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FEB 2 9 2008 ILLINOIS HEALTH FACILITIES PLANNING BOARD

HEALTH FACILITIES PLANNING BOARD

APPLICATION FOR PERMIT

SECTION I. IDENTIFICATION, GENERAL INFORMATION, AND CERTIFICATION (IDEN)

This section must be completed for all projects.

B. Facility/Project Identification

Facility Name Carle Foundation Hospital
Street Address 611 West Park Street City Urbana
County Champaign Zip 61801 Illinois State Representative District 110th

B. Applicant Identification (provide for each co-applicant [refer to Part 1130.220] and insert after this page)

Exact Legal Name Carle Foundation Hospital
Address 611 West Park Street
Urbana 61801 Name of Registered Agent James C. Leonard, MD
Name of Chief Executive Officer James C. Leonard, MD Title President and CEO
CEO Address 611 West Park Street Telephone No. (217) 383-3220

Type of Ownership: ☒ Non-profit Corporation ☐ For-profit Corporation ☐ Limited Liability Company
☐ Partnership ☐ Governmental ☐ Sole Proprietorship ☐ Other (specify)

Corporations and limited liability companies must provide an Illinois certificate of good standing; partnerships must provide the name of the state in which organized and the name and address of each partner specifying whether each is a general or limited partner.

APPEND DOCUMENTATION AS ATTACHMENT IDEN-1 AFTER THE LAST PAGE OF THIS SECTION.

C. Primary Contact Person (person who is to receive correspondence or inquiries during the review period)

Name Candace Branigan Title Director
Company Name Carle Foundation Hospital
Address 611 West Park Street
Urbana 61801 Telephone No. (217) 383-3241
E-mail Address candy.branigan@carle.com Fax Number (217) 326-0051

D. Additional Contact Person (person such as consultant, attorney, financial representative, registered agent, etc. who also is authorized to discuss application and act on behalf of applicant)

Name Title
Company Name
Address
Telephone No. ( )
E-mail Address Fax Number ( )

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Name _____ Title _____
Company Name _____
Address _____
_____ Telephone No. (____)_____
E-mail Address _____ Fax Number (____)_____

E. Post Permit Contact Person (person to whom all correspondence and inquiries pertaining to the project subsequent to permit issuance are to be directed)

Name Candace Branigan Title Director
Company Name Carle Foundation Hospital
Address 611 West Park Street
Urbana 61801 Telephone No. (217) 383-3241
E-mail Address candy.branigan@carle.com Fax Number (217)326-0051

F. Site Ownership (complete this information for each applicable site and insert after this page)

Exact Legal Name of Person Who Owns Site The Carle Foundation
Address of Site Owner 611 West Park Street
Street Address or Legal Description of Site 611 West Park Street

G. Operating Entity/Licensee (complete this information for each applicable facility and insert after this page)

Exact Legal Name Carle Foundation Hospital
Address 611 West Park Street

Type of Ownership: ☒ Non-profit Corporation ☐ For-profit Corporation ☐ Limited Liability Company ☐ Partnership ☐ Governmental ☐ Sole Proprietorship ☐ Other (specify)

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APPEND DOCUMENTATION AS ATTACHMENT IDEN-2 AFTER THE LAST PAGE OF THIS SECTION.

H. Organizational Relationships Carle Foundation Hospital

Provide (for each co-applicant) an organization chart containing the name and relationship of any person who is related (related person is defined in Part 1130.140). If the related person is participating in the development or funding of the project, describe the interest and the amount and type of any financial contribution.

APPEND DOCUMENTATION AS ATTACHMENT IDEN-3 AFTER THE LAST PAGE OF THIS SECTION.

I. Status of Previous Certificate of Need Projects

Provide the project number for any of the applicant's projects that have received permits but are not yet complete (completion is defined in Part 1130.140) and provide the current status of the project . If all projects are complete, indicate NONE: #05-051 and #07-124

J. Flood Plain Requirements (refer to instructions for completion of this application)

Provide documentation regarding compliance with the Flood Plain requirements of Executive Order #4, 1979.

APPEND DOCUMENTATION AS ATTACHMENT IDEN-4 AFTER THE LAST PAGE OF THIS SECTION.

E. Post Permit Contact Person (person to whom all correspondence and inquiries pertaining to the project subsequent to permit issuance are to be directed)

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J. Flood Plain Requirements (refer to instructions for completion of this application)

Provide documentation regarding compliance with the Flood Plain requirements of Executive Order #4, 1979.

APPEND DOCUMENTATION AS ATTACHMENT IDEN-4 AFTER THE LAST PAGE OF THIS SECTION.

K. Historic Resources Preservation Act Requirements (refer to instructions for completion of this application)

Provide documentation regarding compliance with the requirements of the Historic Resources Preservation Act.

APPEND DOCUMENTATION AS ATTACHMENT IDEN-5 AFTER THE LAST PAGE OF THIS SECTION.

L. Project Classification (check those applicable, refer to Part 1110.40 and Part 1120.20.b)

1. Part 1110 Classification
   - [X] Substantive
   - [ ] Non-substantive

2. Part 1120 Applicability or Classification: (check one only)
   - [ ] Part 1120 Not Applicable
   - [ ] DHS or DVA Project
   - [ ] Category A Project
   - [X] Category B Project

M. Narrative Description

Provide in the space below a brief narrative description of the project. Explain what is to be done, **NOT** why it is being done. Include the rationale as to the project's classification as substantive or non-substantive. If the project site does NOT have a street address, include a legal description of the site.

Carle Foundation Hospital
Narrative Description of 2008 Expansion and Modernization Project

Carle Foundation Hospital plans to modernize and expand its current facility at 611 W. Park Street in Urbana, Illinois. There are elements of new construction and modernization as follows:

The hospital plans to build a 9- story/348,400 gross square foot bed tower which will house its modernized 15 bed rehabilitation unit which will be relocated from the current hospital buildings. This new tower will also allow for the modernization and relocation of the hospital's eight vascular procedure laboratories. Of these eight and consistent with their current use, (i) three will be dedicated to cardiac catheterization , (ii) two will be dedicated to electrophysiology procedures, (iii) two will be dedicated to interventional radiology and (iv) one will be non-dedicated or "swing." The new bed tower will also allow for the modernization of 88 medical/surgical beds and all the hospital's 32 ICU beds. In the new tower, all of the beds will be located in private rooms. In this new building, the hospital will also build 50,026 gsf of office space which it shall lease to physicians on the medical staff of the hospital (see commitment letter which follows). Twenty thousand (20,000) gsf of adjacent North Tower space will be affected (modernized) in order to tie the new bed tower into the North Tower.

In existing facilities, the digestive health program will be moved from the Parkview Building to the North Tower. In relocating these services, they will be completely modernized. Further, the program will be expanded from six endoscopy procedure rooms to ten such procedure rooms. The total square footage to be dedicated to digestive health programs is 21,732 gross square feet. Additionally, 8,890 gross square feet of nearby space will be leased to physicians on the medical staff who specialize in gastroenterology and colon rectal surgery (see commitment letter which follows).

The total gsf of new construction will be 348,400 gsf and 50,622 gsf of existing buildings will be modernized.

The planned bed tower will be an addition to the applicant's existing North Tower facility. Prior to construction, the existing building (formerly a nursing home) and parking lot will be demolished. Additional site preparation will involve topsoil stripping, building excavation and stone placement. The addition will be constructed on concrete spread footings with a structural steel framing systems consisting of steel beams and columns with the ability to expand vertically two additional levels. The floors will be reinforced concrete slab on grade and reinforced concrete slab over a steel deck on elevated floors. The exterior enclosure will consist of a curtainwall system of metal panels and glass in conjunction with masonry veneer and punched windows. The roof will consist of a fully adhered EPDM membrane over insulation and a steel roof framing system. The interior of the building will consist of new walls, doors, floors, and ceilings. Fire protection will consist of standpipe with ordinary hazard wet sprinkler system. Fire alarm, nurse call, security, television, paging and energy monitoring will be included in

the facility. Chilled water and steam will be generated at the campus energy plant and piped to the new addition with emergency power generated within the new addition.

The expansion of the digestive health program will be achieved by the infill (modernization) of a portion of the first floor of the applicant's existing North Tower building. The remodel project encompasses some demolition, with new construction build-out including new interior walls, ceilings, floors, casework, and finishes to be provided in this infill. The mechanical system will have all new distribution systems from a combination of new and existing air handling equipment. The electrical system will have new distribution systems utilizing existing electrical services. The digestive health program expansion will create new requirements of the physical plant such as boilers, chillers or generators.

The project involves the acquisition of a small parcel of land adjacent to the existing hospital buildings. It also involves the demolition of an obsolete facility that was formerly operated as a nursing home by an unaffiliated provider but was discontinued for that use in 2005.

The project is a "Category B" project as described in Section 1120.20 of the Planning Board rules and a "Substantive" project as that term is described in Section 1110.40 of the Planning Board rules.

Carle

Carle Clinic Association
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

February, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning board
525 West Jefferson Street
Springfield, Illinois 62761

RE: The Carle Foundation and Carle Foundation Hospital Proposed Modernization and Expansion Project

Dear Mr. Mark:

Carle Clinic Association anticipates leasing approximately 50,026 square feet in the proposed bed tower for physician office space and approximately 8,890 square feet in the proposed digestive health program space also for physician office space for a total of 58,916. square feet. The lease is contingent upon Certificate of Need approval.

Sincerely,

Bruce Wellman, MD
President and CEO

Bloomington/Normal • Champaign • Danville • Mahomet • Mattoon & Charleston
Monticello • Rantoul • Southeast Urbana • Tuscola • Urbana

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KIRK D. MOBERG, MD

Adult Medicine
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TIMOTHY H. CAMDEN, MD
SCOTT R. CINNAMON, MD
CHARLES A. DENNIS, MD
ERIC D. DUNCAN, MD
WALTER R. GONZALEZ, MD
ROBERT G. GOOD, DO
THOMAS J. HALLORAN, MD
ROBERT M. HEALY, MD
JENNIE C. HSU-LUMETTA, MD
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NOLEEN V. KALA, MD
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JEFFREY P. KYROUAC, MD
SUDHA MUTHEKEPALLI, MD
LORI L. PEGRAM, MD
MURRAY PROPES, MD
LOUIS E. SCHWING, MD
LYNETTE SMITH-CAILLOUET, MD
GRETCHEN B. SPERKA, DO
JOHN F. STOLL, MD
NASREEN SYED, MD
COREY M. WARNER, MD
CHRISTINE A. WEAVER, MD
JANET W. WELCH, MD
LORI WEMLINGER, MD

Allergy - Adult
JOHN ZECH, MD

Anesthesiology
RAYMOND L. BURNHAM, MD
MICHAEL D. CARROLL, MD
SADRU D.DHARAMSY, MD
D. CRAIG KLUMP, MD
GORDON R. MONTGOMERY, MD
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CHRISTOPHER K. BODINE, MD
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MALEC A. MOKRAOUI, MD
SOO H. PARK, MD
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MICHAEL V. COLLA, MD
TIMOTHY L. CONNELLY, MD
L. SCOTT COOK, MD, PHD
RICARDO VASQUEZ, MD

Colon and Rectal Surgery
LYN E. TANGEN, MD
PAUL M. TENDER, MD

Convenient Care
ARTHUR H. BELL, DO
KAREN CHARLESTON, MD
KEVIN J. KIRBY, MD
SAM A. MOORE, DO
JOHN R. SELLETT, MD
SUN W. YIM, DO

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MICHAEL J. FREELAND, MD
JAMES S. GREGORY, MD
JOHN F. HILL, MD

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DEREK G. KENNEASTER, MD
CRAIG D. NEITZEL, MD

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BRADLEY PETERSON, MD
VALERIE A. POLLARD, DO
THOMAS R. SCAGGS, MD
GREGORY H. SMITH, MD
GLEN M. SWINDLE, MD
JAMES H. THOMAS, DO
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JENS A. YAMBERT, MD

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MICHAEL G. JAKOBY, MD
ROBERT W. KIRBY, MD
PAUL R. WILSON, MD

Family Medicine
JOHN G. ADAMS, MD
STEPHANIE BAILEY, MD
DONNA B. BEALLIS, DO

Family Medicine (continued)
RANDALL S. BEALLIS, DO
JOYCE W. BEITEL, MD
STEPHEN J. BELGRAVE, MD
KIMBERLY C. BINA, DO
KAREN M. BROADERS, MD
DAVID P. CONNER, MD
JILL E. DARKEN, MD
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JAMES E. DEBOER, MD
DAVID B. DUNN, MD
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BHARAT GOPAL, MD
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JOHN HUTCHINSON, MD
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WILLIAM L. NEIL, MD
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DEBORAH S. SINGLETON, MD
STEVEN J. SPARENBERG, DO
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CHRISTIAN E. WAGNER, MD
DAVID K. WEBB, MD
DAVID L. WHITEHILL, MD
MICHAEL J. WOODS, MD

Gastroenterology - Adult
ANDREW BATEY, MD
EUGENE GREENBERG, MD
GARY R. GRIGLIONE, MD
JEFFREY L. HALLETT, MD
THOMAS P. HUBER, MD

General Surgery
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MARK E. FAITH, MD
DARRYL S. FERNANDES, MD
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CHRISTINE A. WEAVER, MD

Geriatrics
B. CLAIRE BARKER, MD
FOLA O. OLUWEHINMI, MD
SUMA P. PETER, MD

Hematology
JAMES R. EGNER, MD
DAVID L. GRAHAM, MD
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NAVEEN MANCHANDA, MD

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ANDY ARWARI, MD
DOUGLAS D. FILIPOV, MD
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MEHTAB MIZAN, MD
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CRYSTAL D. RADNITZER, MD
WILLIAM K. SCHUH, MD

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CORA E. MUSIAL, PHD, MD
RANA ZAMAN, MD

Neonatology
KIM N. GELKE, MD
WILLIAM C. STRATTON, MD

Nephrology
ABDEL-MONEIM ATTIA, MD
STEPHEN R. HUMPHERYS, MD

Neurology - Adult
KENNETH S. ARONSON, MD
HARRY L. BREMER, MD
KARYN E. CATT, MD
ROBERT E. CRANSTON, MD
MERVAT N. WAHBA, MD

Neuro-Ophthalmology
PATRICIA J. MCNUSSEN, MD

Neurosurgery
RICHARD A. RAK, MD
WALKER L. ROBINSON, MD
CHARLES J. WRIGHT, MD

Obstetrics and Gynecology
INES BAQUERO, MD
MELINDA A. DABROWSKI, MD
TIFFANI E. DILLARD, MD
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THEODORE W. FRANK, MD
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Occupational Medicine
ALLAN E. FILE, MD
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Oncology
JAMES R. EGNER, MD
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JONATHAN S. BAILEY, DMD, MD
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STEPHEN R. SABOL, DDS

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ROBERT BANE, MD
CHRIS J. DANGLES, MD
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Otolaryngology - Head and Neck
FINN R. AMBLE, MD
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Pediatrics
DONNA T. BECK, MD
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JODI A. DEWEY, MD
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TYRONE R. MELVIN, MD

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JOHN A. MOORE, MD
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ILLINOIS HOUSE OF REPRESENTATIVES

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7 E. FAIRCHILD STREET
DANVILLE, ILLINOIS 61832
(217) 431-1986

SPRINGFIELD OFFICE
314 STATE HOUSE
SPRINGFIELD, ILLINOIS 62706
(217) 782-4811

WILLIAM B. BLACK
DEPUTY REPUBLICAN LEADER

February 6, 2008

Mr. Jeffery S. Mark
Executive Director
Illinois Health Facilities Planning board
525 W. Jefferson St., 2nd Floor
Springfield, IL 62761

Dear Mr. Mark;

I want to express my full and complete support for the proposed expansion and modernization plan of Carle Foundation Hospital, located in Urbana, in Champaign County.

Carle Hospital is a very important provider in the health care delivery system in east central Illinois. It is truly a regional hospital and widely recognized for its services, programs, research and dedication to improving the health care of my area.

As all entities must do, Carle Hospital is being proactive in planning for the replacement of aging buildings on it Urbana campus. When I received life saving surgery at Carle Hospital in 1963, that facility was adequate for that time. It would not meet the needs of high technology and the advanced surgical and medical care in 2008 and beyond. Carle is planning to build a hospital of the future to maintain world class care in cardiovascular, neonatal, digestive health and rehabilitation services. As a patient of Carle Hospital, I want to see replacement rooms and centralized access for its Heart and Vascular Institute. Carle is rapidly becoming renowned for its cardiovascular services. It has twice received five-star ratings.

Carle Foundation Hospital is on the cutting edge of 21st Century medicine with its plan to construct a new hospital tower. This project will advance the vision of world class patient care and research. The new facility will include 100% private patient rooms, the very latest in technology and equipment.

Carle's current 305 bed facility is the primary teaching hospital for the University of Illinois College of Medicine at Urbana-Champaign. Our future physicians need to be exposed to modern facilities and the newest technology as they train to deliver health care in a fast changing world. The mission of research will be enhanced as the effort to find improved treatments for cancer, heart disease and digestive diseases continue.

RECYCLED PAPER • SOYBEAN INKS

Carle Foundation Hospital is a partner in our community. They support the Francis Nelson Health Center that serves the underinsured and they provide many free services such as the Community Care Discount program. The amount of charity care has continued to increase, with charity care totaling more than 7.5 million dollars in 2007 and over 4,000 people were provided financial assistance.

Carle Foundation Hospital has been a valuable asset to our area for more than 75 years. I owe my very life to this hospital and its physicians. There is no stronger endorsement than that.

I urge the Illinois Health Facilities Planning board to approve the proposed expansion and modernization plan for Carle Foundation Hospital.

Sincerely,

William B. Black
State Representative
104th District

WBB/jas

45 E. UNIVERSITY AVE., STE. 206
CHAMPAIGN, IL 61820
(217) 355-5252

8 W. NORTH STREET - 1ST FLOOR
DANVILLE, IL 61832
(217) 442-5252

118 STATE CAPITOL
SPRINGFIELD, IL 62706
(217) 782-2507

ILLINOIS STATE SENATE
MICHAEL FRERICHS
STATE SENATOR · 52ND DISTRICT

January 10, 2008

Mr. Jeffery S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson St.
2nd Floor
Springfield, Illinois 62761

Dear Mr. Mark:

I am the State Senator for the 52nd District of Illinois, which includes most of Champaign and Vermilion counties. Within my district is the city of Urbana, which is home to Carle Foundation Hospital. I am writing to voice my support for Carle's Certificate of Need application to expand and modernize its Urbana campus.

Carle Foundation Hospital's ambitious modernization proposal will allow it to continue offering high quality patient care in a wide range of fields. Carle's new Heart & Vascular Institute will expand its cardiology services, which are already ranked in the top 10 percent of hospitals in nation. The proposal will also add new bassinettes to Carle's Neonatal Intensive Care Unit (NICU), extending services to more babies and their parents. The digestive health component of Carle's proposal will create a new Digestive Disease Center, which will consolidate all gastroenterology physician specialists, colon and rectal surgeons, and treatment space in one central location. Finally, Carle's new tower will include one level for a modernized rehabilitation unit, which will address the need for enhanced rehabilitation services in our community.

As a state legislator, I am deeply concerned about the health and welfare of my constituents. One of my priorities is to ensure that the people I represent are able to access the highest quality medical care. I believe that Carle Foundation Hospital's expansion and modernization project will enable it to better serve the needs of our community. I respectfully urge the Illinois Health Facilities Planning Board to approve Carle Foundation Hospital's Certificate of Need application.

Thank you for your consideration of this matter. If you have any questions please do not hesitate to contact me in my Champaign office at (217) 355-5252.

Sincerely,

Michael Frerichs

Michael Frerichs
State Senator – 52nd District

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Recycled Paper · Soybean Inks

ILLINOIS HOUSE OF REPRESENTATIVES

SPRINGFIELD OFFICE
240-W STRATTON BUILDING
SPRINGFIELD, IL 62706
217/ 558-1006

DISTRICT OFFICE
1113 LINCOLN AVENUE
CHARLESTON, IL 61920
217/ 348-7673
FAX 217/348-7677

CHAPIN ROSE

STATE REPRESENTATIVE · 110TH DISTRICT

January 10, 2008

Mr. Jeffery S. Mark
Illinois Health Facilities Planning Board
525 W. Jefferson St., 2nd Floor
Springfield, IL 62761

Dear Mr. Mark,

It has recently been brought to my attention that Carle Foundation Hospital in Champaign-Urbana is preparing to submit a significant Certificate of Need to the Health Facilities Planning Board regarding a 335,000 square foot expansion. Carle Foundation Hospital, for many years, has played a vital role in providing the citizens of east central Illinois with quality health care services. As Carle continues to grow, they clearly have exceeded the demand to repair and replace aging infrastructure and buildings throughout their facilities in east central Illinois. This particular project, as I understand it, addresses this need in designing a modernized facility that will provide state-of-the-art care in cardiovascular, neonatal, digestive health, and rehabilitation services.

As a State Representative, I am always excited and happy to support projects that will bring improved programs and services to the constituency in and around my district. After reviewing the details of the expansion, it is clear that the Carle Foundation Hospital intends to do just that with this CON proposal. In addition, Carle will expand upon its partnerships with the University of Illinois and Parkland College with respect to their research and education missions. Most importantly, however, this project will have a significant positive impact upon the quality and availability of heath care in our region.

I write to lend my full and enthusiastic support for this project and I respectfully request your most favorable review of Carle Foundation Hospital's CON for their proposed expansion. Should you have any additional questions, I would be more than happy to discuss this matter with you further. I can be reached at 217-348-7673.

Best regards,

Chapin Rose
State Representative
110th District

12

COMMITTEES
Human Services (Chairman)
Higher Education (Vice-Chair)
Approp. Higher Education
Approp. Elementary & Secondary Education
Adoption Reform

NAOMI D. JAKOBSSON
STATE REPRESENTATIVE • 103rd DISTRICT
E-mail: naomi@naomijakobsson.com

CAPITOL OFFICE:
257-S Stratton Building
Springfield, IL 62706
217-558-1009
217-557-4536 - FAX

DISTRICT OFFICE:
206 N. Randolph, Suite 120
Champaign, IL 61820
217-373-5000
217-373-8679 - FAX

February 1, 2008

Jeffery S. Mark
Illinois Health Facilities Planning Board
525 West Jefferson St. 2nd Floor
Springfield, Illinois 62761

Dear Mr. Mark:

I am writing to you today in support of the expansion and modernization project Carle Foundation Hospital is proposing on its campus in Urbana. For many years, Carle Foundation Hospital has played an important role in our community and in east central Illinois as a major provider of health care services. Carle is widely recognized for its programs, services and commitment to improving the health care of the community.

As they plan for the eventual replacement of aging buildings on its Urbana campus, Carle Foundation Hospital is building its hospital of the future to advance world-class patient care in cardiovascular, neonatal, digestive health and rehabilitation services. Carle Foundation Hospital has been a valuable asset to our community for more than 75 years and I support its efforts to expand and modernize its facility to provide even better care locally.

Carle is a true community partner, supporting the Francis Nelson Health Center serving uninsured or underinsured individuals in our community and providing many free community services. The Carle Foundation's total community benefit exceeded $43 million in 2006 alone. Carle Foundation Hospital and other organizations within The Carle Foundation provide care to patients, regardless of their ability to pay. Through its Community Care Discount Program, Carle helps qualifying patients apply for and receive public assistance and/or payment plans. The amount of charity care provided has continued to increase annually during this decade; in 2007 The Carle Foundation's charity care totaled more than $7.6 million and approximately 4500 people were provided financial assistance.

I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for our community.

Sincerely,
Naomi D. Jakobsson

Naomi D. Jakobsson
State Representative
103rd District

RECYCLED PAPER • SOYBEAN INKS

CITY OF URBANA

Office of the Mayor

Laurel Lunt Prussing

400 S. Vine Street
Urbana, IL 61801
(217) 384-2456
FAX (217) 384-2426
llprussing@city.urbana.il.us

January 15, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

The City of Urbana supports Carle Foundation Hospital in its effort to obtain a certificate of need for a new tower on its Urbana campus. Carle has spent over a year meeting with the community and with city government seeking comment on this project and answering questions. After careful consideration over many months, the City Council unanimously voted to grant Carle's request to vacate streets to make the project possible.

Urbana's major employers are the University of Illinois and Carle. This project will enable Carle and the University to collaborate on cardiovascular medical research.

This project will benefit the east central Illinois region in a number of ways. First, it will provide improved medical care. Second, because the expansion is within an urban area it will not use up some of the world's richest farmland and sets a good example for smart growth.

Keeping Carle in Urbana is vital to the City's future, since it is our second largest employer. We believe this project will benefit the health of individuals as well as the health of our local economy and encourage you to support it.

Sincerely,

Laurel Lunt Prussing

Laurel Lunt Prussing

Brandon Bowersox
Urbana City Council – Ward 4

January 25, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Jeffrey Mark,

I encourage the Health Facilities Planning Board to support the expansion plans and approve the C.O.N. application for Carle Foundation Hospital in Urbana.

Carle Foundation Hospital is the largest health care provider in Urbana-Champaign and many people depend on Carle. In addition, Carle is situated in an affordable, urban neighborhood that is sensitive to the intensity and expansion of activities at Carle. For this reason, it is imperative that Carle's growth planning process must be collaborative and must engage its neighbors and the City of Urbana.

Since my election to the Urbana City Council in 2005, Carle has indeed fulfilled its responsibilities in this collaboration and has held a public and open planning process to identify its building plans. Carle has refined its plans to meet the needs of the neighborhood and the city as a whole. Through numerous public meetings and workshops, Carle has worked in good faith to develop an expansion plan that is compatible with the neighborhood:

- ✓ By building this expansion upwards rather than spreading outwards into the sensitive neighborhood, Carle is expanding its services without causing a loss of affordable housing.
- ✓ Carle has shown interest in working with the City of Urbana and other agencies to expand the supply of affordable housing in the neighborhood if future expansion plans would cause a loss of housing.
- ✓ Carle's expansion will result in the closure of certain streets and alleys, but these changes will actually improve traffic safety and ambulance entrance safety. By installing traffic lights and new walking and biking paths, transportation both for the hospital and the neighborhood will be efficient and effective.
- ✓ By expanding on its urban campus rather than building a new hospital on the suburban fringe, Carle will continue to provide world-class health care at the heart of Urbana-Champaign where it is accessible by public transit and located nearest to the urban communities who have the greatest unmet need for health care.
- ✓ Urbana City Council has already approved Carle's detailed expansion plans and traffic changes and I look forward to the project's completion.

You will surely hear from other individuals about Carle's world-class patient care, its numerous awards, and its need for expansion and modernization. Those are also valid reasons to support this application, but I urge you to support it because it's the best option for the neighborhood and for access to healthcare in our community.

Brandon

Brandon Bowersox

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506 W Florida Ave, Urbana, IL – Phone: 367-3540
Email: brandon@ward4.org – Web: www.ward4.org

Printed in-house at the expense of the Council member with no public funds.

CHAMPAIGN COUNTY FIRE CHIEFS ASSOCIATION

DEDICATED TO QUALITY EMERGENCY SERVICES FOR CHAMPAIGN COUNTY

Steve Rittenhouse - President
Steve Thuney - Vice-President
Jim Randol - Sec./Treasurer

January 3, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson
Springfield, IL 62761

Dear Mr. Mark:

On behalf of the Champaign County Fire Chief's Association, I hereby pledge our support for the expansion and modernization project proposed by Carle Foundation Hospital on its Urbana Campus. Carle Foundation Hospital is a pioneer in modern medicine, bringing world class health care to the residents of east central Illinois. Carle Foundation Hospital is well known and widely recognized for its programs, services and outstanding commitment to improving the overall health care of the community.

As with any institution, planning for the eventual replacement of aging and antiquated buildings is imperative. Carle is seeking not just to replace aging buildings. More importantly they are preparing for the future of modern medicine, advancing world-class patient care in the areas of cardiovascular, neonatal, digestive health and rehabilitation services.

Being a pre-hospital health care provider myself for over two decades, I know first-hand how important this project is to Carle Foundation Hospital and the community at large. I am particularly interested in this project because this expansion and modernization project will allow Carle Foundation Hospital to continue to provide world class health care right here in east central Illinois not to mention it will allow Carle to advance in the areas of translational research, an area that the whole world can benefit from by finding breakthrough treatments for cancer and cardiovascular disease.

For over 75 years, Carle Foundation Hospital has been a very important asset to the community. Carle is a true partner to the community, serving the uninsured and underinsured people of the community by supporting the Frances Nelson Health Center, as well as providing many free services through various programs and projects such as the Community Care Discount Program and the Parish Nurse Program to name a few.

The community needs and deserves to have access to world-class health care in modern facilities, I therefore urge the Illinois Health Facilities Planning Board to approve Carle Foundation Hospital's expansion and modernization project request.

In closing I wish to thank you for your consideration of this project, if you should have any questions or need anything further, please do not hesitate to contact me at (217) 678-8129.

Sincerely,

Steve Rittenhouse

Steve Rittenhouse, President
Champaign County Fire Chief's Association

SR: jb

Urbana Fire Rescue Services
400 South Vine Street
Urbana, IL 61801
(217) 384-2429
FAX (217) 384-2449

CITY OF URBANA

December 27, 2007

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

The Fire Department would like to show our support for the expansion and modernization project Carle Hospital is proposing on its campus in Urbana. For many years, Carle Foundation Hospital has played an important role in our community. They have been a valuable asset to us by initially assisting in funding our residential smoke detector program. They have also been a very valuable partner in the delivery of our Emergency Medical Services through support, training, and general oversight of the program.

Carle Foundation Hospital has been an asset and a true partner by their participation in numerous other community programs such as the Risk Watch program that we deliver to children locally.

It is our feeling that the future expansion would continue to provide first class services to the citizens of our community as well as many others.

Sincerely,

Michael C. Dilley
Fire Chief
Urbana Fire Rescue

City of
CHAMPAIGN

Fire Department • 307 S. Randolph St • Champaign IL 61820 • (217) 403-7200 • fax (217) 403-7213 • www.ci.champaign.il.us

January 7, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson St.
Springfield, IL 62761

Dear Mr. Mark:

RE: Carle Foundation Hospital's Certificate of Need Application

I am writing in support of Carle Foundation Hospital's Certificate of Need application to add a 335,000 square foot building to accommodate a new Heart and Vascular Institute as well as a Digestive Health Center and 15 new NICU beds on Concourse 4.

I support the expansion and modernization project Carle Foundation Hospital is proposing on its campus in Urbana. For many years, Carle Foundation Hospital has played an important role in our community and in east central Illinois as a major provider of health care services. It is widely recognized for its programs, services, and commitment to improving the health care of the community.

As they plan for the eventual replacement of aging buildings on its Urbana campus, Carle Foundation Hospital is building its hospital of the future to advance world-class patient care in cardiovascular, neonatal, digestive health and rehabilitation services. As an emergency services provider, I am particularly interested in this project because a significant number of our medical calls are patients suffering from cardiac or stroke emergencies. This modernized tower will allow Carle to expand its renowned cardiovascular services. Carle Foundation Hospital has twice received five-star ratings for clinical excellence in the treatment of heat failure and atrial fibrillation, according to a comprehensive study released by HealthGrades, the nation's leading healthcare ratings company. Carle is also ranked in the top 10 percent of hospitals in the nation for cardiology services and has received the HealthGrades Specialty Excellence Award for Cardiology™. In addition, Carle was on the Solucient "100 Top Hospitals: Cardiovascular Benchmarks for Success" two of the last five years. Additionally, with stroke being a leading cause of injury in the United States, we need enhanced rehabilitation services in our area. The proposal includes a modernized rehabilitation unit which will encompass one level of the new tower on Carle's campus and will allow for more advanced care and research locally.

Carle Foundation Hospital has been a valuable asset to our community for more than 75 years and has strong community support. I support its efforts to expand and modernize its facility to provide even better care locally. Carle is a true community partner, supporting the Francis Nelson Health Center serving uninsured or underinsured individuals in our community and providing many free community services, including the Community Care Discount Program, the Parish Nurse Program, Carle Auxiliary Guest House and Risk Watch. The Champaign Fire Department has partnered with Carle Foundation Hospital since the inception of Risk Watch in presenting safety education in the community's classrooms. We also partner with Carle Education Community Training Center in the delivery of CPR and AED heart health programs. We work with Carle Regional EMS in the tracking of field AED saves in full arrest scenarios. The Carle Foundation's total community benefit exceeded $43 million in 2006 alone.

I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for our community.

Sincerely,

Stephen D. Clarkson
Acting Fire Chief

SDC:sw

Michael E. Forrest
Chief
106 West Tomaras Ave., P.O. Box 703
Savoy, Illinois 61874
Phone: 217-359-5814

January 7, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark,

I am writing this letter on behalf of Mutual Aid Box Alarm System (MABAS) Division 28. Division 28 is made up of Fire and Ems services within Champaign and surrounding counties. Carle Foundation Hospital provides an integral part of the emergency services network in Champaign County. Carle is recognized as a leader in the region for health care services. I support an expansion and modernization project for Carle Hospital as it would have a direct impact on the level of service provided to the citizens we serve. Carle Hospital is a valuable asset to our community and any advances to its infrastructure will make our emergency services community stronger and more capable.

Champaign County encompasses a rapidly expanding metropolitan area. As such, citizens in the area have a growing need for more specialized services and options at a local level. They are no longer content with having to look outside the central Illinois region to find more specialized services. The proposed project will allow the centralization and growth of many departments within the hospital. Upgrades in Cardiology, Neonatal Care, and Rehabilitation will bring a higher level of expertise and care to the local area.

Sincerely,

Michael Forrest
Vice-President
MABAS Division 28

Public Works Department
706 South Glover Avenue
Urbana, IL 61802
(217)384-2342
FAX (217)384-2400

January 11, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

As a department head for the City of Urbana, I am writing to you to give my full support to the Carle Foundation Hospital's proposed expansion and modernization project. I support this project as a city employee, but I also see the value of this project as a resident of this community for more than fifteen years.

Carle Foundation Hospital provides valuable medical services not only to Urbana, but they serve many in outlying, rural areas of Central Illinois who travel to our community for healthcare services. To continue to provide quality medical care for this region, Carle Foundation Hospital must invest in technology, equipment, and physical space. The proposed project would modernize Carle Foundation Hospital's facilities to provide state-of-the-art healthcare in cardiovascular, neonatal, digestive health and rehabilitation services.

Besides providing medical services, having Carle Foundation Hospital in our community is an economic asset. Many companies look at a community's healthcare services when making decisions regarding whether or not to locate in an area. The availability of quality healthcare has been cited as one of the reasons that businesses chose Urbana-Champaign as a location.

Another economic impact to consider is the benefit of Carle Foundation Hospital to the restaurants, hotels, gas stations, and other retail businesses in Urbana-Champaign. As I mentioned earlier, many people living within Central Illinois travel to Carle Foundation Hospital to receive medical services. The high quality of medical services attracts them to our community. While here, the patients and their families eat a local restaurants, stay at hotels and/or shop at stores in our community. Improving Carle Foundation Hospital's facilities helps Urbana-Champaign's economy.

Another reason I support the modernization of Carle Foundation Hospital's project is that it will enhance the educational opportunities for those attending the University of Illinois. Urbana-Champaign is the home of the University of Illinois' campus. A modern medical facility will help the University recruit and retain quality faculty members and students. In general, having

excellent medical services located within the university community makes this university more desirable. Specifically, faculty and students in medical studies will be drawn to a community that has excellent medical services and facilities for educational and research purposes.

In closing, I would like to reiterate my support for the Carle Foundation Hospital's proposed expansion and modernization project. The project would benefit Urbana and the surrounding area by providing excellent healthcare to our community, boosting our economy, and supporting the educational experiences offered through the University of Illinois. I ask you to approve Carle Foundation Hospital's certificate of need application to expand its facilities on the Urbana medical campus.

Sincerely,

William R. Gray

William R. Gray, P.E.
Public Works Director

Community Development Services
400 South Vine Street
Urbana, IL 61801
(217) 384-2444
FAX (217) 384-0200

January 15, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, IL 62761

RE: Carle Foundation Hospital Certificate of Need, Urbana, Illinois

Dear Mr. Mark:

This letter is to urge approval by the Illinois Health Facilities Planning Board of the application by Carle Foundation Hospital for expansion and modernization of their facilities on the Urbana campus. Expansion of the Carle facilities at this location is vital to our community for several reasons:

1. Carle Hospital is tremendously important to our local economy. Along with Carle Clinic, it is our top local property tax payer and behind only the University of Illinois as a top employer. The medical industry sustains our local economy and offers an important employment base for our residents. Urbana is truly fortunate to be a host community for this impressive institution. We urge the Board to allow this local business to continue to excel in its fields of expertise by offering the best services and facilities to our community.
2. Expansion and modernization at the primary Carle campus in central Urbana is absolutely critical to maintaining a healthy urban form and providing basic services where they are most needed. Improvement and intensification of the Carle facility at its current location is envisioned and supported by the Urbana Comprehensive Plan, adopted in 2005, with the active involvement of our citizenry. The core Carle campus is readily accessible to the larger community and proximate to the University of Illinois. It is tied in to our local transit, sidewalk, and bicycle pathway system, offering a healthy choice of modalities for employees and visitors. By improving their core campus, Carle is demonstrating a sustainable development pattern that promotes healthy lifestyles for the community. The City of Urbana has demonstrated its commitment to this healthy urban form by providing for a simplified zoning and permitting process within the core area and agreeing to vacate several streets and alleys to allow for the proposed expansion.
3. Finally, provision of high quality health services is a key factor in promoting quality of life in a community. The fact that the City of Urbana is able offer such a high quality of health services to our residents is tremendously important in our economic development efforts. We strongly urge the Board to allow Carle to continue to keep up in providing the best state of the art in health services to help keep our residents healthy and thriving.

As Community Development Director/City Planner, I work closely with Carle Hospital and also hear from local businesses and residents on a daily basis. I cannot stress how important this application is to the City of Urbana and to its residents in allowing us to continue to grow and thrive. The continued excellence and expansion of Carle Hospital also helps to recognize and celebrate our status as home to the magnificent University of Illinois and as one of the Top Ten Green Communities in the United States.

I would be pleased to respond to any questions you may have regarding this letter of support.

Sincerely,

Elizabeth H. Tyler, AICP, Ph.D., Director/City Planner

CHAMPAIGN COUNTY
CHAMBER
OF COMMERCE℠

WWW.CHAMPAIGNCOUNTY.ORG

TOP INVESTORS

PLATINUM

Busey Bank/Main Street Bank & Trust

GOLD

Carle Clinic Association

The Carle Foundation

Provena Covenant Medical Center

SILVER

Christie Clinic

National City Bank

BRONZE

Amdocs

BankChampaign, N.A.

Cancer Treatment Centers of America

Central Illinois Bank

Chase

[illegible]ntry Inn & Suites

[illegible]rejes & Co., Realtor

Health Alliance Medical Plans, Inc.

Kraft Foods Inc.

Strategic Capital Bank

Supervalu Inc. Champaign Distribution Center

University of Illinois at Urbana-Champaign

W. Newell & Co.

Wal-Mart Supercenters

IN-KIND CONTRIBUTORS

PRESIDENT'S CIRCLE

Champaign-Urbana Radio Group – 93.5 The Rock, MY95.3, Q96, 105.9 WGKC

WCIA 3 and WCFN 49

CHAMBER CIRCLE

Central Illinois CW

Illini Radio Group – WIXY 100.3, Mix 94.5 WLRW, 92.5 The Chief, Extra 99.1

BUSINESS CIRCLE

[illegible]ews-Gazette, Inc.

[illegible]Talk 1400 WDWS and Lite Rock 97.5 WHMS

WAND-TV Newscenter 17

WCCU-TV Fox 27

Jeffery S. Mark
Illinois Health Facilities Planning Board
525 West Jefferson St.
2nd Floor
Springfield, Il. 62761

Dear Mr. Mark:

The Champaign County Chamber of Commerce supports the expansion and modernization project Carle Foundation Hospital is proposing on its campus in Urbana. For many years, Carle Foundation Hospital has played an important role in our community and in east central Illinois as a major provider of health care services. It is widely recognized for its programs, services and commitment to improving the health care of the community.

As they plan for the eventual replacement of aging buildings on its Urbana campus, Carle Foundation Hospital is building its 'hospital of the future' to advance world-class patient care in cardiovascular, neonatal, digestive health and rehabilitation services. As an association concerned about the quality of life in our community, we are particularly interested in this project because:

- Modernization of our health facilities will occur. To advance its vision of world-class patient care and research, Carle Foundation Hospital is building a state-of-the-art tower that will include 100% private patient rooms, the latest in equipment and technology, and greater convenience.

- Education: With approximately 30 departments, Carle's current 305-bed facility is the primary teaching hospital for the University of Illinois College Of Medicine at Urbana-Champaign. It's critical that our future doctors be exposed to modern facilities and technology as they train to care for us and our families.

- Research: The modernized facility will be more conducive to providing the best atmosphere for Carle and the University of Illinois to better conduct translational research to find breakthrough treatments for today's most serious diseases, including cancer, cardiovascular disease and digestive diseases.

Additionally, we are an association that is greatly concerned about the economic health of Champaign County. We understand that Carle Foundations Hospital's initiative is expected to create a total number of 470 construction related jobs. It is also estimated that over $30 million of materials for this project will be purchased locally; and an additional $3 million of professional time will be performed by local professional firms.

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(Champaign County Chamber of Commerce
Letter of support continued)

Carle Foundation Hospital is an asset to our community and we support its efforts to expand and modernize its facility to provide even better care locally. They have been a valuable asset to our community for more than 75 years and has strong community support. Carle is a true community partner, supporting the Francis Nelson Health Center serving uninsured or underinsured individuals in our community and providing many free community services. The Carle Foundation's total community benefit exceeded $43 million in 2006 alone.

We respectfully request the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for our community.

Sincerely,

Laura Weis
President & CEO

FRANCES NELSON HEALTH CENTER
SATELLITE OF
COMMUNITY HEALTH IMPROVEMENT CENTER

819 Bloomington Road • Champaign, IL 61820 • phone (217) 356-1558 • fax (217) 366-0160

January 11, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

I am pleased to submit this letter of support on behalf of the Carle Foundation Hospital Certificate of Need Application for the expansion of their Urbana Campus. As Site Director at Frances Nelson Health Center for the past six years, I have learned much about the health care needs in this community and completely endorse Carle Foundation Hospital's effort to respond to that need.

Frances Nelson Health Center, satellite of the Community Health Improvement Center, is a federally qualified health center whose mission is to provide primary medical care to the uninsured and underinsured in the greater Champaign County area. Approximately 80% of a transitional patient base of 6500 unduplicated patients have incomes below the federal poverty level. Overall, 85% of our adult patients are uninsured and qualify for a 90% sliding scale discount for services. In addition, the majority of our babies and children are Medicaid recipients.

Carle Foundation Hospital and other organizations within The Carle Foundation provide care to patients regardless of their ability to pay. Through its Community Care Discount Program, Carle helps qualifying patients apply for and receive public assistance and/or payment plans. The amount of charity care provided has continued to increase annually during this decade; in 2007 The Carle Foundation's charity care totaled more than $7.6 million and approximately 4500 people were provided financial assistance, many of whom were presumedly uninsured patients we referred to them.

Most important to Frances Nelson Health Center staff, and our patients, is Carle Foundation Hospital, and it's attending medical staff's, commitment to the uninsured. Many of our patients require higher levels of medical care including expensive diagnostic services, treatment, and care with specialists including cardiology, perinatology and many other sub-specialities which would other wise not be available to our patients. I hope you will support the Carle Foundation Hospital's expansion application as many vulnerable individuals will benefit each day.

Sincerely,

Andrea Goldberg
Site Director

FRANCES NELSON HEALTH CENTER
SATELLITE OF
COMMUNITY HEALTH IMPROVEMENT CENTER

819 Bloomington Road ● Champaign, IL 61820 ● phone (217) 356-1558 ● fax (217) 366-0160

January 14, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

I am pleased to submit this letter in support of Carle Foundation Hospital's plan to expand and update their facilities in Urbana. As a family medicine physician who now works at both Carle Clinic and Frances Nelson Health Center, I have had the opportunity to work closely with many Carle physicians to provide care to our uninsured, high risk patients with social challenges that often impact their medical condition.

Over the past years, I have had the opportunity to observe Carle's role in our community and in East Central Illinois as a major provider of health care services. As they plan for the eventual replacement of aging buildings on its Urbana campus, Carle Foundation Hospital is building its hospital of the future to advance world-class patient care. As I now workwith the Carle Family Medicine Residency program, I am particularly interested in this project because this expansion will provide the opportunity to attract more young physicians for training and potential recruitment to East Central Illinois.

Most important is to acknowledge the continued commitment of Carle Foundation Hospital and its attending medical staff to the uninsured and underinsured in our community. For many years, Carle Foundation Hospital has provided care to our patients who have limited or no financial resources. Their commitment to the uninsured patients we refer to them is vital to provide me, and my colleagues, the support we need to manage our complex patients. I hope you will support the Carle Foundation Hospital's Modernization and Expansion application.

Sincerely,

Simone Hampton, M.D.

N. Project Costs and Sources of Funds

Complete the following table listing all costs (refer to Part 1120.110) associated with the project. When a project or any component of a project is to be accomplished by lease, donation, gift, or other means, the fair market or dollar value (refer to Part 1190.40.b) of the component must be included in the estimated project cost. If the project contains components that are not related to the provision of health care, complete an additional table for the portions that are solely for health care and insert that table following this page (e.g. separate a nursing home's cost from the components of a retirement community; separate patient care area costs from a hospital project that includes a parking garage.

PROJECT COSTS AND SOURCES OF FUNDS	Total	Clinical	Non-Clinical
Preplanning Costs	$2,892,101	$1,185,761	$1,706,340
Site Survey and Soil Investigation	$50,000	$20,500	$29,500
Site Preparation	$6,960,679	$2,853,878	$4,106,801
Off Site Work	$5,000,000	$2,050,000	$2,950,000
New Construction Contracts	$121,858,775	$51,559,825	$70,298,950
Modernization Contracts	$10,441,425	$3,486,375	$6,955,050
Contingencies	$13,400,000	$5,494,000	$7,906,000
Architectural/Engineering Fees	$8,082,020	$3,313,628	$4,768,392
Consulting and Other Fees	$755,000	$309,550	$445,450
Movable or Other Equipment (not in construction contracts)	$27,126,672	$17,454,149	$9,672,523
Bond Issuance Expense (project related)	$3,560,000	$1,459,600	$2,100,400
Net Interest Expense During Construction (project related)	$26,600,000	$10,906,000	$15,694,000
Fair Market Value of Leased Space or Equipment	$8,876,765	$8,876,765	$0
Other Costs To be Capitalized	$293,328	$120,264	$173,064
Acquisition of Building or Other Property (excluding land)	$0	$0	$0
ESTIMATED TOTAL PROJECT COSTS	$235,896,765	$109,090,296	$126,806,469
Cash and Securities	$19,287,100	$0	$19,287,100
Pledges	$0	$0	$0
Gifts and Bequests	$0	$0	$0
Bond Issues (project related)	$216,609,665	$109,090,296	$107,519,369
Mortgages	$0	$0	$0
Leases (fair market value)	$0	$0	$0
Governmental Appropriations	$0	$0	$0
Grants	$0	$0	$0
Other Funds and Sources	$0	$0	$0
TOTAL FUNDS	$235,896,765	$109,090,296	$126,806,469

O. Related Project Costs

1. Provide the following information, as applicable, with respect to any land related to the project that will be or has been acquired during the last two calendar years:

   ☐ No land acquisition is related to project; Purchase Price $614,500 ; Fair Market Value$ 614,500

2. Does the project involve establishment of a new facility or a new category of service? ☐ Yes ☒ No

   If yes, provide the dollar amount of all non-capitalized operating start-up costs (including operating deficits) through the first full fiscal year when the project achieves or exceeds the target utilization specified in Part 1100.

   Estimated start-up costs and operating deficit cost is $ _____

P. Project Status and Completion Schedules

1. Indicate the stage of the project's architectural drawings:

   ☐ None or not applicable ☒ Schematics ☐ Preliminary ☐ Final Working

2. Provide the following dates (indicate N/A for any item that is not applicable):

   25% of project costs expended 7/09 50% of project costs expended 3/10
   75% of project costs expended 11/10 95% of project costs expended 6/11
   100% of project costs expended 7/11 Midpoint of construction date 3/10
   Anticipated project completion date (refer to Part 1130.140) 12/12

3. Indicate the following with respect to project expenditures or to obligation (refer to Part 1130.140):
   - ☐ Purchase orders, leases, or contracts pertaining to the project have been executed;
   - ☐ Project obligation is contingent upon permit issuance. Provide a copy of the contingent "certification of obligation" document, highlighting any language related to CON contingencies.
   - ☒ Project obligation will occur after permit issuance.

APPEND DOCUMENTATION AS ATTACHMENT INFO-6 AFTER THE LAST PAGE OF THIS SECTION.

Q. Cost/Space Requirements

Provide in the format of the following example the gross square footage (GSF) and the attributable portion of total project cost for each department/area. Identify each piece of major medical equipment. The sum of the department costs MUST equal the total estimated project costs. Indicate if any space is being reallocated for a different purpose. Include outside wall measurement plus the department or area's portion of the surrounding circulation space. Indicate the proposed use of any vacated space.

		Gross Square Feet		Amount of Proposed Total GSF That Is:			
Department/Area	Cost	Existing	Proposed	New Const.	Remodeled	As is	Vacated Space
Dietary	$1,150,000	3,000	6,000	3,000	1,000	2,000	
Radiation Therapy	3,250,000*	4,000(1)	5,500	5,500			
Medical Records	300,000	2,500	6,500		4,000(1)	2,500	
TOTAL	4,700,000	9,500	18,000	8,500	5,000	4,500	

*Includes $1,500,000 for an 18 MEV linear accelerator
(1) Existing radiation therapy space will be vacated and remodeled and converted to medical records.

APPEND DOCUMENTATION AS ATTACHMENT INFO-7 AFTER THE LAST PAGE OF THIS SECTION.

R. Facility Bed Capacity and Utilization *CFH used the 10 percent rule in March of 2007 to add 2 OB beds and 8 M/S beds.

1. Complete the following chart as applicable. Complete a separate chart for each facility that is part of the project and insert following this page. Provide the existing bed capacity and utilization data for the latest 12 month period for which data is available. Any bed capacity discrepancy from the Inventory will result with the application being deemed incomplete.

FACILITY NAME Carle Foundation Hospital CITY Urbana

REPORTING PERIOD DATES: From 7/1/06 to 6/30/07

Category of Service	Existing # of Beds	Number of Admissions	Patient Days	Bed Changes	Proposed # of Beds
Medical/Surgical	177/185*	12,456	45,598		
Pediatrics	20	1,043	3,064		
Obstetrics	26/28*	2,301	5,307		
Intensive Care	32	1,844	6,927		
Neonatal ICU	25	395	8,175		
Acute Mental Illness					
Rehabilitation	15	442	4,769		
Nursing Care					
Sheltered Care					
Other (identify)					
Other (identify)					
Other (identify)					
TOTAL	295 305*	18,481	73,840		

2. Is the facility certified for participation in the Medicare "swing bed" (i.e. acute care beds certified for extended care) program? ____ Yes ✓ No

3. For the following categories of service, indicate the number of existing beds that are Medicare certified and the number of existing beds that are Medicaid certified (if none, so indicate): Not applicable.

Service	# Medicare Beds	#Medicaid Beds
Nursing Care		
ICF/DD Adult		
Children DD		

S. Certification

The application must be signed by the authorized representative(s) of the applicant entity. The authorized representative(s) are in the case of a corporation, any two of its officers or members of its board of directors; in the case of a limited liability company, any two of its managers or members (or the sole manager or member when two or more managers or members do not exist); in the case of a partnership, two of its general partners (or the sole general partner when two or more general partners do not exist); in the case of estates and trusts, two of its beneficiaries (or the sole beneficiary when two or more beneficiaries do not exist); and in the case of a sole proprietor, the individual that is the proprietor. The signature(s) must be notarized. If the application has co-applicants, a separate certification page must be completed for each co-applicant and inserted following this page. One copy of the application must have the ORIGINAL signatures for all persons that sign for the applicant and for each of the co-applicants.

This Application for Permit is filed on behalf of Carle Foundation Hospital *** in accordance with the requirements and procedures of the Illinois Health Facilities Planning Act. The undersigned certifies that he or she has the authority to execute and file this application for permit on behalf of the applicant entity. The undersigned further certifies that the data and information provided herein, and appended hereto, are complete and correct to the best of his or her knowledge and belief. The undersigned also certifies that the permit application fee required for this application is sent herewith or will be paid upon request.**

Signature

Printed Name James C. Leonard, MD

Printed Title President and CEO

Notarization:
Subscribed and sworn to before me
this 11th day of February 2008

Signature of Notary

Seal

"OFFICIAL SEAL"
VIRGINIA A. CLARK
Notary Public, State of Illinois
My commission expires 04/16/11

Signature

Printed Name John M. Snyder

Printed Title Executive Vice President and COO

Notarization:
Subscribed and sworn to before me
this 11th day of February 2008

Signature of Notary

Seal

"OFFICIAL SEAL"
VIRGINIA A. CLARK
Notary Public, State of Illinois
My commission expires 04/16/11

*Insert EXACT legal name of the applicant

S. Certification

The application must be signed by the authorized representative(s) of the applicant entity. The authorized representative(s) are in the case of a corporation, any two of its officers or members of its board of directors; in the case of a limited liability company, any two of its managers or members (or the sole manager or member when two or more managers or members do not exist); in the case of a partnership, two of its general partners (or the sole general partner when two or more general partners do not exist); in the case of estates and trusts, two of its beneficiaries (or the sole beneficiary when two or more beneficiaries do not exist); and in the case of a sole proprietor, the individual that is the proprietor. The signature(s) must be notarized. If the application has co-applicants, a separate certification page must be completed for each co-applicant and inserted following this page. One copy of the application must have the ORIGINAL signatures for all persons that sign for the applicant and for each of the co-applicants.

This Application for Permit is filed on behalf of The Carle Foundation *** in accordance with the requirements and procedures of the Illinois Health Facilities Planning Act. The undersigned certifies that he or she has the authority to execute and file this application for permit on behalf of the applicant entity. The undersigned further certifies that the data and information provided herein, and appended hereto, are complete and correct to the best of his or her knowledge and belief. The undersigned also certifies that the permit application fee required for this application is sent herewith or will be paid upon request.**

Signature

Printed Name James C. Leonard, MD

Printed Title President and CEO

Signature

Printed Name John M. Snyder

Printed Title Executive Vice President and COO

Notarization:
Subscribed and sworn to before me
this 11th day of February 2008

Signature of Notary

Seal

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Notary Public, State of Illinois
My commission expires 04/16/11

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this 11th day of February 2008

Signature of Notary

Seal

"OFFICIAL SEAL"
VIRGINIA A. CLARK
Notary Public, State of Illinois
My commission expires 04/16/11

*Insert EXACT legal name of the applicant

File Number 2932-580-4

STATE OF ILLINOIS

OFFICE OF THE SECRETARY OF STATE

To all to whom these Presents Shall Come, Greeting:

I, Jesse White, Secretary of State of the State of Illinois, do hereby certify that

THE CARLE FOUNDATION, A DOMESTIC CORPORATION, INCORPORATED UNDER THE LAWS OF THIS STATE ON NOVEMBER 06, 1946, APPEARS TO HAVE COMPLIED WITH ALL THE PROVISIONS OF THE GENERAL NOT FOR PROFIT CORPORATION ACT OF THIS STATE, AND AS OF THIS DATE, IS IN GOOD STANDING AS A DOMESTIC CORPORATION IN THE STATE OF ILLINOIS.

In Testimony Whereof, *I hereto set my hand and cause to be affixed the Great Seal of the State of Illinois, this* 10TH *day of* JANUARY *A.D.* 2008 .

Jesse White

SECRETARY OF STATE

Authentication #: 0801000265
Verify at www.cyberdriveillinois.com

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Attachment IDEN-1

File Number 5274-755-4

STATE OF ILLINOIS

OFFICE OF THE SECRETARY OF STATE

To all to whom these Presents Shall Come, Greeting:

I, Jesse White, Secretary of State of the State of Illinois, do hereby certify that

THE CARLE FOUNDATION HOSPITAL, A DOMESTIC CORPORATION, INCORPORATED UNDER THE LAWS OF THIS STATE ON MAY 28, 1982, APPEARS TO HAVE COMPLIED WITH ALL THE PROVISIONS OF THE GENERAL NOT FOR PROFIT CORPORATION ACT OF THIS STATE, AND AS OF THIS DATE, IS IN GOOD STANDING AS A DOMESTIC CORPORATION IN THE STATE OF ILLINOIS.

SEAL OF THE STATE OF ILLINOIS
1868 1818
AUG. 26TH 1818

In Testimony Whereof, *I hereto set my hand and cause to be affixed the Great Seal of the State of Illinois, this* 10TH *day of* JANUARY *A.D.* 2008 .

Jesse White

SECRETARY OF STATE

Authentication #: 0801000273
Verify at www.cyberdriveillinois.com

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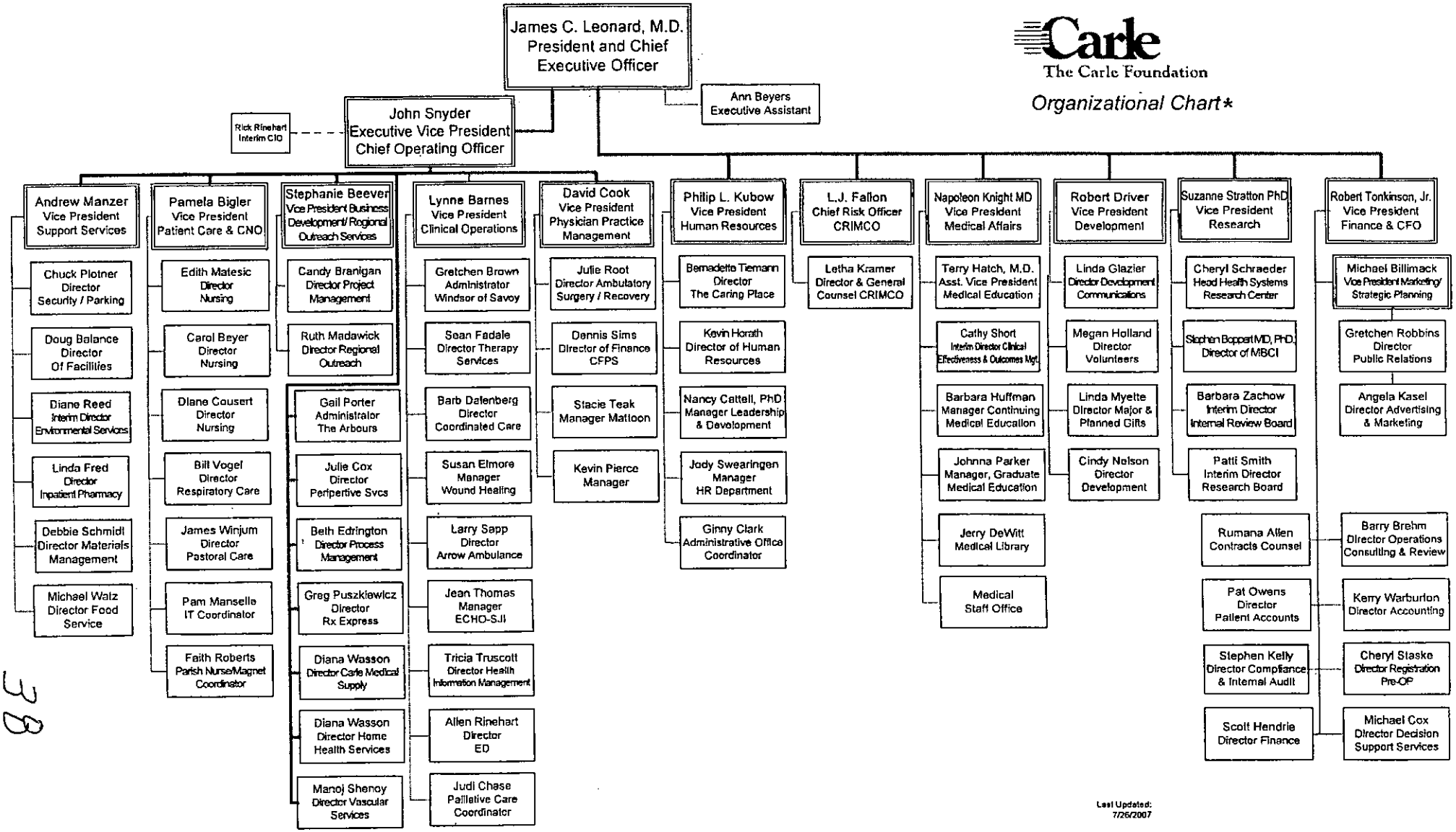
Attachment IDEN-1

H. Organizational Relationships: Carle Foundation Hospital

The Carle Foundation is the parent of Carle Foundation Hospital. The other entities that constitute a "related party" (1) to each of the Applicants are: (i) Champaign Surgicenter, LLC and (ii) Carle Foundation Physician Services, LLC. The organizational chart of The Carle Foundation (includes Carle Foundation Hospital, which does not have a separate organizational chart) is attached hereto as Attachment IDEN-3.

(1) As defined under Section 1130.140 of the Planning Board rules.

Attachment IDEN-3



*Carle Foundation Hospital does not have a separate organizational chart.

Attachment IDEN-3

Project:

05-051

Status: Progress report filed: 2/07
Obligation: 2/07
Progress report filed: 2/08

07-124

Status: Approved by IHFPB 1/16/08

Attachment IDEN-4

Illinois Department of
Natural Resources
One Natural Resources Way • Springfield, Illinois 62702-1271
http://dnr.state.il.us

September 11, 2007
Rod R. Blagojevich, Governor
Sam Flood, Acting Director

Carle Foundation Hospital **611 West Park, Urbana Illinois**

PERMIT NOT REQUIRED NOTIFICATION LETTER

Attention: Bruce Roth **New Bed Tower**

Thank you for the recent submittal regarding the project as shown on the enclosed copy of your submittal. Based on our review of the information you provided and in accordance with the Rivers, Lakes and Streams Act [615 ILCS 5], a Department of Natural Resources, Office of Water Resources permit will not be required for this work because:

☐ The Department does not have jurisdiction over streams with drainage areas of less than one square mile in an urban area, or ten square miles in a rural area. The site of your work is located where the drainage area is below these jurisdictional limits.

☒ The Department does not have regulatory authority over activities outside the floodway of jurisdictional streams. The floodway is the portion of the floodplain that must remain open and unrestricted to carry flood flows

☐ The Department does not have jurisdiction over construction on non-public lakes in which the project would not impact the dam, traverse the lake or impact the flood carrying capacity of the stream(s) that feed the lake.

☐ The Department does not have jurisdiction over Class III (low hazard) dams which meet all of the following criteria:

a dam height of less than 25 feet;
an impounding capacity of less than 50 acre-feet (calculated at the top of dam); and
a drainage area of less than ten square miles in a rural area, or one square mile in an urban area.

If modifications are proposed to the dam, this office should be contacted for a determination of permit applicability prior to initiation of construction. Also, future changes in downstream land use could change the hazard classification making a permit and dam modification necessary.

☐ The proposed activity is considered routine maintenance or repair work and is exempt from the Department's permit requirements.

If you have any questions or comments concerning the above determination, please feel free to contact the person noted below at 217/785-1661. This letter is not to be construed as a release from any other federal, state or local laws or regulations. If the project involves work in a wetland or in a floodplain and if you have not already done so, you should contact the U.S. Army Corps of Engineers and the local regulatory authority to ascertain applicable federal and local requirements.

☐ Rod Johnson ☐ Scott Arends ☐ Mike Diedrichsen
☒ Robert Giesing ☐ Mark McCauley ☐ Dennis Kennedy

BY: Robert Giesing

Post-it® Fax Note 7671	Date 9/11/07	# of pages ▶ 1
To Bruce Roth	From Rob Giesing	
Co./Dept. Engineering	Co. IDNR/OWR	
Phone # 383-3535	Phone # 785-1661	
Fax # 383-3540	Fax # 785-5014	

TOTAL P.01

HD

Attachment: IDEN-4

Illinois Historic Preservation Agency

FAX (217) 782-8161

1 Old State Capitol Plaza • Springfield, Illinois 62701-1512 • www.illinois-history.gov

Champaign County
Urbana
CON - New Construction and Modernization, Carle Foundation Hospital
611 W. Park St.
IHPA Log #004102907

November 7, 2007

Candace Branigan
Carle Foundation Hospital Administration
611 W. Park St.
Urbana, IL 61801

Dear Ms. Branigan:

This letter is to inform you that we have reviewed the information provided concerning the referenced project.

Our review of the records indicates that no historic, architectural or archaeological sites exist within the project area.

Please retain this letter in your files as evidence of compliance with Section 4 of the Illinois State Agency Historic Resources Preservation Act (20 ILCS 3420/1 et. seq.). This clearance remains in effect for two years from date of issuance. It does not pertain to any discovery during construction, nor is it a clearance for purposes of the Illinois Human Skeletal Remains Protection Act (20 ILCS 3440).

If you have any further questions, please contact Patrick Gleason, Cultural Resources Manager, 1 Old State Capitol Plaza, Springfield, IL 62701, 217/785-3977.

Sincerely,

Anne E. Haaker

Anne E. Haaker
Deputy State Historic
Preservation Officer

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Attachment IDEN-5

A teletypewriter for the speech/hearing impaired is available at 217-524-7128. It is not a voice or fax line.

Attachment INFO-6

Pages 42 - 57

CON Project Narrative

Carle Heart and Vascular Institute
Urbana, Illinois

As part of a new bed tower on its main hospital campus, Carle Foundation Hospital proposes to construct a new facility for its heart and vascular services. Carle Foundation Hospital's new Heart and Vascular Institute is intended to provide comprehensive cardiac and vascular care in a single setting and create access to state of the art cardiac and vascular services for East Central Illinois, emphasizing the advanced treatment and technology available. The building will also serve to enhance physician and staff recruitment to reinforce Carle Foundation Hospital's position as the largest provider of cardiovascular services in the region.

The 348,400 square foot bed tower housing the Heart and Vascular Institute is to be located immediately west of the existing North Tower Building. A new entrance will provide direct access to the cardiovascular clinic and non-invasive diagnostic outpatient departments. A connecting corridor will link a new prominent hospital entrance to the center core of the existing hospital. Interventional cardiology will be located on the second floor and will consolidate and modernize cardiovascular services to support diagnostic treatment and patient care. Critical care and medical/surgical patient bedroom units will be located on the upper floors. A total of 135 new single patient bedrooms will be provided to replace existing inadequate nursing units and double occupancy patient bedrooms. The existing number of licensed patient beds will not increase. Critical connecting links between other essential services will be created to quickly move patients through the Heart and Vascular Institute.

Over time, Carle Foundation Hospital's growing cardiovascular services have become scattered across the existing campus. While Carle Foundation Hospital has provided extensive, high quality cardiovascular services for many years continuity of care and efficiency in providing care for patients, families, and staff have suffered. As cardiovascular services have grown in volume and scope, these services have become decentralized, creating staff and space inefficiencies, communication gaps, and way-finding problems.

With the proposed design, the first floor entry is easily accessed from dedicated parking adjacent to the building. The 56,000 square foot first floor is organized from a waiting area along an exterior window wall. The outpatient Cardiac Clinic will register all patients at a single point, provide offices and exam rooms for all cardiovascular providers and also contain related support services such as lab and specimen collection. The Non-Invasive Diagnostics Department will be located adjacent to the outpatient clinic area on the first floor. Non-Invasive Diagnostics will provide complete stress testing, echocardiogram, electrocardiogram and other imaging services required for cardiac care. Patients, family and staff can easily walk between the two departments through the new lobby.

The 48,000 square foot second floor will house vascular services and will be accessible from the existing hospital central core. This department will contain eight procedure labs and 32 prep/ recovery bays. Family waiting is provided adjacent to the central core elevators. Interventional

Attachment Info6

Cardiology is located to provide direct access to the existing surgery department where more invasive cardiac surgery is currently performed. A new bed sized elevator will be installed to allow a direct connection between the existing emergency department and the procedure labs. Clinic offices directly below will increase physician efficiency. Additional hospital administration and conference space will be provided on this floor.

Directly above Interventional Cardiology will be a mechanical floor designed to provide air handling for the entire building. Additional mechanical space will be located in the basement for electrical equipment and pumps. The basement space will be connected to the existing campus utility tunnels. The existing central plant will provide chilled water, steam and other services for the Heart and Vascular Building. Materials management and logistics will also utilize the tunnel system into the new building. Inpatient pharmacy will be relocated to the new basement. The basement will directly connect to the existing North Tower basement. New service, patient and staff elevators within the existing North Tower shafts will be installed to service all floors of the new building. The existing North Tower elevators will be for public use only.

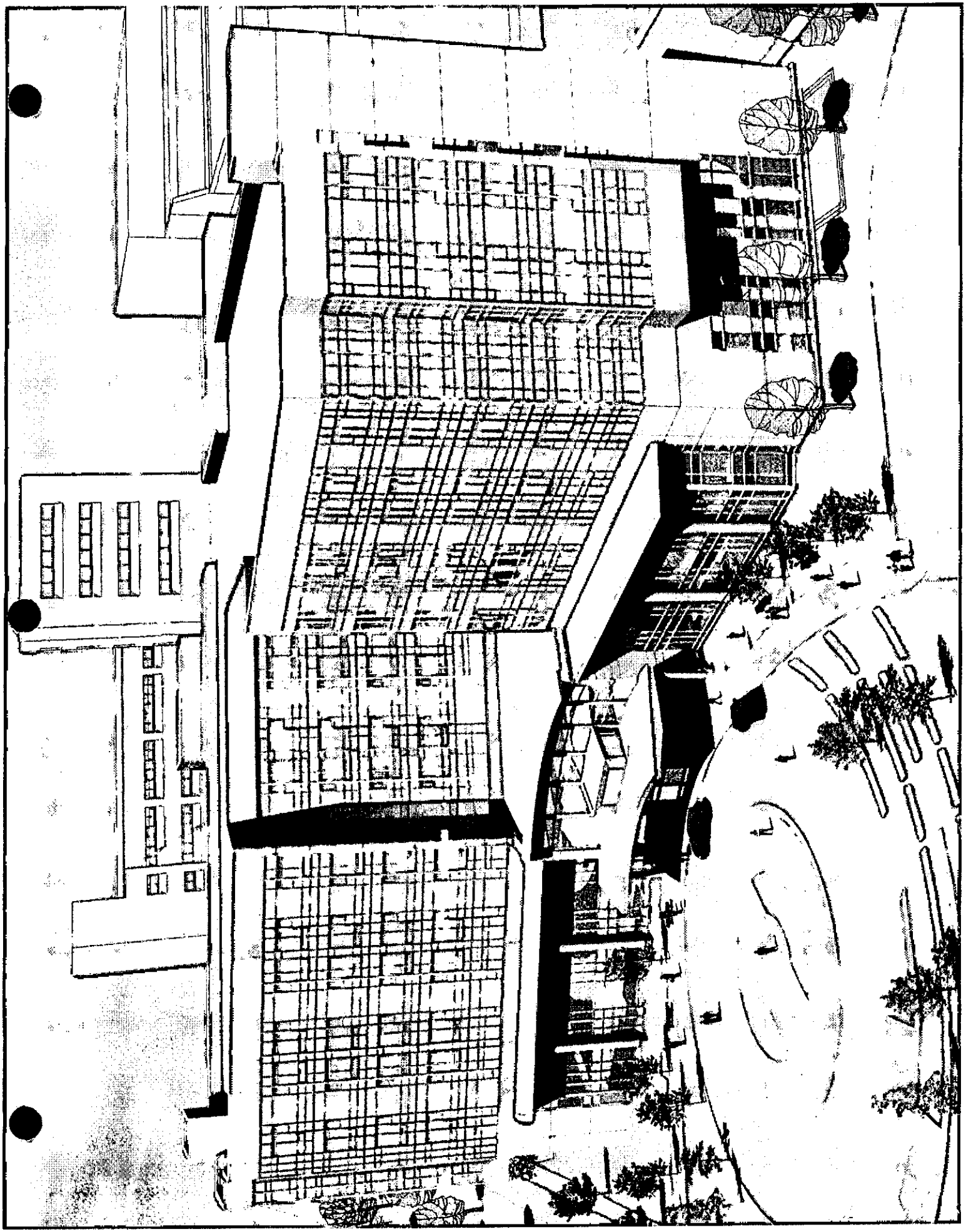
Floor six will be designed for 12 CVICU patient bedrooms and 32 cardiac medical/surgical patient bedrooms. The horizontal arrangement of the cardiac units will allow better care continuity and easier patient movement based on acuity. An additional 16 cardiac patient bedroom unit will located on the floor above, which may serve medical cardiac patients.

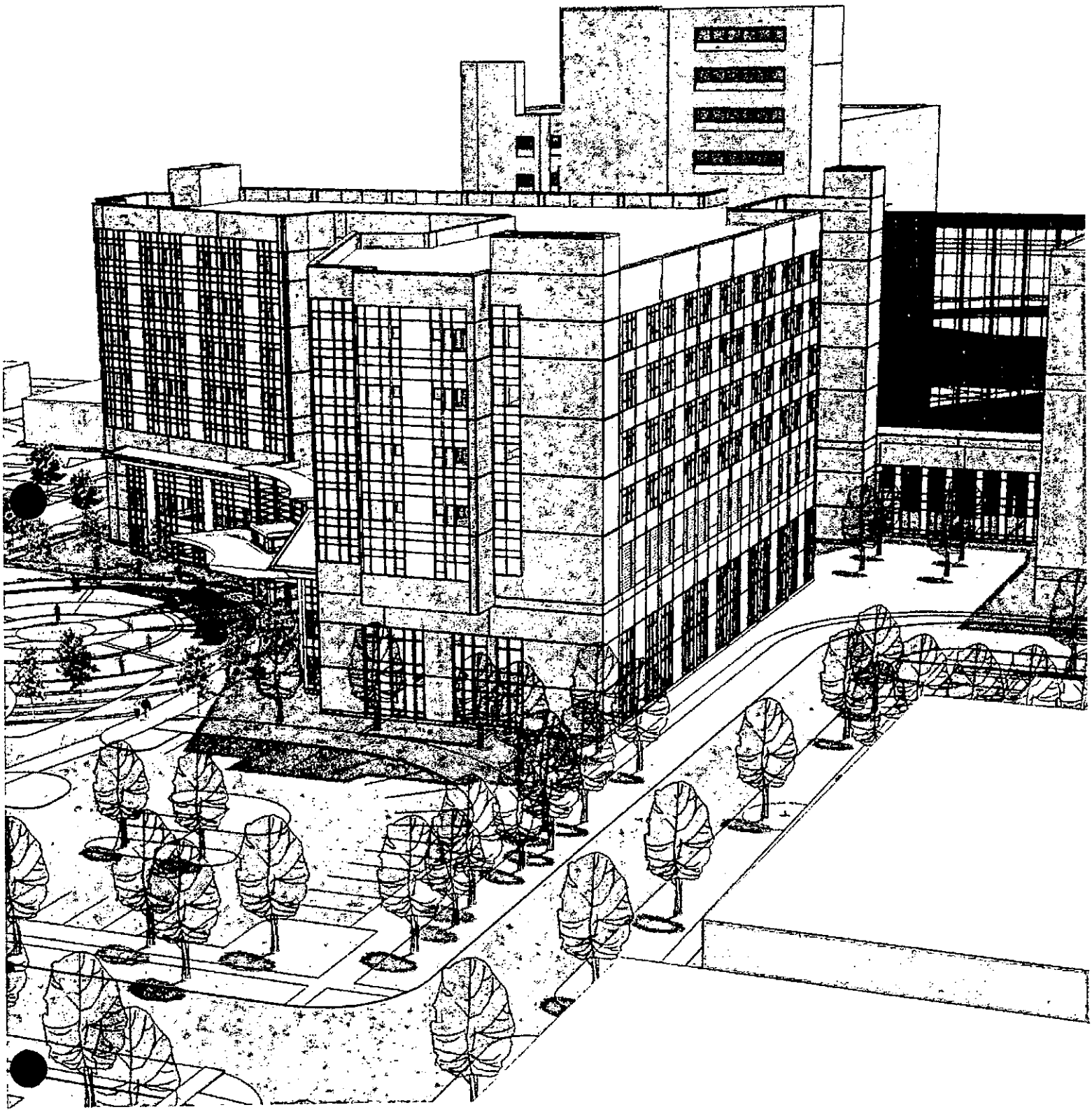
In addition to the 16 cardiac patient beds, the seventh floor will also contain a 16 bed medical/surgical unit and nursing education space. Each of the patient bed floors will be approximately 42,000 square feet.

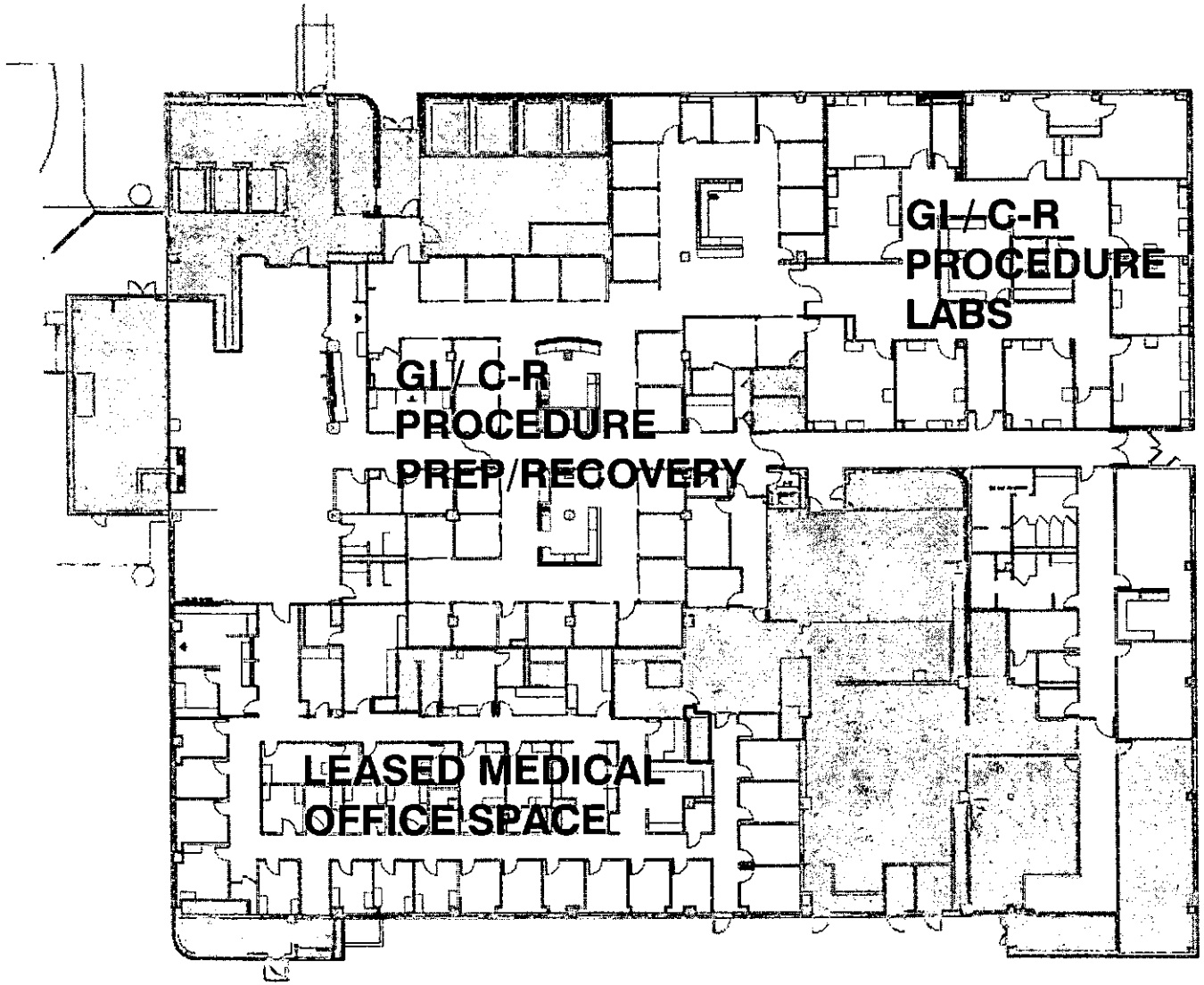
The eighth floor will contain a twenty bed surgical intensive care unit and an additional 24 bed medical/surgical unit. All of the currently licensed non-cardiac intensive care beds will now be grouped on one floor rather than scattered on several floors. The adjacent medical/surgical unit will again allow better care continuity and easier movement of patients based on acuity.

The ninth floor will contain a fifteen bed inpatient rehabilitation unit. This floor will be designed to expand by ten additional beds as required in the future. In the interim, other clinical services will be operated in that space. Inpatient and outpatient rehabilitation therapy and the Wound Healing Department as well as conference space will be provided on this floor.

The building will be designed for future vertical expansion of two additional floors. An additional 48 medical/surgical beds could be developed on each future vertical floor. Carle Foundation Hospital is coordinating the backfill programming relating to vacated space. Due to the age of the buildings, the space that is being re-programmed will be primarily used for non-clinical and outpatient functions. The new building has also been designed to accommodate future expansion of adjacent areas such as an Emergency Department Chest Pain unit, an imaging center and relocation of the main hospital entry. Renderings and line drawings follow.







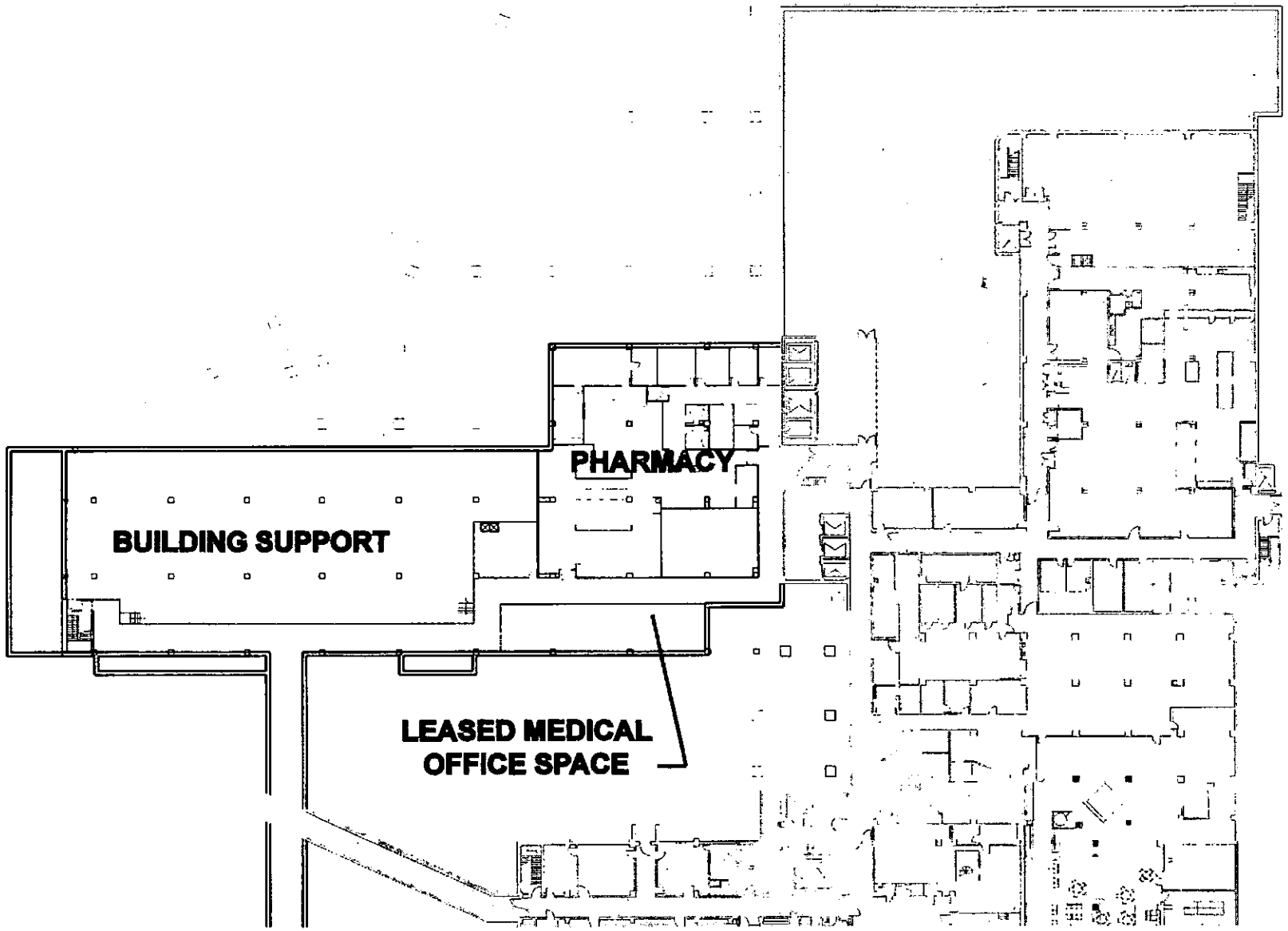
Carle

CARLE DIGESTIVE HEALTH CENTER

First Floor Plan

Marshall Erdman & Associates

February 14, 2008



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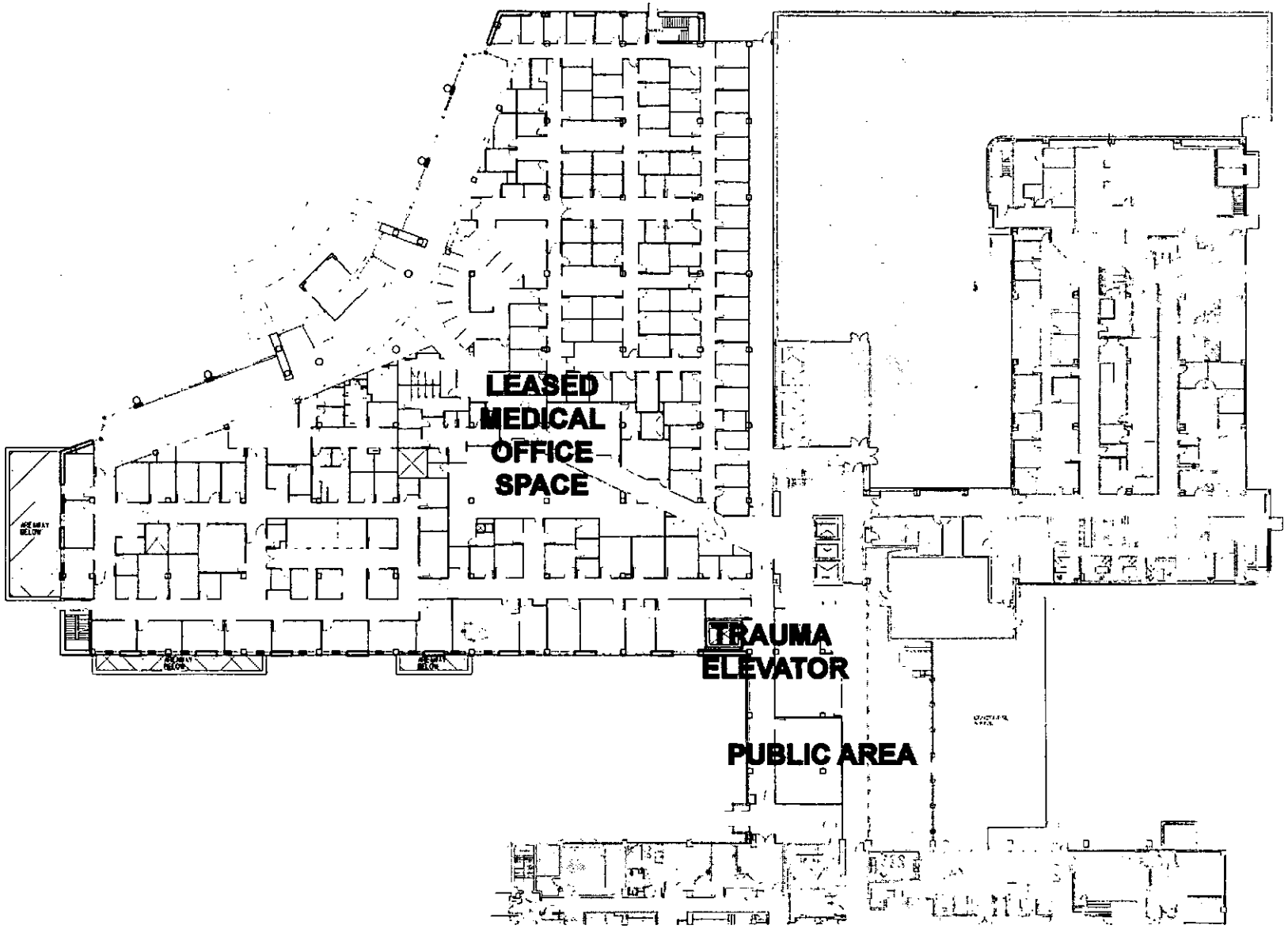
Carle

New Bed Tower

Basement Floor Plan

Marshall Erdman Associates + Shepley Bulfinch Richardson and Abbott

February 12, 2008



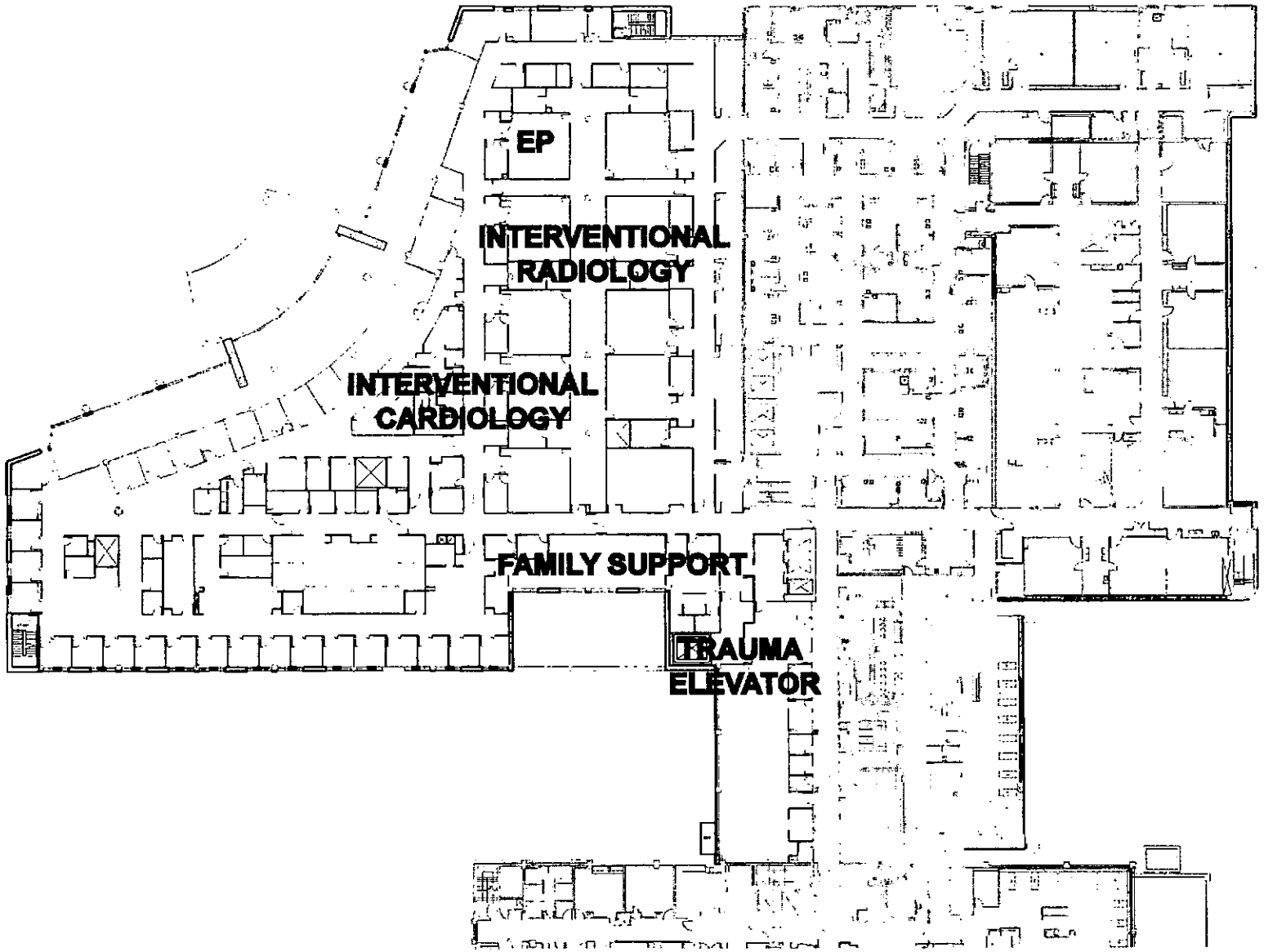
Carle

New Bed Tower

First Floor Plan

Marshall Erdman Associates + Shepley Bulfinch Richardson and Abbott

February 12, 2008



Carle

New Bed Tower

Second Floor Plan

(Double-height space, no Third Floor)

Marshall Erdman Associates + Shepley Bulfinch Richardson and Abbott

February 12, 2008

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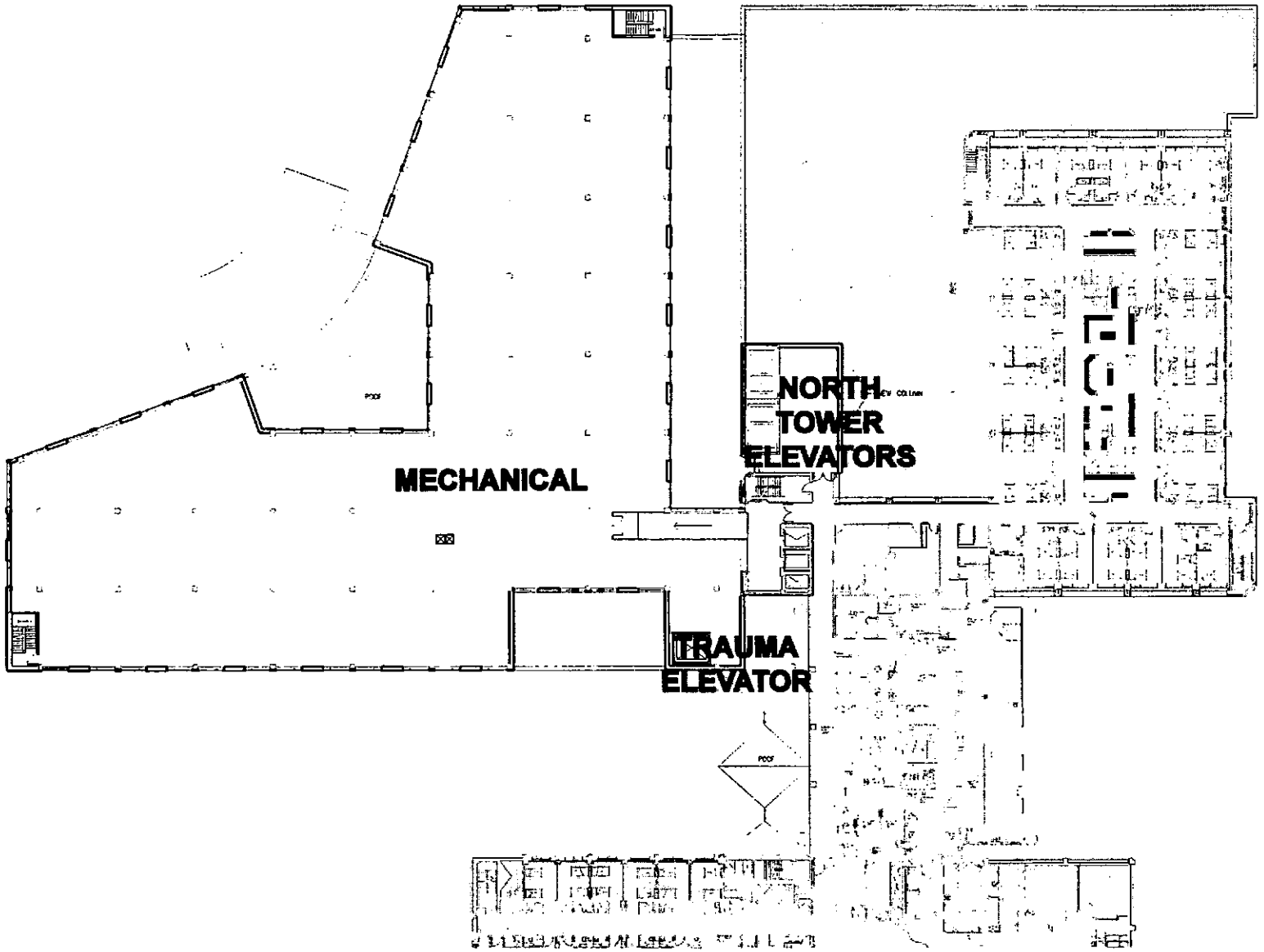

Carle

New Bed Tower

Fourth Floor Plan

(Double-height space, no Fifth Floor)

Marshall Erdman Associates + Shepley Bulfinch Richardson and Abbott

February 12, 2008

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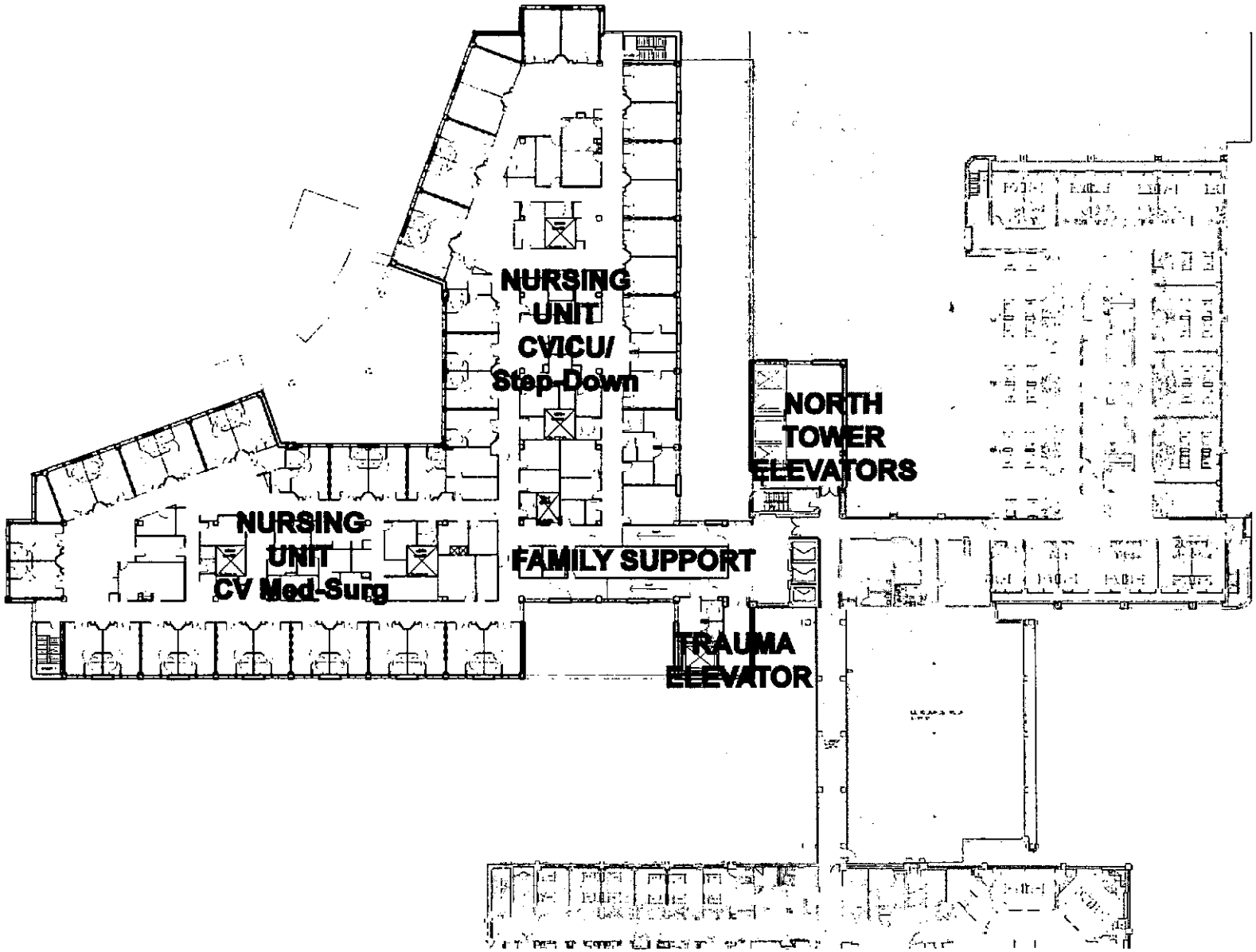

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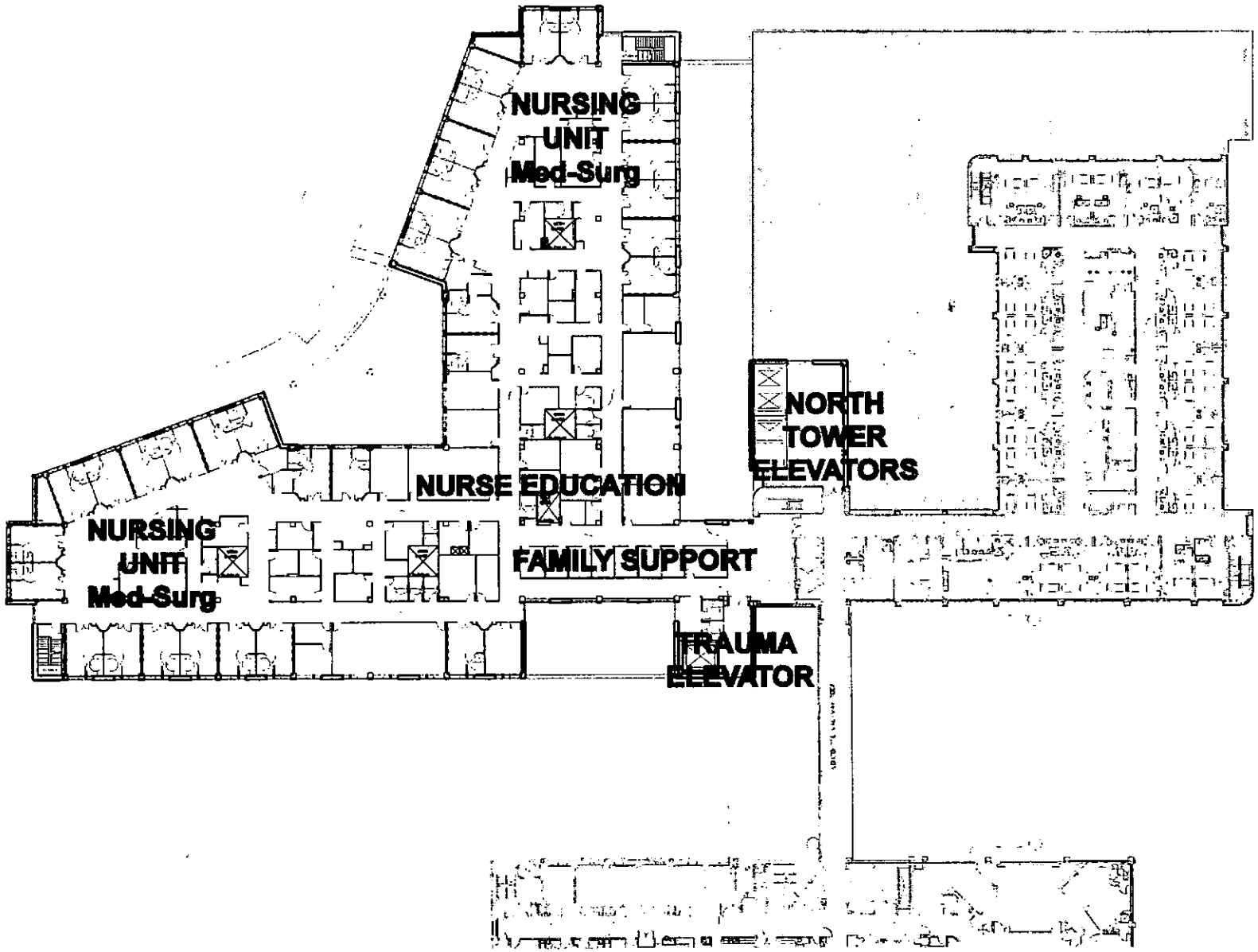
Carle

New Bed Tower

Sixth Floor Plan

Marshall Erdman Associates + Shepley Bulfinch Richardson and Abbott

February 12, 2008



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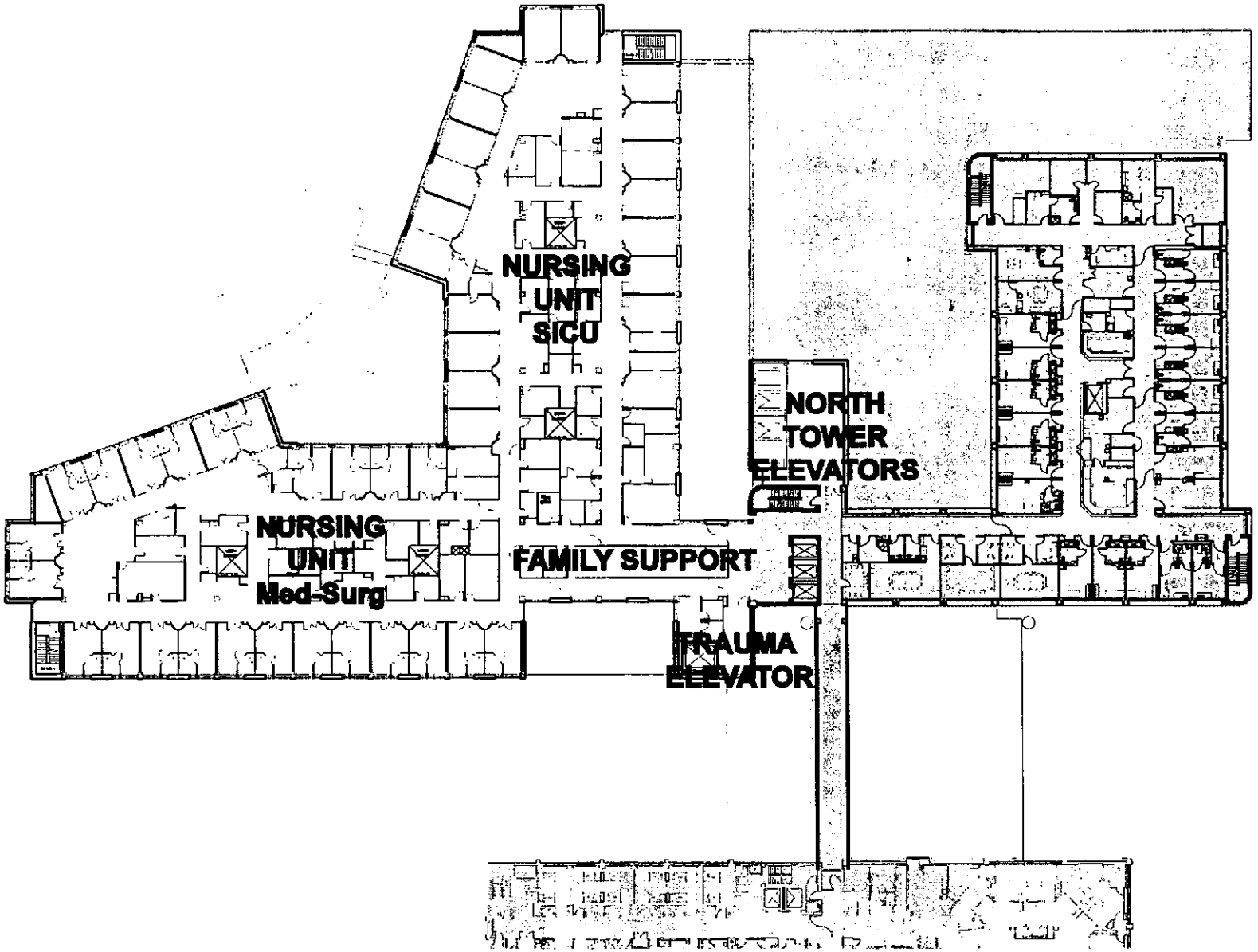
Carle

New Bed Tower

Seventh Floor Plan

Marshall Erdman Associates + Shepley Bulfinch Richardson and Abbott

February 12, 2008



54

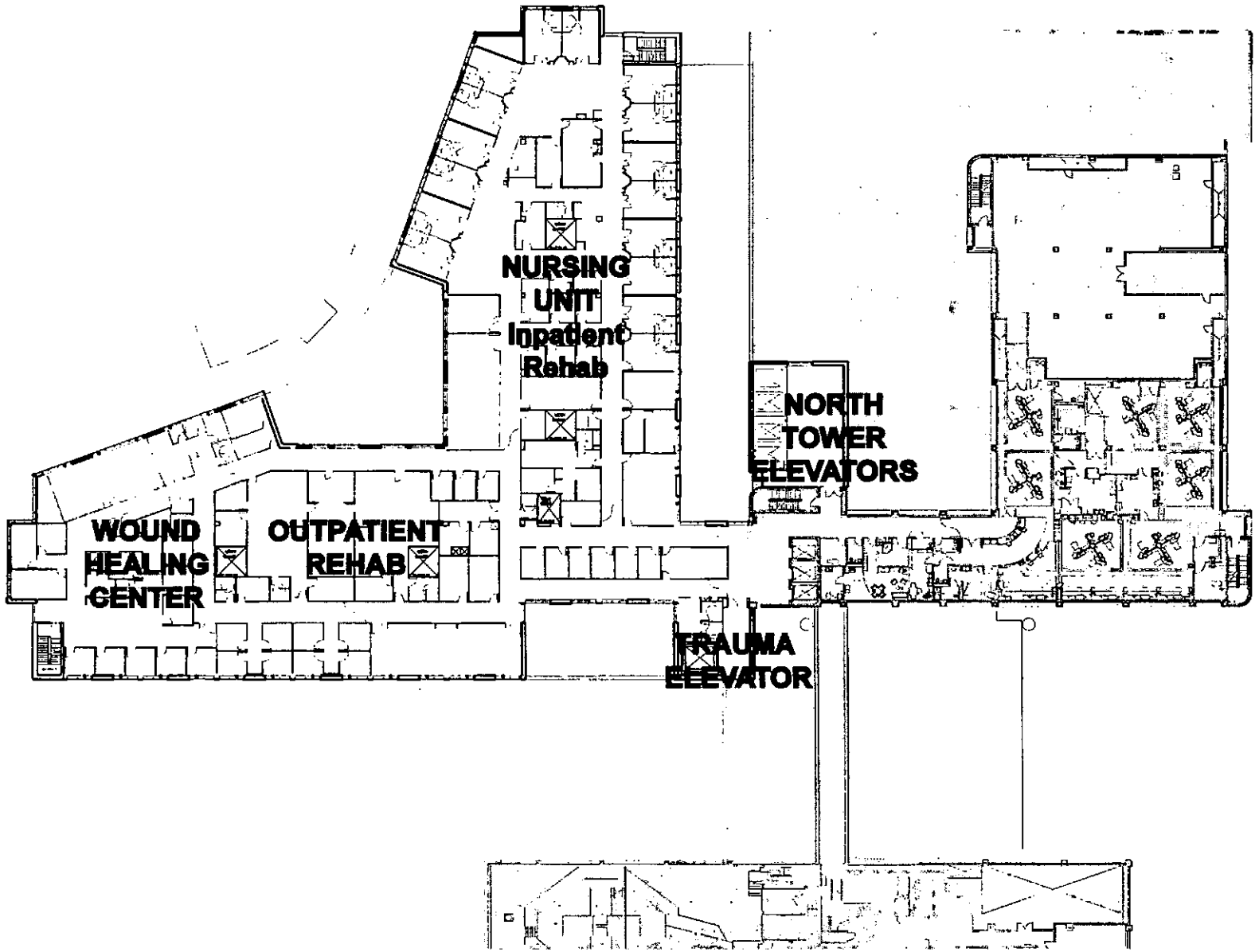
Carle

New Bed Tower

Eighth Floor Plan

Marshall Erdman Associates + Shepley Bulfinch Richardson and Abbott

February 12, 2008



55

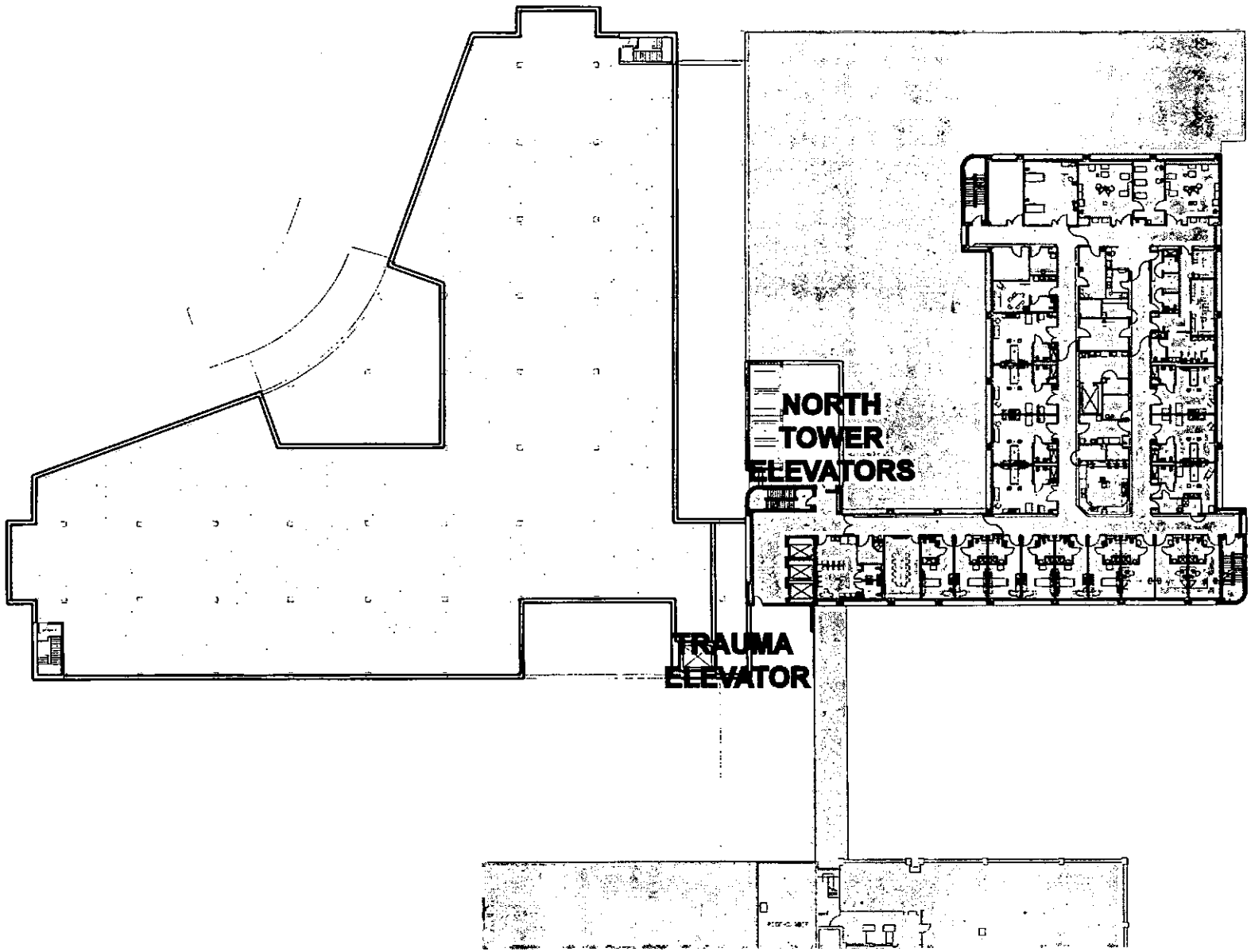
Carle

New Bed Tower

Ninth Floor Plan

Marshall Erdman Associates + Shepley Bulfinch Richardson and Abbott

February 12, 2008



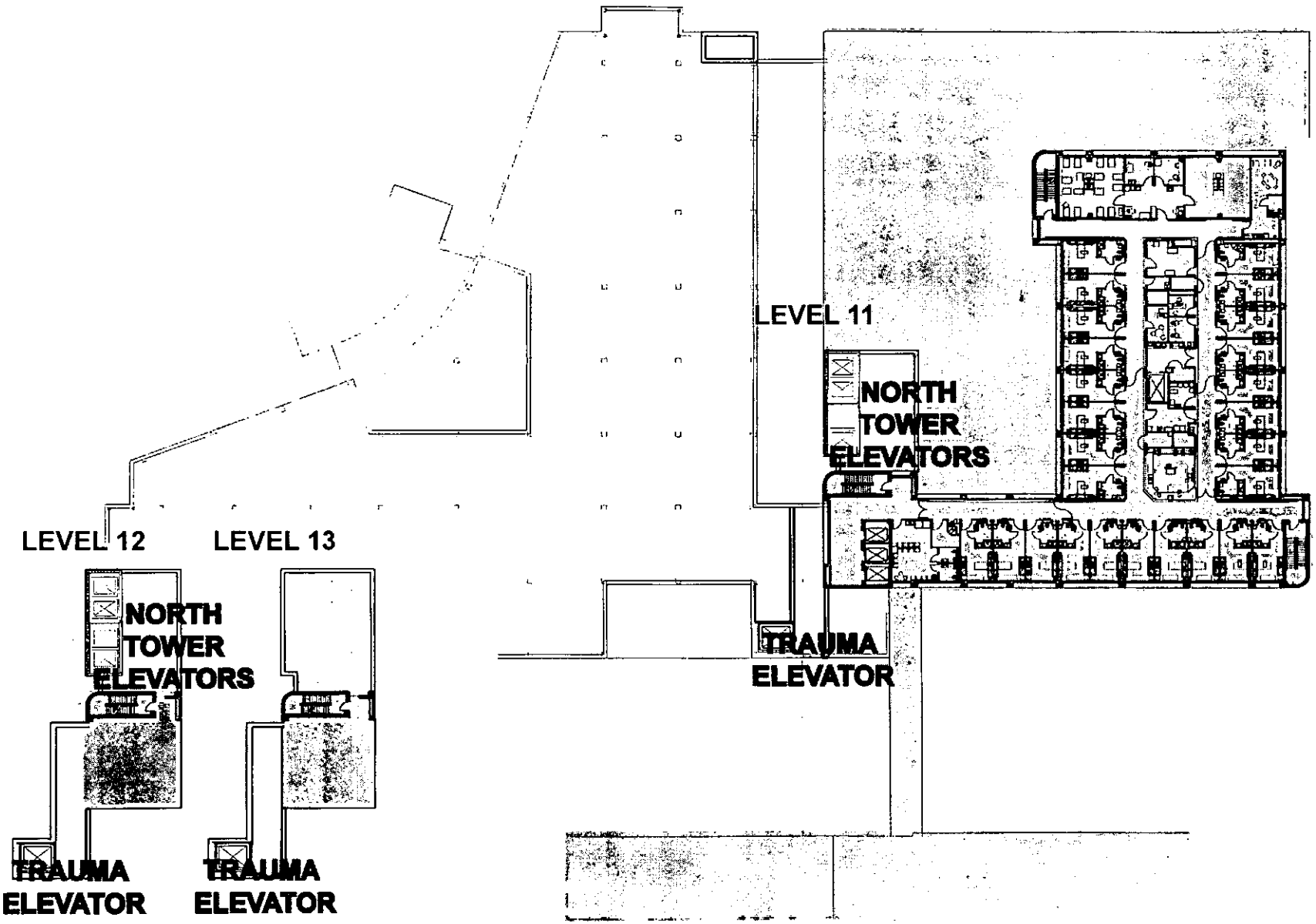
Carle

New Bed Tower

Tenth Floor Plan

Marshall Erdman Associates + Shepley Bulfinch Richardson and Abbott

February 12, 2008



57

Carle

New Bed Tower

Marshall Erdman Associates + Shepley Bulfinch Richardson and Abbott

Eleventh-Thirteenth Floor Plans
February 12, 2008

Q. Cost/Space Requirements

Department/Area	Cost	Gross Square Feet		Amount of Proposed Total GSF That Is:			
		Existing	Proposed	New Const.	Remodeled	As Is	Vacated Space
Clinical							
Cardiac Catheterization	$ 3,260,116	1,576	4,788	4,815	0	0	1,576
Cardiac Catheterization Support	$ 3,844,031	4,147	6,093	6,093	0	0	4,147
Interventional Radiology	$ 3,278,500	2,231	4,815	4,815	0	0	2,231
Interventional Radiology / Support	$ 3,844,031	5,869	6,093	6,093	0	0	5,869
Electrophysiology	$ 2,185,667	791	3,210	3,210	0	0	791
Electrophysiology / Support	$ 2,550,701	2,082	4,043	4,043	0	0	2,082
Catheterization / Interventional Radiology / Electrophysiology Prep / Recovery	$ 3,920,582	4,557	5,758	5,731	0	0	4,557
Gastro-Intestinal / Colo-Rectal Labs	$ 3,947,396	1,531	7,101	0	7,101	0	1,531
Gastro-Intestinal / Colo-Rectal Prep / Recovery	$ 4,666,166	10,805	8,394	0	8,394	0	10,805
Intensive Care Beds	$ 14,778,576	20,112	20,936	20,921	0	0	20,112
Medical-Surgical Beds	$ 40,108,842	48,942	56,820	56,820	0	18,939	30,003
Inpatient Rehabilitation Beds	$ 6,225,976	2,859	8,820	8,835	0	0	2,859
Inpatient Occupational Therapy	$ 1,548,842	795	2,455	2,455	0	0	795
Inpatient Physical Therapy	$ 2,474,993	1,066	3,923	3,923	0	0	1,066
Outpatient Rehabilitation (Occupational Therapy and Physical Therapy)	$ 2,934,340	1,567	4,843	4,843	0	0	1,567
ADL Treatment	$ 469,384	241	744	744	0	0	241
Respiratory Therapy	$ 227,210	121	375	375	0	0	121
Wound Healing Center	$ 3,348,149	2,979	5,307	5,307	0	0	2,979
Pharmacy	$ 3,504,611	4,972	5,555	5,555	0	0	4,972
Pharmacy Storage	$ 1,972,182	0	3,255	3,255	0	0	0
Total Clinical	$ 109,090,296	117,243	163,328	147,833	15,495	18,939	98,304
Non-Clinical							
Building Support and Mechanical	$ 36,714,676	0	62,762	62,681	81	0	0
Conference Rooms	$ 1,523,695	0	2,951	2,579	372	0	0
Dining Room	$ 775,373	0	1,384	1,384	0	0	0
Elevator	$ 17,174,046	0	31,477	21,477	10,000	0	0
Nurse Education	$ 2,376,191	0	4,657	4,657	0	0	0
Office Space	$ 13,035,358	48,845	25,793	24,749	1,044	0	48,845
Leased Physician Office Space	$ 31,673,640	14,444	58,916	50,026	8,890	0	14,444
Public Area	$ 18,748,235	2,213	37,847	25,804	12,043	0	2,213
Staff Support	$ 4,785,254	0	9,907	7,210	2,697	0	0
Total Non-Clinical	$ 126,806,469	65,502	235,694	200,567	35,127	0	65,502
TOTAL PROJECT	$ 235,896,765	182,745	399,022	348,400	50,622	18,939	163,806

85

Backfill Analysis

Over the last 10 years, as Carle Foundation Hospital has grown in its delivery of inpatient and outpatient services, space constraints have required it to move administrative support services and outpatient services which were not critical to the direct delivery of inpatient services off of the inpatient hospital campus. Some of these support functions have moved to other Carle Foundation properties and others have moved to leased offices. Also, CFH has moved 96 staff and certain support functions to the former Manor Care nursing home building which is planned to be demolished in connection with this project. To the extent these functions are now currently either located in buildings scheduled for demolition, buildings that are leased, or prefabricated trailers (the latter of which have been temporarily located on campus), it is our desire to bring key services back to the hospital campus into permanent buildings. This would improve the efficiency and operation of our organization as a whole. It would also, in the midterm and long term, reduce operating costs.

The cost/space requirement worksheet attached hereto as Attachment Info-7, includes the square footage of the space to be vacated by department for the current buildings. It also includes the proposed use of the space. The total square footage to be vacated is 163,806 gsf of clinical and non-clinical space. The intent is to demolish 48,845 gsf (the Manor Care building) and re-use the remaining space. The primary uses of the vacated space will be additional family support space; hospital based physician office space; on call rooms for physicians, residents, students, and staff; expansion of outpatient services, e.g. dialysis, therapy services; inpatient ancillary support staff space, e.g. phlebotomy, imaging, etc.; research; administrative offices including risk management, security, case management/discharge planning; quality, clinical effectiveness, infection control. As the vast majority of the programs to be located within the vacated space will be non-clinical in nature, it is not expected that major renovations will be required to implement the new use of the space. To the extent that such plans are changed, the Applicant would file a CON application for any reviewable use. While demolition of some elements of these existing buildings may be necessary based on mid-to-long term planning, only the former Manor Care building is scheduled for immediate demolition.

Description of Manor Care Space

A portion of the space that will be vacated is a freestanding building which was previously (until 2005) operated as a nursing home building. It consists of three floors and a basement which are functionally obsolete. The obsolescence of this facility was documented for the Planning Board in connection with its discontinuation approval in 2005. It will be demolished in connection with the building of the new bed tower. Currently there are three functions for which the former nursing home building is being used, as follows: 14,787 gsf is Administration, 12,292 gsf is Medical Records, and 1,131 gsf is a Security Office. When this building is demolished these functions will be moved to other locations which are not being affected by the project contemplated by the CON application. In addition to the space that is being used in the former nursing home, there are 20,635 gsf which are currently unused and vacant. This vacant space includes the entire third floor and a portion of the basement.

