

AFTERWORD

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As one who has chosen healthcare as your profession, you have a legacy that is embodied in the lives of the colleagues, patients, and families you have touched along the way. Yet most of us think about care and caregiving in the absence of space. Where we work is integral to how we work. The involvement and the input of clinicians in facility design decisions is an essential insight and, in fact, imperative to the care experience.

Now that you have read this remarkable book, and understand the compelling evidence for clinicians as a critical influence in the design of space, may the knowledge gained enhance your legacy and advance the impact that space can have on those who serve and those who are served.

Knowledge is power. I hope this information will empower you to embrace and engage in planning and design as your organization positions for healthcare of the future. At the same time, I encourage you to engage the design community in a deep understanding of clinical processes and operations. Teaming the two disciplines can, and does, improve quality and safety for patients and caregivers alike. Knowing that procedures, processes, and technology have been and are constantly changing, you can be the voice of experience, and you can confidently advocate for creating adaptive environments that evolve with change to support an unknown future state.

We hope you have been inspired by the evidence that environments can truly impact the way care is delivered. We encourage you to be a catalyst for research that affects people, processes, and health. The power of sharing project outcomes, and especially those that have metrics, can inform the industry moving forward. This is continuous improvement at its best.

Max De Pree, Chairman Emeritus of Herman Miller, in his book *Leadership Is an Art* said that “The first responsibility of a leader is to define reality. The last is to say thank you.” It is in that same spirit that I extol the merit of this book, credit the remarkable dedication required to create it, and thank the authors without whom this book would not have been possible. I thank also my colleagues at Herman Miller, Michael Pflughoeft of MAP Communications, and especially the Nursing Institute for Healthcare Design (NIHD) and NIHD Board of Directors. And, finally, I wish to express deep gratitude for the extraordinary leadership provided by our co-editors Kathy Okland and my amazing colleague and mentor Jan Stichler.

Engage with the authors and leaders who penned this book and amplify your voice with them.

About the Author:

Janet Zeigler serves as Director of Healthcare Consulting for Herman Miller Healthcare. There, she leads a team of nurse consultants who bring clinical and leadership experience to the external and internal healthcare network. This outreach includes architects, designers, equipment planners, project coordinators and healthcare professionals in planning efficient work flow in clinical departments. Janet also provides technical expertise for marketing, research, and development of existing and future Herman Miller Healthcare products and services.

Janet graduated from Emory University with a Bachelor of Science in Nursing and a Master in Business Administration. She also earned a Master in Nursing degree from the University of Washington and is EDAC certified.

TESTIMONIALS

Deb Evans RN, EDAC Senior Healthcare Consultant, Herman Miller Healthcare

I previously served as a Project Coordinator and Clinical Liaison for a large tertiary and quaternary medical facility. The position was created by leadership in anticipation of a strategy for immediate growth and expansion that would potentially disrupt the status quo and the current state. Leadership identified the need for an intermediary to forge interprofessional relationships amidst changes in the physical environment. The new job description for the position required a multi-faceted approach to the design process that included input from the community as well as the in-house stakeholders to inform design. The Clinical Liaison role emphasized three primary tenets:

- Patient safety
- Staff satisfaction; effective, efficient work spaces
- Positive environmental outcomes

In the role of project coordination, the coordinator served as a resource to planning, design and construction, both in-house and out-sourced. The role served as a communication conduit for patients, families, caregivers and ancillary support services, to inform design and affect positive outcomes. Pre-assessment and transition planning were integral to the success of this position to accommodate new construction, as well as renovation of occupied spaces. A unique role indeed, as it provided oversight with a holistic perspective to interpret, translate and facilitate the planning and design process.

The value of the Clinical Liaison is likened to the nursing process by assessing current state, gap analysis, and identifying opportunities for process improvement. Finally, this role served as the steward of the guiding principles designed to achieve an optimal healing environment and ultimately the goals set forth to achieve organizational performance outcomes.

Deborah Gerber RN, MPH, FACHE, EDAC Consultant—retired

As a nurse executive for more than two decades, I had the opportunity to influence numerous (and some, major) construction and renovation projects. In each project, nursing was asked for input, and asked to sign off on plans we didn't really understand while our trusted Architectural and Design (A&D) colleagues were working from their own knowledge and skill set that didn't include intimate knowledge of nursing, patient care, or care processes. We ended up with beautiful spaces, yet they failed to intuitively support caregiving, leading to workarounds for staff to accomplish patient care. Each of us, of course, sought to do our best but we were ill-prepared, without an understanding of the impact of space on patients and processes.

I am reminded of a time when I, and many other nurse leaders, were brought to the budget table for the first time. We knew little about finance, costs, charges, payors, or the difference in our labor, supply, capitol, and operating budgets. I felt lost and confused with the unfamiliar language of finance. I had to learn finance so that I could communicate nursing and patient care needs and obtain necessary resources while many of my colleagues went to graduate school for their MBAs.

I believe teamwork, active participation, and informed involvement are essential to space-planning in support of safe, healing environments for our patients and staff. How care will be delivered in the new space must inform the design process. Coming together for the common good expressed in guiding principles, all team members benefit from a basic understanding of the other's discipline. Nurses and clinicians need study in process design, basic A&D terminology and symbols, and the stages of the A&D process to be an active participant, articulating patient care and caregiving requirements for their architects and designers. The best teams are good listeners, respectful of the value of their clinical advisors who bring expertise to translate and integrate patient care and care processes into the design of the new space. We must all become informed stakeholders, with respect and patience, as we are coming from our own knowledge, experience, and bias.