SECTION III. GENERAL REVIEW CRITERIA

This section is applicable to all projects EXCEPT those projects that are solely for discontinuation with no project costs and those projects that are non-substantive and subject only to a Part 1120 review. Refer to Part 1110.40 for the requirement for non-substantive projects.

A. **Criterion 1110.230.a, Location** Not applicable.

Check if the project will result in any of the following: □ establishment of a health care facility: □ establishment of a category of service; □ acquisition of major medical equipment (for treating inpatients) that is not or will not be located in a health care facility and is not being acquired by or on behalf of a health care facility. If NO boxes are checked, this criterion is not applicable. If any box is checked, read the criterion and submit the following:

1. A map (8 ½" x 11") of the area showing:
   a. the location of the applicant's facility or project;
   b. the name and location of all the other facilities providing the same service within the planning area and surrounding planning areas within 30 minutes travel time of the proposed facility;
   c. the distance (in miles) and the travel time (under normal driving conditions) from the applicant's facility to each of the facilities identified in b. above;
   d. an outline of the proposed target population area.
2. For existing facilities, provide patient origin data for all admissions for the last 12 months presented by zip code. Note this information must be based upon the patient's legal residence other than a health care facility for the last 6 months immediately prior to admission. For all other projects for which referrals are required patient origin data for the referrals must be provided.
3. The ratio of beds to population (population will be based upon the latest census data by zip code) within 30 minutes travel time of the proposed project.
4. The status of the project in the zoning process. Provide letter(s) from the appropriate local officials.
5. Evidence of legal site ownership, possession, or option to purchase or lease.

APPEND DOCUMENTATION AS ATTACHMENT GRC-1 AFTER THE LAST PAGE OF THIS SECTION.

B. **Criterion 1110.230.b, Background of Applicant**

Read the criterion and submit the following information:

1. A listing of all health care facilities owned or operated by the applicant, including licensing, certification and accreditation identification numbers, if applicable.
2. Proof of current licensing and, if applicable, certification and accreditation of all health care facilities owned or operated by the applicant.
3. A certification from the applicant listing any adverse action taken against any facility owned or operated by the applicant during the three (3) years prior to the filing of the application.

4. Authorization(s) permitting the State Board and Agency access to information in order to verify any documentation or information submitted in response to the requirements of this subsection or to obtain any documentation or information that the State Board or Agency finds pertinent to this subsection. **Failure to provide such authorization shall constitute an abandonment or withdrawal of the application without any action by the State Board.**

APPEND DOCUMENTATION AS ATTACHMENT GRC-2 AFTER THE LAST PAGE OF THIS SECTION.

C. Criterion 1110.230.c, Alternatives to the Proposed Project

Read the criterion and provide the following information:

1. Provide a comparison of all of the alternatives considered including the alternative of doing nothing. The comparison must address cost benefit analyses, patient access, quality, and short and long-term financial benefits.

2. Discuss why the alternative of using other area facilities or resources to meet the needs identified in your project is not feasible.

3. Discuss why the alternative of utilizing underutilized bed or other space in the facility is not feasible.

4. If the alternative selected is based solely or in part on improved quality of care, provide empirical evidence (including quantified outcome data) that verifies improved quality of care.

APPEND DOCUMENTATION AS ATTACHMENT GRC-3 AFTER THE LAST PAGE OF THIS SECTION.

D. Criterion 1110.230.d, Need for the Project

Is the need for the project based upon need assessment per Part 1100 or a variance? ☐ Yes ☒ No.
If no is indicated, read the criterion and submit the following as applicable:

1. Copies of area market studies including explanations regarding how and when these studies were performed.

2. Calculation of the need for the beds or services including the models used to estimate the need (all assumptions used in the model and the mathematical calculations must be included).

3. Identification of the individuals likely to use the proposed beds or service by:

   Provide letters from physicians or hospitals which document how many patients were referred for this service in the past 12 months, where the patients were referred and how many patients will be referred annually to the proposed project.

4. If the project is for the acquisition of major medical equipment that does NOT result in the establishment of a category of service, provide documentation that the equipment will achieve or exceed the applicable target utilization levels specified in Appendix B of Part 1110 within 12 months after acquisition.

APPEND DOCUMENTATION AS ATTACHMENT GRC-4 AFTER THE LAST PAGE OF THIS SECTION.

E. Criterion 1110.230.e, Size of Project

Read the criterion and provide the following:

1. For any department involved in this project that has a square footage which exceeds the State Norm found in Appendix B of Part 1110 or if no State Norm is shown in Appendix B, provide:

   a. a rationale explaining how the proposed square footage was determined;

   b. copies of any standards used to determine appropriate square footage;

   c. architectural drawings showing any design impediments in the existing facility; and

   d. if the project is for the conversion of beds from one category of service to another an explanation as to why the excess space within the facility cannot be more appropriately used for other purposes.

APPEND DOCUMENTATION AS ATTACHMENT GRC-5 AFTER THE LAST PAGE OF THIS SECTION.

2. If the project involves a category of service for which the State Board has established utilization targets, provide the following:

   a. projected utilization for the first two years of operation after project completion;

   b. an explanation regarding how these projections were developed;

   c. copies of any contracts with new physicians or professional staff;

   d. a list of any new procedures which will affect the workload of the facility.

APPEND DOCUMENTATION AS ATTACHMENT GRC-6 AFTER THE LAST PAGE OF THIS SECTION.

Carle
Carle Foundation Hospital
611 West Park Street, Urbana, IL 61801-2595 Phone: (217) 383-3311

January, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

RE: **Attachment GRC-2 Background of Applicant (The Carle Foundation)**

Dear Mr. Mark:

The following information addresses the four points of the subject criterion (1110.230.b):

1. The health care facilities owned or operated by the applicant include:

   Carle Foundation Hospital
   License Identification Number: 0003798
   Accreditation Identification Number: 7439

   The Carle Arbours
   License Identification Number 0028522

   Carle Foundation Hospital Ambulatory Surgical Treatment Center – Champaign
   License Identification Number: 7002959

   Carle Foundation Hospital Postsurgical Recovery Care Center – Champaign
   Licensing letter attached.

   Carle Foundation Hospital Ambulatory Surgical Treatment Center – Danville
   License Identification Number: 7002439

   Carle Foundation Hospital Postsurgical Recovery Care Center – Danville
   Licensing letter attached.

2. Proof of current licensure and accreditation is attached.
3. There have been no adverse actions taken against the health care facilities owned or operated by the applicant during the three years prior to the filing of this application.
4. This letter serves as authorization permitting the State Board and Agency access to information in order to verify any documentation or information submitted in response to the requirements of this subsection or to obtain any documentation or information which the State Board or Agency finds pertinent to this subsection.

Sincerely,

James C. Leonard, M.D.
President and CEO

Attachments

The foregoing instrument was subscribed and sworn before me this 24th day of January, 2008.

Ann E. Beyers
Notary Public

"OFFICIAL SEAL"
ANN E. BEYERS
Notary Public, State of Illinois
My commission expires 04/16/11

State of Illinois 1849782
Department of Public Health

LICENSE, PERMIT, CERTIFICATION, REGISTRATION

The person, firm or corporation whose name appears on this certificate has complied with the provisions of the Illinois Statutes and/or rules and regulations and is hereby authorized to engage in the activity as indicated below

DAMON T. ARNOLD, M.D.
DIRECTOR

Issued under the authority of
The State of Illinois
Department of Public Health

EXPIRATION DATE	CATEGORY	ID NUMBER
12/31/08	BGBD	0003798

FULL LICENSE

GENERAL HOSPITAL

EFFECTIVE: 01/01/08

BUSINESS ADDRESS

CARLE FOUNDATION HOSPITAL

611 WEST PARK STREET

URBANA IL 61801

The face of this license has a colored background. Printed by Authority of the State of Illinois • 4/97 •

← DISPLAY THIS PART IN A CONSPICUOUS PLACE

REMOVE THIS CARD TO CARRY AS AN IDENTIFICATION

↓

State of Illinois 1849782
Department of Public Health

LICENSE, PERMIT, CERTIFICATION, REGISTRATION

CARLE FOUNDATION HOSPITAL

EXPIRATION DATE	CATEGORY	ID NUMBER
12/31/08	BGBD	0003798

FULL LICENSE

GENERAL HOSPITAL

EFFECTIVE: 01/01/08

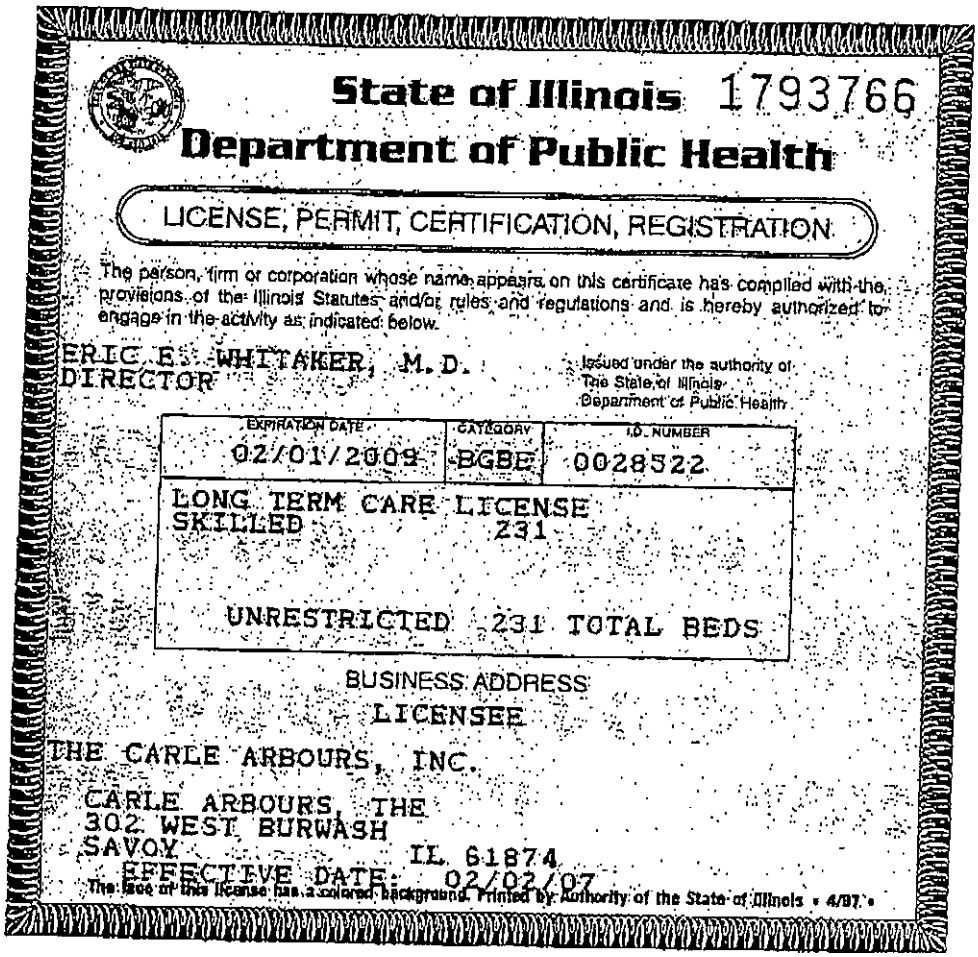
11/03/07

CARLE FOUNDATION HOSPITAL
611 WEST PARK STREET

URBANA IL 61801

FEE RECEIPT NO.

69



State of Illinois 1793766
Department of Public Health

LICENSE, PERMIT, CERTIFICATION, REGISTRATION

The person, firm or corporation whose name appears on this certificate has complied with the provisions of the Illinois Statutes and/or rules and regulations and is hereby authorized to engage in the activity as indicated below.

ERIC E. WHITAKER, M.D.
DIRECTOR

Issued under the authority of
The State of Illinois
Department of Public Health

EXPIRATION DATE	CATEGORY	I.D. NUMBER
02/01/2009	BGBE	0028522

LONG TERM CARE LICENSE
SKILLED Z31

UNRESTRICTED 231 TOTAL BEDS

BUSINESS ADDRESS
LICENSEE

THE CARLE ARBOURS, INC.

CARLE ARBOURS, THE
302 WEST BURWASH
SAVOY IL 61874

EFFECTIVE DATE: 02/02/07

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001/001
01/25/2008 FRI 12:00 FAX 2173262026 Champaign Surgicenter

L7

State of Illinois 1858098
Department of Public Health

LICENSE, PERMIT, CERTIFICATION, REGISTRATION

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DAMON T. ARNOLD, M.D.
DIRECTOR

Issued under the authority of
The State of Illinois
Department of Public Health

EXPIRATION DATE	CATEGORY	I.D. NUMBER
01/31/09	BGBD	7002959

FULL LICENSE

AMBUL SURGICAL TREAT CNTR

EFFECTIVE: 02/01/08

BUSINESS ADDRESS

CHAMPAIGN SURGICENTER, LLC
D/B/A CARLE SURGICENTER
1702 S. MATTIS AVENUE

CHAMPAIGN IL 61821

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State of Illinois 1858098
Department of Public Health

LICENSE, PERMIT, CERTIFICATION, REGISTRATION

CHAMPAIGN SURGICENTER, LLC

EXPIRATION DATE	CATEGORY	I.D. NUMBER
01/31/09	BGBD	7002959

FULL LICENSE

AMBUL SURGICAL TREAT CNTR

EFFECTIVE: 02/01/08

12/22/07

CHAMPAIGN SURGICENTER, LLC
1702 S. MATTIS AVENUE
1702 S. MATTIS AVENUE
CHAMPAIGN IL 61821

FEE RECEIPT NO. 31412

Illinois Department of
PUBLIC HEALTH

Rod R. Blagojevich, Governor
Eric E. Whitaker, M.D., M.P.H., Director

525-535 West Jefferson Street • Springfield, Illinois 62761-0001 • www.idph.state.il.us

LICENSE, PERMIT CERTIFICATION, REGISTRATION

The firm or corporation whose name appears on this certificate has complies with the provisions of the Illinois Statutes and/or rules and regulations and is hereby authorized to engage in the activity as indicated below.

Alternative Health Care Delivery Act and the Postsurgical Recovery Care Center Demonstration Program Code (77Ill. Adm. Code 210)

Licensed number of Beds	Expiration Date	License Identification
6	08/01/2008	4000015

Carle Recovery Center
1702 South Mattis
Champaign, IL 61821

Issued under the authority of The State of Illinois Department of Public Health

L8

State of Illinois 1814780
Department of Public Health

LICENSE, PERMIT, CERTIFICATION, REGISTRATION

The person, firm or corporation whose name appears on this certificate has complied with the provisions of the Illinois Statutes and/or rules and regulations and is hereby authorized to engage in the activity as indicated below.

ERIC E. WHITAKER, M.D.
DIRECTOR

Issued under the authority of
The State of Illinois
Department of Public Health

EXPIRATION DATE	CATEGORY	I.D. NUMBER
07/31/08	BGBD	7002439

FULL LICENSE

AMBUL SURGICAL TREAT CNTR

EFFECTIVE: 08/01/07

BUSINESS ADDRESS

CARLE SURGICENTER
2300 N. VERMILLION
DANVILLE IL 61832 7499

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Illinois Department of
PUBLIC HEALTH

Rod R. Blagojevich, Governor
Eric E. Whitaker, M.D., M.P.H., Director

525-535 West Jefferson Street • Springfield Illinois 62761-0001 • www.idph.state.il.us

LICENSE, PERMIT CERTIFICATION, REGISTRATION

The firm or corporation whose name appears on this certificate has complies with the provisions of the Illinois Statutes and/or rules and regulations and is hereby authorized to engage in the activity as indicated below.

Alternative Health Care Delivery Act and the Postsurgical Recovery Care Center Demonstration Program Code (77Ill. Adm. Code 210)

Licensed number of Beds	Expiration Date	License Identification
2	08/01/2008	4000019

Carle Recovery Center
2300 North Vermillion
Danville, IL 61832

Issued under the authority of The State of Illinois Department of Public Health

January 11, 2005

James C. Leonard, MD
President and CEO
Carle Foundation Hospital
611 West Park Street
Urbana, IL 61801

Joint Commission ID #: 7439
Accreditation Activity Completed: 1/11/2005
Accreditation Activity: Evidence of Standards Compliance

Dear Dr. Leonard:

The Joint Commission would like to thank your organization for participating in the Joint Commission's accreditation process. This process is designed to help your organization continuously provide safe, high-quality care, treatment, and services by identifying opportunities for improvement in your processes and helping you follow through on and implement these improvements. We encourage you to use the accreditation process as a continuous standards compliance and operational improvement tool.

The Joint Commission is granting your organization an accreditation decision of Accredited for all services surveyed under the applicable manual(s) noted below:

- Comprehensive Accreditation Manual for Home Care
- Comprehensive Accreditation Manual for Hospitals

We encourage you to share this accreditation decision with your organization's appropriate staff, leadership, and governing body. You may also want to inform the Centers for Medicare and Medicaid Services (CMS), state or regional regulatory services, and the public you serve of your organization's accreditation decision.

Please be assured that the Joint Commission will keep the report confidential, except as required by law. To ensure that the Joint Commission's information about your organization is always accurate and current, our policy requires that you inform us of any changes in the name or ownership of your organization or the health care services you provide.

Please visit Quality Check® on the Joint Commission web site for updated information related to your accreditation decision.

Sincerely,

Russell P. Massaro

Russell P. Massaro, MD, FACPE
Executive Vice President
Division of Accreditation Operations

Carle Foundation Hospital
Background of Applicant, Criterion 1110.230.b

As required by the Health Facilities Planning Act, the Applicants are fit, willing and able, and have the qualifications, background and character to adequately provide a proper standard of health care service for the Champaign-Urbana community.

Carle Foundation Hospital is a non-profit regional teaching hospital and takes great pride in its position in the community it serves. It is home to some of the brightest, most talented medical professionals using some of the most sophisticated medical technology available in the region. Established in 1931, Carle Foundation Hospital is a 305-bed tertiary care facility with well over 18,000 inpatient admissions each year. Carle Foundation Hospital is a non-profit organization that only reinvests its income to further its charitable purposes which includes making care available to those in its service area who are unable to pay for such care and by providing vital community health care services which are not independently economically viable. A copy of the Carle Foundation Hospital community care policy and Community Benefits Plan Report are attached hereto as Attachment GRC-2. The Carle Foundation Hospital is comprised of more than 50 departments (including outpatient services) with more than 300 physicians on its medical staff. Departments include surgical, cardiac and neurological intensive care units, a Co-Perinatal Center and 25-bed neonatal intensive care unit, the Carle Heart Center and the Carle Cancer Center. The Applicants are focused on quality – utilizing cutting edge technologies like drug-eluting stents in the Carle Heart Center. Carle also focuses on improving safety and patient care management through programs like Hospitalist Services and on-staff intensivists. Carle Foundation Hospital is the primary teaching site of the University of Illinois at Urbana-Champaign and supports translational research with University of Illinois scientists including those associated with the Institute for Genomic Biology.

Carle Foundation Hospital has the region's only Level I Trauma Center and sees well over 50,000 patients in its Emergency Department each year. As a Level I Trauma Center, a higher level of clinical service and technology is available in its Emergency Department to help those in immediate need of advanced care. To earn this distinctive status, Carle must continually meet the strictest patient care guidelines, and the entire hospital must be on alert, with key departments always ready to respond quickly and efficiently.

The activities of Carle Foundation Hospital are supported by the Carle Development Foundation. Charitable donations to this foundation are used to fund direct patient care needs, charity care for patients, advanced medical research, progressive continuing medical education for patients and medical staff and the purchase of the most modern medical equipment.

Recent examples of Carle Foundation Hospital's continuing efforts to enhance its programs and participate in cutting-edge clinical research include its initiatives in gastroenterology and colorectal surgery and breast cancer diagnosis and treatment. Carle is currently preparing to initiate a gastrointestinal research study in collaboration with a University of Illinois researcher. The research study is being conducted as an initial pilot with specific aims of establishing procedures that allow for measurement of SRB density number of bacterial cells in fecal samples and colonic biopsies and the density of sulfomucin-positive goblet cells in colonic biopsies that are collected from patients undergoing a screening colonoscopy. The study will set the stage and establish norms and procedures that will support similar future studies in individuals diagnosed with various forms of colon disorders (e.g. ulcerative colitis and colorectal cancer). This research could lead to participation by the Carle digestive health center in clinical trials as well as translational research with the University of Illinois. Benefits derived from the research will be the potential identification of factors which predispose individuals to diseases of the colon and aid in the development of novel screening and diagnostic techniques.

In addition to the digestive health program expansion, the Illinois Health Facilities Planning Board approved the proposed Mills Breast Cancer Institute (MBCI) in January of 2005 as well as a supplemental Certificate of Need to expand the MBCI research floor (third floor) in January of 2008. The MBCI will enhance breast cancer diagnosis, treatment, and research and will allow patients an opportunity to participate in and benefit from research initiatives not previously available to them. The type of breast cancer research currently being conducted contributes to more efficient delivery of promising discoveries to patients by focusing on practical clinical objectives. Two of the currently active pilot studies in the area of breast cancer research utilize breast cancer tissue. The scope of the two studies is as follows:

- One breast cancer diagnosis study is investigating the use of optical coherence tomography to potentially improve this diagnostic procedure which could in the future reduce time, costs, and sampling errors. This imaging technique can potentially demonstrate the feasibility of this modality for intra-operative detection and improved diagnoses. This technology may also allow for lymph nodes to be imaged for evidence of metastatic disease.

- The second of the breast cancer research projects is treatment related and is studying the effects of tamoxifen and aromatase inhibitors in primary cell cultures that are derived from breast tumors and/or normal breast tissue. The purpose is to identify a set of genes whose regulation by tamoxifen or aromatase inhibitors is predictive of which breast cancer patients will benefit from endocrine therapy. The goal of this project is to be able to determine with high accuracy which patients should be treated in this way so those who are unlikely to benefit can be placed on alternative therapies (chemotherapy or radiation) without loss of valuable time.

Background of Applicant

JCAHO Stroke Center Designation

Each year about 700,000 people experience a new or recurrent stroke, which is the nation's third leading cause of death. On average, someone suffers a stroke every 45 second, and someone dies of a stroke every 3.1 minutes. Stroke is a leading cause of serious, long-term disability in the United States, with about 4.7 million stroke survivors alive today.

Carle Foundation Hospital has discerned an opportunity to pursue Joint Commission Primary Stroke Center Certification, and then advance its offerings to provide advanced neurointerventional stroke care. Carle has performed an initial assessment of its stroke program. This analysis indicates that stroke patients residing in the Region D planning area and the D-1 sub-planning area are being diverted to other medical centers outside of the Planning Area. Furthermore, as vascular diseases and associated co-morbidities increase in incidence and prevalence, the Hospital's need to serve the community and improve clinical outcomes for stroke increase the importance of such a program.

The Hospital has engaged the consulting arm of the Health Care Advisory Board, HWorks, to assist in the facilitation of the process. An initial kickoff/fact-finding meeting was held November 6, 2007 and three subsequent meetings have occurred to move the program forward. Representative physicians and administrators from Carle Clinic Association and Carle Foundation Hospital are participating in the process. Neurosurgeron, Dr. William Olivero serves as the physician leader of the initiatve..

Based upon criteria for Joint Commission Primary Stroke Center certification, the hospital and HWorks teams are identifying the key programmatic components necessary to become a Primary Stroke Center and assessing what programmatic elements need to be enhanced prior to becoming a Primary Stroke Center status. Components being assessed include benchmarks for CT scan order times, compilation of the acute and core stroke teams, presence of a nurse stroke coordinator, capability to track data metrics outlined by the Joint Commission, and staff education regarding stroke. Stroke is an emergent time-sensitive condition that requires coordination among multiple specialties.

The hospital hopes to achieve Joint Commission certification for this program by late 2008.

Attachment GRC-2

Background of Applicant

Air Transport Service

Since February of 2003 Carle Foundation Hospital's air transport service, AirLife, has been available to fly 24/7 with a Carle air medical transport team on site. AirLife is under the medical direction of Dr. Thomas Scaggs, MD, an emergency medicine specialist who oversees the 18- member crew, complete with experienced Emergency Medical Services (EMS) pilots, physicians, critical care flight registered nurses, obstetrical and neonatal nurses and critical care flight paramedics. Potential transfers that occur include, but are not limited to: trauma, cardiac, stroke, neuroscience, pediatric, neonatal, and obstetrical patients, and life threatening emergencies. AirLife is capable and competent in both facility to facility transports, as well as emergency scene flights. These transports bring patients from regional facilities in and around east central Illinois and are facilitated by the Carle Physician Access Line (PAL). This one-phone number, designated transfer line is staffed 24/7 by nurses who help to connect the regional provider with accepting physicians from Carle Foundation Hospital. These nurses will also begin the transportation process, under the direction of the accepting physician, by both ground and air. Last year, 2007, PAL had over 5470 calls to its transport line.

Unique transport teams that are staffed by Carle Foundation Hospital include a neonatal transport team (neonatal intensive care unit (NICU)) and an obstetrical transport team (OB). Requirements to be a nurse on one of these teams are extensive and include:

Neonatal:

- Neonatal Nurse Practitioner (NNP) or Registered Nurse (RN) with 3 years experience at a Level 3 NICU;
- Neonatal Resuscitation Program (NRP), S.T.A.B.L.E ™ certification;
- Completion of transport orientation and competencies including intubation, placement of Umbilical Venous Catheter (UVC) and Umbilical Arterial Catheter (UAC), arterial sticks, needle aspiration of pneumothorax, surfactant administration, and placement of an Laryngeal Mask Airway (LMA) if needed.

OB:

- RN with 2 years labor and delivery experience;
- Advanced Cardiac Life Support, NRP, S.T.A.B.L.E ™ and Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) fetal monitoring certification;
- Completion of orientation and transport competencies including sterile speculum exams, and both vaginal and breech deliveries.

Both of these specialty teams are working under the guidance and protocols of either a neonatologist (NICU) or a maternal fetal medicine (MFM) physician who are available as needed by the team for the duration of the transfer.

Attachment GRC-2

Background of Applicant

Carle Foundation Hospital Recruiting

High quality patient care is the cornerstone of the Carle Foundation Hospital's mission, vision and strategic plan. Consistent with the fact that nursing is the largest health care profession in the country, nurses are a critical element of the staffing requirements at Carle Foundation Hospital. The caliber of the Applicant's current nursing staff sets the bar high, and CFH always endeavors to attract candidates who can perform at that level. Carle Foundation Hospital's nurses work hard each day to make CFH a world class hospital, and they know what it means to provide exceptional patient care. Carle Foundation Hospital believes that its nursing staff is at the core of exceptional patient care, and the hospital's leaders are on a mission to find the most qualified, compassionate nurses in the region.

CFH has recently added new nursing positions, ramped up recruiting efforts, launched a marketing recruitment campaign for RNs, and increased the referral bonus for employees. Carle Foundation Hospital considers its current employees as the best resource to reach potential candidates, and by increasing the referral bonus to $5,000 after only 90 days of completed employment by the referred candidate, CFH is maximizing its use of this resource.

Additionally, several years ago, CFH instituted an internship program for area nursing students who are entering their final year of a nursing program. This is a 10-week program in which the intern shadows a Carle Foundation Hospital staff nurse. CFH hires a significant percentage of these interns as permanent staff nurses.

Starting in October, 2007 and running through December, 2007, the CFH Human Resources Department ran a major RN marketing campaign targeting registered nurses within a 60 mile radius of Champaign-Urbana. The main theme of the campaign was "Find Your Perfect World at Carle Foundation Hospital." The campaign utilized direct mailers, billboards, newspaper and radio ads, personalized websites, and recruiting incentives such as a sign-on bonus and benefit enhancements. CFH has hired 81 RNs through this campaign since its inception, with 7 job offers pending, and another 18 applicants in the interviewing process. Partially as a result of the increased referral bonus, 23 of the 81 nurses hired were referred by CFH employees.

The Applicant is also sensitive to the issues surrounding the retention of its qualified nursing staff. One of the critical issues surrounding nursing staff satisfaction relates to ensuring that patient care is approached with a team care approach where the role of the nurse is not viewed as subordinate to physician professionals. To address childcare issues, Carle operates a licensed day care center two blocks away from the hospital called the Caring Place. Further, CFH recognizes that much of its current and potential workforce consists of individuals who may not be able to work Monday-Friday night shifts. Therefore, in an effort to retain and attract high-quality staff, CFH has implemented a Weekend Program for RNs. This program has been very successful in

retaining nurses who would have left CFH because they could no longer work Monday–Friday night shift hours, and has attracted several external RN applicants as well.

Last, relating to nurse staffing CFH started an internal temporary agency for RNs and stopped using local temporary agencies to fulfill this need. CFH developed a competitive salary scale with various options, and implemented a direct mail marketing campaign to announce the new program. This has been a very successful program for CFH. In addition, CFH contracts with two different agencies for international recruitment and has hired 44 nurses through these agencies since 2001.

With regard to nursing workforce supply generally, in the first half of 2006, over 65,000 persons were newly licensed as registered nurses, joining 2.9 million other RNs in the nation's largest health care profession. Enrollments in nursing programs at all levels have increased rapidly in the past few years as students seek jobs with stable employment. Because programs have had to turn away many qualified applicants because of a shortage of nursing faculty, there is currently a focus underway, including in Illinois, to increase the number of training faculty. Faced with this imminent shortage the state is working on creating programs to attract, retain, and train nurses. In 2006 Governor Rod Blagojevich established the Illinois Center for Nursing, located within the Illinois Department of Financial and Professional Regulation, to assist in identifying and providing resources to recruit and train highly skilled nurses in Illinois.

The center, which is overseen by an advisory board of professional nurses, predominantly works with industry professionals and educational institutions to ensure that Illinois will have the nursing workforce, including RN's and RN to BSN, necessary to meet the demands of a growing and aging population. In addition, the center is looking at ways to retain nurses in the field and recruit students into nursing. The legislation that established the Illinois Center for Nursing also created scholarships for nurse educators willing to commit to teaching in Illinois, and created the Illinois Nurse Educator Loan Repayment Program, which will allow current nurse educators to $5,000 in student loan forgiveness a year for up to four years

CFH Electronic Medical Records Initiative

Two important components of Carle Foundation Hospital's effort to improve clinical care are successfully integrating physician and other clinical efforts and addressing workforce challenges. A major initiative in addressing these issues is CFH's recent implementation of the new Epic EMR electronic medical records program (EMR).

As of December, 2007, all CFH physicians, clinical staff and departments are using EMR. Under the new system, multiple clinicians have immediate, simultaneous electronic access to a patient's entire CFH medical history and care plan, eliminating the need to consult multiple paper records to get an overall picture of the factors that will impact treatment decisions. Diagnosis, patient background and allergies, case notes, lab and radiology data, and radiology digital images are all available in real time thereby making the patient record more accessible, retrievable and immediately actionable than with a paper chart.

Epic EMR software is a modular electronic medical record that helps clinicians stream line their workflow, resulting in more time spent on patient care, and less time on clerical tasks. EMR automates the most common clinician activities including prescribing, capturing charges, ordering lab tests, viewing results, and documenting clinical encounters. In addition, the system incorporates standardized and centralized data and disease-based protocols to converge treatment plans and provide real-time decision support based on clinical evidence or on Carle best practices. Pain scales, documentation templates, care plans and order protocols are all being standardized as much as possible. These clinical standards and protocols work together with the Computerized Physician Order Entry function to create an alert system which helps to ensure that patient interventions are appropriate and safe for the patient.

In less than three years, the hospital has installed EMR software, trained clinical staff, and implemented the entire EMR system in all locations. Also in that time, 10 years of lab data, 8 years of radiology images, and 8 years of dictated notes have been incorporated into the records. At some point, it is anticipated that patients will also be able to access their own personal medical records. Because of its browser-based design, intuitive user interface and compatibility with existing workflow, the hospital's physicians and staff are quickly adapting to the new technology. The EMR experience has led to a Carle standard of 2.5 computer workstations per patient bed.

This $5 million investment will help Carle Foundation Hospital improve the quality of patient care and patient safety, enhance physician efficiency, reduce costs, and streamline workflow by improving cohesion and efficiency across the different functional areas of the hospital. Other benefits include accelerated care management and a potential reduction in length of stay for patients as clinical outcomes begin to be affected by the overall improvement in patient care.

Background of Applicant

Education at Carle Foundation Hospital

Graduate Medical Education

Carle Foundation Hospital is committed to the principle that education and research are integral to its mission of providing quality health care services. As the primary clinical facility for the University of Illinois College of Medicine at Urbana-Champaign, the hospital is committed to the highest academic standards of undergraduate, graduate, and continuing medical education. Graduate medical education enhances quality patient care, the objectives of the medical staff, undergraduate education and the research objectives of the hospital. The institution is committed to provide resources required to meet external accreditation standards for programs which it sponsors and endorses, and to comply fully with institutional responsibilities outlined by national post-graduate accreditation bodies.

To that end, there are the following programs which are overseen by faculty in Graduate Medical Education.

- Oral and Maxillofacial Surgery Residency
- Family Medicine Residency
- University of Illinois at Urbana-Champaign (UIUC) Internal Medicine Residency
- Geriatrics Fellowship

Recently, John A. Aucar, M.D., M.S.H.I., F.A.C.S, joined Carle Foundation Hospital as a physician specializing in general surgery. Previously, Dr. Aucar was a Professor and Chairman in the Department of Surgery at the University of Texas Health Center at Tyler. This experience and Dr. Aucar's interest in developing a surgical residency here at Carle Foundation Hospital for the University of Illinios at Urbana-Champaign exemplifies the commitment that the hospital is making to fulfilling its mission.

Continuing Medical Education

Hospital Education is valued as a leader in collaborative partnerships, needs assessments, personal and professional development, education program development and design, innovative delivery of educational products, and performance improvement. Carle Foundation Hospital offers many continuing education courses for physicians, advanced practice providers, nurses and other allied health professionals which allow them to stay current on best practices and health care delivery models. As the Level III Perinatal center, Carle Foundation Hospital offers and provides a significant number of gynecological, obstetrical, and neonatal care courses to internal as well as external health care providers.

BACKGROUND OF APPLICANT

Quality Initiative

Carle Foundation Hospital is enhancing its efforts to reduce mortality and morbidity, collect patient care data and provide for transparency in outcomes reporting. Along with nearly 100 other hospitals from around the country, CFH recently committed to be a charter member of Premier's QUEST initiative, a three-year project designed to assist hospitals in achieving unprecedented results in Quality Efficiency and Safety with Transparency.

Premier brings nationwide knowledge to improve local health care. It does this by collecting and analyzing clinical and financial data from its member hospitals, organizing committees of members to make decisions and set direction for the members, sponsoring seminars and conferences, and sharing best practices. By doing so, Premier unites a fragmented, chaotic and inefficient health care system to enable hospitals to provide patients with reliably high-quality healthcare at the lowest cost. Premier uses facts to determine the best practices and products that drive the best patient outcomes. Everyone wins when there is no sacrifice in quality or cost.

The hospital's long-term quality goal is to be in the top 10% nationally for quality and service performance and to have one of the lowest mortality rates in the country. To help us achieve that goal, we are embarking on the QUEST journey to develop and define the next generation of quality, safety and cost metrics with a consistency and standardization that does not exist today. Launched in July 2007, QUEST is a three-year program through which participating hospitals will report data to Premier on a set of clearly defined performance measures encompassing aspects of quality, efficiency, safety and patient satisfaction. Premier will analyze the data, facilitate sharing of best practices, and provide incentives for top-performing hospitals. QUEST is based on many of the same principles used in the Hospital Quality Incentive Demonstration Project – or HQID - a successful pay for performance initiative overseen by Premier and the Centers for Medicare and Medicaid Services.

The five measurement areas for QUEST are:

- Mortality Ratio, which will be risk-adjusted, to attain the goal of eliminating all avoidable deaths;
- Appropriate Care, which will measure the percentage of patients receiving "perfect care" – using nationally-recognized evidence-based measures.
- Efficiency, which will measure severity adjusted cost per discharge, including all of the costs associated with each episode of acute care.
- Harm Avoidance measures will be developed over time by the program. Harm avoidance means the prevention of such things as health care associated infections and adverse drug events. Many measures exist

today in this area. The participating hospitals are evaluating a number of these measures to identify those that have the greatest impact for use in QUEST.

- Patient Satisfaction, which will utilize the CMS Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) patient satisfaction measures. In addition to the obvious purpose of improving the patient experience, we will also study how patient satisfaction can relate to cost, quality and safety.

By participating in QUEST we will learn and share better practices, become the best in all dimensions of care, and learn adoption strategies to achieve reliable results – and thus, will become a national leader in patient care and quality. The focus and expected outcomes of QUEST align perfectly with CFH's mission vision and strategic plan.

Carle Foundation Hospital has committed to rigorous requirements which demonstrative strong administrative support. Carle Foundation Hospital's new extensive proposed modernization project helps us meet these goals. Having all private rooms positively affects every one of the five dimensions. Through standardization of equipment, technology and bedside monitoring, efficiencies are achieved for physicians and staff. The design of these private rooms, taken from evidenced based care models, limits exposure and spread of infections. This in turn decreases mortality ratio, promotes harm avoidance, and enhances patient experience. Patients have a better experience if the environment is conducive to healing. Families play a significant part in a patient's recovery and that is why each room, even intensive care rooms, has designated space specifically for families.

Background of Applicant

Carle Foundation Hospital Emergency Preparedness

Emergency preparedness continues to be a strategic objective of Carle Foundation Hospital. Our initiatives include disaster training for our facility and our region, and leadership in planning community-wide responses to various disaster scenarios. As the region's POD hospital, the lead facility in disaster planning and preparedness, we provide state-level leadership for 21 counties so that we can effectively communicate and collaborate in responding to any natural disaster or act of terrorism.

To ensure communities in east central Illinois are better prepared for a disaster, Carle Foundation Hospital has received bioterrorism preparedness grants totaling more than $2.5 million from 2003 to the present. These grants are provided for by the U.S. Health Resources and Services Administration and distributed by the Illinois Department of Public Health. The grants have paid for medicine, supplies, and equipment for a surge facility –an alternative patient care facility that could be set up anywhere in the region in the event of a natural disaster or terrorist attack. We have also purchased a wide assortment of disaster-related equipment to ready our region, such as a hazardous materials trailer, transportable ventilators, computers, radios, Visual Dx, and portable patient isolation units.

Over time, the hospital has refined the surge facility plans to include alternate local locations in the event of a disaster and created disaster specific plans in the event of a pandemic flu outbreak. Carle provided surge facility equipment, supplies and medical leadership in Louisiana for victims of Hurricane Katrina in conjunction with the Illinois Emergency Management Association (IEMA) and the Illinois Medical Emergency Response Team (IMERT). Arrow Carle Ambulance crews were also dispatched to Louisiana to aid in the disaster relief efforts.

Through its emergency preparedness initiatives, Carle has hosted and participated in several community-wide disaster drills. The Hospital collaborates with area public information officers (PIO's) to ensure that accurate and timely information will be disseminated to the public in the event of a disaster.

Attachment GRC-2

Policy# 200

POLICY AND PROCEDURE

Revised: Oct. 14, 2005

CARLE FOUNDATION

SUBJECT: Community Care

PURPOSE: To identify and assist those patients who are financially eligible to receive discounts for medical expenses through the Community Care Program.

STATEMENTS OF POLICY:

A. Any patient and/or guardian may apply for Community Care regardless of citizenship or residency status.

1. Verification of income for the previous 12 months is required. Income eligibility will be based upon the most current Federal Poverty Guidelines.

2. An application for assistance must be completed through the Department of Public Aid if the patient appears to meet IDPA eligibility criteria. When appropriate, Social Services will use a screening checklist called IDPA Eligibility/Community Care Determination to assist in determining if the patient would qualify for IDPA assistance.

   a. Failure to complete the Public Aid application process and/or failure to cooperate with Accordis during the Public Aid application process will result in an automatic denial for Community Care.

   b. Patients who are determined to be homeless with no verifiable address, phone, or income can be exempted from the Public Aid application requirement. However, if these homeless patients have inpatient services, a referral to Accordis should be initiated to complete the Public Aid application process.

   c. Patients who have a third party payment source that will reimburse more than the Public Aid reimbursement will be exempted from the Public Aid application requirement.

   d. Patients who qualify for Public Aid without a spend down will be eligible for a 100% discount for those visits prior to the three month backdating that Public Aid allows. A copy of the Public Aid eligibility will be maintained as

documentation of financial need, a community care application will not be required.

3. Liquid assets will be taken into consideration during the Community Care application process. Liquid assets exceeding $2000 will be added to the applicant's income total for the past 12 months. IRAs, 401ks, and 403b retirement funds will not be considered as liquid assets. Distributions from these funds will be considered as income to the applicant for the income determination.

4. If the applicant's income is equal to or less than 200% of the federal poverty level at the time of submission, the Community Care discount will be 100%, greater than 150% but less than or equal to 230% of the federal poverty level will receive a 75% discount, greater than 230% but less than or equal to 270% of the federal poverty level will receive a 50% discount, and greater than 270% but less than or equal to 300% of the federal poverty level will receive a 25% discount.

5. Patients that receive a determination under the Community Care Program may reapply in six months in the event there are substantial and/or unforeseen material changes in their financial situation. The Manager and Director will conduct the review jointly.

6. Applicants may appeal Community Care discount determinations to the Director of the Patient Accounting Office or the Chief Financial Officer.

B. The Community Care discount will apply to the patient balance of the account after all other payments, such as Medicare, Insurance company, lawsuit settlement funds are received and posted.

C. Long-term patients that have been approved for uncompensated care must re-apply annually for the Community Care Program.

D. Patients that have been referred to a collection agency may request a Community Care application if a judgment has not been obtained yet in court

E. Cosmetic Surgeries, Infertility Services, Dental services, experimental services, screenings and bariatric surgeries that do not meet medical necessity guidelines are excluded from Community Care. Non-emergent out-of-network care that would be paid by the patient's insurance company elsewhere will not be eligible for community care since the patient has the ability to have their health care needs met.

PROCEDURE:

A. Patients with financial concerns should be identified as soon as possible in the registration or treatment process.

1. A referral to Social Services or directly to Public Aid should be completed to obtain a determination of eligibility for Public Assistance. Patients who fail to cooperate with Public Aid and/or Accordis during the Public Aid application process will automatically be denied for Community Care.

   a. If the patient does not meet the eligibility criteria for Public Aid or if they have a spenddown, they may be eligible for a Community Care discount.

   b. The application for Community Care will be available from the Hospital Patient Accounting office, each of the SBU Business Offices, the Hospital Cashiers, Social Services or the Carle website.

   c. The Community Care application should be completed and returned within 21 days from the date it is picked up or mailed to the patient.

   d. If the Community Care application is not returned a notification letter will be mailed to the patient/guarantor that indicates the billing will commence unless we receive the application within the next 14 days.

2. The completed application should include:

   a. Income and asset verification for the 12 months immediately prior to the date of the application and the most recent income tax return form, if applicable. This verification may consist of:

      1. Pay stubs or check with year-to-date totals.
      2. Letter from employer showing current salary and year to date income.
      3. Verification from Social Security of the monthly benefit amount or deposit slips showing the amount of the Social Security checks.
      4. Copies of bank statement to verify checking and savings account balances.

   b. Patient must provide verification of family size.

1. Family size will include only those dependents listed on tax returns.

B. A written determination will be sent to the applicant within 10 working days of receipt of the complete application.

1. If the application is approved, the patient's account should be adjusted as soon as possible to reflect the discount.

C. Patients that qualify for a partial discount of the balance will be required to pay the remaining balance due and will be treated as any other private pay account.

D. Individuals with income up to 400% of the Federal Poverty level will have their personal financial responsibility capped at 40% of their annual gross income.

E. When the application has been processed and the determination is made, each application should be logged and a record should be completed.

F. When HPA or any SBU receives an application for Community Care that indicates treatment at another Carle Foundation facility that participates in the Community Care program; the application, verification and determination will be shared with all other involved businesses. Carle Hospital, Carle Hospice, Carle Home Infusion, Arrow Ambulance, Carle Homecare, Carle Medical Supply, Carle Surgicenter, and Carle Foundation Physician Services participate in the Community Care program.

1. The application, verification of income and the Community Care records will be maintained by fiscal year.

G. The Community Care applications should be approved by the Manager of Accounts Receivable, the SBU director or designee, and the total of the write-offs will be reported to the V.P. of Finance.

_____ _____

Patricia Owens Date

Director - Patient Accounting

Form AG-CBP-I
2/05

LISA MADIGAN
ATTORNEY GENERAL

Annual Non-Profit Hospital Community Benefits Plan Report

Hospital or Hospital System: CARLE FOUNDATION HOSPITAL

Mailing Address: 611 W. PARK (Street Address/P.O. Box) URBANA, IL 61801 (City, State, Zip)

Physical Address (if different than mailing address):

(Street Address/P.O. Box) (City, State, Zip)

Reporting Period: 7 / 1 / 05 (Month / Day / Year) **through** 6 / 30 / 06 (Month / Day / Year) **Taxpayer Number:** 37-1119538

If filing a consolidated financial report for a health system, list below the Illinois hospitals included in the consolidated report.

Hospital Name	Address	FEIN #

1. **ATTACH Mission Statement:**
The reporting entity must provide an organizational mission statement that identifies the hospital's commitment to serving the health care needs of the community and specify the date it was adopted.

2. **ATTACH Community Benefits Plan:**
The reporting entity must provide its most recent Community Benefits Plan and specify the date it was adopted. The plan should be an operational plan for serving health care needs of the community. The plan must:
   1. Set out goals and objectives for providing community benefits including charity care and government-sponsored indigent health care.
   2. Identify the populations and communities served by the hospital.
   3. Disclose health care needs that were considered in developing the plan.

3. **REPORT Charity Care:**
Charity care is care for which the provider does not expect to receive payment from the patient or a third-party payer. Charity care does not include bad debt or the unreimbursed cost of Medicare, Medicaid, and other federal, State, or local indigent health care programs, eligibility for which is based on financial need. In reporting charity care, the reporting entity must report the actual cost of services provided, based on the total cost to charge ratio derived from the hospital's Medicare cost report (CMS 2552-96 Worksheet C, Part 1, PPS Inpatient Ratios), and not the actual charges for the services.

Charity Care ..... $ 4,790,874

ATTACH Charity Care Policy:
Reporting entity must attach a copy of its current charity care policy and specify the date it was adopted. ATTACHMENT C

87 Attachment GRC 2

4. **REPORT Community Benefits** actually provided other than charity care: ATTACHMENT D
See instructions for completing Section 4 of the Annual Non Profit Hospital Community Benefits Plan Report.

Community Benefit Type

Language Assistant Services ..... $_____

Government Sponsored Indigent Health Care ..... $_____

Donations ..... $_____

Volunteer Services
a) Employee Volunteer Services ..... $_____

b) Non-Employee Volunteer Services ..... $_____

c) Total (add lines a and b) ..... $_____

Education ..... $_____

Government-sponsored program services ..... $_____

Research ..... $_____

Subsidized health services ..... $_____

Bad debts ..... $_____

Other Community Benefits ..... $_____

Attach a schedule for any additional community benefits not detailed above. ATTACHMENT D-1

5. **ATTACH Audited Financial Statements for the reporting period.** ATTACHMENT E

Under penalty of perjury, I the undersigned declare and certify that I have examined this Annual Non Profit Hospital Community Benefits Plan Report and the documents attached thereto. I further declare and certify that the Plan and the Annual Non Profit Hospital Community Benefits Plan Report and the documents attached thereto are true and complete.

JAMES C. LEONARD, M.D.
Name / Title (Please Print) PRESIDENT and CEO THE CARLE FOUNDATION

Signature

(217) 383-3221
Phone: Area Code / Telephone No.

12/22/06
Date

GRETCHEN ROBBINS DIR. PUBLIC RELATIONS
Name of Person Completing Form CARLE FOUNDATION HOSPITAL

(217) 383-3016
Phone: Area Code / Telephone No.

GRETCHEN.ROBBINS@CARLE.COM
Electronic / Internet Mail Address

(217) 383-3018
FAX: Area Code / FAX No.

 Attachment GRC-2

1) **Mission Statement**

Carle Foundation Hospital Mission Statement

Adopted by the Carle Foundation Hospital Board of Trustees
March 10, 2006

We serve people through high quality care, medical research, and education.

Our mission statement, in the broadest sense, defines who we are, what we stand for, and the importance of our relationship with our patients, staff and community. Locally owned, we take seriously our obligation to treat and provide high quality care to everyone, regardless of their ability to pay. However, this mission statement looks beyond medicine to include research and education, both of which have been highly valued by our organization over the years. Our Board of Trustees made this change in acknowledgement that research and education spark the ideas that lead to new discoveries, which in turn help us to deliver even better patient care and enhanced community benefit.

From this mission statement, our vision, and our greater strategic plan flows our Community Benefit Plan.

89 Attachment GRC2

2) Community Benefit Plan

In recent years, and FY '06 is no exception, Carle Foundation Hospital administration has encouraged its leadership to be guided in their planning, including for community benefits, by this guideline: *How will/does this affect healthcare in our community?*

Besides emphasizing quality and access to healthcare, our leadership is striving to assure that the medical needs of the people we serve are met--and met close to home. Consequently that has meant maintaining multiple programs that have low or negative margins, but have been deemed valuable in serving patients and improving healthcare in our community.

While community benefit has been tracked at least every other year since the early '90's, Carle Foundation Hospital has had a structured Community Health and Wellness program in place since 1997. That program and our Community Care Discount Program are at the core of our Community Benefit Plan.

In FY 06, Carle Foundation Hospital's community benefit contribution totaled $27,158,909.

Since 2004, community benefit has been calculated by Carle Foundation Hospital using the CBISA (Community Benefit Inventory for Social Accountability) software and accompanying guidelines, established by the Catholic Health Association.

In a memorandum to reporters and editors on September 12 [2006], Sen. Charles Grassley, chairman of the Senate Finance Committee, said: "The Catholic Health Association (CHA) recently established common rules and guidance for reporting and measuring key parts of community benefit for its member hospitals. I appreciate this effort and am pleased that hundreds of hospitals already have agreed to comply with CHA guidelines."

The new voluntary guidelines for community benefits for nonprofit hospitals developed by the Catholic Health Association are a good step forward and will bring real benefits to many in need."

The Carle Foundation Hospital Community Benefit Plan

Carle Foundation Hospital's Community Benefit Plan is comprised of four components:

1. The Carle Foundation Hospital Community Care Discount Program (charity care)
2. The Community Health and Wellness Program
3. Research and education initiatives
4. Emergency preparedness leadership

1. *The Carle Community Care Discount Program* (charity care)
As a tax-exempt organization, Carle Foundation Hospital provides care to patients regardless of their ability to pay for that care or source of payment. We also recognize that some patients may need help to pay their hospital bills. As a locally owned

community hospital, we always provide the care first, and then help with the financial challenges. Carle Foundation Hospital's **Community Care Discount Program** (charity care) provides discounts or free care to those who need it. This program is continually evaluated and expanded as needed to meet the needs of our community. Evaluation involves input from administrative leaders, billing office staff, local consumer advocacy groups and patients.

Goal 1: Regularly review and continually improve practices relating to the hospital's charity care program—Carle Foundation Hospital Community Care Discount Program.

Outcomes:

Review status

In June 2005, our president and CEO brought key people together and directed them to further research and consider ways in which to make our charity care program superior in its generosity and designed to meet the financial circumstances of people served by Carle Foundation Hospital. Following that directive, an expanded plan was proposed and approved by the Carle Foundation Hospital Board of Trustees on October 14, 2005 and the program was renamed the Community Care Discount Program.

Representatives from the Hospital's administration, Patient Accounting, Registration, Case Management and Public Relations departments meet monthly with the local Medical Debt Task Force of the Champaign County Health Care Consumers, which also includes representation from the Land of Lincoln Legal Assistance Foundation, to gain input, ideas and reactions to related services and situations.

Increased Charity Care

By focusing on determining the financial status of patients up-front, we were able to pin-point those needing financial assistance early in the process, minimizing bad debt and optimizing our ability to help them. An even more generous Community Care Discount Program also resulted in our ability to reach more people.

- Charity care *nearly doubled* from $2,501,317 in FY 05 to $4,790,874 in FY 06.
- The number of people served increased from more than 3,400 in FY '05 to more than 4000 in FY 06.

Public Acknowledgement

Valerie McWilliams, an attorney with the Land of Lincoln Legal Assistance Foundation, wrote in a letter dated June 22, 2006 to Jeffrey Mark, Executive Secretary, of the Illinois Health Facilities Planning Board: " ...I believe the existing community care program at Carle Hospital is a national model, both in standards that have been adopted and the efforts to make it as easy as possible for patients to access the programs...Carle has put a lot of money and thought into promoting the community care program...The application is simple. And patients can access the programs whenever they find out about it, even if their case is already in court, which frankly, doesn't happen very often nowadays." (See letter—Attachment A.)

91 Attachment GRL-2

Claudia Lennhoff, executive director, Champaign County Health Care Consumers, is quoted in an October 24, 2005 *News-Gazette* article as saying,

"Carle hospital is showing leadership and demonstrating a good understanding of local community needs with the new policies.

"We'd be hard-pressed to find, in terms of discounted care, a hospital that is doing better or having more generous policies around the nation," she said. "I would say this really puts Carle Foundation Hospital on the map as having a very good program and being responsive to the community." (See article—Attachment B.)

2. *The Community Health and Wellness Program*

Based on a variety of community needs assessments, the Hospital's **Community Health and Wellness** program is organized into three initiatives:

1. Initiatives--programs that are hospital-based and managed and branded with our name
2. Grants and donations—financial support of community programs and events, primarily those that match our mission and meet identified needs in the community
3. Partnerships—programs executed collaboratively or community-need solutions that are sought with input and leadership from multiple organizations.

Goal 2: Continue existing community health and wellness programs, designed to meet identified needs and to improve the health of the community through education and prevention. Programs may be hospital-based initiatives or accomplished in partnership with community organizations. Programs are evaluated annually for effectiveness in meeting needs and community acceptance in conjunction with the budget process.

Outcomes—Partnerships and Initiatives (not inclusive):

- Community Parish Nurse Program has trained 379 nurses from 204 congregations in 29 counties. They reported 14,987 hours of volunteer services to their churches this fiscal year.
- Playing It Safe—free family safety fair—co-sponsored with Champaign County SAFE KIDS® for the 10th year. This year, there was the usual participation from county-wide and area public safety agencies and other community organizations concerned with our childrens' safety, involving 50 interactive displays. Free food is provided by Carle Foundation Hospital and Sonic Drive-In. Approximately 2000 people of all ages were in attendance.
- Community Medical School, offered in conjunction with the University of Illinois College of Medicine at Urbana-Champaign
- Center for Rural Health and Farm Safety—functioning with partners at the University of Illinois and area Farm Bureaus
- Risk Watch, a safety curriculum integrated into local schools, coordinated by a Carle Foundation Hospital staff member and

involving representatives from area public safety agencies as instructors.
- Interpersonal violence prevention—community education with a focus on the reduction of domestic violence and training for nurses who deal with rape and abuse victims.
- Poison prevention education. We serve as a satellite education center for the State's Poison Education Center, serving school children, healthcare professionals, and consumers in our region.
- Mercury thermometer exchange, in cooperation with the Illinois EPA.

Outcomes—Donations and Grants (not inclusive):
Financial, in-kind and leadership support of human service organizations with similar/compatible missions:

- Family Service of Champaign County
- United Way of Champaign County**
- Frances Nelson Health Center
- Champaign County Christian Health Center
- Center for Women in Transition
- Champaign County Regional Planning Commission
- Don Moyer Boys and Girls Club
- Prairienet/HelpSource
- Developmental Services Center
- Canaan Development Foundation
- Danville Family YMCA
- Champaign County YMCA
- Mattoon Area Family YMCA
- Urban League of Champaign County
- Coles County Council on Aging
- American Red Cross
- Big Brothers Big Sisters of Vermilion County
- Eastern Illinois Food Bank
- American Cancer Society
- Leukemia and Lymphoma Society
- American Diabetes Association
- Arthritis Foundation
- MDA
- Cunningham Children's Home
- Habitat for Humanity
- Salvation Army

**Carle Foundation Hospital annually matches a portion of our employees' contribution to United Way. This year that donation amounted to $59,224.94 and was designated for Francis Nelson Health Center.

93 Attachment GRC2

Goal 3: Maintain current programs and find new ways to improve access to healthcare and to reach out to the underserved, uninsured and underinsured populations.

***Outcomes–Programs*:**

Frances Nelson Health Center

- Providing leadership in finding ways to meet the need for access to care in our community through Frances Nelson Health Center.
- In 2002, recognizing its responsibility as the largest health care provider in east-central Illinois, Carle Foundation Hospital joined forces with a coalition of leading community, health and service organizations to address overcrowding, parking and location issues.
- Under the leadership of the United Way, and in cooperation with the Community Health Improvement Center, the coalition moved forward in 2004 to meet the challenge of acquiring a new facility better suited to meet the needs of the Frances Nelson Health Center. Additional space and access to public transportation were needed.
- The solution came in 2005 when Carle Foundation Hospital purchased a former furniture store in Champaign and renovated it for $1.2 million. With renovations completed in November 2006, Carle is renting the facility back to Frances Nelson for $1 a year for the first three years.

Coles County Community Clinic

- Providing leadership to bring community partners together to establish a Federally Qualified Health Center to serve the indigent, uninsured and underinsured in Coles County.
    - Structure established and leadership role relinquished to other community agencies; committee participation and process oversight maintained

Miscellaneous

- Mobile Clinic at Frances Nelson Health Center—donation of use of vehicle expands clinical space
- Community Prenatal Care—funding of this program provides low cost, high quality prenatal care and birthing in partnership with Planned Parenthood of East Central Illinois and United Way
- Mobile Clinic's involvement in Wellness on Wheels (WOW) program—in partnership with Champaign-Urbana Public Health District, screenings for STD's and HIV, as well as other health conditions, are brought to community locations
- Free Breastfeeding Clinic—24 hour service open to the community
- Discounted prenatal and family education programs, open to the community

9E24 Attachment BRC2

- Telemedicine initiatives, providing greater access for rural residents
- Financial support of the Champaign County Christian Health Center
- Expanded Community Care Discount Program (See above.)

Goal 4: Maintain low and negative margin programs within the hospital, initiated to improve the health of the community.

Outcomes—Programs:

- Carle Foundation Hospital's Low Vision Center
- AirLife helicopter transport
- Carle Foundation Hospital Auxiliary Guest House
- Breastfeeding Clinic
- ECHO (Expanding Children's Hearing Opportunities)
- St. Joseph School for the Deaf at Carle
- Palliative Medicine
- Doula Program
- HIV Clinic—social services component

3. Research and Education Initiatives

Carle Foundation Hospital is actively involved in **research and education** initiatives. The overall purpose of the research program is helping to discover new diagnostic and treatment technologies and methods that will improve the delivery and/or quality of healthcare. The research program is done in conjunction with area physicians and scientists, the University of Illinois, and entrepreneurial companies. Carle's Foundation Hospital's efforts in research and education have steadily grown in recent years, with strategic emphasis now placed on translational research with University of Illinois.

The education initiatives include the education and training of medical students, physician residents, nurses, allied health professionals and the general health care workforce.

Goal 5: Expand our approach to translational research, exploring additional ways to collaborate with the University of Illinois.

Outcomes

- Black bear research continued using data previously acquired
- Research activities under a Memorandum of Understanding with the University of Illinois at Urbana-Champaign Institute for Genomic Biology, supporting the hospital's involvement in translational research.
- Re-structuring of research departments underway to accommodate growth and focus on translational research
- Development of the Mills Breast Cancer Institute
  - Ground broken
  - Space allocated for research

95 Attachment GRC 2

- Search for research-oriented director initiated; named in December 2006.
- 20-25 research projects currently funded and underway, including
  - Using gene profiling to predict how breast cancer patients will respond to endocrine therapy
  - New ways to reconstruct and re-engineer bone
  - Finding the source of gastroenterology diseases

Goal 6: Contribute towards health care workforce development.

Outcomes—Hospital-based programs and community partnerships

- Carle Scholars at Parkland College—includes scholarships and staffing support for nurse education and nursing student recruitment
- Support of the University of Illinois College of Medicine at Urbana-Champaign, with monies earmarked for the MD PhD program
- Danville Area Community College—support of health technician program
- Graduate Medical Education programs
- Continuing Medical Education programs for regional providers who are not members of the Carle Foundation Hospital medical staff, including Carle Foundation Day.
- Medical residency programs

4. *Emergency Preparedness*

Emergency Preparedness is a strategic objective of Carle Foundation Hospital and our initiatives in this area include disaster training for our facility and our community, leadership in planning community-wide responses to various disaster scenarios, and state-level leadership for our 21-county region.

Goal 7: Continue to prepare our hospital and those in our 21-county POD region to be ready to respond to any natural disaster or act of terrorism.

Outcomes

- Management of U.S. Health Resources and Services Administration grant of $502,500.
- Community-wide drills hosted and participated in
- Collaboration of area public information officers
- HEICS-related training for Public Health PIO's
- Refinement of surge facility plans, including alternate local locations; creation of a system for family reunification
  - Surge facility requested by the Illinois Medical Emergency Response Team and sent to Louisiana to assist Katrina victims.
  - Arrow Ambulance crews also dispatched to Louisiana

96 Attachment GRC2

Populations and communities served
Carle Foundation Hospital serves Champaign-Urbana and rural communities reaching residents in 38 counties in east central Illinois and western Indiana. The programs within our community benefit plan are directed generally to all of the residents in our communities, with certain programs directed at specific populations and with a focus on residents of Champaign County. Targeted populations include the uninsured and underinsured, and children at risk—from conception through childhood.

Dates adopted/approved
The Community Benefit Plan is driven by a 3-year strategic plan which was written and adopted in 2004, with overlap into the 2007 Strategic Plan. The Community Health and Wellness program, emergency preparedness efforts, and research initiatives are reviewed and confirmed through the annual budgeting process. *The Board of Trustees approved the FY '06 budget on June 10, 2005.* Major components of the plan may be discussed and approved separately. This is particularly true of our Community Care Discount Program. The FY 06 Community Care Discount Program was adopted October 14, 2005.

Components of our overall Community Benefit Plan are included in the 2004 3-Year Strategic Plan (and similarly re-stated in the 2007 plan) as the following strategic initiatives:

- Care for uninsured, underinsured and indigent; partner with community resources to provide access to inpatient and outpatient services
- Partner with the University of Illinois in research, education and program offerings.
- Further develop Emergency Preparedness plan to meet Carle Foundation Hospital affiliates' and community needs.

Health care needs addressed
Use existing data, informal discussions, and community needs assessments to determine if existing programs are on track: what needs to be added, deleted or enhanced; and where our focus needs to be placed.

Data was drawn from these sources and used to affirm and re-shape our plan, as needed:

- Community Needs Assessment, published in 2004 as a community effort coordinated by the Champaign County Regional Planning Commission.
- I-Plan for Champaign County (dates of data vary through 2006)
- The Community Report Card 2004, the most current resource of Project 18/Voices for Illinois Children
- Input from CU Public Health and human service agencies (on-going)
    - According to the Champaign County Health Care Consumers, these health care needs exists (with a focus on low-income, uninsured and Medicaid beneficiaries):
        - Access to primary and specialty care
        - Oral health
        - Vision

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  - Mental and Behavioral Health
  - Prescriptions
  - Durable Medical Equipment needs
  - Accessibility—for people with disabilities, affordable transportation, medical translators
- Current and future workforce shortage statistics
- Homeland Security initiatives

98 Attachment GRC 2

Attachment A

LAND OF LINCOLN
LEGAL ASSISTANCE FOUNDATION, INCORPORATED

EXECUTIVE DIRECTOR

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62201

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SERVICE OFFICES
ALTON
CHAMPAIGN
EAST ST. LOUIS
CARBONDALE
SPRINGFIELD

June 22, 2006

COPY

Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Project Number 06019

Dear Mr. Mark:

I was unable to attend the hearing down in Coles County concerning Carle Hospital's application to open an outpatient surgery center. However, I wanted to take some time to share my opinion about Carle Foundation Hospital's Community Care program, their treatment of low income patients, and their property tax exempt status.

By way of introduction, I am a legal aid attorney working out of the Champaign office of Land of Lincoln Legal Assistance. I have been practicing law in this community for 22 years and health law (particularly issues associated with Medicaid), is one of my areas of specialization. Due to consolidation with our Mattoon office last December, we now serve 14 counties out of this office including Coles County and all the counties that surround it. Access to healthcare for low income individuals is something I care a lot about, and it is in that capacity that I have had the privilege of serving on a committee of community members that has met regularly with 5 hospital staff members since November of 2003 to discuss how to improve medical collection practices and the community care program of the hospital.

As you are probably aware, the Champaign County Board of Review has chosen to scrutinize both local hospitals' requests for substantial property tax subsidies each year instead of rubber-stamping those requests. They are insisting that nonprofit hospitals earn their tax exemption by providing concrete community benefits. The Attorney General of the State of Illinois is also promoting legislation to establish objective

standards for tax exempt status. I personally think these are very good developments that should spread across the nation. The fact that Carle and Provena are currently being scrutinized in this manner is frankly no longer a reflection of their existing practices and programs but a result of the fact that they are located in Champaign County. I think the Coles County Board of Review should do the same for all the non-profit health care providers asking for property tax exemptions.

That being said, I believe the existing community care program at Carle Hospital is a national model, both in the standards that have been adopted and the efforts made to make it as easy as possible for patients to access the programs. Before changes implemented over the last three years, my experience with most hospital charity care programs is that they were one of the best kept secrets around. By the time clients got through to me, they were already in collections or facing litigation, and at that time, the hospitals, through their collection agencies or attorneys, said it was too late to apply for community care. In many cases, bankruptcy appeared to be the best alternative. At the time, we did a study of bankruptcy filings in this district to try to determine the role of medical debt in contributing to the bankruptcy decision, and not surprisingly, it was a major factor for many bankruptcy petitioners.

But that was then and this is now. The Board of Review scrutiny of Provena's tax exempt status created an opportunity for dialogue and became a catalyst for improvements in both hospitals' debt practices. I am attaching a summary prepared last fall summarizing many of the changes, but I want to highlight the most significant changes.

The standards for free and discounted care have been significantly raised. There is a 100% discount to everyone whose household income is at or below 200% of the federal poverty level, which is pretty close to the lowest quarter of the population. That includes pretty much everyone I come into contact with through my work since our income standards are lower, but it also includes a large swath of the working poor, and benefits the uninsured and underinsured.

Anyone who currently has a Medicaid card will qualify for a 100% discount on all past due debt and can resolve the problem with one phone call to a patient accounts representative who can check current eligibility on-line and then make the corresponding adjustment. I recently shared this information with local mortgage lenders and credit counselors who often find themselves in the position of giving advice to people with significant medical debt that is depressing their credit score.

Carle has put a lot of money and thought into promoting the community care program. There are routinely large ads in the News-Gazette asking "Do You Need Help with Your Hospital Bill?" Information about "help for paying bills" is on all bills and even on the outside of envelopes sent to folks who have missed a payment deadline and have not communicated with patient accounts staff. It is discussed with all non-emergency patients as part of the pre-admission process. Once they qualify, patients will have continuing eligibility for a year without having to re-qualify. The application is simple. And patients can access the programs whenever they find out about it, even if their case is already in court, which frankly, doesn't happen very often nowadays.

Carle Hospital—and the community care program—covers many services, and the list keeps expanding. In addition to inpatient and outpatient services, it includes ambulance services, home care, hospice, home infusion, medical supply, physical therapy, laboratory and x-ray work, and hospitalist and staff doctor services.

Carle Clinic, unfortunately, is much less hospitable to the uninsured, underinsured and Medicaid population in our community. I wish Carle Foundation Hospital would run the clinics in Champaign-Urbana as they do in Mattoon, but at least the hospital's expansion of the community care program has lessened the crushing burden of medical debt for many.

The concept of a more convenient option for minor surgeries for rural patients seems like a good idea, since transportation is often problematic for low income folks, and with rising gas prices, it is expensive for all. When I compare the community care programs of Sarah Bush Lincoln and Carle Foundation Hospital as described on their respective websites, I conclude that a Carle option would better serve the needs of low-income underinsured and uninsured folks since their community care discount standards are considerably more generous.

Thank you for your attention.

Sincerely,

Valerie D. McWilliams
Attorney at Law

LSC

United Way
Certified Agency

101 Attachment GRC2

Improvements in Hospital Community Care and Debt Collections

October 26, 2005

Policy Change Goal	Provena Covenant Medical Center	Carle Foundation Hospital
1. Agree to ongoing meetings with Coalition	Yes; began in Oct. 2003; Meet monthly.	Yes; began in November 2003; meet monthly.
2. Stop using "charity care" name for discount program	Yes. Covenant Care	Yes. Carle Community Care
3. Improve Community Care Program: give 100% Discounts	Yes. 120% FPL and below	Yes. 200% FPL and below
4. Improve Community Care Program: Sliding Scale	Yes. Up to 300% of FPL	Yes. Up to 300% of FPL
5. Allow both uninsured and insured patients to qualify for discounts, based on income	Yes.	Yes.
6. Provide Discounts for "Medically Indigent" (patients who do not meet income requirements for discounts, but have very large medical bills)	Yes.	Yes. Up to 400% of FPL, Bill capped at 40% of Annual income. 25% discount for rapid repayment
7. Publicize Community Care Program to Community (newspaper ads, etc.)	Yes.	Yes.
8. Publicize Community Care Program within Hospital (posters, signs, etc.)	Yes. Posters in several areas. Signs with postcards in restrooms	Yes. Signage in several areas.
9. Publicize Community Care Program on hospital website and make application available on the web.	Information about Program is on the web, but application is not.	Yes.
10. Provide Community Care Program Information on Hospital Bills	Bills state that "Financial Assistance May Be Available."	Yes.
11. Make Community Care Program Written Information Available in Multiple Languages	Spanish language ad; developing brochures in other languages	Developing brochures in other languages
12. Remove time limits for applying for Community Care or making payment agreements	Yes. Apply anytime.	Yes. Apply anytime.
13. Have a process for appealing Community Care discount decisions for patients who feel they should qualify for a greater discount	Yes.	Yes.
14. Do Not Charge Interest on Hospital Bills	No interest. Collectors do not charge interest.	No interest on hospital bills, but collectors can charge interest.
15. Set up reasonable payment agreements	Yes.	Yes.
16. Review accounts and assess patients' status prior to collection and court actions	Yes; committee process.	Yes.
17. Assist uninsured or financially needy with referral to other programs	Yes.	Yes.
18. Cease unnecessary and harmful legal actions against low-income patients (including liens on property, attaching exempt income & assets, etc.)	Yes.	Yes.
19. Stop using "body attachments" and incarceration	Yes! (as of Oct. 2003)	Yes! (as of 3/5/04)
20. Medicaid patients' outstanding bills (prior to qualifying for Medicaid) automatically written off for 100% Community Care discount?	No.	Yes.
21. Exempt Retirement Savings from assets considered in qualifying for discounts (do not expect patients to use retirement savings to pay for hospital bills).	Yes.	Yes.

Compiled by the Community Coalition on Medical Debt

For more information, please contact Claudia Lennhoff

102 Attachment GRC2

ATTACHMENT B

The News-Gazette.com

Wednesday, December 20, 2006 East Central Illinois

Carle hospital expands charity program

Published Online Oct 24, 2005

By DEBRA PRESSEY

News-Gazette Staff Writer

URBANA - More patients will qualify for free or discounted care at Carle Foundation Hospital, starting today.

Under an expansion of the hospital's Community Care Discount Program, people earning as much as 400 percent of the federal poverty level are now eligible for a cap on their out-of-pocket hospital expenses.

Those earning as much as 300 percent of the federal poverty level and less are eligible for free or discounted care.

What's more, hospital officials said, they will no longer count funds in official retirement accounts when they're looking at patients' financial ability to pay their bills.

The hospital last expanded its Community Care program in February 2004, but there were still too many needy patients falling through the cracks, one hospital official said.

The expansion last year "helped a significant number of people," said Robert Tonkinson, Carle hospital's chief financial officer. "But we were still seeing that there are people we feel we could help, who are struggling to pay their bills."

Under the old Community Care guidelines, Carle hospital provided free health care to people earning up to 150 percent of the federal poverty level. Sliding scale discounts were given to people earning up to 250 percent of the federal poverty level.

Under the new guidelines, the hospital will provide:

- Free care to people earning up to 200 percent of the federal poverty level.

- A sliding scale discount to those earning up to 300 percent of the federal poverty level.

- A cap on out-of-pocket medical expenses for patients earning at or below 400 percent of the federal poverty level. The cap limits out-of-pocket expenses to 40 percent of the patient's gross annual income.

- A 25 percent discount for any uninsured patient, regardless of the patient's income level, if the bill is paid in 30 days.

Under the new guidelines, the hospital is also promising to undertake a credit analysis before initiating a collection process on an outstanding account, and to notify all patients of what the Community Care program offers at the time they register.

Under the former guidelines, a family of four would have had to earn less than $27,600 to qualify for free care. Now the same family can earn up to $38,700 and qualify for free care, the hospital said.

Tonkinson said the new cap on expenses is intended to help those who become overwhelmed by big hospital bills in proportion to their family income.

"We want to lift some of that burden," he added.

103 Attachment B Pg 2

Tonkinson said the hospital is applying the new guidelines retroactively, going back a full year to find those patients who didn't qualify for help before - but may qualify now.

However, he added, nobody will get a refund under the expanded program. The retroactive discounts and write-offs will apply only to unpaid bills.

In its last fiscal year, Carle hospital provided about $2 million in free or discounted care, with that figure reflecting actual hospital costs. In that last year, the Community Care program helped about 1,800 patients, the hospital said.

Tonkinson said there's no limit on the amount of additional assistance Carle will provide under the new guidelines, as long as the patients qualify. But the hospital has estimated expanding the guidelines will help an additional 560 patients and result in $800,000 to $1 million more in charity care a year.

Champaign County Health Care Consumers Executive Director Claudia Lennhoff said Carle hospital is showing leadership and demonstrating a good understanding of local community needs with the new policies.

"We'd be hard-pressed to find, in terms of discounted care, a hospital that is doing better or having more generous policies around the nation," she said. "I would say this really puts Carle Foundation Hospital on the map as having a very good program and being responsive to the community."

However, she added, local consumers should note that, while the new policies will provide some relief from hospital bills, they won't help with the bills that come from for-profit Carle Clinic, whose doctors care for many of the patients at Carle Hospital.

"I think we still have a lot of challenges with the clinic and consumers need to be aware that these good, new, generous policies apply only to the bills that come through Carle Foundation Hospital," Lennhoff added. "Carle Clinic is another matter."

104 Attachment GRC2

Attachment C

Policy# 200

POLICY AND PROCEDURE

Revised: Oct. 14, 2005

CARLE FOUNDATION

SUBJECT: Community Care

PURPOSE: To identify and assist those patients who are financially eligible to receive discounts for medical expenses through the Community Care Program.

STATEMENTS OF POLICY:

A. Any patient and/or guardian may apply for Community Care regardless of citizenship or residency status.

1. Verification of income for the previous 12 months is required. Income eligibility will be based upon the most current Federal Poverty Guidelines.

2. An application for assistance must be completed through the Department of Public Aid if the patient appears to meet IDPA eligibility criteria. When appropriate, Social Services will use a screening checklist called IDPA Eligibility/Community Care Determination to assist in determining if the patient would qualify for IDPA assistance.

   a. Failure to complete the Public Aid application process and/or failure to cooperate with Accordis during the Public Aid application process will result in an automatic denial for Community Care.

   b. Patients who are determined to be homeless with no verifiable address, phone, or income can be exempted from the Public Aid application requirement. However, if these homeless patients have inpatient services, a referral to Accordis should be initiated to complete the Public Aid application process.

   c. Patients who have a third party payment source that will reimburse more than the Public Aid reimbursement will be exempted from the Public Aid application requirement.

   d. Patients who qualify for Public Aid without a spend down will be eligible for a 100% discount for those visits prior to the three month backdating that Public Aid allows. A copy of the Public Aid eligibility will be maintained as

documentation of financial need, a community care application will not be required.

3. Liquid assets will be taken into consideration during the Community Care application process. Liquid assets exceeding $2000 will be added to the applicant's income total for the past 12 months. IRAs, 401ks, and 403b retirement funds will not be considered as liquid assets. Distributions from these funds will be considered as income to the applicant for the income determination.

4. If the applicant's income is equal to or less than 200% of the federal poverty level at the time of submission, the Community Care discount will be 100%, greater than 150% but less than or equal to 230% of the federal poverty level will receive a 75% discount, greater than 230% but less than or equal to 270% of the federal poverty level will receive a 50% discount, and greater than 270% but less than or equal to 300% of the federal poverty level will receive a 25% discount.

5. Patients that receive a determination under the Community Care Program may reapply in six months in the event there are substantial and/or unforeseen material changes in their financial situation. The Manager and Director will conduct the review jointly.

6. Applicants may appeal Community Care discount determinations to the Director of the Patient Accounting Office or the Chief Financial Officer.

B. The Community Care discount will apply to the patient balance of the account after all other payments, such as Medicare, Insurance company, lawsuit settlement funds are received and posted.

C. Long-term patients that have been approved for uncompensated care must re-apply annually for the Community Care Program.

D. Patients that have been referred to a collection agency may request a Community Care application if a judgment has not been obtained yet in court

E. Cosmetic Surgeries, Infertility Services, Dental services, experimental services, screenings and bariatric surgeries that do not meet medical necessity guidelines are excluded from Community Care. Non-emergent out-of-network care that would be paid by the patient's insurance company elsewhere will not be eligible for community care since the patient has the ability to have their health care needs met.

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PROCEDURE:

A. Patients with financial concerns should be identified as soon as possible in the registration or treatment process.

1. A referral to Social Services or directly to Public Aid should be completed to obtain a determination of eligibility for Public Assistance. Patients who fail to cooperate with Public Aid and/or Accordis during the Public Aid application process will automatically be denied for Community Care.

    a. If the patient does not meet the eligibility criteria for Public Aid or if they have a spenddown, they may be eligible for a Community Care discount.

    b. The application for Community Care will be available from the Hospital Patient Accounting office, each of the SBU Business Offices, the Hospital Cashiers, Social Services or the Carle website.

    c. The Community Care application should be completed and returned within 21 days from the date it is picked up or mailed to the patient.

    d. If the Community Care application is not returned a notification letter will be mailed to the patient/guarantor that indicates the billing will commence unless we receive the application within the next 14 days.

2. The completed application should include:

    a. Income and asset verification for the 12 months immediately prior to the date of the application and the most recent income tax return form, if applicable. This verification may consist of:

        1. Pay stubs or check with year-to-date totals.
        2. Letter from employer showing current salary and year to date income.
        3. Verification from Social Security of the monthly benefit amount or deposit slips showing the amount of the Social Security checks.
        4. Copies of bank statement to verify checking and savings account balances.

    b. Patient must provide verification of family size.

1. Family size will include only those dependents listed on tax returns.

B. A written determination will be sent to the applicant within 10 working days of receipt of the complete application.

   1. If the application is approved, the patient's account should be adjusted as soon as possible to reflect the discount.

C. Patients that qualify for a partial discount of the balance will be required to pay the remaining balance due and will be treated as any other private pay account.

D. Individuals with income up to 400% of the Federal Poverty level will have their personal financial responsibility capped at 40% of their annual gross income.

E. When the application has been processed and the determination is made, each application should be logged and a record should be completed.

F. When HPA or any SBU receives an application for Community Care that indicates treatment at another Carle Foundation facility that participates in the Community Care program; the application, verification and determination will be shared with all other involved businesses. Carle Hospital, Carle Hospice, Carle Home Infusion, Arrow Ambulance, Carle Homecare, Carle Medical Supply, Carle Surgicenter, and Carle Foundation Physician Services participate in the Community Care program.

   1. The application, verification of income and the Community Care records will be maintained by fiscal year.

G. The Community Care applications should be approved by the Manager of Accounts Receivable, the SBU director or designee, and the total of the write-offs will be reported to the V.P. of Finance.

Patricia Owens — Oct. 14, 2005

Patricia Owens — Date

Director - Patient Accounting

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Carle Foundation Hospital
Attachment D

4) REPORT Community Benefits actually provided other than charity care:
See instructions for completing Section 4 of the Annual Non Profit Hospital Community Benefits Plan Report.

Community Benefit Type

Language Assistant Services.....$48,215

Government Sponsored Indigent Health Care.....$10,819,124

Donations.....$1,641,176

Volunteer Services
- a) Employee Volunteer Services.....$15,439
- b) Non-Employee Volunteer Services.....$322,883
- c) Total (add lines a and b).....$338,322

Education.....$ 3,094,971

Government-sponsored program services.....$ 0

Research.....$374,161

Subsidized health services.....$2,977,874

Bad debts.....$2,650,526

Other Community Benefits.....$423,666
See attached Schedule 4-1

Carle Foundation Hospital
Community Benefit Report FY 06

Attachment D-1
Introduction to Schedule 4-1

Carle Foundation Hospital uses the Community Benefit Inventory for Social Accountability (CBISA) software and guidelines for determining inclusions. Originally created collaboratively by the Catholic Hospital Association of the United States of America and VHA Inc. to track their mission activities, these standardized reporting categories, definitions, and guidelines are now universally accepted in the not-for-profit hospital arena.

Additional community benefits reported are in CBISA categories F and G. Category F documents Community Building Activities and Category G includes Community Benefit Operations.

110 Attachment GPC2

Schedule 4-1
Carle Foundation Hospital
Category - Detail
For period from 7/1/2005 through 6/30/2006

F1 - Physical Improvements/Housing	**Benefit**
Accessible House (92)	3,500
Affordable Housing (91)	89,676
City Tree Pruning (172)	3,000
Engineering Work on City Walkways/Streets (171)	38,200
Neighborhood Lighting (95)	39,220
Neighborhood Snow Removal (94)	3,500
Totals Physical Improvements/Housing	**177,096**

F3 - Support System Enhancements	
Disaster Readiness (98)	9,618
Totals Support System Enhancements	**9,618**

F4 - Environmental Improvements	
Thermometer Exchange (173)	2268
Waste Reduction Efforts (99)	21,188
Totals Environmental Improvements	**23,456**

F6 - Coalition Building	
HelpSource (97)	1,982

1111 Attachment 6R12

Neighborhood Meetings (130)		670
Representation on Community Coalitions (101)		2,956
YMCA Partnership (165)		5,671
Totals	**Coalition Building**	**11,279**

F7 - Community Health Improvement Advocacy

Advocacy for Access to Healthcare (102)		21,187
Champaign County Healthcare Consumers (100)		3,617
Totals	**Community Health Improvement Advocacy**	**24,804**

F8 - Workforce Enhancement

Community Workforce Building (104)		61,414
Health Career Programs (105)		662
Totals	**Workforce Enhancement**	**62,076**
Totals	**F - Community Building Activities**	**308,329**

G1 - Dedicated Staff

Dedicated Staff (106)		99,064
Totals	**Dedicated Staff**	**99,064**

G3 - Other Resources

Overhead and Office Expenses Associated with CB Operations (110)	12,797

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Salvation Army Toy Drive (162)		3,476
Totals	**Other Resources**	**16,273**
Totals	**G - Community Benefit Operations**	**115,337**
Grand Total		**423,666**

113 Attachment 6R12

Carle Foundation Hospital
Section III, Part C
Criterion 1110.230(c), Alternatives to the Proposed Project

In preparing this Certificate of Need permit application Carle Foundation Hospital considered the following alternatives:

1. Continue Operations in the Existing Buildings and "Do Nothing";

2. Modernize Rogers Building and Parkview Building;

3. Demolish and Replace Obsolete Buildings on the Existing Footprint;

4. Construct a Comprehensive Replacement Hospital at New Site in Champaign, Illinois (at the Carle Foundation's Clearview Property);

5. Construct a Rehabilitation Hospital in Champaign, Illinois;

6. Construct a 135 Bed Tower and Modernize and Expand Digestive Health Center.

With the exception of the relocation of the digestive health center to the first floor of the North Tower (which is the newest clinical building on campus built in the 1980s and expanded in 2005), the alternative of using existing space for the expansion and enhancement of programs was not considered because this space has already been fully allocated and occupied with other inpatient and clinical operations (namely surgery, NICU, obstetrics, pediatrics, and other medical/surgical units). A discussion of modernizing other existing buildings is set forth below.

The following narrative consists of a comparison of the proposed project to alternative options. In this narrative, the substantive issues of cost, patient access, and quality of care are addressed. The financial benefits of one alternative over another are driven by capital costs and operating expenses as well as patient access issues. The project contemplates the purchase rather than lease of equipment, so the element of this criterion relating to the purchase of equipment as an alternative to the proposed project is not applicable.

A cost-benefit analysis of the various alternatives considered is included with this Attachment GRC-3.

The Applicants believe that the proposed project is the most effective and least costly alternative to the other alternatives considered, provides the highest quality care, and best meets the needs of the patients it is intended to serve.

1. **Continue Operations in the Existing Buildings and "Do Nothing"**

Almost all of the services that Carle Foundation Hospital anticipates modernizing under the proposed project are housed in the oldest buildings on that hospital's campus, the Rogers Building and the Parkview Building. The Rogers Building is more than 45 years old having been built in 1962 and the Parkview Building is over 30 years old. The option of maintaining the status quo has many disadvantages and also involves ongoing capital expenditures. Ultimately, the decision to "do nothing" today would be a decision to delay the project, not to reject the replacement entirely.

The capital expenditures relating to maintaining the Rogers Building and the Parkview Building in the short term (i.e. during the next five years) will be less than the cost of building a new bed tower facility. While demolition of some elements of these existing buildings may be necessary based on mid-to-long term planning, only the former Manor Care building is scheduled for immediate demolition. It needs to be because it is on the exact site of the proposed bed tower. Prior to their replacement, the expenditures to provide services in portions of the Rogers and Parkview buildings will be limited to those necessary to preserve its current use and not to expand its use. Those maintenance costs which would be categorized as capital improvements during the next five years are reasonably estimated to be $20 per gross square foot for 178,474 gsf for a total of $3,569,480 for the first year. Assuming a 3 percent annual inflation factor would result in $107,084 of additional costs beyond what is expected to be incurred initially.

To "Do Nothing" does not address any of the patient care issues urgently needing attention. Combined public and patient circulation, poor vertical transportation and operational inefficiencies will be maintained. Carle Hospital will be unable to meet the expanding clinical needs of the community.

2. **Modernize Rogers Building and Parkview Building**

As discussed further in the Modernization Section, and to some extent in the Need for the Project Discussion, the current units have many functional limitations that need to be corrected. For example, inpatient rehabilitation patients, based on experiencing a major illness, injury and/or surgery, have an impaired ability to accomplish activities of daily living. Activities of daily living or "ADL" measure the ability of a person to bathe, dress, walk indoors or outdoors, transfer in- and-out of bed, use the toilet, or eat, on his own or with varying levels of required assistance. The primary purpose of an inpatient rehabilitation stay is to achieve each patient's highest level of independent function, thus improving quality of life, and returning the patient to an active and productive lifestyle. The current unit is lacking the necessary features for a patient with impairment in activities of daily living. The current unit falls short of providing state-of-the-art facilities that enhance independence and maximize each patient's opportunity to re-learn the basic activities of daily living. Having previously been an acute care floor, the patient rooms were not designed for rehabilitation services. They are semi-private, very small and do not accommodate the required adaptive equipment. Three patients share one toilet and the entire floor has only a single shower. It has two bath tubs on the

different ends of the hall but bath tubs can be dangerous for patients who are functionally impaired and will not be used going forward. When a patient is transferring in and out of bed, furniture and equipment must be moved and when two staff members are needed for such transfers, there is not adequate space to maneuver. There are no dedicated visitor spaces nor is there adequate space for personal items in these rooms. The medical-surgical beds in the Parkview Building face the same limitations.

Neither building meets the requirements of the current 2003 International Building Code or the Illinois Accessibility Standards. Any renovations would need to be very limited so not to trigger compliance with those standards. Building seismic design, ventilation capacity, egress width criteria, and toilet room dimensions do not conform to current requirements. Based on the current design of the facilities, the requirement to come into compliance with such standards would make a major renovation infeasible and thus, both buildings would need to be reconstructed in order to enhance services in them. Carle would be better off from a cost perspective demolishing structures than attempting to retrofit existing buildings to meet current code requirements. Carle Foundation Hospital is in the company of the other hospitals in Illinois and in the U.S. which are providing inpatient services in aging structures.

The current buildings are organized along a single circulation corridor. This corridor is used by the critically ill patients, public, staff and materials management. Similarly, vertical transportation is shared between patients, public, staff and materials management. Further, it is difficult to adapt to changes in technology in an older building. Electrical systems will be required to be upgraded and emergency power capacity expanded. Low floor to floor heights make integrating new equipment difficult. Also, the building exterior walls are inefficient and result in significant energy loss. In order to reorganize the circulation as well as address structural, mechanical, electrical and other deficiencies noted above the buildings would need to be completely gutted.

Carle Foundation Hospital does not believe that it will serve the public interest nor is it economically feasible to modernize its service lines in a physical plant that does not comply with applicable Accessibility and Building Code requirements. The Rogers building is obsolete for all inpatient clinical and other specialized services and demolition and replacement of this portion of the hospital will likely occur as part of Carle's long-term planning. In the interim, these buildings will be used for administrative and support services which have been displaced over time based on space requirements for clinical services.

3. **Demolish and Replace Obsolete Buildings on Existing Footprint;**

As described earlier, it is not practical from a building code perspective to renovate the existing Parkview and Rogers buildings which currently contain the cardiovascular, intensive care and medical/ surgical beds proposed to be relocated to the proposed new building. Any replacement building plan would also include the demolition of the adjacent Center building in order to achieve a footprint area large enough to plan a

modern facility. Further, it is not possible to complete a full replacement on the current campus as it would be off site, and on site demolition would need to be phased.

Demolition would require a phased construction process and the relocation of essential services. Currently the Radiology Department is located in the basement of the Parkview and Center buildings and the Emergency Department is located on the first floor of the Rogers and Center building. The phasing could be considered to construct a temporary Emergency Department within the first floor of the Parkview Building. Existing patient bedroom capacity within the Rogers building would be lost. The Rogers building would be demolished in its entirety and new construction built in its place. New emergency department space within the area of the former Rogers building would need to open, but new space above would not be usable until the remainder of the phases was complete. Similarly, the Radiology Department would need to be temporarily relocated while the Parkview building was demolished and new construction completed. It is not clear how intensive care units currently located in the Parkview building would be relocated during construction. Interventional Cardiology currently on the second floor of the Parkview and Rogers buildings would also need to be relocated to a temporary facility. Center building demolition could occur when the Parkview phase was complete. The upper floors would not be useable until all of the phases were complete.

The phased replacement building option would significantly limit Carle Hospital's ability to provide quality clinical services during construction. The project would take substantially longer to complete. The temporary service locations and difficult construction sequencing would result in higher project costs. The resulting building would also not have an ideal footprint form for a modern patient bed floor design nor would the footprint be large enough to support all of the proposed services. If the cost of an entire facility replacement were to be taken on, undertaking such a project at a new, larger site would be better from a cost-benefit analysis if just comparing the two entire replacement scenarios discussed herein. The second and more feasible option of replacement at another site is discussed below.

4. Construct a Comprehensive Replacement Hospital at New Site in Champaign, Illinois (at Carle Foundation's Clearview Property)

Constructing a replacement hospital at a location other than Carle's main campus in Urbana is a good option for meeting many of the goals of the project but is cost prohibitive due to significantly increased site development, infrastructure and hospital support services costs. If a freestanding, self-sufficient facility were to be constructed, support services (administration, cafeteria, materials management, security, central supply etc.) and staffing would need to be duplicated. While Carle currently owns undeveloped property in the adjacent city of Champaign, any proposed project would be subject to environmental and local zoning review. Utility infrastructure such as power, water, natural gas, sanitary and storm drainage would need to be developed.

A replacement hospital to support the currently licensed 305 patient beds would be approximately 440,000 gsf. The replacement hospital would need to include all of the

energy plant and support services currently available on the main campus. While a replacement hospital would create the opportunity to address facility related operational issues, it is beyond the range of economic feasibility for Carle Hospital at this time.

5. **Construct a Rehabilitation Hospital in Champaign, Illinois**

The option of building a freestanding rehabilitation hospital to replace the 15-bed inpatient program at Carle Foundation Hospital was considered, and the Hospital planned to pursue this option in 2006. In 2007 the proposal was reviewed by the Illinois Health Facilities Planning Board and received a negative finding. At the same meeting, a 20-unit program was approved at another hospital. As a result of these two events, Carle Foundation Hospital redirected its planning energies toward enhancing rehabilitation services by building a new unit of the same size in the proposed bed tower.

The rehabilitation hospital cost project cost was $17,669,686, and it was anticipated that it would be complete in 2010. The construction of such a hospital could not be completed until 2012 at this point. Therefore a 6 percent inflation factor should be imposed on the above referenced cost for a total project cost of $18,729,867. Since this proposal would only meet the needs of rehabilitation patients and not the larger patient base that Carle Foundation Hospital serves, the alternative of building a freestanding rehabilitation hospital was rejected.

6. **Construct a 135 Bed Tower and Modernize and Expand Digestive Health Center**

The Carle system identified through its strategic planning process the need to provide its digestive health services as well as its cardiovascular services in more accessible, patient and community oriented, and state of the art facilities. The proposed project meets this intent and is a step toward improving the accessibility and expanding the opportunity for residents of the region to receive the most advanced care in the most advanced facilities.

Over time Carle Foundation Hospital's growing cardiovascular services have become scattered across the existing campus. While Carle Foundation Hospital has provided extensive, high quality cardiovascular services for many years, continuity of care and efficiency in providing care for patients, family, and staff have suffered. As cardiovascular services have grown in volume and scope, these services have become decentralized, creating staff and space inefficiencies, communication gaps, and way-finding problems.

Carle Foundation Hospital's current digestive health program consists of 7,215 gross square feet. The area does not accommodate physician office space, which is housed in a different building on a different part of the campus. Even without physician office space adjacent, the unit currently spans two separate campus buildings, the Rogers Building and the Parkview Building, which are 42 and 31 years old respectively. The current clinical area shares preparatory and recovery space with preparatory and recovery space for other service lines (interventional radiology and cardiac catheterization). Nurse workspaces

are out in the open in the middle of the hall, as are chairs for waiting patients and family members. These cramped and overlapping support spaces do not provide optimal through-put of cases nor do they provide the appropriate level of privacy and confidentiality that patients, staff, and families have grown to expect in the era subsequent to the enactment of the HIPPA privacy rules. Currently there are no family consultation rooms available for private communications.

Carle Hospital Bed Tower and Modernization Project
ALTERNATIVES TO PROPOSED PROJECT
Cost Benefit Analysis

			Evaluation	Criteria			
					Investment		
Alternative	Description	Community Need	Access	Quality	Construction and Contingency Cost	Project Cost	Status
1	Continue Operations in the Existing Buildings and Maintain Status Quo.	Not met	Same level	Same level	$3,569,480*	$3,569,480	Reject
2	Modernize Rogers and Parkview Buildings.	Partially met	Partially enhanced	Partially improved	$30,000,000-$50,000,000	$75,000,000-$95,000,000	Reject
3	Demolish and Replace Obsolete Buildings on Existing Footprint.	Partially met	Partially enhanced	Partially improved	$173,530,200	$263,526,765	Reject
4	Construct a Comprehensive Replacement Hospital at New Site in Champaign, Illinois (at the Carle Foundation's Clearview Property).	Met	Enhanced	Improved	$184,007,141	$297,917,843	Reject
5	Construct a Rehabilitation Hospital in Champaign, Illinois	Partially met	Partially enhanced	Partially improved	$15,668,763	$18,729,867	Reject
6	Construct a 135 Bed Tower and Modernize and Expand Digestive Health Center	Met	Met	Met	$145,700,200	$235,896,765	Accept

Options 1 and 2 do not provide state-of-the-art facilities.

*** The status quo cannot be maintained indefinitely. This cost would only forestall the ultimate construction of the bed tower.**

ATTACHMENT GRC-3

Carle Foundation Hospital
Application for CON Permit
Criterion 1110.230(d) Need for the Project

The Applicant must document that the project is needed. Based on the obsolescence of certain identified buildings and ongoing growth in utilization of the Carle Foundation Hospital services, the project is needed to provide state-of-the art services in upgraded and larger facilities.

Affected Departments and Categories of Service

a. ICU Beds

One element of the project is the modernization of the 32 ICU beds. There is a need for one additional ICU bed in the D-1 Planning Area and the hospital is operating its unit near or at target utilization. Thus, the number of ICU beds planned for modernization for this project will not exceed the need for ICU beds.

b. Medical Surgical Beds

According to Section 1100.310 of the Planning Board rules, Planning Board need estimates reflect the conceptual baseline for determining if proposed projects are needed. While there is a technical excess of 188 medical/surgical/pediatric beds in Planning Area D-1, there are several reasons that this need determination is not a very useful guide in identifying the need for the modernization of services.

Those reasons include:

- Carle Foundation Hospital, as a tertiary care facility providing an advanced and complex level of medical care, plays a unique role in a large geographic region.
- Its level of specialization is unparalleled in the region.
- There is low utilization of some of the critical access hospitals in the area.[1]
- There is in-migration by residents of other sub-planning areas in Region D (and elsewhere including Indiana) to obtain services from Carle Foundation Hospital and its specialists.[2]

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[1] Of the two critical access hospitals in the D-1 Planning Area, Gibson Area Hospital and Health Services in Gibson City had a med/surg bed ADC of 9.7 in 2006 and a CON occupancy rate of 48.6%. Similarly, but more notably, John and Mary E. Kirby Hospital in Monticello had a med/surg bed ADC of 2.8 and a CON occupancy rate of 17.3% for 2006.

- Champaign County is designated by HRSA as a medically underserved area and as having a medically underserved population. As the community of health care providers continues to address through recruiting and retention efforts, the need to bring more qualified health care professionals into the area to service the medically underserved, the needs for beds will grow.

The Applicant's historical utilization trends support the extent of the modernization. This bed category will be operating above the target utilization rate of 85% by the end of the first full fiscal year following project completion.

c. Rehabilitation Beds

There is a technical excess of rehabilitation beds in the Planning Area (HSA 4) which was largely created by the recent approval of a 20 bed program at St. Mary's Hospital in Decatur nearly 54 miles and over 1 hour away. The extent of the modernization of the 15 rehab beds that the hospital operates is fully justified by its current 88% utilization of those beds. The minimum target occupancy rate for this service is 85%.

d. Cardiac Catheterization Services

One other category of service, cardiac catheterization, is being modernized, as part of the overall relocation of vascular procedures services. The Planning Board does not, however, have a need formula for cardiac catheterization. Certainly, the hospital is operating beyond the minimum rate of 200 cases as discussed in more detail below.

Introduction

Carle Foundation Hospital is a major tertiary care center located in Urbana, Illinois. The Hospital is the only designated Level I Trauma Center in its planning area providing trauma care to both adult and pediatric patients. It is also designated by the Illinois Department of Public Health as a Co-Perinatal Regional Center. CFH provides advanced diagnostic and treatment services in a wide range of adult clinical specialties including medical and interventional cardiology, neurology and neurosurgery, medical and surgical cancer, digestive disorders, ear/nose/throat, geriatrics, obstetrics and gynecology, orthopedics and respiratory disorders.

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[2] The Applicant recognizes the statutory mandate to attempt to curb in-migration and out-migration. It cannot, however, deny its community access to modernized services at a time when the hospital's utilization is increasing so rapidly. While a variety of hospital services are available in various areas surrounding Champaign County, as described further below no other provider in HSA 4/Region D provides the extent of scope of inpatient services that the Applicant provides.

Unlike some of the tertiary care facilities in the Chicago metropolitan area which share responsibility for the care of critically ill patients in their geographic service area, no other provider in the 40 counties comprising its service area provides the range of specialized care that CFH provides. CFH's service area spans from Watseka to the north and Paducah, Kentucky to the south (a span of over 300 miles). East/West, the service area stretches east into the border counties within Indiana and west to Macon County, Illinois (a span of 115 miles). While Champaign/Urbana is classified as an urban area, other areas served are primarily rural. Furthermore, many areas of Planning Area D-1 including Champaign County where CFH is located have been deemed Medically Underserved Areas (MUA) and also as having a Medically Underserved Population (MUP) by the Health Resources and Services Administration (HRSA), a branch of the U.S. Health and Human Services administration. (See attached HRSA documentation.)

In its capacity as the major tertiary care center in the region, Carle Foundation Hospital partners with 11 critical access hospitals and eight community hospitals in the region, and facilitates visiting specialists at certain of those hospitals in specialties including cardiology, oncology, pulmonology, gastroenterology, and neurology. Ultimately, many of the cases identified during these specialists' visits are referred to CFH for advanced care.

In 2007, CFH received transports from more than 19 hospitals where physicians determined that the complexity of care required was beyond the scope of care of the local provider hospital and better performed at CFH. These hospitals are shown on the first map following this narrative. Such transports are facilitated by Carle's dedicated AirLife transport service (which is further described in the Background of Applicant Section) and its mobile ICU team which is comprised of specially trained critical care nurses and paramedics functioning under defined protocols for unstable and critically ill adult, obstetric, pediatric and neonatology patients. In 2007, 5,470 calls (15 a day) to the Physician Access Line referral and transport service were made by hospitals and physicians from within and outside of CFH's planning area. Due to the broad area that its trauma program serves and its status as the only Level I Trauma Center in the region, CFH has the highest organ procurement rate in the Midwest. In other words, a very high volume of accident victims who have suffered severe trauma are brought to its trauma center. Unfortunately, some are never admitted often resulting in the donation of organs to individuals who can be saved by such donations.

As further described in the Background of Applicant discussion, Carle Foundation Hospital is the primary clinical facility for the University of Illinois College of Medicine. Also, the UIC School of Nursing has established a regional Bachelor's of Science in Nursing program in Urbana which admits 50 students a year. That program offers a significant portion of its clinical rotations at CFH including all OB and pediatrics clinicals.

CFH provides post-acute inpatient rehabilitation care for patients who are in need of rehabilitative services after suffering from trauma, stroke and other serious debilitating illnesses and conditions.

Primary Stroke Center Initiative

To address the neuroscience needs of its growing senior population, CFH is currently working with HWorks, the consulting arm of the Health Care Advisory Board, to obtain Joint Commission certification as a Primary Stroke Center.

An initial assessment of CFH's stroke program indicates that stroke patients residing in the Region D planning area and the D-1 sub-planning area are being diverted to other medical centers outside of the Planning Area. Furthermore, as vascular diseases and associated co-morbidities increase in incidence and prevalence, CFH's need to serve the community and improve clinical outcomes for stroke victims increases the importance of such a program. The Stroke Center program would be dedicated to preventing, diagnosing and treating strokes, offering applications of the latest technology and medications while treating the all of the stroke patient's needs. Care would be coordinated from the first point of contact with the patient, whether through the emergency department, the Stroke Program's inpatient or outpatient services or the rehabilitation unit, and would address all aspects and phases of recovery including disease management, risk reduction, and physical, occupational and speech therapy.

Each year about 700,000 people experience a new or recurrent stroke, which is the nation's third leading cause of death. On average, someone suffers a stroke every 45 seconds, and someone dies of a stroke every 3.1 minutes. Stroke is a leading cause of serious, long-term disability in the United States, with about 4.7 million stroke survivors alive today. Innovation of diagnostic technologies, advanced treatment techniques and improved management of stroke risk factors have created new hope for persons who have had a stroke or who are at risk of having a stroke.

Stroke is an emergent, time-sensitive condition that requires coordination among multiple specialties. CFH is uniquely positioned in its Planning Area to bring together a multidisciplinary team of neurologists, neurosurgeons, vascular surgeons, neuroradiologists and physiatrists who focus on comprehensive stroke management to bring state of the art stroke care to stroke victims in the region, obviating the need for them to leave the planning area to receive the care they need. CFH hopes to achieve Joint Commission certification for this program by late 2009.

Patient Population

The Hospital serves both the immediate communities of Champaign and Urbana as well as an extended geographic community, including referring hospitals and physicians that depend on the advanced programs and services at the Hospital to diagnose and treat complex morbidity. Included as Attachment GRC-4 is a map showing the CFH service

area and planning area hospitals. Patient origin by county (FY2007) for the hospital is included on that map. As depicted in that map, approximately 64% of patients receiving inpatient care at Carle Foundation Hospital during FY2007 originated from the D-1 Planning Area. Eighty-two percent (82%), the vast majority of other patients receiving services during that period who did not originate from the D-1 area, were from the other Region D Planning areas. In other words, almost 94% of patients receiving services at Carle Foundation Hospital originated from the Region D (HSA 4) Planning Area during that period. Specific patient origin of all CFH admissions by zip code for FY 2007 (excluding newborns) is provided as an attachment hereto.

The population of the D-1 planning area by the following age cohorts: 0-14, 15-64 and 65+ as estimated by the Planning Board for 2007 was 43,870 for ages 0-14, 172,080 for ages 15-64 and 28,130 for individuals 65 and older. The most dynamic demographic changes affecting the Planning Area's population are the aging of the Baby Boomer population (individuals born between 1946 and 1964) and the growth (and survival) of the oldest age cohort 75+.

At the time that this proposed project is scheduled for completion, the first members of the baby boomer generation will be turning 65 years old and entering their retirement years and the years in which they'll need increased medical care. Representing more than 75 million people, or nearly one-third of the U.S. population,[3] the baby boomers present a number of challenges that the health care industry will soon be forced to face.

With more specific reference to the health care needs of the Baby Boom generation, more than six of every 10 "boomers" are expected to spend their golden years with more than one chronic illness, according to a report done last year by First Consulting Group for the American Hospital Association.[4] More than one in three boomers will be obese. By 2020, nearly half of all boomers are projected to have arthritis, and by 2030, one in four boomers will be living with diabetes.[5]

The increases in the aged population caused by the Baby Boom will also impact demand for cardiovascular services. According to the American Heart Association, an estimated 71 million American adults now suffer from heart disease, stroke and other forms of cardiovascular diseases. The Heart Association notes that studies suggest that increased rates of diabetes, obesity and other risk factors may reverse four decades of declining mortality. As the baby boom generation ages, deaths from heart disease alone are projected to increase by 130 percent between 2000 and 2050.

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[3] http://www.census.gov/Press-Release/www/releases/archives/facts_for_features_special_editions/006105.html

[4] Source: American Hospital Association Press Release: Baby Boomers to Challenge and Change Tomorrow's Health Care System, May 8, 2007, http://www.aha.org/aha/press-release/2007/070508-pr-boomers.html

[5] Id.

The aging of the population is already very significant as it relates to hospital utilization as demonstrated by the Illinois Department of Public Health 2006 Annual Hospital questionnaire data. This data indicates that 55% of patient days in the medical/surgical category of service in Illinois hospitals resulted from care rendered to individuals aged 65 and older and that care rendered to individuals aged 75 and older represented 36% of that care. The U.S. Census Bureau data for 2006 indicates that the 65+ age cohort represented only 12% of the population in Illinois and the 75+ age cohort represents approximately 6% of the state's population. As that segment of the population becomes a proportionately larger, the burden on the health care system will increase.

Similarly, but even more skewed to the older age cohort, 60% of medical/surgical hospital days in the HSA 4 planning area[6] was rendered to individuals 65+ and 40% of such care is attributed to the 75+ age cohort. At Carle Foundation Hospital, these figures are 55% and 32% respectively which is very similar to the statewide statistics.

While the State does not collect ICU data based on the various age cohorts, it is also important to note that while only 12% of the D-1 Planning Area population and 12% of the State population is 65 or older, for CY2007, 46% of ICU patient days at Carle Foundation Hospital (3,120 of 6,839 ICU patient days) were provided to individuals 65 and older.

As depicted in GRC-4 Table 1 below, over the past several years, CFH has experienced significant growth in patient days both overall and particularly in medical/surgical care. The increased demand for services coupled with the deteriorating physical plant, compelled the leadership to initiate the project to ensure continued access to inpatient hospital services in East Central Illinois. Over the five years 2002 – 2007 there was a 23.5% increase in patient days for CFH overall.

GRC-4 TABLE I: Total Inpatient Days at Carle Foundation Hospital: 2002-2007

2002	2003	2004	2005	2006	2007	5-Year CAGR
57,795	62,270	67,132	67,875	70,617	71,350[7]	4.7%

[6] The IDPH data is not broken down into sub-Planning Areas.

[7] Observation Days are not included in the inpatient day totals noted above but did show similar increases (e.g. 2004: 1,485, 2005: 1,619, 2006: 1,645)

Area Market Studies

The Applicants retained ECG Management Consultants, Inc., a health care consulting firm with national experience in hospital utilization and trends to perform an area market study evaluating population trends and service use factors for medical/surgical and intensive care services. A copy of that report which gives consideration to the health planning goals of the State of Illinois, is included and also labeled as Attachment GRC-4.

Individuals Likely to Use the Project

Patients from CFH's current service area will continue to use the hospital's physicians and services after the project is complete and the hospital generally expects future use to reflect historical use trends. These trends and related projections are discussed in more detail below, in the attached market analysis as well as in the responses to the Size of Project and Modernization criteria. This Attachment GRC-4 also contains letters from a variety of key medical staff members indicating the need for the project and their support. Other letters of support are also provided in the application, including payor letters of support.

Justification for Extent of Modernization

Over the course of its many decades of operations, CFH has undertaken numerous expansion and modernization projects going back into the pre-Hill Burton era. In 1966, the Rogers Building was erected. In 1977, the Parkview Building expanded capacity. The Rogers Building and the Parkview Building have already outlived their useful lives particularly given their continued occupancy for inpatient and surgical procedures for the next four years pending completion of the new facilities. The North Tower's erection and expansion has accommodated more recent modernization and is currently allowing the hospital to provide care in state-of-the-art facilities. While many services including pediatric, NICU and obstetrics care have moved out of the more aged facilities into the North Tower, the North Tower can only accommodate the modernization of digestive health services. Additional service requirements are proposed to be addressed by the construction of a new bed tower immediately adjacent to the North Tower.

The Applicant plans to modernize 88 Medical/Surgical Beds, 32 Intensive Care Beds, and 15 Inpatient Rehabilitation Beds in the proposed bed tower. In addition, digestive health services will be modernized and expanded from six to ten procedure rooms, and the eight vascular procedure laboratories (including three cardiac catheterization labs) will be modernized. Details with respect to each item which constitutes a Category of Service under the Planning Board rules are set forth below.

a. Medical/Surgical Beds

Specifically with respect to medical/surgical beds, as shown in GRC-4 Table 2 below, inpatient medical/surgical days at CFH have increased by 40% over the past five years with a compounded annual growth rate of 8.1% during that period. Between 2005 and 2007, growth was even more rapid at 8.5% and 9.5% for each respective one-year period. Because the more recent growth was so rapid, CFH took a conservative approach and based its modernization of beds in the medical/surgical category based on historical utilization growth over a 5-year period rather than limiting the calculation to the more recent period. Further, rather than diminishing over time, the average length of stay for medical/surgical patients has remained relatively constant (even increasing most recently) indicating that increases in patient admissions will continue to drive demand for beds. This consistent and significant historical growth demands that CFH leadership anticipate a continued increasing demand for services.

GRC-4 Table 2: Medical/Surgical Utilization Data for Carle Foundation Hospital 2002-2007

2002	2003	2004	2005	2006	2007	5-Year CAGR
Days and ALOS	**Days and ALOS**	**Days and ALOS**	**Days and ALOS**	**Days and ALOS**	**Days and ALOS**	
33,733/3.9	37,337/3.5	40,110/3.9	39,286/3.5	42,919/3.8	47,414/4.2	8.1%
ADC/ %Util	**ADC/ %Util**	**ADC/ %Util**	**ADC/ %Util**	**ADC/% Util**	**ADC/ %Util**	
92.4/52.2%	102.3/57.8%	109.9/62%	107.6/60.7%	117.6/66.4%	129.9/70.2%[8]	8.1%

Based on the critical role that the hospital plays for the residents of East Central Illinois as reflected in its growing census, the hospital believes that the extent of the modernization is justified. By the end of the first fiscal year of operation, the hospital will be operating at above 85% utilization as required by Section 1100.520 for a 185 bed medical/surgical program. The rationale for expecting that utilization level in 2012 is further described in the ECG analysis that follows. If the projection is overly conservative and capacity issues exist that would justify the construction of additional

[8] During CY2007, the Applicant increased its Med/Surg bed capacity by 8 beds from 177 to 185. The utilization figure above represents the utilization of the enlarged category of service – 185 beds. At 177, the utilization figure would be 73.4%.

beds in the near future, those could be accommodated by the expansion of the proposed bed tower by two floors for additional bed units.

b. Intensive Care Unit

The tertiary adult and pediatric programs and especially trauma, neurosciences, advanced surgery and cardiac services will continue to generate the need for intensive care and medical/surgical beds. As discussed above, many factors are converging to create the need for ICU beds at CFH, including:

- An increasingly elderly population in the planning area (with an attendant increase in the incidence of stroke, heart disease, diabetes and other chronic and debilitating conditions). [9]

- An increase in the scope of pediatric capabilities (see below).

- Planned enhancements to neurologic specialty services, including neurosurgery and interventional neuroradiology.

- An escalating number of high-acuity cases as a result of CFH's critical care transport services, including the Physician Access Line referral and transport service.

- The hospital's status as the sole Level 1 Trauma Center in the Planning Area.

- The hospital's designation as a Co-Perinatal Regional Center.

- The hospital's anticipated Joint Commission certification as a Primary Stroke Center.

The critical care transport team transfers the most fragile and critically ill patients to CFH from more than a dozen health care institutions in the larger region. In 2007, 5,470 calls (15 a day) to the Physician Access Line referral and transport service were made by hospitals and physicians from within and outside of CFH's planning area.

The modernized 32 intensive care beds will be located on two units. Twelve modernized beds will be located on the cardiovascular bed floor and the other 20 modernized beds will be surgical ICU (SICU) beds on the medical surgical floor.

Four rooms in the SICU will be dedicated to pediatric intensive care services at the front of the unit closest to the family waiting and support area space of the SICU. Currently, the ADC for pediatric patients is approximately 3.5, and the typical range is between 2 and 5 patients. Dr. Ricardo Lema, a Board Certified pediatric intensivist, treats these

[9] This trend is supported by the attached market analysis.

children whose average age during flu season is typically about 2.[10] He was recruited approximately three years ago and as his reputation for the provision of services to critically-ill children grows, the number of pediatric patients in the ICU is trending upward. CFH is the only hospital in East Central Illinois for infants and children suffering from complex illnesses and chronic conditions, including those associated with prematurity. Dr. Lema's critical care practice is supplemented by a pediatric pulmonologist who treats life threatening respiratory and other diseases often associated with prematurity, including pneumonia associated with healthcare-associated and community-associated MRSA. CFH is currently recruiting for another full-time pediatric intensivist to further support the program's growth and commitment to providing this regional service.

Hospitalization of neonatal graduates is also contributing to the growth of the pediatric census in the hospital's ICU. (NICU "graduates" do not return to the NICU for subsequent hospitalizations.) The volumes in the NICU of the hospital have rapidly grown over the last several years (from 318 NICU admissions in 2004 to 374 NICU admissions in 2007). Extensive care protocols are in place in the NICU to minimize the readmissions of NICU patients and such babies are not typically readmitted within 30 days of discharge. However, these are fragile babies often born premature, immunocompromised, and/or prone to chronic illnesses, including GI and lung disorders. Thus, they often require several hospitalizations throughout their early childhood. Once a baby has been discharged from the NICU, subsequent inpatient care needs occurs within the pediatric ICU. As premature births and low-birthweight babies are both on the rise due to a variety of factors including higher incidence of fertility treatments and advanced maternal age, it follows that the number of pediatric ICU admissions will continue to rise as the NICU admissions increase.

The current ICU category of service is operating around minimum target utilization of 60%[11] for 32 beds. In 2002, ICU patient days were 6,661 days. In 2007, those days had increased to 6,839. Five year historical utilization data shows some growth. The need for modernizing these beds, however, is primarily driven by problems with the existing units and a need to re-configure bed floors and address care delivery issues. CFH expects growth in ICU patient days over the next few years as the addition of Dr. John Wang, an interventional neuroradiologist, in September 2008, will enable CFH to again care for aneurysm patients and other advanced neurosciences' patients. The addition of another pediatric intensivist by 2009, will also increase CFH's physician capability to care for acutely ill, complex pediatric patients. Based on these factors, as supported by the ECG analysis, we would expect the ICU to experience a range of 7,588 to 7,967 patient days in 2012 or a range of occupancy of 65% to 68%.

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[10] At other times of the year, the average age skews up based on other pediatric admissions for conditions such as diabetes, drug overdoses and trauma.

[11] According to Section 1100.540(c) of the Planning Board rules.

Family-Centered Care in the ICU

The American College of Critical Care Medicine (ACCM) Task Force has issued clinical practice guidelines for support of patients and their families in the adult, pediatric, or neonatal intensive care unit (ICU). The new recommendations are published in the February 2007 issue of Critical Care Medicine. (Crit Care Med. 2007;35:605-622.)

In 2001, the Institute of Medicine strongly recommended that healthcare delivery systems become patient-centered rather than clinician- or disease-centered, with treatment recommendations and decision making tailored to patients' preferences and beliefs," write Judy E. Davidson, RN, FCCM, and colleagues, of the ACCM Task Force. "Nowhere is the need for patient-centered care greater than in the intensive care unit (ICU), where patient and family involvement can profoundly influence clinical decision making and patient outcomes."

The IOM's patient-centered model incorporates the following features:

- Patients and families are kept informed and actively involved in medical decision-making and self-management.
- Patient care is coordinated and integrated across groups of healthcare providers.
- Healthcare delivery systems provide for the physical comfort and emotional support of patients and family members.
- Healthcare providers have a clear understanding of patients' concepts of illness and their cultural beliefs.
- Healthcare providers understand and apply principles of disease prevention and behavioral change appropriate for diverse populations.

Patients in the ICU are often unable to communicate with health care providers or participate in their own care decisions, mandating that responsibility be assumed by others, usually immediate family members, to function as surrogate decision makers.

Beyond issues of communication in the critical care setting, many patients die in the ICU and clearly, others have experienced severe trauma, extensive surgery, require resuscitation and other labor and equipment intensive intervention which create a significant amount of commotion. These patients, whose lives are often very much in jeopardy, do not currently have the benefit of the appropriate environment for their condition due to the current facilities in the ICU departments.

Obviously, death is a sacred and traumatic moment for both the dying person and that person's family and friends. Severe illness is also very traumatic and many of the issues surrounding death also exist in critical care experiences when the patients

ultimately survive. During the last hours of their lives, most patients require continuous skilled care. Much of that care is provided in an ICU setting as well as in other hospital units. A dying person's care environment should allow family and friends access to their loved one around the clock without disturbing others and should be conducive to privacy and intimacy. Medications, equipment, and supplies need to be available in anticipation of problems. As the patient's condition and the family's ability to cope can change frequently, both must be reassessed regularly and changes in the patient's condition can occur suddenly and unexpectedly, so caregivers must be able to respond quickly. To make the last hours of a person's life as positive as possible, advance preparation and education of professional, family, and volunteer caregivers are essential. The current ICU rooms are not conducive to a positive death experience. Not only is the privacy and intimacy noted above not available but for other patients and family members in adjacent spaces, the trauma of the death experience carries over into the other patient's care setting having an adverse impact on all exposed without consideration to their own illness and crisis.

c. Inpatient Rehabilitation Beds

Fifteen inpatient rehabilitation beds are also being modernized as part of CFH's initiative to provide a full continuum of care at the highest level of service possible. As described more fully in MOD-3, the current 15 inpatient rehabilitation beds are extremely limited in how and for whom they can be used, as none of these beds are private. Further, the cramped space necessarily limits the types of services that can be offered to each patient to return them to activities of daily living. The fact that none of the rooms are private means that new patient admissions are highly dependent on the then current patient mix. Males and females cannot room together and therefore patients may be turned away on any given day based on which beds are available on the day of referral or discharge from the acute bed. However, notwithstanding this inability to accommodate the full universe of patients that it might otherwise be able to on any given day, the utilization rate has grown steadily over the past 3 years to 88% in 2007.

Three-year historic utilization data is set forth in the table below.

GRC-4 Table 3: Inpatient Rehab Bed Utilization for Carle Foundation Hospital: 2004 - 2007		
2005	**2006**	**2007**
Days and ALOS	**Days and ALOS**	**Days and ALOS**
4,287/12.87	4,746/13.41	4,822/13.21
ADC/ % Util	**ADC/ % Util**	**ADC/ % Util**
11.75/78%	13.0/86%	13.21/88%

Cardiac Catheterization Laboratory Modernization

The proposed relocation, modernization and expansion of vascular procedure laboratories and associated support space is necessary to provide expansion for diagnostic treatment, patient care, and other support services to meet the needs of patients. The current and planned vascular procedure space consolidates cardiac catheterization (three labs), electrophysiology (2 labs) and interventional radiology (2 labs). [12]

Between FY 2005 and FY 2007, Carle open heart surgery cases experienced a nominal increase of approximately 5% from 358 cases to 375 cases, reflecting the trend toward non-invasive treatment. During that time, however, the hospital's market share has also increased significantly. Of the 192 open heart surgery patients originating from Champaign County receiving services within the State of Illinois during 2007, 72% of the surgeries were performed at Carle Foundation Hospital. This represents a significant market share increase from 59% in FY2005. Similarly, in the larger geographic area which Carle generally considers its primary service area which is referred to by CFH as the Champaign-Urbana "Hub," the hospital's market share grew from 44% in FY2005 to 56% in FY 2007. (a map of this "HUB" area is attached.) Consistent with the aging population and increasing patient acuity, Carle Emergency Department patient visits that resulted in hospitalization increased about 16%, from 6,476 admissions to 7,492 during that period indicating a general rise in potential cardiology cases. These 7,492 admissions constitute a current Emergency Room admission rate of about 15%.[13]

[12] A "swing" lab is also being modernized. This non-dedicated room allows the hospital to accommodate emergency and urgent cases (i.e., non-elective) without disrupting the scheduled procedures.

[13] Emergency room data is noted because cardiology admissions area primary component of these admissions.

Regarding cardiac catheterization procedure growth, for the same three year period, FY2005 to FY2007 utilization increased 24% per year at CFH from 1,207 procedures to 1,775 overall. If cardiac catheterization procedures increase just 18% over the next five years, the cath labs will perform 2,095 procedures in 2012, the first year of operation of the relocated service. Assuming, approximately 85% of the cases are performed in the three dedicated rooms, in 2012, CFH would expect to perform approximately 590 to 600 procedures in each of the dedicated cardiac cath labs. 300 to 325 would be performed in the non-dedicated lab.

GRC-4 Table 4:
Cardiac Catheterization Services Utilization
Carle Foundation Hospital: 2005- 2007

2005	2006	2007
Procedures	**Procedures**	**Procedures**
1207	1405	1775

To support the cardiology services required by the population it serves, Carle Clinic Association has recruited three additional non-invasive cardiologists, one to start in 2008 and two to start in 2009; and an additional interventional cardiologist to start in 2010.

Impact of Hospital Environment on Patient Care and Outcomes

Some key points relating to quality of care and staff efficiency are described to provide additional support for why the project is needed.

There is increasing evidence that the physical setting in which patients receive medical care has a major impact on patient outcomes. Studies have shown that physical environment impacts a broad range of factors relevant to quality of care including improved patient and staff safety; increased staff effectiveness leading to a reduction in medication and other errors; reduction in hospital-acquired and other infections, caused by airborn pathogens by providing a patient care environment with single-bed rooms, improved HVAC systems, lower stress levels for patients as a result of appropriate lighting, reduced noise, and adequate facilities for family and other support networks; improved patient communication, confidentiality, and privacy; and, ultimately, a reduced length of stay.

In 2004, a report to the Center for Health Design[14] in connection with the "Designing the 21st Century Hospital Project" provided an excellent summary of numerous scientific studies that document a variety of design characteristics which impact the quality of the care and patient outcomes and which will be incorporated in the new bed tower design. A copy of this report is attached hereto as Attachment GRC-4. Single rooms, reduced noise, improved lighting, better ventilation, better ergonomic design, supportive workplaces, and improved layout have all been shown to reduce errors, reduce stress, improve sleep, reduce pain and drugs, and improve other outcomes. The report cited studies that link physical environment to patient and staff outcomes in four distinct areas:

1. Improve staff effectiveness in delivering care.
2. Improve patient safety.
3. Improve outcome and reduce patient stress.
4. Improve overall health care quality.

The report cites more than 120 studies linking infection to the hospital's building environment. It was shown that the design of the hospital's physical environment strongly impacts hospital-acquired infection rates by affecting both airborne and contact transition routes. The report stated that a "clear pattern wherein infection rates are lower when there is very good air quality and patients are in single bed rather than multi-bed rooms." Many environmental surfaces become contaminated near infected patients. Surfaces including overbed tables, bed privacy curtains, computer keyboards, infusion pump buttons, door handles, bedside rails, blood pressure caps, chairs and other furniture, and countertops all become contaminated near infected patients. One study cited in the report found that in the rooms of patients affected with MRSA, 27% of all environmental surfaces sampled were contaminated with MRSA. The report goes on to say that compared to single bed rooms, multi-bed rooms are far more difficult to decontaminate thoroughly after a patient is discharged. Last, single rooms are superior to multi-bed rooms with respect to reducing airborne transmission of pathogens. These considerations are all being addressed in the design of the new bed tower.

Another area where environment has a significant impact is the area of patient confidentiality and privacy. The report cites, for example, a study of an emergency department at a university hospital showing that 100% of physicians and other clinical personnel are not able to respect the confidentiality and privacy of patients due to adjacencies of clinical and bed spaces of one patient to the location of other patients, visitors and to staff who were not involved in the care of the patient at issue. Another study showed that 5% of the patients in curtained spaces reported that they would withhold portions of the medical history and refuse parts of their physical exam because of lack of privacy. Such communication failure can severely impact patient safety and

[14] The Center for Health Design is non-profit research organization of healthcare and design professionals with a mission to improve the quality of health care outcomes through building architecture and design.

outcomes. This not only speaks to the needs for private rooms, but also updating and privatization of preparation and recovery areas by creating accessible but enclosed areas for patients who are awaiting or recovering from surgery in the manner that the CFH plans with respect to cardiac and digestive health preparatory and recovery areas.

There is a growing body of literature that speaks to the necessity of paying close attention to sound and lighting in health care facilities. Appropriate lighting and the control of noise are important to patients of all ages, their families, and staff. A special supplement to the Journal of Perinatology focuses on sound, its impact on fragile infants, and the neonatal environment (Journal of Perinatology, 20(8S), December, 2000.) While this publication focuses specifically on newborn intensive care, much of the information on sound control is very relevant to other areas within health care facilities. Each of the new patient care rooms will be equipped with:

- Adjustable lighting for the bed.
- Adjustable indirect area lighting.
- Individual type, thermally broken aluminum framed windows with preglazed insulated low E glazing.
- Adjustable blinds.
- Full height walls in addition to curtains to provide additional privacy when desired. Currently, only a few of the ICU rooms are enclosed. Instead, they have a simple curtain.
- Controls on the television so that family members and patients do not both have to listen to the television.

Changing the Concept of Families as Visitors: Supporting Family Presence and Participation

Beyond profound physical plant issues, the Applicant is facing an ever increasing and changing patient demand for its services. The former limits what Carle Foundation Hospital can do; while the latter requires the hospital to do more and provide services in a different manner. An example of these divergent forces is illustrated by the need for private rooms with space for family involvement and patient companions. Patient safety and privacy combined with a transformed view of the importance of family involvement during hospitalization which is a complete shift from the "visiting hours" model of former times. While historically nurses have assumed a controlling role relegating the opportunity for family and companions to get close to their loved one to comply with institutional standards.

The Institute of Medicine (IOM) publication, Crossing the Quality Chasm: A New Health Care System for the 21st Century, states that health care must be patient-centered and sets forth several "rules to redesign and improve care," including "shared knowledge and the free flow of information." These principles do not just relate to communications with the patient but also with families and companions of patients. After all, a patient is,

in his essence as a hospitalized person, typically compromised in his ability to fully participate on his own in communications and decision-making.

Today, most health care providers would likely agree that the old paradigm in which a doctor reels off instructions to a mostly passive patient falls somewhere toward the bottom of the effectiveness scale. In the dawning of the pay-for-performance era, engaging patients in self-management is widely considered a more effective way to improve health and outcomes. This approach is sometimes called Collaborative Self-Management Support (CSMS). Recognizing the central role patients and families play in managing chronic conditions, collaborative self-management support means that strong relationships are built among all members of the health care team, including the patient and their family. Collaborative self-management support shifts health care from a traditional provider- or system-centered model to a patient- and family-centered approach. Patients, their family members, and providers respect each others' expertise, share information, build a mutual understanding of the patient's goals, and together create a plan that all can use to guide care at home and in the clinical setting. Patient- and family-centered principles, processes, and approaches need to be supported by the design of the clinical areas including ample room for relatives in clinic areas and at the bedside. A family-centered approach recognizes the value of a partnership between patients, families, and providers at the clinical level.

Patients and families, who are more accustomed to being passive recipients of care, will require time and training to learn new skills and strategies to become active participants in care and decision-making. When administrators, clinicians, patients and families have a shared understanding of, and respect for, what each brings to the health care experience, however, the stage is set for improved care and outcomes. With shared priorities and goals, time will most likely not be wasted on repetitive, ineffective, or counterproductive activities. The possibility of misunderstanding, dissatisfaction, and even medical error is greatly diminished.

Families are no longer viewed as visitors, and units are open 24/7. On many units, families are encouraged to be present for rounds and given choices about how they would like to participate. These patient- and family-centered rounds are linked with the patient's discharge goals. The charge nurse/bedside nurse participate in these rounds and ensure that discharge goals are printed out daily and available for the patient and family. Physician orders are written on a laptop in the patient's room during rounds. Residents review orders out loud so that everyone, including the patient and family, can hear them and verify accuracy.

The emerging quality improvement data indicate:

- Patients are being discharged sooner.

- Medical order entry error rates have been reduced from 7%-9% to 1%.

- Faculty report that patient- and family-centered rounds are a more effective way to teach.

- Families are involved in decision-making.

In order to maintain healthy lives, people with chronic, or long-term, conditions and their families have to manage their condition from day to day. This ***self-management*** often involves understanding and following complex medical regimens, and planning and following through with changes in lifestyle, such as weight loss, stress reduction, or increasing exercise. The goal of self-management support is to strengthen people's competence and confidence to manage their condition, make informed decisions about care, and adopt healthy behaviors.

Find a MUA/MUP

Criteria

State: Illinois
County: Champaign County
ID #: All

Results: 23 records found

Name	ID#	Type	Score	Designation Date	Update Date
Low Inc - Champaign Service Area	00798	GOV MUP	0	1997/08/26	
MCD (03246) Ayers township					
MCD (15482) Colfax township					
MCD (17588) Crittenden township					
MCD (59286) Pesotum township					
MCD (59546) Philo township					
MCD (62952) Raymond township					
MCD (66547) Sadorus township					
MCD (69886) Sidney township					
MCD (70863) South Homer township					
MCD (75627) Tolono township					
Champaign Service Area	00870	MUA	61.50	1994/05/11	
CT 0001.00					
CT 0002.00					
CT 0003.00					
CT 0004.00					
CT 0006.00					
CT 0007.00					
CT 0052.00					
CT 0053.00					
CT 0059.00					
Champaign Service Area	00921	MUA	55.60	1994/05/11	
CT 0014.00					

Source: http://www.hrsa.gov on the web. The Health Resources and Services Administration (HRSA), under the U.S. Department of Health and Human Services, is the primary federal agency for improving access to health care services. This chart indicates that Champaign County has been deemed both a Medically Underserved Area (MUA) and and Medically Underserved Population (MUP). A MUA is an area where the federal government has deemed it to have a shortage of personal health services. A MUP designation shows areas groups of persons face economic, cultural, or linguistic barriers to health care.

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Attachment GRC-4

Carle

Gibson Area Hospital
37 Miles NW
11 mins Airtime

St. Joseph Medical Center
54 miles NW
19 mins Airtime

BroMenn Health Center
56 miles NW
19 mins Airtime

Dr. John Warner Hospital
44 Miles West
15 mins Airtime

Decatur Memorial Hospital & St. Mary's, Decatur
52 Miles SW
18 mins Air Time

John & Mary Kirby Hospital
25 Miles West
8 mins Airtime

Shelby Memorial Hospital
75 Miles SW
23 mins Air Time

St. Anthony's Memorial Hospital
80 Miles South
29 mins Air Time

Clay County Hospital
110 Miles South
40 mins Air Time

Fairfield Memorial Hospital
142 miles South
44 min Airtime

Sarah Bush Lincoln Health Center
52 Miles South
17 mins Airtime

Crawford Memorial Hospital
106 Miles SE
32 mins Airtime

Richland Memorial Hospital
118 Miles South
39 mins Air Time

Lawrence County Memorial Hospital
146 Miles S
44 mins Air Time

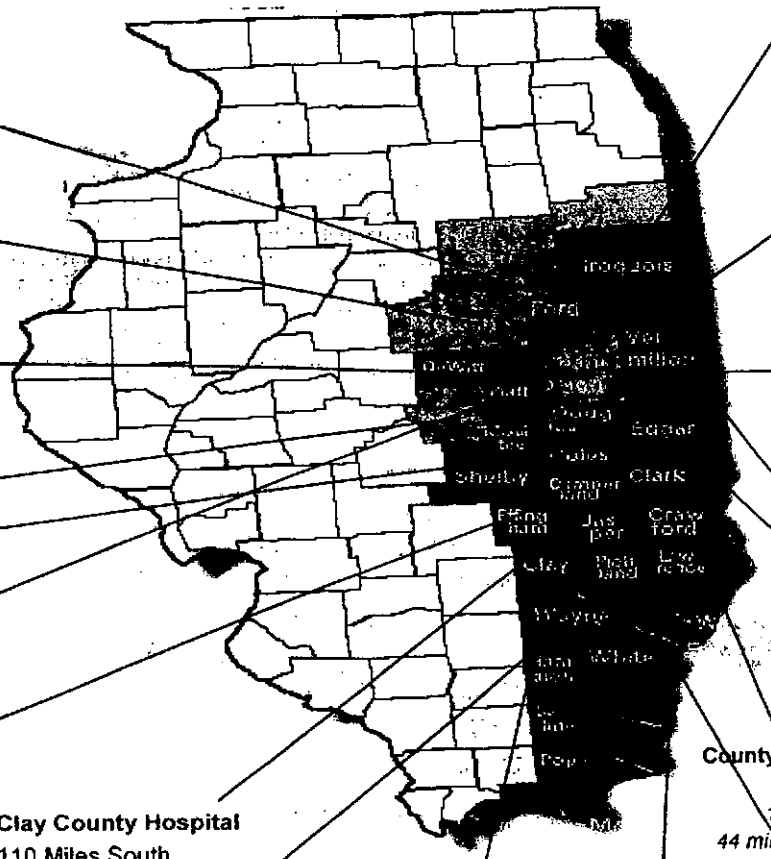
Paris Community Hospital
68 Miles SE
18 mins Airtime

Provena USMC
37 miles E
12 mins Airtime

Provena CMC
1 mile West
5 min ground

Hoopeston Regional Health Center
52 Miles NE
15 mins Airtime

Iroquois Memorial Hospital
66 Miles 66 NW
20 mins Airtime



Attachment GRC-4

CARLE FOUNDATION HOSPITAL
INPATIENT CASES BY PLANNING AREA

FY 2007

PLANNING AREA[8]	NUMBER OF INPATIENT CASES (19,293 PATIENTS TOTAL)	PERCENTAGE
Area D-1	12,320	63.86%
Area D-2	363	1.89%
Area D-3	3,285	17.03%
Area D-4	692	3.59%
Area D-5	1,383	7.17%
Not IL or IN	220	1.14%
Indiana	212	1.10%

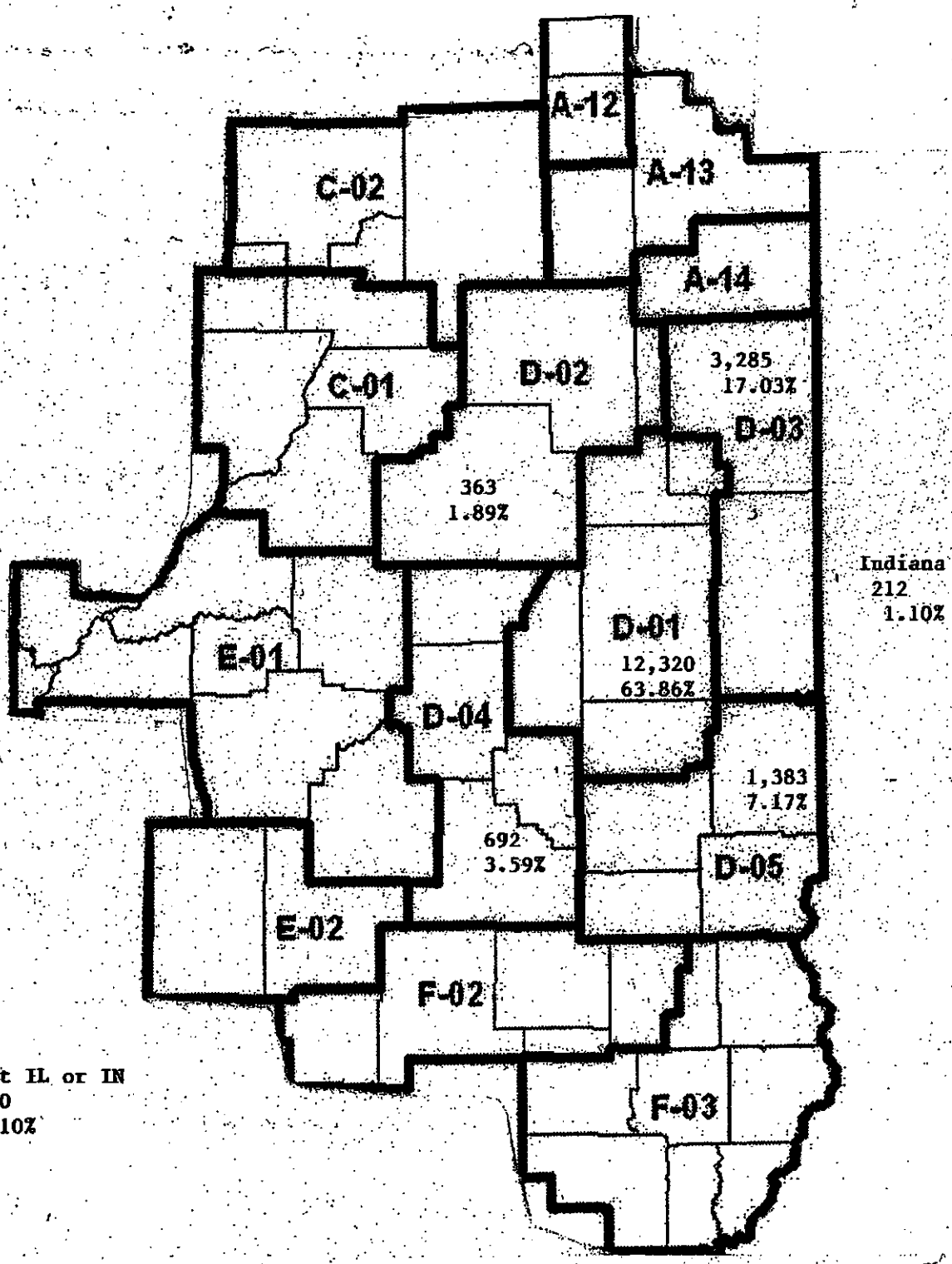
Note: Planning Area D accounts for 93.54% of the inpatient cases with a total of 18,043 inpatient cases.

Attachment GRC-4

[8] Planning Areas other than Planning Area D are not included as they provide less than 0.5%, by county, of the total number of inpatient cases (other than Effingham County, which provides 1.06% and falls in Planning Area F-2 and Crawford County which provides .67% and falls within planning area F-3)

CARLE FOUNDATION HOSPITAL
INPATIENT CASES BY PLANNING AREA

FY 2007



Not IL or IN
220
1.10%

Attachment GRG-4

The Role of the Physical Environment in the Hospital of the 21st Century: A Once-in-a-Lifetime Opportunity

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September 2004

ATTACHMENT GRC-4

The Role of the Physical Environment in the Hospital of the 21st Century: A Once-in-a-Lifetime Opportunity

A visit to a U.S. hospital is dangerous and stressful for patients, families and staff members. Medical errors and hospital-acquired infections are among the leading causes of death in the United States, each killing more Americans than AIDS, breast cancer, or automobile accidents (Institute of Medicine, 2000; 2001). According to the Institute of Medicine in its landmark *Quality Chasm* report: "*The frustration levels of both patients and clinicians have probably never been higher. Yet the problems remain. Health care today harms too frequently and routinely fails to deliver its potential benefits*" (IOM, 2001). Problems with U.S. health care not only influence patients; they impact staff. Registered nurses have a turnover rate averaging 20 percent (Joint Commission on Accreditation of Healthcare Organizations, 2002).

At the same time, the United States is facing one of the largest hospital building booms in US history. As a result of a confluence of the need to replace aging 1970s hospitals, population shifts in the United States, the graying of the baby boom generation, and the introduction of new technologies, the United States will spend more than $16 billion for hospital construction in 2004, and this will rise to more than $20 billion per year by the end of the decade (Babwin, 2002). These hospitals will remain in place for decades.

This once-in-lifetime construction program provides an opportunity to rethink hospital design, and especially to consider how improved hospital design can help reduce staff stress and fatigue and increase effectiveness in delivering care, improve patient safety, reduce patient and family stress and improve outcomes and improve overall healthcare quality.

Just as medicine has increasingly moved toward "evidence-based medicine," where clinical choices are informed by research, healthcare design is increasingly guided by rigorous research linking the physical environment of hospitals to patients and staff outcomes and is moving toward "evidence-based design" (Hamilton, 2003). This report assesses the state of the science that links characteristics of the physical setting to patient and staff outcomes:

- What can research tell us about "good" and "bad" hospital design?
- Is there compelling scientifically credible evidence that design genuinely impacts staff and clinical outcomes?
- Can improved design make hospitals less risky and stressful for patients, their families, and for staff?

In this project, research teams from Texas A&M University and Georgia Tech combed through several thousand scientific articles and identified more than 600 studies—most in top peer-reviewed journals—that establish how hospital design can impact clinical

outcomes. The team found scientific studies that document the impact of a range of design characteristics, such as single-rooms versus multi-bed rooms, reduced noise, improved lighting, better ventilation, better ergonomic designs, supportive workplaces and improved layout that can help reduce errors, reduce stress, improve sleep, reduce pain and drugs, and improve other outcomes. The team discovered that, not only is there a very large body of evidence to guide hospital design, but a very strong one. A growing scientific literature is confirming that the conventional ways that hospitals are designed contributes to stress and danger, or more positively, that this level of risk and stress is unnecessary: improved physical settings can be an important tool in making hospitals safer, more healing, and better places to work.

RESEARCH PROCESS

The research teams searched through scores of databases and in libraries at Texas A&M, Georgia Institute of Technology, University of Michigan, and elsewhere. The team was looking for studies that are:

- Rigorous, in that they use appropriate research methods that allow reasonable comparisons, and discarding of alternative hypotheses. The research studies were assessed on their rigor, quality of research design, sample sizes, and degree of control.

- High impact, in that the outcomes they explore are of importance to healthcare decision-makers, patients, clinicians, and society.

In 1998, Haya Rubin and her colleagues Amanda Owens and Greta Golden found 84 studies produced since 1968 that met similar criteria (Rubin, Owens, & Golden, 1998). Reviewing the research literature six years later, the team estimated that they would find around 125 rigorous studies. We found more than 600.

RESULTS

The research team found rigorous studies that link the physical environment to patient and staff outcomes in four areas:

1. Reduce staff stress and fatigue and increase effectiveness in delivering care
2. Improve patient safety
3. Reduce stress and improve outcomes
4. Improve overall healthcare quality

I. Reduce Staff Stress and Fatigue and Increase Effectiveness in Delivering Care

There is a growing nurse shortage, and this directly threatens patient safety. And the existing hospital-based nursing force is aging. Registered nurses in the United States average more than 43 years old and will average 50 by 2010 and have a turnover rate

averaging 20 percent per year (JCAHO, 2002). The Joint Commission on Accreditation of Healthcare Organizations (JCAHO), in their 2002 report, *Health Care at the Crossroads: Strategies for Addressing the Evolving Nursing Crisis*, noted that a shortage of nurses in America's hospitals is putting patient lives in danger. JCAHO examined 1,609 hospital reports of patient deaths and injuries since 1996 and found that low nursing staff levels were a contributing factor in 24 percent of the cases. The JCAHO report and surveys of nursing found that physical working conditions, along with support and compensation, are key contributors to turnover and burnout. Environmental support for work has become more critical as the typical patient is more seriously ill, patient loads increase, technology changes, and documentation requirements increase.

While reducing staff stress and fatigue through a healing and supportive environment seems like an obvious goal, there are relatively few studies that have dealt with this issue in any detail. More attention has been given to patient outcomes. However, the following sections review several studies that do document (a) effects of healthcare environments on staff health and safety and (b) improving workplaces to increase staff effectiveness, reduce errors, and increase staff satisfaction. Each section also suggests directions for further research.

Improve Staff Health and Safety through Environmental Measures

Nurses, physicians, and other healthcare employees work under extremely stressful physical conditions. Several studies deal with healthcare employees' risk of contracting infectious diseases from patients due to airborne and surface contamination (Jiang et al., 2003; Kromhout et al., 2000; Kumari et al., 1998; Smedbold et al., 2002). A recent study conducted in the wake of the SARS epidemic in China found that isolating SARS cases in wards with good ventilation could reduce the viral load of the ward and might be the key to preventing outbreaks of SARS among healthcare workers, along with strict personal protection measures in isolation units (Jiang et al., 2003). Another study in Norway found correlations between environmental factors and nasal symptoms of 115 females who worked at 36 geriatric nursing departments. They found significant decrease in nasal inflammation in relation to presence of *Aspergillus fumigatus* in ventilation supply and elevated room temperatures (Smedbold et al., 2002). An evaluation of 17 acute-care or university hospitals in Canada shows that tuberculosis (TB) infection among healthcare workers was associated with ventilation of general or nonisolation patient rooms of less than two air exchanges per hour. The evaluation included all personnel who worked at least two days per week in the respiratory and physiotherapy departments (Menzies, Fanning, Yuan, & Fitzgerald, 2000). This study, like the others, supports the importance of adequate ventilation with good maintenance for ensuring both staff and patient safety in hospitals. Several good studies demonstrating the risk of the sick building syndrome in hospitals also have been compiled within the 2003 *Guidelines for Environmental Infection Control in Healthcare Facilities* by the US Centers for Disease Control and Prevention (CDC) and the Healthcare Infection Control Practices Advisory Committee (HICPAC) (Sehulster & Chinn, 2003).

Nursing staff members are also open to risk of injury from medical equipment such as high-intensity surgical-light sources. One study found that a light source used during surgery could potentially cause retinal damage in surgical staff (Fox & Henson, 1996). Much research has examined the effects of noise on patients, but comparatively few studies are available for healthcare staff. There is evidence that staff perceive higher sound levels as stressful (Bayo, Garcia, & Garcia, 1995; Norbeck, 1985). Importantly, noise-induced stress in nurses correlates with reported emotional exhaustion or burnout (Topf & Dillon, 1988). A recent study by Blomkvist et al. (in press, 2004) examined the effects of higher versus lower noise levels on the same group of coronary intensive-care nurses over a period of months. Lower noise levels were linked with a number of positive effects on staff, including reduced perceived work demands, increased workplace social support, improved quality of care for patients, and better speech intelligibility.

Poor ergonomic design of patient beds and nurses' stations leads to back stress, fatigue, and other injuries among nursing staff. In one nursing home study, Garg and Owen evaluated manual tasks deemed stressful by nursing staff and used the information to select patient-transferring devices and to modify toilets and shower rooms. This nursing intervention resulted in a reduction of back injuries of almost 50 percent, from 83 per 200,000 work hours to 47 per 200,000 work hours. Also, in the four months after the intervention, there were no injuries resulting in lost or restricted workdays (Garg & Owen, 1992).

Thus, reducing staff stress by ergonomic interventions, as well as careful consideration of other issues such as air quality, noise, and light, can have significant impact on staff health. In addition, it is also likely to send a message that maintaining health and safety of staff members is an important goal for the organization.

Increase Staff Effectiveness, Reduce Errors, and Increase Staff Satisfaction by Designing Better Workplaces

Jobs by nurses, physicians, and others often require a complex choreography of direct patient care, critical communications, charting, filling meds, access to technology and information, and other tasks. Many hospital settings have not been rethought as jobs have changed, and, as a result, the design of hospitals often increases staff stress and reduces their effectiveness in delivering care. While much research in the hospital setting has been aimed at patients, there is a growing and convincing body of evidence suggesting that improved designs can make the jobs of staff much easier.

Nurses spend a lot of time walking. According to one study, almost 28.9 percent of nursing staff time was spent walking (Burgio, Engel, Hawkins, McCorick, & Scheve, 1990). This came second only to patient-care activities, which accounted for 56.9 percent of observed behavior. At least four studies have shown that the type of unit layout (e.g. radial, single corridor, double corridor) influences amount of walking among nursing staff (Shepley, 2002; Shepley & Davies, 2003; Sturdavant, 1960; Trites, Galbraith, Sturdavant, & Leckwart, 1970), and two studies showed that time saved walking was translated into more time spent on patient-care activities and interaction with family

members. Sturdavant (1960) found that fewer trips were made to patient rooms in radial units as nurses were able to better supervise patients visually from the nursing station, though the average time spent with patients was the same in radial as well as single-corridor designs. Shepley and colleagues (2003) found that nursing staff in the radial unit walked significantly less than staff in the rectangular unit (4.7 steps per minute versus 7.9 steps per minute). However, Shepley and her colleagues noted that radial designs might provide less flexibility in managing patient loads. Trites and colleagues (1970) found that a decrease in the percentage of time spent walking by staff in radial units was correlated to an increase in the percentage of time spent in patient-care activities. Also, the majority of the staff surveyed preferred to work in the radial units. Hendrich's research showed that decentralized nurses stations reduced staff walking and increased patient-care time, especially when supplies also were decentralized and placed near the nurses' station (Hendrich, 2003; IOM, 2004). Centralized location of supplies, however, could double staff walking and substantially reduce care time irrespective of whether nurses stations were decentralized (Hendrich, 2003)

Workplace design that reflects a closer alignment of work patterns and the physical setting, such as redesign of a pharmacy layout, has been shown to improve work flow and reduce waiting times, as well as increase patient satisfaction with the service (Pierce, Rogers, Sharp, & Musulin, 1990). Other studies that compared delivery times in decentralized and centralized pharmacy systems found medication delivery times are reduced by more than 50 percent by using decentralized drug-dose distribution systems (Hibbard, Bosso, Sward, & Baum, 1981; Reynolds, Johnson, & Longe, 1978).

Other aspects of the environment, such as lighting levels and auditory or visual distractions, can also affect staff effectiveness while performing critical tasks such as dispensing medical prescriptions. There are relatively few studies that have examined the effect of environmental factors on medication errors, though this is clearly an area of great interest and future research potential. This is discussed in greater detail in the following section.

II. Improve Patient Safety

Hospital-Acquired Infections

One critically important way that evidence-based design improves safety is by reducing risk from hospital-acquired infections. The research team identified more than 120 studies linking infection to the built environment of the hospital. Transmission of infection to patients occurs through two general routes: airborne and contact. The research literature shows that the design of the physical environment strongly impacts hospital-acquired infection rates by affecting both airborne and contact transmission routes. The literature suggests a clear pattern wherein infection rates are lower when there is very good air quality and patients are in single-bed rather than multi-bed rooms. Also, there is some evidence that providing numerous, easily accessible alcohol-based hand-rub

dispensers or hand washing sinks can increase hand washing compliance and thereby reduce contact contamination.

Reducing Infections Caused by Airborne Pathogens

Evidence from many studies leaves no doubt that hospital air quality and ventilation play decisive roles in affecting air concentrations of pathogens such as fungal spores (*Aspergillus*) and, in this way, have major effects on infection rates.

Source of airborne infections: Well-conducted research has linked all of the following to air quality and infection rates: type of air filter, direction of airflow and air pressure, air changes per hour in room, humidity, and ventilation system cleaning and maintenance (Lutz, 2003; McDonald et al., 1998). For example, in one study where six patients and one nurse were involved with an outbreak of epidemic methicillin-resistant *Staphylococcus aureus* (EMRSA-15), an environmental source was suspected, and the ventilation grilles in two patient bays were found to be harboring EMRSA-15 (Kumari et al., 1998). The ventilation system, at that time, was working on an intermittent cycle from 4:00 p.m. to 8:00 p.m. Daily shutdown of the system created negative pressure, sucking air in from the ward environment into the ventilation system and contaminating the outlet grilles. The contaminated air blew back into the ward when the ventilation system was started. In another case, the source of infection was the exhaust ducting of the adjacent isolation room ventilation system that allowed the contaminants to enter the unit via a partially open window positioned above a particular bed.

Several studies have identified hospital construction and renovation activities as the sources of airborne infection outbreaks due to dust or particulate generation (Humphreys et al., 1991; Iwen, Davis, Reed, Winfield, & Hinrichs, 1994; Loo et al., 1996; Opal et al., 1986; Oren, Haddad, Finkelstein, & Rowe, 2001). In one study, high spore counts were found within and outside construction sites in a hospital. After control measures were instituted, no further cases of disseminated aspergillosis were identified (Opal et al., 1986). In another study, a nosocomial (hospital-induced) outbreak of invasive pulmonary aspergillosis (IPA) occurred in acute leukemia patients treated in a regular ward with natural ventilation during extensive hospital construction and renovation. The observed infection rate was 50 percent. At this point, some of the patients were moved to a new hematology ward with high-efficiency particulate air (HEPA) filters. During the following three years, none of the patients hospitalized exclusively in the hematology ward developed IPA, although 29% of leukemia patients still housed in the regular ward contracted IPA (Oren et al., 2001).

Controlling and preventing airborne infection: There is convincing evidence that immunocompromised and other high-acuity patient groups have lower incidence of infection when housed in a HEPA-filtered isolation room (Passweg et al., 1998; Sherertz, et al., 1987; Sherertz & Sullivan, 1985). In one study, bone-marrow transplant recipients were found to have a tenfold greater incidence of nosocomial *Aspergillus* infection, compared to other immunocompromised patient populations, when assigned beds outside of a HEPA-filtered environment (Sherertz, et al., 1987). Air contamination is least in

laminar airflow rooms with HEPA filters, and this approach is recommended for operating-room suites and areas with ultraclean room requirements such as those housing immunocompromised patient populations (Alberti et al., 2001; Arlet, Gluckman, Gerber, Perol, & Hirsch, 1989; Dharan & Pittet, 2002; Friberg, Ardnor, & Lundholm, 2003; Hahn et al., 2002; Sherertz, et al., 1987). (Laminar flows are very even, smooth, low velocity airflows that are used in cleanrooms and other settings where high quality ventilation is critical. But laminar flows are relatively expensive and difficult to achieve because furnishings, vents and other features can create turbulence.) HEPA filters are suggested for healthcare facilities by the CDC and HICPAC, but are either required or strongly recommended in all construction and renovation areas (Schulster & Chinn, 2003).

Effective prevention or control measures during construction and renovation activities include, for example, portable HEPA filters, installing barriers between the patient care and construction areas, negative air pressure in construction/renovation areas relative to patient-care spaces, and sealing patient windows. There is strong evidence of the impact of using HEPA filters for air intakes near construction and renovation sites (Loo et al., 1996; Mahieu, De Dooy, Van Laer, Jansens, & Ieven, 2000; Opal et al., 1986; Oren et al., 2001). A strong study by Humphreys (1991) demonstrates that HEPA filters are not *by themselves* an adequate control measure, and must be employed in conjunction with other measures such as enhanced cleaning, the sealing of windows, and barriers. Cornet et al. (1999) concludes that carefully directed airflow (e.g. laminar airflow) is important, however, we were unable to find and document cost-benefit analysis in the literature to justify the expense versus effectiveness of laminar airflow for patient-care areas near construction and renovation sites

Reducing Infections by Increasing Hand Washing

Although infection caused by airborne transmission poses a major safety problem, most infections are now acquired in the hospital via the contact pathway (Bauer, Ofner, Just, Just, & Daschner, 1990; IOM, 2004). It is well-established that the hands of healthcare staff are the principal cause of contact transmission from patient to patient (Larson, 1988). The importance of assiduous hand washing by healthcare workers, accordingly, cannot be overemphasized for reducing hospital-acquired infections. In this context, the fact that rates of hand washing by healthcare staff are low represents a very serious patient safety challenge. Several studies of hand washing in high-acuity units with vulnerable patients have found that as few as one in seven staff members wash their hands between patients: compliance rates in the range of 15 percent to 35 percent are typical; rates above 40 percent to 50 percent are the exception (Albert & Condie, 1981; Graham, 1990). Hand washing compliance tends to be consistently lower in units that are understaffed and have a high patient census or bed-occupancy rate (Archibald, Manning, Bell, Banerjee, & Jarvis, 1997).

Education programs to increase hand washing adherence have yielded disappointing or, at best, mixed results. Some investigations have found that education interventions generate no increase at all in hand washing. Even intensive education or training

programs (classes, group feedback, for example) produce only transient increases in hand washing (Conly, Hill, Ross, Lertzman, & Louie, 1989; Dorsey, Cydulka, & Emerman, 1996; Dubbert, Dolce, Richter, Miller, & Chapman, 1990). Given the tremendous morbidity and mortality associated with high rates of hospital-acquired infections, there is an urgent need to identify more effective ways for producing sustained increases in hand washing. Is there evidence suggesting improved hospital design can be effective in elevating hand washing?

Effect of number and location of sinks/dispensers on hand washing: The research team identified six studies that examined whether hand washing is improved by increasing the ratio of the number of sinks or hand-cleaner dispensers to beds and/or by placing sinks or hand-cleaner dispensers in more accessible locations (Cohen, Saiman, Cimiotti, & Larson, 2003; Graham, 1990; Kaplan & McGuckin, 1986; Muto, Sistrom, & Farr, 2000; Pittet et al., 2000; Vernon, Trick, Welbel, Peterson, & Weinstein, 2003). These studies, on balance, offer support, though limited, for the notion that providing numerous, conveniently located alcohol-rub dispensers or washing sinks can increase compliance. In particular, the evidence suggests that installing alcohol-based hand-cleaner dispensers at bedside usually improves adherence. As an example, a study by Pittet et al. (2000) found that a combination of bedside antiseptic hand-rub dispensers and posters to remind staff to clean their hands substantially increased compliance. Cohen et al. (2003) likewise reported improved adherence in association with the installation of numerous alcohol-gel dispensers. By contrast, Muto et al. (2000) reported that placing alcohol-gel dispensers next to the doors of patient rooms did not increase adherence. Two other investigations focusing on sinks (water/soap) identified a positive relationship between observed frequency of hand washing and a higher ratio of sinks to beds (Kaplan & McGuckin, 1986; Vernon et al., 2003). Providing automated water/soap sinks, however, appears not to increase hand washing rates compared to traditional non-automated sinks (Larson, et al., 1991; Larson, Bryan, Adler, & Blane, 1997).

Further, three studies offer convincing and important evidence that providing single-patient rooms with a conveniently located sink in each room reduces nosocomial infection rates in intensive care units, such as neonatal intensive care (NICU) or burn units, compared to when the same staff and comparable patients are in multibed open units with few sinks (Goldmann, Durbin, & Freeman, 1981; McManus, A. T., Mason, McManus, & Pruitt, 1994; McManus, A. T., McManus, Mason, Aitcheson, & Pruitt, 1985; Mulin et al., 1997). Although hand washing frequency was not measured in these studies, the investigators posited that increased hand washing was an important factor in reducing infections in the units with single rooms and more sinks. A comparison of an ICU converted from an open unit with few sinks to single rooms with one sink per room found a nonsignificant tendency for hand washing to increase (from 16 percent to 30 percent) but no decline in infection incidence (Preston, Larson, & Stamm, 1981). These results are perhaps explainable by the fact that several sinks in the single-bed unit were placed in comparatively inaccessible or inconvenient locations, such as behind doors or away from staff work paths.

Despite the encouraging overall pattern of findings in these studies, it is not clear how much of the effectiveness in terms of increased hand washing or reduced infection rates can be attributed to the installation of more numerous and/or accessible sinks and alcohol-gel dispensers. Future research should include controlled experiments that systematically vary the number and location of hand-cleaning stations or dispensers. There is also a conspicuous need for studies that define *accessible* locations for hand-cleaning stations in an evidence-based manner—that is, on the basis of empirical analysis of staff movement paths, visual fields, interactions with patients and families, and work processes. In this regard, the neglect of *human factors* knowledge and research methods is a major weakness of the hand washing research and, more generally, of the infection control literature. Research teams should include a human factors specialist and often an environmental psychologist. The urgent need to increase hand washing frequency underscores the high priority that should be accorded this research direction.

Reducing Infections with Single-Bed Rooms

The research team identified at least 16 studies relevant to the question of whether nosocomial infection rates differ between single-bed and multi-bed rooms. The findings collectively provide a strong pattern of evidence indicating that infection rates are usually lower in single-bed rooms. Different mechanisms or factors have been identified or implicated as contributing to lower infection incidence in single rooms. One clear set of advantages relates to reducing airborne transmission through air quality and ventilation measures such as HEPA filters, negative room pressure to prevent a patient with an aerial-spread infection from infecting others, or maintaining positive pressure to protect an immunocompromised patient from airborne pathogens in nearby rooms. A strong study by Passweg et al. (1998) found that the combination of room isolation and HEPA filtration reduced infection and mortality in bone marrow transplant patients and significantly increased their one-year survival rates. Research studying burn patients also has shown that single rooms and good air quality substantially reduce infection incidence and reduce mortality (McManus, A. T. et al., 1994; McManus, A.T., Mason, McManus, & Pruitt, 1992; Shirani et al., 1986; Thompson, Meredith, & Molnar, 2002). Studies of cross-infection for contagious airborne diseases (influenza, measles, TB, for example) have found, as would be expected, that placing patients in single rooms is safer than housing them in multibed spaces (Gardner, Court, Brocklebank, Downham, & Weightman, 1973; McKendrick & Emond, 1976).

Severe Acute Respiratory Syndrome (SARS) outbreaks in Asia and Canada dramatically highlighted the shortcomings of multibed rooms for controlling or preventing infections both for patients and healthcare workers. SARS is transmitted by droplets that can be airborne over limited areas. Approximately 75 percent of SARS cases in Toronto resulted from exposure in hospital settings (Farquharson & Baguley, 2003). The pervasiveness in Canadian and Asian hospitals of multibed spaces in emergency departments and ICUs, together with the scarcity of isolation rooms with negative pressure, severely hindered treatment and control measures. Toronto hospitals were forced to create additional negative-pressure isolation rooms by quickly constructing wall barriers to replace bed curtains and making airflow and pressure adaptations (Farquharson & Baguley, 2003).

In addition to clear advantages in reducing airborne transmission, several studies show that single-bed rooms also lessen risk of infections acquired by contact. As background for understanding how single rooms can lessen contact spread, it should first be mentioned that many environmental surfaces and features become contaminated near infected patients. Examples of surfaces found to be contaminated frequently via contact with patients and staff include: overbed tables, bed privacy curtains, computer keyboards, infusion pump buttons, door handles, bedside rails, blood pressure cuffs, chairs and other furniture, and countertops (Aygun et al., 2002; Boyce, Potter-Bynoe, Chenevert, & King, 1997; Bures, Fishbain, Uyehara, Parker, & Berg, 2000; Devine, Cooke, & Wright, 2001; Neely & Maley, 2001; Noskin, Bednarz, Suriano, Reiner, & Peterson, 2000; Palmer, 1999; Roberts, Findlay, & Lang, 2001; Rountree, Beard, Loewenthal, May, & Renwick, 1967; Sanderson & Weissler, 1992; Williams, Singh, & Romberg, 2003). These and other contaminated surfaces and features act as pathogen reservoirs that increase cross-infection risk. Boyce et al. (1997) found that in the rooms of patients infected with methicillin-resistant *Staphylococcus aureus* (MRSA), 27 percent of all environmental surfaces sampled were contaminated with MRSA

Compared to single-bed rooms, multi-bed rooms are far more difficult to decontaminate thoroughly after a patient is discharged, and therefore worsen the problem of multiple surfaces acting as pathogen reservoirs. Because different staff members who enter a room can touch the same contaminated surfaces, the risk of a nurse unknowingly becoming contaminated should be greater in multioccupancy rooms. Circumstantial support for this point is provided by research on contamination of nurses in units having patients infected by MRSA. Boyce et al. (1997) found that 42 percent of nurses who had no direct contact with an MRSA patient but had touched contaminated surfaces contaminated their gloves with MRSA.

In a study of MRSA infections in NICUs, Jernigan et al. (1996) reported that risk was lowered by isolation in single-bed rooms; high risk was associated with spatial proximity to an infected patient and shared exposure to caregivers. Ben-Abraham et al. (2002) found that nosocomial infection frequency was much lower in a single-bed pediatric intensive care unit than a unit with multi-bed rooms. The investigators tentatively concluded that single-bed rooms helped to limit person-to-person spread of pathogens between pediatric patients. Having a roommate has been identified as a risk factor for nosocomial diarrhea and gastroenteritis (Chang, V. T. & Nelson, 2000; Pegues & Woernle, 1993).

To summarize briefly, there is a convincing pattern of evidence across many studies indicating that single-bed rooms lower nosocomial infection rates. Singles appear to limit person-to-person and person-surface-person spread of infection in part because they are far easier to decontaminate thoroughly than multibed rooms after patients are discharged. Also, single rooms with a conveniently located sink or alcohol-gel dispenser in each room may heighten hand washing compliance compared to multibed rooms with few sinks. Finally, single rooms are clearly superior to multi-bed rooms with respect to reducing airborne transmission of pathogens.

Reducing Medication Errors

The research team identified three rigorous studies that link environmental factors, such as lighting, distractions, and interruptions, with errors in prescribing or dispensing medications (Booker & Roseman, 1995; Buchanan, Barker, Gibson, Jiang, & Pearson, 1991; Flynn et al., 1999). Although there are relatively few studies in this area, the findings suggest a promising research direction that merits further exploration, considering the vital importance of preventing medical errors in hospitals. Results from a large-scale study of the effects of different illumination levels on pharmacists' prescription-dispensing error rates strongly suggested that such errors are reduced when work-surface light levels are relatively high (Buchanan et al., 1991). In this study, three different illumination levels were evaluated (450 lux, 1,100 lux, 1,500 lux). Medication-dispensing error rates were significantly lower (2.6 percent) at an illumination level of 1,500 lux (highest level), compared to an error rate of 3.8 percent at 450 lux. Two investigations of medication dispensing errors by hospital pharmacists found that error rates increased sharply for prescriptions when an interruption or distraction occurred, such as a telephone call (Flynn et al., 1999; Kistner, Keith, Sergeant, & Hokanson, 1994). Thus, lighting levels, frequent interruptions or distractions during work, and inadequate private space for performing work can be expected to worsen medication errors. The process of improving systems and processes to reduce medication errors in hospitals should include an assessment of the environment in which staff members perform their activities. Additional research is required to confirm the findings from studies as well as to identify ways to design better working environments that may reduce or prevent the likelihood of such errors occurring.

There is mounting evidence that the transfer of patients between rooms or different units is a source of medication errors (Cook, Render, & Woods, 2000). Reasons why errors plague room transfers include delays, communication discontinuities among staff, loss of information, and changes in computers or systems. The solution implied is to create an acuity-adaptable care process and patient rooms that substantially reduce transfers. When Methodist Hospital in Indianapolis, Indiana, changed from two-bed rooms in coronary intensive care to acuity-adaptable single-bed rooms, transfers declined 90 percent and medication errors were lowered by 67 percent (Hendrich, Fay, & Sorrells, 2002; 2004). Reducing transfers also saves much staff time, shortens patient stays, and reduces costs (IOM, 2004). Further studies and demonstration projects are needed to ascertain the safety advantages of acuity-adaptable rooms for other types of units and patient categories.

Reduce Patient Falls

There is a very large literature that looks at the causes and risk factors involved in patient falls in hospitals. This is an area of great importance because patients who fall incur physical injuries, psychological effects, and have greater lengths of stay in the hospital (Brandis, 1999). It is estimated that the total cost of fall injuries for older people was

around $20.2 billion per year in the United States in 1994, and is projected to reach $32.4 billion (in 1994 U.S. dollars) in 2020 (Chang, 2004). While the role of the environment in causing or preventing patient falls is widely accepted, there is not yet evidence conclusively tying environmental interventions with reduced falls. Available studies usually examine the location of fall incidents retrospectively or discuss environmental-modification programs such as improving lighting, securing carpeting, and so on. However, a meta-analysis and systematic review of randomized controlled trials of fall-prevention interventions found that there was no clear evidence for the independent effectiveness of environmental-modification programs (Chang, 2004).

Nonetheless, several studies have shown that most patient falls occur in the bedroom, followed by the bathroom, and that comprehensive fall-prevention programs can have an effect. Brandis (1999) reported transfers to and from bed as the cause of 42.2 percent of inpatient falls. Design faults identified in the bathroom and bedroom areas included slippery floors, inappropriate door openings, poor placement of rails and accessories, and incorrect toilet and furniture heights. After the fall-prevention program (which included identifying high-risk patients, management strategies, environmental and equipment modification, and standardization) was implemented, there was an overall decrease of 17.3 percent in falls. Thus, fall-prevention strategies that have included environmental modification have worked in the past. However, it is not clear how much of the effectiveness of such strategies can be attributed to environmental factors alone.

An innovative and promising environmental strategy for reducing falls has its origins in evidence suggesting that many falls occur when patients attempt to get out of bed unassisted or unobserved (Uden, 1985; Vassallo, Azeem, Pirwani, Sharma, & Allen, 2000). It should be mentioned that considerable evidence has shown that bedrails are ineffective for reducing the incidence of falls and may increase the severity of fall injuries from beds (Capezuti, Maislin, Strumpf, & Evans, 2002; Hanger, Ball, & Wood, 1999; van Leeuwen, Bennett, West, Wiles, & Grasso, 2001). To increase observation and improve assistance for patients and thereby reduce falls, Methodist Hospital in Indianapolis, Indiana, changed from a coronary critical care unit with centralized nurses stations and two-bed rooms to one having decentralized nurses stations and large single-bed rooms designed to support family presence (Hendrich, et al., 2002). Comparison of data from two years prior and three years after the new unit design showed that falls were cut by 2/3—from six-per-thousand patients to two-per-thousand. Given that falls are a critical safety problem, additional research is needed to understand the effectiveness of this approach for designing patient-care units.

Improve Patient Confidentiality and Privacy

Confidentiality has emerged as a priority issue in light of research showing that physicians and nurses very frequently breach patient confidentiality and privacy by talking in spaces where they are overhead by other patients or persons (Ubel, Zell, & Miller, 1995). The seriousness of the problem is underscored, for example, by a study of an emergency department at a university hospital that showed that 100 percent of physicians and other clinical personnel committed confidentiality and privacy breaches

(Mlinek & Pierce, 1997). HIPAA, the Health Insurance Portability and Accountability Act of 1998, has further elevated the importance of providing reasonable safeguards to protect the confidentiality of staff conversations with and about patients.

Although the importance of the built environment for patient confidentiality may seem self-evident, only a few studies have directly examined the role of unit design or architecture. A study by Barlas et al. (2001) compared auditory and visual privacy for emergency department patients assigned to either multibed spaces with curtain partitions or rooms with solid walls. Those with curtains reported having far less auditory and visual privacy than patients with walls. An important finding was that 5 percent of the patients in curtained spaces reported they withheld portions of their medical history and refused parts of their physical examination because of lack of privacy (Barlas et al., 2001). None of the patients in rooms with walls reported withholding information. The fact that some emergency department patients with curtains withheld information suggests that lack of privacy can reduce patient safety. Additional convincing evidence of the importance of the emergency department physical environment comes from a study that documented frequent breaches of auditory and visual privacy and confidentiality in areas with curtains compared to rooms with solid walls (Mlinek & Pierce, 1997). A recent questionnaire study of staff in four West Coast hospitals found that nurses overwhelmingly judged single rooms to be superior to double rooms for examining a patient (85 percent) and for collecting a patient's history (82 percent) (Chaudhury, Mahmood, & Valente, 2003).

There is a clear need for additional studies that examine privacy and confidentiality breaches associated with the physical environment in single versus double rooms, multibed spaces in ICUs and other types of units, and in spaces such as waiting rooms and nurses' stations. As well, priority should be accorded to generating more research that investigates how the quality of communication and information *from* patients *to* physicians and nurses is affected by the unit architecture.

Analysis of patient satisfaction data made available by Press Ganey (2003) for this report leaves no doubt that patients in single-bed rooms, compared to those with a roommate, are consistently much more satisfied with "concern for your privacy." The satisfaction data were obtained from 2,122,439 patients who received care during 2003 in 1,462 healthcare facilities (Press Ganey, 2003). Fifty-six percent of the patients were in single rooms; 44 percent had a roommate. Greater satisfaction with privacy in single rooms was evident across all major patient categories and types of unit and across different age and gender groups. Satisfaction with privacy was 4.5 percent higher on average nationally in single rooms than doubles—a substantial difference considering that it can be difficult for hospitals to increase satisfaction scores by even 1 percent to 2 percent.

III. Reduce Stress and Improve Outcomes

Reduce Noise

The research team identified more than 130 references focusing on noise in hospitals in the research literature. Studies tend to fall into three broad categories: those that measure noise levels in hospital spaces but do not assess outcomes, studies of the effectiveness of environmental and/or organizational interventions in reducing noise, and investigations of the effects of noise on outcomes.

World Health Organization guideline values for continuous background noise in hospital patient rooms are 35 dB, with nighttime peaks in wards not to exceed 40 dB (Berglund, Lindvall, & Schwela, 1999). These guidelines notwithstanding, many studies have shown that hospital background noise levels fall in far higher ranges. Background noise levels typically are 45 dB to 68 dB, with peaks frequently exceeding 85 dB to 90 dB (Aaron et al., 1996; Allaouchiche, Duflo, Debon, Bergeret, & Chassard, 2002; Blomkvist et al., in press, 2004; Falk & Woods, 1973; Hilton, 1985; McLaughlin, McLaughlin, Elliott, & Campalani, 1996; Robertson, Cooper-Peel, & Vos, 1998). In judging these noise levels, it is worth noting that the decibel scale is logarithmic; each 10 dB increase represents approximately a doubling in the perceived sound level. A 60 dB sound, accordingly, is perceived as roughly four times as loud as a 40 dB sound. Medical equipment and staff voices often produce 70 dB to 75 dB levels measured at the patient's head, which approach the noise level in a busy restaurant (Blomkvist et al., in press, 2004). Noises from alarms and certain equipment exceed 90 dB (for example, portable X-ray machine), which is comparable to walking next to a busy highway when a motorcycle or large truck passes. A study in a NICU measured peak levels once per minute and found that 31 percent of peaks exceed 90 dB (Robertson et al., 1998). Noise peaks in hospitals can be extraordinarily loud. A recent study recorded 113 dB during shift changes at a large hospital (Cmiel, Karr, Gasser, Oliphant, & Neveau, 2004). Operating room noises from drills, saws, and other equipment are in the range of 100 dB to 110 dB, presenting a significant risk for noise-induced hearing loss (Hodge & Thompson, 1990; Love, 2003; Nott & West, 2003).

The research reviewed suggests that hospitals are excessively noisy for two general reasons (Ulrich, Lawson, & Martinez, 2003). First, noise sources are numerous, often unnecessarily so, and many are loud. Well-documented examples include paging systems, alarms, bedrails moved up/down, telephones, staff voices, ice machines, pneumatic tubes, trolleys, and noises generated by roommates. Second, environmental surfaces—floors, walls, ceilings—usually are hard and sound-reflecting, not sound-absorbing, creating poor acoustic conditions. Sound-reflecting surfaces cause noise to propagate considerable distances, traveling down corridors and into patient rooms, and adversely affecting patients and staff over larger areas. Sound-reflecting surfaces typical of hospitals cause sounds to echo, overlap, and linger or have long reverberation times (Blomkvist et al., in press, 2004; Ulrich et al., 2003).

Environmental interventions that have proven especially effective for reducing noise and improving acoustics in hospital settings include: installing high-performance sound-absorbing ceiling tiles, eliminating or reducing noise sources (for example, adopting a noiseless paging system), and providing single-bed rather than multibed rooms. In general, studies of the effectiveness of noise-reduction measures suggest that environmental or design interventions are more successful than organizational interventions such as staff education or establishing quiet hours (Gast & Baker, 1989; Moore, 1998; Walder, Francioli, Meyer, Lancon, & Romand, 2000).

A clear-cut finding in the literature is that noise levels are much lower in single-bed than multi-bed rooms. Studies of multi-bed rooms in acute care and intensive care units have shown that most noises stem from the presence of another patient (staff talking, staff caring for other patients, equipment, visitors, patient sounds such as coughing, crying out, rattling bed rails) (Baker, 1984; Southwell & Wistow, 1995; Yinnon, Ilan, Tadmor, Altarescu, & Hershko, 1992). A study of multi-bed bays in a children's hospital concluded that noise levels were so high that consideration should be given to abolishing open bay rooms (Couper et al., 1994). Further, patient satisfaction data provided for this report by Press Ganey (2003) unequivocally show that patients in single-bed rooms, compared to those with a roommate, are vastly more satisfied with the "noise levels in and around your room." The satisfaction data, as noted in an earlier section, were obtained from 2,122,439 patients who received care during 2003 in 1,462 healthcare facilities (Press Ganey, 2003). Far higher satisfaction with noise levels in single rooms was evident across all major patient categories and types of unit and across different age and gender groups. Satisfaction with noise level was 11.2 percent higher on average nationally in single rooms than doubles—a huge difference. As was noted above, it can be difficult for hospitals to achieve even 1 percent to 2 percent increases in patient satisfaction scores. The combination of findings from noise-level measurement studies and patient-satisfaction surveys highlight the great advantage of providing single rooms, compared to two-bed rooms, with respect to reducing noise.

A considerable body of research has documented negative effects of noise on patient outcomes. Several studies have focused on infants in NICUs, finding that higher noise levels, for example, decrease oxygen saturation (increasing need for oxygen support therapy), elevate blood pressure, increase heart and respiration rate, and worsen sleep (Johnson, 2001; Slevin, Farrington, Duffy, Daly, & Murphy, 2000; Zahr & de Traversay, 1995). Much research on adults and children has unequivocally shown, as might be expected, that noise is a major cause of awakenings and sleep loss (Blomkvist et al., in press, 2004; Gabor et al., 2003; Meyer et al., 1994; Parthasarathy & Tobin, 2004; Schnelle, Ouslander, Simmons, Alessi, & Gravel, 1993; Topf, 1985; Topf & Davis, 1993; Topf & Thompson, 2001; Yinnon et al., 1992). In multi-bed rooms, noises stemming from the presence of other patients often are the major cause of sleep loss. Berg (2001) found, by monitoring brain activity, that even relatively low decibel levels—38 dB to 40 dB—when coupled with longer reverberation times (sound-reflecting ceiling) significantly fragmented and worsened sleep of volunteers in patient rooms. Berg's (2001) findings have disturbing implications because most hospitals have nighttime sound peaks exceeding those of the patient rooms in his study.

Apart from worsening sleep, there is strong evidence that noise increases stress in adult patients, for example, heightening blood pressure and heart rate (Baker, 1992; Morrison, Haas, Shaffner, Garrett, & Fackler, 2003; Novaes, Aronovich, Ferraz, & Knobel, 1997; Topf & Thompson, 2001). A recent study by Blomkvist et al. (in press, 2004) examined the effects of poor versus good sound levels and acoustics on coronary intensive-care patients by periodically changing the ceiling tiles from sound-reflecting to sound-absorbing tiles. When the sound-absorbing ceiling tiles were in place, patients slept better, were less stressed (lower sympathetic arousal), and reported that nurses gave them better care. There were also indications in this study that the incidence of re-hospitalization was lower if patients had experienced the sound-absorbing rather than sound-reflecting ceiling during their hospital stay (Hagerman et al., in press, 2004). More studies are needed such as that by Blomkvist et al. (in press, 2004), which use experimental research designs and systematically vary noise conditions. Future research should also investigate the effects of noise on re-hospitalization rates and other outcomes. In sum, the main message from the research review is clear: new hospitals should be much quieter, and effective design strategies for quieting hospitals are available.

Improve Sleep

The above section reviewed many studies showing that noise levels are high in hospitals and that noise is a major cause of poorer sleep in patients. Interventions that reduce hospital noise have been found to improve sleep and reduce patient stress. As noted earlier, environmental interventions found to be most effective for reducing noise in hospital settings include: providing single-bed rather than multi-bed rooms, installing high-performance, sound-absorbing ceiling tiles, using sound-absorbing flooring where possible, and eliminating or reducing noise sources (for example, use noiseless paging, locate alarms outside patient rooms).

Reduce Spatial Disorientation

Wayfinding problems in hospitals are costly and stressful and have particular impacts on outpatients and visitors, who are often unfamiliar with the hospital and are otherwise stressed and disoriented. In a study conducted at a major regional 604-bed tertiary-care hospital, the annual cost of the wayfinding system was calculated to be more than $220,000 per year in the main hospital or $448 per bed per year in 1990. Much of this cost was the hidden costs of direction giving by people other than information staff, which occupied more than 4,500 staff hours, the equivalent of more than two full-time positions (Zimring, 1990). While almost all hospitals strongly feel the problems associated with a complicated building and poor wayfinding system, it is usually difficult to tackle this problem with a piecemeal approach. A wayfinding system, as the name implies, is not just about better signage or colored lines on floors. Rather, hospitals are seeking to provide integrated systems that include coordinated elements such as visible and easy-to-understand signs and numbers, clear and consistent verbal directions, consistent and clear paper, mail-out and electronic information and a legible physical

setting (Carpman, 1993). A wayfinding system includes four main components that work at different levels: administrative and procedural levels, external building cues, local information and global structure

Administrative and procedural information: Mail-out maps, electronic information available on the Web and at kiosks and verbal directions are organizational strategies aimed at providing key information to patients to prepare them for their hospital visit. This is not dealt with in this review.

External building cues: Signs and cues that lead to the hospital, especially the parking lot, need to be considered carefully, as they are the first point of contact of the patient with the hospital (Carpman, Grant, & Simmons, 1985). For example, Carpman, Grant and Simmons conducted a video simulation study to assess the relative role of signs and seeing a destination. The hospital wanted to direct most traffic to a parking structure rather than a drop-off lane. When the researchers showed prospective visitors a simulated video showing a design alternative that allow arriving drivers to see the main pavilion with the drop-off lane, 37 percent of the respondents said that they would turn into the drop circle when they could see the entry to the garage, ignoring the signs. As a consequence, the hospital chose to redesign the entry.

Local information: Once patients find their way to the building from the parking lot, they are faced with the prospect of identifying the destination. Informational handouts, information desks, you-are here maps, directories, and signage along the way are critical wayfinding aids (Carpman, Grant, & Simmons, 1983-84; Levine, Marchon, & Hanley, 1984; Nelson-Shulman, 1983-84; Wright, Hull, & Lickorish, 1993). In an experimental study, researchers found that patients who had the benefit of an information system (welcome sign, hospital information booklet, patient letter, orientation aids) upon reaching the admitting area were more self-reliant and made fewer demands on staff. In contrast, uninformed patients rated the hospital less favorably and were found to have elevated heart rates (Nelson-Shulman, 1983-84).

Information provided in you-are-here maps can be useful. However, you-are-here maps should be oriented so that the top signifies the direction of movement for ease of use. When the maps were aligned in directions other than the forward position, people not only took much longer to find their destination, but were significantly less accurate (Levine et al., 1984). Another study found that people who used signs found their destination faster than those who only used maps (Butler, Acquino, Hissong, & Scott, 1993). However, people who were given a combination of handheld maps and wall signs reached their destination more often than those who just used wall signs (Wright et al., 1993).

It is critical to design signage systems with logical room numbering and comprehensible nomenclature for departments (Carpman & Grant, 1993; Carpman, Grant, & Simmons, 1984). For example, inpatients, outpatients, and visitors to a hospital preferred simple terms such as *walkway* or *general hospital* over more complex or less-familiar terms such as *overhead link, medical pavilion* or *health-sciences complex*.

Contrary to the belief that fewer signs in hospital hallways means less clutter and hence less confusion, an experimental study in a hospital found that patients who had access to more number of signs along the way to the destination were faster, less hesitant, asked for directions a fewer number of times, and reported lower levels of stress (Carpman et al., 1984). Based on this study, the authors suggest that directional signs should be placed at or before every major intersection, at major destinations, and where a single environmental cue or a series of such cues (e.g. change in flooring material) convey the message that the individual is moving from one area into another. If there are no key decision points along a route, signs should be placed approximately every 150 feet to 250 feet.

Global structure: In addition to local properties of the spaces that people move through, there are specific characteristics of the overall structure of the system of rooms and corridors that impact the paths people take (Haq & Zimring, 2003; Peponis, Zimring, & Choi, 1990). People tend to move toward spaces and through corridors that are more accessible from a greater number of spaces. Based on observations of search patterns of study participants in a hospital and use of objective measures that quantify spatial characteristics, researchers found that participants tended to move along more "integrated" routes—routes that are, on average, more accessible because they are fewer turns from all other routes in the hospital. This research suggests that it may be important to identify such integrated routes in the plan while placing important facilities and key points such as the entrance (Peponis et al., 1990).

The research supports the value of a systems approach to wayfinding. Wayfinding continues to be a pervasive problem in hospitals because it is not sufficient to consider one or two components separately. Well-designed signs are likely to be quite ineffective in a building that is highly complicated and does not provide simple cues that enable natural movement. While there are more than 17 studies that look at wayfinding in hospitals and other buildings (Brown, Wright, & Brown, 1997; Carpman & Grant, 1993; Carpman et al., 1983-84, 1984; Carpman et al., 1985; Christensen, 1979; Grover, 1971; Haq & Zimring, 2003; Levine et al., 1984; Moeser, 1988; Nelson-Shulman, 1983-84; Ortega-Andeane & Urbina-Soria, 1988; Passini, Rainville, Marchand, & Joanette, 1995; Peponis et al., 1990; Schneider, L. F. & Taylor, 1999; Weisman, 1981; Wright et al., 1993; Zimring & Templer, 1983-84), it is quite difficult to isolate single influences of design on wayfinding performance or of wayfinding on outpatient or visitor stress. The problem is exacerbated by the fact that most hospitals have existing complex buildings upon which they try to superimpose a signage system to make things work. This strategy is ineffective in most cases.

There are some very good studies that deal with designing better signage, optimal spacing and location of signage, types of information that are most effective in way finding, and so on. Similarly, other studies at the global scale have looked at the properties of the building layout that facilitate or impede movement. It is essential that these different pieces of information come together while designing new hospitals where there is opportunity to develop an effective wayfinding system at multiple levels. Additional

studies are needed to ascertain the magnitude of stress that wayfinding problems have on outpatients and family.

Reduce Depression

Several studies strongly support that bright light—both natural and artificial—can improve health outcomes such as depression, agitation, sleep, circadian rest-activity rhythms, as well as length of stay in demented patients and persons with seasonal affective disorders (SAD). At least eleven strong studies suggest that bright light is effective in reducing depression among patients with bipolar disorder or SAD. Further, seven studies show that exposure to morning light is more effective than exposure to evening light in reducing depression (Beauchemin & Hays, 1996; Benedetti, F., Colombo, C., Barbini, B., Campori, E., & Smeraldi, E., 2001; Lewy et al., 1998; Lovell, Ancoli-Israel, & Gevirtz, 1995; Terman, Terman, Lo, & Cooper, 2001; Van Someren, Kessler, Mirmiran, & Swaab, 1997; Wallace-Guy et al., 2002). An experimental study that compared the effect of morning and evening light on patients with winter depression found that morning light was *twice* as effective as evening light in treating SAD (Lewy et al., 1998). Exposure to bright morning light has been shown to reduce agitation among elderly patients with dementia. When elderly patients with dementia were exposed to 2,500 lux for two hours in the morning for two ten-day periods, their agitation reduced. Patients were significantly more agitated on non-treatment days (Lovell et al., 1995).

There is also strong evidence that exposure to bright light improves sleep and circadian rhythms. When the daytime environmental illumination level was increased in different living spaces of a dementia unit, it was found that, during increased illumination periods, the stability of the rest-activity rhythm increased in patients with intact vision, but not in visually impaired patients (Van Someren et al., 1997).

It has also been shown that patients in brightly lit rooms have a shorter length of stay compared to patients in dull rooms. Beauchemin and Hays (1996) found that patients hospitalized for severe depression reduced their stays by an average of 3.67 days if assigned to a sunny rather than a dull room overlooking spaces in shadow.

A recent randomized prospective study assessed whether the amount of sunlight in a hospital room modifies a patient's psychosocial health, quantity of analgesic medication used, and pain medication cost (Walch et al., 2004, in press). Patients undergoing elective cervical and lumbar spinal surgeries were admitted to the bright or the dim side of the inpatient surgical ward postoperatively. The outcomes measured included the standard morphine equivalent of all opioid medication used postoperatively by patients and their subsequent pharmacy cost. This strong study found that patients exposed to an increased intensity of sunlight experienced less perceived stress, less pain, took 22 percent less analgesic medication per hour and had 20 percent less pain medication costs.

Using light as an intervention to reduce depression in clinically depressed as well as non-depressed patients is a relatively inexpensive intervention that has been shown to yield consistently positive results. While many studies deal with the effects of artificial light,

natural daylight in patient rooms has also been found effective in reducing depression, reducing length of stay, and reducing intake of pain medication. Thus, an important consideration while designing hospital layouts may be to optimize exposure to morning light in patient rooms by using an east-facing orientation. This research further implies the possibility that depression might be worsened by architectural designs that block or sharply reduce natural daylight in patient rooms. A hypothetical example would be a hospital having patient-room windows looking out into a roofed atrium with few skylights and little natural daylight. In this example, deprivation of natural daylight could be extreme if patient windows were tinted to prevent users of the atrium from looking into patient rooms and violating privacy.

Provide Nature and Positive Distraction

Positive distractions refer to a small set of environmental features or conditions that have been found by research to effectively reduce stress. Distractions can include certain types of music, companion animals such as dogs or cats, laughter or comedy, certain art, and especially nature (Ulrich, 1991). The focus here is on the last, nature. (There is an additional large research literature on music, but this is not covered in this review.)

As background relevant to assessing the credibility of nature findings in healthcare environments, it should be mentioned that many studies of populations other than hospital patients have produced strong evidence that even fairly brief encounters with real or simulated nature settings can elicit significant recovery from stress within three minutes to five minutes at most (Parsons & Hartig, 2000; Ulrich, 1999). Investigators have consistently reported that stress-reducing or restorative benefits of simply viewing nature are manifested as a constellation of positive emotional and physiological changes. Stressful or negative emotions such as fear or anger diminish while levels of pleasant feelings increase. Laboratory and clinical studies have shown that viewing nature produces stress recovery quickly evident in physiological changes, for instance, in blood pressure and heart activity (Ulrich, 1991). By comparison, considerable research has demonstrated that looking at built scenes lacking nature (rooms, buildings, parking lots) is significantly less effective in fostering restoration and may worsen stress.

Questionnaire studies have found that bedridden patients assign especially high preference to having a hospital window view of nature (Verderber, 1986). Mounting research is providing convincing evidence that visual exposure to nature improves outcomes such as stress and pain. For example, a study in a Swedish hospital found that heart-surgery patients in ICUs who were assigned a picture with a landscape scene with trees and water reported less anxiety/stress and needed fewer strong doses of pain drugs than a control group assigned no pictures (Ulrich, 1991). Another group of patients assigned an abstract picture, however, had worsened outcomes compared to the control group. Ulrich (1984) found that patients recovering from abdominal surgery recovered faster, had better emotional well-being, and required fewer strong pain medications if they had bedside windows with a nature view (looking out onto trees) than if their windows looked out onto a brick wall.

Recently, strong studies using experimental designs have produced additional convincing evidence that viewing nature reduces patient pain as well as stress. These investigations also support the interpretation that nature serves as a positive distraction (Ulrich, 1991) that reduces stress and diverts patients from focusing on their pain or distress. A randomized prospective investigation found that adult patients undergoing a painful bronchosopy procedure reported less pain if they were assigned to look at a ceiling-mounted nature scene rather than a control condition consisting of a blank ceiling (Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003). Another controlled experiment that used volunteers in a hospital assessed the effect on pain of viewing a soundless nature videotape in contrast to a static blank screen (Tse, Ng, Chung, & Wong, 2002). Subjects who watched the nature scenes evidenced a higher threshold for detecting pain and had substantially greater pain tolerance. Two studies of female cancer patients have shown that taking a virtual reality nature walk while in bed or a hospital room (through a forest with bird sounds) reduced anxiety and symptomatic distress (Schneider, S. M., Prince-Paul, Allen, Silverman, & Talaba, 2004). Research on patients suffering intense pain because of severe burns found that exposing patients to a videotape of scenic nature (forest, flowers, ocean, waterfalls) during burn dressing changes significantly reduced both anxiety and pain intensity (Miller, Hickman, & Lemasters, 1992).

The possibility that nature can improve outcomes even in patients with late-stage dementia, including Alzheimer's disease, has received some support from a quasi-experimental study that found reduced levels of agitated aggressive behavior associated with a shower bath when recorded nature sounds (birds, babbling brook) and color pictures were present (Whall et al., 1997). A well-controlled study of blood donors in a waiting room found that blood pressure and pulse were lower on days when a wall-mounted television displayed a nature videotape, compared to days with continuous daytime television programs (Ulrich, Simons, & Miles, 2003). More research is needed to identify conditions under which television can either be a stress-reducing positive distraction or a stressor in hospitals.

Gardens in healthcare environments: Hospital gardens not only provide restorative or calming nature views, but can also reduce stress and improve outcomes through other mechanisms, for instance, fostering access to social support and providing opportunities for positive escape and sense of control with respect to stressful clinical settings (Cooper Marcus & Barnes, 1995; Ulrich, 1999). Based on postoccupancy evaluations of four hospital gardens in California, Cooper-Marcus and Barnes (1995) concluded that many nurses and other healthcare workers used the gardens for achieving pleasant escape and recuperation from stress. Other postoccupancy studies indicate that patients and family who use hospital gardens report positive mood change and reduced stress (Whitehouse et al., 2001). These reports also suggest that gardens and nature in hospitals can heighten patient and family satisfaction with overall quality of care.

Art in healthcare environments: A small number of studies on art in hospitals has yielded findings parallel to those from nature research. Results suggest a consistent pattern wherein the great majority of patients respond positively to representational

nature art, but many react negatively to chaotic abstract art (Ulrich & Gilpin, 2003). For example, Carpman & Grant (1993) studied the preferences of 300 randomly selected inpatients and concluded that the patients consistently preferred nature images but disliked abstract art. Although nature pictures and other emotionally appropriate art elicit positive reactions, there is also evidence that inappropriate art styles or image subject matter can increase stress and worsen other outcomes (Ulrich, 1991). It should not be expected that all art is suitable for high-stress healthcare spaces, as art varies enormously in subject matter and style, and much art is emotionally challenging or provocative.

The pitfalls of displaying emotionally challenging art in healthcare environments are revealed by a study of psychiatric patients (Ulrich, 1991). The unit was extensively furnished with a diverse collection of wall-mounted paintings and prints. Interviews with patients indicated strongly negative reactions to artworks that were ambiguous, surreal, or could be interpreted in multiple ways. The same patients, however, reported having positive feelings and associations with respect to nature paintings and prints.

Provide Social Support

Many studies of several different categories of patients have indicated that social support reduces stress and improves, for example, recovery outcomes in myocardial infarction patients. Considering the well-established importance of social support, it is unfortunate that there is only a moderate amount of research concerning how hospital design can facilitate or hinder access to social support. Most studies have focused on psychiatric units and nursing homes. There is strong evidence that levels of social interaction can be increased—and presumably beneficial social support as well—by providing lounges, day rooms, and waiting rooms with comfortable movable furniture arranged in small flexible groupings. A few well-designed studies in psychiatric wards and nursing homes have found that appropriate arrangement of movable seating in dining areas enhances social interaction and also improves eating behaviors, such as increasing the amount of food consumed by geriatric patients (Melin & Gotestam, 1981; Peterson, Knapp, Rosen, & al., 1977). Much research on day rooms and waiting areas has shown that the widespread practice of arranging seating side-by-side along room walls inhibits social interaction (Holahan, 1972; Sommer & Ross, 1958). A novel study by Harris (2000) found that family and friends stayed substantially longer during visits to rehabilitation patients when patient rooms were carpeted rather than covered with vinyl flooring.

Much evidence indicates that single rooms are markedly better than multi-bed rooms for supporting or accommodating the presence of family and friends. Some research suggests that open-plan multibed rooms deter family presence and accordingly reduce social support (Sallstrom, Sandman, & Norberg, 1987). Multibed rooms greatly reduce privacy for patient-family interactions compared to single rooms and are much more likely to have restricted visiting hours. A clear advantage of single rooms in fostering social support stems from the fact they provide more space and furniture than double rooms to accommodate family presence (Chaudhury et al., 2003). A survey of staff in four hospitals that each had a mix of single and double rooms found that nurses gave high

ratings to single rooms for accommodating family members but accorded double rooms low scores (Chaudhury et al., 2003). Further, patient-satisfaction data obtained from 2,122,439 patients who received care during 2003 provide overwhelming evidence that patients in single-bed rooms, compared to those with a roommate, are much more satisfied with "accommodations and comfort for family and visitors" (Press Ganey, 2003).

Do patients sharing the same room provide each other with stress-reducing social support? While some patients find roommates provide comforting social support, findings from several studies indicate that the presence of a roommate usually is a source of stress rather than social support. In most cases, roommates are linked to stressors, for example, loss of privacy or having a roommate who is unfriendly, has too many visitors, or is seriously ill (Van der Ploeg, 1988; Volicer, Isenberg, & Burns, 1977). An earlier section emphasized that noise is a much greater problem in double rooms than singles, and that noises stemming from the presence of other patients are a major cause of sleep loss.

Improve Communication to Patients

Good staff communication helps reduce patient and family anxiety, promotes better care at home after discharge, and in other ways can improve outcomes. Good communication also tends to be the single most important factor affecting overall satisfaction with care across different patient categories (Press Ganey, 2003). Data obtained from 2,122,439 patients nationally in 2003 show that patients consistently report significantly higher satisfaction with communication from nurses and physicians when they are in single rooms compared to when they have one or more roommates (Press Ganey, 2003). To explain this clear and important advantage of single rooms, Kaldenburg (1999) has proposed that staff in multibed rooms are reluctant to discuss patient issues or give information within hearing of a roommate, out of respect for privacy. Growing concern for patient confidentiality and HIPAA are certain to increase the already major advantages of single rooms with respect to communication.

IV. Improve Overall Healthcare Quality

Provide Single-Bed Patient Rooms

Based on an extremely large and varied body of research reviewed in earlier sections, there can be no question that single-bed rooms have several major advantages over double rooms and open bays. To summarize briefly, these advantages include: lower nosocomial infection rates, fewer patient transfers and associated medical errors, far less noise, much better patient privacy and confidentiality, better communication from staff to patients and from patients to staff, superior accommodation of family and consistently higher satisfaction with overall quality of care.

Reduce Length of Stay

Climate and sunlight influences length of hospital stay as well as sleep-wake patterns among hospitalized patients (Beauchemin & Hays, 1996; Benedetti, Francesco, Colombo, Cristina, Barbini, Barbara, Campori, Euridice, & Smeraldi, Enrico, 2001; Federman, Drebing, Boisvert, Penk, 2000; Hebert, Dumont, & Paquet, 1998; Kecskes et al., 2003; Kinnunen, Saynajakangs, Tuuponen, & Keistinen, 2002). One research group studied the impact of the amount of natural light on the length of hospitalization of patients with unipolar and bipolar disorder. The researchers found that bipolar patients randomly assigned to the brighter, eastern rooms (exposed to direct sunlight in the morning) had a mean 3.67-day shorter hospital stay than patients in west-facing rooms (Benedetti, Francesco et al., 2001). Patients recovering from abdominal surgery had shorter stays if they had a bedside window view of nature rather than if their windows looked out onto a brick wall (Ulrich, 1984).

The large research literature on infection reviewed in an earlier section indicated that the design of the physical environment strongly impacts hospital-acquired infection rates by affecting both airborne and contact transmission routes. Evidence-based design measures, by reducing nosocomial infection rates, play a key role in shortening hospital stays.

Increase Patient Satisfaction with Quality of Care

There is strong evidence that design changes that make the environment more comfortable, aesthetically pleasing, and informative relieve stress among patients and increases satisfaction with the quality of care provided. Renovating a traditional waiting area in a neurology clinic by making small changes to the general layout, color scheme, furniture, floor covering, curtains, and providing informational material and information displays resulted in more positive environmental appraisals, improved mood, altered physiological state, and greater reported satisfaction among waiting patients (Leather, Beale, Santos, Watts, & Lee, 2003).

Patients in well-decorated and well-appointed hotel-like rooms rated their attending physicians, housekeeping, and food-service staff, the food, and the hospital better than patients in standard rooms (typical hospital beds, inexpensive family sitting chairs, and no artwork) in the same hospital. Also, they had stronger intentions to use the hospital again and would recommend the hospital to others (Swan, Richardson, & Hutton, 2003). In another study, it was found that environmental satisfaction was a significant predictor of overall satisfaction, ranking only below perceived quality of nursing and clinical care (Harris, P. B., McBride, Ross, & Curtis, 2002). Several post-occupancy evaluation studies have examined patient and staff satisfaction with the different elements of the healthcare environment such as gardens, individual wards, and patient rooms (Brown, Wright, & Brown, 1997; Heath & Gifford, 2001; Shepley, 1995, 2002; Shepley & Davies, 2003; Shepley & Wilson, 1999; Whitehouse et al., 2001). These studies yield rich context-specific data that describe which aspects of the environment were effective. Some studies show quite clearly that tacit, as well implicit, staff and organizational practices and policies influence how an environment actually functions and is perceived

by patients and staff members. The qualitative and quantitative data provided by such studies are very important in understanding the nature of the problem (e.g. why are the gardens not being used as intended?) as well in developing solutions to tackle the problem. Future research that looks at satisfaction among hospital patients should consider using these multi-method post-occupancy evaluations that use different methods to obtain objective and subjective evaluations of use and satisfaction.

CONCLUSIONS

The research team found more than 600 rigorous studies linking a range of aspects of the built environment of hospitals to staff stress and effectiveness, patient safety, patient and family stress and healing, and improved overall healthcare quality and cost. This deep and wide base of evidence suggests that, parallel to evidence-based medicine, we can move to evidence-based design (EBD). EBD refers to a process for creating healthcare buildings, informed by the best available evidence, with the goal of improving outcomes and of continuing to monitor the success of designs for subsequent decision-making. While it is difficult to conduct rigorous research on the impacts of the healthcare environment—hospitals are complex systems where it is difficult to isolate the impact of single factors and the building industry conducts little impact-based research—The Center for Health Design and other groups have made considerable progress in developing a knowledge base of evidence.

EBD is not about hospitals that are simply nicer or fancier than traditional hospitals. Rather, the focus of evidence-based design is to create hospitals that actually help patients recover and be safer, and help staff do their jobs better. EBD is a process for creating health care buildings informed by the best available evidence concerning how the physical environment can interfere with or support activities by patients, families, and staff, and how the setting provides experiences that provide a caring, effective, safe, patient-centered environment. Many of the improvements suggested by EBD are only slightly more expensive than traditional solutions, if they are more expensive at all.

The large research literature surveyed in this report point to several actions we can take immediately:

- Provide single-bed rooms in almost all situations. Adaptable-acuity single-bed rooms should be widely adopted. Single rooms have been shown to lower hospital-induced nosocomial infections, reduce room transfers and associated medical errors, greatly lessen noise, improve patient confidentiality and privacy, facilitate social support by families, improve staff communication to patients, and increase patients' overall satisfaction with health care.
- New hospitals should be much quieter to reduce stress and improve sleep and other outcomes. Noise levels will be substantially lowered by the following combination of environmental interventions: providing single-bed rooms, installing high-performance sound-absorbing ceilings, and eliminating noise sources (for example, using noiseless paging).

- Provide patients stress reducing views of nature and other positive distractions.
- Develop wayfinding systems that allow users, and particularly outpatients and visitors, to find their way efficiently and with little stress.
- Improve ventilation through the use of improved filters, attention to appropriate pressurization, and special vigilance during construction.
- Improve lighting, especially access to natural lighting and full-spectrum lighting.
- Design ward layouts and nurses stations to reduce staff walking and fatigue, increase patient care time, and support staff activities such as medication supply, communication, charting, and respite from stress.

REFERENCES CITED

Aaron, J. N., Carlisle, C. C., Carskadon, M. A., Meyer, T. J., Hill, N. S., & Millman, R. P. (1996). Environmental noise as a cause of sleep disruption in an intermediate respiratory care unit. *Sleep, 19*(9), 707-710.

Albert, R. K., & Condie, F. (1981). Hand-washing patterns in medical intensive-care units. *New England Journal of Medicine, 304*(24), 1465-1466.

Alberti, C., Bouakline, A., Ribaud, P., Lacroix, C., Rousselot, P., Leblanc, T., et al. (2001). Relationship between environmental fungal contamination and the incidence of invasive aspergillosis in haematology patients. *The Journal of Hospital Infection, 48*(3), 198-206.

Allaouchiche, B., Duflo, F., Debon, R., Bergeret, A., & Chassard, D. (2002). Noise in the postanaesthesia care unit. *British Journal of Anaesthesia, 88*(3), 369-373.

Archibald, L. K., Manning, M. L., Bell, L. M., Banerjee, S., & Jarvis, W. R. (1997). Patient density, nurse-to-patient ratio and nosocomial infection risk in a pediatric cardiac intensive care unit. *The Pediatric Infectious Disease Journal, 16*(11), 1045-1048.

Arlet, G., Gluckman, E., Gerber, F., Perol, Y., & Hirsch, A. (1989). Measurement of bacterial and fungal air counts in two bone marrow transplant units. *The Journal of Hospital Infection, 13*(1), 63-69.

Aygun, G., Demirkiran, O., Utku, T., Mete, B., Urkmez, S., Yilmaz, M., et al. (2002). Environmental contamination during a carbapenem-resistant Acinetobacter baumannii outbreak in an intensive care unit. *The Journal of Hospital Infection, 52*(4), 259-262.

Babwin, D. 2002. Building Boom. *Hospitals & Health Networks.* 76(3): 48-54

Baker, C. F. (1984). Sensory overload and noise in the ICU: Sources of environmental stress. *Critical Care Quarterly, 6*(4), 66-80.

Baker, C. F. (1992). Discomfort to environmental noise: Heart rate responses of SICU patients. *Critical Care Nursing Quarterly, 15*(2), 75-90.

Barlas, D., Sama, A. E., Ward, M. F., & Lesser, M. L. (2001). Comparison of the auditory and visual privacy of emergency department treatment areas with curtains versus those with solid walls. *Annals of Emergency Medicine, 38*(2), 135-139.

Bauer, T. M., Ofner, E., Just, H. M., Just, H., & Daschner, F. D. (1990). An epidemiological study assessing the relative importance of airborne and direct contact transmission of microorganisms in a medical intensive care unit. *The Journal of Hospital Infection, 15*(4), 301-309.

Bayo, M. V., Garcia, A. M., & Garcia, A. (1995). Noise levels in an urban hospital and workers' subjective responses. *Archives of Environmental Health, 50*(3), 247-251.

Beauchemin, K. M., & Hays, P. (1996). Sunny hospital rooms expedite recovery from severe and refractory depressions. *Journal of Affective Disorders, 40*(1-2), 49-51.

Ben-Abraham, R., Keller, N., Szold, O., Vardi, A., Weinberg, M., Barzilay, Z., et al. (2002). Do isolation rooms reduce the rate of nosocomial infections in the pediatric intensive care unit? *Journal of Critical Care, 17*(3), 176-180.

Benedetti, F., Colombo, C., Barbini, B., Campori, E., & Smeraldi, E. (2001). Morning sunlight reduces length of hospitalization in bipolar depression. *Journal of Affective Disorders, 62*(3), 221-223.

Berg, S. (2001). Impact of reduced reverberation time on sound-induced arousals during sleep. *Sleep, 24*(3), 289-292.

Berglund, B., Lindvall, T., & Schwela, D. H. (1999). *Guidelines for community noise.* World Health Organization: Protection of the Human Environment.

Blomkvist, V., Eriksen, C. A., Theorell, T., Ulrich, R. S., & Rasmanis, G. (in press, 2004). Acoustics and psychosocial environment in coronary intensive care. *Occupational and Environmental Medicine.*

Booker, J. M., & Roseman, C. (1995). A seasonal pattern of hospital medication errors in Alaska. *Psychiatry Research, 57*(3), 251-257.

Boyce, J. M., Potter-Bynoe, G., Chenevert, C., & King, T. (1997). Environmental contamination due to methicillin-resistant Staphylococcus aureus: Possible infection control implications. *Infection Control and Hospital Epidemiology, 18*(9), 622-627.

Brandis, S. (1999). A collaborative occupational therapy and nursing approach to falls prevention in hospital inpatients. *Journal of Quality in Clinical Practice, 19*(4), 215-221.

170

Brown, B., Wright, H., & Brown, C. (1997). A post-occupancy evaluation of wayfinding in a pediatric hospital: Research findings and implications for instruction. *Journal of Architectural & Planning Research, 14*(1), 35-51.

Buchanan, T. L., Barker, K. N., Gibson, J. T., Jiang, B. C., & Pearson, R. E. (1991). Illumination and errors in dispensing. *American Journal of Hospital Pharmacy, 48*(10), 2137-2145.

Bures, S., Fishbain, J. T., Uyehara, C. F., Parker, J. M., & Berg, B. W. (2000). Computer keyboards and faucet handles as reservoirs of nosocomial pathogens in the intensive care unit. *American Journal of Infection Control, 28*(6), 465-471.

Burgio, L., Engel, B., Hawkins, A., McCorick, K., & Scheve, A. (1990). A descriptive analysis of nursing staff behaviors in a teaching nursing home: Differences among NAs, LPNs and RNs. *The Gerontologist, 30*, 107-112.

Butler, D., Acquino, A. L., Hissong, A. A., & Scott, P. A. (1993). Wayfinding by newcomers in a complex building. *Human Factors, 25*(1), 159-173.

Capezuti, E., Maislin, G., Strumpf, N., & Evans, L. K. (2002). Side rail use and bed-related fall outcomes among nursing home residents. *Journal of the American Geriatrics Society, 50*(1), 90-96.

Carpman, J., & Grant, M. (1993). *Design that cares: Planning health facilities for patients and visitors* (2nd ed.). Chicago: American Hospital Publishing.

Carpman, J., Grant, M., & Simmons, D. (1983-84). Wayfinding in the hospital environment: The impact of various floor numbering alternatives. *Journal of Environmental Systems, 13*(4), 353-364.

Carpman, J., Grant, M., & Simmons, D. (1984). *No more mazes: Research about design for wayfinding in hospitals*. Ann Arbor, Michigan: The University of Michigan Hospitals.

Carpman, J., Grant, M. A., & Simmons, D. A. (1985). Hospital design and wayfinding: A video simulation study. *Environment & Behavior, 17*(3), 296-314.

Chang, J. T., Morton, S. C., Rubenstein, L. Z., Mojica, W. A., Maglione, M., Suttorp, M. J., et al. (2004). Interventions for the prevention of falls in older adults: Systematic review and meta-analysis of randomised clinical trials. *British Medical Journal, 328*(7441), 680-680.

Chang, V. T., & Nelson, K. (2000). The role of physical proximity in nosocomial diarrhea. *Clinical Infectious Diseases, 31*(3), 717-722.

Chaudhury, H., Mahmood, A., & Valente, M. (2003). *Pilot study on comparative assessment of patient care issues in single and multiple occupancy rooms* (Unpublished report): The Coalition for Health Environments Research.

Christensen, K. E. (1979). *An impact analysis framework for calculating the costs of staff disorientation in hospitals*. Los Angeles: School of Architecture and Urban Planning, University of California.

Cmiel, C. A., Karr, D. M., Gasser, D. M., Oliphant, L. M., & Neveau, A. J. (2004). Noise control: A nursing team's approach to sleep promotion. *American Journal of Nursing, 104(2)*, 40-48.

Cohen, B., Saiman, L., Cimiotti, J., & Larson, E. (2003). Factors associated with hand hygiene practices in two neonatal intensive care units. *The Pediatric Infectious Diseases Journal, 22*(6), 494-499.

Conly, J. M., Hill, S., Ross, J., Lertzman, J., & Louie, T. J. (1989). Handwashing practices in an intensive care unit: The effects of an educational program and its relationship to infection rates. *American Journal of Infection Control, 17*(6), 330-339.

Cook, R. I., Render, M., & Woods, D. D. (2000). Gaps in the continuity of care and progress on patient safety. *British Medical Journal, 320*(7), 791-794.

Cooper Marcus, C., & Barnes, M. (1995). *Gardens in healthcare facilities: Uses, therapeutic benefits, and design recommendations*. Martinez, CA: Center for Health Design.

Cornet, M., Levy, V., Fleury, L., Lortholary, J., Barquins, S., Coureul, M. H., et al. (1999). Efficacy of prevention by high-efficiency particulate air filtration or laminar airflow against Aspergillus airborne contamination during hospital renovation. *Infection Control and Hospital Epidemiology, 20*(7), 508-513.

Couper, R. T., Hendy, K., Lloyd, N., Gray, N., Williams, S., & Bates, D. J. (1994). Traffic and noise in children's wards. *Medical Journal of Australia, 160*(6), 338-341.

Devine, J., Cooke, R. P., & Wright, E. P. (2001). Is methicillin-resistant Staphylococcus aureus (MRSA) contamination of ward-based computer terminals a surrogate marker for nosocomial MRSA transmission and handwashing compliance? *The Journal of Hospital Infection, 48*(1), 72-75.

Dharan, S., & Pittet, D. (2002). Environmental controls in operating theatres. *The Journal of Hospital Infection, 51*(2), 79-84.

ATTACHMENT GRC-4

171

Diette, G. B., Lechtzin, N., Haponik, E., Devrotes, A., & Rubin, H. R. (2003). Distraction therapy with nature sights and sounds reduces pain during flexible bronchoscopy: A complementary approach to routine analgesia. *Chest, 123*(3), 941-948.

Dorsey, S. T., Cydulka, R. K., & Emerman, C. L. (1996). Is handwashing teachable? Failure to improve handwashing behavior in an urban emergency department. *Academy of Emergency Medicine, 3*(4), 360-365.

Dubbert, P. M., Dolce, J., Richter, W., Miller, M., & Chapman, S. W. (1990). Increasing ICU staff handwashing: Effects of education and group feedback. *Infection Control and Hospital Epidemiology, 11*(4), 191-193.

Falk, S. A., & Woods, N. F. (1973). Hospital noise: Levels and potential health hazards. *New England Journal of Medicine, 289*(15), 774-781.

Farquharson, C., & Baguley, K. (2003). Responding to the severe acute respiratory syndrome (SARS) outbreak: Lessons learned in a Toronto emergency department. *Journal of Emergency Nursing, 29*(3), 222-228.

Federman, E. J., Drebing, C. E., Boisvert, C., Penk, W., Binus, G., & Rosenheck, R. (2000). Relationship between climate and psychiatric inpatient length of stay in Veterans Health Administration hospitals. *American Journal of Psychiatry, 157*(10), 1669.

Flynn, E. A., Barker, K. N., Gibson, J. T., Pearson, R. E., Berger, B. A., & Smith, L. A. (1999). Impact of interruptions and distractions on dispensing errors in an ambulatory care pharmacy. *American Journal of Health Systems Pharmacy, 56*(13), 1319-1325.

Fox, R. A., & Henson, P. W. (1996). Potential ocular hazard from a surgical light source. *Australasian Physical and Engineering Sciences in Medicine, 19*(1), 12-16.

Friberg, S., Ardnor, B., & Lundholm, R. (2003). The addition of a mobile ultra-clean exponential laminar airflow screen to conventional operating room ventilation reduces bacterial contamination to operating box levels. *The Journal of Hospital Infection, 55*(2), 92-97.

Gabor, J. Y., Cooper, A. B., Crombach, S. A., Lee, B., Kadikar, N., Bettger, H. E., et al. (2003). Contribution of the intensive care unit environment to sleep disruption in mechanically ventilated patients and healthy subjects. *American Journal of Respiratory and Critical Care Medicine, 167*(5), 708-715.

Gardner, P. S., Court, S. D., Brocklebank, J. T., Downham, M. A., & Weightman, D. (1973). Virus cross-infection in paediatric wards. *British Medical Journal, 2*(5866), 571-575.

Garg, A., & Owen, B. (1992). Reducing back stress to nursing personnel: An ergonomic intervention in a nursing home. *Ergonomics, 35*(11), 1353-1375.

Gast, P. L., & Baker, C. F. (1989). The CCU patient: Anxiety and annoyance to noise. *Critical Care Nursing Quarterly, 12*(3), 39-54.

Goldmann, D. A., Durbin, W. A., Jr., & Freeman, J. (1981). Nosocomial infections in a neonatal intensive care unit. *Journal of Infectious Diseases, 144*(5), 449-459.

Gotlieb, J. B. (2000). Understanding the effects of nurses, patients' hospital rooms, and patients' perception of control in the perceived quality of a hospital. *Health Marketing Quarterly, 18*(1/2), 1.

Graham, M. (1990). Frequency and duration of handwashing in an intensive care unit. *American Journal of Infection Control, 18*(2), 77-81.

Grover, P. (1971). *Wayfinding in hospital environments: UCLA hospital disorientation pilot case study.* Los Angeles, Calif.: Graduate School of Architecture and Urban Planning, University of California, Los Angeles.

Hagerman, I., Theorell, T., Ulrich, R. S., Blomkvist, V., Eriksen, C. A., & Rasmanis, G. (in press, 2004). Influence of coronary intensive care acoustics on the physiological states and quality of care of patients. *International Journal of Cardiology.*

Hahn, T., Cummings, K. M., Michalek, A. M., Lipman, B. J., Segal, B. H., & McCarthy, P. L., Jr. (2002). Efficacy of high-efficiency particulate air filtration in preventing aspergillosis in immunocompromised patients with hematologic malignancies. *Infection Control and Hospital Epidemiology, 23*(9), 525-531.

Hamilton, K. (2003). The four levels of evidence based practice. *Healthcare Design, 3*, 18-26.

Hanger, H. C., Ball, M. C., & Wood, L. A. (1999). An analysis of falls in the hospital: Can we do without bedrails? *Journal of the American Geriatrics Society, 47*(5), 529-531.

Haq, S., & Zimring, C. (2003). Just down the road a piece: The development of topological knowledge of building layouts. *Environment & Behavior, 35*(1), 132-160.

Harris, D. (2000). *Environmental quality and healing environments: A study of flooring materials in a healthcare telemetry unit*. Doctoral dissertation, Texas A&M University, College Station.

Harris, P. B., McBride, G., Ross, C., & Curtis, L. (2002). A place to heal: Environmental sources of satisfaction among hospital patients. *Journal of Applied Social Psychology, 32*(6), 1276-1299.

Heath, Y., & Gifford, R. (2001). Post-occupancy evaluation of therapeutic gardens in a multi-level care facility for the aged. *Activities, Adaptation & Aging, 25*(2), 21-43.

Hebert, M., Dumont, M., & Paquet, J. (1998). Seasonal and diurnal patterns of human illumination under natural conditions. *Chronobiology International, 15*(1), 59-70.

Hendrich, A. (2003). *Optimizing physical space for improved outcomes: Satisfaction and the bottom line.* Paper presented at "Optimizing the Physical Space for Improved Outcomes, Satisfaction, and the Bottom Line," minicourse sponsored by the Institute for Healthcare Improvement and the Center for Health Design, Atlanta, GA.

Hendrich, A., Fay, J., & Sorrells, A. (2002, September). Courage to heal: Comprehensive cardiac critical care. *Healthcare Design*, 11-13

Hendrich, A., Fay, J., and Sorrells, A. (2004). Effects of acuity-adaptable rooms on flow of patients and delivery of care. *American Journal of Critical Care, 13* (1).

Hibbard, F. J., Bosso, J. A., Sward, L. W., & Baum, S. (1981). Delivery time in a decentralized pharmacy system without satellites. *American Journal of Hospital Pharmacy, 38*(5), 690-692.

Hilton, B. A. (1985). Noise in acute patient care areas. *Research in Nursing & Health, 8*(3), 283-291.

Hodge, B., & Thompson, J. F. (1990). Noise pollution in the operating theatre. *Lancet, 335*(8694), 891-894.

Holahan, C.J. (1972). Seating patterns and patient behavior in an experimental dayroom. *Journal of Abnormal Psychology, 80*(2), 115-124.

Humphreys, H., Johnson, E. M., Warnock, D. W., Willatts, S. M., Winter, R. J., & Speller, D. C. (1991). An outbreak of aspergillosis in a general ITU. *The Journal of Hospital Infection, 18*(3), 167-177.

Institute of Medicine (IOM).(2004). *Keeping patients safe: Transforming the work environment of nurses.* Washington, DC: National Academy Press.

Institute of Medicine (IOM) (2001). *Crossing the Quality Chasm: A new health system for the 21st century.* Washington, DC: National Academy Press.

Iwen, P. C., Davis, J. C., Reed, E. C., Winfield, B. A., & Hinrichs, S. H. (1994). Airborne fungal spore monitoring in a protective environment during hospital construction, and correlation with an outbreak of invasive aspergillosis. *Infection Control and Hospital Epidemiology, 15*(5), 303-306.

Joint Commission on Accreditation of Healthcare Organizations (2002). *Health care at the crossroad: Strategies for addressing the evolving nursing crisis*. Oakbrook Terrace, IL: Joint Commission on Accreditation of Healthcare Organizations.

Jernigan, J. A., Titus, M. G., Groschel, D. H., Getchell-White, S., & Farr, B. M. (1996). Effectiveness of contact isolation during a hospital outbreak of methicillin-resistant Staphylococcus aureus. *American Journal of Epidemiology, 143*(5), 496-504.

Jiang, S., Huang, L., Chen, X., Wang, J., Wu, W., Yin, S., et al. (2003). Ventilation of wards and nosocomial outbreak of severe acute respiratory syndrome among healthcare workers. *Chinese Medical Journal, 116*(9), 1293-1297.

Johnson, A. N. (2001). Neonatal response to control of noise inside the incubator. *Pediatric Nursing, 27*(6), 600-605.

Kaldenburg, D. O. (1999). The influence of having a roommate on patient satisfaction. *Satisfaction Monitor*, January-February (www.pressganey.org).

Kaplan, L. M., & McGuckin, M. (1986). Increasing handwashing compliance with more accessible sinks. *Infection Control, 7*(8), 408-410.

Kecskes, I., Rihmer, Z., Kiss, K., Vargha, A., Szili, I., & Rihmer, A. (2003). Possible effect of gender and season on the length of hospitalisation in unipolar major depressives. *Journal of Affective Disorders, 73*(3), 279-282.

Kinnunen, T., Saynajakangs, O., Tuuponen, T., & Keistinen, T. (2002). Regional and seasonal variation in the length of hospital stay for chronic obstructive pulmonary disease in Finland. *International Journal of Circumpolar Health, 61*(2), 131-135.

Kistner, U. A., Keith, M. R., Sergeant, K. A., & Holcanson, J. A. (1994). Accuracy of dispensing in a high-volume, hospital-based outpatient pharmacy. *American Journal of Hospital Pharmacy, 51*(22), 2793-2797.

Kromhout, H., Hock, F., Uitterhoeve, R., Huijbers, R., Overmars, R. F., Anzion, R., et al. (2000). Postulating a dermal pathway for exposure to anti-neoplastic drugs among hospital workers: Applying a conceptual model to the results of three workplace surveys. *The Annals of Occupational Hygiene, 44*(7), 551-560.

Kumari, D. N., Haji, T. C., Keer, V., Hawkey, P. M., Duncanson, V., & Flower, E. (1998). Ventilation grilles as a potential source of methicillin-resistant Staphylococcus aureus causing an outbreak in an orthopaedic ward at a district general hospital. *The Journal of Hospital Infection, 39*(2), 127-133.

Larson, E. (1988). A causal link between handwashing and risk of infection? Examination of the evidence. *Infection Control, 9*(1), 28-36.

Larson, E., McGeer, A., Quraishi, Z. A., Krenzischek, D., Parsons, B. J., Holdford, J., et al. (1991). Effect of an automated sink on handwashing practices and attitudes in high-risk units. *Infection Control and Hospital Epidemiology, 12*(7), 422-428.

Larson, E. L., Bryan, J. L., Adler, L. M., & Blane, C. (1997). A multifaceted approach to changing handwashing behavior. *American Journal of Infection Control, 25*(1), 3-10.

Leather, P., Beale, D., Santos, A., Watts, J., & Lee, L. (2003). Outcomes of environmental appraisal of different hospital waiting areas. *Environment and Behavior, 35*(6), 842-869.

Levine, M., Marchon, I., & Hanley, G. (1984). The placement and misplacement of you-are-here maps. *Environment & Behavior, 16*(2), 139-157.

Lewy, A. J., Bauer, V. K., Cutler, N. L., Sack, R. L., Ahmed, S., Thomas, K. H., et al. (1998). Morning vs evening light treatment of patients with winter depression. *Archives of General Psychiatry, 55*(10), 890-896.

Loo, V. G., Bertrand, C., Dixon, C., Vitye, D., DeSalis, B., McLean, A. P., et al. (1996). Control of construction-associated nosocomial aspergillosis in an antiquated hematology unit. *Infection Control and Hospital Epidemiology, 17*(6), 360-364.

Love, H. (2003). Noise exposure in the orthopaedic operating theatre: A significant health hazard. *ANZ Journal of Surgery, 73*(10), 836-838.

Lovell, B. B., Ancoli-Israel, S., & Gevirtz, R. (1995). Effect of bright light treatment on agitated behavior in institutionalized elderly subjects. *Psychiatry Research, 57*(1), 7-12.

Lutz, B. D. J., Jiankang Rinaldi, Michael G Wickes, Brian L Huycke, Mark M. (2003). Outbreak of invasive Aspergillus infection in surgical patients, associated with a contaminated air-handling system. *Clinical Infectious Diseases, 37*(6), 786-793.

Mahieu, L. M., De Dooy, J. J., Van Laer, F. A., Jansens, H., & Ieven, M. M. (2000). A prospective study on factors influencing aspergillus spore load in the air during renovation works in a neonatal intensive care unit. *The Journal of Hospital Infection, 45*(3), 191-197.

McDonald, L. C., Walker, M., Carson, L., Arduino, M., Aguero, S. M., Gomez, P., et al. (1998). Outbreak of Acinetobacter spp. bloodstream infections in a nursery associated with contaminated aerosols and air conditioners. *The Pediatric Infectious Disease Journal, 17*(8), 716-722.

McKendrick, G. D., & Emond, R. T. (1976). Investigation of cross-infection in isolation wards of different design. *Journal of Hygiene (Lond), 76*(1), 23-31.

McLaughlin, A., McLaughlin, B., Elliott, J., & Campalani, G. (1996). Noise levels in a cardiac surgical intensive care unit: A preliminary study conducted in secret. *Intensive Critical Care Nursing, 12*(4), 226-230.

McManus, A. T., Mason, A. D., Jr., McManus, W. F., & Pruitt, B. A., Jr. (1994). A decade of reduced gram-negative infections and mortality associated with improved isolation of burned patients. *Archives of Surgery, 129*(12), 1306-1309.

McManus, A. T., Mason, A. D. Jr., McManus, W. F., & Pruitt, B. A. Jr. (1992). Control of pseudomonas aeruginosa infections in burned patients. *Surgical Research Communications, 12*, 61-67.

McManus, A. T., McManus, W. F., Mason, A. D., Jr., Aitcheson, A. R., & Pruitt, B. A., Jr. (1985). Microbial colonization in a new intensive care burn unit. A prospective cohort study. *Archives of Surgery, 120*(2), 217-223.

ATTACHMENT GRC-4

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Melin, L., & Gotestam, K. G. (1981). The effects of rearranging ward routines on communication and eating behaviors of psychogeriatric patients. *Journal of Applied Behavior Analysis, 14*(1), 47-51.

Menzies, D., Fanning, A., Yuan, L., & FitzGerald, J. M. (2000). Hospital ventilation and risk for tuberculosis infection in Canadian health care workers. *Annals of Internal Medicine, 133*(10), 779-789.

Meyer, T. J., Eveloff, S. E., Bauer, M. S., Schwartz, W. A., Hill, N. S., & Millman, R. P. (1994). Adverse environmental conditions in the respiratory and medical ICU settings. *Chest, 105*(4), 1211-1216.

Miller, A. C., Hickman, L. C., & Lemasters, G. K. (1992). A distraction technique for control of burn pain. *Journal of Burn Care and Rehabilitation, 13(5)*, 576-580.

Mlinek, E. J., & Pierce, J. (1997). Confidentiality and privacy breaches in a university hospital emergency department. *Academy of Emergency Medicine, 4*(12), 1142-1146.

Moeser, S. D. (1988). Cognitive mapping in a complex building. *Environment & Behavior, 20*(1), 21-49.

Moore, M. M. N., Stanton P. Nguyen, Diem Robinson, Samuel P. Ryals, Brenda Imbrie, John Z. Spotnitz, William. (1998). Interventions to reduce decibel levels on patient care units, *American Surgeon, 64*(9), 894.

Morrison, W. E., Haas, E. C., Shaffner, D. H., Garrett, E. S., & Fackler, J. C. (2003). Noise, stress, and annoyance in a pediatric intensive care unit. *Critical Care Medicine, 31*(1), 113-119.

Mulin, B., Rouget, C., Clement, C., Bailly, P., Julliot, M. C., Viel, J. F., et al. (1997). Association of private isolation rooms with ventilator-associated Acinetobacter baumanii pneumonia in a surgical intensive-care unit. *Infection Control and Hospital Epidemiology, 18*(7), 499-503.

Muto, C. A., Sistrom, M. G., & Farr, B. M. (2000). Hand hygiene rates unaffected by installation of dispensers of a rapidly acting hand antiseptic. *American Journal of Infection Control, 28*(3), 273-276.

Neely, A. N., & Maley, M. P. (2001). Dealing with contaminated computer keyboards and microbial survival. *American Journal of Infection Control, 29*(2), 131-132.

Nelson-Shulman, Y. (1983-84). Information and environmental stress: Report of a hospital intervention. *Journal of Environmental Systems, 13*(4), 303-316.

Norbeck, J. S. (1985). Perceived job stress, job satisfaction, and psychological symptoms in critical care nursing. *Research in Nursing & Health, 8*(3), 253-259.

Noskin, G. A., Bednarz, P., Suriano, T., Reiner, S., & Peterson, L. (2000). Persistent contamination of fabric-covered furniture by Vancomycin-resistant Enterocci: Implication for upholstery selection in hospitals. *American Journal of Infection Control, 28*(4), 311-313.

Nott, M. R., & West, P. D. (2003). Orthopaedic theatre noise: A potential hazard to patients. *Anaesthesia, 58*(8), 784-787.

Novaes, M. A., Aronovich, A., Ferraz, M. B., & Knobel, E. (1997). Stressors in ICU: patients' evaluation. *Intensive Care Medicine, 23*(12), 1282-1285.

Opal, S. M., Asp, A. A., Cannady, P. B., Jr., Morse, P. L., Burton, L. J., & Hammer, P. G. (1986). Efficacy of infection control measures during a nosocomial outbreak of disseminated aspergillosis associated with hospital construction. *Journal of Infectious Diseases, 153*(3), 634-637.

Oren, I., Haddad, N., Finkelstein, R., & Rowe, J. M. (2001). Invasive pulmonary aspergillosis in neutropenic patients during hospital construction: Before and after chemoprophylaxis and institution of HEPA filters. *American Journal of Hematology, 66*(4), 257-262.

Ortega-Andeane, P., & Urbina-Soria, J. (1988). *A case study of wayfinding and security in a Mexico City hospital.* Paper presented at the EDRA: Environmental Design Research Association, US, 19:231-236.

Palmer, R. (1999). Bacterial contamination of curtains in clinical areas. *Nursing Standard, 14*(2), 33-35.

Parsons, R., & Hartig, T. (2000). Environmental psychophysiology. In J. T. Cacioppo & L. G. Tassinary (Eds.), *Handbook of psychophysiology (2nd ed.)* (pp. 815-846). New York: Cambridge University Press.

Parthasarathy, S., & Tobin, M. J. (2004). Sleep in the intensive care unit. *Intensive Care Medicine, 30*(2), 197-206.

Passini, R., Rainville, C., Marchand, N., & Joanette, Y. (1995). Wayfinding in dementia of the Alzheimer type: Planning abilities. *Journal of Clinical and Experimental Neuropsychology, 17*(6), 820-832.

Passweg, J. R., Rowlings, P. A., Atkinson, K. A., Barrett, A. J., Gale, R. P., Gratwohl, A., et al. (1998). Influence of protective isolation on outcome of allogeneic bone marrow transplantation for leukemia. *Bone Marrow Transplant, 21*(12), 1231-1238.

Pegues, D. A., & Woernle, C. H. (1993). An outbreak of acute nonbacterial gastroenteritis in a nursing home. *Infection Control and Hospital Epidemiology, 14*(2), 87-94.

Peponis, J., Zimring, C., & Choi, Y. K. (1990). Finding the building in wayfinding. *Environment & Behavior, 22*(5), 555-590.

Peterson, R., Knapp, T., Rosen, J., & Pither, B.F. (1977). The effects of furniture arrangement on the behavior of geriatric patients. *Behavior Therapy, 8*, 464-467.

Pierce, R. A., 2nd, Rogers, E. M., Sharp, M. H., & Musulin, M. (1990). Outpatient pharmacy redesign to improve work flow, waiting time, and patient satisfaction. *American Journal of Hospital Pharmacy, 47*(2), 351-356.

Pittet, D., Hugonnet, S., Harbarth, S., Mourouga, P., Sauvan, V., Touveneau, S., et al. (2000). Effectiveness of a hospital-wide programme to improve compliance with hand hygiene. *Lancet, 356*(9238), 1307-1312.

Press Ganey, Inc. (2003). National patient satisfaction data for 2003. (Provided by Press Ganey, Inc. at the request of the authors for this research review.).

Preston, G. A., Larson, E. L., & Stamm, W. E. (1981). The effect of private isolation rooms on patient care practices, Colonization and infection in an intensive care unit. *The American Journal of Medicine, 70*(3), 641-645.

Reynolds, D. M., Johnson, M. H., & Longe, R. L. (1978). Medication delivery time requirements in centralized and decentralized unit dose drug distribution systems. *American Journal of Hospital Pharmacy, 35*(8), 941-943.

Roberts, S. A., Findlay, R., & Lang, S. D. (2001). Investigation of an outbreak of multi-drug resistant Acinetobacter baumannii in an intensive care burns unit. *The Journal of Hospital Infection, 48*(3), 228-232.

Robertson, A., Cooper-Peel, C., & Vos, P. (1998). Peak noise distribution in the neonatal intensive care nursery. *Journal of Perinatology, 18*(5), 361-364.

Rountree, P. M., Beard, M. A., Loewenthal, J., May, J., & Renwick, S. B. (1967). Staphylococcal sepsis in a new surgical ward. *British Medical Journal, 1*(533), 132-137.

Rubin, H., Owens, A. J., & Golden, G. (1998). *Status report (1998): An investigation to determine whether the built environment affects patients' medical outcomes*. Martinez, CA: Center for Health Design.

Sallstrom, C., Sandman, P. O., & Norberg, A. (1987). Relatives' experience of the terminal care of long-term geriatric patients in open-plan rooms. *Scandinavian Journal of Caring Science, 1*(4), 133-140.

Sanderson, P. J., & Weissler, S. (1992). Recovery of coliforms from the hands of nurses and patients: Activities leading to contamination. *The Journal of Hospital Infection, 21*(2), 85-93.

Schneider, L. F., & Taylor, H. A. (1999). How do you get there from here? Mental representations of route descriptions. *Applied Cognitive Psychology* (Vol. 13, pp. 415-441): John Wiley & Sons Inc.

Schneider, S. M., Prince-Paul, M., Allen, M. J., Silverman, P., & Talaba, D. (2004). Virtual reality as a distraction intervention for women receiving chemotherapy. *Oncology Nursing Forum, 31*(1), 81-88.

Schnelle, J. F., Ouslander, J. G., Simmons, S. F., Alessi, C. A., & Gravel, M. D. (1993). The nighttime environment, incontinence care, and sleep disruption in nursing homes. *Journal of the American Geriatrics Society, 41*(9), 910-914.

Sehulster, L., & Chinn, R. Y. (2003). Guidelines for environmental infection control in healthcare facilities. Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). *MMWR Recommendation Report, 52*(RR-10), 1-42.

Shepley, M. M. (1995). The location of behavioral incidents in a children's psychiatric facility. *Children's Environments, 12*(3), 352-361.

Shepley, M. M. (2002). Predesign and postoccupancy analysis of staff behavior in a neonatal intensive care unit. *Children's Health Care, 31*(3), 237-253.

Shepley, M. M., & Davies, K. (2003). *Nursing Unit Configuration and Its Relationship to Noise and Nurse Walking Behavior: An AIDS/HIV Unit Case Study*. Retrieved 5/26/2004, from http://www.aia.org/aah/journal/0401/article4.asp

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1760

Shepley, M. M., & Wilson, P. (1999). Designing for persons with AIDS: A post-occupancy study at the Bailey-Boushay House. *The Journal of Architectural & Planning Research, 16*(1), 17-32.

Sherertz, R., J. Belani, A., Kramer, B. S., Elfenbein, G. J., Weiner, R. S., Sullivan, M. L., et al. (1987). Impact of air filtration on nosocomial Aspergillus infections: Unique risk of bone marrow transplant recipients. *American Journal of Medicine, 83*(4), 709-718.

Sherertz, R. J., & Sullivan, M. L. (1985). An outbreak of infections with Acinetobacter calcoaceticus in burn patients: Contamination of patients' mattresses. *Journal of Infectious Diseases, 151*(2), 252-258.

Shirani, K. Z., McManus, A. T., Vaughan, G. M., McManus, W. F., Pruitt, B. A., Jr., & Mason, A. D., Jr. (1986). Effects of environment on infection in burn patients. *Archives of Surgery, 121*(1), 31-36.

Slevin, M., Farrington, N., Duffy, G., Daly, L., & Murphy, J. F. (2000). Altering the NICU and measuring infants' responses. *Acta Paediatrica, 89*(5), 577-581.

Smedbold, H., Catrine, A., Unimed, S., Nilsén, A., Norback, D., & Hilt, B. (2002). Relationships between indoor environments and nasal inflammation in nursing personnel. *Archives of Environmental Health, 57*(2).

Sommer, R., & Ross, H. (1958). Social interaction on a geriatrics ward. *The International Journal of Social Psychiatry, 4*(2), 128-133.

Southwell, M. T., & Wistow, G. (1995). Sleep in hospitals at night: Are patients' needs being met? *Journal of Advanced Nursing, 21*(6), 1101-1109.

Sturdavant, M. (1960). Intensive nursing service in circular and rectangular units. *Hospitals, JAHA, 34(14)*, 46-48, 71-78.

Swan, J. E., Richardson, L. D., & Hutton, J. D. (2003). Do appealing hospital rooms increase patient evaluations of physicians, nurses, and hospital services? *Health Care Management Review, 28*(3), 254.

Terman, J. S., Terman, M., Lo, E.-S., & Cooper, T. B. (2001). Circadian time of morning light administration and therapeutic response in winter depression. *Archives of General Psychiatry, 58*(1), 69-75.

Thompson, J. T., Meredith, J. W., & Molnar, J. A. (2002). The effect of burn nursing units on burn wound infections. *Journal of Burn Care Rehabilitation, 23*(4), 281-286.

Topf, M. (1985). Noise-induced stress in hospital patients: Coping and nonauditory health outcomes. *Journal of Human Stress, 11*(3), 125-134.

Topf, M., & Davis, J. E. (1993). Critical care unit noise and rapid eye movement (REM) sleep. *Heart Lung, 22*(3), 252-258.

Topf, M., & Dillon, E. (1988). Noise-induced stress as a predictor of burnout in critical care nurses. *Heart Lung, 17*(5), 567-574.

Topf, M., & Thompson, S. (2001). Interactive relationships between hospital patients' noise-induced stress and other stress with sleep. *Heart Lung, 30*(4), 237-243.

Trites, D. K., Galbraith, F. D., Sturdavant, M., & Leckwart, J. F. (1970). Influence of nursing-unit design on the activities and subjective feelings of nursing personnel. *Environment & Behavior, 2*(3), 303-334.

Tse, M. M.Y., Ng, J. K.F., Chung, J. W. Y., & Wong, T.K. S.(2002). The effect of visual stimuli on pain threshold and tolerance. *Journal of Clinical Nursing, 11*(4), 462-469.

Ubel, P. A., Zell, M. M., & Miller, D. J. (1995). Elevator talk: Observational study of inappropriate comments in a public space. *American Journal of Medicine, 99(2)*, 190-194.

Uden, G. (1985). Inpatient accidents in hospitals. *Journal of the American Geriatrics Society, 33*(12), 833-841.

Ulrich, R. S. (1984). View through a window may influence recovery from surgery. *Science, 224*(4647), 420-421.

Ulrich, R. S. (1991). Effects of interior design on wellness: Theory and recent scientific research. *Journal of Health Care Interior Design, 3(1)*, 97-109.

Ulrich, R. S. (1999). Effects of gardens on health outcomes: Theory and research. In C. Cooper Marcus & M. Barnes (Eds.), *Healing gardens* (pp. 27-86). New York: Wiley.

Ulrich, R. S., & Gilpin, L. (2003). Healing arts: Nutrition for the soul. In S. B. Frampton, L. Gilpin & P. Charmel (Eds.), *Putting patients first: Designing and practicing patient-centered care* (pp. 117-146). San Francisco: Jossey-Bass.

ATTACHMENT GRC-4

Ulrich, R. S., Lawson, B., & Martinez, M. (2003). *Exploring the patient environment: An NHS estates workshop*. London: The Stationery Office.

Ulrich, R. S., Simons, R. F., & Miles, M. A. (2003). Effects of environmental simulations and television on blood donor stress. *Journal of Architectural & Planning Research, 20*(1), 38-47.

Van der Ploeg, H. M. (1988). Stressful medical events: A survey of patients' perceptions. In S. Maies, C. D. Spielberger, P. B. Defares & I. G. Sarason (Eds.), *Topics in Health Psychology* (pp. 193-203). New York: John Wiley.

van Leeuwen, M., Bennett, L., West, S., Wiles, V., & Grasso, J. (2001). Patient falls from bed and the role of bedrails in the acute care setting. *Australian Journal of Advanced Nursing, 19*(2), 8-13.

Van Someren, E. J. W., Kessler, A., Mirmiran, M., & Swaab, D. F. (1997). Indirect Bright Light Improves Circadian Rest-Activity Rhythm Disturbances in Demented Patients. *Biological Psychiatry, 41*(9), 955-963.

Vassallo, M., Azeem, T., Pirwani, M. F., Sharma, J. C., & Allen, S. C. (2000). An epidemiological study of falls on integrated general medical wards. *International Journal of Clinical Practice, 54*(10), 654-657.

Verderber, S. (1986). Dimensions of person-window transactions in the hospital environment. *Environment & Behavior, 18*(4), 450-466.

Vernon, M. O., Trick, W. E., Welbel, S. F., Peterson, B. J., & Weinstein, R. A. (2003). Adherence with hand hygiene: Does number of sinks matter? *Infection Control and Hospital Epidemiology, 24*(3), 224-225.

Volicer, B. J., Isenberg, M. A., & Burns, M. W. (1977). Medical-surgical differences in hospital stress factors. *Journal of Human Stress, 3(2)*, 3-13.

Walch, J. M., Rabin, B. S., Day, R., Williams, J. N., Choi, K., & Kang, J. D. (2004, In press). The effect of sunlight on post-operative analgesic medication usage: A prospective study of spinal surgery patients.

Walder, B., Francioli, D., Meyer, J. J., Lancon, M., & Romand, J. A. (2000). Effects of guidelines implementation in a surgical intensive care unit to control nighttime light and noise levels. *Critical Care Medicine, 28*(7), 2242-2247.

Wallace-Guy, G., Kripke, D., Jean-Louis, G., Langer, R., Elliott, J., & Tuunainen, A. (2002). Evening light exposure: Implications for sleep and depression. *Journal of the American Geriatrics Society, 50*(4), 738-739.

Weisman, J. (1981). Evaluating architectural legibility: Wayfinding in the built environment. *Environment & Behavior, 13*(2), 189-204.

Whall, A. L., Black, M. E., Groh, C. J., Yankou, D. J., Kupferschmid, B. J., & Foster, N. L. (1997). The effect of natural environments upon agitation and aggression in late stage dementia patients. *American Journal of Alzheimer's Disease and Other Dementias*, September-October, 216-220.

Whitehouse, S., Varni, J. W., Seid, M., Cooper-Marcus, C., Ensberg, M. J., Jacobs, J. R., et al. (2001). Evaluating a children's hospital garden environment: Utilization and consumer satisfaction. *Journal of Environmental Psychology, 21*(3), 301-314.

Williams, H. N., Singh, R., & Romberg, E. (2003). Surface contamination in the dental operatory: A comparison over two decades. *Journal of the American Dental Association, 134*(3), 325-330;

Wright, P., Hull, A. J., & Lickorish, A. (1993). Navigating in a hospital outpatients' department: The merits of maps and wallsigns. *Journal of Architectural and Planning research, 10*(1), 76-89.

Yinnon, A. M., Ilan, Y., Tadmor, B., Altarescu, G., & Hershko, C. (1992). Quality of sleep in the medical department. *British Journal of Clinical Practitioners, 46*(2), 88-91.

Zahr, L. K., & de Traversay, J. (1995). Premature infant responses to noise reduction by earmuffs: Effects on behavioral and physiologic measures. *Journal of Perinatology, 15*(6), 448-455.

Zimring, C. (1990). *The costs of confusion: Non-monetary and monetary costs of the Emory University hospital wayfinding system*. Atlanta, GA: Georgia Institute of Technology.

Zimring, C., & Templer, J. (1983-84). Wayfinding and orientation by the visually impaired. *Journal of Environmental Systems, 13*(4), 333-352.

APPENDIX: Bibliography

Reduce Staff Stress, Fatigue; Increase Effectiveness in Delivering Care

Bookman, W. B. (1986). Space planning and staff turnover. *Certified Akers Laboratories, 49*(11), 22-23.

Brennan, P. L., & Moos, R. H. (1990). Physical design, social climate, and staff turnover in skilled nursing facilities. *Journal of Long Term Care Administration, 18*(2), 22-27.

Breslin, P. T., Gale, S. O., & Weitzner, W. M. (2003). Operational and design strategies for a reduced workforce. *Healthcare Financial Management, 57*(3), 62-65.

Burgio, L., Engel, B., Hawkins, A., McCorick, K., & Scheve, A. (1990). A descriptive analysis of nursing staff behaviors in a teaching nursing home: Differences among NAs, LPNs and RNs. *Gerontologist, 30*(1), 107-112.

Christensen, K. E. (1979). *An impact analysis framework for calculating the costs of staff disorientation in hospitals*. Los Angeles: School of Architecture and Urban Planning, University of California.

Dennis, K. E., Sweeney, P. M., Macdonald, L. P., & Morse, N. A. (1993). Point of care technology: Impact on people and paperwork. *Nursing Economics, 11*(4), 229-237, 248.

Garg, A., & Owen, B. (1992). Reducing back stress to nursing personnel: An ergonomic intervention in a nursing home. *Ergonomics, 35*(11), 1353-1375.

Hibbard, F. J., Bosso, J. A., Sward, L. W., & Baum, S. (1981). Delivery time in a decentralized pharmacy system without satellites. *American Journal of Hospital Pharmacy, 38*(5), 690-692.

Janssen, P. A., Harris, S. J., Soolsma, J., Klein, M. C., & Seymour, L. C. (2001). Single room maternity care: The nursing response. *Birth, 28*(3), 173-179.

Jiang, S., Huang, L., Chen, X., Wang, J., Wu, W., Yin, S., et al. (2003). Ventilation of wards and nosocomial outbreak of severe acute respiratory syndrome among healthcare workers. *Chinese Medical Journal, 116*(9), 1293-1297.

Joint Commission on Accreditation of Healthcare Organizations (2002). *Health care at the crossroads: Strategies for addressing the evolving nursing crisis*. Oakbrook Terrace, IL: Joint Commission on Accreditation of Healthcare Organizations.

Jones, R. G. (1988). Experimental study to evaluate nursing staff morale in a high stimulation geriatric psychiatry setting. *Journal of Advanced Nursing, 13(3)*, 352-357.

Klimowski, L. L., Rotstein, C., & Cummings, K. M. (1989). Incidence of nosocomial aspergillosis in patients with leukemia over a twenty-year period. *Infection Control and Hospital Epidemiology, 10*(7), 299-305.

Kromhout, H., Hoek, F., Uitterhoeve, R., Huijbers, R., Overmars, R. F., Anzion, R., et al. (2000). Postulating a dermal pathway for exposure to anti-neoplastic drugs among hospital workers: Applying a conceptual model to the results of three workplace surveys. *Annals of Occupational Hygiene, 44*(7), 551-560.

Lin, A. C., Barker, K. N., Hassall, T. H., & Gallelli, J. F. (1988). Effects of simulated facility-design changes on outpatient pharmacy efficiency. *American Journal of Hospital Pharmacy, 45*(1), 116-121.

Lin, A. C., Jang, R., Sedani, D., Thomas, S., Barker, K. N., & Flynn, E. A. (1996). Re-engineering a pharmacy work system and layout to facilitate patient counseling. *American Journal of Health-System Pharmacy, 53*(13), 1558-1564.

Marr, P. B., Duthie, E., Glassman, K. S., Janovas, D. M., Kelly, J. B., Graham, E., et al. (1993). Bedside terminals and quality of nursing documentation. *Computers in Nursing, 11*(4),

176-182.
Pierce, R. A., 2nd, Rogers, E. M., Sharp, M. H., & Musulin, M. (1990). Outpatient pharmacy redesign to improve work flow, waiting time, and patient satisfaction. *American Journal of Hospital Pharmacy, 47*(2), 351-356.
Reynolds, D. M., Johnson, M. H., & Longe, R. L. (1978). Medication delivery time requirements in centralized and decentralized unit dose drug distribution systems. *American Journal of Hospital Pharmacy, 35*(8), 941-943.
Shepley, M. M., & Davies, K. (2003). *Nursing unit configuration and its relationship to noise and nurse walking behavior: An AIDS/HIV unit case study.* Retrieved May 26, 2004, from http://www.aia.org/aah/journal/0401/article4.asp.
Smedbold, H. T., Ahlen, C., Unimed, S., Nilsen, A. M., Norbaeck, D., & Hilt, B. (2002). Relationships between indoor environments and nasal inflammation in nursing personnel. *Archives of Environmental Health, 57*(2), 155-161.
Stefanchik, M. F., & Cohen, P. I. (1989). Point-of-care faces cost challenges. *Computers in Healthcare, 10*(12), 38-39, 41.
Summer, G., Lirk, P., Hoerauf, K., Riccabona, U., Bodrogi, F., Raifer, H., et al. (2003). Sevoflurane in exhaled air of operating room personnel. *Anesthesia and Analgesia, 97*(4), 1070.
Sutton, P. M., Mossman, M., Reinisch, F., & Harrison, R. J. (2002). A determination of healthcare worker exposure to Mycobacterium tuberculosis in two Californian hospitals. *Journal of Hospital Infection, 51*(4), 281-287.
Trites, D. K., Galbraith, F. D., Sturdavant, M., & Leckwart, J. F. (1970). Influence of nursing-unit design on the activities and subjective feelings of nursing personnel. *Environment & Behavior, 2*(3), 303-334.
Tyson, G. A., Lambert, G., & Beattie, L. (2002). The impact of ward design on the behaviour, occupational satisfaction and well-being of psychiatric nurses. *International Journal of Mental Health Nursing, 11*(2), 94-102.
Walker, S. B. (1998). Neonatal nurses' views on the barriers to parenting in the intensive care nursery—a national study. *Australian Critical Care, 11*(3), 86-91.
Willson, D. (1994). Survey of nurse perceptions regarding the utilization of bedside computers. *Proceedings of Annual Symposium on Computer Application in Medical Care, 18*, 553-557.

Improve Patient Safety

Abzug, M. J., Gardner, S., Glode, M. P., Cymanski, M., Roe, M. H., & Odom, L. F. (1992). Heliport-associated nosocomial mucormycoses. *Infection Control and Hospital Epidemiology, 13*(6), 325-326.
Adeniran, A., Shakespeare, P., Patrick, S., Fletcher, A. J., & Rossi, L. A. (1995). Influence of a changed care environment on bacterial colonization of burn wounds. *Burns, 21*(7), 521-525.
Albert, R. K., & Condie, F. (1981). Hand-washing patterns in medical intensive-care units. *New England Journal of Medicine, 304*(24), 1465-1466.
Alberti, C., Bouakline, A., Ribaud, P., Lacroix, C., Rousselot, P., Leblanc, T., et al. (2001). Relationship between environmental fungal contamination and the incidence of invasive aspergillosis in haematology patients. *Journal of Hospital Infection, 48*(3), 198-206.
Alcee, D. A. (2000). The experience of a community hospital in quantifying and reducing patient falls. *Journal of Nursing Care Quality, 14*(3), 43-54.
Allander, T., Gruber, A., Naghavi, M., Beyene, A., Soderstrom, T., Bjorkholm, M., et al. (1995).

180

Frequent patient-to-patient transmission of hepatitis C virus in a haematology ward. *Lancet, 345*(8950), 603-607.

American Health Consultants (1995). Aspergillosis: A deadly dust may be in the wind during renovations. *Hospital Infection Control, 22*(10), 125-126.

Andersen, B. M., & Rasch, M. (2000). Hospital-acquired infections in Norwegian long-term-care institutions. A three-year survey of hospital-acquired infections and antibiotic treatment in nursing/residential homes, including 4500 residents in Oslo. *Journal of Hospital Infection, 46*(4), 288-296.

Anderson, J. D., Bonner, M., Scheifele, D. W., & Schneider, B. C. (1985). Lack of nosocomial spread of Varicella in a pediatric hospital with negative pressure ventilated patient rooms. *Infection Control, 6*(3), 120-121.

Anderson, K., Morris, G., Kennedy, H., Croall, J., Michie, J., Richardson, M., et al. (1996). Aspergillosis in immunocompromised paediatric patients: Associations with building hygiene, design and indoor air. *Thorax, 51(3)*, 256-261.

Anderson, R. L., Mackel, D. C., Stoler, B. S., & Mallison, G. F. (1982). Carpeting in hospitals: An epidemiological evaluation. *Journal of Clinical Microbiology, 15*(3), 408-415.

Archiable, N. (2000). Preventing serious injuries from falls. *Provider, 26*(Suppl. 9), 8-9, 16.

Archibald, L. K., Manning, M. L., Bell, L. M., Banerjee, S., & Jarvis, W. R. (1997). Patient density, nurse-to-patient ratio and nosocomial infection risk in a pediatric cardiac intensive care unit. *Pediatric Infectious Disease Journal, 16*(11), 1045-1048.

Arlet, G., Gluckman, E., Gerber, F., Perol, Y., & Hirsch, A. (1989). Measurement of bacterial and fungal air counts in two bone marrow transplant units. *Journal of Hospital Infection, 13*(1), 63-69.

Armstrong, D. (1984). Protected environments are discomforting and expensive and do not offer meaningful protection. *American Journal of Medicine, 76*(4), 685-689.

Asb, K. L., MacLeod, P., & Clark, L. (1998). A case control study of falls in the hospital setting. *Journal of Gerontological Nursing, 24*(12), 7-15.

Austin, D. J., Bonten, M. J., Weinstein, R. A., Slaughter, S., & Anderson, R. M. (1999). Vancomycin-resistant enterococci in intensive-care hospital settings: Transmission dynamics, persistence, and the impact of infection control programs. *Proceedings of the National Academy of Sciences of the United States of America, 96*(12), 6908-6913.

Aygun, G., Demirkiran, O., Utku, T., Mete, B., Urkmez, S., Yilmaz, M., et al. (2002). Environmental contamination during a carbapenem-resistant Acinetobacter baumannii outbreak in an intensive care unit. *Journal of Hospital Infection, 52*(4), 259-262.

Babb, J. R., Lynam, P., & Ayliffe, G. A. (1995). Risk of airborne transmission in an operating theatre containing four ultraclean air units. *Journal of Hospital Infection, 31*(3), 159-168.

Bakarich, A., McMillan, V., & Prosser, R. (1997). The effect of a nursing intervention on the incidence of older patient falls. *Australian Journal of Advanced Nursing, 15*(1), 26-31.

Barber, N. D., Blackett, A., & Batty, R. (1993). Does a high workload decrease ward pharmacists' clinical monitoring? *International Journal of Pharmacy Practice, 2*, 152-155.

Barlas, D., Sama, A. E., Ward, M. F., & Lesser, M. L. (2001). Comparison of the auditory and visual privacy of emergency department treatment areas with curtains versus those with solid walls. *Annals of Emergency Medicine, 38*(2), 135-139.

Barnes, R. A., & Rogers, T. R. (1989). Control of an outbreak of nosocomial aspergillosis by laminar air-flow isolation. *Journal of Hospital Infection, 14*(2), 89-94.

Bauer, T. M., Ofner, E., Just, H. M., Just, H., & Daschner, F. D. (1990). An epidemiological study assessing the relative importance of airborne and direct contact transmission of microorganisms in a medical intensive care unit. *Journal of Hospital Infection, 15*(4), 301-309.

Bayat, A., Shaaban, H., Dodgson, A., & Dunn, K. W. (2003). Implications for burns unit design

following outbreak of multi-resistant Acinetobacter infection in ICU and burns unit. *Burns, 29*(4), 303-306.

Becker, C., Kron, M., Lindemann, U., Sturm, E., Eichner, B., Walter-Jung, B., et al. (2003). Effectiveness of a multifaceted intervention on falls in nursing home residents. *Journal of the American Geriatrics Society, 51*(3), 306-313.

Ben-Abraham, R., Keller, N., Szold, O., Vardi, A., Weinberg, M., Barzilay, Z., et al. (2002). Do isolation rooms reduce the rate of nosocomial infections in the pediatric intensive care unit? *Journal of Critical Care, 17*(3), 176-180.

Bertrand, X., Bailly, P., Blasco, G., Balvay, P., Boillot, A., & Talon, D. (2000). Large outbreak in a surgical intensive care unit of colonization or infection with pseudomonas aeruginosa that overexpressed an active efflux pump. *Clinical Infectious Diseases, 31*, E9-E14.

Beyer, D. J., & Belsito, D. V. (2000). Fungal contamination of outpatient examination rooms: Is your office safe? *Dermatology Nursing, 12*(1), 51-53.

Bischoff, W. E., Reynolds, T. M., Sessler, C. N., Edmond, M. B., & Wenzel, R. P. (2000). Handwashing compliance by health care workers: The impact of introducing an accessible, alcohol-based hand antiseptic. *Archives of Internal Medicine, 160*(7), 1017-1021.

Bittner, M. J., & Rich, E. C. (1998). Surveillance of handwashing episodes in adult intensive-care units by measuring an index of soap and paper towel consumption. *Clinical Performance and Quality Health Care, 6*(4), 179-182.

Bjorn, E., & Nielsen, P. V. (2002). Dispersal of exhaled air and personal exposure in displacement ventilated rooms. *Indoor Air, 12*(3), 147-164.

Bodey, G. P., & Johnston, D. (1971). Microbiological evaluation of protected environments during patient occupancy. *Applied Microbiology, 22(5)*, 828-836.

Booker, J. M., & Roseman, C. (1995). A seasonal pattern of hospital medication errors in Alaska. *Psychiatry Research, 57*(3), 251-257.

Borg, M. A. (2003). Bed occupancy and overcrowding as determinant factors in the incidence of MRSA infections within general ward settings. *Journal of Hospital Infection, 54*(4), 316-318.

Boyce, J. M., Potter-Bynoe, G., Chenevert, C., & King, T. (1997). Environmental contamination due to methicillin-resistant Staphylococcus aureus: Possible infection control implications. *Infection Control and Hospital Epidemiology, 18*(9), 622-627.

Brandis, S. (1999). A collaborative occupational therapy and nursing approach to falls prevention in hospital inpatients. *Journal of Quality in Clinical Practice, 19*(4), 215-221.

Breiman, R., Cozen, W., & Fields, B. (1990). Role of air sampling in investigation of an outbreak of Legionnaires' disease associated with exposure to aerosols from an evaporative condenser. *Journal of Infectious Diseases, 161(6)*, 1257-1261.

Brown, I. W., Jr., Moor, G. F., Hummel, B. W., Marshall, W. G., Jr., & Collins, J. P. (1996). Toward further reducing wound infections in cardiac operations. *Annals of Thoracic Surgery, 62*(6), 1783-1789.

Bruce, B. B., Blass, M. A., Blumberg, H. M., Lennox, J. L., del Rio, C., & Horsburgh, C. R., Jr. (2000). Risk of Cryptosporidium parvum transmission between hospital roommates. *Clinical Infectious Diseases, 31*(4), 947-950.

Buchanan, T. L., Barker, K. N., Gibson, J. T., Jiang, B. C., & Pearson, R. E. (1991). Illumination and errors in dispensing. *American Journal of Hospital Pharmacy, 48*(10), 2137-2145.

Bures, S., Fishbain, J. T., Uyehara, C. F., Parker, J. M., & Berg, B. W. (2000). Computer keyboards and faucet handles as reservoirs of nosocomial pathogens in the intensive care unit. *American Journal of Infection Control, 28*(6), 465-471.

Burke, J. F., Quinby, W. C., Bondoc, C. C., Sheehy, E. M., & Moreno, H. C. (1977). The contribution of a bacterially isolated environment to the prevention of infection in

seriously burned patients: *Annals of Surgery, 186*(3), 377-387.

Capezuti, E., Maislin, G., Strumpf, N., & Evans, L. K. (2002). Side rail use and bed-related fall outcomes among nursing home residents. *Journal of the American Geriatrics Society, 50*(1), 90-96.

Carducci, A., Verani, M., Casini, B., Giuntini, A., Mazzoni, F., Rovini, E., et al. (2002). Detection and potential indicators of the presence of hepatitis C virus on surfaces in hospital settings. *Letters in Applied Microbiology, 34*(3), 189-193.

Carter, C. D., & Barr, B. A. (1997). Infection control issues in construction and renovation. *Infection Control and Hospital Epidemiology, 18*(8), 587-596.

Chang, V. T., & Nelson, K. (2000). The role of physical proximity in nosocomial diarrhea. *Clinical Infectious Diseases, 31*(3), 717-722.

Chen, Q., Jiang, Z., & Moser, A. (1992). Control of airborne particle concentration and draught risk in an operating room. *Indoor Air, 2(3)*, 154-167.

Cheng, V. C., Lo, W. K., Woo, P. C., Chan, S. B., Cheng, S. W., Ho, M., et al. (2001). Polymicrobial outbreak of intermittent peritoneal dialysis peritonitis during external wall renovation at a dialysis center. *Peritoneal Dialysis International, 21*(3), 296-301.

Cohen, B., Saiman, L., Cimiotti, J., & Larson, E. (2003). Factors associated with hand hygiene practices in two neonatal intensive care units. *Pediatric Infectious Disease Journal, 22*(6), 494-499.

Cohen, H. A., Kitai, E., Levy, I., & Ben-Amitai, D. (2002). Handwashing patterns in two dermatology clinics. *Dermatology, 205*(4), 358-361.

Conly, J. M., Hill, S., Ross, J., Lertzman, J., & Louie, T. J. (1989). Handwashing practices in an intensive care unit: The effects of an educational program and its relationship to infection rates. *American Journal of Infection Control, 17*(6), 330-339.

Connell, B. R. (1996). Role of the environment in falls prevention. *Clinics in Geriatric Medicine, 12*(4), 859-880.

Cook, R. I., Render, M., & Woods, D. D. (2000). Gaps in the continuity of care and progress on patient safety. *British Medical Journal (Clinical Research Ed.), 320*(7), 791-794

Cornet, M., Levy, V., Fleury, L., Lortholary, J., Barquins, S., Coureul, M. H., et al. (1999). Efficacy of prevention by high-efficiency particulate air filtration or laminar airflow against Aspergillus airborne contamination during hospital renovation. *Infection Control and Hospital Epidemiology, 20*(7), 508-513.

Cotterill, S., Evans, R., & Fraise, A. P. (1996). An unusual source for an outbreak of methicillin-resistant Staphylococcus aureus on an intensive therapy unit. *Journal of Hospital Infection, 32*(3), 207-216.

Davidson, A. I., Smylie, H. G., Macdonald, A., & Smith, G. (1971). Ward design in relation to postoperative wound infection. *British Medical Journal, 1*(740), 72-75.

Dean, B., Schachter, M., Vincent, C., & Barber, N. (2002). Causes of prescribing errors in hospital inpatients: A prospective study. *Lancet, 359*(9315), 1373-1378.

Dekker, A. W., Verdonck, L. F., & Rozenberg-Arska, M. (1994). Infection prevention in autologous bone marrow transplantation and the role of protective isolation. *Bone Marrow Transplantation, 14*(1), 89-93.

Demling, R., Perea, A., Maly, J., Moylan, J., Jarett, F., & Balish, E. (1978). The use of a laminar airflow isolation system for the treatment of major burns. *American Journal of Surgery, 136(3)*, 375-378.

deSilva, M. I., & Rissing, J. P. (1984). Postoperative wound infections following cardiac surgery: Significance of contaminated cases performed in the preceding 48 hours. *Infection Control, 5*(8), 371-377.

Dettenkofer, M., Scherrer, M., Hoch, V., Glaser, H., Schwarzer, G., Zentner, J., et al. (2003). Shutting down operating theater ventilation when the theater is not in use: Infection

control and environmental aspects. *Infection Control and Hospital Epidemiology, 24*(8), 596-600.

Devine, J., Cooke, R. P., & Wright, E. P. (2001). Is methicillin-resistant Staphylococcus aureus (MRSA) contamination of ward-based computer terminals a surrogate marker for nosocomial MRSA transmission and handwashing compliance? *Journal of Hospital Infection, 48*(1), 72-75.

Dharan, S., & Pittet, D. (2002). Environmental controls in operating theatres. *Journal of Hospital Infection, 51*(2), 79-84.

Doebbeling, B. N., Stanley, G. L., Sheetz, C. T., Pfaller, M. A., Houston, A. K., Annis, L., et al. (1992). Comparative efficacy of alternative hand-washing agents in reducing nosocomial infections in intensive care units. *New England Journal of Medicine, 327*(2), 88-93.

Donald, I. P., Pitt, K., Armstrong, E., & Shuttleworth, H. (2000). Preventing falls on an elderly care rehabilitation ward. *Clinical Rehabilitation, 14*(2), 178-185.

Donowitz, L. G. (1987). Handwashing technique in a pediatric intensive care unit. *American Journal of Diseases of Children, 141*(6), 683-685.

Dorsey, S. T., Cydulka, R. K., & Emerman, C. L. (1996). Is handwashing teachable? Failure to improve handwashing behavior in an urban emergency department. *Academic Emergency Medicine, 3*(4), 360-365.

Dubbert, P. M., Dolce, J., Richter, W., Miller, M., & Chapman, S. W. (1990). Increasing ICU staff handwashing: Effects of education and group feedback. *Infection Control and Hospital Epidemiology, 11*(4), 191-193.

Enser, J., & MacInnes, D. (1999). The relationship between building design and escapes from secure units. *Journal of the Royal Society of Health, 119*(3), 170-174.

Farquharson, C., & Baguley, K. (2003). Responding to the severe acute respiratory syndrome (SARS) outbreak: Lessons learned in a Toronto emergency department. *Journal of Emergency Nursing, 29*(3), 222-228.

Flynn, E. A., Barker, K. N., Gibson, J. T., Pearson, R. E., Berger, B. A., & Smith, L. A. (1999). Impact of interruptions and distractions on dispensing errors in an ambulatory care pharmacy. *American Journal of Health-System Pharmacy, 56*(13), 1319-1325.

Friberg, B., Friberg, S., & Burman, L. G. (1999). Correlation between surface and air counts of particles carrying aerobic bacteria in operating rooms with turbulent ventilation: An experimental study. *Journal of Hospital Infection, 42*(1), 61-68.

Friberg, S., Ardnor, B., & Lundholm, R. (2003). The addition of a mobile ultra-clean exponential laminar airflow screen to conventional operating room ventilation reduces bacterial contamination to operating box levels. *Journal of Hospital Infection, 55*(2), 92-97.

Fridkin, S. K., Kremer, F. B., Bland, L. A., Padhye, A., McNeil, M. M., & Jarvis, W. R. (1996). Acremonium kiliense endophthalmitis that occurred after cataract extraction in an ambulatory surgical center and was traced to an environmental reservoir. *Clinical Infectious Diseases, 22*(2), 222-227.

Gardner, P. S., Court, S. D., Brocklebank, J. T., Downham, M. A., & Weightman, D. (1973). Virus cross-infection in paediatric wards. *British Medical Journal, 2*(5866), 571-575.

Garner, J. S. (1996). Guideline for isolation precautions in hospitals. *Infection Control and Hospital Epidemiology, 17*(1), 53-80.

Gerson, S. L., Parker, P., Jacobs, M. R., Creger, R., & Lazarus, H. M. (1994). Aspergillosis due to carpet contamination. *Infection Control and Hospital Epidemiology, 15*(1), 221-223.

Goldmann, D. A., Durbin, W. A., Jr., & Freeman, J. (1981). Nosocomial infections in a neonatal intensive care unit. *Journal of Infectious Diseases, 144*(5), 449-459.

Goodley, J. M., Clayton, Y. M., & Hay, R. J. (1994). Environmental sampling for aspergilli during building construction on a hospital site. *Journal of Hospital Infection, 26*(1), 27-35.

Graham, M. (1990). Frequency and duration of handwashing in an intensive care unit. *American Journal of Infection Control, 18*(2), 77-81.

Greenfield, E., & McManus, A. T. (1997). Infectious complications: Prevention and strategies for their control. *Nursing Clinics of North America, 32*(2), 297-309.

Guernsey, B. G., Ingrim, N. B., Hokanson, J. A., Doutre, W. H., Bryant, S. G., Blair, C. W., et al. (1983). Pharmacists' dispensing accuracy in a high-volume outpatient pharmacy service: Focus on risk management. *Drug Intelligence & Clinical Pharmacy, 17*(10), 742-746.

Hahn, T., Cummings, K. M., Michalek, A. M., Lipman, B. J., Segal, B. H., & McCarthy, P. L., Jr. (2002). Efficacy of high-efficiency particulate air filtration in preventing aspergillosis in immunocompromised patients with hematologic malignancies. *Infection Control and Hospital Epidemiology, 23*(9), 525-531.

Hamrick, W. B., & Reilly, L. (1992). A comparison of infection rates in a newborn intensive care unit before and after adoption of open visitation. *Neonatal Network 11*(1), 15-18.

Hanger, H. C., Ball, M. C., & Wood, L. A. (1999). An analysis of falls in the hospital: Can we do without bedrails? *Journal of the American Geriatrics Society, 47*(5), 529-531.

Hannan, M. M., Azadian, B. S., Gazzard, B. G., Hawkins, D. A., & Hoffman, P. N. (2000). Hospital infection control in an era of HIV infection and multi-drug resistant tuberculosis. *Journal of Hospital Infection, 44*(1), 5-11.

Harbarth, S., Sudre, P., Dharan, S., Cadenas, M., & Pittet, D. (1999). Outbreak of Enterobacter cloacae related to understaffing, overcrowding, and poor hygiene practices. *Infection Control and Hospital Epidemiology, 20*(9), 598-603.

Harvey, M. A. (1998). Critical-care-unit bedside design and furnishing: Impact on nosocomial infections. *Infection Control and Hospital Epidemiology, 19*(8), 597-601.

Hendrich, A., Fay, J., & Sorrells, A. (2002, September). Courage to heal: Comprehensive cardiac critical care. *Healthcare Design,* 11-13.

Hendrich, A. (2003, October). *Optimizing physical space for improved outcomes: Satisfaction and the bottom line.* Paper presented at "Optimizing the Physical Space for Improved Outcomes, Satisfaction, and the Bottom Line," minicourse sponsored by the Institute for Healthcare Improvement and the Center for Health Design, Atlanta, GA.

Hendrich, A. L., Bender, P. S., & Nyhuis, A. (2003). Validation of the Hendrich II Fall Risk Model: A large concurrent case/control study of hospitalized patients. *Applied Nursing Research, 16*(1), 9-21.

Herrero, I. A., Issa, N. C., & Patel, R. (2002). Nosocomial spread of linezolid-resistant, vancomycin-resistant Enterococcus faecium. *New England Journal of Medicine, 346*(11), 867-869.

Hofmann, M. T., Bankes, P. F., Javed, A., & Selhat, M. (2003). Decreasing the incidence of falls in the nursing home in a cost-conscious environment: A pilot study. *Journal of the American Medical Directors Association, 4*(2), 95-97.

Hopkins, C. C., Weber, D. J., & Rubin, R. H. (1989). Invasive aspergillus infection: Possible non-ward common source within the hospital environment. *Journal of Hospital Infection, 13*(1), 19-25.

Huebner, J., Frank, U., & Kappstein, I. (1989). Influence of architectural design on nosocomial infections in intensive care units. *Intensive Care Medicine, 15*(3), 179-183.

Humphreys, H., Johnson, E. M., Warnock, D. W., Willatts, S. M., Winter, R. J., & Speller, D. C. (1991). An outbreak of aspergillosis in a general ITU. *Journal of Hospital Infection, 18*(3), 167-177.

Institute of Medicine. (2004). *Keeping patients safe: Transforming the work environment of nurses.* Washington, DC: National Academy Press.

Iwen, P. C., Davis, J. C., Reed, E. C., Winfield, B. A., & Hinrichs, S. H. (1994). Airborne fungal spore monitoring in a protective environment during hospital construction, and

correlation with an outbreak of invasive aspergillosis. *Infection Control and Hospital Epidemiology, 15*(5), 303-306.

Jack, C. I., Smith, T., Neoh, C., Lye, M., & McGalliard, J. N. (1995). Prevalence of low vision in elderly patients admitted to an acute geriatric unit in Liverpool: Elderly people who fall are more likely to have low vision. *Gerontology, 41*(5), 280-285.

Jensen, J., Lundin-Olsson, L., Nyberg, L., & Gustafson, Y. (2002). Falls among frail older people in residential care. *Scandinavian Journal of Public Health, 30*(1), 54-61.

Jensen, J., Nyberg, L., Gustafson, Y., & Lundin-Olsson, L. (2003). Fall and injury prevention in residential care—effects in residents with higher and lower levels of cognition. *Journal of the American Geriatrics Society, 51*(5), 627-635.

Jernigan, J. A., Titus, M. G., Groschel, D. H., Getchell-White, S., & Farr, B. M. (1996). Effectiveness of contact isolation during a hospital outbreak of methicillin-resistant Staphylococcus aureus. *American Journal of Epidemiology, 143*(5), 496-504.

Kaplan, L. M., & McGuckin, M. (1986). Increasing handwashing compliance with more accessible sinks. *Infection Control, 7*(8), 408-410.

Kates, S. G., McGinley, K. J., Larson, E. L., & Leyden, J. J. (1991). Indigenous multiresistant bacteria from flowers in hospital and nonhospital environments. *American Journal of Infection Control, 19*(3), 156-161.

Kim, M. H., Mindorff, C., Patrick, M. L., Gold, R., & Ford-Jones, E. L. (1987). Isolation usage in a pediatric hospital. *Infection Control, 8*(5), 195-199.

Kistner, U. A., Keith, M. R., Sergeant, K. A., & Hokanson, J. A. (1994). Accuracy of dispensing in a high-volume, hospital-based outpatient pharmacy. *American Journal of Hospital Pharmacy, 51*(22), 2793-2797.

Kumari, D. N., Haji, T. C., Keer, V., Hawkey, P. M., Duncanson, V., & Flower, E. (1998). Ventilation grilles as a potential source of methicillin-resistant Staphylococcus aureus causing an outbreak in an orthopaedic ward at a district general hospital. *Journal of Hospital Infection, 39*(2), 127-133.

Lai, K. K. (2001). A cluster of invasive aspergillosis in a bone marrow transplant unit related to construction and the utility of air sampling. *American Journal of Infection Control, 29*(5), 333-337.

Langley, J. M., Hanakowski, M., & Bortolussi, R. (1994). Demand for isolation beds in a pediatric hospital. *American Journal of Infection Control, 22*(4), 207-211.

Lankford, M. G., Zembower, T. R., Trick, W. E., Hacek, D. M., Noskin, G. A., & Peterson, L. R. (2003). Influence of role models and hospital design on hand hygiene of healthcare workers. *Emerging Infectious Diseases, 9*(2), 217-223.

LaPointe, N. M., & Jollis, J. G. (2003). Medication errors in hospitalized cardiovascular patients. *Archives of Internal Medicine, 163*(12), 1461-1466.

Larson, E. (1988). A causal link between handwashing and risk of infection? Examination of the evidence. *Infection Control, 9*(1), 28-36.

Larson, E., & Kretzer, E. K. (1995). Compliance with handwashing and barrier precautions. *Journal of Hospital Infection, 30* (Suppl.), 88-106.

Larson, E., McGeer, A., Quraishi, Z. A., Krenzischek, D., Parsons, B. J., Holdford, J., et al. (1991). Effect of an automated sink on handwashing practices and attitudes in high-risk units. *Infection Control and Hospital Epidemiology, 12*(7), 422-428.

Larson, E. L., Bryan, J. L., Adler, L. M., & Blane, C. (1997). A multifaceted approach to changing handwashing behavior. *American Journal of Infection Control, 25*(1), 3-10.

Larson, E. L., McGinley, K. J., Foglia, A., Leyden, J. J., Boland, N., Larson, J., et al. (1992). Handwashing practices and resistance and density of bacterial hand flora on two pediatric units in Lima, Peru. *American Journal of Infection Control, 20*(2), 65-72.

Laurel, V. L., Meier, P. A., Astorga, A., Dolan, D., Brockett, R., & Rinaldi, M. G. (1999).

Pseudoepidemic of Aspergillus niger infections traced to specimen contamination in the microbiology laboratory. *Journal of Clinical Microbiology, 37*(5), 1612-1616.

Layton, M. C., Perez, M., Heald, P., & Patterson, J. E. (1993). An outbreak of mupirocin-resistant Staphylococcus aureus on a dermatology ward associated with an environmental reservoir. *Infection Control and Hospital Epidemiology, 14*(7), 369-375.

Leclair, J. M., Freeman, J., Sullivan, B. F., Crowley, C. M., & Goldmann, D. A. (1987). Prevention of nosocomial respiratory syncytial virus infections through compliance with glove and gown isolation precautions. *New England Journal of Medicine, 317*(6), 329-334.

Lee, M. L., Chen, C. J., Su, I., Chen. K. T., Yeh, C. C., King, C. C., Chang, H. I., et al. (2003). Use of quarantine to prevent transmission of severe acute respiratory syndrome—Taiwan, 2003. *MMWR, 52*(29), 680-683.

Lesar, T. S., Briceland, L. L., Delcoure, K., Parmalee, J. C., Masta-Gornic, V., & Pohl, H. (1990). Medication prescribing errors in a teaching hospital. *Journal of the American Medical Association, 263*(17), 2329-2334.

Levine, A., Siegel, S., Schreiber, A., Hauser, J., Preisler, H., Goldstein, I. M., et al. (1973). Protected environments and prophylactic antibiotics. *New England Journal of Medicine, 288*(10), 477-483.

Li, C.-S., & Hou, P.-A. (2003). Bioaerosol characteristics in hospital clean rooms. *The Science of the Total Environment, 305*(3), 169-176.

Lidwell, O. M. (1976, October). Clean air, less infection. *Hospital Engineering*, 9-17.

Lidwell, O. M., Lowbury, E. J., Whyte, W., Blowers, R., Stanley, S. J., & Lowe, D. (1984). Infection and sepsis after operations for total hip or knee-joint replacement: Influence of ultraclean air, prophylactic antibiotics and other factors. *Journal of Hygiene, 93*(3), 505-529.

Loeb, M., Wilcox, L., Thornley, D., Gun-Munro, J., & Richardson, H. (1995). Bacillus species pseudobacteremia following hospital construction. *Canadian Journal of Infection Control, 10*(2), 37-40.

Loo, V. G., Bertrand, C., Dixon, C., Vitye, D., DeSalis, B., McLean, A. P., et al. (1996). Control of construction-associated nosocomial aspergillosis in an antiquated hematology unit. *Infection Control and Hospital Epidemiology, 17*(6), 360-364.

Lord, S. R., Clark, R. D., & Webster, I. W. (1991). Visual acuity and contrast sensitivity in relation to falls in an elderly population. *Age and Ageing, 20*(3), 175-181.

Lowery, K., Buri, H., & Ballard, C. (2000). What is the prevalence of environmental hazards in the homes of dementia sufferers and are they associated with falls? *International Journal of Geriatric Psychiatry, 15*(10), 883-886.

Lund, S., Jackson, J., Leggett, J., Hales, L., Dworkin, R., & Gilbert, D. (1994). Reality of glove use and handwashing in a community hospital. *American Journal of Infection Control, 22*(6), 352-357.

Lutz, B. D., Jiankang, J., Rinaldi, M. G., Wickes, B. L., & Huycke, M. M. (2003). Outbreak of invasive Aspergillus infection in surgical patients, associated with a contaminated air-handling system. *Clinical Infectious Diseases, 37*(6), 786-793.

Mahieu, L. M., De Dooy, J. J., Van Laer, F. A., Jansens, H., & Ieven, M. M. (2000). A prospective study on factors influencing aspergillus spore load in the air during renovation works in a neonatal intensive care unit. *Journal of Hospital Infection, 45*(3), 191-197.

Maki, D. G. (1989). Risk factors for nosocomial infection in intensive care. 'Devices vs nature' and goals for the next decade. *Archives of Internal Medicine, 149*(1), 30-35.

Maki, D. G., Alvarado, C. J., Hassemer, C. A., & Zilz, M. A. (1982). Relation of the inanimate hospital environment to endemic nosocomial infection. *New England Journal of*

Medicine, 307(25), 1562-1566.

Malamou-Ladas, H., O'Farrell, S., Nash, J. Q., & Tabaqchali, S. (1983). Isolation of Clostridium difficile from patients and the environment of hospital wards. *Journal of Clinical Pathology, 36*(1), 88-92.

Malik, R. K., Montecalvo, M. A., Reale, M. R., Li, K., Maw, M., Munoz, J. L., et al. (1999). Epidemiology and control of vancomycin-resistant enterococci in a regional neonatal intensive care unit. *Pediatric Infectious Disease Journal, 18*(4), 352-356.

Marier, R. L. (1996). The design of isolation rooms. *Infection Control and Hospital Epidemiology, 17*(1), 3-4.

McDonald, L. C., Walker, M., Carson, L., Arduino, M., Aguero, S. M., Gomez, P., et al. (1998). Outbreak of Acinetobacter spp. bloodstream infections in a nursery associated with contaminated aerosols and air conditioners. *Pediatric Infectious Disease Journal, 17*(8), 716-722.

McKendrick, G. D., & Emond, R. T. (1976). Investigation of cross-infection in isolation wards of different design. *Journal of Hygiene, 76*(1), 23-31.

McManus, A. T., Mason, A. D., Jr. McManus, W. F., & Pruitt, B. A., Jr. (1992). Control of *pseudomonas aeruginosa* infections in burned patients. *Surgical Research Communications, 12*, 61-67.

McManus, A. T., Mason, A. D., Jr., McManus, W. F., & Pruitt, B. A., Jr. (1994). A decade of reduced gram-negative infections and mortality associated with improved isolation of burned patients. *Archives of Surgery, 129*(12), 1306-1309.

McManus, A. T., McManus, W. F., Mason, A. D., Jr., Aitcheson, A. R., & Pruitt, B. A., Jr. (1985). Microbial colonization in a new intensive care burn unit. A prospective cohort study. *Archives of Surgery, 120*(2), 217-223.

McMurdo, M. E. T., Millar, A. M., & Daly, F. (2000). A randomized controlled trial of fall prevention strategies in old peoples' homes. *Gerontology, 46*(2), 83-87.

Meengs, M. R., Giles, B. K., Chisholm, C. D., Cordell, W. H., & Nelson, D. R. (1994). Hand washing frequency in an emergency department. *Journal of Emergency Nursing, 20*(3), 183-188.

Mehta, G. (1990). Aspergillus endocarditis after open heart surgery: An epidemiological investigation. *Journal of Hospital Infection, 15*(3), 245-253.

Menzies, D., Fanning, A., Yuan, L., & FitzGerald, J. M. (2000). Hospital ventilation and risk for tuberculous infection in Canadian health care workers. *Annals of Internal Medicine, 133*(10), 779-789.

Mermel, L. A., Josephson, S. L., Giorgio, C. H., Dempsey, J., & Parenteau, S. (1995). Association of Legionnaires' disease with construction: Contamination of potable water? *Infection Control and Hospital Epidemiology, 16*(2), 76-81.

Merriman, E., Corwin, P., & Ikram, R. (2002). Toys are a potential source of cross-infection in general practitioners' waiting rooms. *British Journal of General Practice, 52*(475), 138-140.

Mion, L. C., Fogel, J., Sandhu, S., Palmer, R. M., Minnick, A. F., Cranston, T., et al. (2001). Outcomes following physical restraint reduction programs in two acute care hospitals. *Joint Commission Journal on Quality Improvement, 27*(11), 605-618.

Mlinek, E. J., & Pierce, J. (1997). Confidentiality and privacy breaches in a university hospital emergency department. *Academic Emergency Medicine, 4*(12), 1142-1146.

Morawska, L., Jamriska, M., & Francis, P. (1998). Particulate matter in the hospital environment. *Indoor Air, 8(4)*, 285-294.

Morgan, V. R., Mathison, J. H., Rice, J. C., & Clemmer, D. I. (1985). Hospital falls: A persistent problem. *American Journal of Public Health, 75*(7), 775.

Mortlock, T. (1994). Maintaining patient confidentiality in A&E. *Nursing Times, 90*(34), 42-43.

Muto, C. A., Sistrom, M. G., & Farr, B. M. (2000). Hand hygiene rates unaffected by installation of dispensers of a rapidly acting hand antiseptic. *American Journal of Infection Control, 28*(3), 273-276.

Nauseef, W. M., & Maki, D. G. (1981). A study of the value of simple protective isolation in patients with granulocytopenia. *New England Journal of Medicine, 304*(8), 448-453.

Neely, A. N., & Maley, M. P. (2001). Dealing with contaminated computer keyboards and microbial survival. *American Journal of Infection Control, 29*(2), 131-132.

Neely, A. N., & Sittig, D. F. (2002). Basic microbiologic and infection control information to reduce the potential transmission of pathogens to patients via computer hardware. *Journal of the American Medical Informatics Association, 9*(5), 500-508.

Noskin, G. A., Bednarz, P., Suriano, T., Reiner, S., & Peterson, L. (2000). Persistent contamination of fabric-covered furniture by Vancomycin-resistant Enterocci: Implication for upholstery selection in hospitals. *American Journal of Infection Control, 28*(4), 311-313.

Noskin, G. A., & Peterson, L. R. (2001). Engineering infection control through facility design. *Emerging Infectious Diseases, 7*(2), 354-357.

Noskin, G. A., Stosor, V., Cooper, I., & Peterson, L. R. (1995). Recovery of vancomycin-resistant enterococci on fingertips and environmental surfaces. *Infection Control and Hospital Epidemiology, 16*(10), 577-581.

Nurmi, I., & Luthje, P. (2002). Incidence and costs of falls and fall injuries among elderly in institutional care. *Scandinavian Journal of Primary Health Care, 20*(2), 118-122.

Nystrom, B. (1983). Optimal design/personnel for control of intensive care unit infection. *Infection Control, 4*(5), 388-390.

Nystrom, B. (1994). Impact of handwashing on mortality in intensive care: Examination of the evidence. *Infection Control and Hospital Epidemiology, 15*(7), 435-436.

Obbard, J. P., & Fang, L. S. (2003). Airborne concentrations of bacteria in a hospital environment in Singapore. *Water Air and Soil Pollution, 144*(1), 333-341.

O'Keefe, S.T. (2004). Down with bedrails? *Lancet, 363*(9406), 343-344.

Opal, S. M., Asp, A. A., Cannady, P. B., Jr., Morse, P. L., Burton, L. J., & Hammer, P. G. (1986). Efficacy of infection control measures during a nosocomial outbreak of disseminated aspergillosis associated with hospital construction. *Journal of Infectious Diseases, 153*(3), 634-637.

Oren, I., Haddad, N., Finkelstein, R., & Rowe, J. M. (2001). Invasive pulmonary aspergillosis in neutropenic patients during hospital construction: Before and after chemoprophylaxis and institution of HEPA filters. *American Journal of Hematology, 66*(4), 257-262.

Palmer, R. (1999). Bacterial contamination of curtains in clinical areas. *Nursing Standard, 14*(2), 33-35.

Panagopoulou, P., Filioti, J., Petrikkos, G., Giakouppi, P., Anatoliotaki, M., Farmaki, E., et al. (2002). Environmental surveillance of filamentous fungi in three tertiary care hospitals in Greece. *Journal of Hospital Infection, 52*(3), 185-191.

Parker, K., & Miles, S. H. (1997). Deaths caused by bedrails. *Journal of the American Geriatrics Society, 45*(7), 797-802.

Passweg, J. R., Rowlings, P. A., Atkinson, K. A., Barrett, A. J., Gale, R. P., Gratwohl, A., et al. (1998). Influence of protective isolation on outcome of allogeneic bone marrow transplantation for leukemia. *Bone Marrow Transplantation, 21*(12), 1231-1238.

Pegues, D. A., & Woernle, C. H. (1993). An outbreak of acute nonbacterial gastroenteritis in a nursing home. *Infection Control and Hospital Epidemiology, 14*(2), 87-94.

Pettinger, A., & Nettleman, M. D. (1991). Epidemiology of isolation precautions. *Infection Control and Hospital Epidemiology, 12*(5), 303-307.

Pittet, D., Hugonnet, S., Harbarth, S., Mourouga, P., Sauvan, V., Touveneau, S., et al. (2000).

Effectiveness of a hospital-wide programme to improve compliance with hand hygiene. *Lancet, 356*(9238), 1307-1312.

Pittet, D., Mourouga, P., & Perneger, T. V. (1999). Compliance with handwashing in a teaching hospital. *Annals of Internal Medicine, 130*(2), 126-130

Preston, G. A., Larson, E. L., & Stamm, W. E. (1981). The effect of private isolation rooms on patient care practices, colonization and infection in an intensive care unit. *American Journal of Medicine, 70*(3), 641-645.

Pryor, F., & Messmer, P. R. (1998). The effect of traffic patterns in the OR on surgical site infections. *AORN Journal, 68*(4), 649-660.

Raad, I., Hanna, H., Osting, C., Hachem, R., Umphrey, J., Tarrand, J., et al. (2002). Masking of neutropenic patients on transport from hospital rooms is associated with a decrease in nosocomial aspergillosis during construction. *Infection Control and Hospital Epidemiology, 23*(1), 41-43.

Redman, J. F., & McNatt, S. J. (2000). Portable cushioned operating table siderails: An adjunct to pediatric surgery. *Southern Medical Journal, 93*(11), 1081-1082.

Reiling, J., Breckbill, C., Murphy, M., McCullough, S., & Chernos, S. (2003). Facility designing around patient safety and its effect on nursing. *Nursing Economics, 21*(3), 143-147.

Resnick, B. (1999). Falls in a community of older adults: Putting research into practice. *Clinical Nursing Research, 8*(3), 251-266.

Rice, N., Streifel, A., & Vesley, D. (2001). An evaluation of hospital special-ventilation-room pressures. *Infection Control and Hospital Epidemiology, 22*(1), 19-23.

Roberts, S. A., Findlay, R., & Lang, S. D. (2001). Investigation of an outbreak of multi-drug resistant Acinetobacter baumannii in an intensive care burns unit. *Journal of Hospital Infection, 48*(3), 228-232.

Rolandi, L., Lodola, L., Guglielminetti, M., Caretta, G., & Azzaretti, G. (1998). Evaluation of airborne particulate and fungi in critical hospital care units. *Toxicology Letters, 95*(Suppl. 1), 226.

Roseman, C., & Booker, J. M. (1995). Workload and environmental factors in hospital medication errors. *Nursing Research, 44*(4), 226-230.

Rountree, P. M., Beard, M. A., Loewenthal, J., May, J., & Renwick, S. B. (1967). Staphylococcal sepsis in a new surgical ward. *British Medical Journal, 1*(533), 132-137.

Saiman, L. (2002). Risk factors for hospital-acquired infections in the neonatal intensive care unit. *Seminars in Perinatology, 26*(5), 315-321.

Samore, M. H., Venkataraman, L., DeGirolami, P. C., Arbeit, R. D., & Karchmer, A. W. (1996). Clinical and molecular epidemiology of sporadic and clustered cases of nosocomial Clostridium difficile diarrhea. *American Journal of Medicine, 100*(1), 32-40.

San Jose-Alonso, J. F., Velasco-Gomez, E., Rey-Martinez, F. J., Alvarez-Guerra, M., & Pelaez, C. G. (1999). Study on environmental quality of a surgical block. *Energy and Buildings, 29*(2), 179-187.

Sanderson, P. J., & Weissler, S. (1992). Recovery of coliforms from the hands of nurses and patients: Activities leading to contamination. *Journal of Hospital Infection, 21*(2), 85-93.

Sarubbi, F. A., Jr., Kopf, H. B., Wilson, M. B., McGinnis, M. R., & Rutala, W. A. (1982). Increased recovery of Aspergillus flavus from respiratory specimens during hospital construction. *American Review of Respiratory Disease, 125*(1), 33-38.

Schott, J., & Force, R. W. (1999). Do bedrails decrease falls in hospitalized patients? *Journal of Family Practice, 48*(8), 579.

Schulster, L., & Chinn, R. Y. (2003). Guidelines for environmental infection control in health-care facilities. Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). *MMWR. Recommendations and Reports, 52*(RR-10), 1-42.

Sheperd, L., & Foureur, M. (2001). Introduction of night-lights to reduce falls on an assessment, treatment and rehabilitation unit. *JARNA, 4*(4), 11-13.

Sherertz, R., J. Belani, A., Kramer, B. S., Elfenbein, G. J., Weiner, R. S., Sullivan, M. L., et al. (1987). Impact of air filtration on nosocomial Aspergillus infections: Unique risk of bone marrow transplant recipients. *American Journal of Medicine, 83*(4), 709-718.

Sherertz, R. J., & Sullivan, M. L. (1985). An outbreak of infections with Acinetobacter calcoaceticus in burn patients: Contamination of patients' mattresses. *Journal of Infectious Diseases, 151*(2), 252-258.

Shirani, K. Z., McManus, A. T., Vaughan, G. M., McManus, W. F., Pruitt, B. A., Jr., & Mason, A. D., Jr. (1986). Effects of environment on infection in burn patients. *Archives of Surgery, 121*(1), 31-36.

Skoutelis, A. T., Westenfelder, G. O., Beckerdite, M., & Phair, J. P. (1994). Hospital carpeting and epidemiology of Clostridium difficile. *American Journal of Infection Control, 22*(4), 212-217.

Smylie, H. G., Davidson, A. I., Macdonald, A., & Smith, G. (1971). Ward design in relation to postoperative wound infection. *British Medical Journal, 1*(740), 67-72.

Soe, J. A. T., Hall, J. M., Collyns, T. A., Witherden, I. R., Parnell, P., Woodrow, G., et al. (2002). An outbreak of vancomycin-resistant enterococci associated with major ward refurbishment. *Journal of Hospital Infection, 50*(1), 79-80.

Srinivasan, A., Beck, C., Buckley, T., Geyh, A., Bova, G., Merz, W., et al. (2002). The ability of hospital ventilation systems to filter Aspergillus and other fungi following a building implosion. *Infection Control and Hospital Epidemiology, 23*(9), 520-524.

Startzell, J. K., Owens, D. A., Mulfinger, L. M., & Cavanagh, P. R. (2000). Stair negotiation in older people: A review. *Journal of the American Geriatrics Society, 48*(5), 567-580.

Streifel, A. J., Vesley, D., Rhame, F. S., & Murray, B. (1989). Control of airborne environmental spores in a university hospital. *Environment International, 15(1-6)*, 221-227.

Stuyver, L., Claeys, H., Wyseur, A., Van Arnhem, W., De Beenhouwer, H., Uytendaele, S., et al. (1996). Hepatitis C virus in a hemodialysis unit: Molecular evidence for nosocomial transmission. *Kidney International, 49*(3), 889-895.

Su, L., Li, H., & Bai, T. (1996). The design of air purification system and its effect on surgical ICU. *Zhonghua Wai Ke Za Zhi [Chinese Journal of Surgery], 34*(5), 291-293.

Tabbara, K. F., & Al Jabarti, A. (1998). Hospital construction-associated outbreak of ocular aspergillosis after cataract surgery. *Ophthalmology, 105*(3), 522-526.

Talon, D., Vichard, P., Muller, A., Bertin, M., Jeunet, L., & Bertrand, X. (2003). Modelling the usefulness of a dedicated cohort facility to prevent the dissemination of MRSA. *Journal of Hospital Infection, 54*(1), 57-62.

Thompson, J. T., Meredith, J. W., & Molnar, J. A. (2002). The effect of burn nursing units on burn wound infections. *Journal of Burn Care & Rehabilitation, 23*(4), 281-286; discussion 280.

Ubel, P. A., Zell, M. M., & Miller, D. J. (1995). Elevator talk: Observational study of inappropriate comments in a public space. *American Journal of Medicine, 99*(2), 190-194.

Uden, G. (1985). Inpatient accidents in hospitals. *Journal of the American Geriatrics Society, 33*(12), 833-841.

Uduman, S. A., Farrukh, A. S., Nath, K. N., Zuhair, M. Y., Ifrah, A., Khawla, A. D., et al. (2002). An outbreak of Serratia marcescens infection in a special-care baby unit of a community hospital in United Arab Emirates: The importance of the air conditioner duct as a nosocomial reservoir. *Journal of Hospital Infection, 52*(3), 175-180.

Lee, M. L., Chen, C. J., Su, I., Chen. K. T., Yeh, C. C., King, C. C., et al. (2003). Use of quarantine to prevent transmission of severe acute respiratory syndrome—Taiwan, 2003.

MMWR, 52(29), 680-683.

Utrup, L. J., Werner, K., & Frey, A. H. (2003). Minimizing pathogenic bacteria, including spores, in indoor air. *Journal of Environmental Health, 66*(5), 19-26, 29.

van Leeuwen, M., Bennett, L., West, S., Wiles, V., & Grasso, J. (2001). Patient falls from bed and the role of bedrails in the acute care setting. *Australian Journal of Advanced Nursing, 19*(2), 8-13.

Vassallo, M., Azeem, T., Pirwani, M. F., Sharma, J. C., & Allen, S. C. (2000). An epidemiological study of falls on integrated general medical wards. *International Journal of Clinical Practice, 54*(10), 654-657.

Vernon, M. O., Trick, W. E., Welbel, S. F., Peterson, B. J., & Weinstein, R. A. (2003). Adherence with hand hygiene: Does number of sinks matter? *Infection Control and Hospital Epidemiology, 24*(3), 224-225.

Volpp, K. G. M., & Grande, D. (2003). Residents' suggestions for reducing errors in teaching hospitals. *New England Journal of Medicine, 348*(9), 851-855.

Voss, A., & Widmer, A. F. (1997). No time for handwashing? Handwashing versus alcoholic rub: Can we afford 100% compliance? *Infection Control and Hospital Epidemiology, 18*(3), 205-208.

Walsh, T. R., Guttendorf, J., Dummer, S., Hardesty, R. L., Armitage, J. M., Kormos, R. L., et al. (1989). The value of protective isolation procedures in cardiac allograft recipients. *Annals of Thoracic Surgery, 47*(4), 539-544; discussion 544-535.

Wan, G. H., Lu, S. C., & Tsai, Y. H. (2004). Polymerase chain reaction used for the detection of airborne Mycobacterium tuberculosis in health care settings. *American Journal of Infection Control, 32*(1), 17-22.

Ward, A., Candela, L., & Mahoney, J. (2004). Developing a unit-specific falls reduction program. *Journal for Healthcare Quality, 26*(2), 36-40; quiz 40-31.

Watanakunakorn, C., Wang, C., & Hazy, J. (1998). An observational study of hand washing and infection control practices by healthcare workers. *Infection Control and Hospital Epidemiology, 19*(11), 858-860.

Weems, J. J., Jr., Davis, B. J., Tablan, O. C., Kaufman, L., & Martone, W. J. (1987). Construction activity: An independent risk factor for invasive aspergillosis and zygomycosis in patients with hematologic malignancy. *Infection Control, 8*(2), 71-75.

Wendt, C., Dietze, B., Dietz, E., & Ruden, H. (1997). Survival of Acinetobacter baumannii on dry surfaces. *Journal of Clinical Microbiology, 35*(6), 1394-1397.

Wenzel, R. P., Thompson, R. L., Landry, S. M., Russell, B. S., Miller, P. J., Ponce de Leon, S., et al. (1983). Hospital-acquired infections in intensive care unit patients: An overview with emphasis on epidemics. *Infection Control, 4*(5), 371-375.

Wigglesworth, N. (2003). The use of protective isolation. *Nursing Times, 99*(7), 26-27.

Williams, H. N., Singh, R., & Romberg, E. (2003). Surface contamination in the dental operatory: A comparison over two decades. *Journal of the American Dental Association, 134*(3), 325-330; quiz 339.

Wolf, E. J. (2003). Promoting patient safety through facility design. *Healthcare Executive, 18*(4), 16-20.

Wong, S., Glennie, K., Muise, M., Lambie, E., & Meagher, D. (1981). An exploration of environmental variables and patient falls. *Dimensions in Health Service, 58*(6), 9-11.

Wu, P. C., Su, H. J., & Ho, H. M. (2000). A comparison of sampling media for environmental viable fungi collected in a hospital environment. *Environmental Research, 82*(3), 253-257.

Zimmerman, S., Gruber-Baldini, A. L., Hebel, J. R., Sloane, P. D., & Magaziner, J. (2002). Nursing home facility risk factors for infection and hospitalization: Importance of registered nurse turnover, administration, and social factors. *Journal of the American*

Geriatrics Society, 50(12), 1987-1995.

Reduce Stress and Improve Outcomes

Aaron, J. N., Carlisle, C. C., Carskadon, M. A., Meyer, T. J., Hill, N. S., & Millman, R. P. (1996). Environmental noise as a cause of sleep disruption in an intermediate respiratory care unit. *Sleep, 19*(9), 707-710.

Ackerman, B., Sherwonit, E., & Fisk, W. (1989). Reduced incidental light exposure: Effect on the development of retinopathy of prematurity in low birth weight infants. *Pediatrics, 83*(6), 958-962.

Aitken, R. J. (1982). Quantitative noise analysis in a modern hospital. *Archives of Environmental Health, 37*(6), 361-364.

Alessi, C. A., Schnelle, J. F., MacRae, P. G., Ouslander, J. G., al-Samarrai, N., Simmons, S. F., et al. (1995). Does physical activity improve sleep in impaired nursing home residents? *Journal of the American Geriatrics Society, 43*(10), 1098-1102.

Allaouchiche, B., Duflo, F., Debon, R., Bergeret, A., & Chassard, D. (2002). Noise in the postanaesthesia care unit. *British Journal of Anaesthesia, 88*(3), 369-373.

Anagnostakis, D., Petmezakis, J., Messaritakis, J., & Matsaniotis, N. (1980). Noise pollution in neonatal units: A potential health hazard. *Acta Paediatrica Scandinavica, 69*(6), 771-773.

Astedt-Kurki, P., Paunonen, M., & Lehti, K. (1997). Family members' experiences of their role in a hospital: A pilot study. *Journal of Advanced Nursing, 25*(5), 908-914.

Avery, D. H. (1998). A turning point for seasonal affective disorder and light therapy research? *Archives of General Psychiatry, 55*(10), 863.

Baker, C. F. (1984). Sensory overload and noise in the ICU: Sources of environmental stress. *Critical Care Quarterly, 6*(4), 66-80.

Baker, C. F. (1992). Discomfort to environmental noise: Heart rate responses of SICU patients. *Critical Care Nursing Quarterly, 15*(2), 75-90.

Baker, C. F. (1993). Annoyance to ICU noise: A model of patient discomfort. *Critical Care Nursing Quarterly, 16*(2), 83-90.

Baker, C. F., Garvin, B. J., Kennedy, C. W., & Polivka, B. J. (1993). The effect of environmental sound and communication on CCU patients' heart rate and blood pressure. *Research in Nursing & Health, 16*(6), 415-421.

Baldwin, S. (1985). Effects of furniture rearrangement on the atmosphere of wards in a maximum-security hospital. *Hospital & Community Psychiatry, 36*(5), 525-528.

Balogh, D., Kittinger, E., Benzer, A., & Hackl, J. M. (1993). Noise in the ICU. *Intensive Care Medicine, 19*(6), 343-346.

Barnhart, S. K., Perkins, N. H., & Fitzsimonds, J. (1998). Behaviour and outdoor setting preferences at a psychiatric hospital. *Landscape and Urban Planning, 42*(2), 147-156.

Barry, J. T., & Miller, D. B. (1980). The nursing home visitor: Who, when, where and for how long? *Long Term Care and Health Services Administration Quarterly, 4*(4), 261-274.

Bay, E. J., Kupferschmidt, B., Opperwall, B. J., & Speer, J. (1988). Effect of the family visit on the patient's mental status. *Focus on Critical Care, 15*(1), 11-16.

Bayo, M. V., Garcia, A. M., & Garcia, A. (1995). Noise levels in an urban hospital and workers' subjective responses. *Archives of Environmental Health, 50*(3), 247-251.

Beauchemin, K. M., & Hays, P. (1996). Sunny hospital rooms expedite recovery from severe and refractory depressions. *Journal of Affective Disorders, 40*(1), 49-51.

Beauchemin, K. M., & Hays, P. (1998). Dying in the dark: Sunshine, gender and outcomes in myocardial infarction. *Journal of the Royal Society of Medicine, 91*(7), 352-354.

Bell, P. L. (1997). Adolescent mothers' perceptions of the neonatal intensive care unit

environment. *Journal of Perinatal & Neonatal Nursing, 11*(1), 77-84.

Bellieni, C. V., Buonocore, G., Pinto, I., Stacchini, N., Cordelli, D. M., & Bagnoli, F. (2003). Use of sound-absorbing panel to reduce noisy incubator reverberating effects. *Biology of the Neonate, 84*(4), 293-296.

Benedetti, F., Colombo, C., Barbini, B., Campori, E., & Smeraldi, E. (2001). Morning sunlight reduces length of hospitalization in bipolar depression. *Journal of Affective Disorders, 62*(3), 221-223.

Benians, R. C. (1988). The influence of parental visiting on survival and recovery of extensively burned children. *Burns, Including Thermal Injury, 14*(1), 31-34.

Benini, F., Magnavita, V., Lago, P., Arslan, E., & Pisan, P. (1996). Evaluation of noise in the neonatal intensive care unit. *American Journal of Perinatology, 13*(1), 37-41.

Bentley, S., Murphy, F., & Dudley, H. (1977). Perceived noise in surgical wards and an intensive care area: An objective analysis. *British Medical Journal, 2*(6101), 1503-1506.

Berens, R. J., & Weigle, C. G. (1996). Cost analysis of ceiling tile replacement for noise abatement. *Journal of Perinatology, 16*(Pt 1), 199-201.

Berg, S. (2001). Impact of reduced reverberation time on sound-induced arousals during sleep. *Sleep, 24*(3), 289-292.

Berglund, B., Lindvall, T., & Schwela, D. H. (1999). *Guidelines for community noise.* World Health Organization: Protection of the Human Environment.

Berrutto, V., Fontoynont, M., & Gue, J. M. F. (1997). Effect of temperature and light source type (natural/artificial) on visual comfort appraisal: Experimental design and setting. *Right Light 4 Proceedings, 1*, 139-141.

Berwick, D. M. & Kotagal, M. (2004). Restricted visiting hours in ICUs: Time to change. *JAMA, 292*(6), 736-737.

Biley, F. C. (1994). Effects of noise in hospitals. *British Journal of Nursing, 3*(3), 110-113.

Blackburn, S., & Patteson, D. (1991). Effects of cycled light on activity state and cardiorespiratory function in preterm infants. *Journal of Perinatal & Neonatal Nursing, 4*(4), 47-54.

Blomkvist, V., Eriksen, C. A., Theorell, T., Ulrich, R. S., & Rasmanis, G. (in press). Acoustics and psychosocial environment in coronary intensive care. *Occupational and Environmental Medicine.*

Bonn, D. (1998). Noise pollution in intensive-care units reduced by simple measures. *Lancet, 352*(9128), 628.

Boubekri, M., Hull, R. B., & Boyer, L. L. (1991). Impact of window size and sunlight penetration on office workers' mood and satisfaction: A novel way of assessing sunlight. *Environment & Behavior, 23*(4), 474-493.

Bovenzi, M., & Collareta, A. (1984). Noise levels in a hospital. *Industrial Health, 22*(2), 75-82.

Bremmer, P., Byers, J. F., & Kiehl, E. (2003). Noise and the premature infant: Physiological effects and practice implications. *Journal of Obstetric, Gynecologic, and Neonatal Nursing, 32*(4), 447-454.

Brown, B., Wright, H., & Brown, C. (1997). A post-occupancy evaluation of wayfinding in a pediatric hospital: Research findings and implications for instruction. *Journal of Architectural and Planning Research, 14*(1), 35-51.

Brown, P., & Taquino, L. T. (2001). Designing and delivering neonatal care in single rooms. *Journal of Perinatal & Neonatal Nursing, 15*(1), 68-83.

Buemi, M., Allegra, A., Grasso, F., & Mondio, G. (1995). Noise pollution in an intensive care unit for nephrology and dialysis. *Nephrology, Dialysis, Transplantation, 10*(12), 2235-2239.

Butler, D., Acquino, A. L., Hissong, A. A., & Scott, P. A. (1993). Wayfinding by newcomers in a complex building. *Human Factors, 25*(1), 159-173.

Callahan, E. J., Brasted, W. S., Myerberg, D. Z., & Hamilton, S. (1991). Prolonged travel time to neonatal intensive care unit does not affect content of parental visiting: A controlled prospective study. *Journal of Rural Health 7*(1), 73-83.

Carpman, J. R. (1993). *Design that cares: Planning health facilities for patients and visitors* (2nd ed.). Chicago: American Hospital Publishing.

Carpman, J. R., Grant, M., & Simmons, D. (1983-84). Wayfinding in the hospital environment: The impact of various floor numbering alternatives. *Journal of Environmental Systems, 13*(4), 353-364.

Carpman, J. R., Grant, M., & Simmons, D. (1984). *No more mazes: Research about design for wayfinding in hospitals.* Ann Arbor, MI: The University of Michigan Hospitals.

Carpman, J. R., Grant, M. A., & Simmons, D. A. (1985). Hospital design and wayfinding: A video simulation study. *Environment & Behavior, 17*(3), 296-314.

Carr, J. A., & Powers, M. J. (1986). Stressors associated with coronary bypass surgery. *Nursing Research, 35*(4), 243-246.

Causey, D. L., McKay, M., Rosenthal, C., & Darnell, C. (1998). Assessment of hospital-related stress in children and adolescents admitted to a psychiatric inpatient unit. *Journal of Child and Adolescent Psychiatric Nursing, 11*(4), 135-145.

Cederberg, R. A., Frederiksen, N. L., Benson, B. W., & Shulman, J. D. (1998). Effect of different background lighting conditions on diagnostic performance of digital and film images, *Dento Maxillo Facial Radiology, 27*(5), 293-297.

Chang, Y. J., Lin, C. H., & Lin, L. H. (2001). Noise and related events in a neonatal intensive care unit. *Acta Paediatrica Taiwanica = Taiwan Er Ke Yi Xue Hui Za Zhi, 42*(4), 212-217.

Cheek, F. E., Maxwell, R., & Weisman, R. (1971). Carpeting the ward: An exploratory study in environmental psychiatry. *Mental Hygiene, 55*(1), 109-118.

Chen, H. F., & Chang, Y. J. (2001). Noise distribution of an incubator with nebulizer at a neonatal intensive care unit in southern Taiwan. *Journal of Nursing Research, 9*(3), 25-32.

Christenfeld, R., Wagner, J., Pastva, G., & Acrish, W. P. (1989). How physical settings affect chronic mental patients. *Psychiatric Quarterly, 60*(3), 253-264.

Cmiel, C. A., Karr, D. M., Gasser, D. M., Oliphant, L. M., & Neveau, A. J. (2004). Noise control: A nursing team's approach to sleep promotion. *American Journal of Nursing, 104*(2), 40-48.

Cohen-Mansfield, J., & Werner, P. (1999). Outdoor wandering parks for persons with dementia: A survey of characteristics and use. *Alzheimer's Disease and Associated Disorders, 13*(2), 109-117.

Colledge, J. (1980). Visiting the mentally handicapped in residential care. *British Journal of Psychiatry, 137*, 313-318.

Cooper Marcus, C. (2003). Healing havens: Two hospital gardens in Portland, Oregon, win awards for therapeutic values. *Landscape Architecture, 93*(8): 84, 91,107-109.

Cooper Marcus, C., & Barnes, M. (1995). *Gardens in healthcare facilities: Uses, therapeutic benefits, and design recommendations*. Martinez, CA: Center for Health Design.

Corser, N. C. (1996). Sleep of 1- and 2-year-old children in intensive care. *Issues in Comprehensive Pediatric Nursing, 19*(1), 17-31.

Couper, R. T., Hendy, K., Lloyd, N., Gray, N., Williams, S., & Bates, D. J. (1994). Traffic and noise in children's wards. *Medical Journal of Australia, 160*(6), 338-341.

Cropp, A. J., Woods, L. A., Raney, D., & Bredle, D. L. (1994). Name that tone. The proliferation of alarms in the intensive care unit. *Chest, 105*(4), 1217-1220.

Cureton-Lane, R. A., & Fontaine, D. K. (1997). Sleep in the pediatric ICU: An empirical investigation. *American Journal of Critical Care, 6*(1), 56-63.

Cuttini, M., Rebagliato, M., Bortoli, P., Hansen, G., de Leeuw, R., Lenoir, S., et al. (1999). Parental visiting, communication, and participation in ethical decisions: A comparison of neonatal unit policies in Europe. *Archives of Disease in Childhood. Fetal and Neonatal Edition, 81*(2), FB4-91.

Daniels, D. Y. (1996). Visiting hours. An open ICU. *RN, 59*(10), 30-32.

Davies, J. M., Ewen, A., Cuppage, A., Gilbert, D., & Winkelaar, R. (1989). Noise levels in operating rooms—A comparison of Canada and England. *Anaesthesia and Intensive Care, 17*(1), 98.

Deep, P., & Petropoulos, D. (2003). Effect of illumination on the accuracy of identifying interproximal carious lesions on bitewing radiographs. *Journal (Canadian Dental Association), 69*(7), 444-446.

Diette, G. B., Lechtzin, N., Haponik, E., Devrotes, A., & Rubin, H. R. (2003). Distraction therapy with nature sights and sounds reduces pain during flexible bronchoscopy: A complementary approach to routine analgesia. *Chest, 123*(3), 941-948.

Diffey, B. L., & Storey, A. (1988). Light and length of stay in hospital. *Journal of the Royal Society of Medicine, 81*(11), 643.

Dijkers, M., Yavuzer, G., Ergin, S., Weitzenkamp, D., & Whiteneck, G. G. (2002). A tale of two countries: Environmental impacts on social participation after spinal cord injury. *Spinal Cord, 40*(7), 351-362.

Dodenhoff, R. M. (1995). Noise in the orthopaedic operating theatre. *Annals of the Royal College of Surgeons of England, 77*(Suppl.), 8-9.

Donchin, Y., & Seagull, F. J. (2002). The hostile environment of the intensive care unit. *Current Opinion in Critical Care, 8*(4), 316-320.

Drinkard, J. L. (1984). *Wayfinding in the hospital environment: A design analysis.* Unpublished master's thesis, Georgia Institute of Technology, Atlanta.

Duxbury, J. (1994). Avoiding disturbed sleep in hospitals. *Nursing Standard, 9*(10), 31-34.

Dvoskin, J. A., Radomski, S. J., Bennett, C., Olin, J. A., Hawkins, R. L., Dotson, L. A., et al. (2002). Architectural design of a secure forensic state psychiatric hospital. *Behavioral Sciences & the Law, 20*(5), 481-493.

Eastman, C. I., Young, M. A., Fogg, L. F., Liu, L., & Meaden, P. M. (1998). Bright light treatment of winter depression. *Archives of General Psychiatry, 55*(10), 883.

Elander, G., & Hellstrom, G. (1995). Reduction of noise levels in intensive care units for infants: Evaluation of an intervention program. *Heart & Lung, 24*(5), 376-379.

Epp, T., MacPhee, R., & Allman, A. (2001). Let there be light: The aging eye needs more illumination than is available in many facilities. *Canadian Nursing Home, 12*(2), 4.

Falk, S. A., & Woods, N. F. (1973). Hospital noise-levels and potential health hazards. *New England Journal of Medicine, 289*(15), 774-781.

Federman, E. J., Drebing, C. E., Boisvert, C., Penk, W., Binus, G. & Rosenheck, R. (2000). Relationship between climate and psychiatric inpatient length of stay in Veterans Health Administration hospitals. *American Journal of Psychiatry, 157*(10), 1669.

Fife, D., & Rappaport, E. (1976). Noise and hospital stay. *American Journal of Public Health, 66*(7), 680-681.

Finlay, G. (1991). Sleep and intensive care. *Intensive Care Nursing, 7*(1), 61-68.

Firestone, I. J., Lichtman, C. M., & Evans, J. R. (1980). Privacy and solidarity: Effects of nursing home accommodation on environmental perception and sociability preferences. *International Journal of Aging & Human Development, 11*(3), 229-241.

Flynn, E. A., Barker, K. N., Gibson, J. T., Pearson, R. E., Smith, L. A., & Berger, B. A. (1996). Relationships between ambient sounds and the accuracy of pharmacists' prescription-filling performance. *Human Factors, 38*(4), 614-622.

Flynn, M. B. (1996). Wound healing and critical illness. *Critical Care Nursing Clinics of North*

America, 8(2), 115-123.

Foltz-Gray, D. (1995). Intimate strangers. When roommates clash, caregivers can ease the tension—or make it worse. *Contemporary Longterm Care, 18*(6), 34-37.

Foss, K. R., & Tenholder, M. F. (1993). Expectations and needs of persons with family members in an intensive care unit as opposed to a general ward. *Southern Medical Journal, 86*(4), 380-384.

Fox, R. A., & Henson, P. W. (1996). Potential ocular hazard from a surgical light source. *Australasian Physical and Engineering Sciences in Medicine, 19*(1), 12-16.

Franck, L. S., & Spencer, C. (2003). Parent visiting and participation in infant caregiving activities in a neonatal unit. *Birth, 30*(1), 31-35.

Freedman, N. S., Gazendam, J., Levan, L., Pack, A. I., & Schwab, R. J. (2001). Abnormal sleep/wake cycles and the effect of environmental noise on sleep disruption in the intensive care unit. *American Journal of Respiratory and Critical Care Medicine, 163*(2), 451-457.

Freedman, N. S., Kotzer, N., & Schwab, R. J. (1999). Patient perception of sleep quality and etiology of sleep disruption in the intensive care unit. *American Journal of Respiratory and Critical Care Medicine, 159*(Pt 1), 1155-1162.

Friberg, T. R., & Borrero, G. (2000). Diminished perception of ambient light: A symptom of clinical depression? *Journal of Affective Disorders, 61*(1-2), 113-118.

Frumkin, H. (2001). Beyond toxicity: Human health and the natural environment. *American Journal of Preventive Medicine, 20*(3), 234-240.

Gabor, J. Y., Cooper, A. B., Crombach, S. A., Lee, B., Kadikar, N., Bettger, H. E., et al. (2003). Contribution of the intensive care unit environment to sleep disruption in mechanically ventilated patients and healthy subjects. *American Journal of Respiratory and Critical Care Medicine, 167*(5), 708-715.

Gast, P. L., & Baker, C. F. (1989). The CCU patient: Anxiety and annoyance to noise. *Critical Care Nursing Quarterly, 12*(3), 39-54.

Gershon, J., Zimand, E., Lemos, R., Rothbaum, B. O., & Hodges, L. (2003). Use of virtual reality as a distractor for painful procedures in a patient with pediatric cancer: A case study. *Cyberpsychology & Behavior, 6*(6), 657-661.

Giacoia, G. P., Rutledge, D., & West, K. (1985). Factors affecting visitation of sick newborns. *Clinical Pediatrics, 24*(5), 259-262.

Giunta, F., & Rath, J. (1969). Effect of environmental illumination in prevention of hyperbilirubinemia of prematurity. *Pediatrics, 44*(2), 162-167.

Glass, P., Avery, G., Subramaniam, K. N. S., Keys, M. P., Sostek, A. M., & Friendly, D. S. (1985). Effect of bright light in the hospital nursery on the incidence of retinopathy of maturity. *New England Journal of Medicine, 313*(7), 401-404.

Glod, C. A., Teicher, M. H., Butler, M., Savino, M., Harper, D., Magnus, E., et al. (1994). Modifying quiet room design enhances calming of children and adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry, 33*(4), 558-566.

Grant, M. (1988). "Wayfinding" in Michigan hospitals. *Michigan Hospitals, 24*(5), 45-47.

Griffin, J. P., Myers, S., Kopelke, C., & Walker, D. (1988). The effects of progressive muscular relaxation on subjectively reported disturbance due to hospital noise. *Behavioral Medicine, 14*(1), 37-42.

Grover, P. (1971). *Wayfinding in hospital environments: UCLA hospital disorientation pilot case study*. Los Angeles: Graduate School of Architecture and Urban Planning, University of California.

Grumet, G. W. (1993). Pandemonium in the modern hospital. *New England Journal of Medicine, 328*(6), 433-437.

Grumet, G. W. (1994). Noise hampers healing and curbs productivity. *Health Facilities*

Management, 7(1), 22-25.

Haas, E. C., & Edworthy, J. (1996). Designing urgency into auditory warnings using pitch, speed and loudness. *Computing & Control Engineering Journal, 7*(4), 193-198.

Haddock, J. (1994). Reducing the effects of noise in hospital. *Nursing Standard 8*(43), 25-28.

Hagerman, I., Theorell, T., Ulrich, R. S., Blomkvist, V., Eriksén, C. A., & Rasmanis, G. (in press). Influence of coronary intensive care acoustics on the physiological states and quality of care of patients. *International Journal of Cardiology*.

Haq, S. (2003). Investigating the syntax line: Configurational properties and cognitive correlates. *Environment & Planning B: Planning & Design*, 30, 841-863.

Haq, S. (2001). Complex architectural settings: An investigation of spatial and cognitive variables through wayfinding behavior. *Dissertation Abstracts International Section A: Humanities & Social Sciences, 62*(2), 362.

Haq, S. & Zimring, C. (2003). Just down the road a piece: The development of topological knowledge of building layouts. *Environment & Behavior, 35*(1), 132-160.

Harris, D. (2000). *Environmental quality and healing environments: A study of flooring materials in a healthcare telemetry unit*. Doctoral dissertation, Texas A&M University, College Station.

Harris, P. B., McBride, G., Ross, C., & Curtis, L. (2002). A place to heal: Environmental sources of satisfaction among hospital patients. *Journal of Applied Social Psychology, 32*(6), 1276-1299.

Harris, R. W., & Reitz, M. L. (1985). Effects of room reverberation and noise on speech discrimination by the elderly. *Audiology, 24*(5), 319-324.

Haslam, P. (1970). Caring for the total patient. Noise in hospitals: Its effect on the patient. *The Nursing Clinics of North America, 5*(4), 715-724.

Heath, Y., & Gifford, R. (2001). Post-occupancy evaluation of therapeutic gardens in a multi-level care facility for the aged. *Activities, Adaptation & Aging, 25*(2), 21-43.

Hebert, M., Dumont, M., & Paquet, J. (1998). Seasonal and diurnal patterns of human illumination under natural conditions. *Chronobiology International, 15*(1), 59-70.

Hefferman, M. L., Morstatt, M., Saltzman, K., & Strunc, L. (1995). *A room with a view art survey: The Bird Garden at Duke University Hospital*. Durham, NC: Cultural Services Program and Management Fellows Program, Duke University Medical Center.

Hilton, A. (1987). The hospital racket: How noisy is your unit? *American Journal of Nursing, 87*(1), 59-61.

Hilton, B. A. (1976). Quantity and quality of patients' sleep and sleep-disturbing factors in a respiratory intensive care unit. *Journal of Advanced Nursing, 1*(6), 453-468.

Hilton, B. A. (1985). Noise in acute patient care areas. *Research in Nursing & Health, 8*(3), 283-291.

Hodge, B., & Thompson, J. F. (1990). Noise pollution in the operating theatre. *Lancet, 335*(8694), 891-894.

Hoffman, H. G., Doctor, J. N., Patterson, D. R., Carrougher, G. J., & Furness, T. A., 3rd. (2000). Virtual reality as an adjunctive pain control during burn wound care in adolescent patients. *Pain, 85*(1-2), 305-309.

Holahan, C. J. (1972). Seating patterns and patient behavior in an experimental dayroom. *Journal of Abnormal Psychology, 80*(2), 115-124.

Holahan, C. J. (1976). Environmental change in a psychiatric setting: A social systems analysis. *Human Relations, 29*(2), 153-166.

Holmberg, S. K., & Coon, S. (1999). Ambient sound levels in a state psychiatric hospital. *Archives of Psychiatric Nursing, 13*(3), 117-126.

Hook, W. F., Sobal, J., & Oak, J. C. (1982). Frequency of visitation in nursing homes: Patterns of contact across the boundaries of total institutions. *Gerontologist, 22*(4), 424-428.

Hutton, A. (2002). The private adolescent: Privacy needs of adolescents in hospitals. *Journal of Pediatric Nursing, 17*(1), 67-72.

Jastremski, C. A., & Harvey, M. (1998). Making changes to improve the intensive care unit experience for patients and their families. *New Horizons, 6*(1), 99-109.

Johnson, A. N. (2001). Neonatal response to control of noise inside the incubator. *Pediatric Nursing, 27*(6), 600-605.

Johnson, A. N. (2003). Adapting the neonatal intensive care environment to decrease noise. *The Journal of Perinatal & Neonatal Nursing, 17*(4), 280-288; quiz 289-290.

Kahn, D. M., Cook, T. E., Carlisle, C. C., Nelson, D. L., Kramer, N. R., & Millman, R. P. (1998). Identification and modification of environmental noise in an ICU setting. *Chest, 114*(2), 535-540.

Kaldenburg, D. O. (1999). The influence of having a roommate on patient satisfaction. *Satisfaction Monitor*, January/February (www.pressganey.org).

Kam, P. C., Kam, A. C., & Thompson, J. F. (1994). Noise pollution in the anaesthetic and intensive care environment. *Anaesthesia., 49*(11), 982-986.

Katcher, A., Segal, H., & Beck, A. (1984). Comparison of contemplation and hypnosis for the reduction of anxiety and discomfort during dental surgery. *American Journal of Clinical Hypnosis, 27*(1), 14-21.

Kecskes, I., Rihmer, Z., Kiss, K., Vargha, A., Szili, L, & Rihmer, A. (2003). Possible effect of gender and season on the length of hospitalisation in unipolar major depressives. *Journal of Affective Disorders, 73*(3), 279-282.

Keep, P. J. (1977). Stimulus deprivation in windowless rooms. *Anaesthesia, 32*(7), 598-602.

Keep, P. J., James, J., & Inman, M. (1980). Windows in the intensive therapy unit. *Anaesthesia, 35*(3), 257-262.

Keep, P. J. (1977). Stimulus deprivation in windowless rooms. *Anaesthesia, 32*(7), 598-602.

Keipert, J. A. (1985). The harmful effects of noise in a children's ward. *Australian Paediatric Journal, 21*(2), 101-103.

Kennedy, K., Fielder, A., Hardy, R., Tung, B., Gordon, D., & Reynolds, J. (2001). Reduced lighting does not improve medical outcomes in very low birth weight infants. *Journal of Pediatrics, 139*(4), 527-531.

Kent, W. D., Tan, A. K., Clarke, M. C., & Bardell, T. (2002). Excessive noise levels in the neonatal ICU: Potential effects on auditory system development. *Journal of Otolaryngology, 31*(6), 355-360.

Kinnunen, T., Saynajakangs, O., Tuuponen, T., & Keistinen, T. (2002). Regional and seasonal variation in the length of hospital stay for chronic obstructive pulmonary disease in Finland. *International Journal of Circumpolar Health, 61*(2), 131-135.

Kulik, J. A., & Mahler, H. I. (1987). Effects of preoperative roommate assignment on preoperative anxiety and recovery from coronary-bypass surgery. *Health Psychology, 6*(6), 525-543.

Kulik, J. A., Mahler, H. I., & Moore, P. J. (1996). Social comparison and affiliation under threat: Effects on recovery from major surgery. *Journal of Personality and Social Psychology, 71*(5), 967-979.

Kulik, J. A., Moore, P. J., & Mahler, H. I. (1993). Stress and affiliation: Hospital roommate effects on preoperative anxiety and social interaction. *Health Psychology, 12*(2), 118-124.

Kuller, R., & Laike, T. (1998). The impact of flicker from fluorescent lighting on well-being, performance, and physiological arousal. *Ergonomics, 41*(4), 433-447.

Kumar, S., & Ng, B. (2001). Crowding and violence on psychiatric wards: Explanatory models. *Canadian Journal of Psychiatry, 46*(5), 433-437.

Lawn, R. (1976). *Direction finding in an hospital environment: Waikate Hospital, Hamilton, New Zealand*. Los Angeles: School of Architecture and Urban Planning, University of

California at Los Angeles.

Lawson, B. R., & Phiri, M. (2003). *The architectural healthcare environment and its effects on patient health outcomes: A report on an NHS estates funded research project.* London: The Stationery Office.

Leather, P., Beale, D., Santos, A., Watts, J., & Lee, L. (2003). Outcomes of environmental appraisal of different hospital waiting areas. *Environment & Behavior, 35*(6), 842-869.

Leather, P., Pyrgas, M., Beale, D., & Lawrence, C. (1998). Windows in the workplace: Sunlight, view, and occupational stress: *Environment & Behavior, 30*(6), 739-762.

Lee, D. W., Chan, A. C., Wong, S. K., Fung, T. M., Li, A. C., Chan, S. K., et al. (2004). Can visual distraction decrease the dose of patient-controlled sedation required during colonoscopy? A prospective randomized controlled trial. *Endoscopy, 36*(3), 197-201.

Levine, M., Marchon, I., & Hanley, G. (1984). The placement and misplacement of you-are-here maps. *Environment & Behavior, 16*(2), 139-157.

Levy, G. D., Woolston, D. J., & Browne, J. V. (2003). Mean noise amounts in level II vs level III neonatal intensive care units. *Neonatal Network, 22*(2), 33-38.

Lewis, M., Bendersky, M., Koons, A., Hegyi, T., Hiatt, I. M., Ostfeld, B., et al. (1991). Visitation to a neonatal intensive care unit. *Pediatrics, 88*(4), 795-800.

Lewis, P., Staniland, J., Cuppage, A., & Davies, J. M. (1990). Operating room noise. *Canadian Journal of Anaesthesia, 37*(Pt 2), S79.

Lewy, A. J., Bauer, V. K., Cutler, N. L., Sack, R. L., Ahmed, S., Thomas, K. H., et al. (1998). Morning vs evening light treatment of patients with winter depression. *Archives of General Psychiatry, 55*(10), 890-896.

Lewy, A. J., Nurnberger, J. I., Wehr, T. A., Pack, D., Becker, L. E., Powell R., et al. (1985). Supersensitivity to light: Possible trait marker for manic-depressive illness. *American Journal of Psychiatry, 142(6),* 725-727.

Lingard, L., Reznick, R., Espin, S., Regehr, G., & DeVito, I. (2002). Team communications in the operating room: Talk patterns, sites of tension, and implications for novices. *Academic Medicine, 77*(3), 232-237.

Liu, E. H., & Tan, S. (2000). Patients' perception of sound levels in the surgical suite. *Journal of Clinical Anesthesia, 12*(4), 298-302.

Lopez, J., & Hendrickson, S. (1991). Family visits and different cultures. *Axone, 12*(3), 59-62.

Lotas, M. J. (1992). Effects of light and sound in the neonatal intensive care unit environment on the low-birth-weight infant. *NAACOG's Clinical Issues in Perinatal and Women's Health Nursing, 3*(1), 34-44.

Love, H. (2003). Noise exposure in the orthopaedic operating theatre: A significant health hazard. *ANZ Journal of Surgery, 73*(10), 836-838.

Lovell, B. B., Ancoli-Israel, S., & Gevirtz, R. (1995). Effect of bright light treatment on agitated behavior in institutionalized elderly subjects. *Psychiatry Research, 57*(1), 7-12.

Madi, B. C., Sandall, J., Bennett, R., & MacLeod, C. (1999). Effects of female relative support in labor: A randomized controlled trial. *Birth, 26*(1), 4-8.

Malkin, J. (1989). Wayfinding: An orientation system for hospitals. *Progressive Architecture, 70*(12), 107-108.

Mann, N., Haddow, R., Stokes, L., Goodley, S., & Rutter, N. (1986). Effect of night and day on preterm infants in a newborn nursery. *British Medical Journal, 293*(6557), 1265-1267.

McCarthy, D. O., Ouimet, M. E., & Daun, J. M. (1991). Shades of Florence Nightingale: Potential impact of noise stress on wound healing. *Holistic Nursing Practice, 5*(4), 39-48.

McGonagle, I. M., & Allan, S. (2002). A comparison of behaviour in two differing psychiatric long-stay rehabilitation environments. *Journal of Psychiatric and Mental Health Nursing, 9*(4), 493-499.

McIntosh, S., Schuessler, B., Coron, D., Suchetka, M., Westball, C., & Dayton, D. (1994). What,

if anything, does your unit do to reduce noise levels in the ICU? *Critical Care Nurse, 14*(6), 88-89.

McLaughlin, A., McLaughlin, B., Elliott, J., & Campalani, G. (1996). Noise levels in a cardiac surgical intensive care unit: A preliminary study conducted in secret. *Intensive & Critical Care Nursing, 12*(4), 226-230.

McLaughlin, J., Beebe, J., Hirshfield, P., Lindia, P., & Gubanc, D. (1996). *Duke University's Bird Garden.* Paper presented at the 1996 Annual Conference of the Society for the Arts in Healthcare, Durham, NC: Durham Arts Council and Duke University Medical Center.

Mead, C. A. (1992). *Design issues related to hospital wayfinding.* Unpublished master's thesis, California State University, Long Beach.

Meyer, T. J., Eveloff, S. E., Bauer, M. S., Schwartz, W. A., Hill, N. S., & Millman, R. P. (1994). Adverse environmental conditions in the respiratory and medical ICU settings. *Chest, 105*(4), 1211-1216.

Meyer-Falcke, A., Rack, R., Eichwede, F., & Jansing, P. J. (1994). How noisy are anaesthesia and intensive care medicine? Quantification of the patients' stress. *European Journal of Anaesthesiology, 11*(5), 407-411.

Miller, A. C., Hickman, L. C., & Lemasters, G. K. (1992). A distraction technique for control of burn pain. *Journal of Burn Care and Rehabilitation, 13*(5), 576-580.

Miller, C., & Lewis, D. (1999). *Wayfinding: Effective wayfinding and signing systems: Guidance for healthcare facilities.* London: NHS Estates.

Miller, C. L., White, R., Whitman, T. L., O'Callaghan, M. F., & Maxwell, S. E. (1995). The effects of cycled versus noncycled lighting on growth and development in preterm infants. *Infant Behavior and Development, 18*(1), 87-95.

Minckley, B. B. (1968). A study of noise and its relationship to patient discomfort in the recovery room. *Nursing Research, 17*(3), 247-250.

Moeser, S. D. (1988). Cognitive mapping in a complex building. *Environment & Behavior, 20*(1), 21-49.

Montello, D. (1991). Spatial orientation and the angularity of urban routes: A field study. *Environment & Behavior, 23*(1), 47-69.

Moore, M. M., Nguyen, D., Nolan, S. P., Robinson, S. P., Ryals, B., Imbrie, J. Z., et al. (1998). Interventions to reduce decibel levels on patient care units. *American Surgeon, 64*(9), 894.

Morrison, W. E., Haas, E. C., Shaffner, D. H., Garrett, E. S., & Fackler, J. C. (2003). Noise, stress, and annoyance in a pediatric intensive care unit. *Critical Care Medicine, 31*(1), 113-119.

Morse, J. M., & Pooler, C. (2002). Patient-family-nurse interactions in the trauma-resuscitation room. *American Journal of Critical Care, 11*(3), 240-249.

Mullett, H., Synnott, K., & Quinlan, W. (1999). Occupational noise levels in orthopaedic surgery. *Irish Journal of Medical Science, 168*(2), 106.

Murthy, V. S., Malhotra, S. K., Bala, I., & Raghunathan, M. (1995). Auditory functions in anaesthesia residents during exposure to operating room noise. *Indian Journal of Medical Research, 101*, 213-216. Nelson-Shulman, Y. (1983-84). Information and environmental stress: Report of a hospital intervention. *Journal of Environmental Systems, 13*(4), 303-316.

Norbeck, J. S. (1985). Perceived job stress, job satisfaction, and psychological symptoms in critical care nursing. *Research in Nursing & Health, 8*(3), 253-259.

Nott, M. R., & West, P. D. (2003). Orthopaedic theatre noise: A potential hazard to patients. *Anaesthesia, 58*(8), 784-787.

Novaes, M. A., Aronovich, A., Ferraz, M. B., & Knobel, E. (1997). Stressors in ICU: Patients' evaluation. *Intensive Care Medicine, 23*(12), 1282-1285.

Nystrom, K., & Axelsson, K. (2002). Mothers' experience of being separated from their newborns. *Journal of Obstetric, Gynecologic, and Neonatal Nursing, 31*(3), 275-282.

Nzama, N. P., Nolte, A. G., & Dorfling, C. S. (1995). Noise in a neonatal unit: Guidelines for the reduction or prevention of noise. *Curationis, 18*(2), 16-21.

O'Connor, B. P., Davidson, H., & Gifford, R. (1991). Window view, social exposure and nursing home adaptation. *Canadian Journal on Aging, 10*(3), 216-223.

Ogilvie, A. J. (1980). Sources and levels of noise on the ward at night. *Nursing Times, 76*(31), 1363-1366.

Oren, D. A. (1999). There is nothing new under the sun. *American Journal of Psychiatry, 156*(2), 336.

Oren, D. A., Brainard, G. C., Johnston, S. H., Joseph-Vanderpool, J. R., Sorek, E., & Rosenthal, N. E. (1991). Treatment of seasonal affective disorder with green light and red light. *American Journal of Psychiatry, 148*(4), 509.

Oren, D. A., Cubells, J. F., & Litsch, S. (2001). Bright light for schizoaffective disorder. *American Journal of Psychiatry, 158*(12), 2086.

Oren, D. A., Wisner, K. L., Spinelli, M., Epperson, C. N., Peindl, K. S., Terman, J. S., et al. (2002). An open trial of morning light therapy for treatment of antepartum depression. *American Journal of Psychiatry, 159*(4), 666.

Ortega-Andeane, P. (1991). Physical comfort, social contact, wayfinding and meaning as indicators of stress in a hospital environment. *Proceedings of the Environmental Design Research Association, USA, 22*, 41-47.

Ortega-Andeane, P., & Urbina-Soria, J. (1988). A case study of wayfinding and security in a Mexico City hospital. *Proceedings of the Environmental Design Research Association, USA, 19*, 231-236.

Parsons, R., & Hartig, T. (2000). Environmental psychophysiology. In J. T. Cacioppo & L. G. Tassinary (Eds.), *Handbook of psychophysiology (2nd ed.)* (pp. 815-846). New York: Cambridge University Press.

Parthasarathy, S., & Tobin, M. J. (2004). Sleep in the intensive care unit. *Intensive Care Medicine, 30*(2), 197-206.

Partonen, T., & Lonnqvist, J. (2000). Bright light improves vitality and alleviates distress in healthy people. *Journal of Affective Disorders, 57*(1-3), 55-61.

Passini, R., Rainville, C., Marchand, N., & Joanette, Y. (1995). Wayfinding in dementia of the Alzheimer type: Planning abilities. *Journal of Clinical and Experimental Neuropsychology 17*(6), 820-832.

Pattison, H. M., & Robertson, C. E. (1996). The effect of ward design on the well-being of post-operative patients. *Journal of Advanced Nursing, 23*(4), 820-826.

Peponis, J., Zimring, C., & Choi, Y. K. (1990). Finding the building in wayfinding. *Environment & Behavior, 22*(5), 555-590.

Peterson, R., Knapp, T., Rosen, J., & al., e. (1977). The effects of furniture arrangement on the behavior of geriatric patients. *Behavior Therapy, 8*, 464-467.

Persson Waye, K., Rylander, R., Benton, S., & Leventhall, H. G. (1997). Effects on performance and work quality due to low frequency ventilation noise. *Journal of Sound and Vibration, 205*(4), 467-474.

Peterson, R., Knapp, T., Rosen, J., & Pither, B. F. (1977). The effects of furniture arrangement on the behavior of geriatric patients. *Behavior Therapy, 8*(3), 464-467.

Philbin, M. K., & Gray, L. (2002). Changing levels of quiet in an intensive care nursery. *Journal of Perinatology, 22*(6), 455-460.

Port, C. L., Hebel, J. R., Gruber-Baldini, A. L., Baumgarten, M., Burton, L., Zimmerman, S., et al. (2003). Measuring the frequency of contact between nursing home residents and their family and friends. *Nursing Research, 52*(1), 52-56.

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Powell, M. (1973). Building noise in a hospital: An experimental simulation. *Annals of Occupational Hygiene, 16*(1), 77-79.

Powers, K. S., & Rubenstein, J. S. (1999). Family presence during invasive procedures in the pediatric intensive care unit: A prospective study. *Archives of Pediatrics & Adolescent Medicine, 153*(9), 955-958.

Pragay, D. A. (1981). Noise levels in hospital laboratories. Are they a problem and can they be reduced? *Clinical Biochemistry, 14*(3), 157-158.

Raeside, L. (1997). Perceptions of environmental stressors in the neonatal unit. *British Journal of Nursing, 6*(16), 914-916, 918, 920-913.

Rainville, C., Passini, R., & Marchand, N. (2001). A multiple case study of wayfinding in dementia of the Alzheimer type: Decision making. *Aging, Neuropsychology, & Cognition, 8*(1), 54.

Ray, C. D., & Levinson, R. (1992). Noise pollution in the operating room: A hazard to surgeons, personnel, and patients. *Journal of Spinal Disorders, 5*(4), 485-488.

Redding, J. S., Hargest, T. S., & Minsky, S. H. (1977). How noisy is intensive care? *Critical Care Medicine, 5*(6), 275-276.

Regan, T. (1971). *Wayfinding in hospital environments, an overview*. Los Angeles: School of Architecture and Urban Planning, University of California at Los Angeles.

Rice, C. G., Talbott, J. A., & Stern, D. (1980). Effects of environmental agents on social behavior of patients in a hospital dining room. *Hospital & Community Psychiatry, 31*(2), 128-130.

Robertson, A., Cooper-Peel, C., & Vos, P. (1998). Peak noise distribution in the neonatal intensive care nursery. *Journal of Perinatology, 18*(5), 361-364.

Robertson, A., Cooper-Peel, C., & Vos, P. (1999). Contribution of heating, ventilation, and air conditioning airflow and conversation to the ambient sound in a neonatal intensive care unit. *Journal of Perinatology, 19*(5), 362-366.

Rosenfield, A. G. (1980). Visiting in the intensive care nursery. *Child Development, 51*(3), 939-941.

Rosenthal, N. E., Sack, D. A., Carpenter, C. J., Parry, B. L., Mendelson, W. B., & Wehr, T. A. (1985). Antidepressant effects of light in seasonal affective disorder. *American Journal of Psychiatry, 142*(2), 163-170.

Routhieaux, R. L., & Tansik, D. A. (1997). The benefits of music in hospital waiting rooms. *Health Care Supervisor, 16*(2), 31-40.

Sadeh, A., McGuire, J. P., Sachs, H., Seifer, R., Tremblay, A., Civita, R., et al. (1995). Sleep and psychological characteristics of children on a psychiatric inpatient unit. *Journal of the American Academy of Child and Adolescent Psychiatry, 34*(6), 813-819.

Sallstrom, C., Sandman, P. O., & Norberg, A. (1987). Relatives' experience of the terminal care of long-term geriatric patients in open-plan rooms. *Scandinavian Journal of Caring Sciences, 1*(4), 133-140.

Satlin, A., Volicer, L., Ross, V., Herz, L., & Campbell, S. (1992). Bright light treatment of behavioral and sleep disturbances. *American Journal of Psychiatry, 149*(8), 1028.

Saunders, A. N. (1995). Incubator noise: A method to decrease decibels. *Pediatric Nursing, 21*(3), 265-268.

Schneider, L. F., & Taylor, H. A. (1999). How do you get there from here? Mental representations of route descriptions. *Applied Cognitive Psychology,* 13(5), 415-441.

Schneider, S. M., Ellis, M., Coombs, W. T., Shonkwiler, E. L., & Folsom, L. C. (2003). Virtual reality intervention for older women with breast cancer. *Cyberpsychology & Behavior, 6*(3), 301-307.

Schneider, S. M., Gallery, M. E., Schafermeyer, R., & Zwemer, F. L. (2003). Emergency department crowding: A point in time. *Annals of Emergency Medicine, 42*(2), 167-172.

Schneider, S. M., Prince-Paul, M., Allen, M. J., Silverman, P., & Talaba, D. (2004). Virtual

reality as a distraction intervention for women receiving chemotherapy. *Oncology Nursing Forum, 31*(1), 81-88.

Schnelle, J. F., Cruise, P. A., Alessi, C. A., Ludlow, K., al-Samarrai, N. R., & Ouslander, J. G. (1998). Sleep hygiene in physically dependent nursing home residents: Behavioral and environmental intervention implications. *Sleep, 21*(5), 515-523.

Schnelle, J. F., Ouslander, J. G., Simmons, S. F., Alessi, C. A., & Gravel, M. D. (1993). The nighttime environment, incontinence care, and sleep disruption in nursing homes. *Journal of the American Geriatrics Society, 41*(9), 910-914.

Schofield, P., & Davis, B. (2000). Sensory stimulation (snoezelen) versus relaxation: A potential strategy for the management of chronic pain. *Disability & Rehabilitation, 22*(15), 675-682.

Schulte, D. A., Burrell, L. O., Gueldner, S. H., Bramlett, M. H., Fuszard, B., Stone, S. K., et al. (1993). Pilot study of the relationship between heart rate and ectopy and unrestricted vs restricted visiting hours in the coronary care unit. *American Journal of Critical Care, 2*(2), 134-136.

Schuster, R. J., & Weber, M. L. (2003). Noise in the ambulatory health care setting. How loud is too loud? *Journal of Ambulatory Care Management, 26*(3), 243-249.

Scott, R. A. (1995). Beeper technology: Improving staff efficiency and decreasing noise levels on medical-surgical units. *Medsurg Nursing, 4*(1), 73-75.

Shankar, N., Malhotra, K. L., Ahuja, S., & Tandon, O. P. (2001). Noise pollution: A study of noise levels in the operation theatres of a general hospital during various surgical procedures. *Journal of the Indian Medical Association, 99*(5), 244, 246-247.

Shapiro, R. A., & Berland, T. (1972). Noise in the operating room. *New England Journal of Medicine, 287*(24), 1236-1238.

Shertzer, K. E., & Keck, J. F. (2001). Music and the PACU environment. *Journal of Perianesthesia Nursing, 16*(2), 90-102.

Shogan, M. G., & Schumann, L. L. (1993). The effect of environmental lighting on the oxygen saturation of preterm infants in the NICU. *Neonatal Network, 12*(5), 7-13.

Simons, J. W., Mize, J. J., & Haynes, B. C., Jr. (1969). Acoustical properties of carpets and drapes. *Medical Journal of Australia, 1*(17), 125-127.

Simpson, T. (1992). Visitors' verbal behavior with coronary care unit patients. *Western Journal of Nursing Research, 14*(4), 482-494; discussion 495-487.

Simpson, T. (1993). Visit preferences of middle-aged vs older critically ill patients. *American Journal of Critical Care, 2*(4), 339-345.

Simpson, T., Lee, E. R., & Cameron, C. (1996). Patients' perceptions of environmental factors that disturb sleep after cardiac surgery. *American Journal of Critical Care, 5*(3), 173-181.

Simpson, T., Lee, E. R., & Cameron, C. (1996). Relationships among sleep dimensions and factors that impair sleep after cardiac surgery. *Research in Nursing & Health, 19*(3), 213-223.

Simpson, T., & Shaver, J. (1991). A comparison of hypertensive and nonhypertensive coronary care patients' cardiovascular responses to visitors. *Heart & Lung, 20*(3), 213-220.

Slevin, M., Farrington, N., Duffy, G., Daly, L., & Murphy, J. F. (2000). Altering the NICU and measuring infants' responses. *Acta Paediatrica, 89*(5), 577-581.

Snyder-Halpern, R. (1985). The effect of critical care unit noise on patient sleep cycles. *Critical Care Quarterly, 7*(4), 41-51.

Sommer, R., & Ross, H. (1958). Social interaction on a geriatrics ward. *International Journal of Social Psychiatry, 4*(2), 128-133.

Soutar, R. L., & Wilson, J. A. (1986). Does hospital noise disturb patients? *British Medical Journal (Clinical Research Ed.), 292*(6516), 305.

Southwell, M. T., & Wistow, G. (1995). Sleep in hospitals at night: Are patients' needs being

met? *Journal of Advanced Nursing, 21*(6), 1101-1109.
Stanton, N., & Edworthy, J. (1998). Auditory affordances in the intensive treatment unit. *Applied Ergonomics, 29*(5), 389-394.
Starks, M. A. (2003). Restoring attention in pregnancy: The natural environment. *Clinical Nursing Research, 12*(3), 246-265.
Stoneham, J., & Jones, R. (1997). Residential landscapes: Their contribution to the quality of older people's lives. *Activities, Adaptation & Aging, 22*(1), 17-26.
Storch, D. D. (2001). Climate and length of hospital stay. *American Journal of Psychiatry, 158*(9), 1530.
Strauch, C., Brandt, S., & Edwards-Beckett, J. (1993). Implementation of a quiet hour: Effect on noise levels and infant sleep states. *Neonatal Network 12*(2), 31-35.
Stroud, R. (1997). The effects of technology on relatives in critical care environments. *Nursing in Critical Care, 2*(6), 272-275.
Sullivan, E. E. (2001). Family visitation in PACU. *Journal of Perianesthesia Nursing, 16*(1), 29-30.
Sumaya, I. C., Rienzi, B. M., Deegan, II, J. F., & Moss, D. E. (2001). Bright light treatment decreases depression in institutionalized older adults: A placebo-controlled crossover study. *Journal of Gerontology, 56A*(6), M356-M360.
Surenthiran, S. S., Wilbraham, K., May, J., Chant, T., Emmerson, A. J., & Newton, V. E. (2003). Noise levels within the ear and post-nasal space in neonates in intensive care. *Archives of Disease in Childhood. Fetal and Neonatal Edition, 88*(4), F315-318.
Tanimoto, S., Takayanagi, K., Yokota, H., & Yamamoto, Y. (1999). The psychological and physiological effects of an intensive-care unit environment on healthy individuals. *Clinical Performance and Quality Health Care, 7*(2), 77-82.
Terman, J. S., Terman, M., Lo, E. S., & Cooper, T. B. (2001). Circadian time of morning light administration and therapeutic response in winter depression. *Archives of General Psychiatry, 58*(1), 69-75.
Terman, M., Terman, J. S., & Ross, D. C. (1998). A controlled trial of timed bright light and negative air ionization for treatment of winter depression. *Archives of General Psychiatry, 55*(10), 875.
Thomas, K. A. (1990). Design issues in the NICU: Thermal effects of windows. *Neonatal Network, 9*(4), 23-26.
Thomas, K. A., & Martin, P. A. (2000). NICU sound environment and the potential problems for caregivers. *Journal of Perinatology, 20*(Pt 2), S94-99.
Thompson, T., Robinson, J., Dietrich, M., Farris, M., & Sinclair, V. (1996). Architectural features and perceptions of community residences for people with mental retardation. *American Journal of Mental Retardation, 101*(3), 292-314.
Thornes, R. (1983). Parental access and family facilities in children's wards in England. *British Medical Journal (Clinical Research Ed.), 287*(6386), 190-192.
Topf, M. (1983). Noise pollution in the hospital. *New England Journal of Medicine, 309*(1), 53-54.
Topf, M. (1985). Noise-induced stress in hospital patients: Coping and nonauditory health outcomes. *Journal of Human Stress, 11*(3), 125-134.
Topf, M. (1985). Personal and environmental predictors of patient disturbance due to hospital noise. *Journal of Applied Psychology, 70*(1), 22-28.
Topf, M. (1988). Noise-induced occupational stress and health in critical care nurses. *Hospital Topics, 66*(1), 30-34.
Topf, M. (1989). Sensitivity to noise, personality hardiness, and noise-induced stress in critical care nurses. *Environment and Behavior, 21*(6), 717-733.
Topf, M. (1992). Stress effects of personal control over hospital noise. *Behavioral Medicine,*

18(2), 84-94.

Topf, M. (1992). Effects of personal control over hospital noise on sleep. *Research in Nursing & Health, 15*(1), 19-28.

Topf, M. (1999). Does the environment of the hospital affect recovery? *Journal of Health Services Research & Policy, 4*(2), 127.

Topf, M., Bookman, M., & Arand, D. (1996). Effects of critical care unit noise on the subjective quality of sleep. *Journal of Advanced Nursing, 24*(3), 545-551.

Topf, M., & Davis, J. E. (1993). Critical care unit noise and rapid eye movement (REM) sleep. *Heart & Lung, 22*(3), 252-258.

Topf, M., & Dillon, E. (1988). Noise-induced stress as a predictor of burnout in critical care nurses. *Heart & Lung, 17*(5), 567-574.

Topf, M., & Thompson, S. (2001). Interactive relationships between hospital patients' noise-induced stress and other stress with sleep. *Heart & Lung, 30*(4), 237-243.

Trites, D. K., & Green, R. M. (1970). Hospital visiting: The patients' point of view. *Nursing Outlook, 18*(8), 44-45.

Tse, M. M. Y., Ng, J. K. F., Chung, J. W. Y., & Wong, T. K. S. (2002). The effect of visual stimuli on pain threshold and tolerance. *Journal of Clinical Nursing, 11*(4), 462-469.

Tse, M. M. Y., Ng, J. K. F., Chung, J. W. Y., & Wong, T. K. S. (2002). The effect of visual stimulation via the eyeglass display and the perception of pain. *CyberPsychology & Behavior, 5*(1), 65-75.

Tsiou, C., Eftymiatos, D., Theodossopoulou, E., Notis, P., & Kiriakou, K. (1998). Noise sources and levels in the Evgenidion Hospital intensive care unit. *Intensive Care Medicine, 24*(8), 845-847.

Ulrich, R. S. (1984). View through a window may influence recovery from surgery. *Science, 224*(4647), 420-421.

Ulrich, R. S. (1991). Effects of interior design on wellness: Theory and recent scientific research. *Journal of Health Care Interior Design, 3*(1), 97-109.

Ulrich, R. S. (1999). Effects of gardens on health outcomes: Theory and research. In C. Cooper Marcus & M. Barnes (Eds.), *Healing Gardens* (pp. 27-86). New York: Wiley.

Ulrich, R. S., & Gilpin, L. (2003). Healing arts: Nutrition for the soul. In S. B. Frampton, L. Gilpin & P. Charmel (Eds.), *Putting patients first: Designing and practicing patient-centered care* (pp. 117-146). San Francisco: Jossey-Bass.

Ulrich, R. S., Lawson, B., & Martinez, M. (2003). *Exploring the patient environment: An NHS estates workshop*. London: The Stationery Office.

Ulrich, R. S., Lunden, O., & Eltinge, J. L. (1993). *Effects of exposure to nature and abstract pictures on patients recovering from heart surgery.* Paper presented at the thirty-third meeting of the Society for Psychophysiological Research, Rottach-Egern, Germany. Abstract in *Psychophysiology, 30*(Suppl. 1), 7.

Ulrich, R. S., Simons, R. F., Losito, B. D., Fiorito, E., Miles, M. A., & Zelson, M. (1991). Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology, 11*(2): 201-230.

Ulrich, R. S., Simons, R. F., & Miles, M. A. (2003). Effects of environmental simulations and television on blood donor stress. *Journal of Architectural & Planning Research, 20*(1), 38-47.

Van der Ploeg, H. M. (1988). Stressful medical events: A survey of patients' perceptions. In S. Maies, C. D. Spielberger, P. B. Defares & I. G. Sarason (Eds.), *Topics in Health Psychology* (pp. 193-203). New York: John Wiley.

Van Someren, E. J. W., Kessler, A., Mirmiran, M., & Swaab, D. F. (1997). Indirect bright light improves circadian rest-activity rhythm disturbances in demented patients. *Biological Psychiatry, 41*(9), 955-963.

Verderber, S. (1986). Dimensions of person-window transactions in the hospital environment. *Environment & Behavior, 18*(4), 450-466.

Verderber, S., & Reuman, D. (1987). Windows, views, and health status in hospital therapeutic environments. *Journal of Architectural & Planning Research, 4*(2), 120-133.

Vessey, J. A., Carlson, K. L., & McGill, J. (1994). Use of distraction with children during an acute pain experience. *Nursing Research, 43*(6), 369-372.

Vickery, K. (2002). Study views visiting patterns. *Provider, 28*(11), 45-46, 49.

Vogelsang, J. (1988). Effect of visitors on patient behavior in the postanesthesia period. *Dimensions of Critical Care Nursing, 7*(2), 91-100.

Volicer, B. J., Isenberg, M. A., & Burns, M. W. (1977). Medical-surgical differences in hospital stress factors. *Journal of Human Stress, 3*(2), 3-13.

Walch, J. M., Rabin, B. S., Day, R., Williams, J. N., Choi, K., & Kang, J. D. (In press). The effect of sunlight on post-operative analgesic medication usage: A prospective study of spinal surgery patients.

Walder, B., Francioli, D., Meyer, J. J., Lancon, M., & Romand, J. A. (2000). Effects of guidelines implementation in a surgical intensive care unit to control nighttime light and noise levels. *Critical Care Medicine, 28*(7), 2242-2247.

Walker, J. S., Eakes, G. G., & Siebelink, E. (1998). The effects of familial voice interventions on comatose head-injured patients. *Journal of Trauma Nursing, 5*(2), 41-45.

Wallace, C. J., Robins, J., Alvord, L. S., & Walker, J. M. (1999). The effect of earplugs on sleep measures during exposure to simulated intensive care unit noise. *American Journal of Critical Care, 8*(4), 210-219.

Wallace-Guy, G., Kripke, D., Jean-Louis, G., Langer, R., Elliott, J., & Tuunainen, A. (2002). Evening light exposure: Implications for sleep and depression. *Journal of the American Geriatrics Society, 50*(4), 738-739.

Walsh-Sukys, M., Reitenbach, A., Hudson-Barr, D., & DePompei, P. (2001). Reducing light and sound in the neonatal intensive care unit: An evaluation of patient safety, staff satisfaction and costs. *Journal of Perinatology, 21*(4), 230-235.

Warren, N. A. (1993). Perceived needs of the family members in the critical care waiting room. *Critical Care Nursing Quarterly, 16*(3), 56-63.

Weisman, J. (1981). Evaluating architectural legibility: Wayfinding in the built environment. *Environment & Behavior, 13*(2), 189-204.

Whalen, L. (1992). Noise in the intensive care setting. *Canadian Critical Care Nursing Journal, 8*(1), 9-10.

Whall, A. L., Black, M. E., Groh, C. J., Yankou, D. J., Kupferschmid, B. J., & Foster, N. L. (1997). The effect of natural environments upon agitation and aggression in late stage dementia patients. *American Journal of Alzheimer's Disease and Other Dementias*, September-October: 216-220.

White, A., & Burgess, M. (1992). Strategies for reduction of noise levels in ICUs. *Australian Journal of Advanced Nursing, 10*(2), 22-26.

White, R. D. (2003). Individual rooms in the NICU—an evolving concept. *Journal of Perinatology, 23*(1), S22-24.

Whitehouse, S., Varni, J. W., Seid, M., Cooper-Marcus, C., Ensberg, M. J., Jacobs, J. R., et al. (2001). Evaluating a children's hospital garden environment: Utilization and consumer satisfaction. *Journal of Environmental Psychology, 21*(3), 301-314.

Whitis, G. (1994). Visiting hospitalized patients. *Journal of Advanced Nursing, 19*(1), 85-88.

Williams, M. A. (1988). The physical environment and patient care. *Annual Review of Nursing Research, 6*, 61-84. Williams, M. A. (1989). Physical environment of the intensive care unit and elderly patients. *Critical Care Nursing Quarterly, 12*(1), 52-60.

Wilson, L. M. (1972). Intensive care delirium: The effect of outside deprivation in a windowless

unit. *Archives of Internal Medicine, 130*(2), 225-226.
Wirz-Justice, A. (1998). Beginning to see the light. *Archives of General Psychiatry, 55*(10), 861.
Wood, A. M. (1993). A review of literature relating to sleep in hospital with emphasis on the sleep of the ICU patient. *Intensive & Critical Care Nursing, 9*(2), 129-136.
Wright, P., Hull, A. J., & Lickorish, A. (1993). Navigating in a hospital outpatients' department: The merits of maps and wallsigns. *Journal of Architectural and Planning Research, 10*(1), 76-89.
Wysocki, A. B. (1996). The effect of intermittent noise exposure on wound healing. *Advances in Wound Care, 9*(1), 35-39.
Yamada, N., Martin-Iverson, M. T., Daimon, K., Tsujimoto, T., & Takahashi, S. (1995). Clinical and chronobiological effects of light therapy on nonseasonal affective disorders. *Biological Psychiatry, 37*(12), 866-873.
Yamamoto-Mitani, N., Anesbensel, C. S., & Levy-Storms, L. (2002). Patterns of family visiting with institutionalized elders: The case of dementia. *Journals of Gerontology. Series B; Psychological Sciences and Social Sciences, 57*(4), S234-246.
Yarcheski, A., & Knapp-Spooner, C. (1994). Stressors associated with coronary bypass surgery. *Clinical Nursing Research, 3*(1), 57-68.
Yassi, A., Gaborieau, D., Gillespie, I., & Elias, J. (1991). The noise hazard in a large health care facility. *Journal of Occupational Medicine, 33*(10), 1067-1070.
Yinnon, A. M., Ilan, Y., Tadmor, B., Altarescu, G., & Hershko, C. (1992). Quality of sleep in the medical department. *British Journal of Clinical Practice, 46*(2), 88-91.
Youngner, S. J., Coulton, C., Welton, R., Juknialis, B., & Jackson, D. L. (1984). ICU visiting policies. *Critical Care Medicine, 12*(7), 606-608.
Zahr, L. K., & de Traversay, J. (1995). Premature infant responses to noise reduction by earmuffs: Effects on behavioral and physiologic measures. *Journal of Perinatology, 15*(6), 448-455.
Zimring, C. (1990). *The costs of confusion: Non-monetary and monetary costs of the Emory University hospital wayfinding system.* Atlanta: Georgia Institute of Technology.
Zimring, C., & Templer, J. (1983-84). Wayfinding and orientation by the visually impaired. *Journal of Environmental Systems, 13*(4), 333-352.

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Arneill, A. B., & Devlin, A. S. (2002). Perceived quality of care: The influence of the waiting room environment. *Journal of Environmental Psychology, 22*(4), 345-360.
Bostick, R., & Krebs, M. (1983). The spinal cord injured female in the veterans hospital: The role of the environment in rehabilitation. *Journal of the American Paraplegia Society, 6*(4), 81-84.
Boswell, K., Finlay, F., Jones, R., & Hill, P. (2000). Perceived ideal out-patient department and hospital ward for children, adolescents and their families. *Clinical Child Psychology & Psychiatry, 5*(2), 213-219.
Bruster, S., Jarman, B., Bosanquet, N., Weston, D., Erens, R., & Delbanco, T. L. (1994). National survey of hospital patients. *British Medical Journal (Clinical Research Ed.), 309*(6968), 1542-1546.
Caplan, G., Board, N., Paten, A., Tazelaar-Molinia, J., Crowe, P., Yap, S. J., et al. (1999). Decreasing lengths of stay: The cost to the community. *The Australian and New Zealand Journal of Surgery, 69*(6), 433-437.
Chaudhury, H., Mahmood, A., & Valente, M. (2003). *Pilot study on comparative assessment of patient care issues in single and multiple occupancy rooms.* Unpublished report, The

ATTACHMENT GRC-4

Coalition for Health Environments Research.

Chen, T. S., & Sanoff, H. (1988). The patients' view of their domain. *Design Studies, 9*(1), 40-55.

Counsell, S. R., Holder, C. M., Liebenauer, L. L., Palmer, R. M., Fortinsky, R. H., Kresevic, D. M., et al. (2000). Effects of a multicomponent intervention on functional outcomes and process of care in hospitalized older patients: A randomized controlled trial of Acute Care for Elders (ACE) in a community hospital. *Journal of the American Geriatrics Society, 48*(12), 1572-1581.

Devlin, A. S. (1992). Psychiatric ward renovation: Staff perception and patient behavior. *Environment & Behavior, 24*(1), 66-84.

Devlin, A. S. (1995). Staff, patients, and visitors: Responses to hospital unit enhancements. *Proceedings of the Environmental Design Research Association, 26*,113-117.

Devlin, A. S., & Arneill, A. B. (2003). Health care environments and patient outcomes: A review of the literature. *Environment & Behavior, 35*(5), 665-694.

Dolce, J. J., Doleys, D. M., Raczynski, J. M., & Crocker, M. F. (1985). Narcotic utilization for back pain patients housed in private and semi-private rooms. *Addictive Behaviors, 10*(1), 91-95.

Fanurik, D., Schmitz, M. L., Martin, G. A., Koh, J. L., Wood, M., Sturgeon, L., et al. (2000). Hospital room or treatment room: Where should inpatient pediatric procedures be performed? *Children's Health Care, 29*(2), 103-111.

Fowler, E., MacRae, S., Stern, A., Harrison, T., Gerteis, M., Walker, J., et al. (1999). The built environment as a component of quality care: Understanding and including the patient's perspective. *The Joint Commission Journal on Quality Improvement, 25*(7), 352-362.

Francis, J. J., Pankratz, V. S., & Huddleston, J. M. (2001). Patient satisfaction associated with correct identification of physician's photographs. *Mayo Clinic Proceedings, 76*(6), 604-608.

Gotlieb, J. B. (2000). Understanding the effects of nurses, patients' hospital rooms, and patients' perception of control in the perceived quality of a hospital. *Health Marketing Quarterly, 18*(1/2), 1.

Griebel, M. A. (1985). *Post occupancy evaluation of hospitals: General methodology and application to five departments.* Unpublished master's thesis, Washington University, St. Louis, MO.

Hahn, J. E., Jones, M. R., & Waszkiewicz, M. (1995). Renovation of a semiprivate patient room. Bowman Center Geriatric Rehabilitation Unit. *The Nursing Clinics of North America, 30*(1), 97-115.

Happ, B. A. (1993). The effect of point of care technology on the quality of patient care. *Proceedings of Annual Symposium on Computer Application in Medical Care, 17*. 183-187.

Harwood, R. H., & Ebrahim, S. (1992). Long-term institutional residents: Does the environment affect outcomes? *Journal of the Royal College of Physicians of London, 26*(2), 134-138.

Holahan, C., & Saegert, S. (1973). Behavioral and attitudinal effects of large-scale variation in the physical environment of psychiatric wards. *Journal of Abnormal Psychology, 82*(3), 454-462.

Hutton, A. (2003). Activities in the adolescent ward environment. *Contemporary Nurse, 14*(3), 312-319.

Janssen, P. A., Klein, M. C., Harris, S. J., Soolsma, J., & Seymour, L. C. (2000). Single room maternity care and client satisfaction. *Birth, 27*(4), 235-243.

Johansson, P., Oleni, M., & Fridlund, B. (2002). Patient satisfaction with nursing care in the context of health care: A literature study. *Scandinavian Journal of Caring Sciences, 16*(4), 337-344.

Judkins, S. (2003). Paediatric emergency department design: Does it affect staff, patient and

community satisfaction? *Emergency Medicine, 15*(1), 63-67.
Kincaid, C., & Peacock, J. R. (2003). The effect of a wall mural on decreasing four types of door-testing behaviors. *Journal of Applied Gerontology, 22*(1), 76-88.
Kirk, S. (2003). Single or shared rooms for hospice patients? *Palliative Medicine, 17*(6), 560.
Koss, E., & Gilmore, G. C. (1998). Environmental interventions and functional ability of AD patients. In B. Vellas, J. Fitten & G. Frisoni (Eds.), *Research and Practice in Alzheimer's Disease* (pp. 185-193). New York: Springer.
Krueckeberg, H. F., & Hubbert, A. (1995). Attribute correlates of hospital outpatient satisfaction. *Journal of Ambulatory Care Marketing, 6*(1), 11-43.
Landefeld, C. S., Palmer, R. M., Kresevic, D. M., Fortinsky, R. H., & Kowal, J. (1995). A randomized trial of care in a hospital medical unit especially designed to improve the functional outcomes of acutely ill older patients. *New England Journal of Medicine, 332*(20), 1338-1344.
Lawson, B., & Phiri, M. (2000). Hospital design: Room for improvement. *Health Services Journal, 110*(5688), 24-26.
Linhorst, D. M. (1991). The use of single room occupancy (SRO) housing as a residential alternative for persons with a chronic mental illness. *Community Mental Health Journal, 27*(2), 135-144.
Lyons, D., El Sayed, O. A., & Matthew, V. M. (2001). New unit on old ground or general hospital—where do patients want inpatient treatment? *Irish Journal of Psychological Medicine, 18*(4), 129-131.
Martin, D. P., Diehr, P., Conrad, D. A., Davis, J. H., Leickly, R., & Perrin, E. B. (1998). Randomized trial of a patient-centered hospital unit. *Patient Education and Counseling, 34*(2), 125-133.
Martin, D. P., Diehr, P., Conrad, D. A., Hunt Davis, J., Leickly, R., & Perrin, E. B. (1998). Randomized trial of a patient-centered hospital unit. *Patient Education and Counseling, 34*(2), 125-133.
Melin, L., & Gotestam, K. G. (1981). The effects of rearranging ward routines on communication and eating behaviors of psychogeriatric patients. *Journal of Applied Behavior Analysis, 14*(1), 47-51.
Middleboe, T., Schjodt, T., Byrsting, K., & Gjerris, A. (2001). Ward atmosphere in acute psychiatric in-patient care: Patients' perceptions, ideals and satisfaction. *Acta Psychiatrica Scandinavica, 103*(3), 212-219.
Miller, N. O., Friedman, S. B., & Coupey, S. M. (1998). Adolescent preferences for rooming during hospitalization. *Journal of Adolescent Health, 23*(2), 89-93.
Morgan, D. G., & Stewart, N. J. (1998). Multiple occupancy versus private rooms on dementia care units. *Environment & Behavior, 30*(4), 487-503.
Morgan, D. G., & Stewart, N. J. (1998). High versus low density special care units: Impact on the behavior of elderly residents with dementia. *Canadian Journal on Aging, 17(2)*, 143-165.
Mujahed, M. (1999). *Design impact on health care facilities performance: A post-occupancy evaluation of patient rooms*. Unpublished master's thesis, Arizona State University, Tempe.
Muller, M. J., Schlässer, R., Kapp-Steen, G., Schanz, B., & Benkert, O. (2002). Patients' satisfaction with psychiatric treatment: Comparison between an open and a closed ward. *Psychiatric Quarterly, 73*(2), 93.
Olusina, A. K., Obaeri, J. U., & Olatawura, M. O. (2002). Patient and staff satisfaction with the quality of in-patient psychiatric care in a Nigerian general hospital. *Social Psychiatry & Psychiatric Epidemiology, 37*(6), 283-286.
Pease, N. J., & Finlay, I. G. (2002). Do patients and their relatives prefer single cubicles or shared wards? *Palliative Medicine, 16*(5), 445-446.

Philips, C. (1988). Single room maternity care for maximum cost-efficiency. *Perinatology/Neonatology, 12*(March/April), 22-31.

Pichert, J. W., Federspiel, C. F., Hickson, G. B., Miller, C. S., Gauld-Jaeger, J., & Gray, C. L. (1999). Identifying medical center units with disproportionate shares of patient complaints. *The Joint Commission Journal on Quality Improvement, 25*(6), 288-299.

Press Ganey, Inc. (2003). National patient satisfaction data for 2003. (Provided by Press Ganey, Inc. at the request of the authors of this research review.)

Seltzer, E., Schulman, K. A., Brennan, P. J., & Lynn, L. A. (1993). Patient attitudes toward rooming with persons with HIV infection. *Journal of Family Practice, 37*(6), 564-568.

Shepley, M. M. (1995). The location of behavioral incidents in a children's psychiatric facility. *Children's Environments, 12*(3), 352-361.

Shepley, M. M. (2002). Predesign and postoccupancy analysis of staff behavior in a neonatal intensive care unit. *Children's Health Care, 31*(3), 237-253.

Shepley, M. M., & Wilson, P. (1999). Designing for persons with AIDS: A post-occupancy study at the Bailey-Boushay House. *Journal of Architectural and Planning Research, 16*(1), 17-32.

Spaeth, G. L., & Angell, M. F. (1968). Preference of ophthalmic patients for multi-bedded hospital rooms. *Archives of Ophthalmology, 79*(4), 362-365.

Stahler, G. J., Frazer, D., & Rappaport, H. (1984). The evaluation of an environmental remodeling program on a psychiatric geriatric ward. *Journal of Social Psychology, 123*(1), 101.

Stegenga, P. W. (1990). Postsurgical recovery care: Spatial organization and social relationships. Unpublished master's thesis, Georgia Institute of Technology, Atlanta.

Strittmatter, S., & Jessee, P. O. (1999). Pediatric health care: Parents' views on child life services. *Journal of Family and Consumer Sciences, 91*(1), 65.

Sturdavant, M. (1960). Intensive nursing service in circular and rectangular units. *Hospitals, JAHA, 34(14)*, 46-48, 71-78.

Swan, J. E., Richardson, L. D., & Hutton, J. D. (2003). Do appealing hospital rooms increase patient evaluations of physicians, nurses, and hospital services? *Health Care Management Review, 28*(3), 254.

Teresi, J. A., Holmes, D., & Monaco, C. (1993). An evaluation of the effects of commingling cognitively and noncognitively impaired individuals in long-term care facilities. *Gerontologist, 33*(3), 350-358.

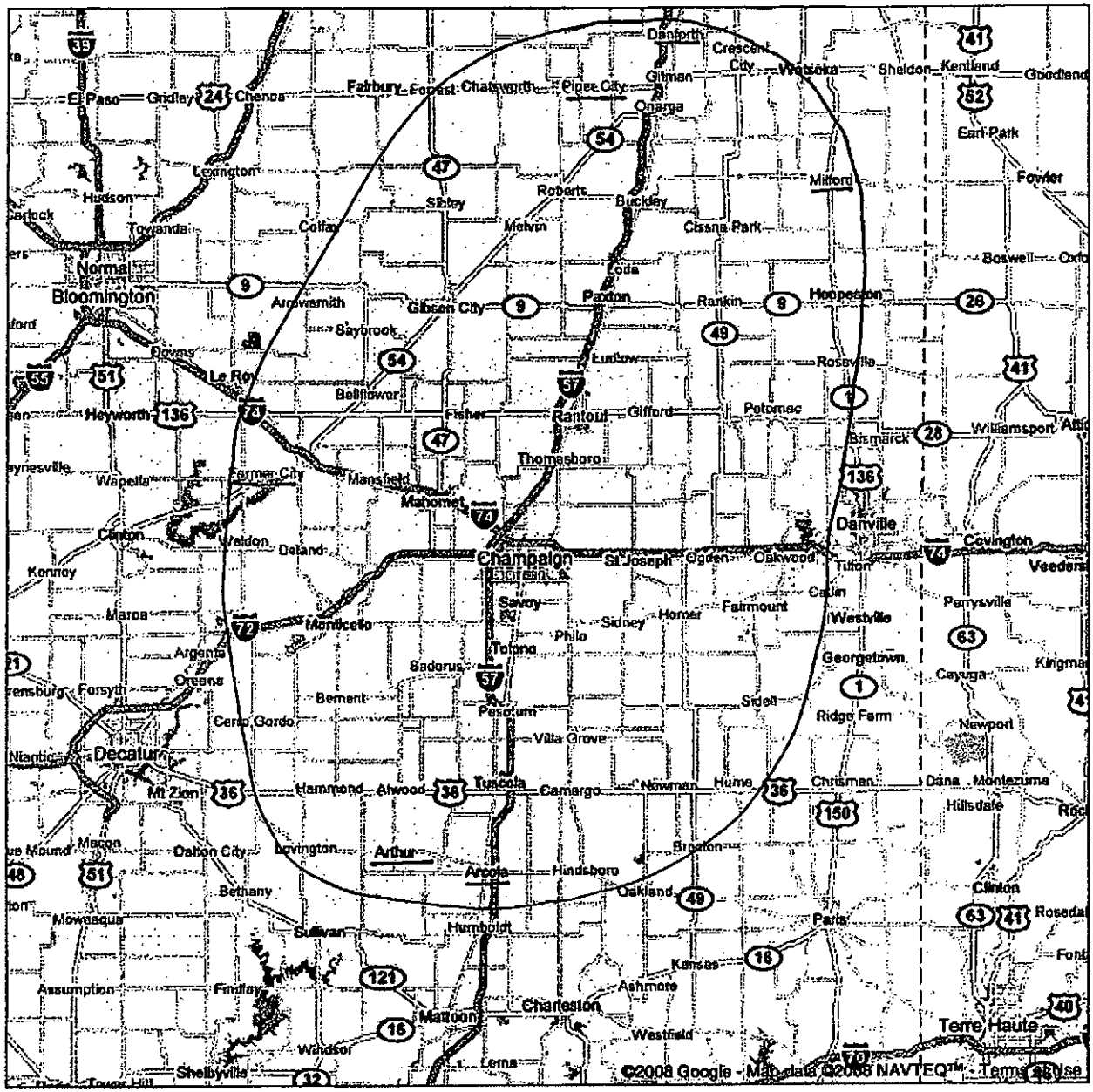
Thi, P. L. N., Briancon, S., Empereur, F., & Guillemin, F. (2002). Factors determining inpatient satisfaction with care. *Social Science & Medicine, 54*(4), 493-504.

Watson, W. T., Marshall, E. S., & Fosbinder, D. (1999). Elderly patients' perceptions of care in the emergency department. *Journal of Emergency Nursing, 25*(2), 88-92.

Willmott, M. (1986). The effect of a vinyl floor surface and a carpeted floor surface upon walking in elderly hospital in-patients. *Age and Ageing, 15*(2), 119-120.

Winkelstein, M. L., & Carson, V. J. (1987). Adolescents and rooming-in. *Maternal-Child Nursing Journal, 16*(1), 75-88.

CHAMPAIGN-URBANA "HUB"
Carle Foundation Hospital



ATTACHMENT GRC-4

Carle Foundation Hospital

Certificate of Need Opinion Report

February 26, 2008

ECG
MANAGEMENT
CONSULTANTS

ECG MANAGEMENT CONSULTANTS, INC.
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Attachment GRC-4

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I. Introduction

The purpose of this report is to provide Carle Foundation Hospital (CFH) with an opinion regarding the impact of its proposal to build a new bed tower that will enable modernization of certain CFH clinical services. Included in this proposal are plans to modernize 88 medical/surgical beds and 32 intensive care unit (ICU) beds.

ECG Management Consultants, Inc., was retained to provide an opinion as to the impact that the new bed tower would have on the region, with consideration of the major requirements of the health planning framework used by the Illinois Health Facilities Planning Board (IHFPB). As an independent healthcare management consulting firm, ECG is well qualified to offer an opinion as to the potential impact of the CFH proposal on the community.

The remainder of this report summarizes our analyses and conclusions and is organized as follows:

- Conclusions
- Community Need for Medical/Surgical and ICU Services
- Qualifications

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II. Conclusions

Based on our analyses, we conclude that the proposed bed tower will allow CFH to address capacity issues resulting from the consistent growth in inpatient days, an aging population, and the lack of regional availability of services. Further, we conclude that the proposed bed tower will not represent an unnecessary duplication of the services currently offered in the community. Those conclusions are made in consideration of the major requirements of the health planning framework used by the IHFPB, which seeks to improve access while not duplicating services.

In making these determinations, we considered the following key findings:

- Conservative projections show that by 2012, CFH will reach 90 percent occupancy for its 185 medical/surgical beds. The ICU is projected to reach at least 65 percent occupancy with the current 32 beds. These figures are above the recommended occupancy rates of 85 percent for medical/surgical and 60 percent for ICU services.
- From 2002 to 2007, total inpatient days at CFH grew at average annual rates of 7.0 percent for medical/surgical services and 0.5 percent for ICU services.
- The elderly (age 65 and older) are a large and growing segment in the D-01 planning area, constituting 11.6 percent of the population, and expected growth is 5.5 percent between 2007 and 2012. The elderly accounted for 52 percent of medical surgical inpatient days and 46 percent of ICU inpatient days at CFH in 2007. This aging population growth and concurrent increase in patient acuity contribute to growth of approximately 1 percent per year to both medical/surgical and ICU inpatient days.
- Patient care-seeking behavior shows that 40 percent of CFH patients come from outside the D-01 planning area, indicating that CFH serves a larger area than its designated planning area. CFH's high-quality services and breadth of specialties make it a provider of choice in eastern central Illinois, and with its projected growth, CFH will require its planned modernizations to meet patient demand.

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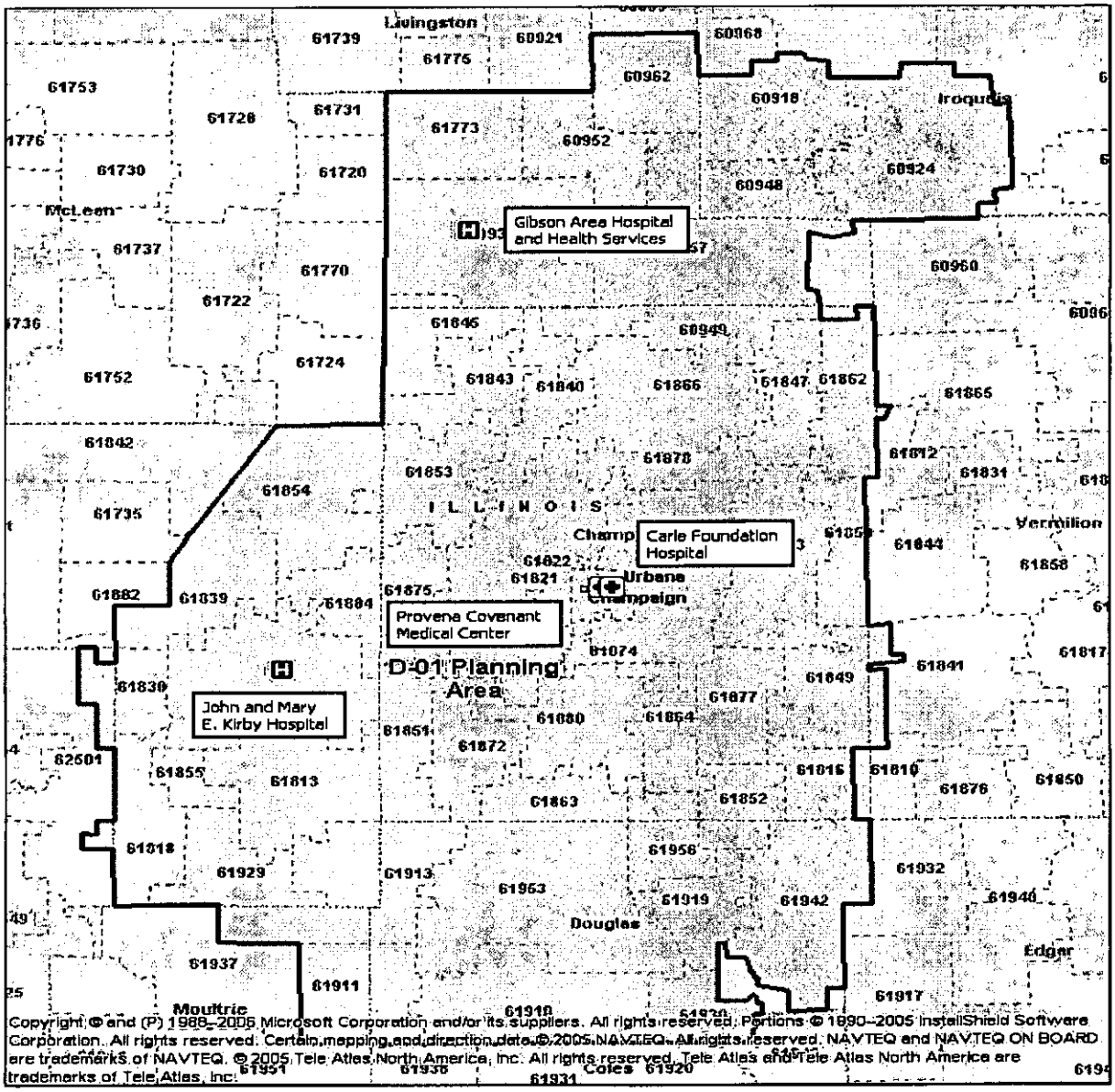
III. Community Need for Medical/Surgical and ICU Services

For medical/surgical and ICU services, CFH is considered part of the D-01 planning area. A map of this planning area, including the locations of the four hospitals in the area, is presented in F igure 1.[1]

Figure 1 – D-01 Planning Area and Hospitals



[1] Note that the area shown on the map and the area analyzed are based on ZIP codes, rather than counties and townships. As such, it is not identical to the D-01 planning area as defined by the Illinois Department of Public Health (IDPH) but is a close approximation as permitted by Section 1100.510(c)(z) of the IHFPB's rules.

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To determine the need for the modernization of medical/surgical and ICU services, we researched the current and future demand for these services. The following areas were analyzed:

- *Historical and Current Inpatient Days* – To establish a trend in the growth of medical/surgical and ICU services, and to thereby determine the need for future services, we reviewed the 5-year growth pattern of inpatient days.
- *Patient Care-Seeking Behavior* – To better understand the area from which CFH generates its patients, and thus the perceived area demand for CFH services, we analyzed patient migration data.
- *Aging Population Shift, Patient Acuity, and Obesity* – As the age, acuity, and obesity of patients rise, so does their need for care and corresponding hospital need for increased capacity. Thus, we researched the occurrence of these trends.
- *Projected Local Population and Inpatient Days by Age Group* – To determine demand for services, we analyzed the growth in age groups and their associated use rates.
- *Projected CFH Growth and Occupancy Rates* – To project CFH bed need, we created a sensitivity analysis around inpatient growth rates and demographic changes, concluding with our opinion on the need for CFH to modernize its medical/surgical and ICU services.

A. Historical and Current Inpatient Days

Medical/surgical and ICU inpatient days have increased at CFH and can be expected to continue to grow in the future. This anticipated increase requires CFH to prepare for growth through facility modernization and capacity enhancement.

1. Medical/Surgical Inpatient Days

Medical/surgical inpatient days have grown over the past 5 years at CFH at a compound annualized growth rate (CAGR) of 7.0 percent. Moreover, CY 2007 data shows inpatient days at a 10 percent growth over CY 2006. CFH is the only hospital in the D-01 planning area contributing to any overall growth in medical/surgical inpatient days. This growth is likely a function of the advanced and complex level of medical care CFH provides. Moreover, CFH is also the only designated Level I trauma center in the planning area, and the only hospital that offers neurosurgery, colorectal surgery, and head and neck surgery.

Within the D-01 planning area, two of the four hospitals, Gibson Area Hospital and Health Services and John and Mary E. Kirby Hospital, are critical access hospitals, and as such provide a limited scope of services. Given the community need for a broad array of tertiary care services, one can assume that CFH's occupancy rates in medical/surgical services will continue to increase.

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Table 1 presents medical/surgical inpatient days for CF H between 2002 and 2007.

Table 1 – CFH Medical/Surgical Inpatient Days

2002	2003	2004	2005	2006	2007	5-Year CAGR
33,733	37,337	40,110	39,286	42,919	47,414	7.0%

2. ICU Inpatient Days

ICU inpatient days have also grown over the past 5 years at CFH. Between 2002 and 2007, ICU inpatient days grew by an average of 0.5 percent per year. CFH is the only hospital in the D-01 planning area to show an increase over the 5-year period.

Table 2 shows the ICU inpatient days for 2002 to 2007 at CFH.

Table 2 – CFH ICU Inpatient Days

2002	2003	2004	2005	2006	2007	5-Year CAGR
6,661	7,378	7,347	7,618	6,980	6,839	0.5%

B. Patient Care-Seeking Behavior

CFH draws a significant portion of its patients from outside the D-01 planning area, demonstrating patient need for CFH's tertiary care services from a larger service area. To show this, we compared the D-01 planning area to the area from which CFH draws its patients for medical/surgical and ICU services. To best approximate medical/surgical and ICU population migration, we used discharge cases from IDPH 2007 COMPdata for all services except newborn, NICU, obstetrics, and rehabilitation.

Figure 2 shows the patient origin by ZIP code with the number of patients by ZIP code increasing with the darker shading. The shading scale goes from 1 to 1,201 patients per ZIP code. This figure shows that a significant number of patients come to CFH from outside the D-01 planning area. Discharges of patients coming from outside the D-01 planning area were responsible for 40 percent of CFH's total discharges in FY 2007.

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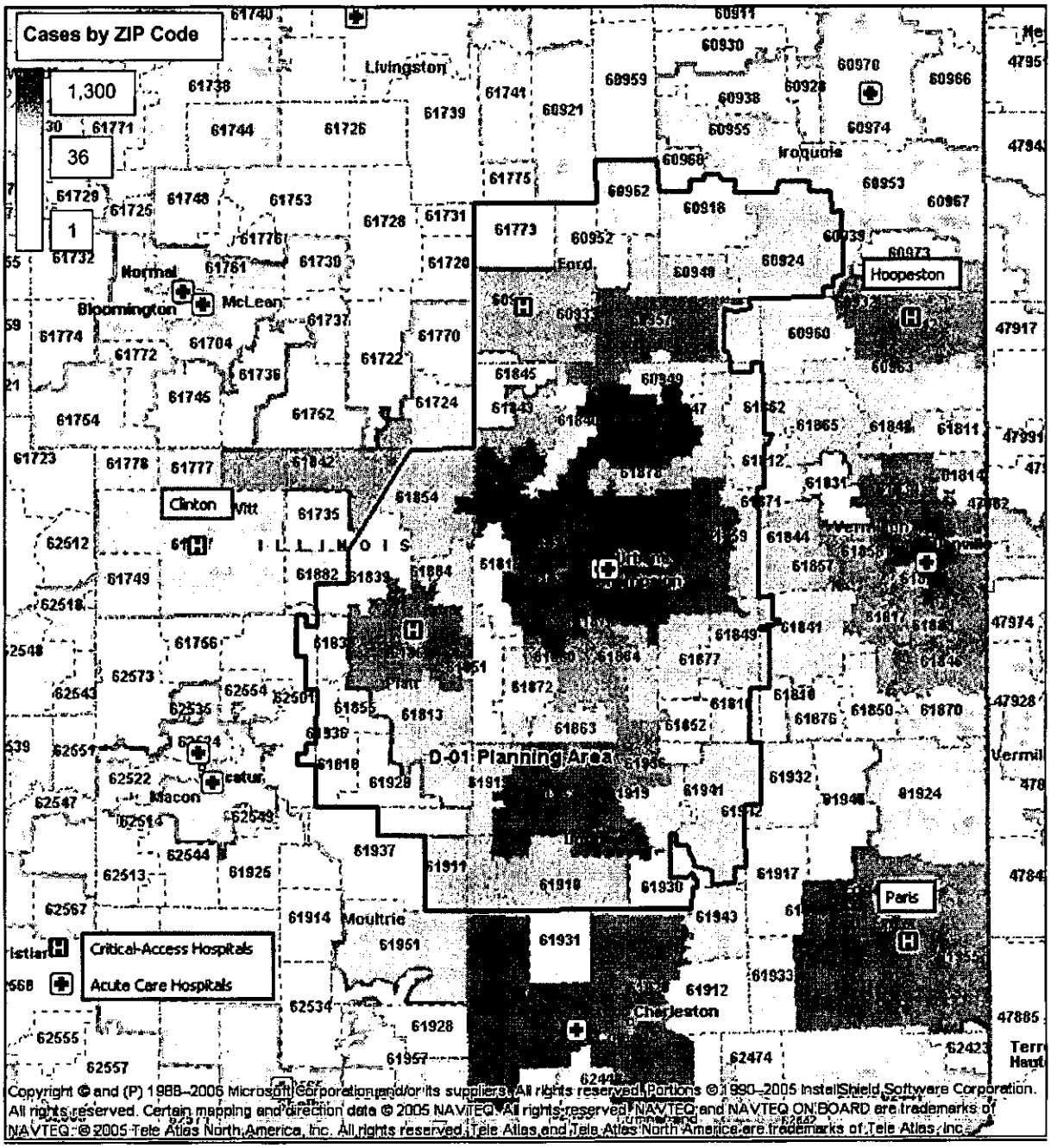
219 Attachment GRCH

Figure 2 – CFH Patient In-Migration and Surrounding Hospitals



In Clinton, Hoopeston, and Paris, the local hospital offers only critical access services; therefore, CFH, in offering a broad array of specialty services to those patients, is providing substantial value to those communities. Furthermore, a significant number of patients come from communities where an acute care hospital exists, yet patients travel to CFH instead. For example, more than 1,600 FY 2007 CFH discharges came from the 10-mile area surrounding Danville and the Provena United Samaritans Medical Center, and an additional 250 came from the 10-mile area surrounding Charleston, where the Sarah Bus h Lincoln Health Center is loc ated.

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Table 3 shows the ZIP codes and their respective cities outside the D-01 planning area with over 100 discharges (excluding newborn, NICU, obstetrics, and rehabilitation). The total of 2,737 from 11 ZIP codes is over 19 percent of all FY 2007 CFH discharges.

Table 3 – FY 2007 ZIP Codes and Cities Outside the D-01 Planning Area With More Than 100 Discharges From CFH

ZIP Code(s)	City	Discharges
61832, 61834	Danville	1,112
61938	Mattoon	292
61944	Paris	247
60942	Hoopeston	226
61920	Charleston	216
61846	Georgetown	161
61842	Farmer City	139
61883	Westville	126
61817	Catlin	110
61858	Oakwood	108
	TOTAL	**2,737**

The IHFPB does not include populations outside the D-01 planning area when calculating bed need; however, given the large in-migration population, it appears that the D-01 planning area does not adequately capture the area from which CFH receives its patients. CFH requires certain modernizations to continue the standard of care that it has established for this population. Failure to modernize its services would result in reduced quality and availability of services to patients from this broader geographical area.

C. Nationwide Aging Population Shift, Patient Acuity, and Obesity

The effects of the aging Baby Boom Generation, the growth of the oldest elderly, increasing acuity of patients, and the obesity epidemic are driving the increased utilization and requiring CFH and other hospitals to prepare to meet future needs.

1. Aging Baby Boomers

As of 2007, approximately 30 percent of the population of the United States was born between 1946 and 1964 (the "Baby Boom"). As these individuals mature past the age of 65 years, they will constitute 20 percent of the population, whereas they currently constitute approximately 12 percent of the population.[2,3] This high proportion of older adults as part of the general population in the

[2] U.S. Census Bureau: National Population Estimates – Characteristics. *http://www.census.gov/popest/national/asrh/*, accessed February 19, 2008.

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United States is unprecedented, and the ability to provide the requisite amount of healthcare to the elderly in the coming years should be a chief concern among hospitals.

Several studies have been conducted suggesting the potential need for increased capacity in hospitals:

- The U.S. Department of Health & Human Services Health Resources and Services Administration found that assuming no change in per capita healthcare utilization, between the years 2000 and 2020, changing demographics would cause an estimated 30 percent increase in inpatient days, a 20 percent increase in outpatient visits, and a 17 percent increase in emergency department visits at general, short-term hospitals.[4]
- The Health Care Advisory Board reported that based on a moderate-growth scenario, hospital inpatient days will rise 3.5 percent each year through 2020, implying the need to increase inpatient bed capacity by 40 percent.[5]
- A report financed by the Metropolitan Chicago Healthcare Council found that by 2020, Chicago-area hospitals will need 4,500 more beds – approximately a 20 percent increase in beds between 2000 and 2020.[6]

These increased needs in bed capacity are due to the greater medical requirements of the elderly, which, combined with access to healthcare services through Medicare and Medicaid, have resulted in much higher per capita use of healthcare services for the elderly compared to the non-elderly. On a per capita basis, the elderly have more hospital inpatient days, outpatient visits, and emergency department visits.

2. Growth of the Oldest Elderly

Also of concern in planning for adequate bed capacity is the growth of the population of the "oldest elderly." This is the most rapidly growing demographic group in the country, and is defined as the portion of the population age 75 and over. In 2000, there were approximately 16.6 million people age 75 and over, 9.2 million people age 80 and over, and 4.2 million people age 85 and over. By 2020, the number of people in these age groups could increase by 33 percent, 41 percent, and 67

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3 Laurie Barclay and Charles Vega, "Good Nutrition May Help Prevent Disability in Elderly," Medscape Medical News, December 4, 2006, *www.medscape.com/viewarticle/548717*, accessed on December 17, 2007.

4 "Changing Demographics: Implications for Physicians, Nurses, and Other Health Workers," U.S. Department of Health & Human Services, Health Resources and Services Administration, Bureau of Health Professions, National Center for Health Workforce Analysis, Spring 2003.

5 Health Care Advisory Board, "The New Economics of Care: Briefing for the Board and Health System Executives," Advisory Board Company, Fall 2001.

6 "The Chicago Regional Health Care Market: Projected Demand for Health Care Services and Impact on Providers," Metropolitan Chicago Healthcare Council and Health Care Futures, December 2002.

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percent, respectively.[7] The oldest elderly have the highest per capita utilization of healthcare services; thus, their increase in the population translates into increased bed needs in hos pitals.

3. Increased Patient Acuity

Hospital patient acuity, or the average severity of illness of the inpatient population, has been increasing since the early 1990s. Two distinct studies published between 2000 and 2003 found that out of all hospital demand contributors, hospital representatives concluded that increased patient acuity contributed the most to capacity problems.[8] This finding correlates with another study, conducted in 2000, focusing specifically on the growth of ICU admissions. The ICU admission study concluded that because of an aging population and the increasing acuity of illness of hospitalized patients, both the total number of ICU patients and their proportional share of hospital admissions overall are expected to grow.[9]

4. Obesity Epidemic

Obesity is weight that endangers health because of its high body fat relative to lean body mass. Over the past 2 decades, obesity in the United States has been increasing steadily. More than one in five adults are classified as obese based on self-reported weight, and almost one in three based on objectively measured weight. According to a study conducted by RAND Health, obese individuals spend 36 percent more on healthcare services, and obesity is associated with more chronic medical conditions than any other health behavior aside from aging.[10] Moreover, the incidence of severe obesity, defined as a body mass index (BMI) of greater than 40, increased by 50 percent between 2000 and 2005.[11] Severely obese individuals are more than twice as likely as people of normal weight to be in fair or poor health and have about twice as many chronic medical conditions.

CFH's planned modernizations are required for the hospital to provide for the greater healthcare needs of the aging population, the increasing acuity of patients, and the chronic medical conditions of the obese.

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7 "Changing Demographics: Implications for Physicians, Nurses, and Other Health Workers," U.S. Department of Health & Human Services, Health Resources and Services Administration, Bureau of Health Professions, National Center for Health Workforce Analysis, Spring 2003.

8 Gloria J. Bazzoli, Linda R. Brewster, Gigi Liu, and Sylvia Kuo, "Does U.S. Hospital Capacity Need to Be Expanded?", *Health Affairs*, November/December 2003 and John R. Richards, Misty L. Navarro, and Robert W. Derlet, "Survey of Directors of Emergency Departments in California on Overcrowding," *Western Journal of Medicine*, Volume 172, June 2000.

9 Jeffrey M. Rothschild, M.D., M.P.H., "'Closed' Intensive Care Units and Other Models of Care for Critically Ill Patients," *Making Health Care Safer: A Critical Analysis of Patient Safety Practices*, Evidence Report/Technology Assessment: Number 43, AHRQ Publication No. 01-E058, July 2001, Agency for Healthcare Research and Quality, *www.ahrq.gov/clinic/ptsafety*, accessed on December 17, 2007.

10 "Obesity and Disability: The Shape of Things to Come," RAND Health, 2007.

11 Ibid.

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D. Projected Local Population and Inpatient Days by Age Group

Future inpatient days in the D-01 planning area will grow because of an overall growth in the population and an increase in the utilization of health services by the population.

1. Population Growth Rates by Age Group

Within the D-01 planning area and HSA 4, the older population is growing at a faster rate than the younger population, and this trend is expected to continue. Table 4 shows the 2007 percentage of population, projected percentage of population for 2012, and population percentage change over time for five age groups within the D-01 planning area. The 65-to-74 age group shows the largest projected population increase, at 8.67 percent, followed by the 45-to-64 age group. This clearly demonstrates the population shift in this area, and therefore the need for increased provision of health services through modernization efforts.

Table 4 – D-01 Planning Area Current and Projected Population Distribution by Age Group

Age Group	2007 Percentage of Population	2012 Percentage of Population	2007–2012 Population Percentage Change
<15 Years	17.44%	17.39%	1.36%
15–44 Years	50.13%	48.62%	(1.39%)
45–64 Years	20.85%	21.98%	7.18%
65–74 Years	5.69%	6.08%	8.67%
75 Years +	5.89%	5.93%	2.34%
All Years	100.00%	100.00%	1.67%

2. Medical/Surgical Inpatient Days

By applying the projected population changes to the measure of medical/surgical inpatient days at CFH for FY 2007 for each of the age groups, we calculated an estimate of future inpatient days for 2012, as shown in Table 5. Holding constant all other growth factors, the change in the population distribution causes medical/surgical inpatient days to increase by 4.59 percent between 2007 and 2012, a CAGR of 0.91 percent.

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- *Moderate* – Inpatient days grow at a rate reflecting more recent growth and an adjustment for the continued aging of the population.
- *Aggressive* – Inpatient days grow at a rate reflecting more recent growth and a larger adjustment for the continued aging of the population.

1. Medical/Surgical Growth and Occupancy Rates

By 2012, occupancy rates for medical/surgical beds at CFH will range from 90 to greater than 100 percent occupancy, assuming growth rates for inpatient days of 5.0, 7.0, and 8.0 percent in the conservative, moderate, and aggressive growth scenarios, respectively.[13] While recent CY 2007 data shows medical/surgical inpatient days to be growing at an annualized rate of 10 percent, using a moderate estimate of 7 percent growth results in a 2012 medical/surgical occupancy rate of 98 percent. This estimate is further supported by a recent study done involving an analysis of the cardiac and vascular procedures, comprising 25 percent of CFH's medical/surgical inpatient days. This study showed that between 2007 and 2012, inpatient days in this area will grow by 7 percent per year.

The IHFPB's medical/surgical occupancy target for CFH, as a 185-bed unit, is 85 percent.[14] As previously discussed, with CFH as the largest provider in the area, and experiencing rapid growth, the medical surgical beds will continue to fill and CFH will face capacity issues, resulting in patients losing the ability to receive the care they need and desire from CFH. Modernizing 88 of the medical/surgical beds will afford CFH enhanced capacity planning capabilities to better meet the increasing patient needs of the future.

Table 7 shows the three growth scenarios and associated expected 2012 inpatient days and occupancy rates for CFH medical/surgical beds.

Table 7 – CFH 2012 Projected Medical/Surgical Growth in Inpatient Days and Associated Occupancy Rates

Scenario	2007 Inpatient Days	CAGR	2012 Inpatient Days	2012 Occupancy Rate
Conservative	47,414	5.0%	60,514	90%
Moderate	47,414	7.0%	66,501	98%
Aggressive	47,414	8.0%	69,667	> 100%

[13] 2012 is projected to be the first operating year of the modernized medical/surgical and ICU beds.

[14] Illinois Joint Committee on Administrative Rules Administrative Code Section 1100.520: Medical/Surgical-Pediatric Categories of Service, *http://www.ilga.gov/commission/jcar/admincode/077/077011000D05200R.html*, accessed February 19, 2008.

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2. ICU Growth and Occupancy Rates

At 32 beds, projected FY 2012 occupancy rates for ICU beds range from 65 to 67 percent occupancy according to conservative, moderate, and aggressive growth rate scenarios of 2.0, 2.5, and 3.0 percent, respectively. The range in growth scenarios begins at 2.0 percent growth per year to account for the aging population shift and as a result of the new neuroradiologist joining CFH in 2008. This neuroradiologist is expected to complete at least 60 new procedures per year on patients originating in the D-01 planning area for an additional 310 inpatient days. This estimate is calculated analyzing the current out-migration of patients to hospitals outside the D-01 planning area for neuroradiological procedures and assuming that 75 percent of these cases will not leave the planning area with the presence of a physic ian specializing in these procedures.

The IHFPB's ICU occupancy target in the D-01 planning area is 60 percent.[15] With CFH growing at the moderate estimate of 2.5 percent per year while the other two ICU providers in the planning area experience no growth between 2007 and 2012, the planning area will stand at 67 percent occupancy for ICU beds by 2012, 7 percentage points above the target occupancy rate.

Table 8 shows the three growth scenarios and associated expected 2012 inpatient days and occupancy rates for CFH ICU beds.

Table 8 – CFH 2012 Projected ICU Growth in Inpatient Days and Associated Occupancy Rates

Scenario	2007 Inpatient Days	CAGR	2012 Inpatient Days	2012 Occupancy Rate
Conservative	6,839	2.0%	7,588	65%
Moderate	6,839	2.5%	7,776	67%
Aggressive	6,839	3.0%	7,967	68%

15 Illinois Joint Committee on Administrative Rules Administrative Code Section 1100.540: Intensive Care Category of Service, *http://www.ilga.gov/commission/jcar/admincode/077/077011000D05400R.html*, accessed February 19, 2008..

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IV. Qualifications

A. Firm Qualifications

In accordance with the appropriate regulations, we certify that ECG is an independent consulting firm with a long-standing and active practice in ambulatory and general hospital matters. As such, we regularly perform business/strategic planning and other studies for taxable and tax-exempt healthcare entities, and we are well qualified to provide opinions regarding the reasonableness of healthcare business ventures of the type described in and provided by this letter. We affirm that neither the client nor any of its officers or directors influenced, restrained, or otherwise affected our procedures or analysis in preparing this opinion letter.

B. Principal Qualifications

Mr. Gary K. Edmiston is the head of ECG's San Diego office and has more than 18 years of experience in healthcare strategy, business operations, mergers and acquisitions, strategic planning, and finance. Prior to joining the firm in 1997, he spent 7 years with Sharp HealthCare in San Diego, where he directed strategic planning and business development activities. He also directed the international division and held the position of chief financial officer for Sharp's for-profit, seven-company subsidiary. Mr. Edmiston received a Master of Business Administration degree from the UCLA Anderson School of Management and a Bachelor of Science degree in economics from the University of California, Riverside.

228 Attachment GRC 4

JOHN AND MARY E.
KIRBY HOSPITAL
A Tradition of Caring

January 11, 2008

steven.tenhouse@kirbyhospital.org

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

My name is Steven D. Tenhouse and I am the chief executive officer at The John & Mary E. Kirby Hospital in Monticello, Illinois. I am writing today to express my support of Carle Foundation Hospital's modernization and expansion project for its Urbana campus. Carle Foundation Hospital has played a major role, not only in the Champaign-Urbana community, but in my community as well. While my organizations' goal is to provide services to our patients in our community, we sometimes need to defer to a higher level of care for the best outcomes to occur. Physicians and physician assistants from Kirby Hospital have relied upon Carle Foundation Hospital for many years to provide care for their patients, most specifically, in the areas of Cardiovascular, Neonatal, Neurosurgical, Intensive Care, Trauma, and Gastroenterology services.

The new facility will help my organization in many ways. Most specifically by;

- Expanding and enhancing the rehabilitation unit
- Modernizing the cardiology and vascular services offered at Carle, making patient care streamlined and more efficient and,
- Expanding the digestive health services currently offered.

As a regional leader in healthcare, Carle Foundation Hospital has been widely recognized for its programs, services and commitment to improving the health care of the community. This project will insure that patients in East Central Illinois, regardless of their ability to pay, can continue to rely on Carle Foundation Hospital as it prepares for the future.

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1111 North State Street • Monticello, IL 61856
Phone: (217) 762-2115 • Fax: (217) 762-6165
www.kirbyhospital.org

On behalf of The John & Mary E. Kirby Hospital, I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for the East Central Illinois community. Thanking you in advance, I remain,

Very truly yours,

Steven D. Tenhouse
Chief Executive Officer

230 Attachment GRC4

RMH Richland Memorial Hospital

800 East Locust Street • Olney, IL 62450-2598
618.395.2131 • fax 618.392.3228

January 17, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark:

My name is Harvey Pettry, the CEO of Richland Memorial Hospital. I am writing you today to express my support of Carle Foundation Hospital's modernization and expansion project for its Urbana campus.

Carle Foundation Hospital is recognized in this area as a major tertiary provider of a wide range of medical/surgical services. It is considered to be the referral center for Eastern and Southeastern Illinois. The projects for Neonatal Intensive Care beds, expansion of the Rehabilitation Unit, and an expansion of the Digestive Health Services are upgrades in services that will occur only at Carle Foundation Hospital.

On behalf of Richland Memorial Hospital, I urge the Illinois Health Facilities Planning Board to approve this much needed health improvement initiative in the Central Illinois area.

Sincerely,

Harvey H. Pettry, FACHE
Chief Executive Officer

08-0024
cjs

231 Attachment GRC4

LAWRENCE
COUNTY
MEMORIAL
HOSPITAL

2200 West State Street
Lawrenceville, Illinois 62439
Ph: (618) 943-1000
Fax: (618) 943-7230

December 28, 2007

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

My name is Doug Florkowski, the Chief Executive Officer of Lawrence County Memorial Hospital, and I am writing to you today to express my support of Carle Foundation Hospital's modernization and expansion project for its Urbana campus.

Carle Foundation Hospital has played a major role, not only in the Champaign-Urbana community, but in my community as well. While my organizations' goal is to keep the patients that we can provide care for, we sometimes need to defer tertiary care for the best outcomes to occur. Patients from Lawrence County Memorial Hospital have relied upon Carle Foundation Hospital for many years to provide care for numerous health conditions, most specifically, in the areas of Cardiovascular, Neonatal, Neurosurgical, Pediatrics and Trauma services.

As a regional leader in healthcare, Carle Foundation Hospital earned the reputation for providing high quality services to Lawrence County patients and physicians. This project will insure that all patients in East Central and Southern Illinois, regardless of their ability to pay, can continue to rely on Carle Foundation Hospital, as it prepares for the future.

On behalf of Lawrence County Memorial Hospital, I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for the East Central Illinois community.

Sincerely,

Douglas Florkowski
Chief Executive Officer
Lawrence County Memorial Hospital

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Carle Foundation Hosp LOI

Paris Community Hospital
721 East Court Street
Paris, Illinois 61944
Phone: (217) 465-4141

Family Medical Center
727 East Court Street
Paris, Illinois 61924
Phone: (217) 465-8411

Family Medical Center
112 West Madison Avenue
Chrisman, Illinois 61924
Phone: (217) 269-2394

Family Medical Center
104 East Buena Vista Avenue
Kansas, Illinois 61933
Phone: (217) 948-5905

Paris Community Hospital
Family Medical Center

January 10, 2008

RECEIVED
JAN 14 2008
HEALTH FACILITIES PLANNING BOARD

Mr. Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark:

I wish to express my support of Carle Foundation Hospital's modernization and expansion project for its Urbana campus. Carle Foundation Hospital has played a major role, not only in the Champaign-Urbana community, but in the Edgar County area as well. I have relied on Carle Foundation Hospital for many years to provide care for patients who have required specialty care.

The planned construction of the heart and vascular institute will combine:

- Cardiology, vascular and cardiothoracic surgery outpatient services, with vascular labs, cardiac intensive care/stepdown/medical beds.
- Expanded digestive health services,
- Surgical ICU, Pediatric ICU and stepdown beds with defined space to grow the developing stroke programs and neurosurgical services, and
- Rehabilitation programs with inpatient and outpatient services.

Health care access is of critical importance and growth in services with commitment for the future is vital as our country experiences changes in our health care environment..

On behalf of rural health care providers in south-central Illinois, I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for the east central Illinois community.

Sincerely,

Leland A. Phipps, MD

Committed to Community and Family Health

www.pariscommunityhospital.com

233 Attachment GRCH

Paris Community Hospital
721 East Court Street
Paris, Illinois 61944
Phone: (217) 465-4141

Family Medical Center
727 East Court Street
Paris, Illinois 61924
Phone: (217) 465-8411

Family Medical Center
112 West Madison Avenue
Chrisman, Illinois 61924
Phone: (217) 269-2394

Family Medical Center
104 East Buena Vista Avenue
Kansas, Illinois 61933
Phone: (217) 948-5905

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JAN 2 2 2008
HEALTH FACILITIES
PLANNING BOARD

Paris Community Hospital
Family Medical Center

January 15, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

I wish to express my support of Carle Foundation Hospital's modernization and expansion project for its Urbana campus. Carle Foundation Hospital has played a major role, not only in the Champaign-Urbana community, but in the Edgar County area as well. I have relied on Carle Foundation Hospital for many years to provide care for patients who have required specialty care.

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- Rehabilitation programs with inpatient and outpatient services

Health care access is of critical importance and growth in services with commitment for the future is vital as our country experiences changes in our health care environment.

On behalf of rural health care providers in south-central Illinois, I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for the east central Illinois community.

Sincerely,

Rahat Sheikh, M.D.
RS/epc

Committed to Community and Family Health

www.pariscommunityhospital.com

234 Attachment GRC4

Paris Community Hospital
721 East Court Street
Paris, Illinois 61944
Phone: (217) 465-4141

Family Medical Center
727 East Court Street
Paris, Illinois 61924
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Kansas, Illinois 61933
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JAN 2 2 2008
HEALTH FACILITIES PLANNING BOARD

Paris Community Hospital
Family Medical Center

January 18, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

I have been practicing Internal Medicine in Paris, IL in Edgar County since 1977 and have used Carle Clinic/Hospital consultants and facilities extensively over the past 30 years. I wish to express my support of Carle Foundation Hospital's modernization and expansion project for its Urbana campus.

The planned construction of the heart and vascular institute will combine:

- Cardiology, vascular and cardiothoracic surgery outpatient services, with vascular labs, cardiac intensive care/stepdown/medical beds,
- Expanded digestive health services,
- Surgical ICU, Pediatric ICU and Stepdown beds with defined space to grow the developing stroke program and neurosurgical services and,
- Rehabilitation programs with inpatient and outpatient services

Health care access is of critical importance and growth in services with commitment for the future is vital as our country experiences changes in our health care environment.

On behalf of rural health care providers in south-central Illinois, I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for the east central Illinois community.

Sincerely,

Reid Sutton, M.D.
RS/epc

Committed to Community and Family Health

www.pariscommunityhospital.com

235 Attachment GRC 4

Paris Community Hospital
721 East Court Street
Paris, Illinois 61944
Phone: (217) 465-4141

Family Medical Center
727 East Court Street
Paris, Illinois 61924
Phone: (217) 465-8411

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104 East Buena Vista Avenue
Kansas, Illinois 61933
Phone: (217) 948-5905

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JAN 22 2008
HEALTH FACILITIES
PLANNING BOARD

Paris Community Hospital
Family Medical Center

January 15, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

I wish to express my support of Carle Foundation Hospital's modernization and expansion project for its Urbana campus. Carle Foundation Hospital has played a major role, not only in the Champaign-Urbana community, but in the Edgar County area as well. I have relied on Carle Foundation Hospital for many years to provide care for patients who have required specialty care.

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- Rehabilitation programs with inpatient and outpatient services

Health care access is of critical importance and growth in services with commitment for the future is vital as our country experiences changes in our health care environment.

On behalf of rural health care providers in south-central Illinois, I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for the east central Illinois community.

Sincerely,

M. B. Akerman, M.D.
MBA/epc

Committed to Community and Family Health

www.pariscommunityhospital.com

236 Attachment GRC4

Paris Community Hospital
721 East Court Street
Paris, Illinois 61944
Phone: (217) 465-4141

Family Medical Center
727 East Court Street
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RECEIVED
JAN 2 2 2008
HEALTH FACILITIES
PLANNING BOARD

Paris Community Hospital
Family Medical Center

January 15, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

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- Rehabilitation programs with inpatient and outpatient services

Health care access is of critical importance and growth in services with commitment for the future is vital as our country experiences changes in our health care environment.

On behalf of rural health care providers in south-central Illinois, I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for the east central Illinois community.

Sincerely,

Philip Holloway, D.P.M.
PH/epc

Committed to Community and Family Health

www.pariscommunityhospital.com

237 Attachment 6RC4

Paris Community Hospital
721 East Court Street
Paris, Illinois 61944
Phone: (217) 465-4141

Family Medical Center
727 East Court Street
Paris, Illinois 61924
Phone: (217) 465-8411

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Phone: (217) 948-5905

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JAN 22 2008
HEALTH FACILITIES
PLANNING BOARD

Paris Community Hospital
Family Medical Center

January 15, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

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- Rehabilitation programs with inpatient and outpatient services

Health care access is of critical importance and growth in services with commitment for the future is vital as our country experiences changes in our health care environment.

On behalf of rural health care providers in south-central Illinois, I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for the east central Illinois community.

Sincerely,

Duane Haskell, M.D.
DH/epc

Committed to Community and Family Health

www.pariscommunityhospital.com

238 Attachment GRCH

Paris Community Hospital
721 East Court Street
Paris, Illinois 61944
Phone: (217) 465-4141

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RECEIVED
JAN 22 2008
HEALTH FACILITIES
PLANNING BOARD

Paris Community Hospital
Family Medical Center

January 15, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

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Health care access is of critical importance and growth in services with commitment for the future is vital as our country experiences changes in our health care environment.

On behalf of rural health care providers in south-central Illinois, I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for the east central Illinois community.

Sincerely,

Zainab

Zainab Sher, M.D.
ZS/epc

Committed to Community and Family Health

www.pariscommunityhospital.com

239 Attachment GRC 4

Paris Community Hospital
721 East Court Street
Paris, Illinois 61944
Phone: (217) 465-4141

Family Medical Center
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Phone: (217) 948-5905

RECEIVED
JAN 2 2 2008
HEALTH FACILITIES
PLANNING BOARD

Paris Community Hospital
Family Medical Center

January 15, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

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Health care access is of critical importance and growth in services with commitment for the future is vital as our country experiences changes in our health care environment.

On behalf of rural health care providers in south-central Illinois, I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for the east central Illinois community.

Sincerely,

Jawad Sher, M.D.
JS/epc

Committed to Community and Family Health

www.pariscommunityhospital.com

240 Attachment GRL4

Community Hospital
721 East Court Street
Paris, Illinois 61944
Phone: (217) 465-4141

Family Medical Center
727 East Court Street
Paris, Illinois 61924
Phone: (217) 465-8411

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Paris Community Hospital
Family Medical Center

January 10, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

I wish to express my support of Carle Foundation Hospital's modernization and expansion project for its Urbana campus. Carle Foundation Hospital has played a major role, not only in the Champaign-Urbana community, but in the Edgar County area as well. I have relied on Carle Foundation Hospital for many years to provide care for patients who have required specialty care.

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- Rehabilitation programs with inpatient and outpatient services

Health care access is of critical importance and growth in services with commitment for the future is vital as our country experiences changes in our health care environment.
On behalf of rural health care providers in south-central Illinois, I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for the east central Illinois community.

Sincerely,

Daniel R. Gilbert D.O.,FACOS

...mmitted to Community and Family Health

www.pariscommunityhospital.com

241 Attachment GRC4

Community Hospital
721 East Court Street
Paris, Illinois 61944
Phone: (217) 465-4141

Family Medical Center
727 East Court Street
Paris, Illinois 61924
Phone: (217) 465-8411

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Kansas, Illinois 61933
Phone: (217) 948-5905

Paris Community Hospital
Family Medical Center

January 10, 2008

Mr. Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

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- Rehabilitation programs with inpatient and outpatient services.

Health care access is of critical importance and growth in services with commitment for the future is vital as our country experiences changes in our health care environment.

On behalf of rural health care providers in south-central Illinois, I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for the east central Illinois community.

Sincerely,

Leland A. Phipps, MD

bcc: Judy Poe

Sent 1/10/08
to Mr Mark

Committed to Community and Family Health

www.pariscommunityhospital.com

242 Attachment GRC 4

January 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark,

I am writing to voice my complete support of the CON permit application that Carle Foundation Hospital is submitting to the Illinois Health Facilities Planning Board for the modernization of medical surgical beds within the new structure that will house the Heart and Vascular Institute.

As a Hospitalist on staff with Carle Foundation Hospital, I help to provide care for, and attend to, many patients with various levels of disease. Many of these patients are transferred from facilities within the east central Illinois region, as the resources to care for these patients in their communities are scarce. The planned construction of the heart and vascular institute will combine:

- Cardiology, vascular and cardiothoracic surgery outpatient services, including vascular labs, cardiac intensive care/stepdown/medical beds;
- Expanded digestive health services;
- Surgical ICU, Pediatric ICU and Stepdown beds with defined space to grow the developing stroke program and neurosurgical services; and
- Rehabilitation programs with inpatient and outpatient services

These benefits will be housed in a state of the art facility that, when combined with the recently completed North Tower, will become the cornerstone of our hospital campus. The facility will enable Carle Foundation Hospital to continue to care for patients in our community, and others around us, who need the highest levels of care. This follows the commitment of providing world class care that Carle Foundation Hospital has provided to the patients of East Central Illinois for over 75 years.

My support for this project is as a provider of inpatient care in a hospital that is thinking of the future of patients in East Central Illinois. I urge you to approve this much needed health improvement initiative for the East Central Illinois community for generations to come.

Respectfully submitted,

K. Moazemi

Kourosh Moazemi, MD, FACP
Carle Foundation Hospital
Internal Medicine Division Head &
Hospitalist Services Medical Director

611 West Park Street
Urbana, Illinois 61801

243

Attachment GRCH

Carle Foundation Hosp. LOI

Carle

Carle Foundation Physicians – Mattoon/Charleston
200 Lerna Road South, Mattoon, IL 61938-9388
Phone: (217) 258-5900 • (217) 348-5900, from Charleston

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JAN - 9 2008

HEALTH FACILITIES
PLANNING BOARD

January 8, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

I wish to express my support of Carle Foundation Hospital's modernization and expansion project for its Urbana campus. Carle Foundation Hospital has played a major role, not only in the Champaign-Urbana community, but in the Coles County area as well. As a physician with privileges at both Carle Foundation Hospital in Urbana, and Sarah Bush Lincoln Health Center in Mattoon, I have relied on Carle Foundation Hospital for many years to provide care for special patients who have required specialty care.

Health care access is of critical importance and growth in services with commitment for the future is vital as our country experiences changes in our health care environment.

On behalf of Carle Foundation Physician Services- Mattoon and rural health care providers in south-central Illinois, I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for the east central Illinois community.

Sincerely,

Robert G. Good, DO, FACOI
Carle Foundation Physician Services- Mattoon

2404 Attachment GRC2

Adult Medicine
Naveed A. Adoni, MD
Timothy H. Camden, MD
Robert G. Good, DO, FACOI
Louis E. Schwing, IV, MD
Jan Baker, APN, FNP

Pediatrics
Timothy H. Camden, MD
David R. Knox, MD
David W. Stoltz, MD

Family Medicine
Donna B. Beallis, DO
Randall S. Beallis, DO

Psychiatry
Paula C. McNitt, PhD
Thomas L. Minogue, MD

Obstetrics and Gynecology
John B. Hutchinson, MD
Kathleen T. LeVeck, MD, FACOG
Sharon Draper, APN, FNP

www.carlephysicians.com

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1315 W. 22nd Street Suite 300
Oak Brook, Illinois 60523
630.954.1232
FAX 630.954.1308
www.hfninc.com

February 8, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

We support the expansion and modernization project that Carle Foundation Hospital is proposing for its campus in Urbana. For many years, Carle Foundation Hospital has played an important role in east central Illinois as a major provider of health care services. It is widely recognized for its programs, services and commitment to improving the health care of the community.

As they plan for the eventual replacement of aging buildings on its Urbana campus, Carle Foundation Hospital is building this hospital of the future to advance patient care in cardiovascular, neonatal, digestive health and rehabilitation services. As a representative of an Illinois based PPO Network and our customer base of health insurers and employers, we are interested in and supportive of Carle Foundation Hospital as a key provider in our provider network. Thus we think this modernized facility will be a benefit to both our members and the residents of Illinois.

We urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative.

Sincerely,

Ronald J Craven
Vice President
Provider Network Management

245 Attachment GRC4

Methodist
A MAGNET HOSPITAL

February 8, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

I support the expansion and modernization project Carle Foundation Hospital is proposing on its campus in Urbana. For many years, Carle Foundation Hospital has played an important role in east central Illinois as a major provider of health care services. It is widely recognized for its programs, services and commitment to improving the health care of the community. Carle Foundation Hospital is a key provider in our provider network and we think a modernized facility will be a benefit to our members.

I recommend the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative.

Sincerely,

Cathy Emanuel
Senior Vice President
Business Development

CE/bb

246 Attachment GRC4

221 Northeast Glen Oak Avenue Peoria, Illinois 61636-0002 Phone: 309-672-5522 methodistmedicalcenter.org

Aetna®

February 12, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

I support the expansion and modernization project Carle Foundation Hospital is proposing on its campus in Urbana. For many years, Carle Foundation Hospital has played an important role in east central Illinois as a major provider of health care services. It is widely recognized for its programs, services and commitment to improving the health care of the community.

As they plan for the eventual replacement of aging buildings on its Urbana campus, Carle Foundation Hospital is building its hospital of the future to advance patient care in cardiovascular, neonatal, digestive health and rehabilitation services. As a representative of a health insurer, I am particularly interested in this project because Carle Foundation Hospital is a key provider in our provider network and we think a modernized facility will be a benefit to our members.

I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative.

Sincerely,

Allan Greenberg
President HCD, North Central Region

247 Attachment GRC4

MultiPlan

2405 Grand Boulevard
Suite 1030
Kansas City, MO 64108
ph 816-221-4455
800-268-7427
fx 816-221-4466

multiplan.com

February 8, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

I support the expansion and modernization project Carle Foundation Hospital is proposing on its campus in Urbana. For many years, Carle Foundation Hospital has played an important role in east central Illinois as a major provider of health care services. It is widely recognized for its programs, services and commitment to improving the health care of the community.

As they plan for the eventual replacement of aging buildings on its Urbana campus, Carle Foundation Hospital is building its hospital of the future to advance patient care in cardiovascular, neonatal, digestive health and rehabilitation services. As a licensed Preferred Provider Arrangement, we are particularly interested in this project because Carle Foundation Hospital has been a key provider in our PPO network for a number of years and going forward, we think a modernized facility will be of significant benefit to our members.

I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative.

Sincerely,

Kurt Malcolm

Kurt Malcolm
Regional Director, North Central Region
MultiPlan
816-472-2990
kurt.malcolm@multiplan.com

PHCS

HealthEOS

248 Attachment GRC 4

MultiPlan

9701 West Higgins Road
Suite 700
Rosemont, IL 60018
ph 847-292-6700
800-283-7427
fx 847-292-6736

multiplan.com

February 8, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

I support the expansion and modernization project Carle Foundation Hospital is proposing on its campus in Urbana. For many years, Carle Foundation Hospital has played an important role in east central Illinois as a major provider of health care services. It is widely recognized for its programs, services and commitment to improving the health care of the community.

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I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative.

Regards,

Laurie K. Gibbons

Laurie K. Gibbons
Senior PPO Network Development Executive
MultiPlan
847-292-6716
laurie.gibbons@multiplan.com

PHCS

HealthEOS

249 Attachment GR 04

Community Partners Health Plans

www.cphp.com

1605 South State Street
Suite 104
Champaign, IL 61820

Tel: 217.355.0055
Fax: 217.355.0044

February 8, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

I support the expansion and modernization project Carle Foundation Hospital is proposing on its campus in Urbana. For many years, Carle Foundation Hospital has played an important role in east central Illinois as a major provider of health care services. It is widely recognized for its programs, services and commitment to improving the health care of the community.

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I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative.

Sincerely,

Marla M. Deval

Marla M. Deval
Director, Provider Relations

250 Attachment GRCH

January 29, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, IL 62761

Dear Mr. Mark:

As a lifetime resident of Urbana-Champaign and retiree from the former Main Street Bank and Trust, I continue to take great interest in any matter that affects our fine communities. I spent forty-six years in the banking business spending the latter part of my career as a vice-president representing our financial community.

My wife and I have been Carle patients since 1940. Carle is a fine organization. When I retired from the banking business I wanted to continue to serve the community in some capacity. I do so now by volunteering 20 hours a week at Carle Foundation Hospital. I help transport patients as they leave Carle after their stay. My interaction with Carle patients allows me the opportunity to continually hear positive comments.

It is now the intent and request of Carle Foundation Hospital to construct a new brick tower to modernize their campus in Urbana. This modernized tower will allow Carle to expand its renowned cardiovascular services. On a personal note, I know to the fullest extent of services rendered as I was in fact at Carle in 1999 for 28 days. Seventeen of those days were spent in intensive care having had vascular surgery three times during that period.

The outstanding team at Carle truly saved my life and I will be internally grateful. I now sincerely ask you to give your approval to this project so that patients like me can continue to have the assistance and quality of care when the need arises. Carle offers the finest in surgeons, physicians, and support staff.

Thank you for your attention in this matter. If you should need to contact me personally please do call me at (217) 367-7773 or (217) 840-7219. I would be more than happy to speak with you.

Very truly yours,

E. Philip Hoggatt
1305 East McHenry
Urbana, IL 61801

cc: Carle Foundation Hospital

251 Attachment 6R(4

Carle
The Carle Foundation
611 West Park Street, Urbana, IL 61801-2595

January 21, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

I have been a citizen and practicing physician here in the Champaign-Urbana community for 17 ½ years. I came to this community with my family not only because I had found a wonderful job, but because of the many attributes of the community. One of those attributes was the fact that Carle Foundation Hospital has a Level 1 Trauma center, and because they provide excellent care to the citizens of this community. There are not many communities outside of the Chicago Metro area that are able to say that they offer the broad range of services that Carle Foundation Hospital does. Having these services available here in our community allows our patients and their families to remain here in their community for the majority of their medical care, and that provide a level of security and support for its citizens that is very important.

I support the campus modernization project that Carle is proposing for its medical campus in Urbana. I feel that the enhanced facility that they have planned will give this vibrant and growing community the technology, services, and patient amenities that are required for the present and into the foreseeable future. As technology has advanced, as patient demands for private rooms has increased, and as improvements in medicine have continued to advance, this planned facility will allow them to continue to provide the high level of care that they have for this, and surrounding communities.

I can say without reservation that this planned facility will improve the level of care for citizens in this community, will make it easier for physicians to care for them, and will improve the satisfaction of the patients who come here for their care. Digestive health, cardiovascular services, neonatal care, and rehab services are all part of the critical continuum of care for patients in our community. As the large baby boomer population is beginning to enter the health care arena, digestive health, cardiovascular services, and rehab become even more important for our community.

I hope you will support Carle Foundation Hospital's certificate of need. Having an up-to-date facility in east central Illinois can only improve the health of our community.

Sincerely yours,

Napoleon Knight

Napoleon Knight, MD
VP Medical Affairs & CMO
Carle Foundation Hospital

494-0107

252 Attachment GRC4

January 2007

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

I am writing to voice my complete support of the CON permit application that Carle Foundation Hospital is submitting to the Illinois Health Facilities Planning Board for the modernization of medical surgical beds within the new structure that will house the Heart and Vascular Institute.

As a neurosurgeon on staff with Carle Foundation Hospital, I help to provide care and attend to many patients with various levels of disease. Carle Foundation Hospital plays a critical role in our community and East Central Illinois as a provider of advanced care in neurosciences.

Every year approximately 730,000 Americans have a new or recurrent stroke. This is approximately 1 every 45 seconds. Stroke is the third leading cause of death and the leading cause of serious long-term disability in the United States.

The planned construction of the heart and vascular institute will combine:

- Cardiology, vascular and cardiothoracic surgery outpatient services, with vascular labs, cardiac intensive care/step-down/medical beds,
- Expanded digestive health services,
- Surgical ICU, Pediatric ICU and Step-down beds with defined space to grow the developing stroke program and neurosurgical services and,
- Rehabilitation programs with inpatient and outpatient services

These benefits will be housed in a state of the art facility that, when combined with the recently completed North Tower, will become the cornerstone of our hospital campus. The facility will enable Carle Foundation Hospital to continue to care for patients in our community, and others around us, who need the highest levels of care. This follows the commitment of providing world class care which Carle Foundation Hospital has offered to the patients of East Central Illinois for over 75 years.

I sincerely urge the Illinois Health Facilities Planning Board to approve the Certificate of Need application. This project, with a dedicated neuroscience unit, will help to facilitate advances in stroke care for our community and East Central Illinois.

253 Attachment GRC4

Respectfully submitted,

William Olivero MD
Professor of Neurosursgery
University of Illinois UC

Carle Clinic Association
602 University Avenue
Urbana, Illinois 61801

254 Attachment GRC4

Carle Clinic
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

February 13, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Il 62761

Dear Mr. Mark,

I support the expansion and modernization project Carle Foundation Hospital is proposing on its campus in Urbana. For many years, Carle Foundation Hospital has played an important role in our community and in east central Illinois as a major provider of health care services. It is widely recognized for its programs, services and commitment to improving the health care of the community.

As they plan for the eventual replacement of aging buildings on its Urbana campus, Carle Foundation Hospital is building its hospital of the future to advance world-class patient care in cardiovascular, neonatal, digestive health and rehabilitation services. As a physician, I am particularly interested in this project because this project includes replacement rooms, centralized space for our Heart and Vascular Institute, additional neonatal intensive care beds, expanded digestive health services and an enhanced rehabilitation unit. In the future, this building, combined with the recently-completed North Tower, will become the cornerstone of our hospital campus.

This modernized tower will allow Carle to expand its renowned cardiovascular services. Carle Foundation Hospital has twice received five-star ratings for clinical excellence in the treatment of heart failure and atrial fibrillation, according to a comprehensive study released by HealthGrades, the nation's leading healthcare ratings company. Carle is also ranked in the top 10 percent of hospitals in the nation for cardiology services and has received the HealthGrades Speciality Excellent Award for Cardiology. In addition, Carle was on the Solucient "100 Top Hospitals: Cardiovascular Benchmarks for Success" two of the last five years.

With approximately 30 departments, Carle's current 305-bed facility is the primary teaching hospital for the University of Illinois College of Medicine at Urbana-Champaign. It's critical that our future doctors be exposed to modern facilities and technology as they train to care for us and our families. I also feel the modernized facility will be more conducive to providing the best atmosphere for Carle and the University of Illinois to better conduct translational research to find breakthrough treatments for today's most serious diseases, including cancer, cardiovascular disease and digestive diseases.

255 Attachment GRC4

Carle Clinic
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

Carle Foundation Hospital is an asset to our community and I support its efforts to expand and modernize its facility to provide even better care locally. Carle Foundation Hospital has been a valuable asset to our community for more than 75 years and has strong community support. Carle is a true community partner, supporting the Frances Nelson Health Center serving uninsured or underinsured individuals in our community and providing many free community services, including the Carle Auxiliary Guest House.
I strongly urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for our community.

Sincerely,

Aung Min.

AUNG MIN MD.

256 Attachment 6 RCH

Carle Clinic
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

February 13, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Il 62761

Dear Mr. Mark,

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257 Attachment GRCH

Carle Clinic
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

Carle Foundation Hospital is an asset to our community and I support its efforts to expand and modernize its facility to provide even better care locally. Carle Foundation Hospital has been a valuable asset to our community for more than 75 years and has strong community support. Carle is a true community partner, supporting the Frances Nelson Health Center serving uninsured or underinsured individuals in our community and providing many free community services, including the Carle Auxiliary Guest House.
I strongly urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for our community.

Sincerely,

2/19/2008.

Rahim Tabriz, MD

258 Attachment 6-RCH

Carle Clinic
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

February 13, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Il 62761

Dear Mr. Mark,

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259 Attachment GRCH

Carle Clinic
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

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I strongly urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for our community.

Sincerely,

Sanjay Mehta, MD

260 Attachment GRC4

Carle Clinic
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

February 13, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Il 62761

Dear Mr. Mark,

I support the expansion and modernization project Carle Foundation Hospital is proposing on its campus in Urbana. For many years, Carle Foundation Hospital has played an important role in our community and in east central Illinois as a major provider of health care services. It is widely recognized for its programs, services and commitment to improving the health care of the community.

As they plan for the eventual replacement of aging buildings on its Urbana campus, Carle Foundation Hospital is building its hospital of the future to advance world-class patient care in cardiovascular, neonatal, digestive health and rehabilitation services. As a physician, I am particularly interested in this project because this project includes replacement rooms, centralized space for our Heart and Vascular Institute, additional neonatal intensive care beds, expanded digestive health services and an enhanced rehabilitation unit. In the future, this building, combined with the recently-completed North Tower, will become the cornerstone of our hospital campus.

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261 Attachment 6 RCH

Carle Clinic
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

Carle Foundation Hospital is an asset to our community and I support its efforts to expand and modernize its facility to provide even better care locally. Carle Foundation Hospital has been a valuable asset to our community for more than 75 years and has strong community support. Carle is a true community partner, supporting the Frances Nelson Health Center serving uninsured or underinsured individuals in our community and providing many free community services, including the Carle Auxiliary Guest House.
I strongly urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for our community.

Sincerely,

DARREN BRASCH, MD

262 Attachment 6RC4

Carle Clinic
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

February 13, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Il 62761

Dear Mr. Mark,

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263 Attachment GRL4

Carle Clinic
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

Carle Foundation Hospital is an asset to our community and I support its efforts to expand and modernize its facility to provide even better care locally. Carle Foundation Hospital has been a valuable asset to our community for more than 75 years and has strong community support. Carle is a true community partner, supporting the Frances Nelson Health Center serving uninsured or underinsured individuals in our community and providing many free community services, including the Carle Auxiliary Guest House.
I strongly urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for our community.

Sincerely,

Ken Bodine MD

2604 Attachment GRC4

Carle Clinic
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

February 13, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Il 62761

Dear Mr. Mark,

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265 Attachment 6 PC 4

Carle Clinic
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

Carle Foundation Hospital is an asset to our community and I support its efforts to expand and modernize its facility to provide even better care locally. Carle Foundation Hospital has been a valuable asset to our community for more than 75 years and has strong community support. Carle is a true community partner, supporting the Frances Nelson Health Center serving uninsured or underinsured individuals in our community and providing many free community services, including the Carle Auxiliary Guest House.
I strongly urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for our community.

Sincerely,

Farhad Farokhi, DO

Bloomington/Normal • Champaign • Danville • Mahomet • Mattoon & Charleston
Monticello • Rantoul • Southeast Urbana • Tuscola • Urbana

www.carle.com

2660 Attachment GRCH

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

I am writing to you today in support of Carle Foundation Hospital's request to modernize our facilities on the Urbana campus.

I work at Carle Foundation Hospital and have always appreciated Carle's ongoing focus on providing superior patient care. The proposed modernization effort with help Carle continue to provide world-class care and patient satisfaction long into the future.

As you are probably aware, cardiovascular disease is on the rise in the United States; heart and vascular diseases are among the top diseases in Champaign County. Adults over the age of 45 make up approximately 92 percent of clinical cardiology discharges and 98 percent of peripheral artery disease cases. As the massive generation of baby boomers enters retirement age, Carle Foundation Hospital must be prepared to handle the anticipated increase in patient volumes, as well as the demand for technologically advanced cardiovascular care.

The proposed modernization effort will allow us to provide enhanced care while attracting physicians and surgeons to the region. And Carle will continue building on its tradition of being a regional leader in heart and vascular services, having twice received five-star ratings for clinical excellence in the treatment of heart failure and atrial fibrillation, according to a comprehensive study released by HealthGrades, the nation's leading healthcare ratings company. The project will allow us to relocate all of our inpatient and outpatient cardiovascular services within close proximity to the surgical areas of the hospital – greatly enhancing patient care, efficiency and overall capacity.

I hope you will join me and other Carle Foundation Hospital staff members in supporting Carle's efforts to meet not only today's, but tomorrow's patient needs in east central Illinois

Thank you for your consideration.

Sincerely,

Katherine M. Newman RN

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

2607 Attachment GRC4

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

I am writing to you today in support of Carle Foundation Hospital's request to modernize our facilities on our Urbana campus.

I work at Carle Foundation Hospital and have always appreciated Carle's continued focus on providing superior patient care. The proposed modernization effort will help Carle continue to provide world-class care and patient satisfaction long into the future.

Many patients are admitted to an intensive care unit after being treated in Carle's Level I Trauma Center, where my co-workers are trained to handle a variety of serious injuries. An important benefit of this project is the 135 relocated beds from buildings constructed in the 1960s and 1970s. The new ICU will be relocated and designed for increased patient privacy and family participation in the treatment and healing process, and to better accommodate the increasing size of hospital beds and medical equipment used at the bedside. That will certainly make a big difference for those of us who work in these units and for the patients and family members we care for daily.

I hope you will join me and other Carle Foundation Hospital staff members in supporting Carle's efforts to meet not only today's, but tomorrow's patient needs in east central Illinois.

Thank you for your consideration.

Sincerely,

Shirley Combs RN CCRN

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

268 Attachment 6 RC4

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

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The proposed modernization effort will allow us to provide enhanced care while attracting physicians and surgeons to the region. And Carle will continue building on its tradition of being a regional leader in heart and vascular services, having twice received five-star ratings for clinical excellence in the treatment of heart failure and atrial fibrillation, according to a comprehensive study released by HealthGrades, the nation's leading healthcare ratings company. The project will allow us to relocate all of our inpatient and outpatient cardiovascular services within close proximity to the surgical areas of the hospital – greatly enhancing patient care, efficiency and overall capacity.

I hope you will join me and other Carle Foundation Hospital staff members in supporting Carle's efforts to meet not only today's, but tomorrow's patient needs in east central Illinois

Thank you for your consideration.

Sincerely,

Johnalee Bardek, RN

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

269 Attachment GRCH

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

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I hope you will join me and other Carle Foundation Hospital staff members in supporting Carle's efforts to meet not only today's, but tomorrow's patient needs in east central Illinois

Thank you for your consideration.

Sincerely,

Carey M Frank RN, BSN

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

270 Attachment GRC4

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

I am writing to you today in support of Carle Foundation Hospital's request to modernize our facilities on the Urbana campus.

I work at Carle Foundation Hospital and have always appreciated Carle's continued focus on providing superior patient care. The proposed modernization effort will help Carle continue to provide world-class care and patient satisfaction long into the future.

I take pride in our facilities and want our patients to have access to the latest technologies and procedures available. This campus modernization project will allow Carle to expand our much-needed services for cardiovascular, rehabilitation, neonatal and digestive health. The larger, private patient rooms will offer increased patient privacy and provide greater family participation in the treatment and healing process. These rooms will enhance our patient safety initiatives, further protect patients from transmitting infections to each other, and better accommodate the increasing size of hospital beds and medical equipment used at the bedside. All of this is great for our patients and good for us as employees, too.

Carle's modernization plan shows a strong commitment to our patients and every aspect of their care. It's exciting to know that this new bed tower, combined with our recently expanded North Tower, will become our hospital of the future.

I hope you will join me and other Carle Foundation Hospital staff members in supporting Carle's efforts to meet not only today's, but tomorrow's patient needs in east central Illinois.

Thank you for your consideration.

Sincerely,

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

271 Attachment GRLH

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

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I work at Carle Foundation Hospital and have always appreciated Carle's ongoing focus on providing superior patient care. The proposed modernization effort with help Carle continue to provide world-class care and patient satisfaction long into the future.

As you are probably aware, cardiovascular disease is on the rise in the United States; heart and vascular diseases are among the top diseases in Champaign County. Adults over the age of 45 make up approximately 92 percent of clinical cardiology discharges and 98 percent of peripheral artery disease cases. As the massive generation of baby boomers enters retirement age, Carle Foundation Hospital must be prepared to handle the anticipated increase in patient volumes, as well as the demand for technologically advanced cardiovascular care.

The proposed modernization effort will allow us to provide enhanced care while attracting physicians and surgeons to the region. And Carle will continue building on its tradition of being a regional leader in heart and vascular services, having twice received five-star ratings for clinical excellence in the treatment of heart failure and atrial fibrillation, according to a comprehensive study released by HealthGrades, the nation's leading healthcare ratings company. The project will allow us to relocate all of our inpatient and outpatient cardiovascular services within close proximity to the surgical areas of the hospital – greatly enhancing patient care, efficiency and overall capacity.

I hope you will join me and other Carle Foundation Hospital staff members in supporting Carle's efforts to meet not only today's, but tomorrow's patient needs in east central Illinois

Thank you for your consideration.

Sincerely,

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

272 Attachment GRC4

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

I am writing to you today in support of Carle Foundation Hospital's request to modernize our facilities on our Urbana campus.

I work at Carle Foundation Hospital and have always appreciated Carle's continued focus on providing superior patient care. The proposed modernization effort will help Carle continue to provide world-class care and patient satisfaction long into the future.

Many patients are admitted to an intensive care unit after being treated in Carle's Level I Trauma Center, where my co-workers are trained to handle a variety of serious injuries. An important benefit of this project is the 135 relocated beds from buildings constructed in the 1960s and 1970s. The new ICU will be relocated and designed for increased patient privacy and family participation in the treatment and healing process, and to better accommodate the increasing size of hospital beds and medical equipment used at the bedside. That will certainly make a big difference for those of us who work in these units and for the patients and family members we care for daily.

I hope you will join me and other Carle Foundation Hospital staff members in supporting Carle's efforts to meet not only today's, but tomorrow's patient needs in east central Illinois.

Thank you for your consideration.

Sincerely,

Elissa Russell (RN, CVICU, BSN)

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

273 Attachment 6 PCH

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

I am writing to you today in support of Carle Foundation Hospital's request to modernize our facilities on the Urbana campus.

I work at Carle Foundation Hospital and have always appreciated Carle's continued focus on providing superior patient care. The proposed modernization effort will help Carle continue to provide world-class care and patient satisfaction long into the future.

I take pride in our facilities and want our patients to have access to the latest technologies and procedures available. This campus modernization project will allow Carle to expand our much-needed services for cardiovascular, rehabilitation, neonatal and digestive health. The larger, private patient rooms will offer increased patient privacy and provide greater family participation in the treatment and healing process. These rooms will enhance our patient safety initiatives, further protect patients from transmitting infections to each other, and better accommodate the increasing size of hospital beds and medical equipment used at the bedside. All of this is great for our patients and good for us as employees, too.

Carle's modernization plan shows a strong commitment to our patients and every aspect of their care. It's exciting to know that this new bed tower, combined with our recently expanded North Tower, will become our hospital of the future.

I hope you will join me and other Carle Foundation Hospital staff members in supporting Carle's efforts to meet not only today's, but tomorrow's patient needs in east central Illinois.

Thank you for your consideration.

Sincerely,

Christina Grooms, RN, BSN

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

274 Attachment GRC4

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

I am writing to you today in support of Carle Foundation Hospital's request to modernize our facilities on the Urbana campus.

I work at Carle Foundation Hospital and have always appreciated Carle's ongoing focus on providing superior patient care. The proposed modernization effort with help Carle continue to provide world-class care and patient satisfaction long into the future.

As you are probably aware, cardiovascular disease is on the rise in the United States; heart and vascular diseases are among the top diseases in Champaign County. Adults over the age of 45 make up approximately 92 percent of clinical cardiology discharges and 98 percent of peripheral artery disease cases. As the massive generation of baby boomers enters retirement age, Carle Foundation Hospital must be prepared to handle the anticipated increase in patient volumes, as well as the demand for technologically advanced cardiovascular care.

The proposed modernization effort will allow us to provide enhanced care while attracting physicians and surgeons to the region. And Carle will continue building on its tradition of being a regional leader in heart and vascular services, having twice received five-star ratings for clinical excellence in the treatment of heart failure and atrial fibrillation, according to a comprehensive study released by HealthGrades, the nation's leading healthcare ratings company. The project will allow us to relocate all of our inpatient and outpatient cardiovascular services within close proximity to the surgical areas of the hospital – greatly enhancing patient care, efficiency and overall capacity.

I hope you will join me and other Carle Foundation Hospital staff members in supporting Carle's efforts to meet not only today's, but tomorrow's patient needs in east central Illinois

Thank you for your consideration.

Sincerely,

Teresa L. Rogers

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

275 Attachment GRCH

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

I am writing to you today in support of Carle Foundation Hospital's request to modernize our facilities on the Urbana campus.

I work at Carle Foundation Hospital and have always appreciated Carle's ongoing focus on providing superior patient care. The proposed modernization effort with help Carle continue to provide world-class care and patient satisfaction long into the future.

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I hope you will join me and other Carle Foundation Hospital staff members in supporting Carle's efforts to meet not only today's, but tomorrow's patient needs in east central Illinois

Thank you for your consideration.

Sincerely,

Amy Halvenstadt RN

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

276 Attachment GRC4

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

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I work at Carle Foundation Hospital and have always appreciated Carle's ongoing focus on providing superior patient care. The proposed modernization effort with help Carle continue to provide world-class care and patient satisfaction long into the future.

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I hope you will join me and other Carle Foundation Hospital staff members in supporting Carle's efforts to meet not only today's, but tomorrow's patient needs in east central Illinois

Thank you for your consideration.

Sincerely,

Joanne M Cosey

THE CARLE FOUNDATION
611 W. PARK ST
URBANA IL 61801-2595

277 Attachment GRC4

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

I am writing to you today in support of Carle Foundation Hospital's request to modernize our facilities on the Urbana campus.

I work at Carle Foundation Hospital and have always appreciated Carle's ongoing focus on providing superior patient care. The proposed modernization effort with help Carle continue to provide world-class care and patient satisfaction long into the future.

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I hope you will join me and other Carle Foundation Hospital staff members in supporting Carle's efforts to meet not only today's, but tomorrow's patient needs in east central Illinois

Thank you for your consideration.

Sincerely,

Michael L Mann

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

278 Attachment GRCH

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Re: Carle Foundation Hospital Project

Dear Mr. Mark:

I was recently a frequent visitor to Carle Foundation Hospital. I was impressed not only with the care provided to my loved one, but also, as a family member, with how I was involved in the treatment and healing process.

As a relative of a Carle patient, I fully support the campus modernization project Carle is proposing for its medical campus in Urbana. I am particularly interested in this project because I want others to benefit from all Carle has to offer. Comprehensive plans to modernize facilities for cardiovascular, neonatal, intensive care, digestive health and rehabilitation services will allow Carle to continue providing the best health care possible.

Carle Foundation Hospital has been a valuable asset to our community for more than 75 years. I fully support Carle's efforts for this new tower and modernization, so it can continue that tradition for another 75 years or more.

I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for our community.

Sincerely,

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

279 Attachment GRC4

January 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

My name is Dr. Michael Freeland and I am on staff at Carle Foundation Hospital as a Critical Care Physician. I am writing to you today to express my complete support of the CON application that Carle Foundation Hospital is submitting to the Illinois Health Facilities Planning Board for the Heart and Vascular Institute.

As the attending physician to many critically ill patients, a state-of-the-art facility may mean the difference between life and death. Patients requiring intensive care turn to Carle Foundation Hospital in their greatest time of need, and expect world class care from our team in the critical care unit. In order to provide this type of care, a modernization of the existing physical structure must be completed to pave the way for the future care of patients in east central Illinois. Among other features, the Intensive Care Unit housed in the new facility will:

- Have larger, more modern rooms to accommodate specialized moveable equipment without displacing family members,
- Create a dedicated family space with evidence-based design to improve patient safety, communication and outcomes,
- Allow for specialized stepdown medical-surgical beds to be located on the same floor of the intensive care unit to provide for physician oversight and overlap between nursing staff. This model will also apply to our neurovascular, neurosciences, surgical and cardiovascular programs.

Every year, hospitals throughout east central Illinois and beyond refer their most difficult cases to Carle Foundation Hospital for intensivist-led care in its ICU's. I urge you to approve this much-needed health improvement initiative for the East Central Illinois community in order to help facilitate advances in critical care for our community and provide the advanced care that the region depends upon.

Respectfully submitted,

Michael J. Freeland, MD

Michael J. Freeland, MD
611 West Park Street
Urbana, Illinois 61801

280 Attachment GRC4

January 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

My name is Dr. Karen White and I am on staff at Carle Foundation Hospital as a Critical Care Physician. I am writing to you today to express my complete support of the CON application that Carle Foundation Hospital is submitting to the Illinois Health Facilities Planning Board for the Heart and Vascular Institute.

As the attending physician to many critically ill patients, a state-of-the-art facility may mean the difference between life and death. Patients requiring intensive care turn to Carle Foundation Hospital in their greatest time of need, and expect world class care from our team in the critical care unit. In order to provide this type of care, a modernization of the existing physical structure must be completed to pave the way for the future care of patients in east central Illinois. Among other features, the Intensive Care Unit housed in the new facility will:

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- Allow for specialized stepdown medical-surgical beds to be located on the same floor of the intensive care unit to provide for physician oversight and overlap between nursing staff. This model will also apply to our neurovascular, neurosciences, surgical and cardiovascular programs.

Every year, hospitals throughout east central Illinois and beyond refer their most difficult cases to Carle Foundation Hospital for intensivist-led care in its ICU's. I urge you to approve this much-needed health improvement initiative for the East Central Illinois community in order to help facilitate advances in critical care for our community and provide the advanced care that the region depends upon.

Respectfully submitted,

Karen C. White

Karen C. White, MD, PhD

611 West Park Street
Urbana, Illinois 61801

281 Attachment GRC4

Carle Clinic
Division of Neurosciences
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3440

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

RECEIVED
JAN 25 2008
HEALTH FACILITIES
PLANNING BOARD

January 22, 2008

Mr. Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street, 2nd Floor
Springfield, IL 62761

RE: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark:

I am writing to voice my support of the CON permit application that Carle Foundation Hospital is submitting to the Illinois Health Facilities Planning Board for the modernization of the medical surgical beds within the new structure that will house the Heart and Vascular Institute.

As Chief of Neurosurgery at Carle Foundation Hospital, I help to provide care and attend to many patients with various levels of disease. Carle Foundation Hospital plays a critical role in our community and East Central Illinois as a provider of advanced care in neurosciences.

Every year, approximately 730,000 Americans have a new or recurrent stroke. This is approximately 1 every 45 seconds. Stroke is the third leading cause of death and the leading cause of serious long-term disability in the United States.

The planned construction of the Heart and Vascular Institute will combine:

1. Cardiology, vascular and cardiothoracic surgery outpatient services, with vascular labs, cardiac intensive care/step-down/medical beds.
2. Expanded digestive health services.
3. Surgical Intensive Care Unit, Pediatric Intensive Care Unit and Step-down beds with defined space to grow the developing stroke program and neurosurgical services.
4. Rehabilitation programs with inpatient and outpatient services.

These benefits will be housed in a state of the art facility that, when combined with the recently completed North Tower, will become the cornerstone of our hospital campus. The facility will enable Carle Foundation Hospital to continue to care for patients in our community, and others around us, who need the highest levels of care.

I sincerely urge the Illinois Health Facilities Planning Board to approve the Certification of Need application. This project, with a dedicated neuroscience unit, will help to facilitate advances in stroke care for our community and East Central Illinois.

Respectfully submitted,

Robert E. Cranston, MD FAAN
Chief of Neurosurgery

del/9298727/

cc:

Dictated: 01/22/2008
Typed: 01/22/2008 2:35 P

283 Attachment GRC4

Carle Clinic
Division of Neurosciences
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3440

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

January 19, 2008

Mr. Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street, 2nd Floor
Springfield, IL 62761

RE: CARLE FOUNDATION HOSPITAL MODERNIZATION AND EXPANSION

Dear Mr. Mark:

I am writing my letter to voice my 100 percent support of the CON Permit Application that Carle Foundation Hospital is submitting to the Illinois Health Facilities Planning Board for the modernization of medical surgical beds within the new structure that will house the Heart and Vascular Institute.

As a neurologist on staff with Carle Foundation Hospital for over 30 years, I provide care and tend to patients with many different levels of disease. Carle Foundation Hospital plays a critical role in our community in East Central Illinois as a provider of advanced care in the neurosciences.

Stroke is a major problem as our population ages. Every year there are approximately 730,000 Americans who have new or recurrent strokes (or 1 every 45 seconds). Stroke is the third leading cause of death and the leading cause of serious long-term disability in the United States.

The Heart and Vascular Institute will combine:

- Cardiology, vascular and cardiothoracic surgery, outpatient services with vascular labs, cardiac intensive care/step-down medical beds.
- Expanded digestive health services.
- Surgical ICU, pediatric ICU, and step-down beds with defined space to grow the developing stroke program and neurosurgical services.

284 Attachment GRC4

- Rehabilitation programs with inpatient and outpatient services.

These benefits will be housed in a state of the art facility that will be combined with a recently completed North Tower. It will be the cornerstone of our hospital campus. This facility will enable Carle Foundation Hospital to continue to care for patients in our community and around us, who need the highest levels of care. This follows the commitment of provider world class care, which Carle Foundation Hospital has offered to patients of East Central Illinois for over 75 years.

I strongly urge the Illinois Health Facilities Planning Board to approve the Certificate of Need Application. This project, with the dedicated neurosciences unit, will help to facilitate advances in stroke care for our community in East Central Illinois.

Respectfully submitted,

Harry L. Bremer, MD
Division of Neurology

ksr/9292278/009483106

cc:

Dictated: 01/19/2008
Typed: 01/19/2008 8:44 A

285 Attachment GRC4

Carle Clinic
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761
Re: Carle Foundation Hospital

Dear Mr. Mark;

I am writing to voice my complete support of the CON permit application that Carle Foundation Hospital is submitting to the Illinois Health Facilities Planning Board for the modernization of medical surgical beds within the new structure that will house the Heart and Vascular Institute.

As a neurologist on staff with Carle Foundation Hospital, I help to provide care and attend to many patients with various levels of disease. Carle Foundation Hospital plays a critical role in our community and East Central Illinois as a provider of advanced care in neurosciences.

Every year approximately 730,000 Americans have a new or recurrent stroke. This is approximately 1 every 45 seconds. Stroke is the third leading cause of death and the leading cause of serious long-term disability in the United States.

The planned construction of the heart and vascular institute will combine:

- Cardiology, vascular and cardiothoracic surgery outpatient services, with vascular labs, cardiac intensive care/step-down/medical beds,
- Surgical ICU, Pediatric ICU and Step-down beds with defined space to grow the developing stroke program and neurosurgical services and,
- Rehabilitation programs with inpatient and outpatient services

These benefits will be housed in a state of the art facility that, when combined with the recently completed North Tower, will become the cornerstone of our hospital campus. The facility will enable Carle Foundation Hospital to continue to care for patients in our community, and others around us, who need the highest levels of care. This follows the commitment of providing world class care which Carle Foundation Hospital has offered to the patients of East Central Illinois for over 75 years.

I sincerely urge the Illinois Health Facilities Planning Board to approve the Certificate of Need application. This project, with a dedicated neuroscience unit, will help to facilitate advances in stroke care for our community and East Central Illinois.

Respectfully submitted, 286 Attachment GRC4
Charles R. Davies MD, PhD.

January 2007

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

I am writing to voice my complete support of the CON permit application that Carle Foundation Hospital is submitting to the Illinois Health Facilities Planning Board for the modernization of medical surgical beds within the new structure that will house the Heart and Vascular Institute.

As a neurologist on staff with Carle Foundation Hospital, I help to provide care and attend to many patients with various levels of disease. Carle Foundation Hospital plays a critical role in our community and East Central Illinois as a provider of advanced care in neurosciences.

Every year approximately 730,000 Americans have a new or recurrent stroke. This is approximately 1 every 45 seconds. Stroke is the third leading cause of death and the leading cause of serious long-term disability in the United States.

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- Expanded digestive health services,
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I sincerely urge the Illinois Health Facilities Planning Board to approve the Certificate of Need application. This project, with a dedicated neuroscience unit, will help to facilitate advances in stroke care for our community and East Central Illinois.

287 Attachment 6RC4

Respectfully submitted,

Kenneth S. Aronson M.D.
602 W. University Ave.
Urbana, IL 61801

288 Attachment GRC4

WEBBER & THIES, P.C.
ATTORNEYS AT LAW
202 LINCOLN SQUARE
P.O. BOX 189
URBANA, ILLINOIS 61803-0189

RICHARD L. THIES
CARL M. WEBBER
DAVID C. THIES
HOLTEN D. SUMMERS
JOHN E. THIES
PHILLIP VAN NESS
AMY L. TWOHEY
KARA J. WADE

CHARLES M. WEBBER
(1903-1991)
CRAIG R. WEBBER
(1936-1998)

TELEPHONE
(217) 367-1126
TELECOPIER
(217) 367-3752

January 24, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

I write in support of Carle Foundation Hospital's Campus Modernization Project.

Being a life-long resident of Urbana, my life has been intertwined with Carle Foundation Hospital. I was born at Carle; my children were born at Carle; my parents and grandparents have all had long relationships with Carle. In the case of my grandparents, Charlie and Lucille Webber, it is where they each took their last breath – and they both lived long and productive lives, in part because of the care they received at Carle Foundation Hospital and Carle Clinic. Certainly, one of the reasons I felt very good about remaining in Champaign-Urbana after law school was the excellent health care available through Carle.

In our lives, each of us has events which define us, and I would like to tell you about one of these events for me, and especially for my wife.

A little more than two years ago, my wife suffered a cardiac arrest at our home in Urbana. It was the evening of Labor Day, 2005. Soon after we had both gone to bed, I awoke to discover that my wife was not breathing, and her heart had stopped. 95% of those who suffer cardiac arrests, do not survive. Out of the remaining 5%, a substantial portion have brain injuries which they do not overcome for the balance of their lives.

Our story has a happy ending. After being in a coma for a day and a half, and a lengthy period of rehabilitation at Carle hospital, my wife has completely recovered. I write about this story because it is a great story about *more* than just my wife's determination to recover and the faith that sustained her throughout, but also about the emergency services that we have in Urbana, and through the Carle family – and by that I mean the hospital and the clinic.

289 Attachment GRC4

It was roughly 11:25 at night when I awoke to discover that my wife was not breathing and had no pulse. I dialed 911, and from the time the nearest fire station received the dispatch to when the paramedics were at our door was about 4 minutes. As I attempted to resuscitate my wife, I was reassured by the steady voice of the 911 dispatcher (through our speaker phone), who told me when I needed to run downstairs to unlock the door for the paramedics.

We estimate that my wife was without a pulse for between 8 and 12 minutes before her heart was shocked back to a normal rhythm. At that point, we were taken to Carle Hospital, with Urbana police staying at our house until family could arrive to watch our young daughters (who fortunately slept through the whole thing).

We are also very thankful for the care we received from Carle, where my wife spent the next week. It was at Carle where I saw my wife's eyelash move for the first time, indicating brain activity that we had yet to confirm. And, it was at Carle, where my wife awoke from her coma, the following Wednesday morning. The support we received from Carle staff during this time was tremendous.

I could provide more detail about this, but I think you get the point. The proximity and sophistication of Carle Foundation Hospital and its staff was of major significance to my wife as we dealt with some really extraordinary challenges.

It is with this background that I urge the Illinois Health Facilities Planning Board to cooperate with Carle in its expansion plans, and in particular, to do all it can to aid in the development of the Carle Heart Center. Our community will benefit so much from the cutting edge treatment that will take place at such a facility.

Many of those who suffer cardiac arrest do not have the advantages that my wife had. She was relatively young, very healthy, and had no blockages in her arteries. This is not true with many others who really need *every* advantage that they can get.

Please support Carle Foundation Hospital on this current project. It is my view that it is certainly worthy of all our state leaders can do to help.

Very truly yours,

WEBBER & THIES, P.C.

BY:_____
John E. Thies

JET/sjc

290 Attachment 6 RC4

259 West Pells Street
Paxton, Il 60957
January 18, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Il 62761

Dear Mr. Mark:

The purpose of this letter is to express my feelings regarding the planned upgrade of the medical facilities by the Carle Foundation Hospital in Urbana.

Carle has provided the primary medical care for my family continuously for the past thirty-two (32) years and during this period, the care has always been top of the line. Whenever my family or friends in our East Central Illinois community recommend a medical care facility, Carle in Urbana is always at the top of the list.

In the Spring of 2000, I had a double heart bypass surgery at Carle. The before surgery, the surgery, and the after surgery care were outstanding and a tribute to Carle's Heart and Vascular Center's personnel and technology. As soon as possible after surgery, I began rehabilitation in Carle's Cardiac Rehabilitation program and have been participating in their Phase III program ever since.

I understand Carle's modernization plans include a six floor structure that will be state of the art and will allow for the expansion and modernization of the Heart and Vascular Center and Cardiac Rehabilitation Centers. The new addition will only enhance Carle's standing as the premier cardiovascular provider in the midwest. And since Carle is the primary teaching hospital for the University of Illinois College of Medicine at Urbana, the new facilities with their associated technological improvements will be available to medical students and staff. These advances will only make our future doctors even better.

I wholeheartedly support Carle's plans for modernizing and upgrading their facilities at Urbana and highly recommend the Illinois Health Facilities Planning Board approve Carle's modernization plans.

Sincerely,

Charles L. White

Charles L. White

291 Attachment GRC4

Carle

Carle Clinic Association
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

February 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

On behalf of my colleagues in Adult and Pediatric Gastroenterology and Colon/Rectal Surgery, I ask for your careful consideration of Carle Foundation Hospital's CON proposal to build a Digestive Health Center.

With the ever-increasing growth in the number and complexity of patients with a wide range of digestive disorders requiring specialized cognitive and procedural expertise, the necessity for a state-of-the-art Digestive Health Center is unequivocal. Patients requiring digestive disease interventions turn to Carle Foundation Hospital in their greatest time of need; expecting, deserving, and receiving world class care from our team of highly trained specialists. In order to galvanize our resolve to provide the highest quality care keeping pace with constantly expanding technological advances, a modernization of our existing special procedures unit is a must.

Some of the features proposed for a new Digestive Health Center include:

- Feature the most up-to-date video-endoscopic technology for routine upper and lower endoscopic procedures, including the addition of advanced motility, endoscopic ultrasound, and fluoroscopic suites for specialized liver and pancreas evaluation,
- Allow for all gastroenterology physician specialists and colorectal surgeons to collaborate in one centralized location, creating more streamlined communication and better patient care, and,
- Create additional space for more patient screening for colon cancer, with the addition of four endoscopy suites, to improve our colon cancer prevention and survival rates within our community and region.

Every year, hospitals throughout east central Illinois and beyond, refer hundreds of digestive disease cases to Carle Foundation Hospital. We urge you to approve this much-needed health improvement initiative for the East Central Illinois community in order to help facilitate quality health care for our community and provide the advanced care that the region depends upon.

Respectfully submitted,

Gary R. Griglione MD 292 Attachment GRG4

Gary R. Griglione, MD

1/7/2008

Mr. Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital

Dear Mr. Mark:

I am a physician specializing in gastroenterology and am a member of the medical staff of Carle Foundation Hospital.

Carle Foundation Hospital is dedicating resources to a center for digestive diseases and, through such center, plans to increase awareness about colorectal cancer and improve the rates for colorectal cancer (CRC) screening of adults residing in East Central Illinois who are at risk for CRC based on their age and other factors including a personal or family history of colorectal cancer, age, smoking, physical inactivity and a low-fiber, high-fat diet. The primary goal of this screening campaign will be to reduce late stage detection of CRC and the morbidity and mortality associated with late stage CRC. Effective screening campaigns can drastically reduce the number of individuals that are diagnosed with advanced colorectal cancer each year. With timely screening and treatment, advanced stages of the disease can be avoided. There is a 95% chance for a five year survival in stage I of CRC, as opposed to only a 3% chance of survival in stage IV CRC.

The hospital's modernized digestive disease program will enhance the availability of colorectal cancer screening. The Center for Medicare and Medicaid Services' contracted agency, the Medical Review of North Carolina, Inc. (MRNC) completed a national colorectal cancer screening rate study relating to the Medicare population by county. MRNC found that while colorectal screening rates are improving in Illinois, Champaign County colonoscopy screening rates for that group at risk is only 35% over a 7 year period (1998 to 2004). According to Illinois Department of Commerce and Economic Opportunity (DCEO) projections, in 2005, there were 98,099 individuals aged 50 or older living in the economic region that DCEO has designated the "east central Illinois." DCEO expects this population will grow 13.5% in just five years to 111,323 in 2010. More locally in Champaign County, this figure increases 13.1% over five years from 38,554 in 2005 to 44,386 in 2010. This is the population which the program will target to intervene with this disease. Given the protocol to repeat a colonoscopy at least every ten years, this means that each year over 11,000 individuals in east central Illinois should receive a colonscopy and over 4,000 in Champaign County alone.

293 Attachment GRC4

Not only will this enhanced program make the service more readily available but it will development public awareness and education programs to improve screening rates. Specific focuses of the Carle screening initiatives will be educational campaigns to highlight the importance of screening and to debunk some of the misperceptions about CRC screening techniques. For example, there is significant reluctance to be screened because of the misperception that the colonoscopy procedure will be humiliating when, in fact, the use of anesthesia makes most patients unaware that the procedure is being undertaken. Also, patients can be hesitant to talk about changes in bowel movements, blood in their stools and unexplained fatigue. Public service announcements designed to enhance individual empowerment with respect to health care decisions will be aimed at patient avoidance behaviors. Further, Carle will also employ its programs to encourage patient use of web-based information on treatment options by disease or condition to enhance patient awareness of the importance of preventative CRC services.

Practitioner education will focus on primary care outreach to identify screening candidates and patient monitoring techniques designed to assist patients with the preparation process and ensure that scheduled procedures are not cancelled due to difficulty with preparation or fear of the procedure.

One of the initiatives of Carle's center for digestive diseases will be to improve the ease of use and comparative efficacy of colonoscopy preparations (which are designed to permit the physician to visualize the colon). Through participation in one study, physician researchers affiliated with the hospital are reviewing less onerous methods for cleaning the colon to improve the ability of patients to tolerate the preparation (for example, by reducing the volume of liquid to be consumed) and are also reviewing the feasibility of a pill preparation.

Carle's implementation of a screening program is consistent with recent legislative and public health agency initiatives to improve CRC screening rates and reduce colon cancer morbidity and mortality. Specifically, Senate Bill 1470 recently amended the Illinois Insurance Code with respect to colorectal cancer examinations. The legislation, effective January 1, 2004 provides that insurance coverage must provide coverage for colorectal cancer examinations for colorectal cancer in accordance with the published guidelines of the American Cancer Society. Further, on July 8, 2005, Governor Blagojevich signed Senate Bill 133 into law. SB 133 creates the Vince Demuzio Memorial Colon Cancer Fund. Money collected in this fund will be directed to the Illinois Department of Public Health to establish and maintain a public awareness campaign in target areas in Illinois with high colon cancer mortality rates. The campaign is being developed in conjunction with recommendations made by the American Cancer Society.

At the federal level, CMS partners with the Centers for Disease Control and Prevention (CDC) to increase CRC screening within the Medicare population and the general population aged 50 and above. Together CDC and CMS develop and implement the Screen for Life: National Colorectal Cancer Action Campaign (SFL), which informs men and women aged 50 years and older about the importance of CRC screening for early detection and prevention of the disease. In March of each year, CMS joins 50 agencies

and organizations to carry out the National CRC Awareness Month Campaign, which generates widespread awareness about CRC and encourages people to learn more about how to reduce their risk of the disease through regular screening and a healthy lifestyle.

It is my hope that this new center will not only improve public awareness and public health in regard to colon cancer screening and prevention, but will also help us comply with HIPPA privacy guidelines. It seems that our current space is too cramped and outdated to allow adequate privacy during preparation and recovery of our patients.

I support the Carle Foundation Hospital modernization plans and respectfully ask the Illinois Health Facilities Planning Board to approve the hospital's CON permit application.

Very truly yours,

Jeffrey L. Hallett, MD
602 W. University Ave.
Urbana, IL
61801

Subscribed and sworn before
me this 28th day of February,
2008.

Christina S. Trankina
Notary Public

My commission expires on: 8-28-11

\4879049.1

"OFFICIAL SEAL"
CHRISTINA S. TRANKINA
Notary Public, State of Illinois
My commission expires 08/28/11

295 Attachment GRC4

CHRISTIE CLINIC

Medicine for Your Life

February 20, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

My name is Claudia Nugent, MD and I am on staff at Carle Foundation Hospital and Provena Covenant Medical Center in Urbana as a gastroenterologist. I am writing to you today to express my complete support of the CON application that Carle Foundation Hospital is submitting to the Illinois Health Facilities Planning Board for the modernization and expansion of the hospital, which will include a proposed digestive disease center.

As an attending physician to many patients, a state-of-the-art facility may mean the difference between life and death. Patients requiring digestive disease interventions turn to Carle Foundation Hospital in their greatest time of need, and expect world class care from the team. In order to provide this type of care, a modernization of an existing physical structure must be completed to pave the way for the future care of patients in east central Illinois. Among other features, the Digestive Health center housed in the expanded facility will:

- Feature the most up-to-date technology, including the addition of four endoscopy rooms,
- Allow for all gastroenterology physician specialists, and colorectal surgeons to collaborate in one centralized location, creating more streamlined communication and better patient care, and,
- Create additional space for more people to be screened for colon cancer, improving our colon cancer survival rates within our community.

Every year, hospitals throughout east central Illinois and beyond, refer hundreds of digestive disease cases to Carle Foundation Hospital. I urge you to approve this much-needed health improvement initiative for the East Central Illinois community in order to help facilitate quality health care for our community and provide the advanced care that the region depends upon.

Respectfully submitted,

Claudia Nugent, MD
Christie Clinic, P.C.

Attachment GRC-4

CHRISTIE CLINIC

Medicine for Your Life

February 20, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization and Expansion

Dear Mr. Mark;

My name is Davendra Ramkumar, MD and I am on staff at Carle Foundation Hospital and Provena Covenant Medical Center in Urbana as a gastroenterologist. I am writing to you today to express my complete support of the CON application that Carle Foundation Hospital is submitting to the Illinois Health Facilities Planning Board for the modernization and expansion of the hospital, which will include a proposed digestive disease center.

As an attending physician to many patients, a state-of-the-art facility may mean the difference between life and death. Patients requiring digestive disease interventions turn to Carle Foundation Hospital in their greatest time of need, and expect world class care from the team. In order to provide this type of care, a modernization of an existing physical structure must be completed to pave the way for the future care of patients in east central Illinois. Among other features, the Digestive Health center housed in the expanded facility will:

- Feature the most up-to-date technology, including the addition of four endoscopy rooms,
- Allow for all gastroenterology physician specialists, and colorectal surgeons to collaborate in one centralized location, creating more streamlined communication and better patient care, and,
- Create additional space for more people to be screened for colon cancer, improving our colon cancer survival rates within our community.

Every year, hospitals throughout east central Illinois and beyond, refer hundreds of digestive disease cases to Carle Foundation Hospital. I urge you to approve this much-needed health improvement initiative for the East Central Illinois community in order to help facilitate quality health care for our community and provide the advanced care that the region depends upon.

Respectfully submitted,

Davendra Ramkumar, MD
Christie Clinic, P.C.

Attachment GRC-4

Carle
Carle Clinic Association
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

January 8, 2008

Dear Mr. Mark,

I am writing this letter in my capacity as Medical Director of the Carle Foundation Hospital Inpatient Rehabilitation Unit. I am strongly in support of Carle Foundation Hospital's request to modernize our facilities on the Urbana campus.

As part of this project, the Rehabilitation Unit itself will be specifically designed to serve the needs of the rehabilitation patient population. The modernization project will provide large private rooms which will be a substantial improvement from our existing space and is a frequent request from current patients. Currently we have a double room and a smaller single room, all sharing a single bathroom. This space is inadequate for multiple reasons including lack of space for use of adaptive equipment, privacy, infection control needs, toileting needs, transfer training, accommodation of family members, as well as related patient training needs. In addition, our existing unit does not have an activity of daily living (ADL) suite or adequate space for ADL and Physical Therapy training. The modernization project will provide a designated ADL suite as well as adequate inpatient therapy space, allowing for appropriate privacy, patient confidentiality as well as a therapeutic environment that is aesthetically pleasing. Although I believe our staff and patients make excellent use of their current space, the barriers to accessibility and cramped conditions are constant reminders of the need to build a new space that is particularly designed for this patient population.

The goal for our patients is to return them into the community. This modernization project will offer a center of excellence with a rehabilitation focus and allow us to provide excellent rehabilitation care for our patients.

Sincerely,

Sanjiv Jain, MD
Medical Director, Acute Inpatient Rehabilitation Unit
Carle Foundation Hospital

298 Attachment GRC4

January, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization of Rehabilitation Beds

Dear Mr. Mark:

I am a physician specializing in orthopedic services and am currently a member of the medical staff at Carle Foundation Hospital. During the 12 month period from October, 2006 through September, 2007, I discharged 546 patients from Carle Foundation Hospital who had a primary diagnosis which would commonly qualify such patients to be referred to an inpatient rehabilitation program. While not all of those patients were, in fact, admitted to an inpatient rehabilitation program, I would expect to refer many of these patients to the newly modernized Carle Foundation Hospital program consistent with my past volumes.

In determining whether to refer a patient to an inpatient rehabilitation unit, I consider that admission criteria require that patients:

- have a condition that improves with rehabilitation
- be medically stable and could tolerate at least three hours of therapy per day
- have a prognosis that indicates reasonable potential for return to a community setting
- who recently experienced impairment or dysfunction of at least two of the following functions: (a) self care; (b) mobility, (c) bladder or bowel incontinence, (d) neurological function and (e) perception/cognition

I hereby certify that the projected patient volume will come from the proposed geographic service area which I understand is consistent with the HSA-4 designation for inpatient rehabilitation services. I further certify that the information contained within this letter is true and correct to the best of my knowledge.

299 Attachment GRC4

Sincerely,

Chris J. Dangles M.D.

Signature

CHRIS J. DANGLES M.D.

Printed Name

Medical Specialty: ORTHOPAEDICS

Carle Clinic Association
602 University Avenue
Urbana, Illinois 61801

The foregoing instrument was subscribed and sworn before me this 24th day of January, 2008

Ann E. Beyers

Notary Public

My Commission Expires: 4-16-11

"OFFICIAL SEAL"
ANN E. BEYERS
Notary Public, State of Illinois
My commission expires 04/16/11

300 Attachment GRC4

January, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization of Rehabilitation Beds

Dear Mr. Mark:

I am a physician specializing in orthopedic services and am currently a member of the medical staff at Carle Foundation Hospital. During the 12 month period from October, 2006 through September, 2007, I discharged many patients from Carle Foundation Hospital who had a primary diagnosis which would commonly qualify such patients to be referred to an inpatient rehabilitation program. While not all of those patients were, in fact, admitted to an inpatient rehabilitation program, I would expect to refer many of these patients to the newly modernized Carle Foundation Hospital program consistent with my past volumes.

In determining whether to refer a patient to an inpatient rehabilitation unit, I consider that admission criteria require that patients:

- have a condition that improves with rehabilitation
- be medically stable and could tolerate at least three hours of therapy per day
- have a prognosis that indicates reasonable potential for return to a community setting
- who recently experienced impairment or dysfunction of at least two of the following functions: (a) self care; (b) mobility, (c) bladder or bowel incontinence, (d) neurological function and (e) perception/cognition

I hereby certify that the projected patient volume will come from the proposed geographic service area which I understand is consistent with the HSA-4 designation for inpatient rehabilitation services. I further certify that the information contained within this letter is true and correct to the best of my knowledge.

301 Attachment GRCH

Sincerely,

Signature

R.A. GURTLER

Printed Name

Medical Specialty: ORTHOPEDICS

Carle Clinic Association
602 University Avenue
Urbana, Illinois 61801

The foregoing instrument was subscribed and sworn before me this 24th day of January, 2008

Notary Public

My Commission Expires: 4-16-11

"OFFICIAL SEAL"
ANN E. BEYERS
Notary Public, State of Illinois
My commission expires 04/16/11

302 Attachment GRCH

January, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization of Rehabilitation Beds

Dear Mr. Mark:

I am a physician specializing in hospitalist services and am currently a member of the medical staff at Carle Foundation Hospital. During the 12 month period from October, 2006 through September, 2007, I discharged 170 patients from Carle Foundation Hospital who had a primary diagnosis which would commonly qualify such patients to be referred to an inpatient rehabilitation program. While not all of those patients were, in fact, admitted to an inpatient rehabilitation program, I would expect to refer many of these patients to the newly modernized Carle Foundation Hospital program consistent with my past volumes.

In determining whether to refer a patient to an inpatient rehabilitation unit, I consider that admission criteria require that patients:

- have a condition that improves with rehabilitation
- be medically stable and could tolerate at least three hours of therapy per day
- have a prognosis that indicates reasonable potential for return to a community setting
- who recently experienced impairment or dysfunction of at least two of the following functions: (a) self care; (b) mobility, (c) bladder or bowel incontinence, (d) neurological function and (e) perception/cognition

I hereby certify that the projected patient volume will come from the proposed geographic service area which I understand is consistent with the HSA-4 designation for inpatient rehabilitation services. I further certify that the information contained within this letter is true and correct to the best of my knowledge.

303 6RC4

Sincerely,

Signature

Crystal Radnitzer, MD
Printed Name

Medical Specialty: Hospitalist

Carle Clinic Association
602 University Avenue
Urbana, Illinois 61801

The foregoing instrument was subscribed and sworn before me this 24th day of January, 2008

Notary Public

My Commission Expires: 4-16-11

"OFFICIAL SEAL"
ANN E. BEYERS
Notary Public, State of Illinois
My commission expires 04/16/11

304 GRC4

January, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization of Rehabilitation Beds

Dear Mr. Mark:

I am a physician specializing in hospitalist services and am currently a member of the medical staff at Carle Foundation Hospital. During the 12 month period from October, 2006 through September, 2007, I discharged 258 patients from Carle Foundation Hospital who had a primary diagnosis which would commonly qualify such patients to be referred to an inpatient rehabilitation program. While not all of those patients were, in fact, admitted to an inpatient rehabilitation program, I would expect to refer many of these patients to the newly modernized Carle Foundation Hospital program consistent with my past volumes.

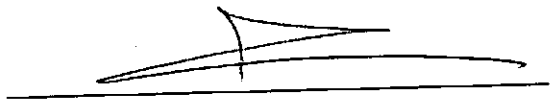
In determining whether to refer a patient to an inpatient rehabilitation unit, I consider that admission criteria require that patients:

- have a condition that improves with rehabilitation
- be medically stable and could tolerate at least three hours of therapy per day
- have a prognosis that indicates reasonable potential for return to a community setting
- who recently experienced impairment or dysfunction of at least two of the following functions: (a) self care; (b) mobility, (c) bladder or bowel incontinence, (d) neurological function and (e) perception/cognition

I hereby certify that the projected patient volume will come from the proposed geographic service area which I understand is consistent with the HSA-4 designation for inpatient rehabilitation services. I further certify that the information contained within this letter is true and correct to the best of my knowledge.

305 GRC4

Sincerely,



Signature

ERNEST OTHMAN, MD

Printed Name

Medical Specialty: Hospitalist

Carle Clinic Association
602 University Avenue
Urbana, Illinois 61801

The foregoing instrument was subscribed and sworn before me this 24th day of January, 2008

Ann E. Beyers

Notary Public

My Commission Expires: 4-16-11

"OFFICIAL SEAL"
ANN E. BEYERS
Notary Public, State of Illinois
My commission expires 04/16/11

306 GRC 4

January, 2008

Jeffrey S. Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street, 2nd Floor
Springfield, IL 62761

Re: Carle Foundation Hospital Modernization of Rehabilitation Beds

Dear Mr. Mark:

I am a physician specializing in general surgery and am currently a member of the medical staff at Carle Foundation Hospital. During the 12 month period from October, 2006 through September, 2007, I discharged 122 patients from Carle Foundation Hospital who had a primary diagnosis which would commonly qualify such patients to be referred to an inpatient rehabilitation program. While not all of those patients were, in fact, admitted to an inpatient rehabilitation program, I would expect to refer many of these patients to the newly modernized Carle Foundation Hospital program consistent with my past volumes.

In determining whether to refer a patient to an inpatient rehabilitation unit, I consider that admission criteria require that patients:

- have a condition that improves with rehabilitation
- be medically stable and could tolerate at least three hours of therapy per day
- have a prognosis that indicates reasonable potential for return to a community setting
- who recently experienced impairment or dysfunction of at least two of the following functions: (a) self care; (b) mobility, (c) bladder or bowel incontinence, (d) neurological function and (e) perception/cognition

I hereby certify that the projected patient volume will come from the proposed geographic service area which I understand is consistent with the HSA-4 designation for inpatient rehabilitation services. I further certify that the information contained within this letter is true and correct to the best of my knowledge.

307 GRL4

Sincerely,

Richard B. Berlin

Signature

Richard Berlin

Printed Name

Medical Specialty: Surgery

Carle Clinic Association
602 University Avenue
Urbana, Illinois 61801

The foregoing instrument was subscribed and sworn before me this 28 day of January, 2008

Diana L Quigg

Notary Public

My Commission Expires: 1/24/2010

"OFFICIAL SEAL"
Diana L. Quigg
Notary Public, State of Illinois
My Commission Expires 1/24/2010

308 GRC 4

Family Service

Enriching Lives Across the Generations

405 S. State St. • Champaign, IL 61820-5196 • Phone: 217/352-0099 • FAX: 217/352-9512

January 14, 2008

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United Way of Champaign County

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, IL 62761

To the Illinois Health Facilities Planning Board:

I am pleased to write to you in support of the application of Carle Foundation Hospital to expand and modernize its campus in Urbana. Carle Foundation Hospital is widely recognized in our community as a leader in providing health care services and for its commitment to improving the health care of the community through its support of many diverse community organizations and projects that share this goal. With its proposed expansion and renovation, Carle Foundation Hospital will advance patient care in cardiovascular, neonatal, digestive health and rehabilitation services.

Of particular interest and value to Family Service and those whom we serve is the modernization of Carle Foundation Hospital's rehabilitation unit. Family Service is a non-profit social service agency with nine different programs that serve more than 12,000 individuals and families each year in Champaign County. Many of our programs serve seniors and their family caregivers. We see on a daily basis the importance for our clients of easy access to quality health care close to home, and the strain on the senior and his or her family caused by having to travel long distances outside our community for treatment or rehabilitation services. Carle currently provides excellent rehabilitation care, but their facilities have become outdated. Having enhanced rehabilitation services in our community will be a significant benefit to many seniors and their families, both now and in the future as this segment of our population grows more quickly than any other.

Carle Foundation Hospital is a dedicated corporate citizen to this community, responding not only to the needs of the patients they serve, but to the health and supportive service needs of the entire community. Through its Community Care Discount Program and other forms of charity care, Carle Foundation Hospital helps thousands of low-income patients each year to have access to affordable, quality health care. Carle Foundation Hospital was recognized recently as one of our Community Partners of the Year for the tremendous support they have shown to our organization over the years.

309 GRC 4

Carle Foundation Hospital has donated more than $100,000 in the last decade to Family Service for capital acquisitions, special event sponsorships, and ongoing program operations. When our Senior Transportation service was threatened by a loss of grant funding, Carle Foundation Hospital stepped up with $5,000 donations in each of the last two years to insure the continuation of this vital service that helps seniors to access medical care in our community. In addition, many of the clients we serve have benefited greatly by the recent expansion of the Frances Nelson Health Center, a Federally Qualified Health Center, made possible in large part by the generous contributions of Carle Foundation Hospital that exceeded $1.2 million.

I strongly support and urge your approval of Carle Foundation Hospital's application for this much-needed health improvement initiative that will benefit so many in our community.

Very truly yours,

Sheryl Bautch
Executive Director

310 GRC4

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street
Springfield, IL 62761

Re: Carle Foundation Hospital Project

Dear Mr. Mark:

As a member of the community and someone who utilizes Carle as my health care provider, I am writing in support of their proposal to improve their current facilities.

To continue providing the best health care possible, Carle is proposing a modernization project on its campus in Urbana. This effort to improve health care services and to provide state-of-the-art facilities proves Carle's dedication to the patients it serves and this community. Plans to improve cardiovascular, neonatal, intensive care, digestive health and rehabilitation services will make Urbana a better place to live and work.

Thanks to Carle's quality care, I feel secure that should I or my family need health care in the future we will be well taken care of. I take great comfort in knowing Carle is committed to advancing its medical technology and services. This proposed modernization project, if allowed to advance, will ensure our community receives health care that is second to none.

I urge the Illinois Health facilities Planning Board to approve this much needed health improvement initiative in our community.

Sincerely,

Mark Rieger

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

311 GRC 4

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street
Springfield, IL 62761

Re: Carle Foundation Hospital Project

Dear Mr. Mark:

As a member of the community and someone who utilizes Carle as my health care provider, I am writing in support of their proposal to improve their current facilities.

To continue providing the best health care possible, Carle is proposing a modernization project on its campus in Urbana. This effort to improve health care services and to provide state-of-the-art facilities proves Carle's dedication to the patients it serves and this community. Plans to improve cardiovascular, neonatal, intensive care, digestive health and rehabilitation services will make Urbana a better place to live and work.

Thanks to Carle's quality care, I feel secure that should I or my family need health care in the future we will be well taken care of. I take great comfort in knowing Carle is committed to advancing its medical technology and services. This proposed modernization project, if allowed to advance, will ensure our community receives health care that is second to none.

I urge the Illinois Health facilities Planning Board to approve this much needed health improvement initiative in our community.

Sincerely,

Carla Sue Reese

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

312 GRC 4

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Re: Carle Foundation Hospital Project

Dear Mr. Mark:

I was recently hospitalized at Carle Foundation Hospital and after receiving excellent medical care there, I am more grateful than ever to have Carle in my community.

To continue providing the best health care possible, Carle is proposing a modernization project on its campus in Urbana. This effort to improve health care services and to provide state-of-the-art facilities proves Carle's dedication to the patients it serves and this community. Plans to improve cardiovascular, neonatal, intensive care, digestive health and rehabilitation services will make Urbana a better place to live and work.

Thanks to Carle's quality care, I am recovering. But, should I or my family need health care in the future, I take great comfort in knowing Carle is committed to advancing its medical technology and services. This proposed modernization project, if allowed to advance, will ensure our community receives health care that is second to none.

I urge the Illinois Health Facilities Planning Board to approve this much-needed health improvement initiative for our community.

Sincerely,

Cheryl L. Salvi

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

313 GRC 4

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street
Springfield, IL 62761

Re: Carle Foundation Hospital Project

Dear Mr. Mark:

As a member of the community and someone who utilizes Carle as my health care provider, I am writing in support of their proposal to improve their current facilities.

To continue providing the best health care possible, Carle is proposing a modernization project on its campus in Urbana. This effort to improve health care services and to provide state-of-the-art facilities proves Carle's dedication to the patients it serves and this community. Plans to improve cardiovascular, neonatal, intensive care, digestive health and rehabilitation services will make Urbana a better place to live and work.

Thanks to Carle's quality care, I feel secure that should I or my family need health care in the future we will be well taken care of. I take great comfort in knowing Carle is committed to advancing its medical technology and services. This proposed modernization project, if allowed to advance, will ensure our community receives health care that is second to none.

I urge the Illinois Health facilities Planning Board to approve this much needed health improvement initiative in our community.

Sincerely,

Casey Buchanan ATC

THE CARLE FOUNDATION
611 W PARK ST
URBANA IL 61801-2595

3 14 GRC 4

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street
Springfield, IL 62761

Re: Carle Foundation Hospital Project

Dear Mr. Mark:

As a member of the community and someone who utilizes Carle as my health care provider, I am writing in support of their proposal to improve their current facilities.

To continue providing the best health care possible, Carle is proposing a modernization project on its campus in Urbana. This effort to improve health care services and to provide state-of-the-art facilities proves Carle's dedication to the patients it serves and this community. Plans to improve cardiovascular, neonatal, intensive care, digestive health and rehabilitation services will make Urbana a better place to live and work.

Thanks to Carle's quality care, I feel secure that should I or my family need health care in the future we will be well taken care of. I take great comfort in knowing Carle is committed to advancing its medical technology and services. This proposed modernization project, if allowed to advance, will ensure our community receives health care that is second to none.

I urge the Illinois Health facilities Planning Board to approve this much needed health improvement initiative in our community.

Sincerely,

ATC

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

315

GRLH

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street
Springfield, IL 62761

Re: Carle Foundation Hospital Project

Dear Mr. Mark:

As a member of the community and someone who utilizes Carle as my health care provider, I am writing in support of their proposal to improve their current facilities.

To continue providing the best health care possible, Carle is proposing a modernization project on its campus in Urbana. This effort to improve health care services and to provide state-of-the-art facilities proves Carle's dedication to the patients it serves and this community. Plans to improve cardiovascular, neonatal, intensive care, digestive health and rehabilitation services will make Urbana a better place to live and work.

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, MS, ATC

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

316 GRC4

February 2008

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Illinois Health Facilities Planning Board
525 W. Jefferson Street
Springfield, IL 62761

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Sincerely,

Stephanie Kaiser ATC

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

317 GRC 4

February 2008

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Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street
Springfield, IL 62761

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Sincerely,

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

318 GRCH

February 2008

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Executive Secretary
Illinois Health Facilities Planning Board
525 W. Jefferson Street
Springfield, IL 62761

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611 W. PARK ST.
URBANA IL 61801-2595

319 GRC 4

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Sincerely,

James Brendan McHale ATC

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

320 GRC 4

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

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I work at Carle Foundation Hospital and have always appreciated Carle's ongoing focus on providing superior patient care. The proposed modernization effort with help Carle continue to provide world-class care and patient satisfaction long into the future.

As you are probably aware, cardiovascular disease is on the rise in the United States; heart and vascular diseases are among the top diseases in Champaign County. Adults over the age of 45 make up approximately 92 percent of clinical cardiology discharges and 98 percent of peripheral artery disease cases. As the massive generation of baby boomers enters retirement age, Carle Foundation Hospital must be prepared to handle the anticipated increase in patient volumes, as well as the demand for technologically advanced cardiovascular care.

The proposed modernization effort will allow us to provide enhanced care while attracting physicians and surgeons to the region. And Carle will continue building on its tradition of being a regional leader in heart and vascular services, having twice received five-star ratings for clinical excellence in the treatment of heart failure and atrial fibrillation, according to a comprehensive study released by HealthGrades, the nation's leading healthcare ratings company. The project will allow us to relocate all of our inpatient and outpatient cardiovascular services within close proximity to the surgical areas of the hospital – greatly enhancing patient care, efficiency and overall capacity.

I hope you will join me and other Carle Foundation Hospital staff members in supporting Carle's efforts to meet not only today's, but tomorrow's patient needs in east central Illinois

Thank you for your consideration.

Sincerely,

Sarah A. Peoples, RN

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

321

GRC4

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

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Thank you for your consideration.

Sincerely,

Deborah Davis RN

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

322

GRC 4

February 2008

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Illinois Health Facilities Planning Board
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Thank you for your consideration.

Sincerely,

Jenny Hand
PCT

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

323

GRC4

February 2008

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Executive Secretary
Illinois Health Facilities Planning Board
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Thank you for your consideration.

Sincerely,

Lauren M. Miller

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

324

LRC4

February 2008

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Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

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Thank you for your consideration.

Sincerely,

Jeff Battenfeld

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

325

GRC4

February 2008

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Illinois Health Facilities Planning Board
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Thank you for your consideration.

Sincerely,

Kyle Brewer

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

326

GRCH

February 2008

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Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

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Sincerely,

Eric L Fuller

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

327

GRC4

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Sincerely,

Rebecca L. Harper CRPN

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

328

GRC 4

February 2008

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Sincerely,

Emily Palmer RN

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

329

GRC4

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Sincerely,

LSW

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

330

GRC 4

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Illinois Health Facilities Planning Board
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Sincerely,

Betsi Rudin

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

331 GRC 4

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Sincerely,

David Li

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

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GRC4

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Sincerely,

Jeanette Hudel

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

333

GRL4

February 2008

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Thank you for your consideration.

Sincerely,

Sherilyn Manske

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

334

GRC4

February 2008

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Illinois Health Facilities Planning Board
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Thank you for your consideration.

Sincerely,

Katie Brewer

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

335

GRL4

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Illinois Health Facilities Planning Board
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Thank you for your consideration.

Sincerely,

Vicente Picerno

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

336

GRL4

February 2008

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Illinois Health Facilities Planning Board
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Thank you for your consideration.

Sincerely,

Lori White

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

337

GRC 4

February 2008

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Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Dear Mr. Mark:

I am writing to you today in support of Carle Foundation Hospital's request to modernize our facilities on the Urbana campus.

I work at Carle Foundation Hospital and have always appreciated Carle's continued focus on providing superior patient care. The proposed modernization effort will help Carle continue to provide world-class care and patient satisfaction long into the future.

Patients using Carle's rehabilitation services will benefit greatly from this project. Since Carle is the region's Level I Trauma Center, the enhanced rehabilitation unit will provide an uninterrupted, continuum of care for those patients with multiple traumas and other severe injuries, as well as for those with serious illnesses requiring rehab. The current unit does not have adequate space for all of the equipment needed to provide therapy on a routine basis. The rooms are much too small and our patients have very little privacy. We manage well with what we have, but I look forward to working in the relocated unit where there will be private, spacious patient rooms, a new exercise area and a dedicated activities of daily living suite, helping patients transition back into their daily lives as quickly as possible.

I hope you will join me and other Carle Foundation Hospital staff members in supporting Carle's efforts to meet not only today's, but tomorrow's patient needs in east central Illinois.

Thank you for your consideration.

Sincerely,

Ann M Bennett, PhD.

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

338

GRC 4

February 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

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Thank you for your consideration.

Sincerely,

Tyler M. Balony

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

339

GRCH

February 2008

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Illinois Health Facilities Planning Board
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Thank you for your consideration.

Sincerely,

Doug Scaffidi PT

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

340

GRCH

February 2008

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Thank you for your consideration.

Sincerely,

Kendra R Eckert, COTA/L

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

3411

GRC 4

February 2008

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Thank you for your consideration.

Sincerely,

Kristen MacBrooke

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

342

GRC 4

February 2008

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Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

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February 2008

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Thank you for your consideration.

Sincerely,

Katie Mallett

THE CARLE FOUNDATION
611 W. PARK ST.
URBANA IL 61801-2595

344

GRL4

CARLE HOSPITAL INPT DISCHARGES
(Excluding normal newborns)
FY07
Source: Eclipsys/DSS/jzm

FY	ZIP CODE	CASES
2007	61821	1,592
2007	61801	1,124
2007	61832	1,122
2007	61802	976
2007	61820	972
2007	61866	934
2007	61822	639
2007	61853	555
2007	61874	368
2007	61938	341
2007	61953	341
2007	61856	315
2007	61873	305
2007	61944	276
2007	60942	259
2007	60957	256
2007	61920	229
2007	61846	187
2007	61956	187
2007	61834	181
2007	61880	176
2007	61842	162
2007	61883	142
2007	61858	130
2007	61843	128
2007	61817	118
2007	61910	118
2007	60936	112
2007	61911	108
2007	61864	95
2007	61833	94
2007	62401	94
2007	61813	92
2007	61854	89
2007	61849	83
2007	61877	79
2007	61878	76
2007	62454	71
2007	61847	69
2007	62521	67
2007	62526	67
2007	61863	66
2007	61844	65

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2007	61859	65
2007	61913	65
2007	60924	64
2007	61924	64
2007	61951	64
2007	61942	63
2007	60948	61
2007	60963	61
2007	47932	58
2007	61884	57
2007	61872	53
2007	62448	53
2007	61865	51
2007	61919	51
2007	62420	47
2007	60949	43
2007	61704	43
2007	61841	43
2007	61870	42
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2007	61814	40
2007	61840	40
2007	60953	39
2007	60955	38
2007	61752	38
2007	61761	38
2007	60938	37
2007	62428	37
2007	62522	36
2007	61862	35
2007	61701	34
2007	61812	32
2007	61839	32
2007	60970	31
2007	61816	31
2007	61826	31
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2007	60918	29
2007	61875	29
2007	61932	27
2007	61933	27
2007	61770	26
2007	61811	26
2007	62565	26
2007	62411	25
2007	47928	24
2007	60962	24

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2007	61741	24
2007	61937	24
2007	62440	24
2007	62449	24
2007	60921	23
2007	61850	23
2007	61851	22
2007	61882	22
2007	62467	21
2007	47974	20
2007	61957	20
2007	62441	20
2007	62450	19
2007	62474	19
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2007	62468	18
2007	60952	17
2007	61803	17
2007	62439	17
2007	61931	16
2007	61852	15
2007	61912	15
2007	61917	15
2007	62451	15
2007	62442	14
2007	61845	13
2007	62471	13
2007	62550	13
2007	61739	12
2007	61929	12
2007	62426	12
2007	62445	12
2007	62549	12
2007	61810	11
2007	62554	11
2007	62839	11
2007	61773	10
2007	61857	10
2007	47993	9
2007	61824	9
2007	61830	9
2007	61949	9
2007	62414	9
2007	62461	9
2007	62557	9
2007	62858	9
2007	47991	8
2007	60959	8
2007	60968	8
2007	60973	8
2007	61735	8

2007	61745	8
2007	61753	8
2007	61764	8
2007	61848	8
2007	61940	8
2007	62417	8
2007	62501	8
2007	60915	7
2007	60928	7
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2007	62573	6
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2007	62465	5
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2007	30511	4
2007	32348	4
2007	47917	4
2007	60927	4
2007	60932	4
2007	60974	4
2007	61350	4
2007	61360	4
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2007	61914	4
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2007	62459	4
2007	62460	4
2007	62463	4
2007	62469	4
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2007	62552	3
2007	62623	3
2007	62656	3
2007	62684	3
2007	62704	3
2007	62880	3
2007	62895	3
2007	62951	3
2007	14618	2
2007	30094	2
2007	32952	2

2007	33855	2
2007	34145	2
2007	34994	2
2007	37066	2
2007	44039	2
2007	46175	2
2007	47847	2
2007	47872	2
2007	47909	2
2007	47921	2
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2007	60930	2
2007	60940	2
2007	60967	2
2007	61021	2
2007	61201	2
2007	61356	2
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2007	61467	2
2007	61537	2
2007	61571	2
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2007	61720	2
2007	61728	2
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2007	61925	2
2007	61926	2
2007	62011	2
2007	62041	2
2007	62063	2
2007	62080	2
2007	62206	2
2007	62363	2
2007	62421	2
2007	62435	2
2007	62464	2

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2007	62534	2
2007	62569	2
2007	62691	2
2007	62702	2
2007	62801	2
2007	62806	2
2007	62837	2
2007	62849	2
2007	62863	2
2007	62881	2
2007	72908	2
2007	77619	2
2007	78245	2
2007	78582	2
2007	90272	2
2007	95110	2
2007	96224	2
2007	192	1
2007	7079	1
2007	8540	1
2007	8736	1
2007	10000	1
2007	14075	1
2007	14803	1
2007	15235	1
2007	16001	1
2007	19320	1
2007	19904	1
2007	20016	1
2007	22026	1
2007	22030	1
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2007	22303	1
2007	23464	1
2007	24012	1
2007	27284	1
2007	27320	1
2007	27529	1
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2007	28262	1
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2007	30213	1
2007	31820	1
2007	32724	1
2007	32757	1
2007	32771	1
2007	33314	1
2007	33444	1
2007	33914	1
2007	33917	1
2007	34221	1

2007	34608	1
2007	34668	1
2007	37027	1
2007	37421	1
2007	37840	1
2007	38060	1
2007	38106	1
2007	38122	1
2007	38619	1
2007	38701	1
2007	40324	1
2007	40391	1
2007	40977	1
2007	42001	1
2007	42079	1
2007	42203	1
2007	42286	1
2007	44024	1
2007	44044	1
2007	44087	1
2007	44118	1
2007	44444	1
2007	45439	1
2007	45805	1
2007	46041	1
2007	46107	1
2007	46225	1
2007	46254	1
2007	46259	1
2007	46311	1
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2007	46342	1
2007	46614	1
2007	46804	1
2007	47021	1
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2007	47802	1
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2007	47805	1
2007	47807	1
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2007	47904	1
2007	47905	1
2007	47918	1
2007	47920	1
2007	47922	1
2007	47982	1
2007	47994	1
2007	48038	1
2007	48047	1
2007	48084	1
2007	48880	1

GRC4

2007	49120	1
2007	49326	1
2007	49507	1
2007	50049	1
2007	50325	1
2007	50953	1
2007	53154	1
2007	53172	1
2007	53590	1
2007	53910	1
2007	53963	1
2007	54102	1
2007	54217	1
2007	54656	1
2007	54660	1
2007	54929	1
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2007	60004	1
2007	60008	1
2007	60015	1
2007	60016	1
2007	60060	1
2007	60085	1
2007	60102	1
2007	60107	1
2007	60110	1
2007	60123	1
2007	60134	1
2007	60137	1
2007	60148	1
2007	60153	1
2007	60154	1
2007	60176	1
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2007	60416	1
2007	60417	1
2007	60420	1
2007	60428	1
2007	60430	1
2007	60435	1
2007	60447	1
2007	60450	1
2007	60451	1
2007	60471	1

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2007	60548	1
2007	60563	1
2007	60586	1
2007	60609	1
2007	60610	1
2007	60618	1
2007	60621	1
2007	60625	1
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2007	60641	1
2007	60649	1
2007	60651	1
2007	60652	1
2007	60707	1
2007	60802	1
2007	60931	1
2007	60939	1
2007	60961	1
2007	60964	1
2007	61008	1
2007	61032	1
2007	61111	1
2007	61242	1
2007	61265	1
2007	61270	1
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2007	61325	1
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2007	61611	1
2007	61615	1
2007	61717	1
2007	61730	1
2007	61736	1
2007	61742	1
2007	61743	1
2007	61755	1
2007	61769	1
2007	61776	1
2007	61804	1

GRCH

2007	61823	1
2007	61861	1
2007	61935	1
2007	61955	1
2007	61970	1
2007	62012	1
2007	62024	1
2007	62049	1
2007	62052	1
2007	62070	1
2007	62077	1
2007	62083	1
2007	62218	1
2007	62263	1
2007	62269	1
2007	62294	1
2007	62301	1
2007	62353	1
2007	62425	1
2007	62434	1
2007	62444	1
2007	62470	1
2007	62476	1
2007	62512	1
2007	62513	1
2007	62523	1
2007	62525	1
2007	62548	1
2007	62555	1
2007	62568	1
2007	62571	1
2007	62618	1
2007	62620	1
2007	62626	1
2007	62629	1
2007	62644	1
2007	62650	1
2007	62670	1
2007	62675	1
2007	62791	1
2007	62807	1
2007	62812	1
2007	62853	1
2007	62864	1
2007	62869	1
2007	62884	1
2007	62896	1
2007	62899	1
2007	62901	1
2007	62902	1
2007	62922	1
2007	62923	1

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2007	62930	1
2007	62938	1
2007	62948	1
2007	62959	1
2007	63026	1
2007	63301	1
2007	63385	1
2007	63645	1
2007	63825	1
2007	65243	1
2007	65559	1
2007	66517	1
2007	67460	1
2007	68105	1
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2007	70546	1
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2007	77035	1
2007	77080	1
2007	77378	1
2007	77601	1
2007	78541	1
2007	78572	1
2007	78729	1
2007	79707	1
2007	80907	1
2007	81212	1
2007	85051	1
2007	85220	1
2007	85250	1
2007	85282	1
2007	86333	1
2007	86401	1
2007	89012	1
2007	89445	1
2007	90740	1
2007	90893	1
2007	91362	1
2007	92530	1
2007	92656	1
2007	94087	1
2007	95610	1
2007	95687	1
2007	97080	1
2007	97225	1
2007	97405	1
TOTAL		17,262

GRCH

1. Rationale for Determining Square Footage

Considering the current and future of healthcare, the proposed square footage of the Carle Foundation Hospital ("CFH") replacement bed tower is appropriate for the delivery of care to the high acuity patients of a tertiary referral center and teaching hospital. Technology continues to advance. Families are integrally involved in the patient's care. Patients with complex and multiple chronic and acute illnesses are on the rise as baby boomers enter retirement in 2011.

Designing a flexible, family focused, and care provider efficient facility is essential. With that in mind, CFH developed the following goals for designing the replacement bed tower and the patient care units.

Goals of the Replacement Bed Tower:

- Increase overall proportion of single occupancy rooms on the campus by providing all single-occupancy rooms.
- Align clinical services across multiple acuity levels.
- Improve efficiency for patient care and support services staff by integrating inpatient services within two primary bed towers.
- Ease patient, visitor, and staff access and movement within the facility by establishing a connection between each floor of the new bed tower and the current North Tower.
- Limit shared parallel or cross traffic of visitors and acutely ill patients.
- Support the organization's regional tertiary care programs and services through facility design.
- Nurture patient- and family-centered care through facility design.
- Allow for dedicated visitor elevators by adding new staff and patient transport elevators.
- Support current and future technology needs by providing flexibility in design.
- Achieve operational efficiency based on the assumption of limited human resources in the future, thereby controlling costs.

Goals for All Patient Care Floors within the new Bed Tower:

- Incorporate dedicated family space within all patient care rooms, including medical-surgical and intensive care rooms.
- Develop a facility with consistent room size, design and location of all medical supplies to facilitate physician and staff familiarity with all rooms and improve patient safety, reduce medical errors and support efficient acute, emergent and routine patient care.
- Incorporate dedicated space for use of Carle's fully integrated electronic medical record by patient care staff, physicians, residents, medical students, nursing students, and ancillary support staff.
- Facilitate professional and family consultation, teaching, educational, and support space central to each of the patient care units.
- Design patient units and patient rooms to allow Carle Foundation Hospital the flexibility to adjust the specific clinical patient type on a given unit or move to higher acuity with minor renovation.
- Develop space that supports the needs of the increasing population of patients with multiple, complex chronic illnesses, and bariatric and overall older patients.

Design of CFH Patient Care Rooms and Nursing Unit:

CFH places high priority on patient safety and continuous quality improvement. Based upon our experience in current patient care areas, which were built in the 1960s, 1970s, 1980s, and the latest campus addition in 2005, Carle has developed standards for our patient care rooms. Carle has also utilized the following reference documents to develop the standards:

- Ulrich and Zimring, "The Role of the Physical Environment in the Hospital of the 21st Century: A Once-in-a-Lifetime Opportunity," a Report to the Center for Health Design for the Designing the 21st Century Hospital Project, funded by the Robert Wood Johnson Foundation, September, 2004.
- The Facilities Guidelines Institute and The American Institute of Architects Academy of Architecture for Health with assistance from the US Department of Health and Human Services, 2006 Guidelines for Design and Construction of Healthcare Facilities. 2006: American Institute of Architects.
- The Institute for Family Centered Care, Collaborative Design Planning and Changing the Concept of Families as Visitors: Supporting Family Presence and Participation.

  "The Institute for Family-Centered Care, a non-profit organization founded in 1992, takes pride in providing essential leadership to advance the understanding and practice of patient- and family-centered care. By promoting collaborative, empowering relationships among patients, families, and health care professionals, the Institute facilitates patient- and family-centered change in all settings where individuals and families receive care and support.

  The Institute also serves as a central resource for policy makers, administrators, program planners, direct service providers, educators, design professionals, and patient and family leaders."

- Illinois Hospital Licensing Requirements, 77 Ill. Adm. Code, Section 250.

Standards for patient room design:

- Nurse servers that house isolation supplies and other patient care supplies immediately outside of each patient door.
- Large Patient Room Doors for ease of patient transport and equipment access to each room. Medical-Surgical room doors are three feet wide with an additional two foot leaf, allowing a five foot clearance. ICU room doors with sliders and breakaway doors allowing a 7'-8" clearance through the doorway.
- Staff hand washing sink immediately inside each patient room to encourage hand washing upon entrance and exit from the patient room. Hand washing reduces infection.
- Electronic Documentation Station on the headwall immediately inside the patient room in order to encourage staff documentation while continuing to interact with the patient and family. An additional computer work station is located in a "cockpit" documentation station immediately off the hallway between each two patient rooms.

- Dedicated Patient Zone adequately sized to support multiple pieces of equipment and multiple staff members for maximum patient care needs support, while also not intruding in the dedicated family zone.
- Dedicated Family Zone with convertible couch for sleeping and also, in Medical-Surgical rooms, a family desk area. As a tertiary referral center, many of the families of critically ill and hospitalized patients must travel a distance back and forth to their homes or stay in local hotels. Dedicated family space is imperative to support these, as well as, the more local families.
- Consistent Toilet Facilities with easy access to assisting all patients in movement between toilet, shower and sink areas.
- Large Windows to facilitate substantial natural light within each room. Exposure to natural light has been shown to improve patient outcomes.
- Staff Observation Windows from Hallway located in each of the cockpits between patient rooms to enable staff for monitor patients easily and without disturbing the patient.
- Easy Access to Central Nurse's Stations with multiple stations located throughout the unit, identified by differentiating interior design features, e.g. designated changes in flooring, ceiling structure, etc.

As part of the facility design process, the hospital constructed mock-up intensive care and general medical-surgical rooms. Physicians, nursing staff, ancillary support staff, and patients have provided recommendations for improving the room designs. Physical and occupational therapy staff have also been involved in assessing and recommending patient safety and ergonomically correct improvements to the room designs.

2. Departments

This project includes both clinical and non-clinical service areas.

The project includes the following clinical service areas:
Cardiac Catheterization
Prep/Recovery for Cardiac Catheterization / Interventional Radiology / EP
Interventional Radiology
Electrophysiology
Intensive Care
Medical Surgical
Gastro-Intestinal / Colo-Rectal Procedures
Occupational Therapy
Physical Therapy
Inpatient Rehabilitation
Respiratory Therapy
Wound Healing Center
Pharmacy

The Illinois certificate of need Rules include State Norms (77 Ill. Adm. Code 1110.APPENDIX B) for the following clinical service areas that are included in this project:

III E.1 Size of Project

Medical/Surgical Beds
Intensive Care Beds
Rehabilitation Beds
Cardiac Catheterization
Prep/Recovery for Cardiac Catheterization / Interventional Radiology / EP
Occupational Therapy
Physical Therapy
Respiratory Therapy
Pharmacy

There are no State Norms (77 Ill. Adm. Code 1110.APPENDIX B) for the balance of the clinical service areas that are included in this project.

This section addresses the clinical areas in the proposed project. The table below lists the departments for which there is state size norm (Section 1110.Appendix B). The planned GSF for each department is listed in Schedule Q.

Department List	State Norm			Proposed	
	GSF	Space Definition	GSF Justified for Proposed Beds	# Key Rooms	Proposed Department GSF
Procedure Space					
Cardiac Catheterization	1,596	GSF/Laboratory	4,788	3	4,788
Prep & Recovery for Catheterization / Interventional Radiology / Electrophysiology	180	GSF/Recovery Station	5,760	32	5,758
Inpatient Beds					
Intensive Care Beds	603	GSF/Bed	19,296	32	20,936
Medical-Surgical Beds	401	GSF/Bed	35,288	88	56,820
Inpatient Rehabilitation Beds	588	GSF/Bed	8,820	15	8,820
Treatment Space					
Inpatient Occupational Therapy	4.3	GSF/Bed	65	15	2,455
Inpatient Physical Therapy	23	GSF/Bed	345	15	3,923
Respiratory Therapy	8.9	GSF/Bed	498	56	375
Pharmacy	12	GSF/Bed	3,660	305	5,555

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An analysis of the proposed size (gross square footage) of the clinical service areas for which there are State Norms is following. The project does not include any change in number of licensed beds for any service.

A. Cardiac Catheterization

Cardiac Catheterization space is within the State Norms (77 Ill. Adm. Code 1110.APPENDIX B).

B. Prep/Recovery for Cardiac Catheterization/Interventional Radiology/Electrophysiology

Prep/Recovery for Cardiac Catheterization/Interventional Radiology/Electrophysiology space is within the State Norms (77 Ill. Adm. Code 1110.APPENDIX B).

C. Intensive Care Beds

Based on the State Agency guideline, 19,296 dgsf would be allowed for the proposed 32 intensive care beds. At 20,936 dgsf for 32 beds across two units, when an adjustment is made for design considerations made in Patient Rooms and Unit Support, this project has an adjusted square footage of 434 dgsf/bed, and is under the State norm. The following is an explanation of the need for the additional space in the ICU rooms and on the units.

The intensive care patient beds will be located on the 6th and 8th floors of the new bed tower. The 12-bed Surgical Intensive Care Unit and the Pediatric Intensive Care Unit are located on the 8th floor, and the 12-bed Cardiovascular Intensive Care Unit will be located on the 6th floor.

Through the planning process, it was determined that 24-bed acute care or 20-bed intensive care nursing units were the most efficient and flexible for CFH. Each nursing unit has perimeter patient bedrooms surrounding a support core. Rooms are accessed by an eight-foot wide 'racetrack' patient corridor with six-foot wide staff corridors to support rooms.

The greatest factor for deviation from the State's standard is the area within each patient room. The state minimum area is 120 nsf for a single occupancy room (IDPH General Hospital Standards, ¶ 250.2440.e)2)A). In our design we allowed three feet circulation around three sides of the patient bed. The modern patient room is much larger than existing rooms found in Carle Foundation Hospital. As part of the design process, mock-ups of patient rooms were constructed. These were useful tools in identifying the necessary design elements, size, and configuration of the rooms. At 293 nsf per patient room, the larger patient room considers the necessity for space for equipment, infection control, staff, and family. In our design we also considered the AIA Guidelines for the Design and Construction of Healthcare Facilities (§§ 2.1-3.1 and 2.1-A3.1.2.c) which requires a minimum headwall width of 13 feet.

III E.1 Size of Project

Every patient room is designed for single occupancy. This provides patients and staff with a less stressful environment, and has been shown to reduce infection rates by minimizing cross-patient contamination. Designing private rooms will help fill the beds more efficiently, as age and gender differences, acuity, and other impediments to bed use will be less relevant in room assignments.

The use of clinical equipment at bedside has increased greatly over the years. In any given patient's stay, there might be a ventilator, dialysis machine, multiple IV poles with many infusion pumps, portable x-ray machines, and other diagnostic aids. It is presently difficult to position these devices while maintaining patient access for the doctors and nursing staff. The 169 nsf dedicated to patient care will accommodate this equipment. Every room includes 15 nsf for bedside electronic medical record access and a 20 nsf hand-washing area near the room entrance. Easily accessible patient-side hand-washing stations have been shown to significantly reduce nosocomial infections. The sinks will all have hands-free faucets to further stymie the spread of infection. There is a storage area for towels, gloves, and waste receptacles near the hand-washing sink, but much of the typical built-in cabinetry has been excluded from our design to allow for greater flexibility within each room. Patient rooms were designed with patient care modules (12 nsf) rather than full-sized toilet rooms.

The role of family-centered care has been increasingly recognized as an important component of patient care[1] and we have designed the patient rooms to include 84 nsf for a family member, patient belongings. The benefits of single rooms that support family-centered care are now well established, and include reduced stress and improved emotional status among patients, and improved communication between family and other care team members. Patients' families expect to spend long periods of time in the room offering comfort and encouragement to the patient, supplementing nursing care and becoming better informed about how to care for patients after discharge. "Rooming in", where a family member sleeps in the patient's room, has become the norm. With the limited existing space, rooming in is an undesirable option, where families struggle to avoid being in the way of patient care. The planned rooms have a family zone at the window for sleeper chairs or a day bed. There will also be wardrobes large enough for the patients' belongings and family supplies.

Outside every two patient bedrooms, we have designed a charting alcove, or "cockpit", where physicians and nurses can document at a computer workstation without intruding on the patient, yet still maintain visualization. The central nurse stations are situated such that visualization is possible into rooms from each station. Each intensive care unit has two larger stations and two satellite stations to enable this. A guiding principle for design is that direct visualization of patients is preferred over all other monitoring systems. Convenient documentation support with a fully integrated electronic medical record system is expected to reduce medical errors. The

[1] Ulrich and Zimring's 'The Role of the Physical Environment in the Hospital of the 21st Century' report to The Center for Health Design, September 2004, cites several studies that indicate that social support, as provided by family members, reduces stress and improves outcomes. This report cites other studies whose conclusions support various other design decisions (e.g. the importance of single-occupancy bed rooms in preventing infection and in improving outcomes, and the importance of designing units to reduce staff walking and fatigue, and to support activities such as medication supply and documentation).

CVICU has 183 nsf and the SICU and PICU together have 309 nsf of documentation space. There will be 62 computer workstations on every unit.

Infection control is a serious and growing problem in hospitals with the increased incidence of drug-resistant infections. Though regulations call for one isolation room on every unit, there are a total of six isolation rooms within the intensive care units; two airborne isolation rooms are planned in the Cardiovascular Intensive Care Unit, and four in the Surgical Intensive Care Unit. Each airborne isolation room is designed with an anteroom of 67-125 nsf, sized to include a hand-washing sink and isolation precaution equipment. The total area attributable to infection isolation rooms is 1,142 nsf. The number and type of isolation rooms were determined in consultation with the Carle Hospital Infection Control Committee during the design process.

Opposite the patient bed rooms, in the support core, are stretcher, cart, equipment, and nourishment alcoves (together 164.5 nsf on each unit), clean and soiled utility rooms, janitor closets, nurse and physician work rooms, and medication rooms. Support space will be arranged within each unit to decrease the walking distance to needed medications and supplies. Alcoves provide storage for equipment such as line carts, stretchers, and newer technologies like portable CT scanners, preventing cluttered corridors while maintaining ready access. To improve cardiac and respiratory arrest survival rates, space for several crash carts has been designed into each unit, allowing quicker access to each. The medications rooms have restricted access to give the nurses a quiet place, without distraction, to gather medications. It is believed that such arrangements serve to reduce medication errors. There are two such rooms, rather than the typical singular room, on the Intensive Care Units, to further reduce walking distances and enable nursing staff to remain near their patients as well as to support the increased number of student nurses in the medication rooms. The two adjacent work rooms (together 376 nsf on each unit) share a movable partition to provide semi-private areas away from patients and their families for nurses, physicians, technologists, nursing students, and residents to work together to facilitate communication, and collaborative interdisciplinary patient care and teaching. Space will be provided on the units for those administrators who direct staff and who support or provide patient care. Additionally, pharmacist office space is provided on each of the intensive care units. The Surgical Intensive Care Unit includes space for a Respiratory Therapy support satellite area. Together, these spaces account for 33.8 nsf per patient bed room.

When the additional space attributable to design enhancements made to the Patient Rooms and Unit Support is subtracted from the gross square footage of the space, the proposed square footage was found to be within the IHFPB standard.

- In the Patient Rooms:
  - The design of each room to provide a Patient/Family/Visitor Zone results in additional square footage because there is space allocated for sleeper chairs or a daybed, storage, computer access, etc. This is estimated to add 3,687 gsf.
  - The design of each room to support Electronic Medical Records access results in additional square footage because there is space allocated for a bedside computer in each patient care room. This is estimated to add 641 gsf.

- The design of each room to improve infection control results in additional square footage because there is a hand-washing station near the entrance of every patient room. This is estimated to add 1,069 gsf.

- In Unit Support:
  - The design of each room to support Electronic Medical Records access results in additional square footage because there is space allocated for 2.5 computer workstations per patient care bed, and a charting alcove for every two patient care rooms. This is estimated to add 1,638 gsf.

When the square footage of the proposed project is adjusted for these differences, the gsf per bed is 434, which is below the State standard of 603:

Proposed GSF for Intensive Care Unit:	20,936
Minus square footage for design features:	
Patient/Family/Visitor Zone:	3,687
Electronic Medical Records (patient room):	641
Hand-Washing Zone:	1,069
Electronic Medical Records (Unit):	1,638
Proposed adjusted square footage:	13,901
Adjusted square footage per bed:	434

D. Medical-Surgical Beds

At 56,820 dgsf for 88 beds across five units, when an adjustment is made for design considerations made in Patient Rooms and Unit Support, the project has an adjusted square footage of 382 dgsf/bed, and is under the State norm. The following is an explanation of the need for the additional space in the Medical-Surgical rooms and on the units.

The medical-surgical patient beds will be located on the 6th, 7th, and 8th floors of the new bed tower. The 8-bed Cardiovascular Step-Down (Medical-Surgical) Unit will be located on the 6th floor, the 24-bed Cardiovascular Medical-Surgical Unit will be located on the 6th floor, two 16-bed Medical-Surgical Units will be located on the 7th floor, and a 24-bed multi-acuity Medical-Surgical Unit will be located on the 8th floor.

The discussion for Medical-Surgical units is similar to that of the Intensive Care units discussed above.

The Medical-Surgical rooms include 137 nsf for patient care and 64 nsf of family space.

The typical Medical-Surgical patient rooms are 238 nsf with a 50 nsf toilet room. Toilet rooms include showers and grab bars. Up to five patient rooms on each the 6th and 8th floor Medical-Surgical units, and up to four patient rooms on each of the two 7th floor Medical-Surgical units include wheelchair accessible toilet rooms. Toilet rooms are sized for staff assistance, a proven

preventive measure in reducing patient falls. All doors are sized for bariatric patients and IV pole movement.

The Medical-Surgical units on the 6th and 8th floors will each have 324 nsf of documentation space, and the two Medical-Surgical units on the 7th floors will each have 264 nsf of documentation space. There will be space for 62 computer workstations on each 24-bed unit.

We designed the Medical-Surgical units to be flexible, creating room and unit layouts that will allow each room to be utilized for different specialties and acuities of patients as the needs and mix of CFH patients change over time.

In our design we also considered the AIA Guidelines for the Design and Construction of Healthcare Facilities (§§ 2.1-3,1 and 2.1-A3.1.2.c).

When the additional space attributable to design improvements made to the Patient Rooms and Unit Support is subtracted from the gross square footage of the space, the proposed square footage was found to be within the IHFPB standard.

- In the Patient Rooms:
  - The design of each room as a single occupancy room results in additional square footage because there is double the number of rooms necessary to support the same number of patients; however, allowing for more efficient use of space as gender, infection control, care needs do not restrict patient placement. This is estimated to add 2939 gsf.
  - The design of each room to provide a Patient/Family/Visitor Zone results in additional square footage because there is space allocated for sleeper chairs or a daybed, storage, computer access, etc. This is estimated to add 9,405 gsf.
  - The design of each room to support Electronic Medical Records access results in additional square footage because there is space allocated for a bedside computer in each patient care room. This is estimated to add 1,764 gsf.
  - The design of each room to improve infection control results in additional square footage because there is a hand-washing area near the entrance of every patient room. This is estimated to add 2,939 gsf.
  - The design of single occupancy rooms each with an individual toilet and shower has doubled the number of toilets and showers that would be required in semi-private occupancy rooms. This is estimated to add 4409 gsf.
- In Unit Support:
  - The design of each room to support Electronic Medical Records access results in additional square footage because there is space allocated for 2.5 computer workstations per patient care bed, and a charting alcove for every two patient care rooms. This is estimated to add 3,552 gsf.

When the square footage of the proposed project is adjusted for these differences, the gsf per bed is 362, which is below the State standard of 401:

Proposed GSF for Medical/ Surgical Unit:	56,820
Minus square footage for design features:	
Single-Occupancy Rooms:	2,939
Patient/Family/Visitor Zone:	9,405
Electronic Medical Records (Patient Room):	1,764
Hand-Washing Zone:	2,939
Electronic Medical Records (Unit):	3,552
Single-Occupancy Toilet Rooms:	4,409
Proposed adjusted square footage:	31,812
Adjusted square footage per bed:	362

E. Inpatient Rehabilitation Beds

Inpatient Rehabilitation bed space is within the State Norms (77 Ill. Adm. Code 1110.APPENDIX B).

F. Occupational Therapy

Inpatient Occupational Therapy will be located on the 9th floor.

We are guided by the knowledge that patients such as those to be treated in this environment will receive a minimum of three hours of direct therapy per day. In any given hour during the day, using an inpatient census of 15, therapy space must accommodate an average of eight patients, the staff to treat them, and all the associated equipment (mat tables, parallel bars, stair steps, rolling mirrors, exercycles, wheelchairs, walkers, hydrocollators, ultrasound, miscellaneous other equipment) required for treatment, and ensure privacy where indicated. The facility must be of sufficient size and design to promote and allow patients to be outside their rooms during the treatment day.

The Activities for Daily Living suite is designed emulate a home-like environment so patients can learn to be independent at home.

The Occupational Therapy space located on the Rehabilitation unit has been designed specifically to target the needs of the rehabilitation population only and functions independently of the hospital occupational therapy department.

In our design we also considered the AIA Guidelines for the Design and Construction of Healthcare Facilities (§§ 2.1-5.7 and 2.1-A5.7.3.2).

When the square footage of the proposed project is adjusted for these differences, the gsf per bed is 4.3, which is consistent with the State standard.

Proposed GSF for Occupational Therapy:	2455
Minus square footage for design features:	
Day, Dining & Multipurpose Activity Rooms:	1646
ADL Suite:	744
Proposed adjusted square footage:	65
Adjusted square footage per bed:	4.3

G. Physical Therapy

The discussion for Physical Therapy is similar to that of Occupational Therapy discussed above.

The Physical Therapy space located on the Rehabilitation unit has been designed specifically to target the needs of the rehabilitation population only and functions independently of the hospital occupational therapy department. As such, additional functions have been included over and above the typical physical therapy functions. Private treatment rooms are incorporated to support the patient and their family participation in therapy. A gymnasium has also been included to support group therapy and use of large equipment to support the rehabilitation process.

In our design we also considered the AIA Guidelines for the Design and Construction of Healthcare Facilities (§§ 2.1-5.7 and 2.1-A5.7.3.2).

When the square footage of the proposed project is adjusted for these differences, the gsf per bed is 20 gsf, which is below the State standard.

Proposed GSF for Physical Therapy	3923
Minus square footage for design features:	
Private Treatment Rooms:	800
Inpatient Gym:	1878
Electronic Medical Record:	944
Proposed adjusted square footage:	301
Adjusted Square Footage per Bed:	20

H. Pharmacy

The Pharmacy will occupy 5555 bgsf in the basement level of the New Bed Tower.

The excess in proposed area/bed beyond the state norm is due to several factors, including the recent regulatory changes which require additional space for IV preparation (reference U.S.

Pharmacopoeia Regulation 797). Previously, pharmacies were only required to have a single relative positive pressure mixing room. Pharmacy regulations now require both relative positive and negative pressure mixing rooms, the additional for safety in chemotherapy drug mixing. Our new design accommodates this requirement. Negative pressure IV therapy space is estimated at 500 gsf.

In addition to support of the hospital's 305 licensed inpatient beds, the Pharmacy also provides the following services in an estimated 1395 gsf:

- Compounding of pharmaceuticals for the Carle Clinic Association's Radiology department for use during diagnostic procedures.
- Compounding of pharmaceuticals for Carle Clinic Association's Expanded Care program.
- Compounding of pharmaceuticals for Carle Foundation Hospital Physician Services Pediatric Hematology/Oncology Department.
- Secondary compounding support for Carle Foundation Hospital Home Infusion department.
- Secondary pharmaceutical services for Carle Arbours, a 231 bed, long term care facility.

In our design we also considered the AIA Guidelines for the Design and Construction of Healthcare Facilities (§ 2.1-6.1).

When the square footage of the proposed project is adjusted for these differences, the gsf per bed is 12, which is consistent with the State standard.

Proposed GSF for Pharmacy:	5555
Minus square footage for design features:	
Negative Pressure IV Therapy Space:	500
Pharmaceutical Support for Outpatient and Long-Term Care Services:	1395
Proposed adjusted square footage:	3,660
Adjusted Square Footage per Bed:	12

I. Respiratory Therapy

Respiratory Therapy will continue to be located mainly in the existing buildings, and a satellite clean and soiled equipment room was included to facilitate access to the New Bed Tower patients in need of respiratory services.

Respiratory Therapy is within the State Norms (77 Ill. Adm. Code 1110.APPENDIX B).

In our design we also considered the AIA Guidelines for the Design and Construction of Healthcare Facilities (§ 2.1-5.8).

3.1.1 Typical Patient Rooms

Each patient room shall meet the following standards:

3.1.1.1 Capacity

(1) In new construction, the maximum number of beds per room shall be one unless the functional program demonstrates the necessity of a two-bed arrangement. Approval of a two-bed arrangement shall be obtained from the licensing authority.

(2) Where renovation work is undertaken and the present capacity is more than one patient, maximum room capacity shall be no more than the present capacity, with a maximum of four patients.

3.1.1.2 Space requirements. Minor encroachments, including columns and hand-washing stations, that do not interfere with functions may be ignored when determining space requirements for patient rooms.

*(1) Area. In new construction, patient rooms shall be constructed to meet the needs of the functional program and have a minimum of 100 square feet (9.29 square meters) of clear floor area per bed in multiple-bed rooms and 120 square feet (11.15 square meters) of clear floor area in single-bed rooms, exclusive of toilet rooms, closets, lockers, wardrobes, alcoves, or vestibules.

(2) Dimensions and clearances. The dimensions and arrangement of rooms shall be such that there is a minimum of 3 feet (91.44 centimeters) between the sides and foot of the bed and any wall or any other fixed obstruction. In multiple-bed rooms, a clearance of 4 feet (1.22 meters) shall be available at the foot of each bed to permit the passage of equipment and beds. (See "bed size" in the glossary.)

(3) Renovation. Where renovation work is undertaken, every effort shall be made to meet the above minimum standards. If it is not possible to meet the above minimum standards, the authorities having jurisdiction shall be permitted to grant approval to deviate from this requirement. In such cases, patient rooms shall have no less than 80 square feet (7.43 square meters) of clear floor area per bed in multiple-bed areas and 100 square feet (9.29 square meters) of clear floor area in single-bed rooms exclusive of the spaces previously noted in this section.

*3.1.1.3 Windows. Each patient room shall have a window in accordance with Section 2.1-8.2.2.5.

3.1.1.4 Patient privacy. In multiple-bed rooms, visual privacy from casual observation by other patients and visitors shall be provided for each patient. The design for privacy shall not restrict patient access to the entrance, hand-washing station, or toilet.

*3.1.1.5 Hand-washing stations. These shall be provided to serve each patient room.

(1) A hand-washing station shall be located in the toilet room.

(2) A hand-washing station shall be provided in the patient room in addition to that in the toilet room. This shall be located outside the patient's cubicle curtain and convenient to staff entering and leaving the room.

(3) A hand sanitation station in patient rooms utilizing waterless cleaners may be used in renovation

APPENDIX

A3.1.1.2 (1) In new construction, single patient rooms should be at least 12 feet (3.66 meters) wide by 13 feet (3.96 meters) deep (or approximately 160 square feet, or 14.86 square meters) exclusive of toilet rooms, closets, lockers, wardrobes, alcoves, or vestibules. These spaces should accommodate comfortable furniture for family members (one or two) without blocking access of staff members to patients. Efforts should be made to provide the patient with some control of the room environment.

A3.1.1.3 Windows are important for the psychological well-being of many patients, as well as for meeting fire safety code requirements. They are also essential for continued use of the area in the event of mechanical ventilation system failure.

A3.1.1.5 Where renovation work is undertaken, every effort should be made to meet this standard. Where space does not permit the installation of an additional hand-washing station in the patient room, or where it is technically infeasible, the authority having jurisdiction may grant approval of alternative forms of hand cleansing.

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of existing facilities where existing conditions prohibit an additional hand-washing station.

3.1.1.6 Toilet rooms. Toilet rooms shall be provided in accordance with Section 2.1-2.2.1.

3.1.1.7 Patient storage locations. Patient storage shall be provided in accordance with Section 2.1-2.2.2.

*3.1.2 Patient/Family-Centered Care Rooms

3.1.3 Examination/Treatment Room(s)
Omission of such rooms shall be permitted if all patient rooms in the nursing unit are single-bed rooms.

3.1.3.1 Location. Centrally located examination and treatment room(s) shall be permitted to serve more than one nursing unit on the same floor.

3.1.3.2 Space requirements. Such rooms shall have a minimum floor area of 120 square feet (11.15 square meters).

3.1.3.3 Patient privacy. Provision shall be made to preserve patient privacy from observation from outside the exam room through an open door.

3.1.3.4 Facility requirements. The room shall contain a hand-washing station; storage facilities; and a desk, counter, or shelf space for writing.

3.1.4 Support Areas—General
3.1.4.1 The size and location of each support area shall depend on the numbers and types of beds served.

3.1.4.2 Location

(1) Provision for the support areas listed shall be in or readily available to each nursing unit.

(2) Each support area may be arranged and located to serve more than one nursing unit; however, unless otherwise noted, at least one such support area shall be provided on each nursing floor.

3.1.4.3 Identifiable spaces are required for each of the indicated functions. Where the words room or office are used, a separate, enclosed space for the one named function is intended; otherwise, the described area may be a specific space in another room or common area.

3.1.5 Support Areas for Medical/Surgical Nursing Units
*3.1.5.1 Administrative center(s) or nurse station(s). This area shall be provided in accordance with Section 2.1-2.3.1.

3.1.5.2 Documentation area. This area shall be provided on the unit in accordance with Section 2.1-2.3.2.

3.1.5.3 Nurse or supervisor office

*3.1.5.4 Multipurpose room(s). Room(s) shall be provided for patient conferences, reports, education, training sessions, and consultation in accordance with Section 2.1-2.3.3.

3.1.5.5 Hand-washing stations

(1) In nursing locations, hand-washing stations shall be conveniently accessible to the nurse station, medication station, and nourishment area.

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A3.1.2 Patient/Family-Centered Care Rooms.
Where a facility contemplates patient/family-centered care rooms, the rooms should be constructed to meet the needs of the functional program.

a. Capacity. Patient/family-centered rooms should be single-bed rooms.

b. Area and dimensions. These rooms should have a minimum of 250 square feet (23.22 square meters) of clear floor area exclusive of family alcoves, toilet rooms, closets, lockers, wardrobes, vestibules, staff charting areas, or staff hand-washing stations, with a minimum clear dimension of 15 feet (4.57 meters).

c. Additional area. Additional areas should be provided at a minimum clear area of 30 square feet (2.79 square meters) per family member (permitted by the facility).

d. Environment of care. Consideration for a homelike atmosphere, furniture arrangements, and orientation to the patient bed and room windows should reflect the needs of the functional program.

A3.1.5.1 The station should permit visual observation of all traffic into the unit.

A3.1.5.4 Multipurpose rooms are used primarily for staff purposes and generally are not available for family or visitors. A waiting room convenient to the unit should be provided.

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Carle Foundation Hospital
Part 1110.230(e)(2)
Size of Project

When the State Board has established utilization targets for the beds or services proposed, the applicant must document that in the second year of operation the annual utilization of the beds or service will meet or exceed the target utilization. Documentation shall include, but not be limited to, historical utilization trends, population growth, expansion of professional staff or programs (demonstrated by signed contracts with additional physicians) and the provision of new procedures which would increase utilization.

Medical/Surgical (Target: 85%):

2012	Beds:	185
	ADC:	165.8
	Occupancy Rate:	89.6%
2013	Beds:	185
	ADC:	174.1
	Occupancy Rate:	94.1%

Intensive Care (Target: 60%):

2012:	Beds:	32
	ADC:	20.8
	Occupancy Rate:	65%
2013:	Beds:	32
	ADC:	21.2
	Occupancy Rate:	66.3%

Rehabilitation (Target: 85%):

2012:	Beds:	15
	ADC:	13.21[1]
	Occupancy Rate:	88%
2013:	Beds:	15

[1] Assumes that the ADC will not increase between 2007 and 2012 due to unit running at practical capacity as a result of long ALOS and male/female patient mix issues.

ADC:	14.1
Occupancy Rate:	94%

Extent of modernization of non-bed services is discussed in Attachments GRC-4 and Mod-3.

\5061679.3

16. DIAGNOSTIC RADIOLOGY -- Is this area being modernized? Yes ☒ No ☐
If yes, provide the following information classifying procedure rooms as general or special according to the type of machines employed.

General machines are:	Special machines are:
-Radiographic	-Angiographic
-Fluoroscopic	-CT Scanner
-Radiographic/Flouroscopic	-Mammography
-Tomographic (linear)	-Sonographic (ultrasound)
-Tomographic (multi-directional)	

a. Provide the number of existing and proposed general procedure rooms by machine type.

b. Provide the number of existing and proposed special procedure rooms by machine type.

APPEND DOCUMENTATION AS ATTACHMENT MOD-1A AFTER THE LAST PAGE OF THIS SECTION.

17. EMERGENCY SERVICES -- Is this area being modernized? Yes ☐ No ☒
If yes, provide the following information:

a. The number of existing and proposed treatment/examination rooms;

b. A list of any of the above rooms that are or will be used for purposes other than general treatment;

c. The number of visits for each of the last three years.

APPEND DOCUMENTATION AS ATTACHMENT MOD-1B AFTER THE LAST PAGE OF THIS SECTION.

18. INPATIENT BED AREA -- Is this area being modernized? Yes ☒ No ☐
If yes, provide the following information:

a. The number of existing and proposed private rooms, semi-private rooms, and three or more occupancy rooms (by category of service for each type of room) for the entire facility and for the project;

b. Line drawings showing the configuration of the unit(s) being modernized.

APPEND DOCUMENTATION AS ATTACHMENT MOD-1C AFTER THE LAST PAGE OF THIS SECTION.

19. NUCLEAR MEDICINE -- Is this area being modernized? Yes ☐ No ☒
If yes, provide the following information:

a. A list of the existing and proposed major pieces of equipment;

b. The existing and proposed number of procedure rooms;

c. The number of inpatient, outpatient, and total procedures done for each of the last three years;

d. A breakdown of the procedures into types of procedures and machine time/procedure for the last year.

APPEND DOCUMENTATION AS ATTACHMENT MOD-1D AFTER THE LAST PAGE OF THIS SECTION.

20. RADIATION THERAPY -- Is this area being modernized? Yes ☐ No ☒
If yes, provide the following information:

a. The number of treatments and the number of "courses of treatment" for each of the last three years;

b. A list of the existing and proposed pieces of megavoltage equipment.

APPEND DOCUMENTATION AS ATTACHMENT MOD-1E AFTER THE LAST PAGE OF THIS SECTION.

21. SURGERY -- Is this area being modernized? Yes ☐ No ☒
If yes, provide the following information:

a. The existing and proposed number of procedure rooms. Indicate the use of these rooms such as general, open heart, eye, endoscopy, and cystology. Indicate how many rooms are dedicated solely to outpatient surgery, solely to inpatient surgery, and how many are used for both.

b. The inpatient, outpatient, and total hours of utilization (including clean-up and set-up time) for each of the last three years;

c. The total hours of utilization (including clean-up and set-up time) for each type of procedure room for each of the last three years;

d. The number of inpatient, outpatient, and total surgical visits for each type of surgical specialty for each of the last three years.

APPEND DOCUMENTATION AS ATTACHMENT MOD-1F AFTER THE LAST PAGE OF THIS SECTION.

22. OTHER DEPARTMENTS OR AREAS – Are any other areas being modernized? Yes ☒ No ☐
If yes, identify the area(s) and provide workload data for each area for each of the last three years.

APPEND DOCUMENTATION AS ATTACHMENTS MOD-1G, MOD-1H, MOD-1I, MOD 1J, etc. AFTER THE LAST PAGE OF THIS SECTION.

B. Criterion 1110.420.b, Modern Facilities

A criterion must be claimed for EACH department or area to be modernized. The justification for each department or area must be on a separate page. Choose the criterion or criteria which most clearly approximates the reason for proposing the modernization.

At least ONE of the following two criteria must be claimed for EACH department or area proposed for modernization.

1. Read criterion 1110.420.b.1. **This criterion cannot be used to justify any increase in square footage. If expansion of a department is proposed, criterion 1110.420.b.2 must be claimed.**

Indicate if this criterion is claimed and submit the following:

a. the age of the building or piece of equipment;

b. the downtime experienced on the piece of equipment for each of the last three years;

c. the cost of repair experienced on the piece of equipment for each of the last three years;

d. a detailed explanation of why and how it was determined that the building or piece of equipment was deteriorated and needs to be replaced;

e. provide copies of any licensing, certification, or fire protection citations.

APPEND DOCUMENTATION AS ATTACHMENT MOD-2 AFTER THE LAST PAGE OF THIS SECTION.

2. Read Criterion 1110.420.b.2. Identify if this criterion is claimed and submit the following information:

a. a detailed explanation of why and how it was determined that expansion of the department or area was necessary;

b. a discussion of the alternatives considered to expanding the department (e.g. increasing the hours or days of operation) and why the alternatives were rejected.

APPEND DOCUMENTATION AS ATTACHMENT MOD-3 AFTER THE LAST PAGE OF THIS SECTION.

C. Criterion 1110.420.c, Major Medical Equipment Not applicable.

Read Criterion 1110.420.c and provide documentation that the equipment will achieve or exceed the applicable target utilization levels specified in Appendix B of Part 1110 within 12 months after becoming operational.

APPEND DOCUMENTATION AS ATTACHMENT MOD-4 AFTER THE LAST PAGE OF THIS SECTION.

SECTION VII. REVIEW CRITERIA RELATING TO ALL MODERNIZATION PROJECTS (MOD)

This section is applicable to all projects proposing modernization. Modernization includes, but is not limited to: expanding a department, acquiring major medical equipment, remodeling, or constructing additions or new buildings.

A. Specific Information Requirements

Indicate if the following areas or departments are to be modernized and provide the information as applicable.

1. AMBULATORY CARE (Include all outpatient clinics) -- Is this area being modernized? Yes ☐ No ☒

If yes, provide:

a. The number of visits for each of the last three years:

Year	_____	_____	_____
Number	_____	_____	_____

b. The number of treatment/examination rooms: Existing _____ Proposed _____

2. AMBULATORY SURGERY TREATMENT CENTERS-- Is this area being modernized? Yes ☐ No ☒

If yes, provide:

a. The number of procedures for each of the last three years:

Year	_____	_____	_____
Number	_____	_____	_____

b. The number of visits for each of the last three years:

Year	_____	_____	_____
Number	_____	_____	_____

c. The number of operating rooms for each of the last three years:

Year	_____	_____	_____
Number	_____	_____	_____

3. CARDIAC CATHETERIZATION -- Is this area being modernized? Yes ☒ No ☐

If yes, provide the number of inpatient, outpatient, and total procedures (patient visits) performed on adults and on pediatric patients for each of the past three years:

	ADULT				PEDIATRIC		
Year	2005	2006	2007	Year	_____	_____	_____
Inpatient	852	922	1,170	Inpatient	_____	_____	_____
Outpatient	355	483	605	Outpatient	_____	_____	_____
Total	1,207	1,405	1,775	Total	_____	_____	_____

4. EEG DEPARTMENT OR AREA -- Is this area being modernized? Yes ☐ No ☒

If yes, provide the number of inpatient, outpatient, and total procedures for each of the past three years:

Year	_____	_____	_____
Inpatient	_____	_____	_____
Outpatient	_____	_____	_____
Total	_____	_____	_____

5. EKG DEPARTMENT OR AREA -- Is this area being modernized? Yes ☐ No ☒

If yes, provide the number of inpatient, outpatient, and total procedures for each of the past three years:

Year	_____	_____	_____
Inpatient	_____	_____	_____
Outpatient	_____	_____	_____
Total	_____	_____	_____

6. HEMODIALYSIS SERVICES -- Is this area being modernized? Yes ☐ No ☐

If yes, provide the following information:

a. The number of treatment stations: existing _____ proposed _____

b. The number of treatments performed for each of the last three years:

Year	_____	_____	_____
Treatments	_____	_____	_____

7. LABOR-DELIVERY-RECOVERY -- Is this area being modernized? Yes ☐ No ☒

If yes, provide the following information:

a. The number of

Labor rooms	_____
Delivery/birthing rooms	_____
Recovery stations	_____
LDR's	_____
LDRP rooms	_____

b. The number of procedures and deliveries for each of the last three years:

Year	_____	_____	_____
Procedures	_____	_____	_____
Deliveries	_____	_____	_____

8. LABORATORY SERVICES -- Is this area being modernized? Yes ☐ No ☒

If yes, provide the number of equivalent full-time employees (FTE's) employed in the laboratory_____

9. MAGNETIC RESONANCE IMAGING -- Is this area being modernized? Yes ☐ No ☒

If yes, provide the following information for each of the last three years:

Year	_____	_____	_____
Number of visits	_____	_____	_____
Number of scans	_____	_____	_____

10. NURSERY (other than neonatal intensive care units) -- Is this area being modernized? Yes ☐ No ☒
If yes, provide the following for each of the last three years:

Year			
Number of newborns			
Number of patient days			

11. OCCUPATIONAL THERAPY -- Is this area being modernized? Yes ☒ No ☐
If yes, provide the following information for each of the last three years:

Year	2005	2006	2007
Inpatient treatments	33,397	34,068	30,971
Outpatient treatments			
Number of visits	3,028	3,435	3,825

12. PHYSICAL THERAPY -- Is this area being modernized? Yes ☒ No ☐
If yes, provide the following information for each of the last three years.

Year	2005	2006	2007
Inpatient treatments	45,256	45,113	47,607
Outpatient treatments			
Total treatments			
Number of visits	4,723	4,902	5,389

13. PULMONARY FUNCTION -- Is this area being modernized? Yes ☐ No ☒
If yes, provide the following information for each of the last three years.

Year			
Inpatient procedures			
Outpatient procedures			
Total procedures			
Number of visits			

14. RECOVERY (SURGICAL) -- Is this area being modernized? Yes ☐ No ☒
If yes, provide the existing and proposed number of stations by type:

	Existing	Proposed
Inpatient		
Outpatient Stage I		
Outpatient Stage II		

15. RESPIRATORY THERAPY -- Is this area being modernized? Yes ☒ No ☐
If yes, provide the following information for each of the last three years.

Year	2005	2006	2007
Inpatient treatments	190,989	187,652	213,252
Outpatient treatments			
Total treatments			
Number of visits	7,587	7,656	7,826

Diagnostic Radiology

a. **and b.** There are currently 8 angiographic suites and upon project completion there will be 8 angiographic suites. The suites are used for electrophysiology studies, cardiac catheterizations (both diagnostic and interventional) and interventional radiology procedures.

Carle Foundation Hospital Room Modernization Summary

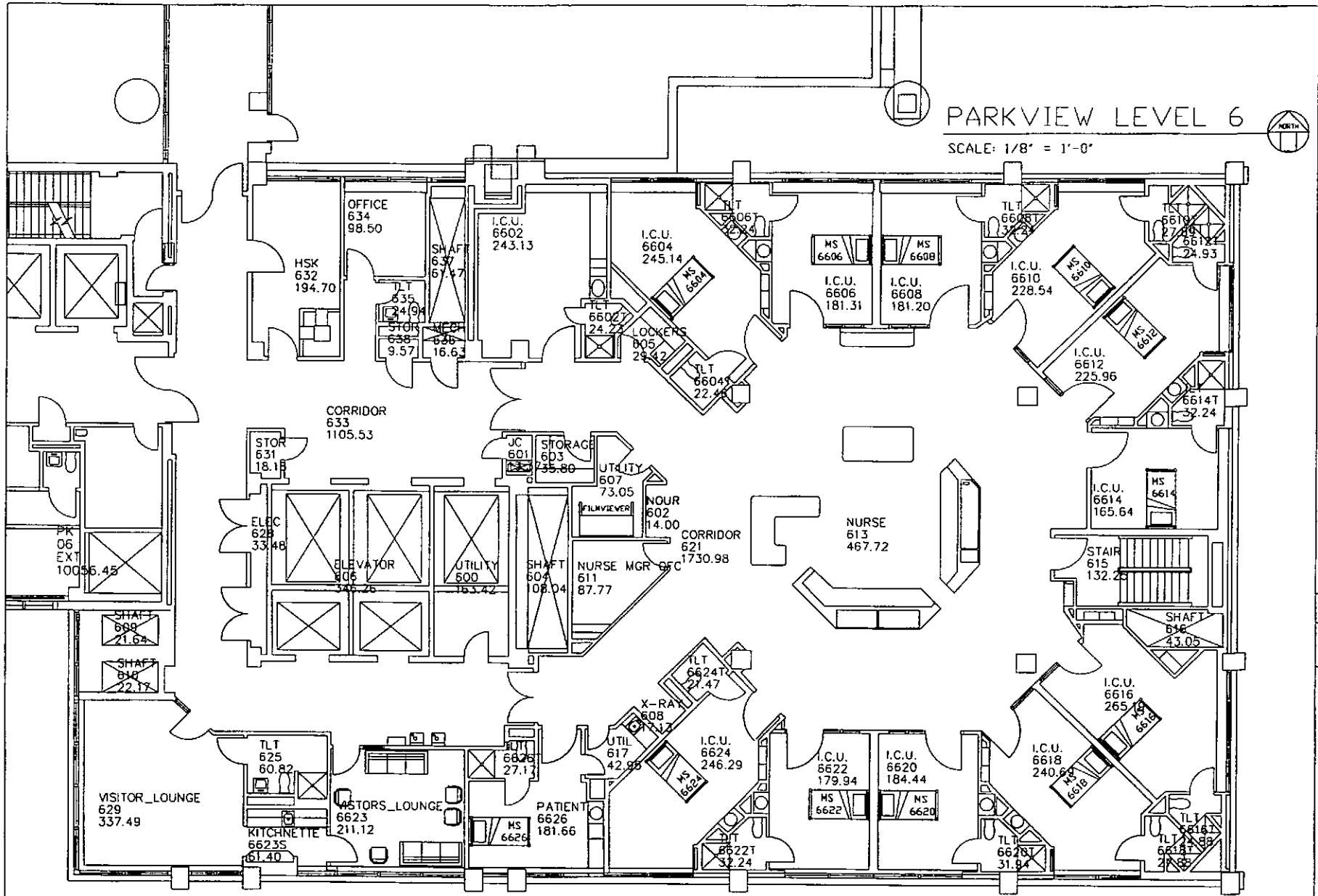
Existing Hospital Rooms	2008			Proposed Configuration		
	Private	Semi-Private	Total	Private	Semi-Private	Total
Med/Surg	111	37	148	87	5	92
ICU	32	0	32	0	0	0
NICU	25	0	25	40	0	40
Post Partum	28	0	28	28	0	28
Peds	16	2	18	16	2	18
Rehab	5	5	10	0	0	0
Total Rooms	217	44	261	171	7	178

New Bed Tower Rooms Rooms	2008			Proposed Configuration		
	Private	Semi-Private	Total	Private	Semi-Private	Total
Med/Surg	0	0	0	88	0	88
ICU	0	0	0	32	0	32
NICU	0	0	0	0	0	0
Post Partum	0	0	0	0	0	0
Peds	0	0	0	0	0	0
Rehab	0	0	0	15	0	15
Total	0	0	0	135	0	135

	2008–Proposed Configuration Private/Semi-Private +/–			
All Facilities Rooms	2008		Proposed Configuration	
	Private	Semi-private	Private	Semi-private
Med/Surg	111	37	175	5
ICU	32	0	32	0
NICU	25	0	40	0
Post Partum	28	0	28	0
Peds	16	2	16	2
Rehab	5	5	15	0
Total	217	44	306	7

	Proposed Configuration	
	Private +/–	Semi-private +/–
Med/Surg	64	-32
ICU	0	0
NICU	15	0
Post Partum	0	0
Peds	0	0
Rehab	10	-5
Total	89	-37

Attachment MOD-1C



Existing Bed Configuration	
Number of Beds	Bed Type
12	MS

January 8, 2008

Carle Foundation Hospital
Construction and Facilities Planning
611 West Park Street, Urbana, IL 61801 Phone (217) 383-4483

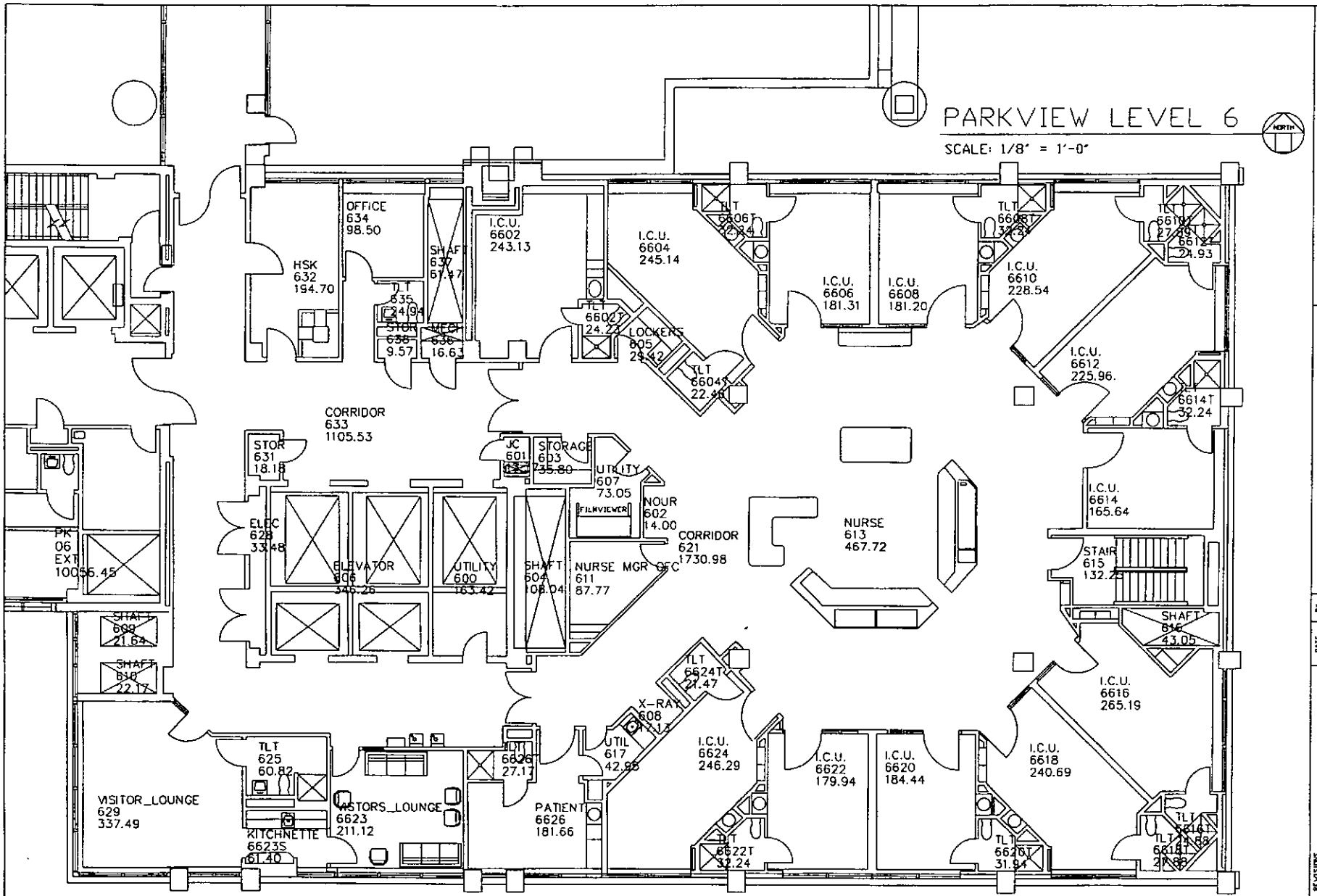
PARKVIEW LEVEL 6

REVISIONS	BY	DATE

PROJECT NO.
SCALE: No Scale
DATE: Oct 15th, 2005
DRAWN BY: TST
APPROVED: JLH
SHEET: PV06

Mod 1-2

381



Proposed Bed Configuration	
Number of Beds	Bed Type
0	N/A

January 8, 2008

Carle
Carle Foundation Hospital
Construction and Facilities Planning
611 West Park Street, Urbana, IL 61801 Phone (217) 383-1403

PARKVIEW LEVEL 6

REVISIONS	BY	DATE

PROJECT NO.
SCALE: No Scale
DATE: Oct 15th, 2005
DRAWN BY: TST
APPROVED: JLH
SHEET: PV06

382 11/04-12

PARKVIEW LEVEL 7

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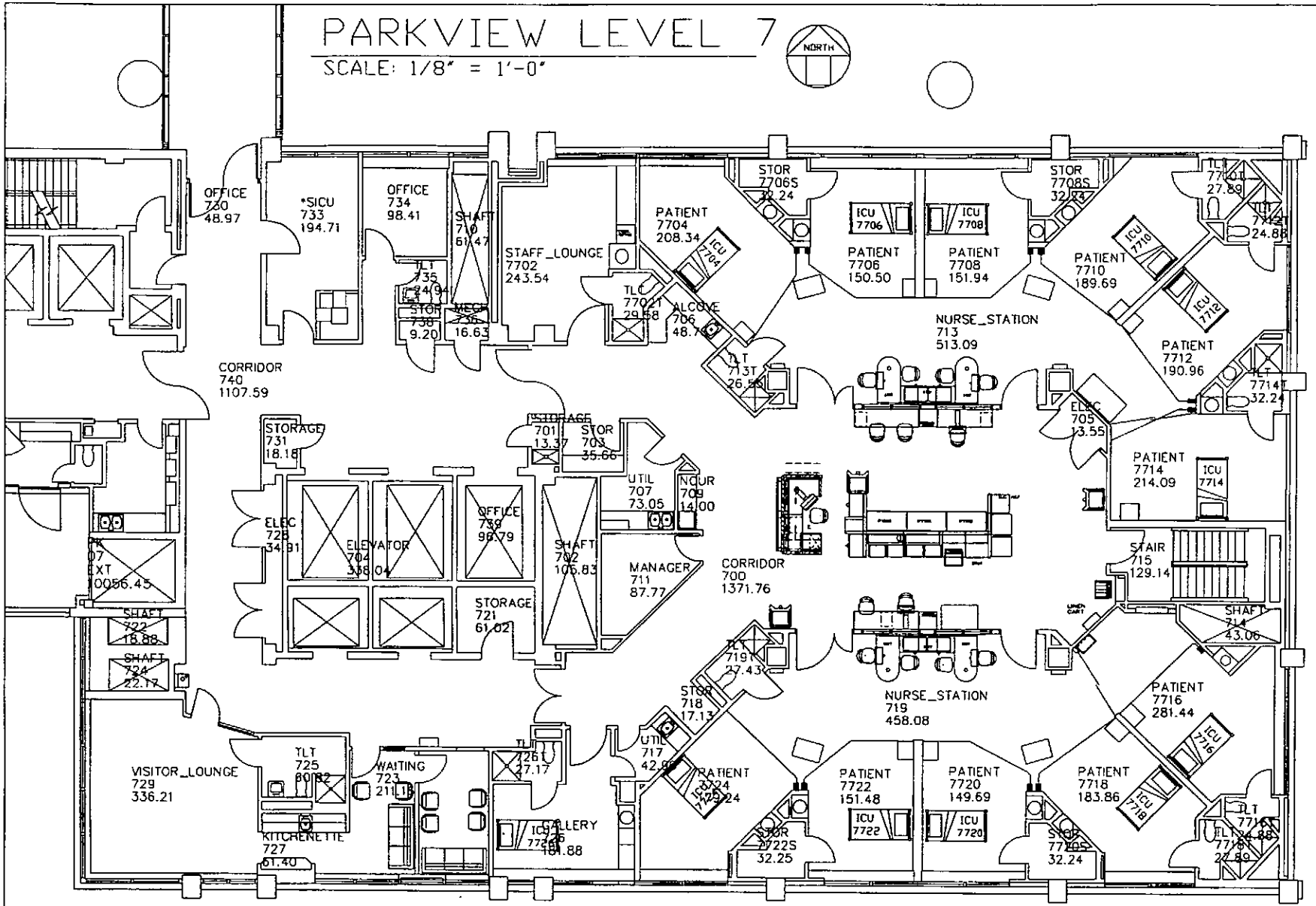

Existing Bed Configuration

Number of Beds	Bed Type
12	ICU

January 8, 2008

Carle Foundation Hospital
Carle Construction and Facilities Planning
611 West Park Street, Urbana, IL 61801 Phone: (217) 337-3443

PARKVIEW LEVEL 7

BY	
DATE	
REVISIONS	
PROJECT NO.	
SCALE:	No Scale
DATE	Oct 15th, 2005
DRAWN BY	TST
APPROVED	JLH
SHEET	PV07

383 Mod-12

PARKVIEW LEVEL 7

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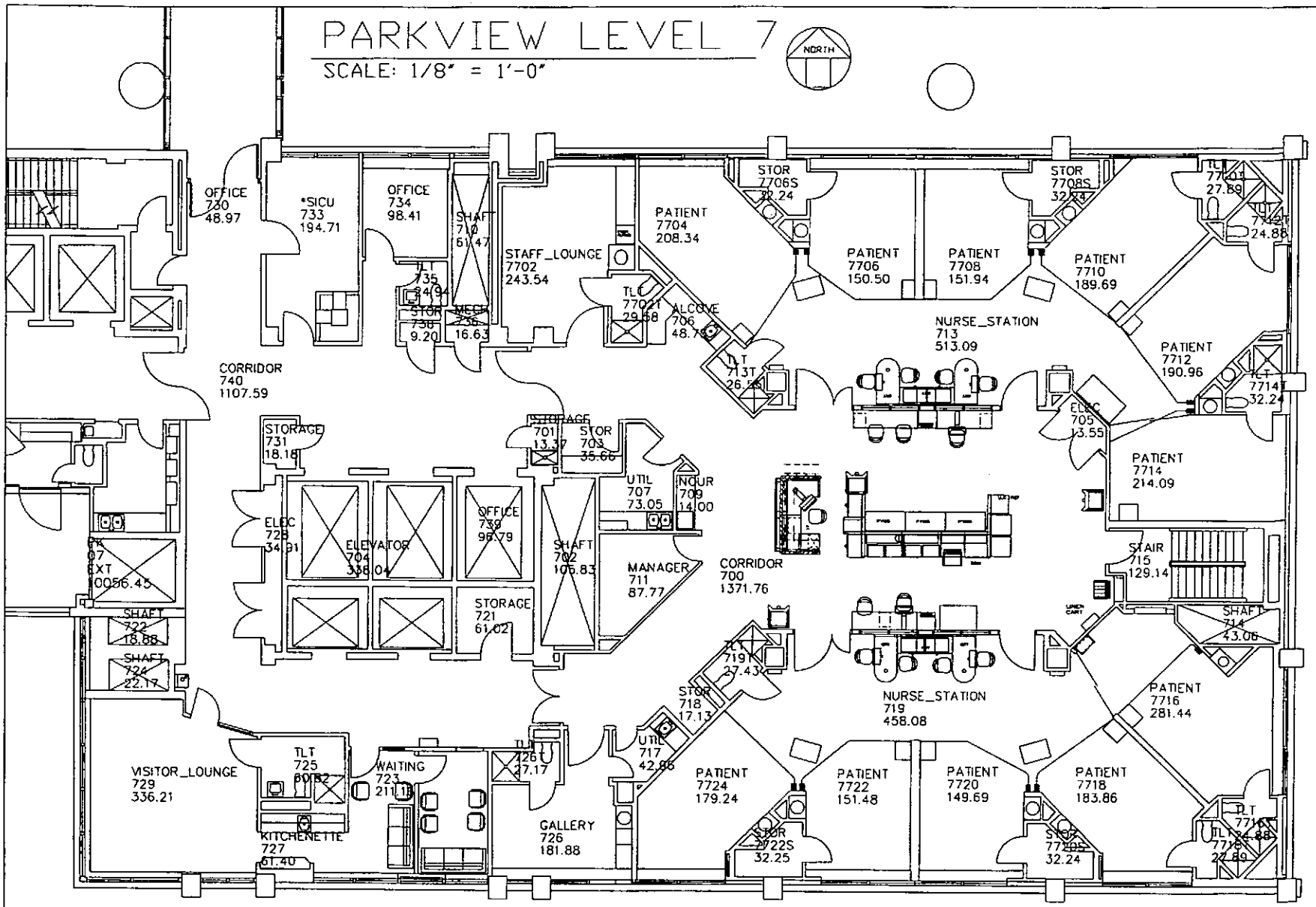

Proposed Bed Configuration

Number of Beds	Bed Type
0	N/A

January 8, 2008

Carle
Carle Foundation Hospital
Construction and Facilities Planning
611 West Park Street, Urbana, IL 61801 Phone: (217) 337-8443

PARKVIEW LEVEL 7

BY | DATE | REVISIONS

PROJECT NO.

SCALE: No Scale

DATE: Oct 15th, 2005

DRAWN BY: TST

APPROVED: JLH

SHEET: PV07

Mod - 1C

384

PARKVIEW LEVEL 8

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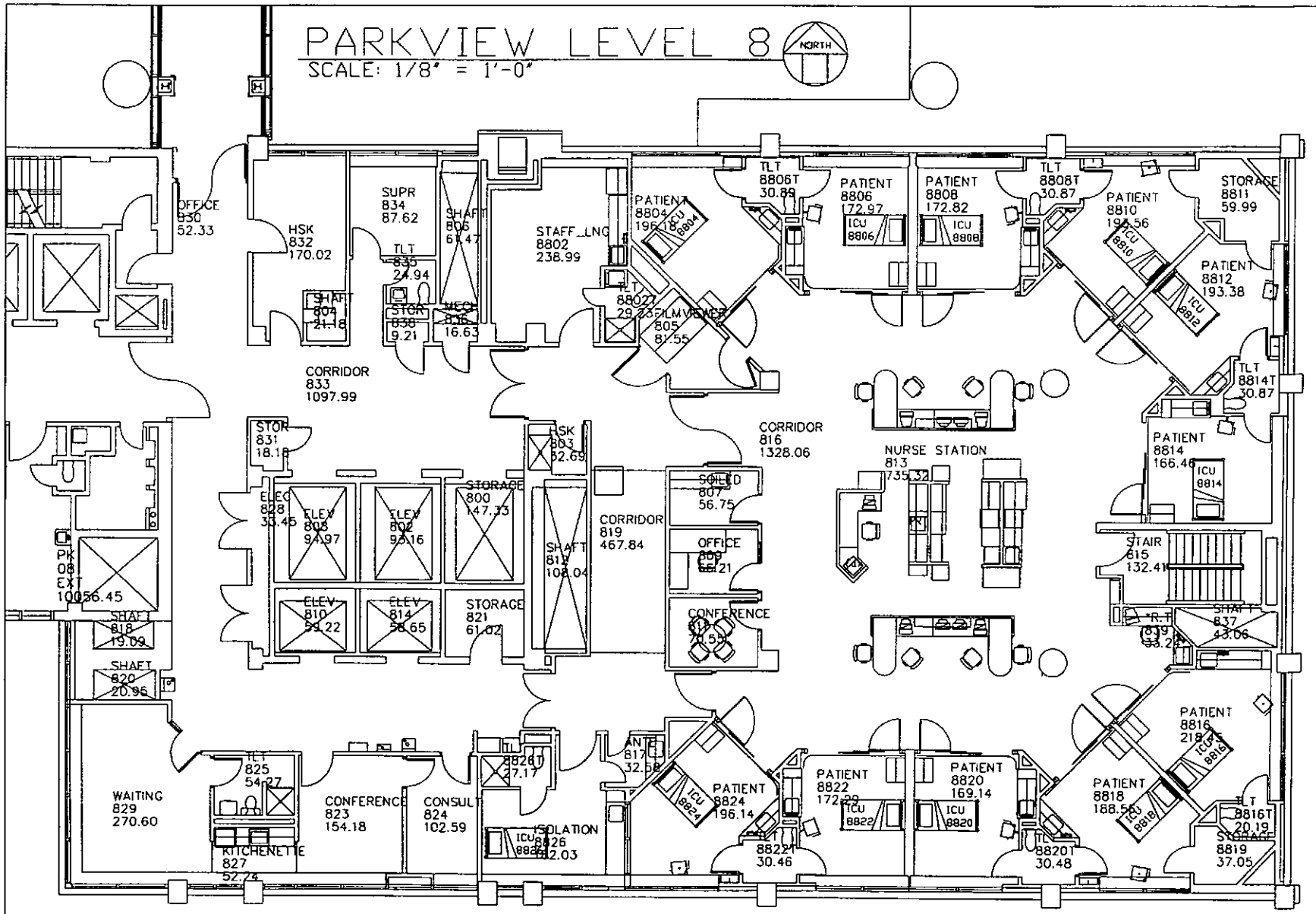

Existing Bed Configuration	
Number of Beds	Bed Type
12	ICU

January 8, 2008

Carle
Carle Foundation Hospital
Construction and Facilities Planning
611 West Park Street, Urbana, IL 61801 Phone (217) 337-3443

PARKVIEW LEVEL 8

385

Mod-1C

REVISIONS | DATE | BY

PROJECT NO.

SCALE: No Scale

DATE: Oct 15th, 2005

DRAWN BY: TST

APPROVED: JLH

SHEET: PV08

PARKVIEW LEVEL 8

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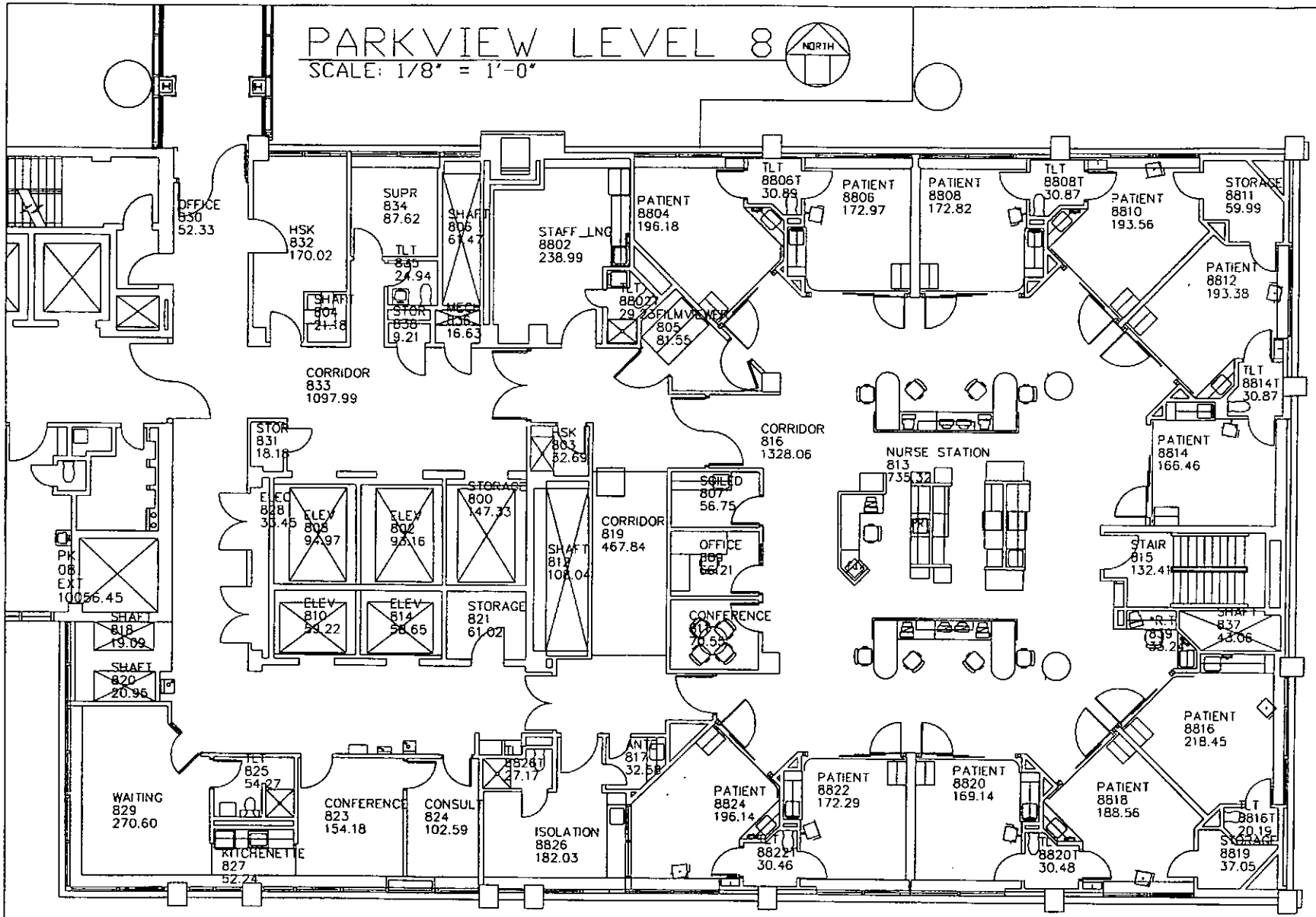


Proposed Bed Configuration	
Number of Beds	Bed Type
0	N/A

January 8, 2008

Carle
Carle Foundation Hospital
Construction and Facilities Planning
611 West Park Street, Urbana, IL 61801 Phone: (217) 337-3443

PARKVIEW LEVEL 8

386

1/1 od-1C

REVISIONS | DATE | BY

PROJECT NO.

SCALE: No Scale

DATE: Oct 15th, 2005

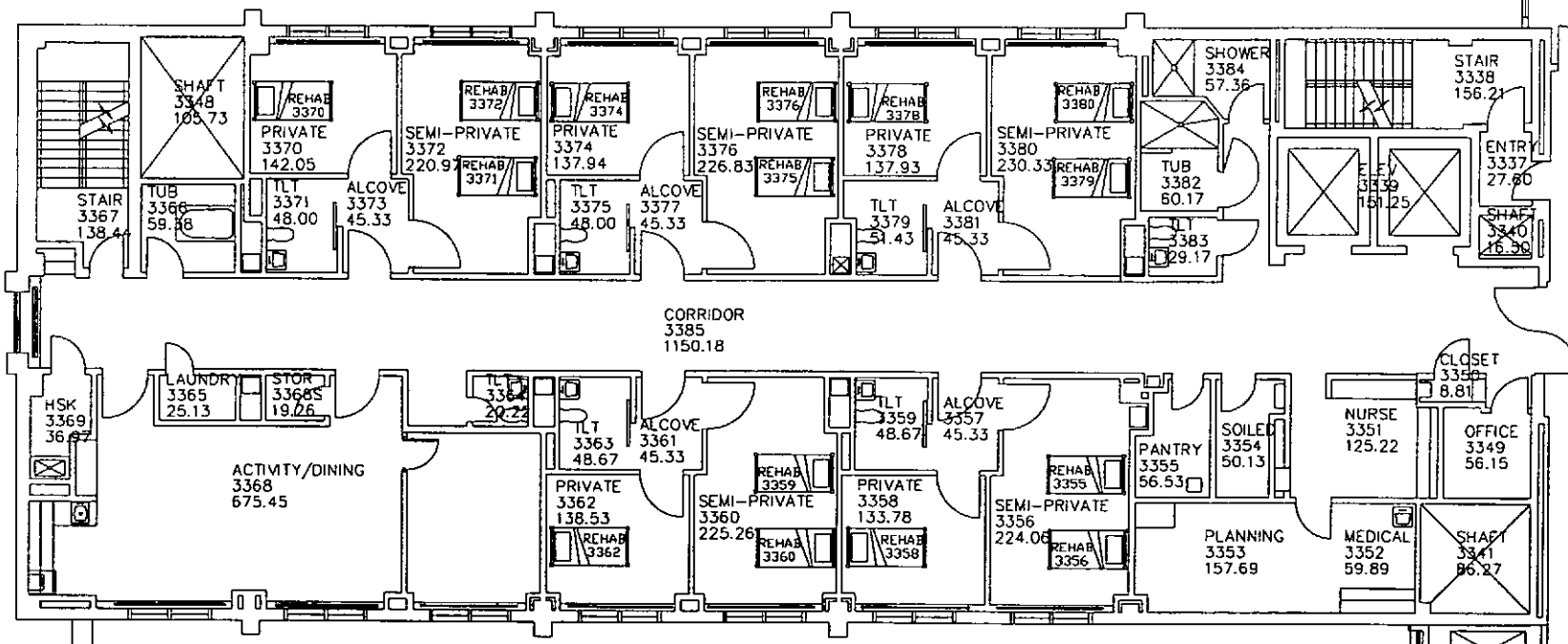
DRAWN BY: TST

APPROVED: JLH

SHEET: PV08

Existing Bed Configuration

Number of Beds	Bed Type
15	REHAB



ROGERS LEVEL 3

SCALE: 1/8" = 1'-0"

January 8, 2008

ROGERS ROOF

Carle

Carle Foundation Hospital
Construction and Facilities Planning
611 West Park Street, Urbana, IL 61801 Phone (217) 383-4403

ROGERS LEVEL 3

Mod-1C

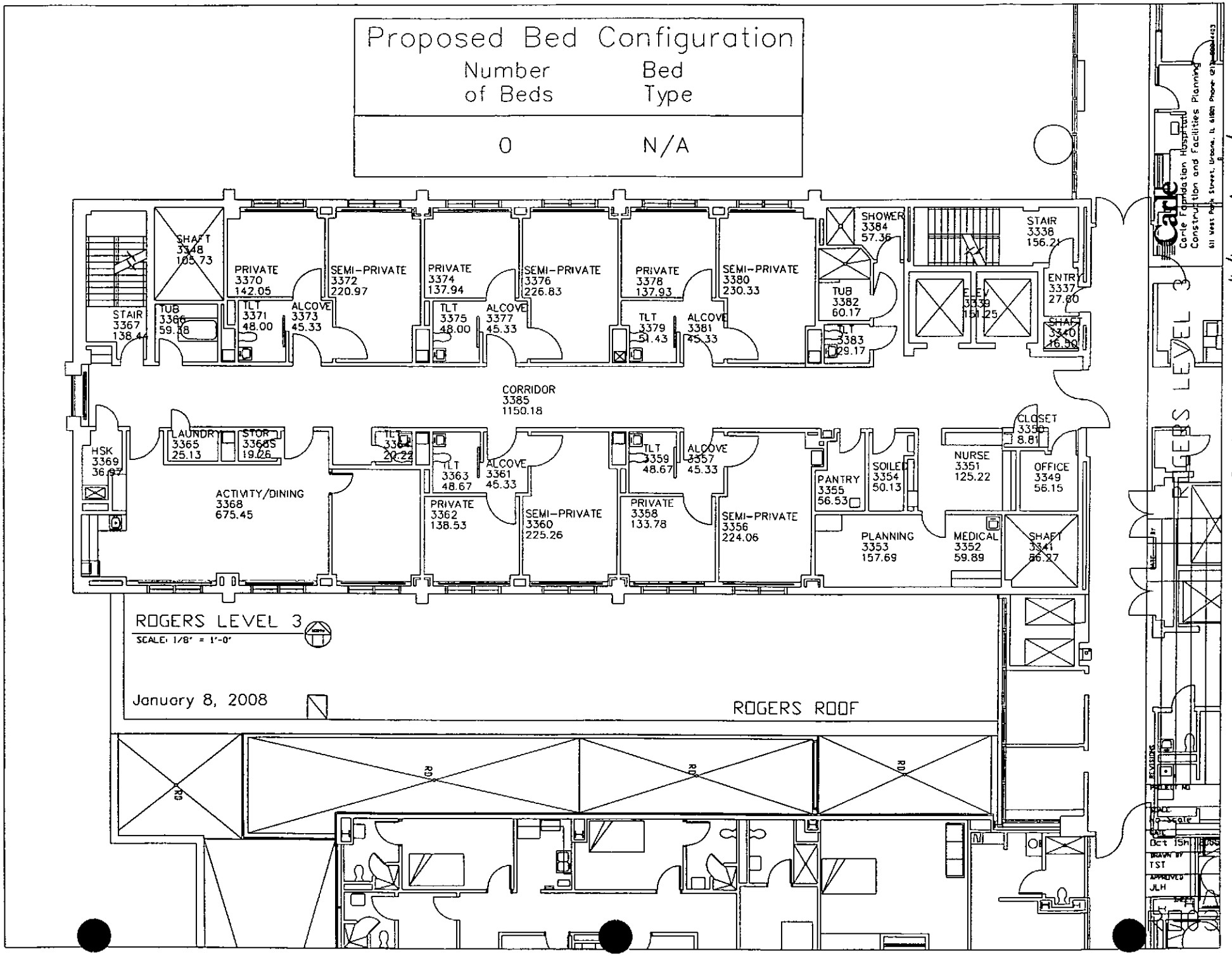
387

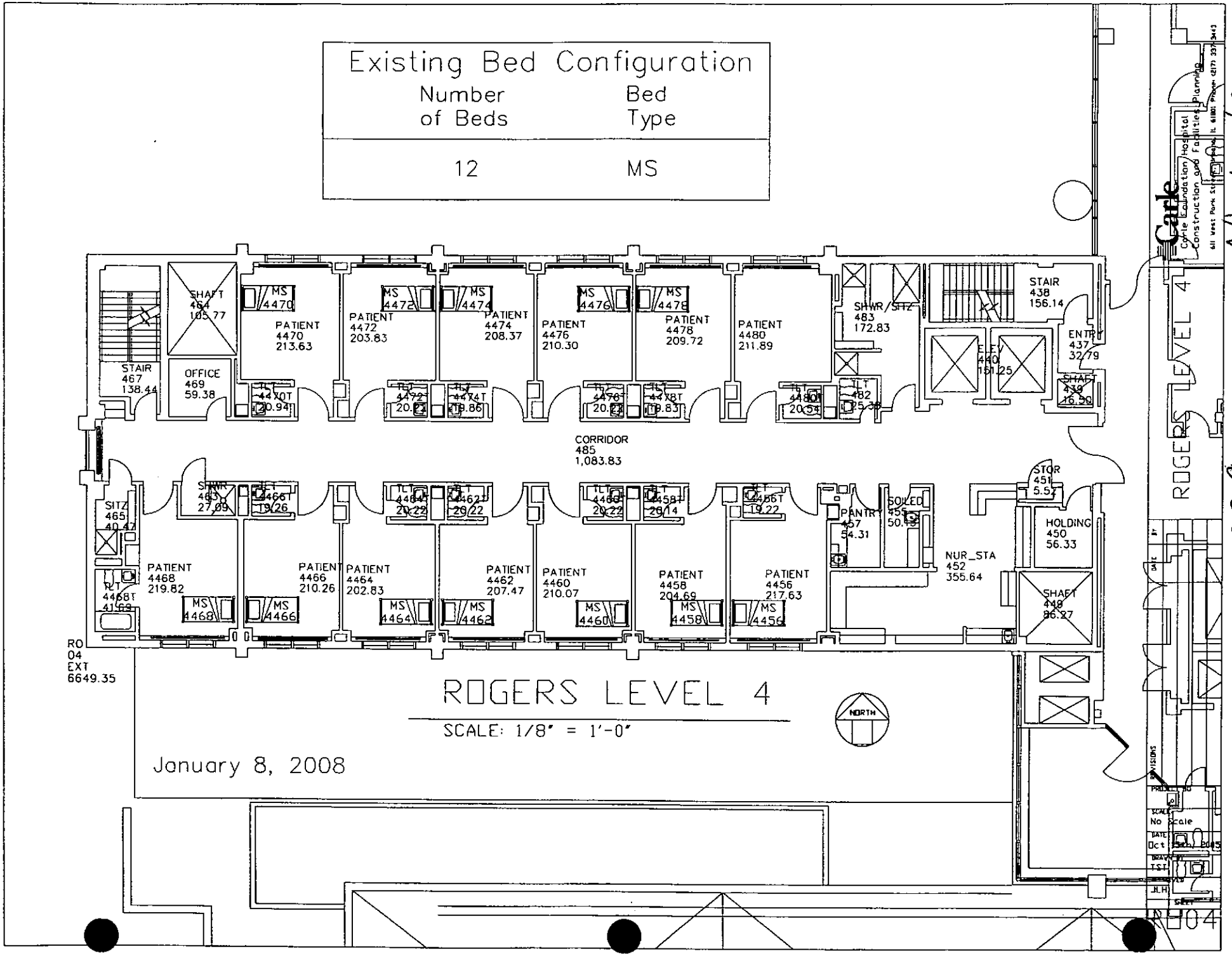
REVISIONS

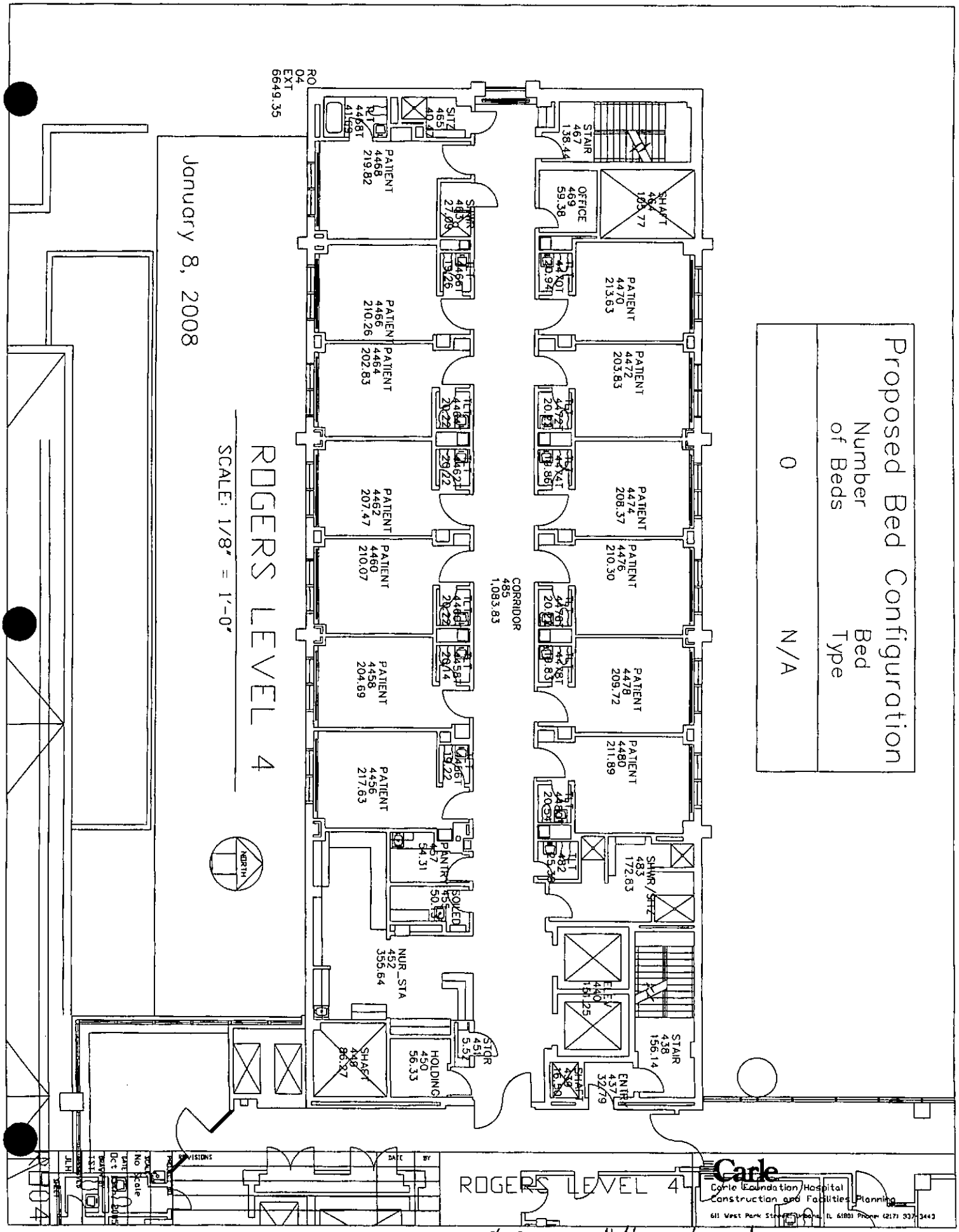
Oct 15th

DRAWN BY TST

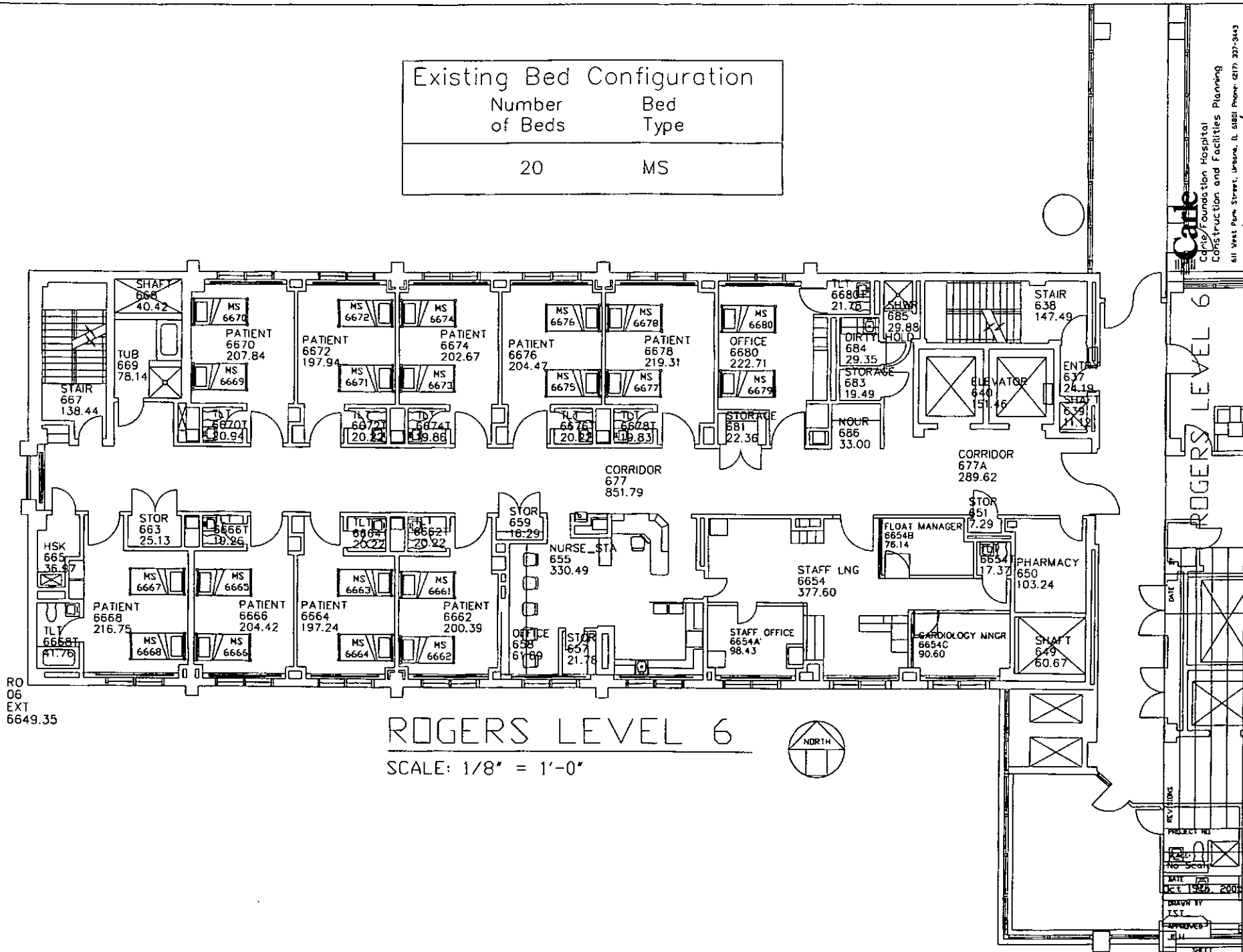
APPROVED JLH


Proposed Bed Configuration
Number of Beds
Bed Type
0
N/A
SHAFT 3348 105.73
PRIVATE 3370 142.05
SEMI-PRIVATE 3372 220.97
PRIVATE 3374 137.94
SEMI-PRIVATE 3376 226.83
PRIVATE 3378 137.93
SEMI-PRIVATE 3380 230.33
SHOWER 3384 57.36
STAIR 3338 156.21
STAIR 3367 138.44
TUB 3366 59.38
TLT 3371 48.00
ALCOVE 3373 45.33
TLT 3375 48.00
ALCOVE 3377 45.33
TLT 3379 51.43
ALCOVE 3381 45.33
TUB 3382 60.17
TLT 3383 29.17
ELEV 3339 151.25
ENTRY 3337 27.80
SHAFT 3340 16.90
CORRIDOR 3385 1150.18
HSK 3369 36.97
LAUNDRY 3365 25.13
STOR 3368S 19.26
ACTIVITY/DINING 3368 675.45
TLT 3364 20.22
TLT 3363 48.67
ALCOVE 3361 45.33
PRIVATE 3362 138.53
SEMI-PRIVATE 3360 225.26
TLT 3359 48.67
ALCOVE 3357 45.33
PRIVATE 3358 133.78
SEMI-PRIVATE 3356 224.06
PANTRY 3355 56.53
SOILED 3354 50.13
NURSE 3351 125.22
CLOSET 3350 8.81
OFFICE 3349 56.15
PLANNING 3353 157.69
MEDICAL 3352 59.89
SHAFT 3341 86.27
ROGERS LEVEL 3
SCALE: 1/8" = 1'-0"
January 8, 2008
ROGERS ROOF
RD
RD
RD
ROGERS LEVEL
3388
Mod-1C
Carle
Carle Foundation Hospital
Construction and Facilities Planning
Oct 15th
DRAWN BY
TST
APPROVED
JLH


Existing Bed Configuration
Number of Beds
Bed Type
12
MS
PATIENT 4470 213.63
PATIENT 4472 203.83
PATIENT 4474 208.37
PATIENT 4476 210.30
PATIENT 4478 209.72
PATIENT 4480 211.89
CORRIDOR 485 1,083.83
PATIENT 4468 219.82
PATIENT 4466 210.26
PATIENT 4464 202.83
PATIENT 4462 207.47
PATIENT 4460 210.07
PATIENT 4458 204.69
PATIENT 4456 217.63
NUR_STA 452 355.64
ROGERS LEVEL 4
SCALE: 1/8" = 1'-0"
NORTH
January 8, 2008
ROGERS LEVEL 4
Mod-1C
389


Proposed Bed Configuration
Number of Beds
0
Bed Type
N/A
ROGERS LEVEL 4
SCALE: 1/8" = 1'-0"
January 8, 2008
RO 04 EXT 6649.35
PATIENT 4468 219.82
SITZ 465 40.42
PATIENT 4470 213.63
PATIENT 4472 203.83
PATIENT 4474 208.37
PATIENT 4476 210.30
PATIENT 4478 209.72
PATIENT 4480 211.89
PATIENT 4466 210.26
PATIENT 4464 202.83
PATIENT 4462 207.47
PATIENT 4460 210.07
PATIENT 4458 204.69
PATIENT 4456 217.63
STAIR 467 138.44
OFFICE 469 59.38
SHAFT 468 103.77
CORRIDOR 485 1,083.83
SHWR/SITZ 483 172.83
PANTRY 457 54.31
SOILED 451 50.13
NUR_STA 452 355.64
HOLDING 450 56.33
STOR 451 5.57
SHAFT 449 86.27
ELEV 440 151.25
STAIR 438 156.14
ENTR 437 32.79
NORTH
REVISIONS
DATE
BY
ROGERS LEVEL 4
Carle
Carle Foundation Hospital
Construction and Facilities Planning
611 West Park Street, Urbana, IL 61801 Phone (217) 337-3443
390 Mod-1c

Existing Bed Configuration	
Number of Beds	Bed Type
20	MS



ROGERS LEVEL 6

SCALE: 1/8" = 1'-0"

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ROGERS LEVEL 6

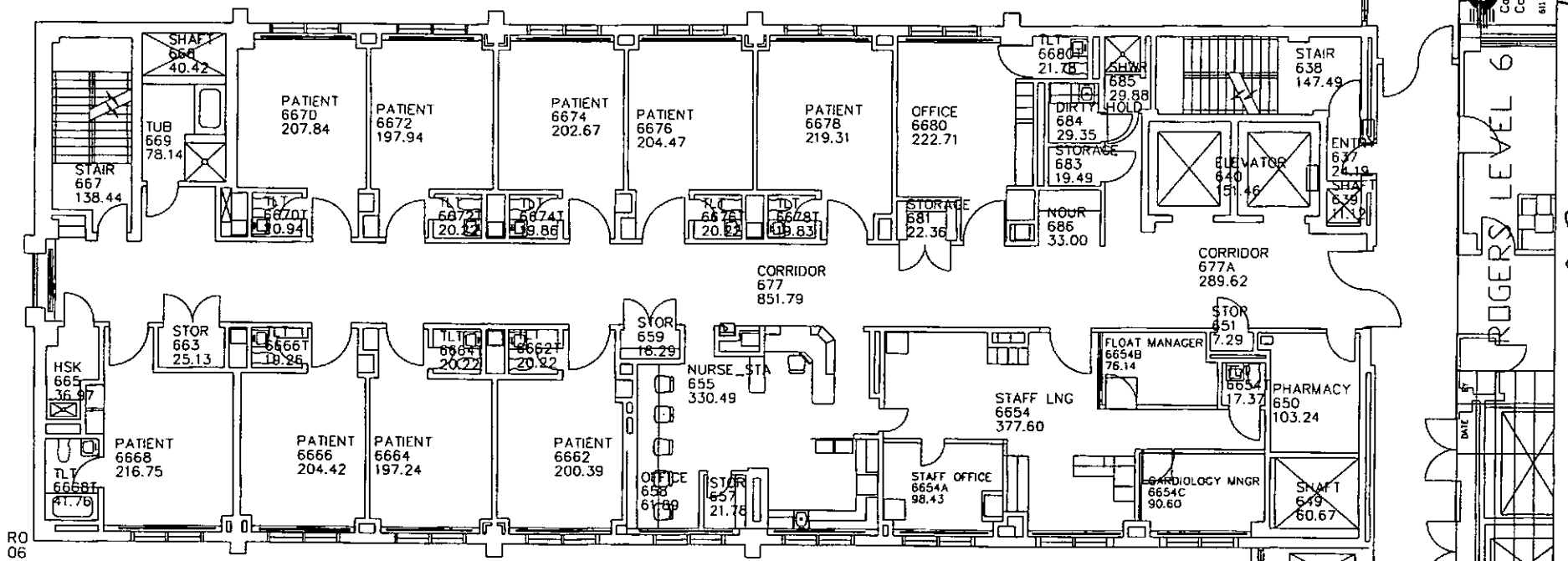
391

Mod-1c

January 8, 2008

RO06

Proposed Bed Configuration	
Number of Beds	Bed Type
0	N/A



ROGERS LEVEL 6

SCALE: 1/8" = 1'-0"

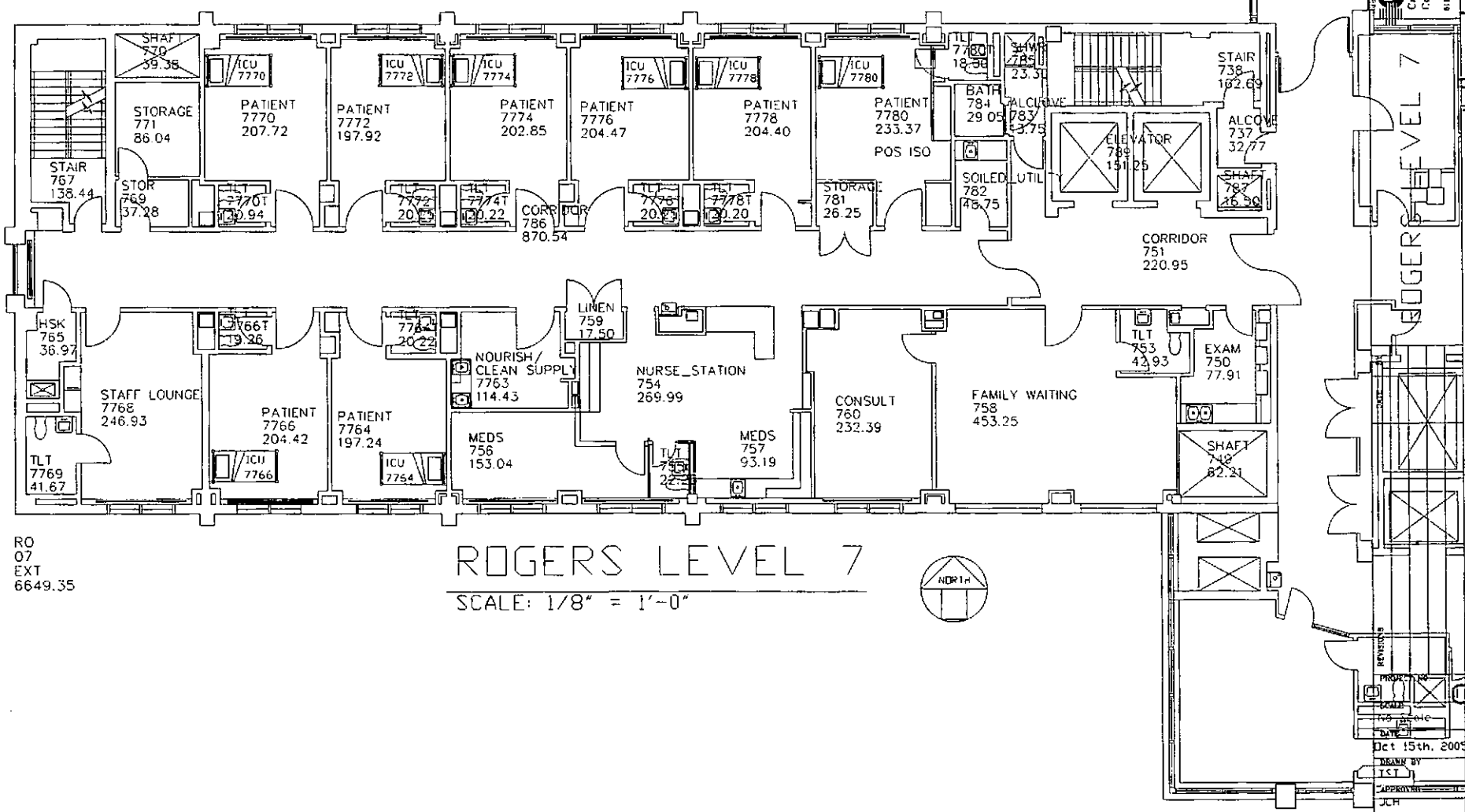
January 8, 2008

392 Mod-1C

ROGERS LEVEL 6

R006

Existing Bed Configuration	
Number of Beds	Bed Type
8	ICU



RO
07
EXT
6649.35

ROGERS LEVEL 7

SCALE: 1/8" = 1'-0"

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Carle Foundation Hospital
Construction and Facilities Planning
611 West Park Street, Urbana, IL 61801 Phone: (217) 337-3443

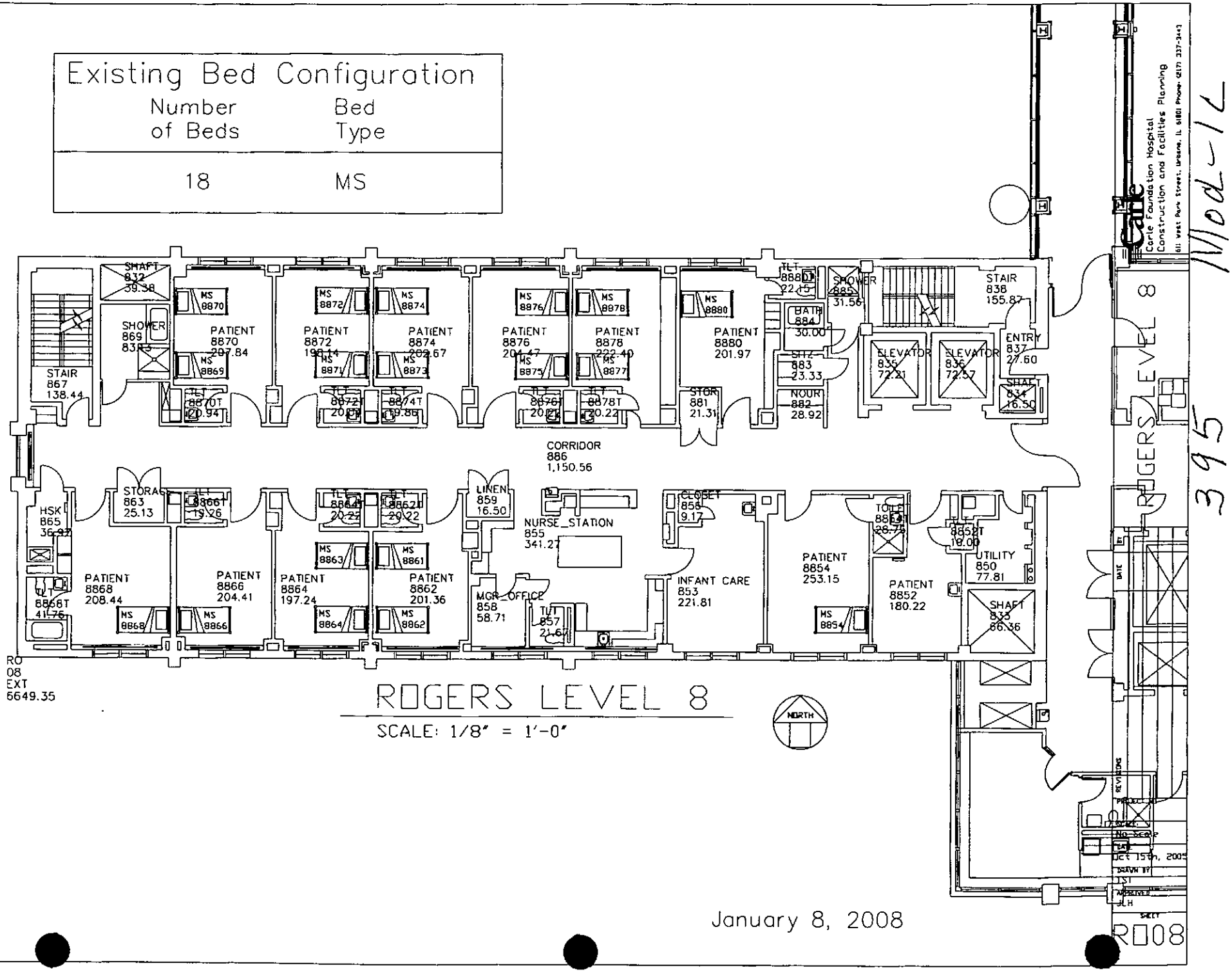
ROGERS LEVEL 7

393 Mod-1L

REVISIONS
PROJECT NO
SCALE
No Scale
DATE
Oct 15th, 2005
DRAWN BY
TST
APPROVED
JLH
SHEET
RO07

January 8, 2008

Existing Bed Configuration	
Number of Beds	Bed Type
18	MS



ROGERS LEVEL 8

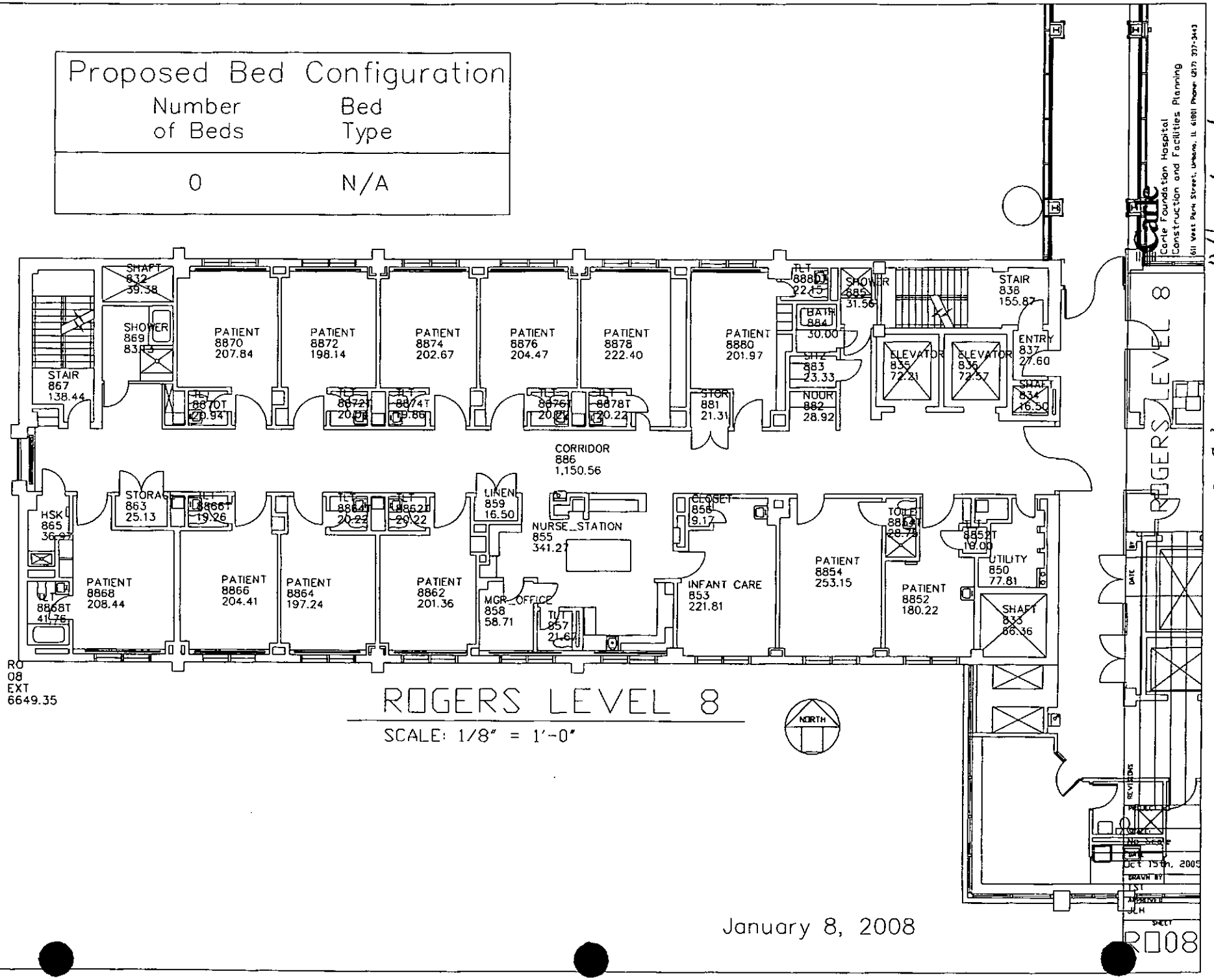
SCALE: 1/8" = 1'-0"

January 8, 2008

Mod-1L

395

Proposed Bed Configuration	
Number of Beds	Bed Type
0	N/A



ROGERS LEVEL 8

SCALE: 1/8" = 1'-0"

January 8, 2008

11/od-1c

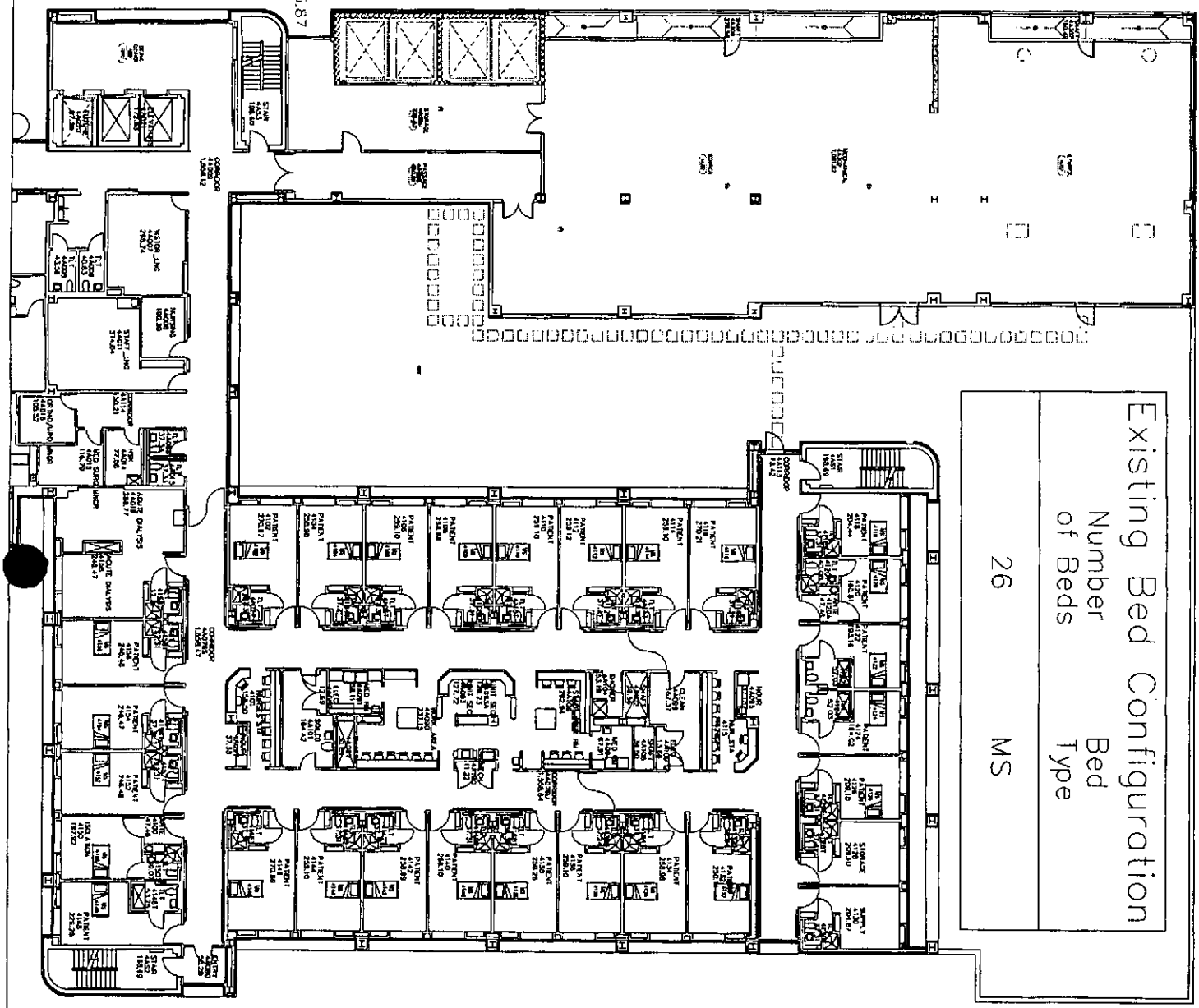
396

January 2007

NORTH TOWER LEVEL 4

SCALE: 1/16" = 1'-0"

NT 04 EXT. 30,865.87



Existing Bed Configuration

Number of Beds	Bed Type
26	MS

REVISIONS	DATE	BY

PROJECT NO.

SCALE: No Scale

DATE: Oct 15th, 2005

DRAWN BY: TST

APPROVED: JLH

SHEET: NT04

NORTH TOWER LEVEL 4

Carle

Carle Foundation Hospital
Construction and Facilities Planning

611 West Park Street, Urbana, IL 61801 Phone: (217) 383-4403

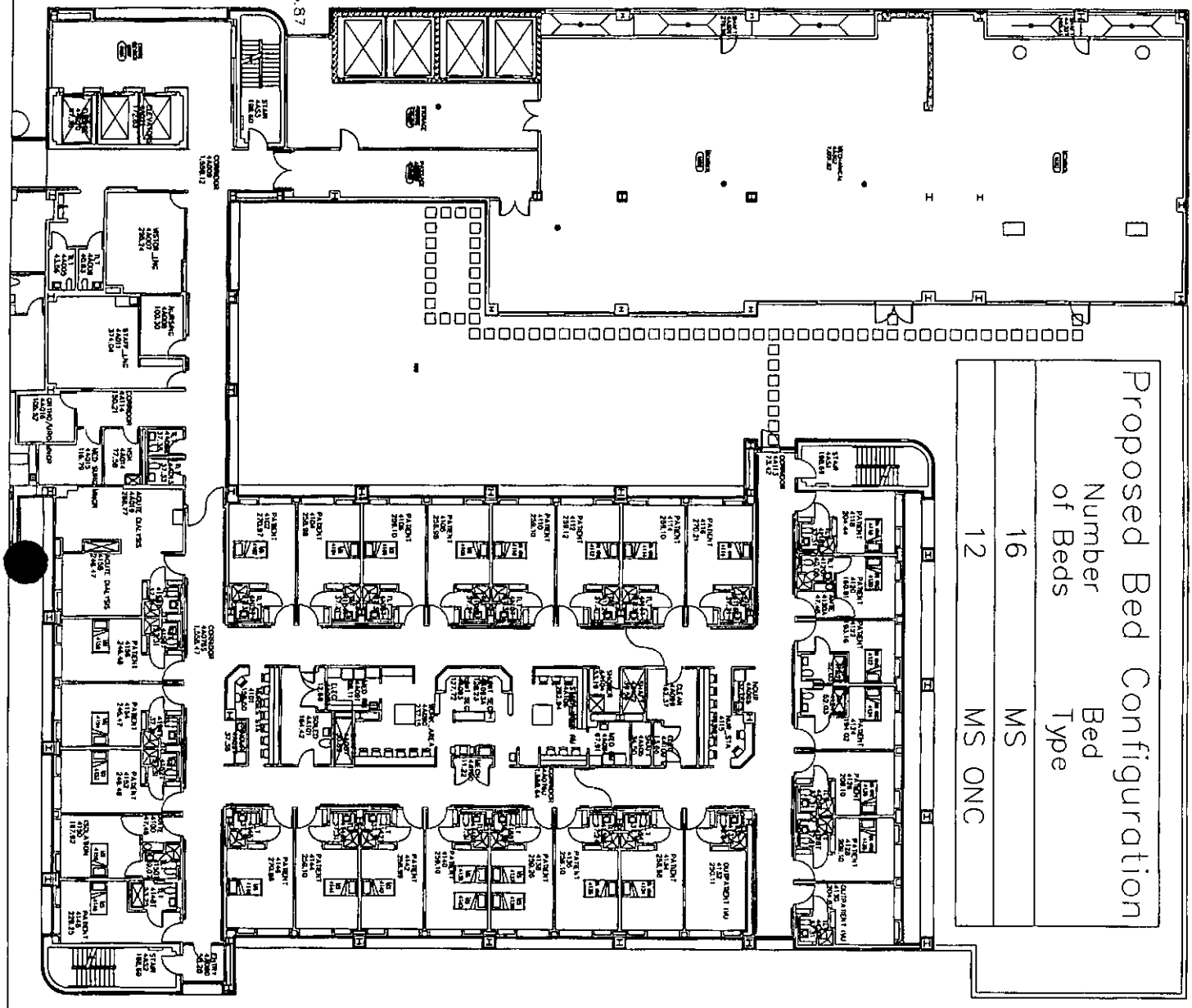
397

Mod. 1-C

January 08

NORTH TOWER LEVEL 4

SCALE: 1/16" = 1'-0"



Proposed Bed Configuration

Number of Beds	Bed Type
16	MS
12	MS ONC

REVISIONS	DATE	BY

PROJECT NO.

SCALE: No Scale

DATE: Oct 15th, 2005

DRAWN BY: TST

APPROVED: JLH

SHEET: NT04

NORTH TOWER LEVEL 4

Carle

Carle Foundation Hospital
Construction and Facilities Planning

611 West Park Street, Urbana, IL 61801 Phone: (217) 383-4403

398

Mod-1c

January 8, 2008

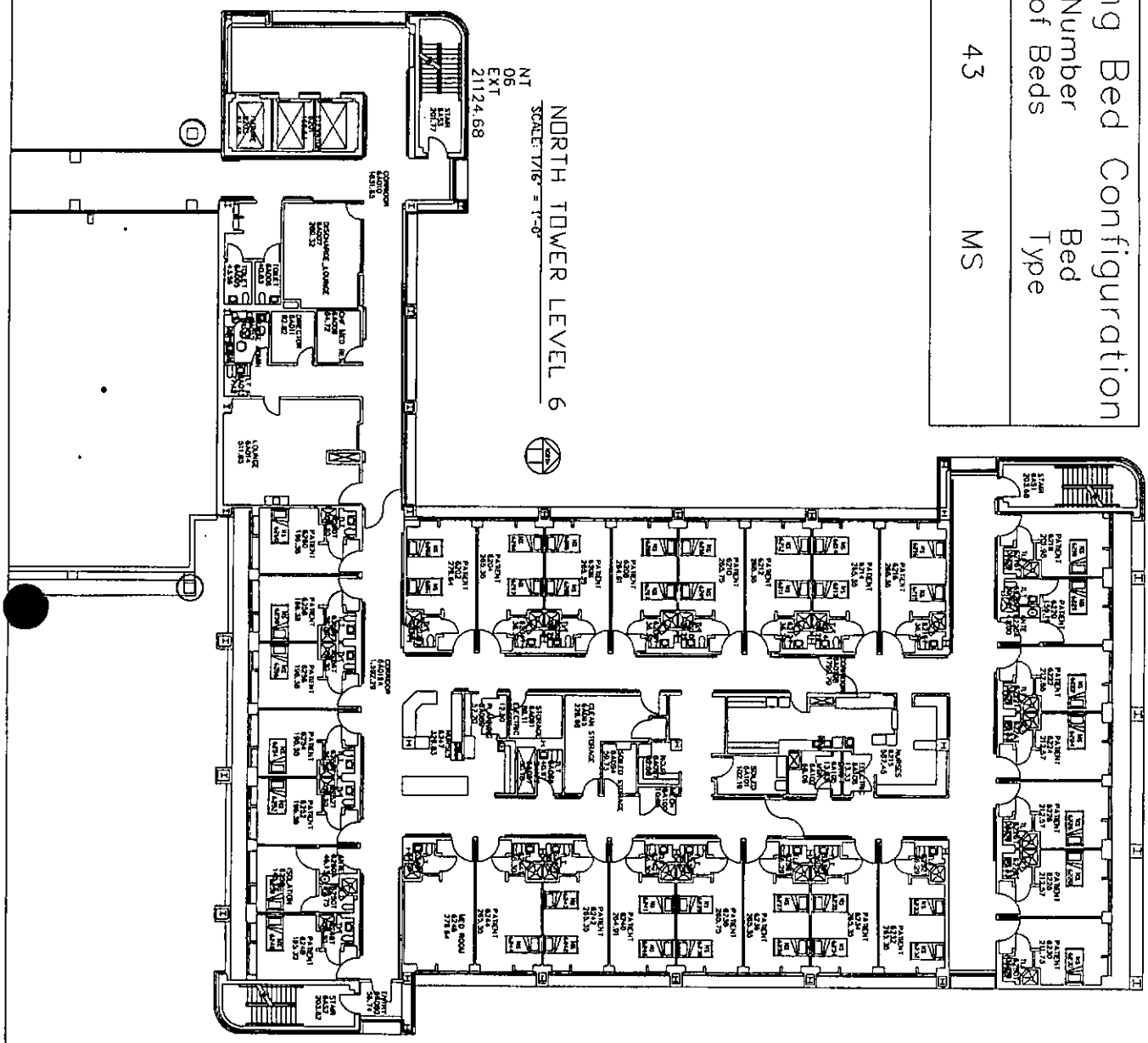
Existing Bed Configuration

Number of Beds	Bed Type
43	MS

NORTH TOWER LEVEL 6

SCALE: 1/16" = 1'-0"

NT 06 EXT 21124.68



REVISIONS	DATE	BY

PROJECT NO.

NORTH TOWER LEVEL 6

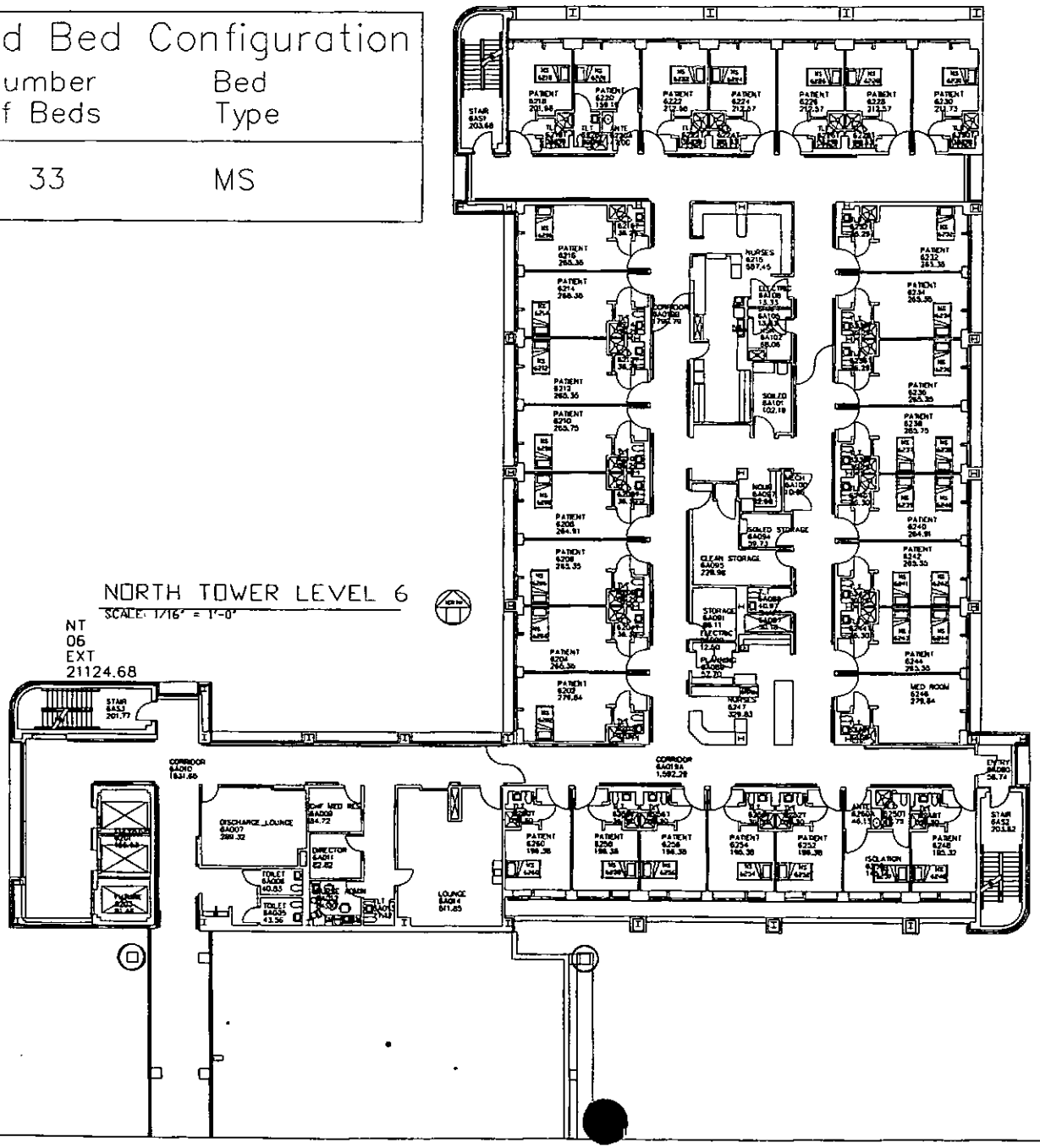
Carle
Carle Foundation Hospital
Construction and Facilities Planning
611 West Park Street, Urbana, IL 61801 Phone: (217) 337-3443

SCALE: No Scale
DATE: Oct 15th, 2005
DRAWN BY: JSK
APPROVED: JSK
SHEET: NT06

399

Mod-1c

Proposed Bed Configuration	
Number of Beds	Bed Type
33	MS



NORTH TOWER LEVEL 6

SCALE: 1/16" = 1'-0"

NT
06
EXT
21124.68

Carle
Carle Foundation Hospital
Construction and Facilities Planning
611 West Park Street, Urbana, IL 61801 Phone (217) 337-3443

NORTH TOWER LEVEL 6

REVISIONS	BY	DATE

PROJECT NO

SCALE: No Scale

DATE: Oct 15th, 2005

DRAWN BY: JSK

APPROVED: JSK

SHEET: NT06

400 Wood-1 L

January 8, 20

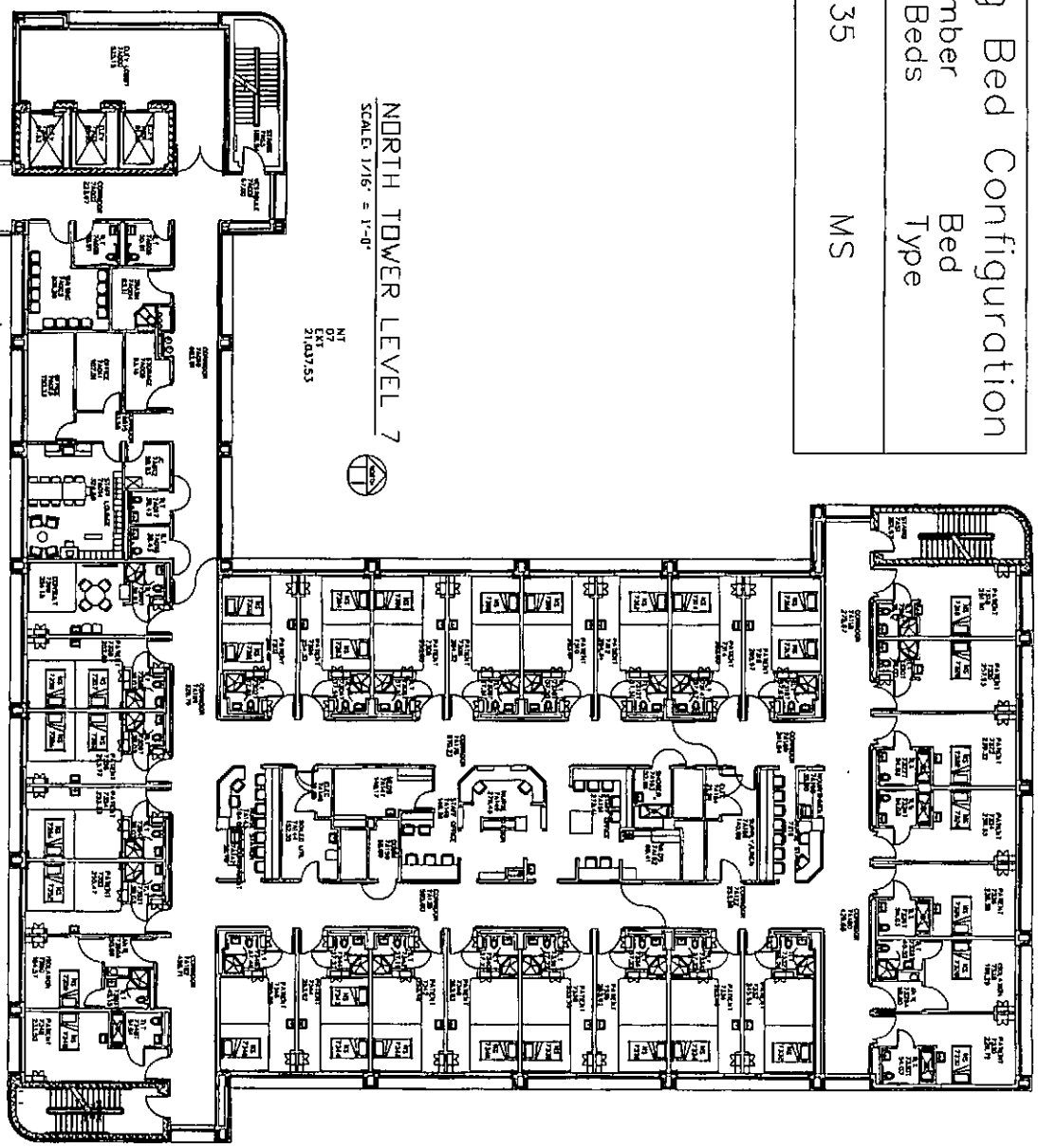
January 8,

Existing Bed Configuration

Number of Beds	Bed Type
35	MS

NORTH TOWER LEVEL 7

SCALE: 1/16" = 1'-0"



REVISIONS	DATE	BY

PROJECT NO.

SCALE: No Scale

DATE: Oct 15th, 2005

DRAWN BY: TST

APPROVED: JLH

SHEET: NT07

NORTH TOWER LEVEL 7

Carle

Carle Foundation Hospital
Construction and Facilities Planning

611 West Park Street, Urbana, IL 61801 Phone: (217) 337-3443

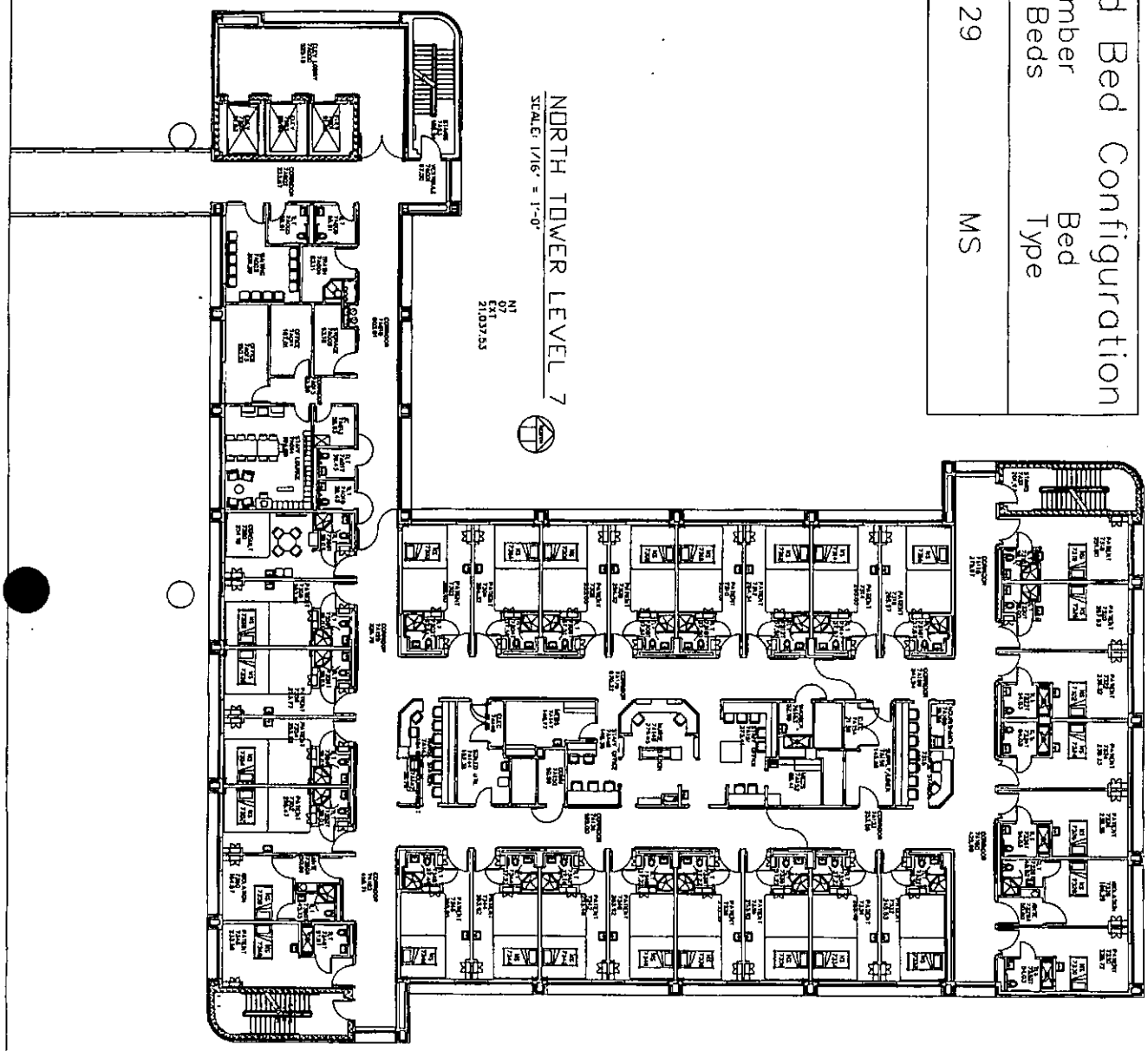
401 Mod-1C

January 8,

Proposed Bed Configuration

Number of Beds	Bed Type
29	MS

NORTH TOWER LEVEL 7
SCALE: 1/16" = 1'-0"



REVISIONS	DATE	BY

NORTH TOWER LEVEL 7

Carle
Carle Foundation Hospital
Construction and Facilities Planning
611 West Park Street, Urbana, IL 61801 Phone: (217) 337-5443

SCALE: No Scale
DATE: Oct 15th, 2005
DRAWN BY: TST
APPROVED: JLH
SHEET: NT07

402 Mod 1C

Digestive Health/Endoscopy

Year	Procedures
FY 05	9,386
FY 06	11,854
FY 07	11,511

Attachment MOD-1G

Electrophysiology

Year	Procedures
2005	1,832
2006	2,000
2007	2,110

Interventional Radiology

Year	Procedures
2005	5,300
2006	5,392
2007	5,892

Cardiovascular Services Modernization Narrative
1110.420(b)(2)

The proposed relocation, modernization and expansion of cardiovascular ("CV") services are necessary to provide expansion for diagnostic treatment, patient care, and other support services to meet the needs of patients.

Documentation provided herein includes: historical utilization data, changes in the scope of services offered, building deficiencies related to existing services, and changes in industry standards.

Background and Scope

Cardiac services are a fundamental community service. Carle Foundation Hospital ("CFH" or "Carle") has offered open heart surgery and cardiac catheterization services for 20 years since 1988. Market-changing innovation has become a regular occurrence in cardiac services. The first nonsurgical invasive cardiac therapy and the beginning of cardiac interventions was balloon angioplasty in the late 1970s and early 1980s. From the mid-1990s through 2004 drug-eluting stents became a breakthrough treatment for stenosis and restenosis and as a less invasive but effective alternative, served to have a neutralizing effect on otherwise increasing open heart surgical volume. Additionally, in the late 1990s, device-based arrhythmia management evolved and brought about a sweeping change to heart failure patient management.

The following is a list of the procedures that will be affected by the modernization of the CV services. The procedures performed in the CFH cardiac catheterization labs are angiograms, angioplasty and/or stenting of coronary arteries, intra-aortic balloon pump insertion, renal angiography and stenting, as well as insertion of transvenous pacemakers as a bridge to permanent pacemaker implantation. The electrophysiology labs perform EP studies, radiofrequency ablations, pulmonary vein isolations and/or ablation, pacemaker implantation as well as AICD implantation. The CFH interventional radiology (IR) suites perform procedures that are vascular in nature: angiograms of all vessels except the heart, angioplasty and/or stenting of those vessels, drainage tube insertions, carotid stenting, dialysis access catheters, and central line insertions.

Historical Utilization Data

The proposed modernization is, in part, driven by volume increases in less invasive CV and other vascular procedures. Historical utilization data of the affected services follows. Open heart data is provided for informational purposes only as those surgical areas of the hospital will not be affected by this modernization but have recently been modernized in the adjacent North Tower.

Between 2005 and 2007, Carle open heart surgery cases experienced a nominal increase of approximately 5 percent from 358 cases to 375 cases, reflecting the non-invasive treatment trends mentioned above. During that time, however, the hospital's market share has increased significantly. Of the 192 open heart surgery patients originating from Champaign County receiving services within the State of Illinois during 2007, 72 percent of the surgeries were performed at Carle Foundation Hospital. This represents a significant market share increase from 59 percent in 2005. Similarly, in the larger geographic area which Carle considers its primary service area which is referred to by CFH as the Champaign-Urbana Hub (bounded by Piper City and Danforth to the north, Arthur and Arcola to the south, Milford to the east, and Farmer City to the west) the hospital's market share grew from 44 percent in 2005 to 56 percent in 2007. Consistent with the aging population and increasing patient acuity, Carle Emergency Department patient visits that resulted in hospitalization increased about 16 percent from 6,476 admissions to 7,492 during that period indicating a general rise in potential cardiology cases. This is a current Emergency Room admission rate of about 15 percent.

Regarding heart catheterization case volume growth for the same three year period, 2005 to 2007, utilization increased 47 percent at CFH from 1,207 cases to 1,775 cases. Electrophysiology procedures increased 15 percent between FY 2005 and FY 2007 (from 1,832 to 2,110) and interventional radiology procedures increased 11 percent (from 5,300 to 5,892).

Changes in Scope of Services

CFH anticipates an increase in its non- cardiovascular vascular procedures as a result of its ongoing efforts to become certified by the Joint Commission as a Primary Stroke Center. Primary Stroke Center activities are further described in [Exhibit A] to this Attachment Mod-3 narrative. Once Primary Stroke Center status is achieved in late 2008, CFH plans to develop a Comprehensive Regional Referral Stroke program that will provide support to regional hospitals in Carle's 40-county tertiary care service area. Development of this program will significantly impact utilization of the interventional radiology laboratories.

Carle Foundation hospital's focus on continually improving patient care, commitment to quality improvement and research, and a state of the art facility designed to support physician and staff efficiency and effectiveness is expected to facilitate the retention and recruitment of highly talented physicians and staff. Currently Carle Clinic Association has recruited two additional non-invasive cardiologists, one to start in 2008 (Dr. Christine Perks) and one to start in 2009; and an additional interventional radiologist to start in 2010. In addition, a new interventional radiologist will join Carle in the summer of 2008. Dr. Scott Santeler will be 50 percent interventional radiology and 50 percent diagnostic radiology. Dr. John Wang, a neurosurgeon who is completing a combined neurointerventional radiology and neurosurgery fellowship, will join Carle Clinic Association in September of 2008. Drs. Santeler and Wang will significantly impact the volume of cases performed in the interventional radiology laboratory space.

Current Building Deficiencies

Over time, CFH's CV care services have become scattered across the constantly growing campus and service line. While CFH's CV care services have been extensive and high-quality for many years, the services have fallen short on efficiencies and continuity of care experiences—for the patient, family, staff, and physicians. Patients often must make multiple trips to the hospital for diagnosis and treatment. While numerous trips cannot in and of themselves be avoided, these trips combined with a lack of centralization, disrupts continuity of care and is confusing for patients traveling throughout the campus for various CV services. Additionally, lack of centralization hinders physician and staff efficiency and communication. With decentralized services, nurses need to accompany patients on multiple transfers, while physicians have to travel long distances between procedural and patient care areas. In fact, some portions of the CV care service line are separated by several buildings and multiple elevator rides. Cardiologist and cardiac surgeon office space are currently located on the second and third floors of the North Clinic building respectively. Those physicians travel to the sixth and eighth floors of the Rogers and Parkview buildings to round on inpatients, to the second floor of the Rogers and Center buildings to work in the catheterization and EP lab areas, and further to the second floor of the North Tower to perform surgery. Visits to the emergency department take these physicians to yet another location. Diagrams denoting the scattered nature of the services are attached as Attachment MOD-3.

Currently the recovery space associated with the cath, EP, and interventional radiology labs is not immediately adjacent to the procedure rooms and the program is not designed for the industry's current standard of care. Only two of the current procedure areas have separate control rooms. The communication technology in the majority of the rooms is dated, and the boom systems are bulky and difficult to maneuver. These deficiencies will be corrected in the proposed integrated space. Due to space and building limitations, the current seven labs are different sizes and have no consistent design. Photographs of current cath and EP lab space are attached as Mod-3.

Changes in Industry Standards

CFH proposes the construction of a new bed tower, part of which is being designed to house a world-class and technologically advanced cardiovascular institute. The proposed facility is designed with the goal of elevating patient care and enhancing the work environment for staff and physicians from an efficiency and quality perspective, including lower rates of morbidity and mortality.

The building plan provides a staff-focused environment geared toward improving efficiencies along with decentralized nurse work stations and adjacencies that eliminate multiple transfers. CFH's focus on supporting physician efficiency and patient care through facility design is expected to facilitate the retention of its fine cardiology staff 2010. In addition, a new interventional radiologist will start at Carle in the summer of 2008. Dr. Scott Santeler will be 50 percent interventional radiology and 50 percent diagnostic radiology. By combining the latest cardiovascular technology with an

innovative facility design, the cardiovascular institute and associated programs will provide an exceptional care environment and offer a patient, physician, and clinical support staff experience geared toward excellent clinical outcomes including low rates of morbidity and mortality.

Multidisciplinary Planning Team

CFH envisions a facility design for CV care services that is flexible enough to provide leading edge therapies – now and in the future – in a patient-centered environment that will enhance the overall health care experience. In order to achieve this goal, a multidisciplinary planning team was assembled to develop this vision of excellence in CV care services and ensure that such high quality services continue into the future. The planning team includes members of CFH's administration and other facility planning teams; CFH's support services staff, including information technology, material management, and security; and external expertise from architects who specialize in innovative design solutions and efficient, recognized health care buildings; as well as health care consultants who provide strategic, management, and technology-based consulting services to hospitals and health care providers nationally. As a collaboration of project stakeholders, this multidisciplinary team has created an integrated design to optimize patient safety, family integration, operations efficiency, and patient flow through creation of a state-of-the-art design for excellence in CV care delivery.

As the planning team analyzed current facility designs, they identified the following industry standards as essential in the design of the new CFH patient care building:

- Alignment of clinical services across multiple acuity levels to:
  - ✓ Support staff maintaining current care competencies as medical care continues to change and advance, and
  - ✓ Reduce the need for patient transfers between multiple units;
- Integration of current bed tower with proposed CV bed tower;
- Consistent design of patient care rooms to facilitate flexible and efficient patient care and reduce medical errors;
- Private rooms with family-focused space to support family involvement in immediate patient care as well as preparation for care of the patient post-discharge;
- Placement of nurse stations and workstations throughout the unit with viewing windows into all acuity levels of patient care rooms;
- Integration of electronic documentation and viewing of digital images;
- State-of-the-art procedure space and maintenance of the latest technology resources and equipment to support the continuing advancements in interventional care of cardiovascular patients;
- Building design to support future vertical expansion.

Alignment of Clinical Services Across Multiple Acuity Levels

The planning team focused on creating a staff- and physician-friendly environment—one that will also support increased efficiency and productivity of health care delivery. As previously mentioned, CV services are currently scattered throughout CFH's campus, necessitating travel to multiple floors and patient units. Not only is patient care less focused by the existing layout, but physician and staff productivity is also hampered. Staff concern with existing facility-induced inefficiencies have guided CFH's design plan for the new facility. The post-construction CV service locations will be a dramatic improvement from the existing design. The new design will integrate nearly all CV care services in one building adjacent to the existing hospital buildings.[1] Aggregating patient populations in the cardiac specialty (e.g., heart surgery, vascular surgery, interventional cardiology, medical cardiology) as well as neurovascular patients (e.g., neurosurgery, neuron-interventional radiology and medical management of neurosciences patients (stroke), will reduce the amount of time physicians spend traveling because the physicians' patients will be located in one area during their entire hospitalization.

A critical planning team focus is change in care processes. Change in unit and facility design will support and enable enhancement of the care processes. Consequently, the traditional multiple-transfer setting in which a patient's need to be transported to a different unit is based on the severity of his illness will be replaced with an acuity-adaptable health care delivery concept. In this model, all required levels of care are available on one floor where the patient stays during his entire hospitalization.

Cardiovascular ICU, cardiac stepdown, and cardiac medical/surgical inpatients will be located on the same floor. Neurovascular ICU, neurovascular stepdown, and neurovascular medical/surgical will also be located together on a different floor. This alignment of similar patient types provides opportunities for staff development of clinical competencies in the care of multiple acuity levels of patients within the same clinical specialty. Physicians will be interacting with the same clinical staff daily and thus will be able to develop more collegial and trusting relationships with them, resulting in a stronger team approach to patient care and better communication. The physicians' presence in the same area with nearly the entire CV patient base during their work day will enhance accessibility to patients and improve their response times to patient emergencies by reducing travel times. When a nurse or resident calls for physician involvement with a care decision, it will be more likely that the physician will be able to communicate face-to-face with the other staff and the patients and their families. Consult rooms are also situated within the procedural and patient care areas to further encourage communications between physicians, patients, and their families. This building will be designed to support medical education and residency programs. While it is difficult to quantify the improvements in patient care and outcomes that this will engender, the clinical staff is confident that care will be enhanced.

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[1] CV surgical services will be physically integrated although technically located in the North Tower.

A key attribute of the acuity-adaptable care delivery model is the elimination of patient transfers off the floor to various levels of care. An acuity-adaptable floor significantly reduces such inefficiencies. Patient safety is improved as the staff skilled in the care of a given clinical service collaborate in the care of their patients on a daily basis. In the typical setting, a patient transfer from an intensive care setting to a telemetry floor usually involves seven to nine staff members from various clinical and ancillary areas, costs about $500, and takes an average of four hours. With this large number of staff involved, the potential for miscommunication is high and can result in medical errors. Reducing or eliminating transfers decreases the potential for medication errors, lost belongings, and patient and family confusion or unease.

In addition, the centralization of cardiovascular services is designed to minimize time spent on transfers from procedural areas to patient rooms. The procedural areas are located just an elevator ride from the corresponding patient care area, thus saving time and reducing the costs associated with procedure-to-recovery transfers.

The universal floors are also strategically designed to minimize transfers required for diagnostic tests. Improved lighting in patient rooms will allow some procedural work to be done in the rooms, eliminating the need to transport patients to other locations.

Integration of Current Bed Tower with Proposed Bed Tower

To ensure state-of-the-art care in today's evolving health care industry, a hospital must support changing technology, evolving care practices, and increasing utilization, all of which typically demand more space. The proposed building will increase space for the community's immediate health care needs while remaining adaptable for future building structure enhancements.

For ease of access and travel between the current bed tower (North Tower) and the proposed bed tower, staff and visitors will be able to move between buildings at the elevator banks on each floor of both buildings. To further support the efficient operations of the facility and to also support visiting families, the current elevator banks will be expanded to include dedicated visitor elevators and separate, dedicated patient and support services transport. To fully respect the privacy of patients, a private connector for patient transport from the Emergency Department to the patient bed towers will be incorporated.

Although directly adjacent to existing hospital buildings—including a 1970s building constructed with mostly 11'6" floor-to-floor heights—the proposed bed tower will use a flexible, modern vertical grid adaptable for future CFH expansion. The grid design will provide ample floor-to-floor heights, with 20' on the procedural floor and approximately 15 feet on the floors above. New floor heights will connect cardiovascular program services to provide greater efficiency and overflow. While the cardiovascular operating rooms will not be located in the proposed bed tower, they are immediately adjacent on

the second level of the North Tower building and will be seamlessly connected. The new construction will shorten the path of travel from the existing cardiac operating rooms to the new cardiovascular intensive care unit and permit patient transport in a new, larger elevator that will accommodate all necessary staff and equipment (which the existing elevators do not). Many of the most critically ill cardiovascular patients are sent directly to the intensive care unit, bypassing the recovery room. Reducing the distance and duration of patient travel during this critical period enhances patient safety as well as staff productivity.

Consistent Design of Patient Care Rooms

To increase the focus on patient safety, the proposed bed tower's design is based on evidence supporting the reduction of medical errors through a standardized facility approach. The layouts of all patient units are identical. Supplies are found in the same cabinets and drawers in all rooms and equipment/gases are placed in the same locations regardless of the patient unit or room. The goal is to standardize the hospital layout so that physicians and nurses do not need to rely on memory to obtain supplies when caring for a patient. Moreover, nurses and physicians moving between different units will be able to quickly orient to the patient care room and unit in order to rapidly respond to emergent and routine patient care situations.

The consistent size and design of all of the patient care rooms within the proposed bed tower incorporates immediate patient care space around the patient's bed, family area, electronic documentation space, dedicated staff hand washing sinks, and toiletry facilities. A nurse server is located outside each patient room to provide easy access to isolation supplies, linens, and patient care supplies. The placement of the documentation cockpit outside of each patient room allows nurses to better observe patients during the acute period of their recovery.

The intensive care rooms accommodate additional space needs for critical care equipment (such as ventilators, pumps, dialysis machines) through elimination of full bathrooms and eliminating unnecessary countertop space. The rooms are adequately sized to move the patient bed out from the headwall during emergent treatments and to also facilitate newer technology, such as portable CT scanner within the patient's room.

The moderate-size patient room – 288 square feet, including the bathroom – strikes an appropriate balance between providing generous patient care and family space and keeping overall facility construction costs on budget. The universal room's size adequately facilitates progressive patient recovery with a dedicated patient and family zone to encourage patient mobility and family visitation and care participation.

Private Rooms with Family Focused Space

The proposed bed tower's design supports family involvement in the patient's care. Along with dedicated space for family, each room includes a fold-out sleeper to allow family members to spend the night if the patient's condition warrants, individual lighting controls, and individual television volume and channel controls. Medical/surgical rooms will also include a desk area. Wireless Internet service will be provided for family convenience as well.

Current literature focuses on the impact of facility design as more than just providing a safe environment. Studies show that a less severe environment can reduce patient stress and facilitate faster healing and wellness. The unit design in the proposed tower includes soft, rounded corners, soothing wood tones, and colorful art work along with carefully managed hallway length. Curved hallways support the patient's perception of privacy by decreasing the crowded institutional feel of a large unit.

Placement of Nurse Stations, Workstations, and Integration of the Electronic Medical Record

The proposed facility's design incorporates flexibility into the nurse and physician stations by providing a mix of centralized and decentralized work space. Decentralized work space, including electronic documentation stations, are located immediately inside the door of each patient room and also in a hallway cockpit between each two patient rooms. At these workstations staff will have direct line of sight to each patient. As a result of this design, nurses will only infrequently need to walk back and forth to a central location to document care, retrieve medications and supplies, or access patient information. This allows for more time to focus on direct patient care.

In addition to decentralized work space in patient rooms, each floor will have centralized multidisciplinary team workstations with additional computers for medical and nursing documentation as well as viewing digital images. Through the electronic medical record implementation process, Carle has established a standard of 2.5 computer workstations for each patient care bed. These multi-user workstations, located throughout the patient care unit, will foster interdisciplinary communication and enable nursing staff and physicians to address patient issues, conduct informal learning, and enhance team member communication needs in an efficient and effective manner. At the entry to each unit there will be a workstation and general reception area which will house the unit clerk, who will coordinate care for patients and direct traffic by assisting families, physicians, and ancillary department members.

This care design has been successful in the newly designed NICU of CFH where care has been greatly enhanced by bedside workstations. Nurses are able to stay close to the patient and family while documenting, which further encourages interaction and involvement of families in the patient's care. Moreover, CFH believes decentralized

nursing documentation stations, offering increased patient surveillance and nursing presence at the bedside, will contribute to patient fall reduction.

State-of-the-Art Procedure Space

With regard to the procedural floor, all of the eight interventional procedure labs have been designed to be essentially identical so that staff who move from one lab to another will always know where all supplies are located and how to respond quickly in case of an adverse event or emergency. As interventional procedures become increasingly complex, many are requiring the use of anesthesia and this function has been accounted for in the design of the labs. In order to prepare for potential future changes in interventional procedures, the interventional space has been designed as semi-sterile. The size of the labs is based on an existing lab, a model of which has been demonstrated to work well and accommodate new technologies without the costs and disruption of renovation.

Each interventional procedure lab must be equipped with the several large pieces of advanced technology medical equipment which are described below. Much of this equipment requires multiple monitor screens and ceiling suspension booms. Photographs depicting this equipment in the current facilities are attached.

For the cardiac catheterization labs, two Digital Cardiovascular X-ray Imaging Systems (the GE Innova 2000 and GE Innova 2100) are used. These have a digital detector that provides fully digital imaging capabilities. By converting X-ray signals into digital images at the point of acquisition, the detector captures information with minimal loss over the full range of typical exposures. It also minimizes the artifacts and distortions associated with conventional systems. This system provides unprecedented views of hard-to-see vessels and other cardiac anatomy.

An Advantx Digital Fluoroscopic Imaging System which is designed to perform biplane fluoroscopic x-ray examinations is also used. The detectors are comprised of amorphous silicon with a cesium iodine scintillatorn. The resulting digital images can be sent through a Fiber Channel link to an acquisition system then to network for applications such as post-processing, printing, viewing and archiving. This Digital Fluoroscopic Imaging System consists of a biplane positioner, a vascular table, an X-ray system, two X-ray generators/sources and two digital detectors.

Also, under contemporary standards and because x-ray is used, each lab has a control room with the x-ray monitors (2-3), workstation for nurse/tech, and the hemodynamic monitoring equipment (2 monitors). In certain of the current labs, there is no space for a control area so all hemodynamic monitoring and documentation is done in the lab itself. This is not an optimal environment for staff from a radiation safety perspective.

Ultrasound units and anesthesia machines are also routinely used during the procedures in these rooms. Also, each lab has a defibrillator and a large Omnicell medication supply and dispensing system. While the interventional radiology rooms use different x-ray and

bi-plane imaging equipment, the size and requirements of these pieces of equipment are similar.

The ability to control inventory costs and improve lab utilization and turnover are important financial considerations. The design of the new interventional labs includes a central inventory and work core, a model which has been used for many years in surgical suites and is now migrating to interventional areas. Such an arrangement is more efficient and cost effective. Along the perimeter corridor of the labs accommodation has been made for stretchers, lead aprons, scrub sinks and other required equipment so that corridors remain clear.

Physician work areas in the interventional suite allow physicians to work productively between cases, reducing the turnaround time between procedures. Because the interventional suite will be a clean/semi-sterile environment (similar to that of a surgical services suite), the provision of workstations and reading areas allows physicians to work without re-gowning or leaving the semi-sterile environment. To enhance cardiologist productivity and accessibility, physician offices will be located in the building. As a result of expanded support areas, cardiologists will be able to make follow-up phone calls, answer emails, and review patient charts and lab work without leaving the cardiac catheterization lab vicinity. These work areas are currently non-existent. If physicians have space to work between procedures and rounding, there is better opportunity to participate actively in the care plan and not only communicate on patient care issues but also offer educational opportunities for staff and colleagues.

The prep/hold/recovery area has been planned with two types of patient care space: an open area with eight bays for inpatients, sheath pulls and any patient requiring constant observation and twenty-four small private prep/recovery rooms. The private room model allows for patients to change in the room, have private discussions with clinicians prior to the procedure, and accommodates family members both pre-procedure and during the recovery process. While historically family members were not allowed in these areas, experience shows that communication is clearly enhanced when a family member is present to serve as both a patient advocate and an important second set of ears to receive diagnostic and treatment results and patient instructions. While there is an expectation that information shared with family is also available to all staff who need to know such information, it is easy to understand why patient and family member involvement in communications can enhance communication. Of course, family and patients may not understand information that is provided by staff and physicians but if they fail to understand something that is important, the staff is provided better access to the patient and family so that the important information can be provided in writing and in an otherwise clear manner.

The floor construction in portions of the catheterization labs will be reinforced to accept floor-loading imaging equipment; thus, offering tremendous flexibility to accommodate future technology. Examples of future technology include further advanced image-guided magnetic navigation systems for electrophysiology and interventional cardiology.

In addition, strategically placed knock-out panels in the walls will allow large, heavy equipment to be easily brought into the building. It is anticipated that imaging equipment upgrades will continue to be available throughout the construction timeline and purchase of such will be held off until project completion to ensure cutting edge technology is available to patients.

Future Vertical Expansion

Throughout the planning process, the planning team will keep the future in mind, always thinking in progressive terms and staying apprised of CV medical and technological innovations. With this in mind, the bed tower is being constructed in suc a way that it will be able to be vertically expanded to add two additional floors with 44 to 48 beds on each floor. Provisions have been incorporated into the fire alarm and HVAC systems to allow the facility to meet high-rise code requirements in any future vertical expansion. Anticipating the need for additional capacity, mechanical equipment will be be placed elsewhere in the building rather than on the roof, allowing for easier vertical expansion when the need arises. Upward design is consistent with the directives of the City of Urbana and maintain the campus within the Medical Institutional Campus boundaries designated by the municipality.

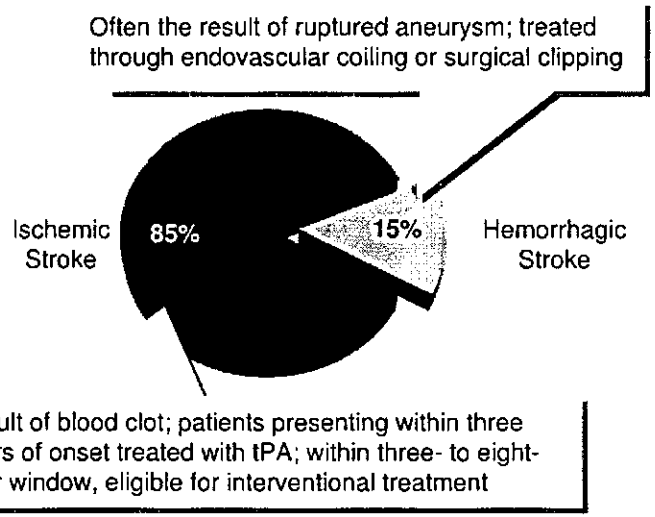
Strokes Differ in Type and Treatment

A brief clinical overview proves helpful in discussing stroke. Strokes fall into two main categories: hemorrhagic and ischemic. Hemorrhagic strokes are caused by bleeding in the brain and represent the minority of stroke cases. The majority of stroke cases are ischemic, caused by a clot that blocks blood flow to a section of the brain. A transient ischemic attack (TIA) often termed a "mini-stroke", refers to a partial blockage of a blood vessel that causes milder symptoms of stroke. All manifestations of stroke are regarded as emergent conditions.

Stroke Pathology

Stroke	Description
Ischemic Stroke	Caused by clot that blocks blood flow to a section of the brain; clot can develop in narrowed artery that supplies the brain or can travel from heart (or elsewhere in the body) to artery that supplies brain
Hemorrhagic Stroke	Caused by bleeding inside brain (intracerebral hemorrhage) or bleeding in space around brain (subarachnoid hemorrhage)
Transient Ischemic Attack (TIA)	"Mini-strokes" –partial blockage of blood flow to brain caused by a clot; result in presentation of mild stroke symptoms and should be considered a medical emergency; patients who experience TIA 10 times more likely to suffer from a stroke

Distribution of Stroke Sub-Types



Source: The Neurology Channel, available at: www.neurology-channel.com, accessed July 1, 2006; WebMD, available at: www.webmed.com, accessed July 1, 2006.

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Exhibit A

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Interventional Therapies The Future For Ischemic Stroke

In ischemic stroke patients, clots in the neurovasculature block blood flow to brain tissue, potentially causing cell death and, by extension, severe brain damage. As a result, "Time is Brain" is an often used phrase to describe the importance of timely intervention to reverse the stroke and limit cell death where possible. First approved in the mid-1990's, the thrombolytic drug tissue plasminogen activator (tPA) was the first viable treatment option for ischemic stroke. However, due to the limited three hour time window in which tPA must be administered and physiological contraindications to tPA, national treatment rates for ischemic stroke remain low (1-5 percent). Recently, the emergence of neurointerventional stroke reversal therapies such as intra-arterial tPA and the Merci Clot Retriever have extended the treatment window for stroke and promise to increase the number of ischemic stroke patients receiving treatment.

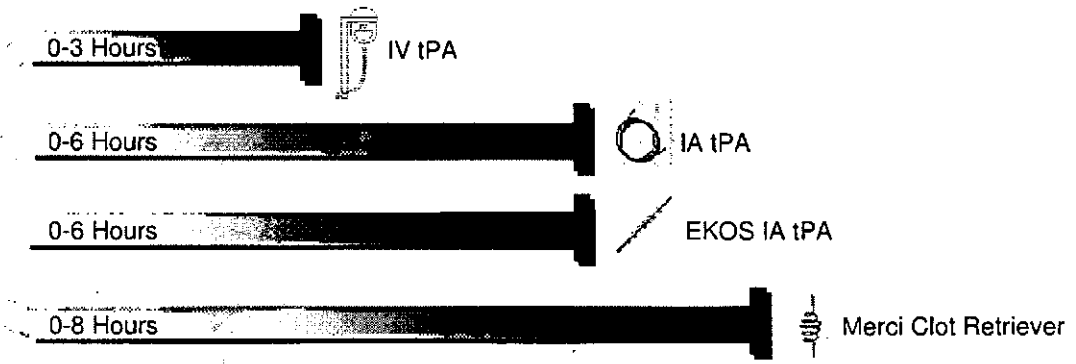
Interventional Stroke Treatments

Technology	Description	Uses
IV tPA	Intravenous delivery of tPA	Clot buster
IA tPA	Catheter delivery of tPA to cerebral arteries	Clot buster
EKOS IA tPA	Catheter delivery of tPA, ultrasound energy to cerebral arteries	Clot buster
Merci Clot Retriever	Catheter-based; flexible, tapered wire with helical loops	Clot retriever

Stroke Technologies Expanding The Window of Treatment Opportunity

Stroke Onset

- Initial symptoms can include loss of speech, motor function, sensation and altered consciousness
- The onset of stroke for sleeping patients is assumed to have begun at the time of repose



Source: FDA; Technology Insights interviews and analysis.

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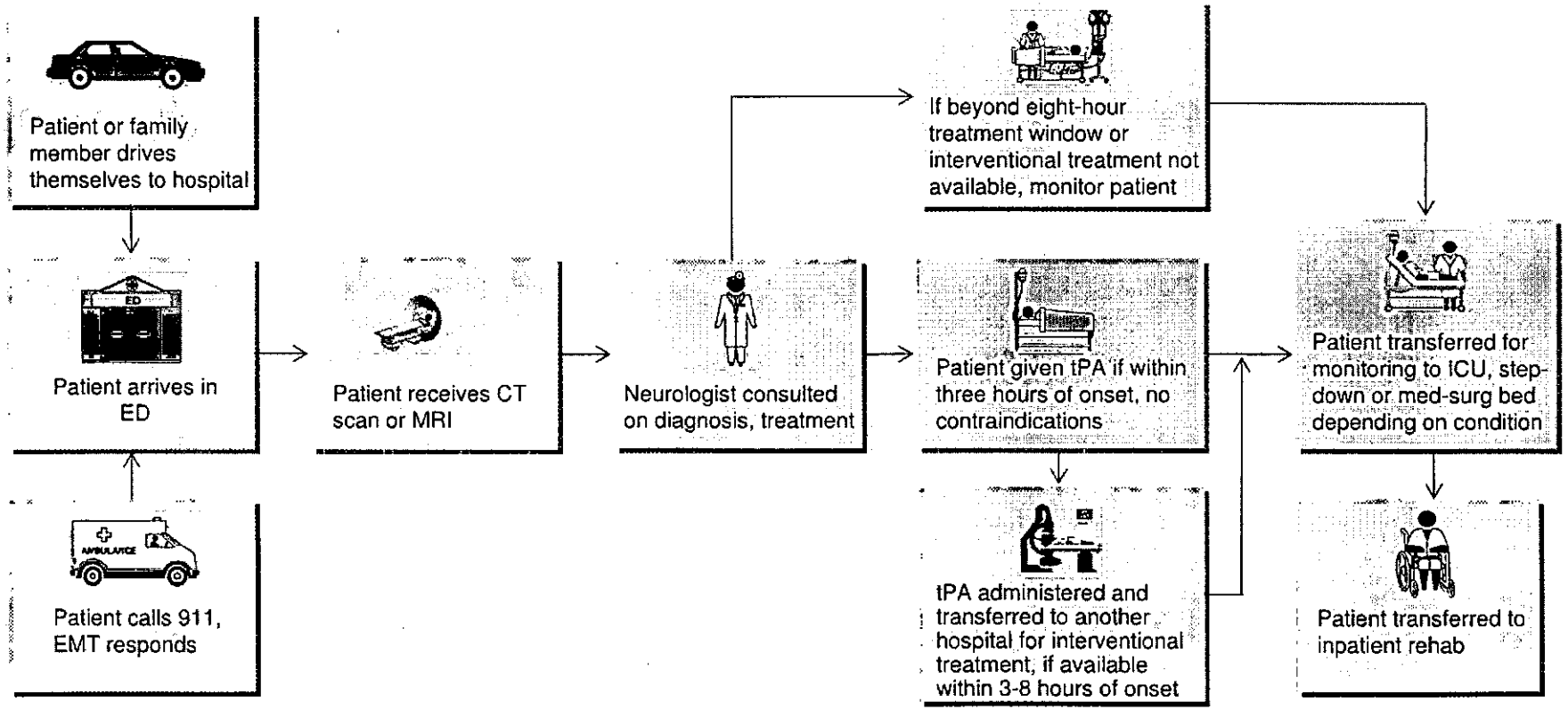
Exhibit A

Complex Stroke Care Pathways Mandate Coordination

Given that time is of the essence in stroke care and that stroke care pathways are complex and require multiple specialists, clinical coordination is critical to reduce treatment delays. After arriving in the ED, the patient must receive a CT scan or MRI and after the initial stroke diagnosis has been made, a neurologist consulted to confirm the diagnosis and advise on treatment options. Depending on the diagnosis and the interventional capabilities of the hospital, care may have to be coordinated between neurologists, radiologists, neurosurgeons and interventional neuroradiologists. The complexity of the care pathway ensures that carefully considered, hardwired stroke care protocols are a must for any hospital providing stroke care.

Clinical Pathway for Ischemic Stroke



Source: National Institute of Neurological Disorders, "Stroke: Hope Through Research," available at http://www.ninds.nih.gov/disorders/stroke/detail_stroke.htm, accessed July 17, 2006.

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Exhibit A

Hardwired Stroke Protocols Centerpiece of Certification

For hospitals interested in becoming Joint Commission certified as Primary Stroke Centers , hardwired stroke care pathways and a well-oiled in-house stroke team that is invested in taking call represent the most important factors for successful certification. To become certified, a hospital must first submit a pre-onsite summary of program development and clinical practice guidelines. Subsequently, Joint Commission representatives come on-site for a day to meet with stroke care providers and review standards compliance. If the hospital receives certification, it must then submit data on clinical performance and changes in clinical practice guidelines at the one year anniversary of certification.

Financial Cost For Certification

- Application fee: $9,685
- Intra-cycle data review fee: $1,625 - $2,690
- 25% discount given to all Joint Commission accredited acute care hospitals

Key Requirements For Stroke Center Certification

Element	Joint Commission Requirements
Admin Support	• Written documentation from administrators showing support for Primary Stroke Center • Stroke center medical director appointed, preferably a neurologist
Stroke Team	• Includes clinicians – neurologists, neurosurgeons – experienced in cerebrovascular care • Documentation of stroke team duties, notification system and expected response times • Evidence of stroke team log that captures stroke team response times, treatments etc. • Documentation of neurosurgical coverage within two hours of clinical necessity
Care Protocols	• Written care protocols for work-up of stroke patients available in the ED, and stroke unit • Stroke center can provide FDA-approved stroke treatments in accordance with indications
EMS, ED	• Evidence of providing EMS with pre-hospital treatment guidelines • ED care providers familiar with pathology, presentation, assessment, treatment of stroke
Stroke Units	• Care providers in stroke unit demonstrate evidence of training in care of stroke patients • Care providers receive eight hours of CME
Ancillary Services	• Imaging and laboratory services available 24 hours a day • 80% of stroke patients have CT or MRI with results reported within 45 minutes of order • Laboratory services able to complete, report results within 45 minutes of order
Educational Programs	• Stroke centers offer at least one public education event per year
Outcomes	• Evidence of performance measurement and review by QI department and stroke team

Certification Process

I. Pre-Onsite Review:
- Submit summary of clinical practice guidelines and a description of at least four performance measurement criteria, including at least two clinically-focused measures

II. On-Site Review:
- One day visit allows Joint Commission to evaluate standards compliance and outcomes performance
- Joint Commission representatives meet with clinicians and data tracking staff

III. Intra-Cycle Review:
- Performed at one year anniversary of certification
- Off-site review of continuing compliance, updated clinical guidelines and performance measurement metrics

Source: The Joint Commission on the Certification of Healthcare Organizations.

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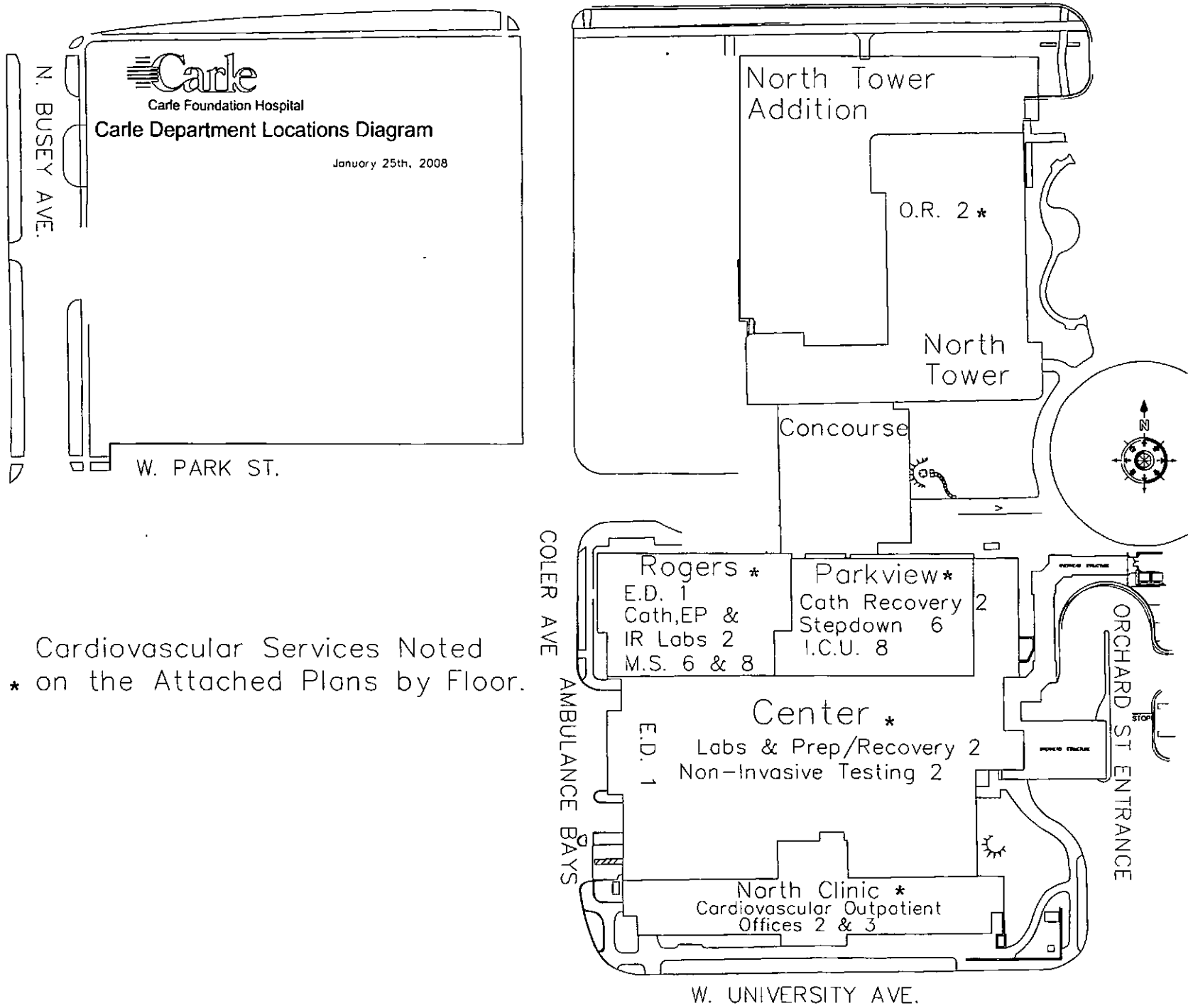
Exhibit A

CURRENT LAYOUT

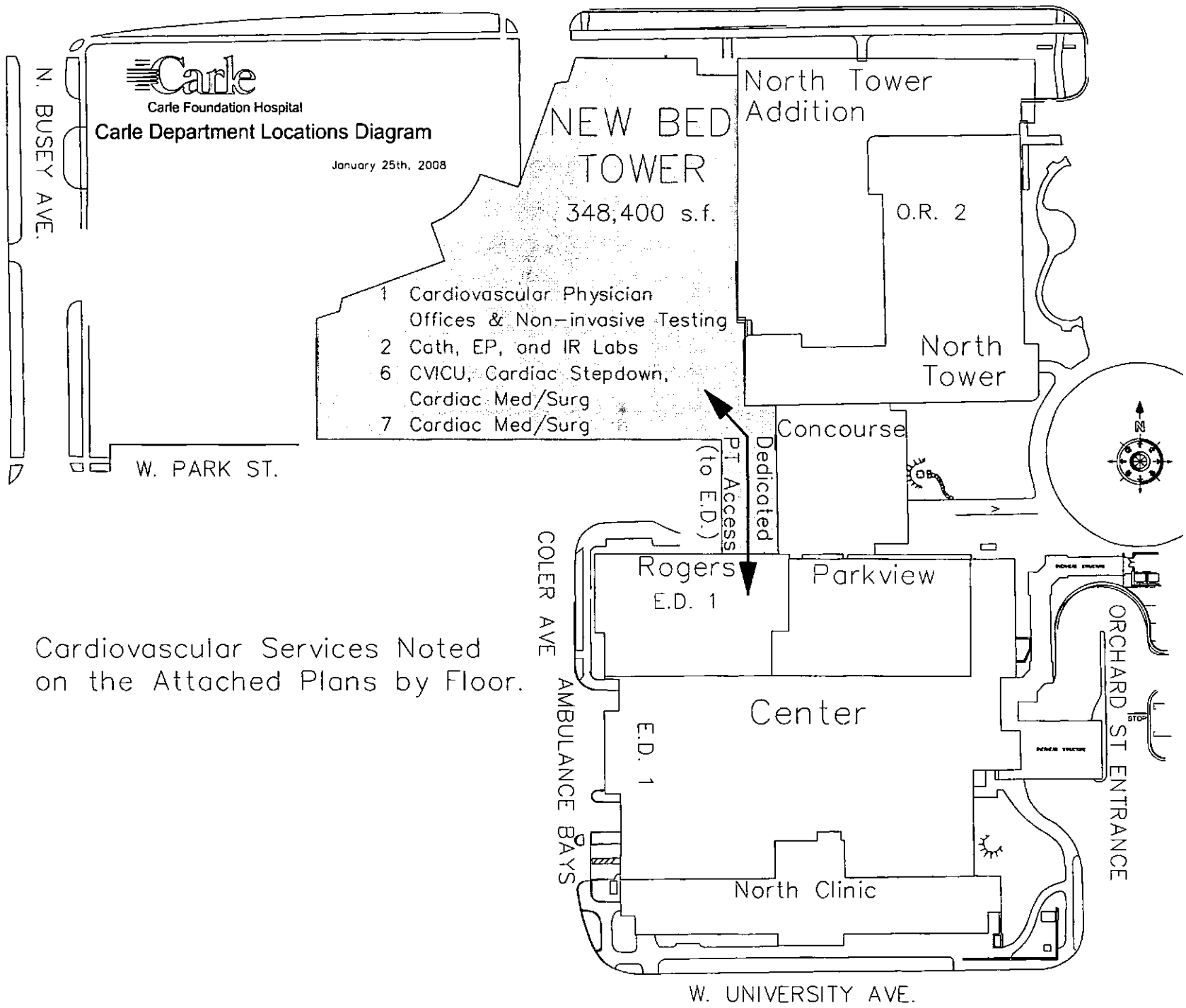


Cardiovascular Services Noted by * on the Attached Plans by Floor.

H21

Attachment
Mod-3

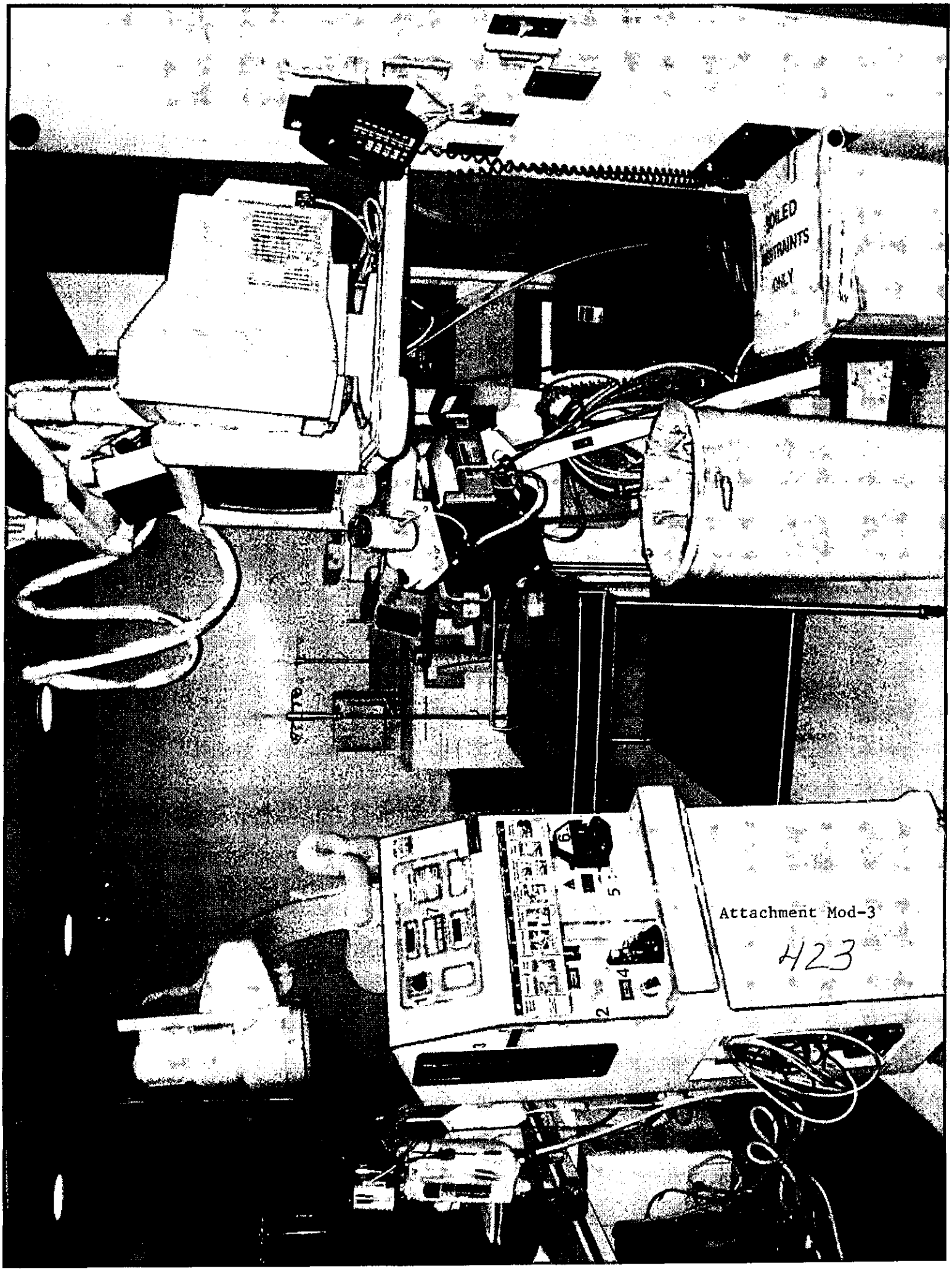
PROPOSED LAYOUT



Cardiovascular Services Noted on the Attached Plans by Floor.

422

Attachment
Mod-3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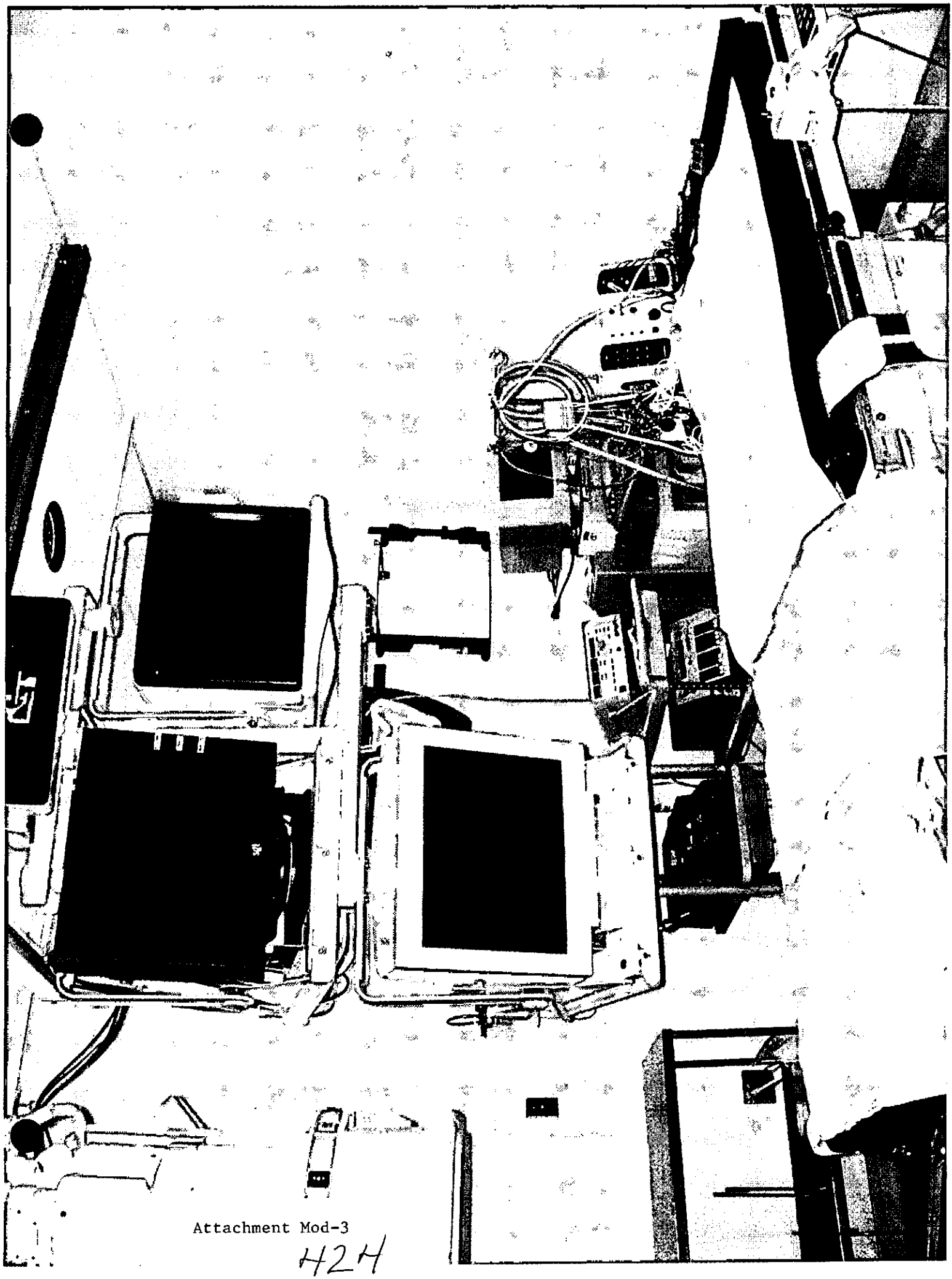
423



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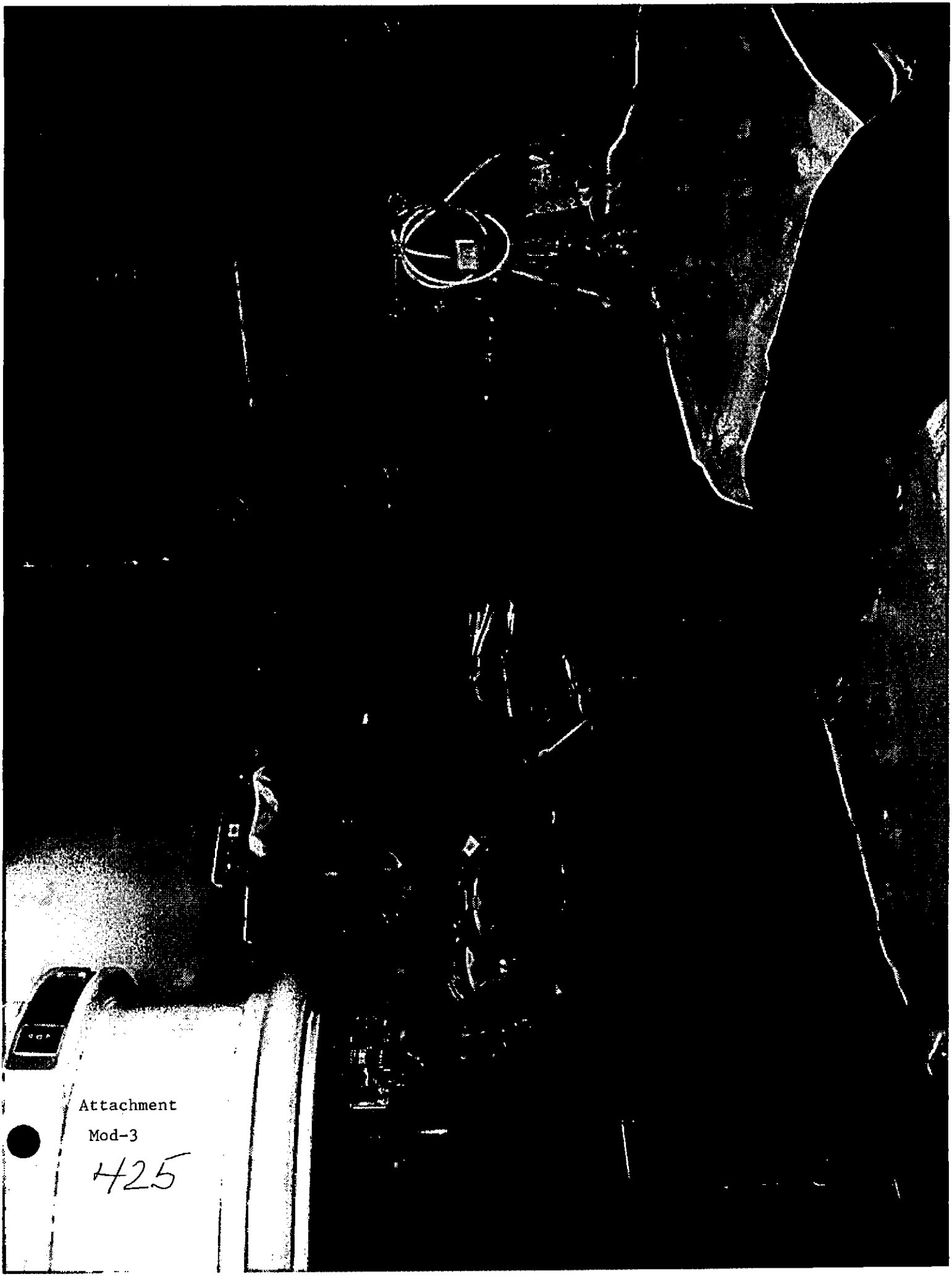

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425

STROKE 4

(ICD/9 430-438) (ICD/10 I60-I69)

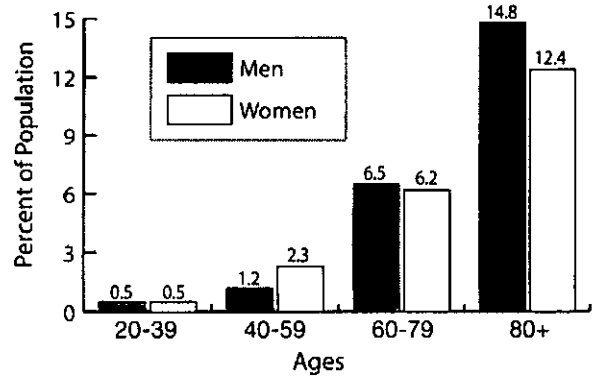
PREVALENCE

- Among adults age 20 and older, the estimated prevalence of stroke in 2005 was 5,800,000 (about 2,300,000 males and 3,400,000 females).

INCIDENCE

- Each year about 780,000 people experience a new or recurrent stroke. About 600,000 of these are first attacks, and 180,000 are recurrent attacks. *(GCNKSS, NINDS, NHLBI.)*
- On average, every 40 seconds someone in the United States has a stroke. *(AHA computation based on latest available data.)*
- Each year, about 60,000 more women than men have a stroke. *(GCNKSS, NINDS.)*
- Men's stroke incidence rates are greater than women's at younger ages but not at older ages. The male/female incidence ratio was 1.25 at ages 55–64; 1.50 for ages 65–74; 1.07 at ages 75–84 and 0.76 at age 85 and older. *(ARIC and CHS studies.)*
- Blacks have almost twice the risk of first-ever stroke compared with whites. The age-adjusted stroke incidence rates at ages 45–84 are 6.6 per 1,000 population in black males, 3.6 in white males, 4.9 in black females and 2.3 in white females. *(NHLBI. Incidence and Prevalence: 2006 Chart Book on Cardiovascular and Lung Diseases. Bethesda, MD: National Heart, Lung, and Blood Institute, 2006.)*

Prevalence of Stroke by Age and Sex
NHANES: 1999–2004



Source: NCHS and personal communication with NHLBI.

- The Brain Attack Surveillance in Corpus Christi project (BASIC) clearly demonstrated an increased incidence of stroke among Mexican Americans compared with non-Hispanic whites. The crude cumulative incidence was 168/10,000 in Mexican Americans and 136/10,000 in non-Hispanic whites. Specifically, Mexican Americans have an increased incidence of intracerebral hemorrhage and subarachnoid hemorrhage compared with non-Hispanic whites, as well as an increased incidence of ischemic stroke and TIA at younger ages. *(Am J Epidemiol. 2004;160:376–383.)*
- Of all strokes, 87 percent are ischemic, 10 percent are intracerebral hemorrhage, and 3 percent are subarachnoid hemorrhage. *(GCNKSS, NINDS.)*

MORTALITY

Stroke accounted for about one of every 16 deaths in the United States in 2004. Stroke mortality for 2004 was 150,074 (58,800 males, 91,274 females). Stroke total mention mortality in 2004 was about 253,000 (see glossary for definition of "total mention mortality"). *(Vital Statistics of the U.S., NCHS; http://www.cdc.gov/nchs/data/dvs/MortFinal2003_WorkTable307.pdf)*

- When considered separately from other cardiovascular diseases, stroke ranks No. 3 among all causes of death, behind diseases of the heart and cancer. *(NCHS mortality data.)*
- On average, every three to four minutes someone dies of a stroke. *(NCHS, NHLBI.)*
- Among persons ages 45–64, 8 to 12 percent of ischemic strokes and 37 to 38 percent of hemorrhagic strokes result in death within 30 days, according to the ARIC study of the NHLBI. *(Stroke. 1999;30:736–743.)*
- From 1994–2004, the stroke death rate fell 24.2 percent and the actual number of stroke deaths declined 6.8 percent. *(NCHS, CDC. Compressed Mortality File: Underlying Cause of Death; http://wonder.cdc.gov/mortSQL.html)*
- The 2004 final overall death rate for stroke was 50.0. Death rates were 48.1 for white males and 74.9 for black males; 47.2 for white females and 65.5 for black females. *(NCHS, CDC. Compressed Mortality File: Underlying Cause of Death; http://wonder.*

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cdc.gov/mortSQL.html) Death rates were 41.5 for Hispanic or Latino males and 35.4 for females; 44.2 for Asian or Pacific Islander males and 38.9 for females; and 35.0 for American Indian/Alaska Native males and 35.1 for females. *(NCHS. Health, United States, 2006.)*

- Because women live longer than men, more women than men die of stroke each year. Women accounted for 61.0 percent of U.S. stroke deaths in 2004. *(AHA computation based on latest mortality data.)*

Stroke Risk Factors

- The risk of ischemic stroke in smokers is about double that of nonsmokers. *(FHS, CHS, HHS, NHLBI.)*
- Atrial fibrillation (AF) is an independent risk factor for stroke, increasing risk about five-fold. *(Stroke. 1991;22:983–988.)*
- High blood pressure is the most important risk factor for stroke. *(Stroke. 1997;28:1840–1844.)* Subjects with blood pressure lower than 120/80 mm Hg have about half the lifetime risk of stroke compared to subjects with high blood pressure. *(Stroke. 2006;37:345–350.)*

Smokers have about twice the stroke risk of nonsmokers.

- A study of over 37,000 women age 45 and older participating in the Women's Health Study suggests that a healthy lifestyle consisting of abstinence from smoking, low body mass index, moderate alcohol consumption, regular exercise and healthy diet was associated with a significantly reduced risk of total and ischemic stroke but not of hemorrhagic stroke. *(Arch Intern Med. 2006;166:1403–1409.)*
- The risk of ischemic stroke or intracerebral hemorrhage during pregnancy and the first six weeks postpartum was 2.4 times greater than for nonpregnant women of similar age and race, according to the Baltimore-Washington Cooperative Young Stroke Study. *(N Engl J Med. 1996;335:768–774.)*
- Among postmenopausal women, the Women's Health Initiative primary prevention clinical trial found that estrogen plus progestin (PremPro) increased ischemic stroke risk by 44 percent, with no effect on hemorrhagic stroke. *(JAMA. 2003;289:2673–2684.)*
- In the Framingham Heart Study, among participants younger than age 65, the risk of stroke was 4.21 times higher in subjects with symptoms of depression. *(Stroke. 2007;38:1–3.)*

Physical Activity and Stroke Prevention

- Physical activity (PA) reduces stroke risk. Results from the Physicians' Health Study, showed a lower stroke risk associated with vigorous exercise among men (relative risk of total stroke = 0.86 for exercise five times a week or more). The Harvard Alumni Study showed a decrease in total stroke risk in men who were highly physically active (relative risk = 0.82). *(Stroke. 1998;29:2049–2054.)*
- In an evaluation of walking and sports participation in 73,265 men and women in Japan, risk of stroke death was reduced by 29 percent and 20 percent, respectively, in those pertaining to the highest-intensity category. *(J Am Coll Cardiol 2005;46:1761–1767.)* In a study of 47,721 men and women in Finland, significant trends toward lower stroke risk were associated with moderate and high levels of leisure-time PA and active commuting. *(Stroke 2005;36:1994–1999.)* A meta-analysis of reports of 31 observational studies conducted mainly in the United States and Europe found that moderate and high levels of leisure-time and occupational PA protected against total stroke, hemorrhagic stroke and ischemic stroke. *(Int J Epidemiol 2004;33:787–798.)*
- The Northern Manhattan Study (NOMAS)—which included white, black and Hispanic men and women in an urban setting—showed a decrease in ischemic stroke risk associated with PA levels across all racial/ethnic and age groups and for each gender (odds ratio = 0.37). *(Stroke. 1998;29:380–387.)*

Awareness of Stroke Warning Signs and Risk Factors

- 2001 data from the BRFSS survey in 17 states and the U.S. Virgin Islands showed that public awareness of the major stroke warning signs was high.
  - Sudden numbness or weakness of the face, arm or leg—94.1 percent.
  - Sudden confusion, trouble speaking or understanding—87.9 percent.
  - Sudden trouble walking, dizziness or loss of balance or coordination—85 percent.
  - Sudden trouble seeing in one or both eyes—68.1 percent.

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- Sudden severe headache with no known cause—61.3 percent.
- 37.8 percent incorrectly reported sudden chest pain as a sign of stroke. *(MMWR Morb Mortal Wkly Rep. 2004;53[17]:359–362.)*

- Spanish-speaking Hispanics are less likely to know all stroke symptoms, and far less likely to know all heart attack symptoms, than English-speaking Hispanics, non-Hispanic blacks and non-Hispanic whites. *(Am J Prev Med. 2006;30:189–196.)*

Aftermath

- Stroke is a leading cause of serious, long-term disability in the United States. *(SIPP; MMWR Morb Mortal Wkly Rep. 2001;50:120–125.)*
- Based on pooled data from the FHS, ARIC and CHS studies of the NHLBI:

The percent who die one year following a first stroke:

- at age 40 and older, 21 percent of men and 24 percent of women.
- at ages 40–69: 14 percent of white men, 20 percent of white women, 19 percent of black men and 19 percent of black women.
- at age 70 and older: 24 percent of white men, 27 percent of white women, 25 percent of black men and 22 percent of black women.

The median survival time (in years) following a first stroke is:

- at ages 60–69: 6.8 for men and 7.4 for women.
- at ages 70–79: 5.4 for men and 6.4 for women.
- at age 80 and older: 1.8 for men and 3.1 for women.

Stroke is a leading cause of serious, long-term disability in the United States.

Hospital Discharges/ Ambulatory Care Visits

- From 1979–2005, the number of inpatient discharges from short-stay hospitals with stroke as the first listed diagnosis increased 20 percent to 895,000. *(NHDS/NCHS; AHA computation based on annual hospital discharge data.)*
- 2005 data from the Hospital Discharge Survey of the NCHS showed the average length of stay for discharges with stroke as the first-listed diagnosis was 5.2 days. *(Adv Data Vital Health Stat 2007. No. 385.)*

Cost

- The estimated direct and indirect cost of stroke for 2008 is $65.5 billion.
- The mean lifetime cost of ischemic stroke in the United States is estimated at $140,048. This includes inpatient care, rehabilitation and follow-up care necessary for lasting deficits. (All numbers converted to 1999 dollars using the medical component of CPI.) *(Stroke. 1996;27:1459–1466.)*

Stroke in Children

- Compared to the stroke risk of white children, black children have a higher relative risk of 2.12, Hispanics have a lower relative risk of 0.76, and Asians have a similar risk. Boys have a 1.28-fold higher risk of stroke than girls. There are no ethnic differences in stroke severity or case-fatality, but boys have a higher case-fatality rate for ischemic stroke. *(Neurology. 2003;61:189–194.)*
- Cerebrovascular disorders are among the top 10 causes of death in children, with rates highest in the first year of life. Stroke mortality in children younger than age 1 has remained the same over the last 40 years. *(Pediatrics. 2002;109:116–123.)*

Transient Ischemic Attack (TIA)

(A TIA is a mini-stroke that lasts less than 24 hours.)

- The prevalence of TIA in men is estimated to be 2.7 percent for ages 65–69 and 3.6 percent for ages 75–79. For women, TIA prevalence is estimated to be 1.6 percent for ages 65–69 and 4.1 percent for ages 75–79. *(Ann Epidemiol. 1993;3:504–507.)*
- About 15 percent of strokes are preceded by a TIA. *(Cerebrovasc Dis. 1996;6[suppl 1]:26–33.)*
- About half of patients who experience a TIA fail to report it to their healthcare providers. *(Neurology. 2003;60:1429–1434; Stroke. 1989;20:333–339.)*
- After TIA, the 90-day risk of stroke is 3–17.3 percent, highest within the first 30 days. *(Neurology. 2004;62:2015–20; Stroke. 2004;35:1842–6; Stroke. 2005;36:720–3; BMJ. 2004;328:326; Neurology. 2003;60:1429–34.)*
- Within a year of TIA, up to a quarter of patients will die. *(Neurology. 2004;62:2015–2020; Neurology. 2004;62:S20–S21)*

For more statistics on stroke, please visit our Web site at www.americanheart.org/statistics.

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At-a-Glance Summary Tables
Males and Cardiovascular Diseases

Diseases and Risk Factors	Both Sexes	Total Males	White Males	Black Males	Mexican-American Males
Total CVD					
Prevalence 2005**	80.7 M (37.1%)	37.9 M (37.5%)	37.2%	44.6%	31.6%
Mortality 2004++	869.7 K	410.6 K	353.1 K	48.1 K	—
Coronary Heart Disease					
Prevalence 2005 CHD**	16.0 M (7.3%)	8.7 M (8.9%)	9.4%	7.1%	5.6%
Prevalence 2005 MI**	8.1 M (3.7%)	5.0 M (5.1%)	5.4%	3.9%	3.1%
Prevalence 2005AP**	9.1 M (4.1%)	4.4 M (4.4%)	4.8%	3.4%	2.3%
New and recurrent CHD* ##	1.2 M	710.0 K	650.0 K	65.0 K	—
New and recurrent MI##	920.0 K	555.0 K	—	—	—
Incidence AP (stable angina)#	500.0 K	320.0 K	—	—	—
Mortality 2004 CHD++	451.3 K	233.5 K	205.5 K	23.1 K	—
Mortality 2004 MI++	156.8 K	82.9 K	73.4 K	7.8 K	—
Stroke					
Prevalence 2005**	5.8 M (2.6%)	2.3 M (2.6%)	2.4%	4.1%	3.1%
New and recurrent strokes++	780.0 K	360.0 K	304.0 K	43.0 K	—
Mortality 2004++	150.1 K	58.8 K	49.3 K	7.6 K	—
High Blood Pressure					
Prevalence 2005**	73.0 M (33.6%)	34.0 M (33.2%)	32.5%	42.6%	28.7%
Mortality 2004++	54.7 K	23.1 K	16.7 K	5.8 K	—
Heart Failure					
Prevalence 2005**	5.3 M (2.5%)	2.7 M (2.8%)	2.8%	2.7%	2.1%
Mortality 2004++ ≠	284.4 K	122.7 K	109.9 K	10.7 K	—
Tobacco					
Prevalence 2005+	46.6 M (20.9%)	25.9 M (23.9%)	24.0%	26.7%	—
Blood Cholesterol					
Prevalence 2005:					
Total cholesterol ≥200 mg/dL**	106.7 M (48.4%)	50.8 M (47.8%)	47.9%	44.8%	49.9%
Total cholesterol ≥240 mg/dL**	37.2 M (16.8%)	17.2 M (16.2%)	16.1%	14.1%	16.0%
LDL cholesterol ≥130 mg/dL**	80.4 M (32.5%)	41.3 M (32.2%)	31.7%	32.4%	39.0%
HDL cholesterol <40 mg/dL**	44.6 M (16.7%)	32.1 M (25.1%)	26.2%	15.5%	27.7%
Physical Activity††					
Prevalence 2006+	30.9%	33.1%	—	—	—
Overweight and Obesity					
Prevalence 2005:					
Overweight BMI 25.0 or higher**	142.0 M (66.0%)	73.0 M (70.5%)	71.0%	67.0%	74.6%
Obesity BMI 30.0 or higher**	67.3 M (31.4%)	30.7 M (29.5%)	30.2%	30.8%	29.1%
Diabetes Mellitus					
Prevalence 2005:					
Physician-diagnosed diabetes**	15.1 M (7.3%)	7.6 M (7.3%)	6.7%	10.7%	11.0%
Undiagnosed diabetes**	6.0 M (2.8%)	3.7 M (3.6%)	3.2%	1.7%	1.1%
Prediabetes**	59.7 M (27.9%)	34.8 M (33.5%)	34.3%	23.1%	37.5%
Incidence — diagnosed diabetes**	1.5 M	—	—	—	—
Mortality 2004++	73.1 K	35.3 K	28.6 K	5.6 K	—

Note: AP = angina pectoris (chest pain); BMI = body mass index; CHD = coronary heart disease includes heart attack, angina pectoris (chest pain) or both; CVD = cardiovascular disease; K = thousand; M = million; MI = myocardial infarction (heart attack); mg/dL = milligrams per deciliter; (—) = data not available; * = New and recurrent MI and fatal CHD; ** = Age 20+; + = Age 18+; ++ = All Ages; # = Age 45+; ## = Age 35+; †† = Regular leisure-time physical activity; ≠ = Total Mentions.

Sources: See expanded version of the Statistical Update, at ***americanheart.org/statistics****. For data on males in other ethnic groups, see other chapters and Statistical Fact Sheets.*

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At-a-Glance Summary Tables
Females and Cardiovascular Diseases

Diseases and Risk Factors	Both Sexes	Total Females	White Females	Black Females	Mexican-American Females
Total CVD					
Prevalence 2005**	80.7 M (37.1%)	42.7 M (36.6%)	35.0%	49.0%	34.4%
Mortality 2004++	869.7 K	459.1 K	396.5 K	53.9 K	—
Coronary Heart Disease					
Prevalence 2005 CHD**	16.0 M (7.3%)	7.3 M (6.1%)	6.0%	7.8%	5.3%
Prevalence 2005 MI**	8.1 M (3.7%)	3.0 M (2.5%)	2.5%	3.3%	2.1%
Prevalence 2005 AP**	9.1 M (4.1%)	4.6 M (3.9%)	3.9%	4.3%	3.3%
New and recurrent CHD* ##	1.2 M	490.0 K	425.0 K	60.0 K	—
New and recurrent MI##	920.0 K	365.0 K	—	—	—
Incidence AP (stable angina)#	500.0 K	180.0 K	—	—	—
Mortality 2004 CHD++	451.3 K	217.8 K	190.2 K	23.6 K	—
Mortality 2004 MI++	156.8 K	73.9 K	64.2 K	8.4 K	—
Stroke					
Prevalence 2005**	5.8 M (2.6%)	3.4 M (2.8%)	2.7%	4.1%	1.9%
New and recurrent strokes++	780.0 K	420.0 K	343.0 K	60.0 K	—
Mortality 2004++	150.1 K	91.3 K	78.6 K	10.5 K	—
High Blood Pressure					
Prevalence 2005**	73.0 M (33.6%)	39.0 M (33.6%)	31.9%	46.6%	31.4%
Mortality 2004++	54.7 K	31.6 K	24.2 K	6.7 K	—
Heart Failure					
Prevalence 2005†	5.3 M (2.5%)	2.7 M (2.2%)	2.1%	3.3%	1.9%
Mortality 2004++ ≠	284.4 K	161.6 K	145.0 K	14.3 K	—
Tobacco					
Prevalence 2005+	46.6 M (20.9%)	20.7 M (18.1%)	20.0%	17.3%	—
Blood Cholesterol					
Prevalence 2005:					
Total cholesterol ≥200 mg/dL**	106.7 M (48.4%)	55.9 M (48.6%)	49.7%	42.1%	50.0%
Total cholesterol ≥240 mg/dL**	37.2 M (16.8%)	19.9 M (17.1%)	18.2%	12.5%	14.2%
LDL cholesterol ≥130 mg/dL**	80.4 M (32.5%)	39.1 M (32.4%)	33.8%	29.8%	30.7%
HDL cholesterol <40 mg/dL**	44.6 M (16.7%)	12.5 M (9.1%)	8.8%	6.9%	13.0%
Physical Activity††					
Prevalence 2006+	30.9%	28.9%	—	—	—
Overweight and Obesity					
Prevalence 2005:					
Overweight BMI 25.0 or higher**	142.0 M (66.0%)	69.0 M (61.6%)	57.6%	79.6%	73.0%
Obesity BMI 30.0 or higher**	67.3 M (31.4%)	36.7 M (33.2%)	30.7%	51.1%	39.4%
Diabetes Mellitus					
Prevalence 2005:					
Physician-diagnosed diabetes**	15.1 M (7.3%)	7.5 M (6.8%)	5.6%	13.2%	10.9%
Undiagnosed diabetes**	6.0 M (2.8%)	2.3 M (2.0%)	1.7%	2.3%	3.1%
Prediabetes**	59.7 M (27.9%)	24.9 M (22.6%)	21.6%	20.5%	22.6%
Incidence — diagnosed diabetes**	1.5 M	—	—	—	—
Mortality 2004++	73.1 K	37.9 K	29.5 K	7.3 K	—

Note: AP = angina pectoris (chest pain); BMI = body mass index; CHD = coronary heart disease includes heart attack, angina pectoris (chest pain) or both; CVD = cardiovascular disease; K = thousand; M = million; MI = myocardial infarction (heart attack); mg/dL = milligrams per deciliter; (—) = data not available; * = New and recurrent MI and fatal CHD; ** = Age 20+; † = Age 18+; ++ = All Ages; # = Age 45+; ## = Age 35+; ≠ = Total Mentions; †† = Regular leisure-time physical activity.

Sources: See expanded version of the Statistical Update, at ***americanheart.org/statistics****. For data on females in other ethnic groups, see other chapters and Statistical Fact Sheets.*

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At-a-Glance Summary Tables
Ethnic Groups and Cardiovascular Diseases

Diseases and Risk Factors	Both Sexes	Whites		Blacks		Mexican Americans		Hispanics/ Latinos	
		Males	Females	Males	Females	Males	Females	Males	Females
Total CVD									
Prevalence 2005**	80.7 M (37.1%)	37.2%	35.0%	44.6%	49.0%	31.6%	34.4%	—	—
Mortality 2004++	869.7 K	353.1 K	396.5 K	48.1 K	53.9 K	—	—	—	—
Coronary Heart Disease									
Prevalence 2005 CHD**	16.0 M (7.3%)	9.4%	6.0%	7.1%	7.8%	5.6%	5.3%	5.9%	
Prevalence 2005 MI**	8.1 M (3.7%)	5.4%	2.5%	3.9%	3.3%	3.1%	2.1%	—	—
Prevalence 2005 AP**	9.1 M (4.1%)	4.8%	3.9%	3.4%	4.3%	2.3%	3.3%	—	—
New and recurrent CHD* ##	1.2 M	650.0 K	425.0 K	65.0 K	60.0 K	—	—	—	—
Mortality 2004 CHD ++	451.3 K	205.5 K	190.2 K	23.1 K	23.6 K	—	—	—	—
Mortality 2004 MI ++	156.8 K	73.4 K	64.2 K	7.8 K	8.4 K	—	—	—	—
Stroke									
Prevalence 2005**	5.8 M (2.6%)	2.4%	2.7%	4.1%	4.1%	3.1%	1.9%	2.2%+	
New and recurrent strokes++	780.0 K	304.0 K	343.0 K	43.0 K	60.0 K	—	—	—	—
Mortality 2004++	150.1 K	49.3 K	78.6 K	7.6 K	10.5 K	—	—	—	—
High Blood Pressure									
Prevalence 2005**	73.0 M (33.6%)	32.5%	31.9%	42.6%	46.6%	28.7%	31.4%	20.3%+	
Mortality 2004++	54.7 K	16.7 K	24.2 K	5.8 K	6.7 K	—	—	—	—
Heart Failure									
Prevalence 2005**	5.3 M (2.5%)	2.8%	2.1%	2.7%	3.3%	2.1%	1.9%	—	—
Mortality 2004++ ±	284.4 K	109.9 K	145.0 K	10.7 K	14.3 K	—	—	—	—
Tobacco									
Prevalence 2005+	46.6 M (20.9%)	24.0%	20.0%	26.7%	17.3%	—	—	21.1%	11.1%
Blood Cholesterol									
Prevalence 2005:									
Total cholesterol ≥200 mg/dL**	106.7 M (48.4%)	47.9%	49.7%	44.8%	42.1%	49.9%	50.0%	—	—
Total cholesterol ≥240 mg/dL**	37.2 M (16.8%)	16.1%	18.2%	14.1%	12.5%	16.0%	14.2%	29.9%†	
LDL cholesterol ≥130 mg/dL**	80.4 M (32.5%)	31.7%	33.8%	32.4%	29.8%	39.0%	30.7%	—	—
HDL cholesterol <40 mg/dL**	44.6 M (16.7%)	26.2%	8.8%	15.5%	6.9%	27.7%	13.0%	—	—
Physical Activity††									
Prevalence 2006+	30.9%	33.7%		25.3%		—	—	22.6%	
Overweight and Obesity									
Prevalence 2005:									
Overweight BMI 25.0 or higher**	142.0 M (66.0%)	71.0%	57.6%	67.0%	79.6%	74.6%	73.0%	39.6%+	
Obesity BMI 30.0 or higher**	67.3 M (31.4%)	30.2%	30.7%	30.8%	51.1%	29.1%	39.4%	27.5%+	
Diabetes Mellitus									
Prevalence 2005:									
Physician-diagnosed diabetes**	15.1 M (7.3%)	6.7%	5.6%	10.7%	13.2%	11.0%	10.9%	9.8%+	
Undiagnosed diabetes**	6.0 M (2.8%)	3.2%	1.7%	1.7%	2.3%	1.1%	3.1%	—	—
Prediabetes**	59.7 M (27.9%)	34.3%	21.6%	23.1%	20.5%	37.5%	22.6%	—	—
Incidence — diagnosed diabetes**	1.5 M	—	—	—	—	—	—	—	—
Mortality 2004++	73.1 K	28.6 K	29.5 K	5.6 K	7.3 K	—	—	—	—

Note: AP = angina pectoris (chest pain); BMI = body mass index; CHD = coronary heart disease; includes heart attack, angina pectoris (chest pain) or both; CVD = cardiovascular disease; K = thousand; M = million; MI = myocardial infarction (heart attack); mg/dL = milligrams per deciliter; (—) = data not available; * = New and recurrent MI and fatal CHD; ** = Age 20+; + = Age 18+; ++ = All Ages; # = Age 45+; ## = Age 35+; † = BRFSS. MMWR 2005;54:865–70. †† = Regular leisure-time physical activity; # = Total Mentions

Sources: See expanded version of the Statistical Update, at ***americanheart.org/statistics****. For data on other ethnic groups, see other chapters and Statistical Fact Sheets.*

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At-a-Glance Summary Tables
Children, Youth and Cardiovascular Diseases

Diseases and Risk Factors	Both Sexes	Total Males	Total Females	Whites Males	Whites Females	Blacks Males	Blacks Females	Mexican Americans Males	Mexican Americans Females
Congenital CV Defects									
Mortality 2004[++]	3.9 K	2.1 K	1.8 K	1.6 K	1.4 K	0.4 K	0.3 K	—	—
Mortality 2004 (age < 15)	2.1 K	1.1 K	0.9 K	0.9 K	0.7 K	0.2 K	0.2 K	—	—
Tobacco									
Prevalence ages 12–17:									
Cigarette use past month 2005	10.8%	10.7%	10.8%	12.5%	13.0%	7.4%	5.6%	9.2%*	9.1%*
High school students grades 9–12:									
Current cigarette smoking 2005	23.0%	22.9%	23.0%	24.9%	27.0%	14.0%	11.9%	24.8%*	19.2%*
Current cigar smoking 2005	14.0%	19.2%	8.7%	21.0%	8.6%	12.3%	8.3%	20.0%*	9.1%*
Smokeless tobacco use 2005	8.0%	13.6%	2.2%	17.6%	2.7%	3.0%	0.4%	8.6%*	1.5%*
Blood Cholesterol									
Mean total cholesterol mg/dL									
Ages 4–11	164.5	163.9	165	163.9	166.2	165.0	164.8	161.3	164.2
Ages 12–19	161.7	158.3	165.4	157.1	167.5	161.3	162.7	159.6	161.4
Mean HDL cholesterol mg/dL									
Ages 4–11	55.2	56.2	54.2	54.7	53.3	59.7	57.1	54.5	53.7
Ages12–19	52.6	49.9	56.5	47.0	56.5	54.4	57.6	49.4	53.7
Mean LDL cholesterol mg/dL									
Ages 12–19	90.5	89.6	91.4	90.3	91.5	87.9	91.4	89.9	92.0
Physical Activity†									
Prevalence 2005 grades 9–12:#									
Met currently recommended levels of PA	35.8%	43.8%	27.8%	46.9%	30.2%	38.2%	21.3%	39.0%	26.5%
PA on 5 or more of last 7 days	68.7%	75.8%	61.5%	77.0%	63.3%	71.7%	53.1%	76.0%*	62.6%*
Overweight									
Prevalence 2005:									
Preschool children ages 2–5[††]	14%			11.5%		13.0%		19.2%	
Children ages 6–11	4.2 M (17.5%)	2.3 M (18.7%)	1.9 M (16.3%)	16.9%	15.6%	17.2%	24.8%	25.6%	16.6%
Adolescents ages 12–19	5.7 M (17.0%)	3.1 M (17.9%)	2.6 M (16.0%)	17.9%	14.6%	17.7%	23.8%	20.0%	17.1%
Students grades 9–12#	13.1%	16.0%	10.0%	15.2%	8.2%	15.9%	16.1%	21.3%*	12.1%*

Note: K = thousand; M = million; mg/dL = milligrams per deciliter; Overweight in children is body mass index (BMI) 95th percentile of the CDC 2000 growth chart; (—) = data not available; * = Hispanic; † = Regular leisure-time physical activity; †† = 2003–04; ++ = All Ages; # = CDC; PA=physical activity; Youth Risk Behavior Surveillance, U.S., 2005. Surveillance Summaries, June 9, 2006. MMWR 2006;55(SS–5).

Sources: See expanded version of the Statistical Update, at ***americanheart.org/statistics****. For more data on congenital defects, see Chapter 6, and our Statistical Fact Sheet, Congenital Cardiovascular Defects.*

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2004 Age–Adjusted Death Rates for Cardiovascular Disease (CVD), Coronary Heart Disease (CHD) and Stroke by State (includes District of Columbia and Puerto Rico)

State	CVD* Rank##	CVD* Death Rate	CVD* % Change† 1994 to 2004	CHD** Rank##	CHD** Death Rate	CHD** % Change† 1994 to 2004	Stroke# Rank##	Stroke# Death Rate	Stroke# % Change† 1994 to 2004
Alabama	50	364.2	–11.2	24	135.2	–24.9	50	64.8	–5.7
Alaska	2	223.4	–29.9	4	95.5	–37.6	30	51.4	–29.2
Arizona	13	248.3	–23.2	26	139.5	–27.7	10	43.3	–26.4
Arkansas	46	338.2	–17.2	46	174.9	–21.4	52	65.1	–24.3
California	28	276.4	–22.9	33	150.8	–32.1	32	52.8	–21.3
Colorado	4	233.9	–23.4	8	110.6	–33.1	14	44.2	–21.1
Connecticut	7	239.6	–31.2	12	122.6	–36.2	2	37.8	–28.8
Delaware	33	292.7	–22.6	40	161.2	–27.1	6	40.5	–20.4
District of Columbia	45	336.8	–14.2	49	182.9	+19.4	4	38.8	–46.8
Florida	24	265.7	–22.0	36	153.8	–28.9	8	41.9	–24.8
Georgia	42	324.3	–20.5	20	128.5	–34.6	46	59.8	–21.7
Hawaii	3	230.4	–24.2	3	91.1	–36.5	18	47.3	–19.1
Idaho	19	256.8	–21.0	10	120.4	–30.7	35	53.9	–19.8
Illinois	31	290.2	–27.4	31	149.2	–37.1	26	50.1	–26.4
Indiana	38	306.0	–25.1	32	150.4	–33.8	36	53.9	–29.0
Iowa	23	262.6	–25.5	30	147.6	–33.8	24	49.4	–20.7
Kansas	27	272.6	–21.5	15	124.2	–31.8	31	51.5	–19.0
Kentucky	44	334.9	–19.3	42	163.9	–28.5	42	58.0	–19.2
Louisiana	47	338.8	–18.8	39	158.3	–29.7	44	59.3	–17.5
Maine	20	257.2	–27.6	14	123.8	–38.9	27	50.8	–14.3
Maryland	30	282.7	–21.0	35	151.7	–24.9	29	51.3	–21.1
Massachusetts	10	243.9	–26.6	9	116.7	–36.3	9	42.6	–19.5
Michigan	39	307.3	–24.7	44	166.3	–33.0	25	50.0	–28.2
Minnesota	1	211.1	–33.6	1	90.0	–44.7	16	46.2	–34.5
Mississippi	52	381.9	–18.6	43	164.6	–31.8	45	59.7	–16.8
Missouri	43	324.4	–20.7	45	169.5	–29.0	40	55.8	–19.9
Montana	6	237.4	–23.9	5	102.3	–32.0	15	45.6	–27.8
Nebraska	17	254.8	–30.0	6	106.4	–40.4	20	47.8	–22.7
Nevada	41	314.0	–20.6	21	128.8	–37.4	34	53.6	–17.2
New Hampshire	22	261.1	–28.0	29	143.2	–34.9	12	43.7	–34.0
New Jersey	25	270.9	–26.0	38	155.1	–31.8	5	39.3	–29.7
New Mexico	8	239.6	–22.7	13	122.8	–27.1	7	40.6	–32.4
New York	34	297.6	–28.3	51	195.3	–31.2	1	32.7	–31.8
North Carolina	35	298.0	–24.4	28	143.1	–34.0	48	60.9	–27.5
North Dakota	11	247.9	–27.3	23	132.8	–25.0	37	54.3	–23.5
Ohio	37	305.5	–23.6	41	162.0	–31.4	28	51.1	–17.4
Oklahoma	51	367.6	–10.9	52	208.8	–11.2	47	60.4	–10.9
Oregon	15	250.8	–24.8	7	108.8	–37.7	43	58.1	–25.7
Pennsylvania	32	291.2	–26.8	34	151.5	–34.5	19	47.3	–24.2
Puerto Rico††	9	243.5	–19.5	11	122.2	–12.6	22	48.2	–17.6
Rhode Island	26	271.6	–23.3	48	181.0	–24.8	3	38.4	–30.2
South Carolina	40	308.5	–27.7	25	136.5	–38.2	51	64.9	–28.4
South Dakota	16	252.5	–27.7	27	141.4	–33.1	21	47.8	–24.2
Tennessee	49	349.1	–18.3	50	189.5	–23.9	49	64.5	–24.8
Texas	36	301.3	–19.5	37	154.4	–28.8	41	56.3	–19.0
Utah	5	237.3	–19.3	2	90.4	–38.6	17	46.9	–21.1
Vermont	12	247.9	–31.5	22	129.1	–38.2	11	43.6	–32.6
Virginia	29	281.6	–27.4	19	128.2	–33.5	39	55.2	–24.7
Washington	14	249.1	–22.7	17	126.2	–25.9	33	53.4	–21.3
West Virginia	48	344.5	–19.5	47	177.5	–27.5	38	54.4	–12.7
Wisconsin	21	260.8	–26.8	16	125.2	–36.2	23	48.9	–29.6
Wyoming	18	256.6	–22.7	18	128.0	–31.6	13	43.9	–30.5
Total United States		288.0	–24.7		150.2	–31.6		51.1	–24.2

*Cardiovascular disease is defined here as ICD/10 I00–I99.
**Coronary heart disease is defined here as ICD/10 I20–I25.
#Stroke is defined here as ICD/10 I60–I69.
##Rank is lowest to highest.
†Percent change, is based on log linear slope of rates for each year, 1994–2004. For stroke, the death rates in 1994–1998 were comparability modified, using the ICD/10 to ICD/9 comparability ratio of 1.0502.
††Percent changes for Puerto Rico are for 1996–98 (averaged) to 2004 and are not based on a log linear slope. Source: NCHS compressed mortality file 1979–2004. Data provided by personal communication with NHLBI.

Note: The AHRQ has released state level data for heart disease for all 50 states and the District of Columbia. The data are taken from the Congressionally mandated 2004 National Healthcare Quality Report (NHQR) at: http://www.qualitytools.ahrq.gov/qualityreport/2005/state/summary/intro.aspx. In addition, the Women's Health and Mortality Chartbook of the NCHS has state-related data for women at: http://www.cdc.gov/nchs/data/healthywomen/womenschartbook_aug2004.pdf. Also, at http://apps.nccd.cdc.gov/brfss-smart/index.asp, Metropolitan/Micropolitan Area Risk (MMSA) data are available for 500 such areas nationwide. BRFSS data are also collected within each state (www.cdc.gov/brfss). In addition, the NCHS, has "Health Data for All Ages by State": http://www.cdc.gov/nchs/health_data_for_all_ages.htm.

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Statistical Fact Sheet — Miscellaneous
2007 Update

Causes of Death — Statistics

Cardiovascular Diseases

- In the United States, total cardiovascular disease is the leading cause of death. Looking at specific age groups, cardiovascular disease is no. 1 for age 65 and older, no. 2 for ages 0–14 and 25–64, and no. 4 for ages 15–24.

Note: The codes below are from the International Classification of Diseases, 10th Revision (ICD/10). "Cardiovascular Diseases" includes Congenital Cardiovascular Defects.

Rank of the 10 Causes of Death by Age Group
United States, 2003

	0-14	15-24	25-44	45-64	65-74	75+	TOTAL
Cardiovascular Diseases (I00-I99, Q20-Q28)	2	3	2	2	2	1	1
Cancer (C00-C97)	3	4	3	1	1	2	2
Chronic Lower Respiratory Diseases (J40-J47)	8	6	7	5	3	3	3
Accidents (V01-X59,Y85-Y86)	1	1	1	3	5	8	4
Diabetes Mellitus (E10-E14)	9	7	5	4	4	6	5
Influenza and Pneumonia (J10-J18)	4	5	6	9	7	5	6
Alzheimer's Disease (G30)	--	--	--	--	9	4	7
Nephritis and Nephrosis (N00-07, N17-19, N25-27)	7	9	9	8	6	7	8
Septicemia (A40-A41)	5	8	8	7	8	9	9
Intentional Self-Harm (Suicide) (X60-X84, Y87.0)	6	2	4	6	--	--	10
Essential Hypertension (I10, I12)	10	10	10	10	10	10	11

For additional information, see our Heart Disease and Stroke Statistics – 2007 Update, available on our Web site.

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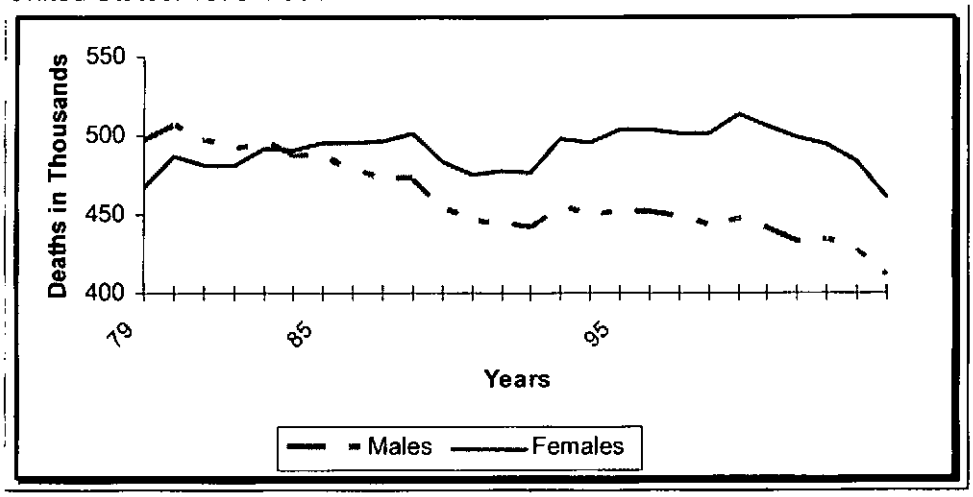
Cardiovascular Disease Mortality Trends for Males and Females
United States: 1979–2004



Source: NCHS and NHLBI. Note: The overall comparability for CVD between the ICD/9 (1979–98 and ICD/10 (1999–04) is 0.9962. No comparability ratios were applied.

Death rates are age-adjusted per 100,000 population, based on the 2000 U.S. standard. Some data are reported according to ICD/9 codes and some use ICD/10 codes.

Cardiovascular Disease (CVD) (ICD/10 codes I00-I99, Q20-Q28) (ICD/9 codes 390-459, 745-747)

- One in three female adults has some form of cardiovascular disease.
- Since 1984, the number of CVD deaths for females has exceeded those for males.
- In 2004, CVD was the cause of death in 459,096 females. Females represent 52.8 percent of deaths from CVD.
- In the United States in 2004, all cardiovascular diseases combined claimed the lives of 459,096 females while all forms of cancer combined to kill 267,058 females. Breast cancer claimed the lives of 40,954 females; lung cancer claimed 68,461.
- The 2004 death rate from CVD was 288.0. Death rates were
  - — 238.0 for white females
  - — 333.6 for black females.
- In 2005, CVD was the first listed diagnosis of 3,023,000 females discharged from short-stay hospitals. Discharges include people both alive, dead or of unknown status.

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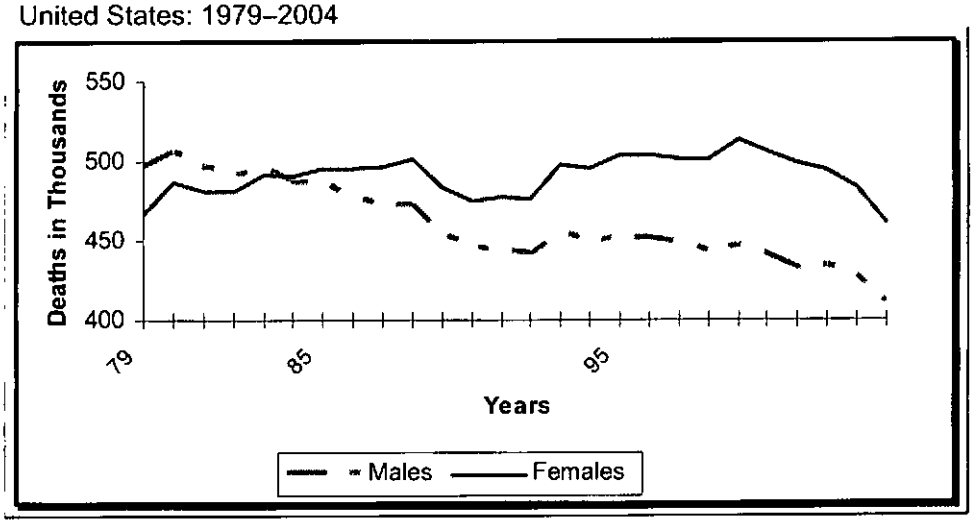
Men and Cardiovascular Diseases
2008 Update

Cardiovascular Disease Mortality Trends for Males and Females
United States: 1979–2004



Source: NCHS.
Note: The overall comparability for CVD between the ICD/9 (1979–98) and ICD/10 (1999–2004) is 0.9962. No comparability ratios were applied.

Note: Death rates are age-adjusted per 100,000 population, based on the 2000 U.S. standard. Some data are reported according to ICD/9 codes and some use ICD/10 codes.

Cardiovascular Disease (CVD) (ICD/10 codes I00-I99, Q20-Q28)

- About one in three adult men have some form of cardiovascular disease.
- In 2004 cardiovascular disease caused the deaths of 410,628 males and 459,096 females. Males represent 47.2 percent of deaths from CVD. Cancer killed 286,830 males in 2004.
- The 2004 overall death rate from CVD was 288.6. Death rates were
  - — 335.1 for white males.
  - — 454.0 for black males.
- In 2005, cardiovascular disease was the first listed diagnosis of 3,136,000 males discharged from short-stay hospitals. Discharges include people alive, dead and status unknown.

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Carle Foundation Hospital
Application for CON Permit

Criterion 1110.420 (Modernization) - Center for Digestive Health (Endoscopy)

Criterion 1110.420(a) is not applicable to the modernization of the digestive health services because it is not a bed category. Justification of the scope of modernization, however, is described herein. The extent of modernization, based on historical procedural levels and utilization trends, justifies the ten procedure rooms proposed.

As set forth on Attachment Mod-1G, Carle Foundation Hospital reported an 11.3% average annual increase in endoscopy and other digestive health related cases in the most recent three year period. Set forth below is the hospital's FY2005 to FY2007 endoscopy volume.

Period	Procedures
FY2005	9,386
FY2006	11,854
FY2007	11,511

In addition, there are just over 1,000 endoscopy procedures performed in Carle's Champaign ambulatory surgery center, Champaign Surgicenter, annually.[12]

While historically each procedure has required approximately 1.25 hours of dedicated procedure room time, it is anticipated that a redesigned and expanded digestive health program will improve throughput of cases and that the procedure time will be reduced to approximately one hour per case. According to the IDPH Annual Hospital and ASTC questionnaire data for 2006, this duration is on target with the state average for these procedures in dedicated-GI procedure rooms in hospitals and in ASTCs.

For purposes of identifying the correct number of procedure rooms in the new digestive health center, the following assumptions were made:

- Cases would increase at 50% of their current 11.3% annual growth rate (or 5.65% per year). This conservative growth rate recognizes the current capacity limitations.
- Procedure room time for each patient will be one hour

[1] 1,048 endoscopy cases were performed at the ASC in 2006.

• All endoscopy cases at the Champaign Surgicenter will be moved to the new digestive health center although no volume increases are anticipated

• Service use was forecasted five years out to 2012

Projected Utilization Formula

11,511 x 1 hour x 1.2825 (5.65% x 5 years) + 1,000 hours of ASTC volume = 15,763 hours/10 procedure rooms = 1576 hours per room per year in 2012

Digestive Health Services

The new Digestive Health Center will provide a comprehensive, integrated care system for the diagnosis and treatment of patients with digestive disorders. In one convenient facility, our patients will have access to cutting-edge technology to diagnose and treat conditions ranging from gastroesophageal reflux and celiac disease to colorectal cancer and inflammatory bowel disease. Our services include upper GI endoscopy, enteroscopy, and colonoscopy, treatment of GI bleeding, esophageal dilation techniques, liver biopsy, laparoscopy. Notably, the new Digestive Health Center at Carle Foundation Hospital will enhance the availability of colon cancer screening through augmented delivery of endoscopy services.

Existing Program Configuration

Carle Foundation Hospital's current digestive health program consists of 7,215 gross square feet. This area does not accommodate physician office space which is housed in a completely different part of the campus. Even without any physician office space adjacent, the unit currently spans two separate campus buildings, the Rogers Building and the Parkview Building which are 42 years old and 31 years old respectively. The current clinical area includes six procedure rooms. Its preparatory and recovery space is shared with preparatory and recovery space for other service lines (interventional radiology and cardiac catheterization). Nurse workspaces are out in the open in the middle of the hall, as are chairs for waiting patients and family members. These cramped and overlapping support spaces do not provide optimal through-put of cases nor do they provide for the appropriate level of privacy and confidentiality that patients, staff and family have grown to expect in the era subsequent to the enactment of the HIPAA privacy rules. Currently, there are no family consultation rooms available for private communications.

Proposed Expansion and Modernization

As part of the expansion and modernization of its gastroenterology and colorectal services, Carle Foundation Hospital will relocate all digestive health services

including gastroenterology and colorectal physicians' offices. In the new location, they will all be in integrated space and four additional procedure rooms will be added, bringing the total number to ten. The 30,622 gsf of renovated space will be located on the first floor and will allow for a private, separate exit for digestive health patients. Additionally, a larger, dedicated surgical preparation and recovery area (described further below) will be built as well as larger procedure rooms to accommodate the larger and more advanced equipment that has been developed as technology in this area of medicine has advanced since the current endoscopy procedure rooms were built. Further, the increasing administration of propofol for conscious sedation of patients undergoing endoscopy[3] mandates certain technology and medication requirements to support its administration. Whenever propofol is used, the dedicated anesthesiology staff must monitor patients continuously for oxygen saturation, respiration, heart rate and blood pressure. Emergency medications and equipment must be immediately available for the maintenance of a patent airway, oxygen enrichment and artificial ventilation in addition to circulatory resuscitation. (Further described in Endoscopy Exhibit B.) This support will be available regardless of the sedative agent used.

A larger department will also provide an opportunity for new diagnostic and therapeutic techniques such as the "virtual colonoscopy. Last fall, at the American College of Radiology Imaging Network meeting on September 28, 2007, researchers presented results from the National CT Colonography Trial. This study, funded by the National Institutes of Health (NIH), indicated that computerized tomographic colonography (CTC), or virtual colonoscopy, may be a viable option for colorectal cancer screening. Carle Foundation Hospital would like to have this option available if it proves to be a cost-effective and quality enhancing diagnostic procedure.

In addition, a significantly larger prep and recovery area, dedicated to digestive health patients will aid in throughput of patients, which is hindered right now due to space and volume limitations. This is due, in part, to the fact that the space is shared with the outpatient surgery department. Also, prep and recovery bays will be modeled after those utilized for surgical preparation and recovery in the hospital's North Tower surgical department. These bays are enclosed by walls on three sides and in front by a glass observation wall which can be opened completely for moving gurneys and equipment but when closed provides a quiet, private space enhancing infection control, confidentiality and removing patients from the commotion associated with the busy care environment. A retractable curtain will also run along with glass wall for further privacy. In this environment,

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[3] Propofol is associated with a statistically significant improvement in comfort and sedation score when compared to midazolam and meperidine. Propofol versus Midazolam and Meperidine for Conscious Sedation in GI Endoscopy, Koshy, G.; Nair, S.; Norkus, E.P.; Hertan, H.I.; Pitchumoni, C.S, The American Journal of Gastroenterology, Volume 95, Number 6, 1 June 2000 , pp. 1476-1479(4).

family members can accompany the patient in the recovery area soon after a patient is returned from his or her procedure. Patients experiencing distress and difficulties associated with the procedures will not disrupt other patient experiences or exacerbate the emotional state of anxious and uncomfortable patients.

In addition, the design of the new digestive health center allows improved care and management of clean and dirty equipment with limited travel from procedure space to cleaning area. Adequate waiting area for families and staff support space will also be built.

8,890 gross square feet of adjacent physician office space and space for translational research collaborations and new directions in digestive health and liver research, in an integrated, collaborative and multidisciplinary fashion. It is our hope that the new center will attract new investigators to foster digestive disease research and make significant discoveries relating to pediatric and adult digestive diseases.

In addition, as described further below, the clinical integration benefits of bringing all facets of the digestive health center (including physician offices and research space) together in close proximity to one another are designed to greatly enhance communication, patient care, and patient outcomes.

CRC Screening Campaign

Through its expanded and revitalized program, Carle Foundation Hospital plans to increase awareness about colorectal cancer (CRC) and improve the rates for CRC screening of adults residing in Planning Area D-1 who are at risk for CRC based on their age and other factors.[4]

With the opening of its new, state-of-the-art digestive health center, one of CFH's primary objectives is to launch a major of screening campaign with the goal of reducing late stage detection of CRC and the morbidity and mortality associated with late stage CRC. Effective screening campaigns can drastically reduce the number of individuals that are diagnosed with advanced colorectal cancer each year. With timely screening and treatment, advanced stages of the disease can be avoided. There is a 95% chance for a five year survival in stage I of CRC, as opposed to only a 3% chance of survival in stage IV CRC.[5]

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[4] Risk factors include a personal or family history of colorectal cancer, colon polyps, or inflammatory bowel disease, age, smoking, physical inactivity and a low-fiber, high-fat diet.

[5] http://www.fdhn.org/html/education/colorectal/facts.html.

It has been only since 2001 that Medicare has covered all recommended CRC screening options.[6] However, a December 10, 2007 article in *Health Day News* found that the percentage of enrollees in Medicare getting screening tests such as colonoscopies has actually declined since the program began paying for them.[7] In fact, only 25% of Medicare beneficiaries were screened for CRC between 1998 and 2004.[8]

The Center for Medicare and Medicaid Services' contracted agency, the Medical Review of North Carolina, Inc. studied colorectal cancer screening rates in the Medicare population and found that in Champaign County during the seven year period from 1998 to 2004 there was a population of approximately 20,000 Medicare beneficiaries eligible for CRC screening, however, only 57% of that population (or 11,400 individuals) received any CRC screening test. Even fewer individuals, 7,000 (or 35%), received a colonoscopy[9] – the preferred and "Gold Standard" screening method according to the American Gastroenterological Association. Based on this data, there are more than 13,000 individuals who are in need of a colonoscopy in Planning Area D-1. Based solely on that group receiving the recommended screening, over a 10-year period an average of 1,300 additional procedures would be performed in Champaign County each year. Since the recommended re-screening period is every ten years, in the subsequent ten year period, that figure would at least double.[10] As mentioned, these numbers do not account for the non-Medicare eligible portions of the Champaign County population who should be receiving colonoscopy screenings (those between ages 50 and 65, or younger people with a family history of CRC) or the projected increase in the Medicare-eligible population as more and more baby boomers reach age 65.

While current capacity constraints and other practical considerations limit the hospital's ability to profoundly impact the screening rate, once the program is expanded Carle Foundation Hospital would endeavor to improve the screening rates. A 25% increase in the screening rate over five years, would increase the increase the case volume by 1,000 additional colonoscopy screenings annually, for the Champaign County patient base. Such an improvement is an aggressive target, yet it still leaves a substantial number of CRC screening targets in need of

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[6] American Cancer Society. *Colorectal Cancer Facts & Figures Special Edition 2005*. Atlanta: American Cancer Society, 2005.

[7] *Most Medicare Recipients Ignore Colorectal Cancer Screening*, HealthDay News, December 10, 2007

[8] While there is a broader population which is at risk for CRC, Medicare data is valuable because it coveres a large sub-group of individuals at risk of a CRC diagnosis.

[9] http://www.mrnc.org/crcreport2/tab3.aspx?County=Champaign&State=IL
http://www.mrnc.org/crcreport2/tab2.aspx

[10] These figures do not take into account the individuals within the group that have already been screened who should have a repeat screening every ten years.

a colonoscopy. As patient awareness and diagnostic methods are improved, Carle Foundation Hospital would reassess these goals. Beyond enhancing endoscopy services themselves, Carle Foundation Hospital management is collaborating with its affiliated physicians to focus on early disease identification and intervention efforts. These efforts include primary care physician protocols to refer patients on for CRC screening and educate those patients about the live-saving benefits of identifying CRC at an early disease state.

Additional overview information about colorectal cancer and prevention and regarding other elements of the proposed Carle colorectal cancer screening outreach program is set forth in Endscopy Exhibit A within this Attachment Mod-3.

Clinical Integration

As discussed above, the current digestive health program at CFH is very disjointed, with physician offices in a totally separate building, and the shared prep and recovery area separated from procedure rooms by public hallways and a bank of elevators.

In addition, there are just over 1,000 endoscopy procedures performed in Carle's Champaign ambulatory surgery center annually. However, the ASC has no dedicated procedure room for endoscopy procedures, nor does it have any staff dedicated to endoscopy procedures.

Clinical integration of the digestive health program will improve patient care and outcomes in various ways. For example, in the January, 2008 issue of Hospital and Health Networks Magazine, authors cited the following as some of the benefits of clinical integration:

- A patient's status is tracked from setting to setting with no gaps in continuity care.
- Duplication is eliminated for both clinical and administrative work.
- The chances of medication errors or other mistakes are reduced.
- Data can be collected and best practices can be developed for certain conditions to improve care outcomes.

In addition to bringing the existing hospital based program elements within much closer proximity of each other, Carle plans to move the ASC's endoscopy cases to the new digestive health center based at the hospital. These moves will achieve several goals including care provided in specialized procedure rooms, dedicated staff and CRNAs, and an overall integrated care setting providing the benefits as described above. In addition, the transfer of these cases would free up a significant amount of ASC operating room time for physicians from other specialties who are seeking block scheduling time at the ASC and cannot

currently be accommodated (local physicians recently filed an application to build a new ASC in Champaign citing full capacity at Carle's ASC).

Research Initiatives

One of the research initiatives of Carle's Center for Digestive Health will be to improve the ease of use and comparative efficacy of colonoscopy preparations (which are designed to eliminate fecal matter to permit the physician to visualize the colon). Through participation in one study, physician researchers affiliated with the Carle Foundation Hospital are reviewing less onerous methods for cleaning the colon to improve the ability of patients to tolerate the preparation (for example, by reducing the volume of liquid to be consumed) and are also reviewing the feasibility of a pill preparation. In addition, with research facilities on site, data collection and processing may be enhanced thereby leading to improved care outcomes and best practices evaluations.

Endoscopy -Exhibit A
Colorectal Cancer Screening

Colorectal cancer is one of the deadliest but most preventable causes of death in the United States. In 2007, it is estimated that there were 147,000 new cases of colorectal cancer and 57,000 deaths from colon and rectal cancers combined in the U.S.[11] Colorectal cancer is second only to lung cancer as a cause of cancer deaths among American men and women.[12] Studies show that at least 33 percent of deaths from colorectal cancer could be avoided if people 50 and older had regular screening tests.[13] Screening helps reduce deaths from colorectal cancer in two ways: by finding precancerous polyps that can be removed before they become cancer, and by finding colorectal cancer early, when treatment is most effective. According to data published by the Center for Disease Control, Illinois, compared to other states, has one of the least effective colorectal cancer screening programs with screening rates of only 42.9% to 50% of respondents reporting any level of screening.[14] What's more, fewer than 25% of Americans over 50 years old follow early detection screening guidelines.[15]

Colonoscopy is the "gold standard" for CRC screening. Neither the flexible sigmoidoscopy, fecal DNA panel or fecal occult blood test is as effective as the colonoscopy in detecting CRC. A colonoscopy can be completed in more than 95% of examinations with negligible risk. Colonoscopic screening in individuals with average risk has been found to be cost-effective and similar to cervical or breast cancer screening techniques in cost-effectiveness per life-year saved. Medicare has approved the use of screening colonoscopy in average-risk beneficiaries and there are a number of federal and state initiatives (described below) to improve CRC diagnosis and treatment.

Specific focuses of the Carle screening initiatives will be educational campaigns to highlight the importance of screening, and to debunk some of the misperceptions about CRC screening techniques. For example, there is significant reluctance to be screened because of the misperception that the colonoscopy procedure will be humiliating when, in fact, the use of anesthesia makes most patients unaware that the procedure is being performed. Also, patients can be hesitant to talk about changes in bowel movements, blood in their stools and unexplained fatigue. Public service announcements designed to

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[11] American Cancer Society.: Cancer Facts and Figures 2005. Atlanta, Ga: American Cancer Society, 2005. http://www.cancer.org/docroot/STT/stt_0.asp
[12] Cancer Statistics, 2003, Jemal A., et al., CA Cancer J Clin 2003;53;5-26.
[13] www.cdc.gov/nccdphp/pe_factsheets/pe_cancer.htm
[14] http://www.cdc.gov/colorectalcancer/statistics/screening_rates.htm This rate is compared to 60.1% to 70% in Connecticut, Delaware, District of Columbia, Maryland, Massachusetts, Minnesota, Rhode Island and Vermont.
[15] http://www.idph.state.il.us/public/press05/7.8.05b.htm

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enhance individual empowerment with respect to health care decisions will be aimed at patient avoidance behaviors. Further, as part of its educational outreach efforts, Carle Foundation Hospital will also encourage patient use of web-based information on treatment options by disease or condition to enhance patient awareness of the importance of preventative CRC services in the D-*1 planning area.

Practitioner education will focus on primary care outreach to identify screening candidates, and patient monitoring techniques designed to assist patients with the preparation process and ensure that scheduled procedures are not cancelled due to difficulty with preparation or fear of the procedure.
Carle's implementation of a screening program is consistent with recent legislative and public health agency initiatives to improve CRC screening rates and reduce colon cancer morbidity and mortality. Specifically, Senate Bill 1470 recently amended the Illinois Insurance Code with respect to colorectal cancer examinations. The legislation, effective January 1, 2004, provided that insurance coverage must provide coverage for colorectal cancer examinations for CRC in accordance with the published guidelines of the American Cancer Society. Further, on July 8, 2005, Governor Blagojevich signed Senate Bill 133 into law. SB 133 created the Vince Demuzio Memorial Colon Cancer Fund. Money collected in this fund will be directed to the Illinois Department of Public Health to establish and maintain a public awareness campaign in target areas in Illinois with high colon cancer mortality rates. The campaign is being developed in conjunction with recommendations made by the American Cancer Society.

At the federal level, March is recognized each year as Colorectal Cancer Awareness Month. CMS partners with the Centers for Disease Control and Prevention (CDC) to increase CRC screening within the Medicare population and the general population aged 50 and above. Together CDC and CMS develop and implement the Screen for Life: National Colorectal Cancer Action Campaign (SFL), which informs men and women aged 50 years and older about the importance of CRC screening for early detection and prevention of the disease. In March of each year, CMS joins 50 agencies and organizations to carry out the National CRC Awareness Month Campaign, which generates widespread awareness about CRC and encourages people to learn more about how to reduce their risk of the disease through regular screening and a healthy lifestyle.

Given the focus on this disease during the month of March, it seems fitting that the Applicants are filing this application for an enhanced and expanded digestive health program which will enhance the availability of colorectal screening services in the target region, as well as provide additional opportunities for research and public awareness in this important area of public health.

Endoscopy- Exhibit B
Emergency Resuscitative Equipment for Endoscopy

Assorted syringes, tourniquets, adhesive tape
Intravenous access equipment including fluids

Basic airway management equipment
Oxygen supply
Suction machine and catheter
Nasal cannulae and face-masksa
Bag-mask ventilation device
Oral and nasal airways (all sizes)
Advanced airway management equipment
Laryngoscope handles and bladesa
Endotracheal tubes and styletsa
Laryngeal mask airwaya
Cardiac equipment
Pulse oximeter
Cardiac defibrillator

Emergency medications
Atropine
Diphenhydramine
Epinephrine
Ephedrine
Flumazenil
Glucose, 50%
Hydrocortisone
Lidocaine
Naloxone
Sodium bicarbonate

All appropriate sizes should be available

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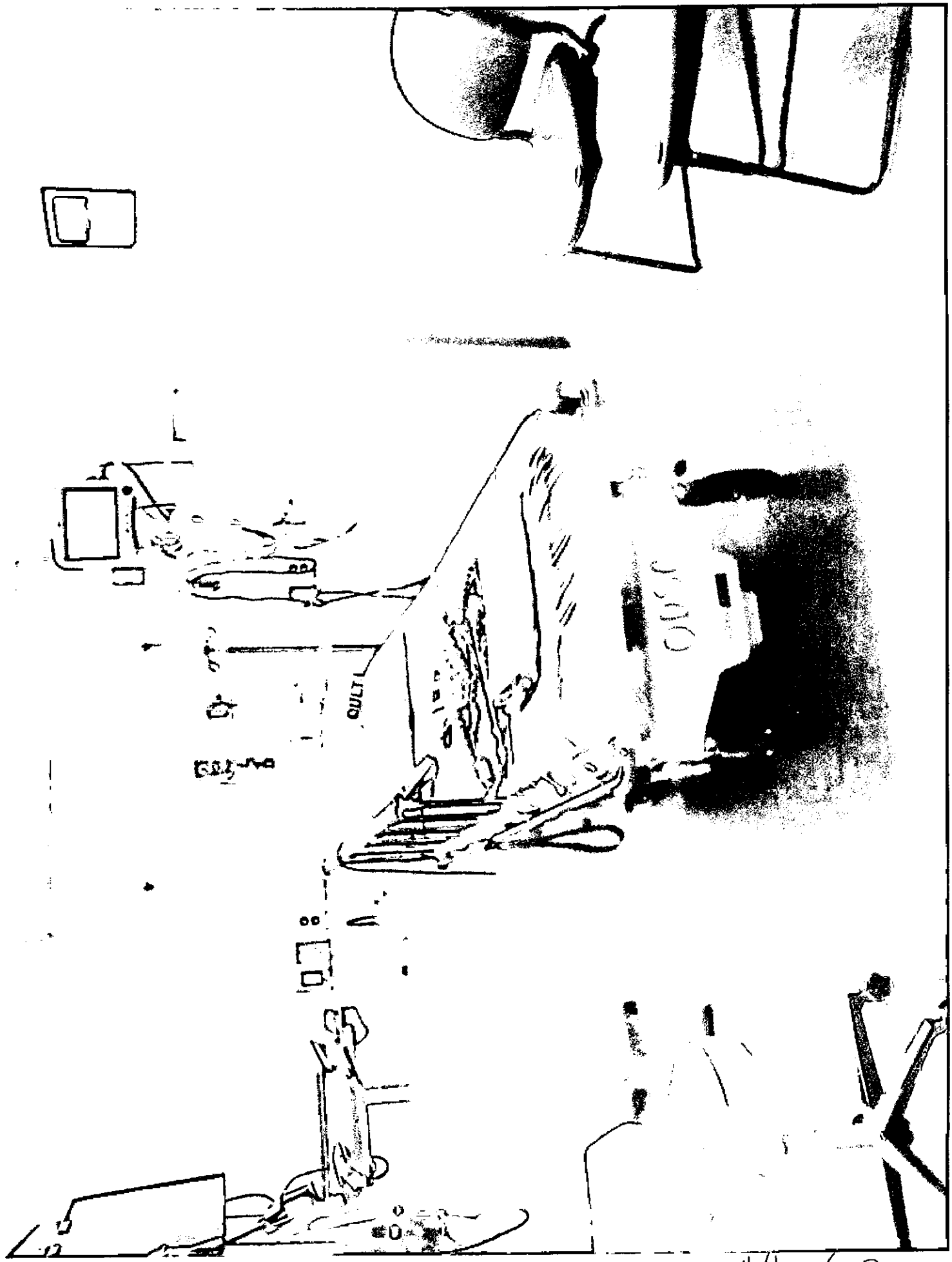

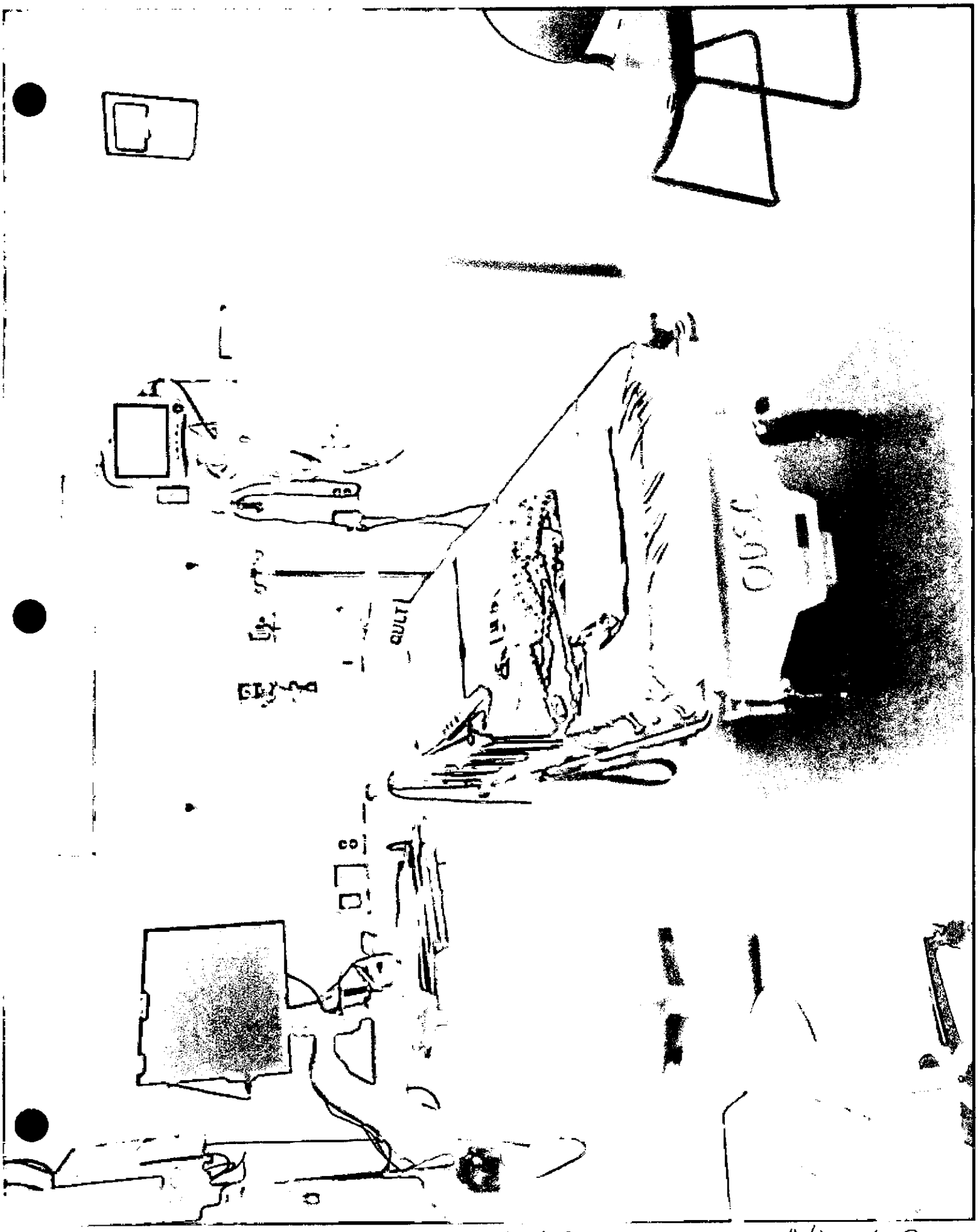

448 Mod 3

Carle Foundation Hospital
Application for CON Permit

Criterion 1110.420(b)(1) Modernization Review Criteria (Medical/Surgical Beds and ICU Beds)

Criterion 1110.420(b)(1) is not applicable to the modernization of the medical surgical beds because the square footage is being increased. Justification of the extent of modernization is discussed below. This discussion does include information on the obsolescence of the current space but the Applicants depend on the latter alternative (1110.420(b)(2) to justify the extent of the modernization. Current utilization and projected utilization of the 185 bed medical/surgical unit and the 32 bed ICU are described at the end of this section but also further discussed in Attached GRC-4 and Attachment GRC-6.

Criterion 1110.420(b)(2) Modernization Review Criteria (Medical/Surgical Beds and ICU Beds)

Provide a detailed explanation of why and how it was determined that expansion was necessary.

Introduction

Modernization of 88 of its 185 medical/surgical and all 32 of its ICU beds will ensure that Carle Foundation Hospital continues to be able to meet the healthcare needs of the community it serves by facilitating and enhancing capacity planning in order to meet the increasing patient needs of the future.

The convergence of a variety of factors, including patterns of patient-seeking behavior, an aging population, prevalence of heart disease, stroke, and cancer, increasing patient acuity, and very aggressive historical volume growth, especially with respect to its med/surg beds and ICU beds, demands that CFH leadership anticipate and address a continued increasing demand for medical and surgical inpatient services. Over the five years 2002 – 2007 there was a 23.5% increase in patient days for CFH overall. There has been a particular surge in demand for medical/surgical and ICU care.

The increased demand for services coupled with a deteriorating physical plant, has compelled the CFH leadership to initiate the modernization of its med/surg and ICU beds to ensure continued access to inpatient hospital services in East Central Illinois. The design of the modernized medical-surgical and ICU units was focused on flexibility, creating room and unit layouts that will allow each room to be utilized for different specialties and acuities of patients as the needs and mix of CFH patients change over time.

Other goals relating to hospital environment and quality of care issues to be achieved through modernization of the medical/surgical and ICU beds, as with all of the patient care facilities in the new bed tower include:

- Incorporation of dedicated family space within all patient care rooms, including medical-surgical and intensive care rooms;
- Development of a facility with consistent room design and location of all medical supplies to facilitate physician and staff familiarity with all rooms and improve patient safety, reduce medical errors and support efficient acute, emergent and routine patient care;
- Incorporation of dedicated space for use of CFH's fully integrated electronic medical record by patient care staff, physicians, residents, medical students, nursing students, and ancillary support staff;
- Facilitation of professional and family consultation, teaching, educational, and support space central to each of the patient care units;
- Design of patient units and patient rooms to allow CFH the flexibility to adjust the specific clinical patient type on a given unit or move to higher acuity with minor renovation; and
- Development of space that supports the needs of the increasing population of patients with multiple, complex chronic illnesses, and bariatric and overall older census of patients.

In connection with developing the proposal, CFH developed standards for patient room design as follows:

- Nurse servers that house isolation supplies and other patient care supplies immediately outside of each patient door.
- Large Patient Room Doors for ease of patient transport and equipment access to each room. Medical-Surgical room doors are three feet wide with an additional two foot leaf, allowing a five foot clearance. ICU room doors with sliders and breakaway doors allowing a 7'-8" clearance through the doorway.
- Staff hand washing sink immediately inside each patient room to encourage hand washing upon entrance and exit from the patient room. Hand washing reduces nosocomial infection rates.
- Electronic Documentation Station on the headwall immediately inside the patient room in order to encourage staff documentation while continuing to interact with the patient and family. An additional computer work station is located in a "cockpit" documentation station immediately off the hallway between each two patient rooms.
- Dedicated Patient Zone adequately sized to support multiple pieces of equipment and multiple staff members for maximum patient care needs support, while also not intruding in the dedicated family zone.
- Dedicated Family Zone with convertible couch for sleeping and also, in Medical-Surgical rooms, a family desk area.
- Consistent Toilet Facilities with easy access to assisting all patients in movement between toilet, shower and sink areas in Medical-Surgical rooms.

- Large Windows to facilitate substantial natural light within each room. Exposure to natural light has been shown to improve patient outcomes.
- Staff Observation Windows from Hallway located in each of the cockpits between patient rooms to enable staff for monitor patients easily and without disturbing the patient.
- Easy Access to Central Nurse's Stations with multiple stations located throughout the unit, identified by differentiating interior design features, e.g. designated changes in flooring, ceiling structure, etc.

Limitations of Current Units

The current medical/surgical and ICU units have many functional limitations that need to be corrected. For example, both the current units are lacking the necessary features for acutely ill patients. The units are housed in two buildings – Rogers and Parkview, which are 42 and 31 years old respectively – which, due to their age and increasing obsolescence, fall short of providing state-of-the-art facilities that enhance independence and maximize each patient's opportunity to re-learn the basic activities of daily living. The patient rooms are largely semi-private, without adequate bathrooms, and do not accommodate the required adaptive equipment. Often, three patients share one bathroom. When a patient is transferring in and out of bed, furniture and equipment must be moved, and when two staff members are needed for such transfers, there is not adequate space to maneuver. There are no dedicated visitor spaces nor is there adequate space for personal items in these rooms.

Further, the use of clinical equipment at bedside has increased greatly over the years. In any given patient's stay, there might be a ventilator, dialysis machine, multiple IV poles with many infusion pumps, portable x-ray machines, and other diagnostic aids. It is presently difficult to position these devices while maintaining patient access for the doctors and nursing staff.

The current units are organized along a single circulation corridor. This corridor is used by the critically ill patients, public, staff and materials management. Similarly, vertical transportation is shared between patients, public, staff and materials management. Further, it is difficult to adapt to changes in technology in an older building. Electrical systems will be required to be upgraded and emergency power capacity expanded. Low floor to floor heights make integrating new equipment difficult. Also, the building exterior walls are inefficient and result in significant energy loss. In order to reorganize the circulation as well as address structural, mechanical, electrical and other deficiencies noted above the buildings would need to be completely gutted.

Neither building meets the requirements of the current 2003 International Building Code or the Illinois Accessibility Standards. Only limited renovations could be undertaken without triggering required compliance with the new standards. Building seismic design, ventilation capacity, egress width criteria, and toilet room dimensions do not conform to current requirements. Based on the current design of the facilities, the requirement to come into compliance with such standards would make a major renovation infeasible

Each airborne isolation room is designed with an anteroom with a hand-washing sink and isolation precaution equipment.

There is increasing evidence that the physical setting in which patients receive medical care has a major impact on patient outcomes. Studies have shown that physical environment impacts a broad range of factors relevant to quality of care including improved patient and staff safety; increased staff effectiveness leading to a reduction in medication and other errors; reduction in hospital-acquired and other infections, caused by airborne pathogens by providing a patient care environment with single-bed rooms, improved HVAC systems, lower stress levels for patients as a result of appropriate lighting, reduced noise, and adequate facilities for family and other support networks; improved patient communication, confidentiality, and privacy; and, ultimately, a reduced length of stay.

In 2004, a report to the Center for Health Design[1] in connection with the "Designing the 21st Century Hospital Project" provided an excellent summary of numerous scientific studies that document a variety of design characteristics which impact the quality of the care and patient outcomes and which will be incorporated in the new bed tower design. A copy of this report is attached hereto as Attachment GRC-4. Single rooms, reduced noise, improved lighting, better ventilation, better ergonomic design, supportive workplaces, and improved layout have all been shown to reduce errors, reduce stress, improve sleep, reduce pain and drugs, and improve other outcomes.

Today, most health care providers would likely agree that the old paradigm in which a doctor reels off instructions to a mostly passive patient falls somewhere toward the bottom of the effectiveness scale. In the dawning of the pay-for-performance era, engaging patients in self-management is widely considered a more effective way to improve health and outcomes. Patients and families, who are more accustomed to being passive recipients of care, will require time and training to learn new skills and strategies to become active participants in care and decision-making. The possibility of misunderstanding, dissatisfaction, and less satisfactory outcomes, and even medical errors, will be greatly diminished.

The role of family-centered care has been increasingly recognized as an important component of patient care, and CFH has designed the patient rooms to include space for family member and patient belongings. Families are no longer viewed as visitors, and units are open 24/7. On many units, families are encouraged to be present for rounds and given choices about how they would like to participate. Patients' families expect to spend long periods of time in the room offering comfort and encouragement to the patient, supplementing nursing care and becoming better informed about how to care for patients after discharge. "Rooming in", where a family member sleeps in the patient's room, has become the norm. With the limited existing space in the current ICU

[1] The Center for Health Design is non-profit research organization of healthcare and design professionals with a mission to improve the quality of health care outcomes through building architecture and design.

unit, rooming in is an undesirable option, where families struggle to avoid being in the way of patient care. The planned rooms have a family zone at the window for sleeper chairs or a day bed.

This family-centered care is linked with the patient's discharge goals. The charge nurse and bedside nurse participate in these rounds and ensure that discharge goals are printed out daily and available for the patient and family. Physician orders are written on a computer just outside the patient's room during rounds. The emerging quality improvement data indicate that as a result of this approach to care:

- Patients are being discharged sooner;
- Medical order entry error rates have been reduced from 7%-9% to 1%;
- Faculty report that family-centered care is a more effective way to teach; and
- Families are involved in decision-making.

Utilization and Projected Need

CFH's service area spans from Watseka on the north end to Paducah, Kentucky on the south end (over 300 miles). The East/West service area stretches east into border counties in Indiana, and west to Macon County, Illinois (a span of 115 miles).

The Hospital serves both the immediate communities of Champaign and Urbana as well as an extended geographic community, including referring hospitals and physicians that depend on the advanced programs and services at the Hospital to diagnose and treat complex morbidity. Included as Attachment GRC-4 is a map showing the CFH service area and planning area hospitals. Patient origin by county (FY2007) for the hospital is included on that map. As depicted in that map, approximately 64% of patients receiving inpatient care at Carle Foundation Hospital during FY2007 originated from the D-1 Planning Area. Eighty-two percent (82%), the vast majority of other patients receiving services during that period who did not originate from the D-1 area, were from the other Region D Planning areas. In other words, almost 94% of patients receiving services at Carle Foundation Hospital originated from the Region D (HSA 4) Planning Area during that period.

Carle Foundation Hospital is the only designated Level I Trauma Center in its planning area, and is also a designated Co-Perinatal Regional Center by the Illinois Department of Public Health. CFH serves both adult and pediatric patients, and provides advanced diagnostic and treatment services in a wide range of adult clinical specialties including medical and interventional cardiology, neurology and neurosurgery, medical and surgical cancer, trauma, digestive disorders, ear/nose/throat, geriatrics, obstetrics and gynecology, orthopedics and respiratory disorders. Pediatric services, which are overseen by a Board-certified pediatric intensivist, include pediatric and neonatal intensive care services for critically ill babies and children, pediatric pulmonolgy and GI, and other pediatric specialty services.

A significant source of patients for CFH is its critical care transport service, including the AirLife Program. In 2007, CFH received transports from more than 19 hospitals where physicians determined that the complexity of care required was out of the scope of the local hospital and better performed at CFH. These hospitals are shown on the first map following this narrative. Such transports are facilitated by Carle's dedicated AirLife transport service (which is further described in the Background of Applicant Section) and its mobile ICU team which is comprised of specially trained critical care nurses and paramedics functioning under defined protocols for unstable and critically ill adult, obstetric, pediatric and neonatology patients. In 2007, 5,470 calls (15 a day) to the Physician Access Line referral and transport service were made by hospitals and physicians from within and outside of CFH's planning area. Due to the broad area that its trauma program serves and its status as the only Level I Trauma Center in the region, CFH has the highest organ procurement rate in the Midwest. In other words, a very high volume of accident victims who have suffered severe trauma are brought to its trauma center where our highly trained staffcoordinate organ and tissue donations which enables us to saves lives.

CFH is also planning to expand programs focused on serving the aging population in its service area. For example, to address the growing neuroscience needs of its growing senior population, CFH is currently working to obtain Joint Commission certification as a Primary Stroke Center. An initial assessment of CFH's stroke program indicates that stroke patients residing in the Region D planning area and the D-1 sub-planning area are being diverted to other medical centers outside of the Planning Area. Furthermore, as vascular diseases and associated co-morbidities increase in incidence and prevalence, CFH's need to serve the community and improve clinical outcomes for stroke victims increases the importance of such a program. The Stroke Center program would be dedicated to preventing, diagnosing and treating strokes, offering applications of the latest technology and medications while treating the stroke patient's entire needs. Care would be coordinated from the first point of contact with the patient, whether through the emergency department, the Stroke Program's inpatient or outpatient services or the rehabilitation unit, and would address all aspects and phases of recovery including disease management, risk reduction, and physical, occupational and speech therapy.

CFH is uniquely positioned in its Planning Area to bring together a multidisciplinary team which focuses on comprehensive stroke management to bring state of the art stroke care to stroke victims in the region, obviating the need for them to leave the planning area to receive the care they need. CFH hopes to achieve Joint Commission certification as a Primary Stroke Center in 2009, followed by development of the Comprehensive Stroke program shortly thereafter.

The most dynamic demographic changes affecting the Planning Area's population are the aging of the Baby Boomer population (individuals born between 1946 and 1964) and the growth (and survival) of the oldest age cohort 75+. At the time that this proposed project is scheduled for completion, the first members of the baby boomer generation will be turning 65 years old, entering their retirement years and the years in which they'll

need increased medical care. Representing more than 75 million people, or nearly one-third of the U.S. population,[2] the baby boomers present a number of challenges that the health care industry will soon be forced to face. More than 6 of every 10 "boomers" are expected to spend their golden years with more than one chronic illness, according to a report done last year by First Consulting Group for the American Hospital Association.[3] More than one in three boomers in this age group will be obese. By 2020, nearly half of all boomers are projected to have arthritis, and by 2030, one in four boomers will be living with diabetes.[4] In addition, deaths from heart disease are projected to increase by 130% between 2000 and 2050.

The aging of the population is already very significant as it relates to hospital utilization as demonstrated by the Illinois Department of Public Health 2006 Annual Hospital questionnaire data. This data indicates that 55% of patient days in the medical/surgical category of service in Illinois hospitals resulted from care rendered to individuals aged 65 and older, and that care rendered to individuals aged 75 and older represented 36% of that care. To exacerbate matters, the U.S. Census Bureau data for 2006 indicates that the 65+ age cohort represented only 12% of the population in Illinois, and that the 75+ age cohort represented approximately 6% of the state's population. As the 33% of the population comprised of baby boomers moves into this age category, and this segment of the population becomes proportionately larger, the burden on the health care system will increase.

At CFH, the proportion of medical surgical patient days of care rendered to individuals age 65 and older already stands at 55%. Thirty-two percent (32%) of those patient days are comprised of individuals in the 75+ age cohort. Again, as this segment of the population grows, so will patient days for this population.

In addition to the aging baby boomers, hospitalization of neonatal graduates is also contributing to the growth of the pediatric census in the hospital's ICU. (NICU "graduates" do not return to the NICU for subsequent hospitalizations.) The volumes in the NICU of the hospital have rapidly grown over the last several years (from 318 NICU admissions in 2004 to 374 NICU admissions in 2007). Extensive care protocols are in place in the NICU to minimize the readmissions of NICU patients and such babies are not typically readmitted within 30 days of discharge. However, these are fragile babies often born premature, immunocompromised, and/or prone to chronic illnesses, including GI and lung disorders. Thus, they often require several hospitalizations throughout their early childhood. Once a baby has been discharged from the NICU, subsequent inpatient care needs occurs within the pediatric ICU. As premature births and low-birthweight babies are both on the rise due to a variety of factors including higher

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[2] http://www.census.gov/Press-Release/www/releases/archives/facts_for_features_special_ editions/006105.html

[3] Source: American Hospital Association Press Release: Baby Boomers to Challenge and Change Tomorrow's Health Care System, May 8, 2007, http://www.aha.org/aha/press-release/2007/070508-pr-boomers.html

[4] Id.

incidence of fertility treatments and advanced maternal age, it follows that the number of pediatric ICU admissions will continue to rise as the NICU admissions increase.

Further, even without considering the additional volumes that the aging baby boomers will contribute, CFH has experienced significant growth in patient days both overall and particularly in medical/surgical care. As shown in Table 1 and Table 2 below, over the five years 2002 – 2007 there was a 23.5% increase in patient days for CFH overall, and for the same period, the five-year compounded average growth rate for medical surgical beds was 8.1%. In the years 2005 and 2006, this med/surg beds utilization growth was even higher, at 8.5% and 9.5% respectively.

Med Surg/ICU Mod-3 Table 1
Total Inpatient Days at Carle Foundation Hospital: 2002-2007

2002	2003	2004	2005	2006	2007	5-Year CAGR
57,795	62,270	67,132	67,875	70,617	71,350[5]	4.7%

Med Surg/ICU Mod-3 Table 2
Medical/Surgical Utilization Data for Carle Foundation Hospital: 2002-2007

2002	2003	2004	2005	2006	2007	5-Year
Days and ALOS	Days and ALOS	Days and ALOS	Days and ALOS	Days and ALOS	Days and ALOS	
33,733/3.9	37,337/3.5	40,110/3.9	39,286/3.5	42,919/3.8	47,414/4.2	8.1%
ADC/ %Util	ADC/ %Util	ADC/ %Util	ADC/ %Util	ADC/% Util	ADC/ %Util	
92.4/52.2%	102.3/57.8%	109.9/62%	107.6/60.7%	117.6/66.4%	129.9/70.2%[6]	8.1%

Based on this historical utilization, CFH anticipates 2012 utilization of its 185 medical/ surgical beds to be in a range of 90% to 100% utilization. These projections are based on a range of conservative, moderate and aggressive assumptions projecting between 60,514 and 69,667 medical/surgical patient days for that year.

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[6] During 2007, the Applicant increased its Med/Surg bed capacity by 8 beds from 177 to 185. The utilization figure above represents the utilization of the enlarged category of service – 185 beds. At 177, the utilization figure would be 73.4%.

With regard to ICU bed use projections for 2012, these projections are set forth below and discussed further in Attachment GRC-4. Further, documentation from the Carle Clinic Association relating to its hiring of John Wang, M.D., an interventional neuroradiologist, which is a sub-specialty of neurosurgery is provided herein. Dr. Wang's sub-specialty practice in neurosurgery is expected to add about 310 patient days in the ICU based on current outmigration for those services.

ICU Days and Associated Occupancy Rates

Scenario	2007 Inpatient Days	CAGR	2012 Inpatient Days	2012 Occupancy Rate
Conservative	6,839	2.0%	7,588	65%
Moderate	6,839	2.5%	7,776	67%
Aggressive	6,839	3.0%	7,967	68%

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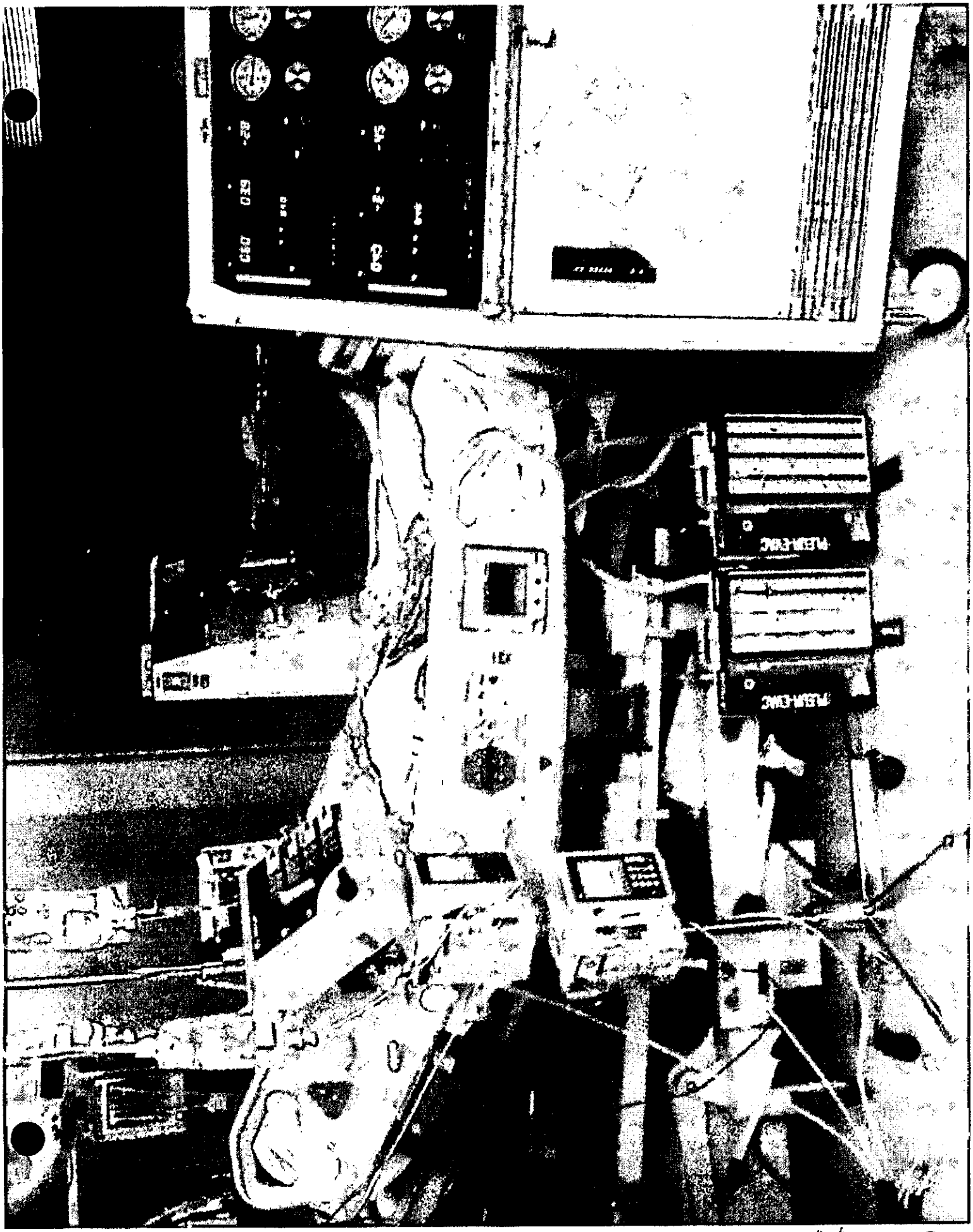

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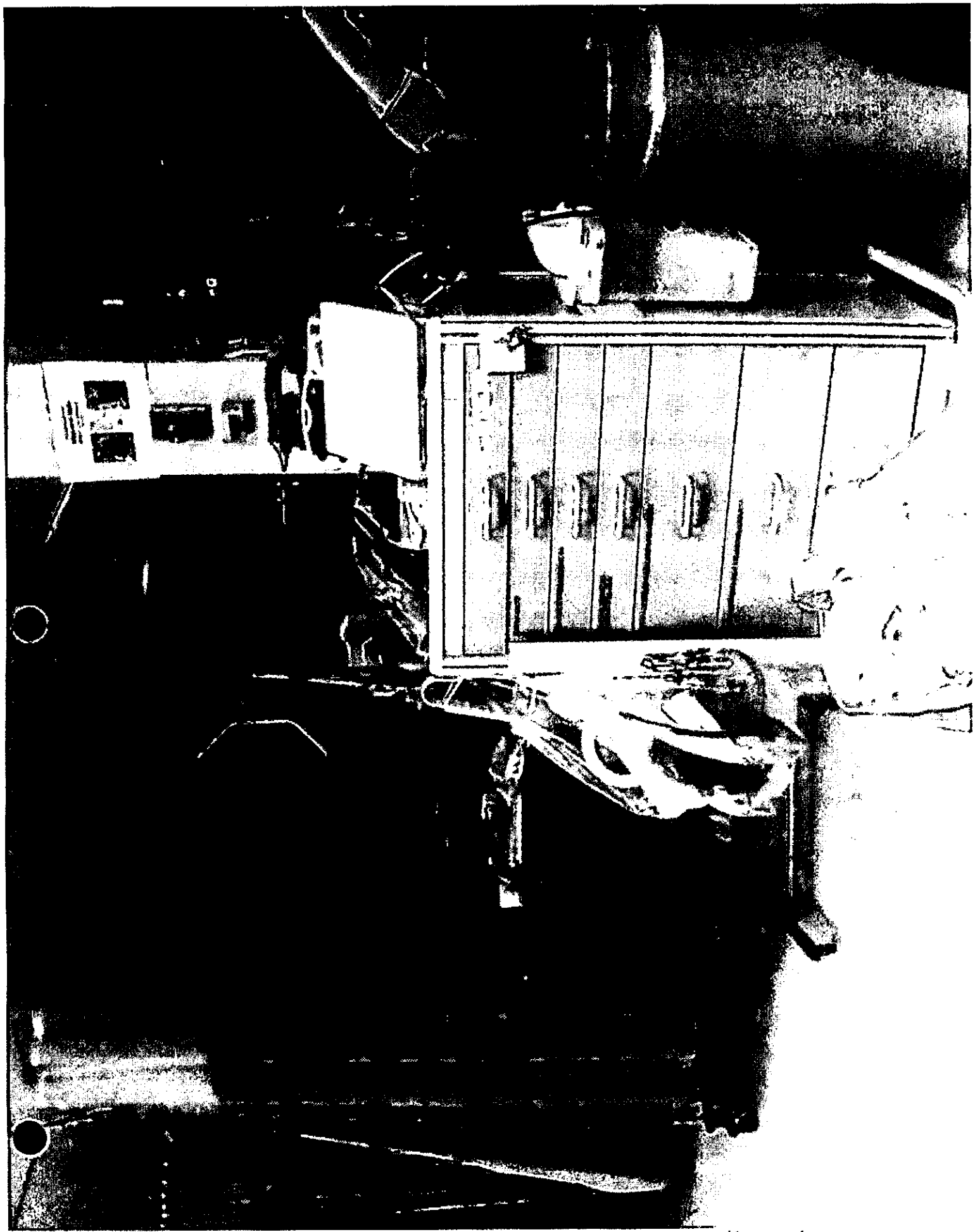

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Carle Clinic
602 West University Avenue, Urbana, IL 61801-2594 Phone: (217) 383-3311

IN FURTHER CORRESPONDENCE REFER TO CHART NUMBER:

February 24, 2008

Dr. James Leonard
President & CEO
Carle Foundation Hospital
611 W. Park Street
Urbana, Illinois 60801

Dear Dr. Leonard:

This letter describes our current neurosurgery group at the Carle Clinic Association as well as some background information regarding our neurosurgeon recruiting and retention efforts over the last few years. As you know neurosurgery is an advanced specialty of medical care which focuses on all aspects of brain surgery from pre-operative imaging to the removal of tumors. This specialty also encompasses the central nervous system and the spinal cord.

As Carle Foundation Hospital is a Level I Trauma center serving all of East Central Illinois in this capacity, neurosurgery is an especially important service in this area. Each year an estimated 500,000 people sustain brain and spinal cord injuries in the U.S. These injuries are usually caused by motor vehicle crashes, falls, sports and recreation and violence. Children and teens are at high-risk for these devastating injuries, which include concussions, contusions, subdural hematomas, epidural hematomas, and fractures.

Patients who suffer from injuries to the brain and spinal cord require specialized care at every step of their treatment and recovery. This begins with their initial evaluation at the scene of the injury and emergency room, continues during their initial hospital stay (if required), and transitions into their rehabilitation and recovery. Many specialists are involved, including neurosurgeons, neurologists, neuro-psychologists, rehabilitations medicine physicians, and therapists.

When I joined the Carle Clinic Association in October 2003, there were two neurosurgeons employed by the Carle Clinic, namely, Dr. Richard Rak and Dr. Walker Robinson. At that time, Dr. Robinson was the head of the Hospital's Division of Neurological Surgery.

Particularly given the Level I Trauma Center designation of the Carle Foundation Hospital Emergency Department, recruitment for neurosurgery was a particularly important task for our group. Our group needed additional assistance to fully manage the patients requiring the care of

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Attachment Mod-3

a neurosurgeon. In 2004, the Carle Clinic took the extraordinary measure of bringing an additional neurosurgeon into the community on a locum tenens basis. Under such an arrangement, the Clinic was able to engage a physician named Charles Wright. Dr. Wright will be replaced in 2008 by a sub-specialist, Dr. Wang, whose expertise is described below. By 2005, we had three active neurosurgeons. Unfortunately, however, during 2006 each of the three neurosurgeons had personal, albeit for the most part temporary, limitations that significantly impaired their ability to provide full time services during that year. In fact, in that year, we had to recruit Dr. William Olivero to replace Dr. Robinson. Another important enhancement to the group in 2006 was the certification of Sarah Marner, one of our nurses, to become a certified neuroscience advanced practice nurse. As such a specialist, Sarah plays a critical role in the care of our neurosurgery patients.

Unless our neurosurgery service is staffed with three neurosurgeons, it has difficulty fully managing all of the demand for neurosurgical services in the area. This can cause delays in elective procedures as well as referrals outside of Champaign/Urbana since Carle Clinic has the only neurosurgeons in the County and the D-1 Planning Area. In fact, the only other neurosurgeons in all of the 16 county area that comprises East Central Illinois (or Region D) are a small group located in Bloomington/Normal which is approximately an hour away and one such surgeon in Decatur. In medicine, an elective procedure means a procedure that does not have to be done on an emergency basis. The term does not imply that the procedure is not "medically necessary." It means that it is safe to schedule the procedure when appropriate physicians are available or when the patient is in a stable condition. The operation can be necessary to save a patient's life and still be classified as elective.

We continue to recruit neurosurgeons to meet the growing and specialized needs of our patients. We have engaged Dr. Huan Wang to join the practice in July 2008 when he will join our practice full time after completing a fellowship in neuro-interventional radiology at Brigham and Women's Hospital, a teaching affiliate of Harvard Medical School in Boston. With his specialty as a neuro-interventional radiologist, this will allow us to treat aneurisms and arteriovenous malformations (AVM) which we currently have to refer to other places within or outside of Illinois. One of the treatments that will be available, for example, is endovascular therapy which is a minimally invasive way to diagnose and treat a patient from within a blood vessel. In the case of a brain aneurysm, this treatment is called coil embolization, or "coiling." Coiling does not require open surgery. Instead, physicians use fluoroscopic imaging, to visualize the patient's vascular system and treat the disease from inside the blood vessel. We are very excited that such innovative and often life-saving therapy will soon be available for our patients.

As a whole, our new physician with interventional neuroradiology capabilities will be able to treat aneurysms, AVMs, spinal vascular malformations, perform veterbroplasty/kyphoplasty, insert carotid stents and intracranial stents, perform intracranial angioplasties and intra-arterial tPA, Merci, and cerebral diagnostic angiograms.

As a final note, as we further develop our neurosurgery practice to meet the immediate patient care demands of our service area, we expect that this will increase the need for surgical ICU services at Carle Foundation Hospital based on a review of current outmigration for these services. Dr. Wang's practice at Carle Foundation Hospital will likely result in at least an

additional 60 hospitalizations per year on patients residing in the D-1 Planning Area including 310 ICU patient days and annually from the hospital's current levels. As our medical group draws beyond the D-1 Planning Area for neurosurgery services, this is a conservative estimate.

Very truly yours,

Mark F. Berlin
Vice President - Surgical Services

SUBSCRIBED AND SWORN TO
Before me this 25 day of February, 2008

Diana L Quigg *
Notary Public

"OFFICIAL SEAL"
Diana L. Quigg
Notary Public, State of Illinois
My Commission Expires 1/24/2010

Carle Foundation Hospital
Section 1110.420
Rehabilitation Unit Modernization

Modernization of Beds – Review Criterion.

Criterion 1110.420(a)

Carle Foundation Hospital is proposing to maintain its rehabilitation bed complement at the existing 15 bed level. This number of beds proposed does not exceed the number of beds needed to support the facility's rehabilitation utilization at the appropriate modernization target which is 85% for rehabilitation. Utilization is based upon the latest 12 month period for which data are available which is FY2007 (July 1, 2006 to June 30, 2007).

In FY2007, the Carle Foundation Hospital ("CFH") rehabilitation unit admitted 421 patients with an associated 4,822 patient days. With 15 beds, this utilization resulted in an 88.1% utilization rate.

The associated calculations are as follows: 4822 days/365 days of the year= average daily census of 13.2 patients. 13.2 ADC/15 beds=88.1%

Criterion 1110.420 (b)

The modernization of the rehabilitation unit in a new bed tower is justified both because the current unit is obsolete and because the current unit does not well serve the objectives of the patient admissions and needs to be physically larger. Because the Applicant proposes to augment the gross square footage of its rehabilitation program, Criterion 1110.420(b)(2) is the applicable review criterion.

The CFH rehabilitation opened in 1992 in space that had previously been designed for and dedicated to acute care. It was not designed for its current use and purpose which is to achieve each patient's highest level of independent function, thus improving quality of life, and returning the patient to an active and productive lifestyle. The unit is housed in the Rogers Building, the oldest building on the hospital's campus, having been built in 1962. As such, the Rogers Building is over 45 years old. The option of maintaining the status quo has many disadvantages and also involves ongoing capital expenditures. Importantly, having been built many years before the Americans with Disabilities Act Accessibility Standards[1] were implemented, and prior to the 2003 federal Life Safety Code ("LSC") amendments, the current building which houses the CFH rehabilitation unit is grandfathered and, therefore, exempt from compliance with those accessibility and safety standards. Any major renovation of the current unit would trigger a requirement to comply with those standards. However, a renovation of the current facility which includes such compliance would be architecturally infeasible. This necessitates relocation to a

[1] A brief summary of the ADA Accessibility Standards labeled Attachment MOD-2 is attached hereto.

new bed tower to enhance rehabilitation services. In that it is better off, from a long term capital expenditure perspective, to entirely replace structures rather than attempt to retrofit existing buildings to meet current code requirements, CFH is in the company of all the other hospitals in Illinois and the U.S. which have clinical structures dating back more than 25 years.

ADA and LSC compliance issues in the current building include doorway, corridor and stairway widths, bathroom size, ceiling height and areas of refuge requirements. For example, to accommodate LSC requirements, new construction projects for multi-story buildings have nearly two additional feet of ceiling height than what exists in Carle's current unit in order to permit heavy booms to be hung from ceilings, run adequate cable for technology requirements, and provide for lighting and ductwork. In addition, it is difficult, if not impossible, to adapt to changes in medical technology in an older building.

In addition to ADA and LSC compliance issues, other environmental factors must be considered. First, the current unit is too small, with severe space restrictions which limit CFH's ability to serve the needs of its patients. Inpatient rehabilitation patients, having experienced a major illness, injury and/or surgery, have an impaired ability to accomplish activities of daily living. Activities of daily living or "ADL" measure the ability of a person to bathe, dress, walk indoors or outdoors, transfer in and out of bed, use the toilet, and eat on his own or with varying levels of required assistance. The primary purpose of an inpatient rehabilitation stay is to achieve each patient's highest level of independent function, thus improving quality of life, and returning the patient to an active and productive lifestyle.

The current unit is lacking the necessary features to accommodate a patient with impairment in ADLs, and, thus, falls far short of providing state-of-the-art facilities that enhance independence and maximize each patient's opportunity to re-learn the basic activities of daily living. All of the rooms – which are configured as two room suites of three beds sharing a showerless toilet room - are very small, and do not accommodate the required adaptive equipment. As noted above, the rooms were built over 45 years ago, for a different purpose, and at a time when patient ambulation was discouraged. Equipment must be shifted around to allow for the patient to transfer in and out of bed, and to accommodate visitors and bedside attention. Having been located for over 15 years in this facility, which was not designed for rehab care, CFH rehabilitation unit personnel are well aware of and experienced in its limitations. The new unit would also include an ADL suite which would offer the opportunity for patients and family to stay overnight and simulate living in the safe confines of the hospital. Modified terrain, varied counter heights and ability to use adaptive equipment in patient rooms will all optimize the ability to prepare for post discharge adjustment. These are currently not options for CFH patients and would better prepare our patients and their families for discharge home.

Most poignant is a letter from a CFH patient describing his difficulties in the unit given its space limitations. This letter, and three photographs depicting various

portions of the current unit, are appended to this Attachment MOD-3. As the letter and pictures depict, separate and apart from physical access and safety, the current unit is too small and has significant space limitations even for the current 15 bed unit that it operates. For example, in order not to impinge on the space of a patient's roommate during a patients transfer in and out of bed, staff must rearrange miscellaneous room furniture prior to the transfer. Further, patient privacy and dignity are sacrificed because of the lack of private space.

Also, because there are no real private rooms in the current unit, patient throughput is negatively affected. Male and female patients cannot share a room, and therefore acceptance of referrals is subject to the current patient mix.

Also included in this Attachment MOD-3 is a copy of the current floor plan of the rehabilitation unit. The current unit consists of less than 5,000 gsf for patient rooms, functional support and therapy spaces and staff support space. Bluntly, the lack of space on the unit renders it ineffective. This floor plan identifies the very small patient rooms ranging from 134 gsf to 142 gsf for the one-bed element of the suite and 221 gsf to 230 gsf for the two-bed portion of the suite. Also, depicted is the 675 gsf group dining and activity area and the near non-existent staff support space (400 gsf for staff support, 25 gsf laundry, 28 gsf storage, 37 gsf for house keeping, 57 gsf pantry and 50 gsf soiled linen for a total of about 600 gsf of support). In the newly constructed units, space will be adequate to meet the rehab patient and staff requirements.

It does not serve the public interest, nor is it the optimal economic decision, for CFH to maintain its rehabilitation unit in a physical plant with such severe physical and clinical limitations, and which does not comply with applicable ADA and LSC requirements. The building has declined to the point of obsolescence for inpatient rehab care delivery, and demolition and replacement of this portion of the hospital campus will likely occur as part of CFH's mid-range planning.

The CFH system, through its strategic planning process, identified the need to provide residents of the region aggressive rehabilitation care in an environment conducive to independence, return to activities of daily living and their communities, and further healing.

The modernized CFH rehabilitation unit will be designed to provide state-of-the-art rehabilitation care. This will include updated technology and equipment; recreational, therapy and dining areas to improve patients' functional outcomes; alternative and advanced treatment options; and new research opportunities.

As a newly constructed state-of-the-art rehabilitation unit, the unit will not be grandfathered from compliance with otherwise applicable codes and will meet all applicable accessibility and life safety code requirements. The modernized CFH rehabilitation unit will enable CFH to provide more advanced and comprehensive rehabilitation services than it is currently able to offer. The new unit will consist of

over 20,000 gsf of clinical and non-clinical rehabilitation space, including a gym suitable to accommodate physical therapy, occupational therapy and other rehabilitation activities, a 1,000 gsf outpatient gym, 1,500 gsf dedicated to other patient activities oriented toward returning patients to ADLs, 15 private rooms, and a 700 gsf ADL suite. A significant outpatient rehabilitation services unit will be allocated on the same floor providing continuity of care for patients who transition from the inpatient to the outpatient program, and facilitating staff collaboration between the two programs.

The facility will also incorporate an aesthetic design to promote healing. Features such as windows for natural light, and artwork to decrease anxiety and promote a sense of well-being will be incorporated. According to The Journal of Alternative and Complementary Medicine, a facility's design can impact the length of a patient's hospital stay. CFH's modernized rehabilitation unit will incorporate the latest approach to rehabilitation facility design, to promote healing while reducing stress and increasing patient satisfaction. None of these healing design features could possibly be incorporated into a renovated unit which remains in its existing location.

Appropriate lighting and the control of noise are important to patients, their families, and staff. There is a growing body of literature that speaks to the necessity of paying close attention to sound and lighting in health care facilities. A healing environment requires both a physical setting conducive to recovery in all aspects and an organizational culture that supports patients and families through the stresses imposed by illness, hospitalization, medical visits, the process of healing, and sometimes bereavement. The sound environment, which includes patient activities and communications (including those expressing pain and discomfort such as moaning and screaming), monitoring, paging, and technologies, must also be managed such that neither patients nor staff are at risk.

Each of the new patient care rooms will be private and uniformly sized at 238 gsf plus a private bath with shower. Tubs will not be utilized. Each patient room will be equipped with:

- Adjustable lighting for the bed
- Adjustable indirect area lighting
- Large double-pane thermoregulating windows and adjustable blinds
- Full walls with highly absorbent acoustical materials on floors and ceiling.

Noise reduction is also a goal of moving to a private room model. Hospital noise is not a new complaint but it is finally getting attention. Noise is a primary cause of sleep deprivation and disturbance among patients.[2] It increases their anxiety and decreases their confidence in the clinical competence of the staff, putting into question the most basic consideration on the part of the hospital in general. It

[2] Cmiel, et al., 2004

contributes to patient falls, causes confusion, and results in increased medication and restraint use. Furthermore, noise-induced stress is contagious, impacting attendant family members who may end up at the nurses' station complaining about a variety of issues, each worsened by extraneous noise.[3] Sudden noises, such as a dropped tray or slammed door, may cause a "startle reflex" in patients, resulting in physiological responses such as facial grimacing, muscular flexion, increased blood pressure, higher respiratory rate, increased heart rate, and vaso-constriction.[4] Patients exposed to continuous extraneous noise can also experience altered memory, increased agitation, less tolerance for pain, and feelings of isolation. These environmentally generated symptoms are often medicated or otherwise treated in ways unrelated to their cause.

A 2004 study at the Mayo Clinic in Rochester, Minn., found that noise-reduction efforts as simple as closing the door to a patient's room resulted in cutting the peak decibel level to 86 and the average to 42, quieter than a library. Of course, a patient room has to be private to eliminate the noises associated with the care and condition of surrounding patients on the unit.

The mission of a comprehensive rehabilitation program is to improve functional independence and focus on basic skills that enable independent living and working. These goals can be more readily accomplished in a modernized unit, the design of which is actually a part of the overall clinical program. Individualized and flexible programs which address the individual's unique needs and circumstances, adjust over time to meet the individual's changing medical and rehabilitation status, promote reintegration of the patient into their home and community, and deploy a system of internal review for quality improvement can be easily implemented in a facility which is closer in environment to the one to which the patients will be transitioning.

Dr. Sanjiv Jain, the Medical Director of the Rehabilitation Services Unit, has written a letter of support for the new, modernized unit which is appended to this Attachment MOD-3. Further, those Carle-affiliated physicians who have the highest rate of diagnoses associated with rehabilitation impairment categories have also written letters indicating their need for a larger, modernized rehabilitation facility (attached).

Key clinical benefits of the modernization include:

- The ability to provide a care setting and therapeutic milieu which promotes recovery and return to home and community;

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[3] Stop The Noise: Reduce Errors by Creating a Quieter Hospital Environment, Mazer, Susan, Patient Safety Quality and Healthcare, March/April 2005. Source: http://www.psqh.com/marapr05/noise.html

[4] *Supra* at 2

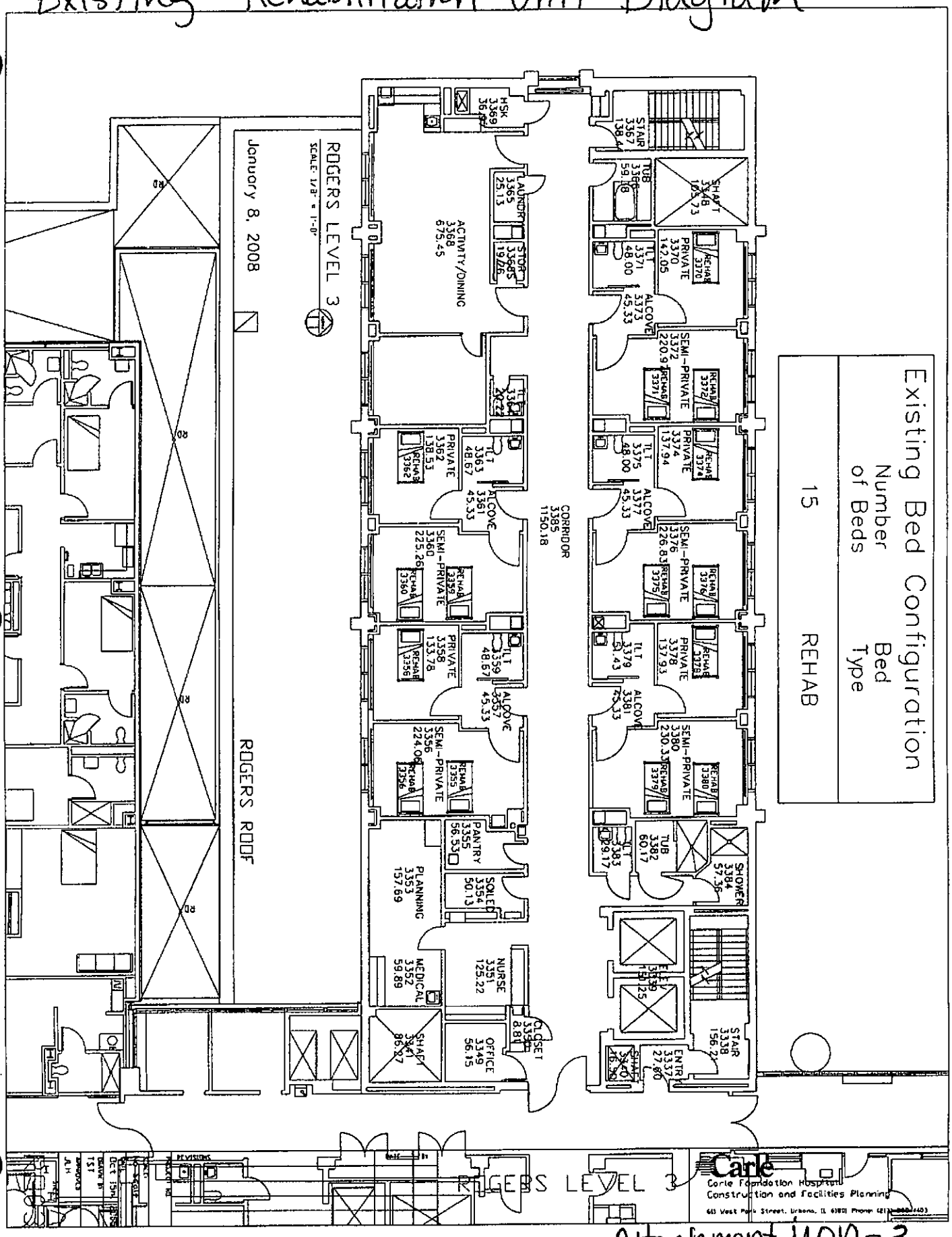
- The ability to provide enhanced rehabilitation services primarily for adult patients following a stroke, traumatic brain injury, spinal cord injury or similar medical problem;
- The ability to provide an uninterrupted continuum of care for those patients with multiple traumas and other severe injuries;
- The ability to comply with ADA and LSC requirements;
- The ability to accommodate new technology and treatment approaches;
- The ability to allow for more effective throughput of patients, and, ideally, to move toward shorter lengths of stay;
- The ability to enhance patients' and families' ability to move past the "medically sick" or "life and death" phases; and
- The ability to expand by ten beds if other services are relocated.

Accessible Means of Egress

ADAAG 's criteria for accessible means of egress, like those in other building requirements, address both the required number and the technical specifications. The minimum number of egress routes required to be accessible is based on life safety code requirements for means of egress. Most of the criteria for accessible routes, such as width and the treatment of elevation changes, are applied to accessible means of egress to ensure access for persons with disabilities, including those with mobility impairments. Multi-story buildings pose a particular challenge to accessible means of egress since elevators, the standard means of access between floors, are typically taken out of service in emergencies for safety purposes. ADAAG addresses this situation through requirements for areas of rescue assistance or horizontal exits.

ADAAG provides requirements for fire-resistant spaces where persons unable to use stairs can call for and await evacuation assistance from emergency personnel. Known as "areas of rescue assistance" or "areas of refuge," these spaces must meet specifications for fire resistance and ventilation. They are often incorporated into the design of fire stair landings, but can be provided in other recognized locations meeting the design specifications, including those for fire and smoke protection. Areas of rescue assistance must include two-way communication devices so that users can place a call for evacuation assistance. ADAAG requires areas of rescue assistance in new buildings only. An exception is provided for buildings equipped with sprinkler systems that have built-in signals used to monitor the system's features. Horizontal exits, which use fire barriers, separation, and other means to help contain the spread of fire on a floor, can substitute for areas of rescue assistance provided they meet applicable building codes. Horizontal exits enable occupants to evacuate from one area of a building to another area or building on approximately the same level that provides safety from smoke and fire. Life safety codes and model building codes provide requirements for horizontal exits

Existing Rehabilitation Unit Diagram



Attachment MOD-3

Attachment
MOD-3 472

Attachment
MOD-3 473

July 10, 2007

Mr. Jeff Mark
Illinois Health Facilities Planning Board
525 West Jefferson Street, 2nd Floor
Springfield, IL 62761

RE: Project # 07013

Dear Mr. Mark,

I am writing in support of the proposed Carle Rehab Institute. I am currently a patient on the Carle Inpatient Rehabilitation Unit, and also was an inpatient in 2005, so I speak with personal insight and awareness regarding the current space constraints.

As you can see in the attached pictures, I share a room with another gentleman. I have signed a HIPAA waiver and desire to have these pictures submitted to the Illinois Health Faculties Planning Board and the general public. Being in this restricted space, the equipment I am using for my rehabilitation such as wheelchair, bedside commode, reachers, etc. do not fit within my room (Exhibit K). The therapists and nurses are constantly rearranging the furniture to accommodate my need to use equipment. As you can also see, in order for me to transfer to my wheelchair, my Physical Therapist must straddle the wheelchair (Exhibit I) and rearrange furniture to access my supplies and belongings in the cabinets (Exhibit J).

Often patients need to have therapy in their room for many reasons, one of which is to help us be more independent with doing tasks for ourselves. Today my roommate and I both had therapy in the room at the same time. Frequently throughout the session our time with our therapists was interrupted because they had to move furniture and retrieve equipment from their storage places in the hallway.

Close proximity not only compromises my privacy with my roommate, but it is also compromised when I attend therapy in the therapy gym. Currently the cluttered and distracting environment does not let me focus on my therapist's instructions or the task at hand. The small therapy gym does not accommodate individual therapy sessions and group activities without causing lack of privacy. Honestly, this has at times been embarrassing to me.

I fully support the Carle's proposed freestanding rehab facility. From my experience, I believe that this specialized facility and ample space would maximize patients' recovery. I hope the Board will recognize the need for this rehabilitation service in Central Illinois.

Michael Ashmore
215 Logan Drive
Monticello, Illinois 61856

Attachment
MOD-3 474

SECTION XIII. REVIEW CRITERIA RELATING TO CARDIAC CATHETERIZATION (CATH)

This section is applicable to all projects proposing to establish or modernize a cardiac catheterization category of service or to replace existing cardiac catheterization equipment.

A. Criterion 1110.1330.a, Peer Review

Read the criterion and submit a detailed explanation of your peer review program.

APPEND DOCUMENTATION AS ATTACHMENT CATH-1 AFTER THE LAST PAGE OF THIS SECTION.

B. Criterion 1110.1330.b, Establishment or Expansion of Cardiac Catheterization Service Not applicable.

Read the criterion and, if applicable, submit the following information:

1. A map (8 1/2" x 11") showing the location of the other hospitals within the planning area.

2. The number of cardiac catheterizations performed for the last 12 months at each of the hospitals shown on the map.

3. Provide the number of patients transferred directly from the applicant's hospital to another facility for cardiac catheterization services in each of the last three years.

APPEND DOCUMENTATION AS ATTACHMENT CATH-2 AFTER THE LAST PAGE OF THIS SECTION.

C. Criterion 1110.1330.c, Unnecessary Duplication of Services Not applicable.

Read the criterion and, if applicable, submit the following information.

1. Copies of the letter sent to all facilities within 90 minutes travel time which currently provide cardiac catheterization. This letter must contain a description of the proposed project and a request that the other facility quantify the impact of the proposal on its program.

2. Copies of the responses received from the facilities to which the letter was sent.

APPEND DOCUMENTATION AS ATTACHMENT CATH-3 AFTER THE LAST PAGE OF THIS SECTION.

D. Criterion 1110.1330.d, Modernization of Existing Cardiac Catheterization Laboratories

Read the criterion and, if applicable, submit the number of cardiac catheterization procedures performed for the latest 12 months.

APPEND DOCUMENTATION AS ATTACHMENT CATH-4 AFTER THE LAST PAGE OF THIS SECTION.

E. Criterion 1110.1330.e, Support Services Not applicable.

Read the criterion and indicate on a service by service basis which of the listed services are available on a 24 hour basis and explain how any services not available on a 24 hour basis will be available when needed.

APPEND DOCUMENTATION AS ATTACHMENT CATH-5 AFTER THE LAST PAGE OF THIS SECTION.

F. Criterion 1110.1330.f, Laboratory Location Not applicable.

Read the criterion and, if applicable, submit line drawings showing the location of the proposed laboratories. If the laboratories are not in close proximity explain why.

APPEND DOCUMENTATION AS ATTACHMENT CATH-6 AFTER THE LAST PAGE OF THIS SECTION.

G. Criterion 1110.1330.g, Staffing Not applicable.

Read the criterion and submit a list of names and qualifications of those who will fill the positions detailed in this criterion. Also provide staffing schedules to show the coverage required by this criterion.

APPEND DOCUMENTATION AS ATTACHMENT CATH-7 AFTER THE LAST PAGE OF THIS SECTION.

H. Criterion 1110.1330.h, Continuity of Care

Read the criterion and submit a copy of the fully executed written referral agreement(s).

APPEND DOCUMENTATION AS ATTACHMENT CATH-8 AFTER THE LAST PAGE OF THIS SECTION.

I. Criterion 1110.1330.i, Multi-institutional Variance Not applicable.

Read the criterion and, if applicable, submit the following information:

1. A copy of a fully executed affiliation agreement between the two facilities involved.
2. Names and positions of the shared staff at the two facilities.
3. The volume of open heart surgeries performed for the latest 12-month period at the existing operating program.
4. A cost comparison between the proposed project and expansion at the existing operating program.
5. The number of cardiac catheterization procedures performed in the last 12 months at the operating program.
6. The number of catheterization laboratories at the operating program.
7. The projected cardiac catheterization volume at the proposed facility annually for the next 2 years.
8. The basis for the above projection.

APPEND DOCUMENTATION AS ATTACHMENT CATH-9 AFTER THE LAST PAGE OF THIS SECTION.

Criterion 1110.1330.a, Peer Review

Carle Hospital's cardiac catheterization services are provided by the cardiovascular department which, along with all other departments of the hospital, are subject to the hospital-wide peer review program. The policy and procedure under which such peer review program is operated is attached hereto as Attachment Cath-1.

Attachment Cath-1

Attachment Cath-1

Pages 478 – 486

Carle Foundation Hospital

Medical Staff *Policy-Improving Organization Performance* ***#PI 401***

Subject: Clinical Improvement/Peer Review
Reviewed: Biennially **Revised:** 7/01, 3/02, 10/11/02, 3/05

Review/Approval/Dissemination/Implementation:

I. This policy shall be reviewed and approved by the Clinical Improvement Committee, Medical Executive Committee and the Board of Trustees.
II. The Medical Staff Office [MSO] will obtain all signatures and secure the original for inclusion in the Medical Staff Policy and Procedure Manual; the MSO shall be responsible for updating the policy on the C-Web.
III. The MSO shall disseminate the policy to the Medical Staff and Patient Care leadership via the Medical Staff Newsletter.

PURPOSE

To monitor, review, and recommend improvement in clinical activities as described below.

POLICY

A. The Clinical Improvement Committee (CIC hereafter) will provide oversight of the following performance improvement and patient safety activities including, but not limited to:
   1. Medical assessment and treatment of the patients
   2. Use of medications
   3. Use of blood and blood components
   4. Use of operative and other procedures
   5. Efficiency of the clinical practice patterns
   6. Significant departures from established patterns of clinical practice
   7. Medical Staff attempts to secure autopsies on all deaths that meet established criteria.
   8. Perform medical record pertinence and completion reviews.

   The CIC will initially, and subsequently biannually, seek recommendations for indicators from Department Heads, Medical Staff Committees, the Health Information Services Director, the Vice President of Patient Care, and the Vice President Medical Affairs. Recommendations are to include whether the indicators/criteria are Type I, Type II, or Type III.

B. The following Committees shall report to the CIC:

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1. Medical Staff Special Committees
    a. Cancer Committee
    b. Critical Care Committee
    c. Infection Control Committee
    d. Pharmacy and Therapeutics Committee
    e. Code and Unplanned Transfers Committee
2. Other Committees / Departments including, but not limited to:
    a. Medical Records
    b. Patient Care Division PI Council
    c. Safety Committee (environmental safety)
    d. Foundation Quality Department
    e. Medical Departments
    f. Respiratory Care Department
    g. Carle Clinical Association departments with contracted clinical care

The CIC shall review recommended indicators/criteria, develop a consensus recommendation for the indicators/criteria, and designate each indicator as a Type I, Type II, or Type III. The Committee will also designate which individual, and/or Committee, is responsible for providing the report and the frequency of the report. These recommendations will be sent to the MEC for review and approval.

C. Reports
    1. The Foundation Quality Department will provide monthly reports and include a summary report of each performance improvement activity in the Hospital. This will include, but is not limited to, departmental and/or divisional performance improvement activities such as Morbidity and Mortality review. [See Addendum B.]
    2. The Foundation Quality Department is responsible for providing trending variations for each individual practitioner according to the classification scheme above. They will furnish a report to the CIC and the Department Head annually. If a trend or special cause variation is noted during the year appropriate analysis will be done and reported to the CIC. The CIC Chair will notify the appropriate Division/Department Head of any concerning rate variations for any of the classification types and request a review and planned action and written follow-up communication.
    3. The Foundation Quality Department will provide follow-up reports to the CIC on any actions taken.
D. The Committee shall make recommendations and report to the MEC.
E. Performance indicators/criteria will be divided into three types.

<u>TYPE I</u>
This type of indicator represents documentation error. Documentation requirements are defined in the Medical Staff Bylaws, Rules and Regulations and/or Policies and Procedures. No practitioner review of an individual chart is necessary. Examples of sources include, but are not limited to, the following:

- Open chart audits
- Medical record completeness audits
- Safe Order Writing audits

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TYPE II

This type of indicator represents a very unusual event within the Hospital and requires analysis by Division and/or Department Head [or designee] in order to determine cause, effect, and severity. Variations of Type II indicators require practitioner review and classification as indicted on the Type II Case Review Summary Sheet. :The following areas will be classified:

- Final outcome
- Overall physician care
- Overall nursing care
- Overall ancillary services care
- Documentation
- Problem identification

Final outcome Ratings:

1. No adverse outcome
2. Prolonged hospitalization, additional procedure / surgery needed with full recovery
3. Prolonged hospitalization, additional procedure / surgery needed with temporary disability / loss of function
4. Permanent disability / loss of function
5. Death

As soon as anyone involved in the case, including the nurse reviewer, recognizes potential class 4 or 5 Type II variation, immediate consideration should be given to whether or not this is a sentinel event. The sentinel event policy/procedure should then be referenced. Examples of sources include, but are not limited, to the following:

- Morbidity and Mortality Reviews/ Quality Reviews
- Medical Staff Peer Review Performance Indicators (see addendum A)
- Committees such as Code and Unplanned Transfer Review Committee
- Unusual Occurrence Reports
- Division and Departmental Reviews

TYPE III

This type of indicator exists only to cause a rate to be created and returned to the appropriate department and the CIC, or appropriate Medical Staff Special Committee. No records need to be evaluated. These rates are broken down by service, department, and/ or individual practitioner. Those indicators disclosing patterns of performance at variance with the benchmark or the norm shall be evaluated by the CIC utilizing whatever tools necessary. If an analysis shows a deviation attributed to one practitioner, the issue should be identified as such and the procedure below should be followed. Examples of sources include, but are not limited to, as follows:

- Records of:

- Medication errors
- Falls
- Restraints
- Skin and Mobility
- Mortality
- C-section and Induction's
- Blood transfusion data
- Infection Control data
- Medical Record Completeness
- Readmission
- Return to Operating Room
- Medication Usage Evaluation
- Adverse Drug Reactions

- Press Ganey Reports

PROCEDURE

A. TYPE I INDICATORS

1. Variations of Type I indicators will automatically result in a report of findings to the Division / Department Head and attributing practitioners. Non-physician Type I indicators will be reported to the appropriate manager / director.
2. For confirmed trends, special cause variation or clinically significant Type I events, a discussion will occur followed by a letter documenting the findings and the result of the discussion, which are then placed in the practitioner's credentials file. A copy of this letter will be sent to Foundation Quality. This letter may include a paragraph suggesting that the practitioner take these issues under consideration and initiate those steps necessary to improve his/her level of practice/documentation. The last paragraph of the letter should indicate that if performance does not improve, the next step is to report the continuing or emerging pattern of sub-standard documentation or practice to the CIC.
3. If patterns continue in this regard, the data will be trended as a Type III and the Department Head will confirm the issue with a letter, further discussion, and refer the matter to the CIC for consideration of recommending Corrective Action to the Medical Executive Committee.

B. TYPE II INDICATORS

1. Peer Review Coordinator Process

Definitions/Explanations:

- The Peer Review Coordinator [PRC hereafter] receives information about potential Type II cases from patients / patient's family, staff and practitioner

referrals as well as reports generated by Decision Support Services and the Hospital's patient accounting/management system. The Peer Review Coordinator's extension is 3-4880.

- The attributing practitioner is the practitioner who was managing the aspect of patient care at the time an event occurred or is the physician that provided medical assessment and/or treatment of the patient that may have led to the event.
- The reviewing practitioner will have privileges similar to the attributing practitioner and will be determined according to the attributing practitioner's expertise, Division, or Department as directed by the appropriate Division or Department Head.
- The subject matter expert [SME) is the reviewing practitioner delegated by the Division / Department Head or by the CIC, or is the Division / Department Head who reviews the case. The SME performing the initial peer review is whomever has immediate oversight of the attributing (or his / her designee). Example: a staff physician would be peer reviewed by his / her Division Head, but a Division Head would be peer reviewed by the Department Head. Peer review of A Department Head would be delegated to an appropriate reviewing practitioner.
- When no one on the Medical Staff has expertise in the subject matter under review an external peer review will be obtained.
- Non-physician practitioners include physician assistants, advanced practice registered nurses, registered nurses, respiratory therapists, physical therapists, and any other clinical providers. The Vice President of Patient Care / Quality serves the position of the Division Head / Department Head in the review process; the reviewing practitioner in these cases is designated by the Vice President Patient Care / Quality.

a. The Peer Review Coordinator [PRC hereafter] (extension 3-4880) will review the case as soon as possible and no later than seven (7) business days from the date of discharge from the Hospital or death. He/ she will provide a written summary of the case and forward to the following:

    - The Department Head
    - The Division Head or
    - The designated reviewing practitioner

    [The patient chart will be available in the Chart Completion Room for the attributing practitioner (s), the designated reviewing practitioner and the Department/Division Head reviewer.]

b. The reviewing practitioner shall provide a written response, including a description of the case (in addition to the nurse reviewer's summary), and classify the Type variation according to the above described classification scheme. These review determinations will be forwarded to the PRC within ten (10) business days.
c. The PRC will notify the attributing practitioner (s) of the peer review results and inform him/ her of the need to comment on the case. The attributing practitioner shall provide a written response to the peer reviewer's comments to the PRC within 10 business days.
d. If the Division / Department Head delegated the peer review to a reviewing

practitioner, the PRC will send a copy of the completed review to the appropriate Division / Department Head and inform him / her of the need to provide written comment on the case and classification to the PRC with 10 business days.

e. The PRC will ensure the entire case review and all comments on the case are compiled in the appropriate quality software application for trending and any future analysis.
f. The Division / Department Head or his / her designee will discuss the reviews with the attributing practitioner and document that discussion. The documentation of the discussion will be placed in the attributing practitioners credentials file or the HR file for the non-physician practitioners.
g. If based on review there are significant trends or significant clinical concerns identified by the Department Head or the CIC, then a request for corrective action (see Bylaws, Article V, Corrective Action) will be forwarded to the VPMA.

2. Other Quality Review Process

a. When cases are reviewed and analyzed in meetings, e.g. Committees, M & M's, or other performance improvement processes, e.g. risk management issue, etc, and an issue is identified, the reviewing practitioner (s) will determine the type of the variation according to the previously described classification scheme on the Type II Case Review Summary sheet..
b. If the opinion of the practitioner/administrative leader reviewer is that it is a Type II case with concerns identified, a case summary will be forwarded to the PRC. The case summary will consist of the meeting minutes and a completed Type II Case Review Summary sheet, including identification of the attributing practitioner (s).
c. The PRC will enter the information into the Hospital's quality software application. He/she will follow the process outlined in the peer review process, see step c and d above, if the appropriate practitioners were not previously involved.
d. If the case is determined to be a Type I, follow the procedure outlined under Type I Procedure section.
e. If an issue is not related to those with clinical privileges the information will be forwarded to the Foundation Quality Director for follow up. Within two weeks, an action plan will be reported to the PRC.

C. TYPE III INDICATORS

Type III indicators will be reviewed by the CIC and referred to the appropriate Department Head for analysis, recommendations, and actions (when indicated). Based on this response, the CIC members shall then report any concerns they have regarding the overall rate for service, procedure, or specialty to the MEC.

D. CIC REVIEW

1. The following will be brought to the CIC meeting [responsible person]:
   a. Practitioner and nurse review summaries as well as any comments from the treating practitioner of all Type II cases classified as 4 or 5 [Peer Review Coordinator],
   b. A summary of total Type II cases classified as 1, 2, and 3 will be reported at least every six months. (In the event there is a specific concern about the case it will be reported to the CIC at the next meeting.) [Peer Review

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Coordinator]

c. A summary of Type II 4 and 5 cases will be provided to CIC every six [6] months. [Peer Review Coordinator]
d. Type III indicator reports (see addendum B) [included in the packet prepared by Medical Staff Coordinator].
e. Type I indicator reports (see addendum B) quarterly [included in the packet prepared by Medical Staff Coordinator].
f. PI Team Summaries
g. Any action plan for system or process improvement related to Type I or III indicators [included in the packet prepared by Medical Staff Coordinator]

2. For the cases classified as Type II, 4 and 5 the PRC will bring the patient's chart to the meeting.
3. The PRC will invite the reviewing practitioner and the Department Head to attend.
4. The CIC shall review the information provided for Type II variations, with the peer review classification of Type II 4 or 5, or those with unresolved discrepancies in the classification. The patient's medical record will be available for review, if needed. CIC, by majority consensus, will confirm or re-type/classify the variation according to the classification scheme on the Type II Case Review Summary sheet. If it is deemed to be a practitioner issue, the conclusions and recommended action (s) will be submitted to the involved practitioner, the Department Head, the Division Head, and the MEC. The conclusions and recommended action (s) for all non-physician practitioners ~~issues~~ will be submitted to the Vice President of Patient Care / Quality who will ensure appropriate follow up is completed.
    a. If the case is classified as having a final outcome rating of 1 - 4, a report will be filed in the attributing practitioner's credentialing file or in the HR file for non-physicians (who are not credentialed through the Medical Staff Office.)
    b. If the case is either confirmed or reclassified to a final outcome rating of 4 or 5 then the Division / Department Head will discuss the classification with the attributing practitioner and a copy of the completed review will be placed in his / her credentialing file, or if a non-physician who is not credentialed through the Medical Staff Office, in the HR file.
    c. Further detailed analysis of cases classified as Type II 4 or 5 will be done by CIC to identify the key activity and human errors that occurred. This analysis will give direction to the corrective or follow-up interventions to be recommended.
        1. Additional tools will be provided at the CIC meeting to facilitate this analysis. (e.g. Physician Key Activity Error Analysis Chart and human errors or inappropriate actions chart - used with permission of PI).
5. The CIC may recommend review by a second reviewing practitioner when ambiguous or conflicting explanations / recommendations from the SME which cannot be resolved by discussion at CIC.
6. As with internal peer review, the following will occur when an external peer review is returned to the Hospital:
    a. return external peer review cases to Risk Management.
    b. Risk Management should forward to Chair of CIC.
    c. Chair of CIC should review with Department Head
    d. External peer review should be brought back to CIC as follow up with the report.
    e. Department Head and Chair of CIC review findings with attributing practitioner (s) to present and educate and provide a written summary to the attributing

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practitioners credentialing file.

f. If CIC believes corrective action is needed based on an act, conduct, or on review of the clinical care, they may forward a request for possible routine corrective action to the VPMA. (see Bylaws, Article V Corrective Action)

SIGNATURES ON FILE IN HOSPITAL MEDICAL STAFF OFFICE
SIGNATURES DATED: 3/05

William Schuh, MD
President - Medical Staff

Date

4/86

b) Establishment or Expansion of Cardiac Catheterization Service Review Criteria

This criterion is not applicable because it only applies to a provider that wishes to establish the cardiac catheterization category of service. Carle Foundation Hospital operates busy cardiology service lines including open heart surgery and both diagnostic and interventional cardiac catheterization.

2007 Cardiac Catheterization Procedures

1,775 procedures

Attachment Cath-4

The Applicants appreciate that due to safety considerations in the event of a technical breakdown it is preferable to group laboratory facilities. Integrating services also positively benefits certain efficiency and quality considerations. Thus, in proposing to establish additional laboratories, all labs will be located in close proximity to one another with shared support space.

Criterion 1110.1330(h) "Continuity of Care"

Any applicant proposing the establishment, expansion or modernization of a cardiac catheterization service must document that written transfer agreements have been established with facilities with open-heart surgery capabilities for the transfer of seriously ill patients for continuity of care.

Carle Foundation Hospital has full service open-heart surgery capabilities for the provision of these services to such patients who are in need of them. In FY2007, Carle Foundation Hospital performed 375 open heart procedures. Thus, this continuity of care is assured on site at the hospital.

SECTION XXIV. REVIEW CRITERIA RELATING TO FINANCIAL FEASIBILITY (FIN)

This section is applicable to all projects subject to Part 1120.

Does the applicant (or the entity that is responsible for financing the project or is responsible for assuming the applicant's debt obligations in case of default) have a bond rating of "A" or better? Yes ☒ No ☐.

If yes is indicated, submit proof of the bond rating of "A" or better (that is less than two years old) from Fitch's, Moody's or Standard and Poor's rating agencies and go to Section XXX. If no is indicated, submit the most recent three years' audited financial statements including the following:

1. **Balance sheet**
2. **Income statement**
3. **Change in fund balance**
4. **Change in financial position**

APPEND THE REQUIRED DOCUMENTS AS ATTACHMENT FINANCIALS AND PLACE AFTER ALL OTHER APPLICATION ATTACHMENTS INCLUDING THE REMAINING ATTACHMENTS FOR THIS SECTION AND FOR SECTION XXX.

A. Criterion 1120.210.a, Financial Viability

1. Viability Ratios Not applicable.

If proof of an "A" or better bond rating has not been provided, read the criterion and complete the following table providing the viability ratios for the most recent three years for which audited financial statements are available. Category B projects must also provide the viability ratios for the first full fiscal year after project completion or for the first full fiscal year when the project achieves or exceeds target utilization (per Part 1100), whichever is later.

Provide Data for Projects Classified as:	Category A or Category B (last three years)			Category B
Enter Historical and/or Projected Years:				
Current Ratio				
Net Margin Percentage				
Percent Debt to Total Capitalization				
Projected Debt Service Coverage				
Days Cash on Hand				
Cushion Ratio				

Provide the methodology and worksheets utilized in determining the ratios detailing the calculation and applicable line item amounts from the financial statements. Complete a separate table for each co-applicant and provide worksheets for each. Insert the worksheets after this page.

2. Variance

Compare the viability ratios provided to the Part 1120 Appendix A review standards. If any of the standards for the applicant or for any co-applicant are not met, provide documentation that a person or organization will assume the legal responsibility to meet the debt obligations should the applicant default. The person or organization must demonstrate compliance with the ratios in Appendix A when proof of a bond rating of "A" or better has not been provided.

APPEND DOCUMENTATION AS ATTACHMENT FIN-1 AFTER THE LAST PAGE OF THIS SECTION.

February, 2008

Note regarding bond letter:

The "A" Bond Rating applies to both the Carle Foundation and the Carle Foundation Hospital. The Carle Foundation and the Carle Foundation Hospital are both members of the obligated group under the Master Trust Indenture dated as of December 1, 1989. As such, both are jointly and severally liable for the outstanding direct note obligations issued under the Master Trust Indenture that secure the outstanding bonds issued on their behalf. Attached as Exhibit A are selected pages from the Master Trust Indenture to confirm that Carle Foundation Hospital is a member of the obligated group.

STANDARD
&POOR'S

120 East Randolph Street
Suite 2900
Chicago, IL 60601
tel 312 233-7001
reference no.: 40155091

December 14, 2007

The Carle Foundation
611 West Park Street
Urbana, IL 61801
Attention: Mr. Robert E. Tonkinson, Senior Vice President-Finance

Re: ***$185,425,000 Illinois Finance Authority (Carle Foundation) (FGIC), Series 2004A***

Dear Mr. Tonkinson:

Standard & Poor's has reviewed the rating on the above-referenced obligations. After such review, we have affirmed the "AA-" rating and stable outlook. A copy of the rationale supporting the rating and outlook is enclosed.

The rating is not investment, financial, or other advice and you should not and cannot rely upon the rating as such. The rating is based on information supplied to us by you or by your agents but does not represent an audit. We undertake no duty of due diligence or independent verification of any information. The assignment of a rating does not create a fiduciary relationship between us and you or between us and other recipients of the rating. We have not consented to and will not consent to being named an "expert" under the applicable securities laws, including without limitation, Section 7 of the Securities Act of 1933. The rating is not a "market rating" nor is it a recommendation to buy, hold, or sell the obligations.

This letter constitutes Standard & Poor's permission to you to disseminate the above-assigned rating to interested parties. Standard & Poor's reserves the right to inform its own clients, subscribers, and the public of the rating.

Standard & Poor's relies on the issuer/obligor and its counsel, accountants, and other experts for the accuracy and completeness of the information submitted in connection with the rating. To maintain the rating, Standard & Poor's must receive all relevant financial information as soon as such information is available. Placing us on a distribution list for this information would facilitate the process. You must promptly notify us of all material changes in the financial information and the documents. Standard & Poor's may change, suspend, withdraw, or place on CreditWatch the rating as a result of changes in, or unavailability of, such information. Standard & Poor's reserves the right to request additional information if necessary to maintain the rating.

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Please send all information to:

Standard & Poor's Ratings Services
Public Finance Department
55 Water Street
New York, NY 10041-0003

If you have any questions, or if we can be of help in any other way, please feel free to call or contact us at nypublicfinance@standardandpoors.com. For more information on Standard & Poor's, please visit our website at www.standardandpoors.com. We appreciate the opportunity to work with you and we look forward to working with you again.

Sincerely yours,

Standard & Poor's Ratings Services
a division of The McGraw-Hill Companies, Inc.

Standard & Poor's/JK

gr
enclosure

STANDARD
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Outlook

The stable outlook reflects Carle's strong bottom line results and solid debt service coverage, as well as growth of balance sheet measures. Carle has sizeable capital plans over the next few years and while the debt has not been fully incorporated into the current rating as the details and plan of finance are still being finalized, Carle should be able to absorb the current debt projections and project expenditures at the current rating level if Carle maintains its current financial profile.

Complete ratings information is available to subscribers of RatingsDirect, the real-time Web-based source for Standard & Poor's credit ratings, research, and risk analysis, at www.ratingsdirect.com. All ratings affected by this rating action can be found on Standard & Poor's public Web site at www.standardandpoors.com; under Credit Ratings in the left navigation bar, select Find a Rating, then Credit Ratings Search.

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NEW ISSUE
BOOK-ENTRY ONLY

Ratings	Insured
S&P:	*AAA*
Moody's:	*Aaa*

In the opinion of Jones Day, Bond Counsel to The Carle Foundation, an Illinois not for profit corporation (the "Corporation"), assuming compliance with certain covenants, under current law, interest on the Series 2004A Bonds will not be includible in gross income of the owners thereof for federal income tax purposes and will not be treated as an item of tax preference for purposes of the federal alternative minimum tax imposed on individuals and corporations. Interest on the Series 2004A Bonds will be taken into account, however, in computing an adjustment used in determining the corporate alternative minimum tax and the branch profits tax. See "Tax Exemption" herein for a more detailed discussion of some of the federal income tax consequences of owning the Series 2004A Bonds. Interest on the Series 2004A Bonds is not exempt from present Illinois income taxes.

$190,300,000
ILLINOIS FINANCE AUTHORITY
Revenue Bonds, Series 2004A
(The Carle Foundation)
Auction Rate Securities
consisting of

$48,450,000 SubSeries 2004A-1	$57,800,000 SubSeries 2004A-2	$56,375,000 SubSeries 2004A-3	$27,675,000 SubSeries 2004A-4
Due: February 15, 2028	Due: February 15, 2035	Due: February 15, 2035	Due: February 15, 2035
CUSIP: 45200B GC6	CUSIP: 45200B GG7	CUSIP: 45200B GH5	CUSIP: 45200B GD4

Dated: Date of Original Issuance **Price: 100%**

The Series 2004A Bonds will initially bear interest at Auction Rates but may be converted, at the option of the Corporation and subject to certain conditions, to bear interest in a Variable Rate, Flexible Rate or Fixed Rate Period. The Series 2004A Bonds will be issued in denominations of $25,000 or integral multiples thereof while they bear interest at Auction Rates. The SubSeries 2004A-1 Bonds and the SubSeries 2004A-4 Bonds will bear interest from the date of original delivery for the Initial Periods as shown on the inside cover page of this Official Statement at the rates established by Citigroup Global Markets Inc. prior to the date of delivery. The SubSeries 2004A-2 Bonds and the SubSeries 2004A-3 Bonds will bear interest from the date of original delivery for the Initial Periods as shown on the inside cover page of this Official Statement at the rates established by UBS Financial Services Inc. prior to the date of delivery. Thereafter, the Series 2004A Bonds of each Subseries will bear interest at the Auction Rate for the Auction Period described herein, until a conversion to a Variable Rate, Flexible Rate or Fixed Rate Period. While the Series 2004A Bonds bear interest at the Auction Rate for a seven-day Auction Period, regularly scheduled interest will be payable on the Business Day immediately following such Auction Period; provided, however, that for the Initial Period, interest will be payable on November 22, 2004 with respect to the SubSeries 2004A-1 Bonds; on November 19, 2004 with respect to the SubSeries 2004A-2 Bonds; and on November 18, 2004 with respect to the SubSeries 2004A-3 Bonds and the SubSeries 2004A-4 Bonds. See "The Series 2004A Bonds" herein.

The Series 2004A Bonds will be registered in the name of Cede & Co., as nominee of The Depository Trust Company, New York, New York ("DTC"), and DTC will act as securities depository for the Series 2004A Bonds as described herein. Purchases will be made only in book-entry form through DTC Participants (as herein defined), and no physical delivery of Bonds will be made to Beneficial Owners (as herein defined) except as described herein. The principal of and interest on the Series 2004A Bonds will be paid by J.P. Morgan Trust Company, National Association, as Bond Trustee, to Cede & Co., so long as Cede & Co. is the registered owner of the Series 2004A Bonds. Payments of principal and interest will be made to Beneficial Owners by DTC through its DTC Participants. See "Book-Entry Only System" herein.

Deutsche Bank Trust Company Americas will act as the Auction Agent for the Series 2004A Bonds. Citigroup Global Markets Inc. will act as the initial Broker-Dealer for the SubSeries 2004A-1 Bonds and the SubSeries 2004A-4 Bonds and UBS Financial Services Inc. will act as the initial Broker-Dealer for the SubSeries 2004A-2 Bonds and the SubSeries 2004A-3 Bonds.

The Series 2004A Bonds will be subject to redemption prior to maturity, including optional redemption prior to stated maturity, mandatory sinking fund redemption, and extraordinary optional redemption from insurance or condemnation proceeds. See "The Series 2004A Bonds — Redemption of the Series 2004A Bonds" herein. The Series 2004A Bonds also will be subject to mandatory tender for purchase prior to maturity. See "The Series 2004A Bonds — Mandatory Tenders" herein.

There are risks associated with the purchase of the Series 2004A Bonds. For a discussion of certain of these risks, see "Bondholders' Risks" herein.

The scheduled payment of principal of and interest on the Series 2004A Bonds when due will be guaranteed under a financial guaranty insurance policy to be issued concurrently with the delivery of the Series 2004A Bonds by Financial Guaranty Insurance Company (the "Bond Insurer").

This Official Statement in general describes the terms of the Series 2004A Bonds only while the Series 2004A Bonds are Auction Rate Securities and does not describe all factors relevant to the Series 2004A Bonds upon conversion of the Series 2004A Bonds to other interest rate modes as provided in the Bond Indenture.

THE SERIES 2004A BONDS CONSTITUTE LIMITED OBLIGATIONS OF THE ILLINOIS FINANCE AUTHORITY (THE "AUTHORITY") PAYABLE SOLELY FROM THE REVENUES OF THE AUTHORITY SPECIFIED IN THE RESOLUTION AUTHORIZING THE ISSUANCE OF THE SERIES 2004A BONDS AND THE BOND INDENTURE. UNDER NO CIRCUMSTANCES SHALL THE SERIES 2004A BONDS AND THE INTEREST THEREON BE OR BECOME AN INDEBTEDNESS OR OBLIGATION OF THE STATE OF ILLINOIS WITHIN THE PURVIEW OF ANY CONSTITUTIONAL LIMITATION OR PROVISION. THE AUTHORITY HAS NO TAXING POWER.

The SubSeries 2004A-1 Bonds and the SubSeries 2004A-4 Bonds are being offered when, as and if issued and received by Citigroup Global Markets Inc. and the SubSeries 2004A-2 Bonds and the SubSeries 2004A-3 Bonds are being offered when, as and if issued and received by UBS Financial Services Inc., in each case subject to prior sale, to withdrawal or modification of the offer without notice, and to the approval of their legality by Jones Day, Chicago, Illinois, Bond Counsel to the Corporation. Certain legal matters will be passed upon for the Authority by its special counsel, Schiff Hardin LLP, Chicago, Illinois; for the Corporation and the other Members of the Obligated Group by their special counsel, McDermott Will & Emery LLP, Chicago, Illinois, by their general counsel, Thomas Mamer & Haughey, Champaign, Illinois, and by their litigation counsel as referred to herein under "Legal Matters"; for the Underwriters by their counsel, McGuireWoods LLP, Chicago, Illinois; and for the Bond Insurer by its Senior Counsel. It is expected that the Series 2004A Bonds will be available for delivery in New York, New York through the facilities of DTC on or about November 10, 2004.

UBS Financial Services Inc.
Underwriter and Broker-Dealer for the SubSeries 2004A-2 and SubSeries 2004A-3 Bonds

Citigroup
Underwriter and Broker-Dealer for the SubSeries 2004A-1 and SubSeries 2004A-4 Bonds

Official Statement Dated October 22, 2004.

Relevant Exerpt of official Statement

OFFICIAL STATEMENT

$190,300,000
ILLINOIS FINANCE AUTHORITY
REVENUE BONDS, SERIES 2004A
(THE CARLE FOUNDATION)
AUCTION RATE SECURITIES

INTRODUCTION

The information contained in this Introduction is a summary statement and is subject in all respects to the more complete information set forth in this Official Statement, including the Appendices attached hereto. The purchase of the Series 2004A Bonds involves certain investment risks that are discussed throughout this Official Statement, including under the caption "Bondholders' Risks" herein. Investors must read the entire Official Statement to obtain information essential to making an informed investment decision.

This Official Statement, including the front and inside cover pages and the Appendices attached hereto, sets forth certain information concerning (i) the Carle Health Care System (the "Health Care System" or "Health System"), The Carle Foundation (the "Corporation"), The Carle Foundation Hospital (the "Hospital"), Carle Health Care Incorporated ("Carle Health Care"), The Carle Arbours, Inc. ("Arbours") and Carle Retirement Centers, Inc. ("Retirement Centers"), each an Illinois not for profit corporation, (ii) the Illinois Finance Authority (the "Authority") and (iii) the issuance by the Authority of $190,300,000 in aggregate principal amount of Revenue Bonds, Series 2004A (The Carle Foundation) Auction Rate Securities (the "Series 2004A Bonds"). This Official Statement in general describes the terms of the Series 2004A Bonds only while the Series 2004A Bonds are Auction Rate Securities as described herein. It is currently anticipated that, should the Series 2004A Bonds be converted to a Variable Rate, Flexible Rate or Fixed Rate Period, a supplement to this Official Statement or remarketing circular will be distributed describing the Series 2004A Bonds in such Rate Period.

Certain capitalized terms used in the forepart of this Official Statement and not otherwise defined herein are defined in Appendix C and Appendix F to this Official Statement.

The Carle Health Care System and the Obligated Group

The Health Care System consists of the Corporation, its affiliated corporations, all of which either are controlled by or all the outstanding stock of which is owned directly or indirectly by the Corporation, and a group of entities that are not controlled by the Corporation. The Health Care System functions as a vertically integrated provider of a broad spectrum of inpatient, outpatient and long-term health care services to a large and predominantly rural service area in east central Illinois and west central Indiana surrounding the cities of Champaign and Urbana, Illinois. The Health Care System, through the Hospital, is the primary teaching hospital of the University of Illinois School of Basic Medical Services and Clinical Medicine at Urbana-Champaign. The Corporation and its controlled affiliates operate a variety of health care facilities and programs, including a 295-bed hospital; a 231-bed skilled nursing facility; a nine-county home care agency; a certified hospice; an emergency transportation system; a 174-unit continuing care retirement community; retail pharmacies; and a durable medical equipment company.

The Corporation, the Hospital, Carle Health Care, Arbours and Retirement Centers are the current Members of the Obligated Group. The Corporation is the sole corporate member of each Member of the Obligated Group.

The Health Care System also includes corporations that are not controlled by the Corporation. Principal among these is the Carle Clinic Association, P.C. (the "Clinic") which is among the largest physician multi-specialty group practices in the United States, with approximately 300 practicing physicians, oral surgeons and podiatrists. While the Clinic is independent of the Corporation and its affiliates, the Clinic's operations and activities greatly impact the operations and activities of the Corporation and its affiliates.

For further information concerning the Health Care System and the Members of the Obligated Group (including certain financial information), see Appendices A and B to this Official Statement.

Purpose of the Series 2004A Bonds

The proceeds from the sale of the Series 2004A Bonds, together with certain other available moneys, will be used to: (i) advance refund a portion of the outstanding principal amount of the Illinois Health Facilities Authority Revenue Bonds, Series 1996 (The Carle Foundation Issue) (the "Series 1996 Bonds"), (ii) advance refund a portion of the outstanding principal amount of the Illinois Health Facilities Authority Revenue Bonds, Series 1998A (The Carle Foundation) (the "Series 1998A Bonds"), (iii) current refund the outstanding Illinois Health Facilities Authority Variable Rate Demand Revenue Bonds, Series 1999 (The Carle Foundation) (the "Series 1999 Bonds" and, together with the Series 1996 Bonds and the 1998A Bonds, the "Prior Bonds"), (iv) finance the cost of the acquisition, construction, renovation and equipping of certain health care facilities of the Corporation, the Hospital, Arbours and Retirement Centers as described herein (the "Project") and the termination payment with respect to the interest rate swap transaction entered into with respect to the Series 1999 Bonds, (v) pay a portion of the interest on the Series 2004A Bonds, and (vi) pay certain expenses incurred in connection with the issuance of the Series 2004A Bonds and the refunding of the Prior Bonds, including the premium for a financial guaranty insurance policy (the "Policy") to be issued by Financial Guaranty Insurance Company (the "Bond Insurer") with respect to the Series 2004A Bonds. See "Plan of Finance" and "Estimated Sources and Uses of Funds" herein.

Security for the Series 2004A Bonds

The Series 2004A Bonds will be issued under and be secured by a Bond Trust Indenture dated as of October 1, 2004 (the "Bond Indenture") between the Authority and J.P. Morgan Trust Company, National Association, as bond trustee (the "Bond Trustee"). The Authority will loan the proceeds from the sale of the Series 2004A Bonds to the Corporation pursuant to a Loan Agreement dated as of October 1, 2004 (the "Loan Agreement") between the Corporation and the Authority.

To evidence the loan of the proceeds from the sale of the Series 2004A Bonds, the Corporation will issue and deliver to the Authority its Direct Note Obligation, Series 2004A (Illinois Finance Authority) (the "Series 2004A Obligation") in a principal amount equal to the aggregate principal amount of the Series 2004A Bonds pursuant to the Master Trust Indenture dated as of December 1, 1989 (the "Master Trust Indenture"), as heretofore amended and supplemented and as amended and supplemented by the Eleventh Supplemental Master Trust Indenture dated as of October 1, 2004 (the Master Trust Indenture as so amended and supplemented is hereinafter referred to as the "Master Indenture"), by and among the Corporation, the Hospital, Arbours, Carle Health Care, Retirement Centers and J.P. Morgan Trust Company, National Association, as successor master trustee (the "Master Trustee"). Upon issuance

Exhibit A

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B. Criterion 1120.210.b, Availability of Funds Not applicable.

If proof of an "A" or better bond rating has not been provided, read the criterion and document that sufficient resources are available to fund the project and related costs including operating start-up costs and operating deficits. Indicate the dollar amount to be provided from the following sources:

_____ Cash & Securities
Provide statements as to the amount of cash/securities available for the project. Identify any security, its value and availability of such funds. Interest to be earned or depreciation account funds to be earned on any asset from the date of application submission through project completion are also considered cash.

_____ Pledges
For anticipated pledges, provide a letter or report as to the dollar amount feasible showing the discounted value and any conditions or action the applicant would have to take to accomplish goal. The time period, historical fund raising experience and major contributors also must be specified.

_____ Gifts and Bequests
Provide verification of the dollar amount and identify any conditions of the source and timing of its use.

_____ Debt Financing (indicate type(s) _____)
For general obligation bonds, provide amount, terms and conditions, including any anticipated discounting or shrinkage) and proof of passage of the required referendum or evidence of governmental authority to issue such bonds;
For revenue bonds, provide amount, terms and conditions and proof of securing the specified amount;
For mortgages, provide a letter from the prospective lender attesting to the expectation of making the loan in the amount and time indicated;
For leases, provide a copy of the lease including all terms and conditions of the lease including any purchase options.

_____ Governmental Appropriations
Provide a copy of the appropriation act or ordinance accompanied by a statement of funding availability from an official of the governmental unit. If funds are to be made available from subsequent fiscal years, provide a resolution or other action of the governmental unit attesting to such future funding.

_____ Grants
Provide a letter from the granting agency as to the availability of funds in terms of the amount, conditions, and time or receipt.

_____ Other Funds and Sources
Provide verification of the amount, terms and conditions, and type of any other funds that will be used for the project.

_____ TOTAL FUNDS AVAILABLE

APPEND DOCUMENTATION AS ATTACHMENT FIN-2 AFTER THE LAST PAGE OF THIS SECTION.

C. Criterion 1120.210.c, Operating Start-up Costs Not applicable.

If proof of an "A" or better bond rating has not been provided, indicate if the project is classified as a Category B project that involves establishing a new facility or a new category of service? Yes ☐ No ☐. If yes is indicated read the criterion and provide in the space below the amount of operating start-up costs (the same as reported in Section I of this application) and provide a description of the items or components that comprise the costs. Indicate the source and amount of the financial resources available to fund the operating start-up costs (including any initial operating deficit) and reference the documentation that verifies sufficient resources are available.

SECTION XXV. REVIEW CRITERIA RELATING TO ECONOMIC FEASIBILITY (ECON)

This section is applicable to all projects subject to Part 1120.

A. Criterion 1120.310.a, Reasonableness of Financing Arrangements

Is the project classified as a Category B project? Yes ☒ No ☐. If no is indicated this criterion is not applicable. If yes is indicated, has proof of a bond rating of "A" or better been provided? Yes ☒ No ☐. If yes is indicated this criterion is not applicable, go to item B. If no is indicated, read the criterion and address the following:

Are all available cash and equivalents being used for project funding prior to borrowing? ☐ Yes ☐ No

If no is checked, provide a notarized statement signed by two authorized representatives of the applicant entity (in the case of a corporation, one must be a member of the board of directors) that attests to the following:

1. a portion or all of the cash and equivalents must be retained in the balance sheet asset accounts in order that the current ratio does not fall below 2.0 times; or

2. borrowing is less costly than the liquidation of existing investments and the existing investments being retained may be converted to cash or used to retire debt within a 60-day period.

APPEND DOCUMENTATION AS ATTACHMENT ECON-1 AFTER THE LAST PAGE OF THIS SECTION.

B. Criterion 1120.310.b, Conditions of Debt Financing

Read the criterion and provide a notarized statement signed by two authorized representatives of the applicant entity (in the case of a corporation, one must be a member of the board of directors) that attests to the following as applicable:

1. The selected form of debt financing the project will be at the lowest net cost available or if a more costly form of financing is selected, that form is more advantageous due to such terms as prepayment privileges, no required mortgage, access to additional debt, term (years) financing costs, and other factors;

2. All or part of the project involves the leasing of equipment or facilities and the expenses incurred with such leasing are less costly than constructing a new facility or purchasing new equipment.

APPEND DOCUMENTATION AS ATTACHMENT ECON-2 AFTER THE LAST PAGE OF THIS SECTION.

C. Criterion 1120.310.c, Reasonableness of Project and Related Costs

Read the criterion and provide the following:

1. Identify each department or area impacted by the proposed project and provide a cost and square footage allocation for new construction and/or modernization using the following format (insert after this page).

COST AND GROSS SQUARE FEET BY DEPARTMENT OR SERVICE									
Department (list below)	A	B	C	D	E	F	G	H	Total Cost (G + H)
	Cost/Square Foot New	Cost/Square Foot Mod.	Gross Sq. Ft. New	Gross Sq. Ft. Circ.*	Gross Sq. Ft. Mod.	Gross Sq. Ft. Circ.*	Const. $ (A x C)	Mod. $ (B x E)	
Contingency									
TOTALS									

*Include the percentage (%) of space for circulation

2. For each piece of major medical equipment included in the proposed project, the applicant must certify one of the following:

   a. that the lowest net cost available has been selected; or

   b. that the choice of higher cost equipment is justified due to such factors as, but not limited to, maintenance agreements, options to purchase, or greater diagnostic or therapeutic capabilities.

APPEND DOCUMENTATION AS ATTACHMENT ECON-3 AFTER THE LAST PAGE OF THIS SECTION.

3. List the items and costs included in preplanning, site survey, site preparation, off-site work, consulting, and other costs to be capitalized. If any project line item component includes costs attributable to extraordinary or unusual circumstances, explain the circumstances and provide the associated dollar amount. When fair market value has been provided for any component of project costs, submit documentation of the value in accordance with the requirements of Part 1190.40.

APPEND DOCUMENTATION AS ATTACHMENT ECON-4 AFTER THE LAST PAGE OF THIS SECTION.

D. Criterion 1120.310.d, Projected Operating Costs

Read the criterion and provide in the space below the facility's projected direct annual operating costs (in current dollars per equivalent patient day or unit of service, as applicable) for the first full fiscal year of operation after project completion or for the first full fiscal year when the project achieves or exceeds target utilization pursuant to 77 Ill. Adm. Code 1100, whichever is later. If the project involves a new category of service, also provide the annual operating costs for the service. Direct costs are the fully allocated costs of salaries, benefits, and supplies. Indicate the year for which the projected operating costs are provided.

E. Criterion 1120.310.e, Total Effect of the Project on Capital Costs

Is the project classified as a category B project? Yes ☒ No ☐. If no is indicated, go to item F. If yes is indicated, provide in the space below the facility's total projected annual capital costs as defined in Part 1120.130.f (in current dollars per equivalent patient day) for the first full fiscal year of operation after project completion or for the first full fiscal year when the project achieves or exceeds target utilization pursuant to 77 Ill. Adm. Code 1100, whichever is later. Indicate the year for which the projected capital costs are provided.

F. Criterion 1120.310.f, Non-patient Related Services

Is the project classified as a category B project and involve non-patient related services? Yes ☐ No ☒. If no is indicated, this criterion is not applicable. If yes is indicated, read the criterion and document that the project will be self-supporting and not result in increased charges to patients/residents or that increased charges are justified based upon such factors as, but not limited to, a cost benefit or other analysis that demonstrates the project will improve the applicant's financial viability.

APPEND DOCUMENTATION AS ATTACHMENT ECON-5 AFTER THE LAST PAGE OF THIS SECTION.

Carle
Carle Foundation Hospital
611 West Park Street, Urbana, IL 61801-2595 Phone: (217) 383-3311

February, 2008

Mr. Jeffrey Mark
Executive Secretary
Illinois Health Facilities Planning Board
525 West Jefferson Street
Springfield, Illinois 62761

Re: Carle Foundation and Carle Foundation Hospital Modernization and Expansion Project.

Dear Mr. Mark:

The selected form of debt financing the project will be at the lowest net cost available or if a more costly form of financing is selected, that form is more advantageous due to such terms as prepayment privileges, no required mortgage, access to additional debt, term (years), financing costs, and other factors.

Sincerely,

John M. Snyder
Executive Vice President
and COO

Robert Tonkinson
Senior Vice President
and CFO

February 11, 2008
Virginia A Clark

"OFFICIAL SEAL"
VIRGINIA A. CLARK
Notary Public, State of Illinois
My commission expires 04/16/11

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Attachment ECON-2

C. Criterion 1120.310.c, Reasonableness of Project and Related Costs

COST AND GROSS SQUARE FEET BY DEPARTMENT OR SERVICE

Department List	A	B	C	D	E	F	G	H	
	Cost/Square Foot		Gross Square Foot		Gross Square Foot		Construction $	Modification $	Total Cost
	New	Modified	New	Circulation	Modified	Circulation	(A x C)	(B x E)	(G + H)
Clinical									
Cardiac Catheterization	$350	$0	4788	0	0	0	$1,675,800	$0	$1,675,800
Cardiac Catheterization Support	$300	$0	6093	0	0	0	$1,827,900	$0	$1,827,900
Interventional Radiology	$350	$0	4,815	0	0	0	$1,685,250	$0	$1,685,250
Interventional Radiology / Support	$300	$0	6,093	0	0	0	$1,827,900	$0	$1,827,900
Electrophysiology	$350	$0	3,210	0	0	0	$1,123,500	$0	$1,123,500
Electrophysiology / Support	$300	$0	4,043	0	0	0	$1,212,900	$0	$1,212,900
Catheterization / Interventional Radiology / Electrophysiology Prep / Recovery	$350	$0	5,758	0	0	0	$2,015,300	$0	$2,015,300
Gastro-Intestinal / Colo-Rectal Labs	$0	$225	0	0	7,101	0	$0	$1,597,725	$1,597,725
Gastro-Intestinal / Colo-Rectal Prep / Recovery	$0	$225	0	0	8,394	0	$0	$1,888,650	$1,888,650
Intensive Care Beds	$375	$0	20,936	0	0	0	$7,851,000	$0	$7,851,000
Medical-Surgical Beds	$375	$0	56,820	0	0	0	$21,307,500	$0	$21,307,500
Inpatient Rehabilitation Beds	$375	$0	8,820	0	0	0	$3,307,500	$0	$3,307,500
Inpatient Occupational Therapy	$300	$0	2,455	0	0	0	$736,500	$0	$736,500
Inpatient Physical Therapy	$300	$0	3,923	0	0	0	$1,176,900	$0	$1,176,900
Outpatient Rehabilitation (Occupational Therapy and Physical Therapy)	$275	$0	4,843	0	0	0	$1,331,825	$0	$1,331,825
ADL Treatment	$300	$0	744	0	0	0	$223,200	$0	$223,200
Respiratory Therapy	$275	$0	375	0	0	0	$103,125	$0	$103,125
Wound Healing Center	$300	$0	5,307	0	0	0	$1,592,100	$0	$1,592,100
Pharmacy	$300	$0	5,555	0	0	0	$1,666,500	$0	$1,666,500
Pharmacy Storage	$275	$0	3,255	0	0	0	$895,125	$0	$895,125
Total Clinical	$348.77	$225.00	147,833	0	15,495	0	$51,559,825	$3,486,375	$55,046,200
Contingency	$34.93	$21.27	147,833		15,495		$5,164,360	$329,640	$5,494,000 1
Total Project	$383.70	$246.27					$56,724,185	$3,816,015	$60,540,200

1) The contingency reflects a proportional allocation between new construction and modifications, against a standard of 10% for each category.

C. Criterion 1120.310.c, Reasonableness of Project and Related Costs

Construction Constraints and Complexities Pertaining to Cost / SF

Basis of Construction Cost Budget

Carle Foundation Hospital ("CFH") has completed extensive business planning to determine if this project is economically feasible. Once the business planning indicated the need to develop a new Bed Tower, CFH retained Marshall Erdman & Associates (the largest Healthcare Design/Build firm in the US), to direct and manage the overall planning, design, and construction of the project. MEA has completed hundreds of projects in Illinois, including several locally. Under MEA's direction, the detailed planning, programming, design, budgeting, and scheduling were conducted. At the time of this application, the Schematic Drawings are 100% complete, and the budget and schedule contained in this application is based on these Schematic Drawings.

The site chosen for this project, ("Site") is on CFH's current campus, and immediately adjacent to the existing Hospital. This Site was chosen because it enables the new Bed Tower to connect on every floor and integrate with numerous existing clinical services (Emergency Department, Operating Rooms, etc.), various support services (Administration, Cafeteria, Materials Management, Central Sterilization, etc.), as well as tying into the existing Energy Plant for steam and chilled water lines. The City of Urbana MIC Zone constrains the construction project to CFH's current campus. This tight urban site has some constraints and creates a complex construction project, which increases the cost of the construction. At the site, the only way to accommodate the desired scope was to plan for a multi-storey (nine) building. In the local market, buildings are typically three to five stories tall. The CFH North Tower building, at eleven stories tall, is currently the tallest building in Urbana. This high rise construction in a limited area, with connections at every level, specialized systems and elements, and with investments for vertical expansion, creates some of the constraints and complexities which are presented in more detail in the following;

Comparison to R.S. Means Construction Cost Data

Under the Planning Board's Review Criterion Section 1120.310(c) - Reasonableness of Project and Related Costs; (1) Construction and Modernization Costs; provides that "construction and modernization costs per square foot shall not exceed the adjusted (for inflation, location, economies of scale, and mix of service) third quartile as provided for in Means Building Construction Cost Data publication unless the applicant documents construction constraints or other design complexities and provides evidence that the costs are similar or consistent with other projects that have similar constraints or complexities." For this Bed Tower project, the third quartile Means number at the time of this application is $310/sf. Escalating that cost @ 3%/year from 2008 to 2012, equates to $348.91/sf, which is the initial standard for this Bed Tower project. The proposed cost per square foot for this project is $383.70.

C. Criterion 1120.310.c, Reasonableness of Project and Related Costs

1. Site Constraints & Complexities

The existing urban site is completely developed. This site is surrounded by existing hospital buildings and residential areas, and will require that measures be taken to protect adjacent structures. Relocation of existing utilities (water, sewer, stormwater), vacation of public streets (already approved), and demolition of two buildings is also required. Further, this site is very limited in space for material storage and lay-down areas, necessitating the need to shuttle materials and construction crews from off-site parking locations. Excavated materials for the basement will need to be trucked off-site, and engineered fill will need to be trucked in. The project requires the construction of a tunnel to convey materials, trash, and utilities from the existing Energy Plant. In addition, the limited site pushes the program vertically, into High Rise construction. The premium cost for the site constraints and complexities is estimated at $15/sf over the Means basis.

2. Seismic Bracing – Local Requirements

The City of Urbana has adopted IBC 2003 for its building code. The proposed Bed Tower is classified as "Building Category IV", and Seismic Use Group III. The Geotechnical investigation has deemed the site to be "Seismic Site Class D" (which is unique to south eastern Illinois), requiring the design to be in accordance with Seismic Design Category D, which requires extensive seismic bracing for the structure, as well as the mechanical, electrical, and plumbing components. This extensive bracing is estimated to cost $3.50/sf above the Means basis.

3. High Rise Construction Premiums

The cost of High Rise construction carries higher costs due to several factors including the lower productivity rate (due to the need to elevate materials and construction personnel), which leads to the longer construction duration time, The design of the Bed Tower includes two stairwells which are required to be pressurized, and four elevators which will be built above the nine stories to the future height of 11 stories (see Vertical Expansion discussion which follows). Further, a trauma elevator will be built up to the 12th floor (roof of the existing North Tower) to provide conveyance for helipad patients vertically down to the Emergency Departments. The premium costs for the High Rise construction above the (8-10 stories used by Means) are estimated at $10/sf above the Means basis.

4. Provisions for Future Vertical Expansion

The Bed Tower is designed to vertically expand two floors (from 9 stories to 11 stories), in the future, thereby matching the existing N. Tower. The proposed Bed Tower budget includes costs for increased size of footings, foundations, structural elements, and concrete roof decking to serve as the future 10th floor. These elements need to be

included in the initial construction, to accommodate the future vertical expansion. These premium costs are estimated at $5/sf over the Means basis.

5. Specific Program Design & Features Premiums

The project has incorporated numerous design features to provide an enhanced healing environment for our patient community, and assist with Infection Control, including private patient rooms with individual toilets, solid surfaces (for ease of cleaning), and positive/negative pressure rooms. Further, the project's design includes engineering and conveyance systems to integrate with the existing hospital systems, including a fully-integrated Electronic Medical Records system (EMR), pneumatic tube system, and redundant mechanical and electrical systems. The premium cost of these features is estimated at $ 10/sf above the Means basis.

The total accumulation of the premium costs identified above is $ 43.50 per square foot.

C. Criterion 1120.310.c, Reasonableness of Project and Related Costs

Itemization of Project Costs

Preplanning	
Planning and Programming	$100,000
Site Recon, Budgeting, Estimating, Scheduling	$150,000
Code Analysis, Specifications	$50,000
Conceptual Design	$500,000
Schematic Design	$817,101
Design Development	$1,175,000
Market Analysis	$100,000
Total	$2,892,101
Site Survey and Soil Investigation	
Survey and Geotechnical	$50,000
Total	$50,000
Site Preparation	
Surface parking, utilities, lighting	$2,505,000
Demolition, vacation, utility relocation, tunnels, landscaping	$4,455,679
Total	$6,960,679
Off-Site Work	
Expand energy plant	$5,000,000
Total	$5,000,000
Consulting	
CON, City review, IDPH review, zoning, landscaping	$755,000
Total	$755,000
Other Costs To Be Capitalized	
Permits, utilility connections	$100,000
Cost Escalations	$193,328
Total	$293,328

C.2 Major Medical Equipment

There is no Major Medical Equipment in the project as defined by the statute. Listed below is a summary of the equipment budget.

Public and Staff Furniture	$3,594,411
Artwork	$1,262,752
Medical Equipment	
Cardiac Catheterization Labs	$6,922,980
CVICU Beds with Booms	$1,079,985
Cardiac Beds	$3,323,030
Medical-Surgical Beds	$2,907,652
Rehabilitation Beds	$103,845
Rehabilitation Therapy Equipment	$124,614
Wound Healing Center Equipment	$62,307
Sleep and Occupational Therapy Equipment	$13,846
Dialysis Beds and Equipment	$138,460
Inpatient Pharmacy Equipment	$346,149
Multiple Procedure - Endoscopy Equipment	$417,317
Preparation - Recovery Area Equipment	$175,740
Business Equipment	
IT (computers, phones, etc)	$2,380,832
Administrative Equipment	$346,149
Security System	$826,604
Miscellaneous Equipment	$3,100,000
TOTAL	$27,126,672

C. Criterion 1120.310.c, Reasonableness of Project and Related Costs

Book Value Documentation

Book value of endoscopy equipment to be moved per LifeStructures Technology Planning and Carle Foundation Hospital Purchasing Department:	$5,257,700
Book value of cardiac catheterization lab equipment to be moved per Carle Foundation Hospital Accounting Department:	$3,619,065

The Carle Foundation

	2009	2010	2011	2012	2013
Criterion 1120.310.d, Projected Operating Costs					
Direct Annual Operating Costs (dollars in 000s)					
Salaries and wages	132,533	139,407	146,888	154,444	161,620
Employee benefits	33,886	35,547	37,453	39,380	41,211
Patient care and other supplies	158,947	167,599	178,197	188,364	198,175
Total direct annual operating costs	325,366	342,553	362,538	382,188	401,006
Projected patient days	83,691	88,697	91,935	94,331	96,058
Total direct annual operating costs/patient day	3,888	3,862	3,943	4,052	4,175
Criterion 1120.310.e, Total Effect of the Project on Capital Costs					
Total Projected Capital Costs	(36,250)	(36,600)	(34,300)	(229,223)	(39,300)

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Attachment ECON-5

The Carle Foundation
Statement of Operations
(dollars in thousands)

	2009	2010	2011	2012	2013
Patient Revenue					
Inpatient revenue	$ 634,713	$ 712,512	$ 782,587	$ 851,054	$ 918,640
Outpatient revenue	390,760	399,939	434,883	468,815	503,994
Total patient revenue	1,025,473	1,112,451	1,217,470	1,319,869	1,422,634
Deductions From Revenue					
Contractual allowances	523,931	583,810	653,010	722,613	793,960
Charity	25,865	28,713	31,553	34,318	37,083
Total deductions from revenue	549,796	612,523	684,563	756,931	831,043
Net patient revenues	475,677	499,928	532,907	562,938	591,591
Other operating revenue	46,427	51,565	53,031	55,837	58,853
Total net revenue	522,104	551,493	585,938	618,775	650,444
Operating Expenses					
Salaries and wages	132,533	139,407	146,888	154,444	161,620
Employee benefits	33,886	35,547	37,453	39,380	41,211
Patient care and other supplies	158,947	167,599	178,197	188,364	198,175
Contract services purchased from CCA	33,698	35,780	37,618	39,186	40,804
General and administrative	21,948	22,769	23,630	24,498	25,379
Interest and financing expense	8,232	7,513	7,335	10,154	14,084
Depreciation and amortization	29,134	32,355	34,608	37,505	40,796
Provision for bad debt	14,570	15,654	17,145	18,589	20,093
Other operating expenses	80,206	84,600	88,881	92,998	97,905
Total operating expenses	513,154	541,224	571,755	605,118	640,067
Income from operations	8,950	10,269	14,183	13,657	10,377
Nonoperating gains (losses)	67,770	29,633	31,349	30,668	32,443
Excess of Revenue Over Expenses	76,720	39,902	45,532	44,325	42,820

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Attachment ECON-5

The Carle Foundation
Statement of Cash Flow
(dollars in thousands)

	2009	2010	2011	2012	2013
Operating Activities					
Income from operations	$ 8,950	$ 10,269	$ 14,183	$ 13,657	$ 10,377
Adjustments to reconcile change in net assets to net cash provided by operating activities					
Accounts receivable	(2,761)	(4,180)	(5,684)	(5,176)	(4,938)
Change in inventory	(936)	(635)	(778)	(746)	(720)
Other current assets	-	-	-	-	-
Accounts payable and accrued expenses	577	841	948	1,027	1,067
Other current liabilities	-	-	-	-	-
Depreciation and amortization	29,134	32,355	34,608	37,505	40,796
Net cash provided by operating activities	34,964	38,650	43,277	46,267	46,582
Investing Activities					
Purchases, net of sale proceeds, of investments	(16,798)	(6,194)	(19,359)	9,796	(19,776)
Purchase of property and equipment	(36,250)	(36,600)	(34,300)	(229,223)	(39,300)
Proceeds from sale of property and equipment	67,104	-	-	-	-
(Increase) in other assets	(1,589)	-	-	-	-
Net cash provided by (used in) investing	12,467	(42,794)	(53,659)	(219,427)	(59,076)
Financing Activities:					
Increase in borrowings	190,000	-	-	-	-
Payments on IFA bonds	(26,800)	(6,530)	(7,355)	(7,730)	(8,110)
Change in net assets	-	-	-	-	-
Net cash provided by (used in) financing	163,200	(6,530)	(7,355)	(7,730)	(8,110)
Nonoperating Revenues and Expenses					
Other nonoperating items	29,020	29,633	31,349	30,668	32,443
Net cash provided by nonoperating activities	29,020	29,633	31,349	30,668	32,443
Net Change in Cash	239,651	18,959	13,612	(150,222)	11,839
Beginning Cash	446,770	686,421	705,380	718,992	568,770
Ending Cash	686,421	705,380	718,992	568,770	580,609

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Attachment ECON-5

The Carle Foundation
Balance Sheet
(dollars in thousands)

	2009	2010	2011	2012	2013
Current Assets					
Cash and cash equivalents	$ 7,000	$ 7,000	$ 7,000	$ 7,000	$ 7,000
Accounts receivable	81,981	86,160	91,844	97,020	101,958
Inventories	11,666	12,301	13,079	13,825	14,545
Other current assets	127,700	127,700	127,700	127,700	127,700
Total Current Assets	228,347	233,161	239,623	245,545	251,203
Property, Plant and Equipment					
Property, Plant and Equipment	529,795	566,395	600,695	829,918	869,218
Less: Accumulated Depr and Amort	(258,703)	(291,058)	(325,666)	(363,172)	(403,968)
Total Fixed Assets	271,092	275,337	275,029	466,746	465,250
Assets Limited as to Use					
Board designated funds	679,421	698,380	711,992	561,770	573,609
Special purpose funds	189,075	188,507	200,760	183,495	195,422
Trustee-held funds	132,574	139,335	146,441	153,910	161,759
Other assets	18,419	18,419	18,419	18,419	18,419
Total Other Assets	1,019,489	1,044,641	1,077,612	917,594	949,209
	$ 1,518,928	$ 1,553,139	$ 1,592,264	$ 1,629,885	$ 1,665,662
Current Liabilities					
Current maturities of IFA revenue bonds	4,405	5,080	5,305	5,510	5,735
Accounts payable and accrued liabilities	16,618	17,457	18,405	19,431	20,498
Third party payables	8,980	8,980	8,980	8,980	8,980
Other current liabilities	189,140	189,140	189,140	189,140	189,140
Total Current Liabilities	219,143	220,657	221,830	223,061	224,353
Long-Term Debt and Other Liabilities					
IFA revenue bonds	383,158	375,953	368,373	360,438	352,103
Other liabilities	157,700	157,700	157,700	157,700	157,700
Total Current Liabilities	540,858	533,653	526,073	518,138	509,803

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Attachment ECON-5

Net Assets					
Unrestricted	749,187	789,089	834,621	878,946	921,766
Temporarily restricted	8,810	8,810	8,810	8,810	8,810
Permanently restricted	930	930	930	930	930
Total Net Equity	758,927	798,829	844,361	888,686	931,506
	$ 1,518,928	$ 1,553,139	$ 1,592,264	$ 1,629,885	$ 1,665,662

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Attachment ECON-5