Clinicians, and our planning and design counterparts, have an opportunity to work together to create spaces that will have lasting effects on the patients served and the caregivers at work. Make the most of being invited to the planning table!

Ronald Goodnough RN, MN
Clinical Project Manager,
Harrison Medical Center, Bremerton, WA

What motivates and inspires me...

As I've transitioned from frontline clinician to leader and developer of programs, and then to designer of places, I am reminded that each member of a community makes valuable contributions to the patient experience. From designers and donors who help build the environment, to housekeepers and volunteers who make the environment pleasant, and the frontline clinician who oversees the patient's care plan - some contributions are foundational, others are critical, but all contribute to the fullness of the care of others.

What inspires me most in all of this and above all, is the thought that this space we are creating, a hospital, is sacred ground. People live and people die in these spaces. At times, miracles happen and the human soul is inspired. And at other times, the human soul is crushed with grief. People experience all of these moments in our spaces and I am inspired that these experiences can be honored by the design of a healing environment.

At the same time, space intimidates me. We are designing for a multitude of needs, each important and sacred. This is where I believe the clinician brings significant value. As a clinical project manager, I bring clinical experience and understanding to the table:

- As a consistent clinical thread that follows the entire process
- As a facilitator in design discussions and decisions to ensure optimal design of the space and workflow
- As an observer—the work is multifaceted and messy, the ability to stand back and observe the connections among disciplines, flows of medicine, themes, and the experience that the users will have
- As a leader to bring form and function together to serve the ultimate purpose

There are obstacles which are not new to team dynamics. Communication is at the core of this work. The flow of information to ensure that it gets to you and through you is essential and without it, can cause significant complications. Critical to communication:

- Timing is everything—when is the right time to share strategic information?
- Being inclusive—involving the right stakeholders and the real decision makers
- Knowing who the keepers of needed information are to help provide the context and inform the process

The timing and coordination of communication influences the transformation. When communication is clear, energy and momentum are able to flow among the parts to help develop an operation that meets the objective, a healthy healing environment for the human experience.

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Jaynelle F. Stichler DNS, RN, NEA-BC, EDAC, FACHE, FAAN
Co-Editor of Health Environment Research & Design
(HERD) Journal

After completing the design, construction, and opening of one of the largest women's hospitals in the United States in 1992, I was invited to join the architectural firm as a nurse consultant. At the time, I was one of the few nurses working in the design industry. For the first few months in my new role, I felt very unsettled, not sure what my role was or how I could add value to the design team members who seemed very knowledgeable and competent about healthcare design. My uneasiness caused me to re-read Florence Nightingale's *Notes on Nursing*, and immediately I understood the importance of embedding a nurse in a healthcare design firm. It was so important for me to maintain my nursing identity that I surrounded myself with nursing artwork and memorabilia. I began traveling with the design team and interacting with the healthcare clients (healthcare executives, nurse leaders, clinical nurses, physicians and other healthcare providers) and led many "user group meetings." It became readily apparent, to me and to my design colleagues, that I played an important role in translating the intersection of healthcare knowledge and design knowledge. My involvement with the design team not only added value during the design process, but it was also viewed by potential clients as an important criterion in the selection process.

Once embedded in the design world, I recognized that the healthcare design industry rarely published the "true story" about the effectiveness of completed healthcare projects. Most design publications consisted of lovely, pre-occupancy photographs with narratives focusing on the aesthetic features of the project with listings of the various consulting firms that worked on the project. If post-occupancy evaluations had been completed, the findings were not published or presented at any of the national conferences. Because of the competitive nature of the field, who would ever admit that a great design idea did not work as well as intended? With this in mind, I approached one of our major competitors and an architect who I truly admired to inquire of his interest in working with me to establish a new journal that focused on publishing findings from research design and the real story about the effectiveness of completed projects. D. Kirk Hamilton had been thinking similar thoughts about the need for a healthcare design journal that published more rigorous material than project descriptions currently the focus of many journals. Mr. Hamilton and I agreed to work together, and we wrote a proposal, found a publisher, and established the first international, interdisciplinary, peer-reviewed journal featuring design research, evidence-based design (EBD) projects, case studies, opinion and theory articles, a methodology column, and a book review. *Health Environments Research & Design (HERD) Journal*, is an example of what can be accomplished with interprofessional collaboration. The articles in *HERD* have significantly influenced the healthcare design industry and have contributed to the expanding body of knowledge and evidence used to guide EBD projects. *HERD* continues to be the primary source of evidence for healthcare projects, and is indexed in PubMed making it easy to access by firms across the world.

My phenomenal career in nursing has now spanned four decades, and I have enjoyed many different roles in nursing as a clinical nurse, clinical nurse specialist, nurse researcher, nurse educator, author and editor, hospital administrator, and external and internal consultant. I've even been a business owner of a small consulting business that facilitated the strategic planning, financial feasibility analysis, and project development for new services for hospitals. It's been a phenomenal journey, so when the invitation came to participate in the writing and editing of this book, it seemed like a capstone project for my entire career. The healthcare design industry needs nurses who can provide leadership and design insight that only a clinician would understand. For those

nurses selecting a career in the healthcare design field, I strongly encourage you to pursue this journey and to prepare yourself with advanced education, enabling you to be most effective in your role as consultant, interpreter, researcher, and colleague. Then disseminate your knowledge in national and international presentations and peer-reviewed publications to expand the knowledge and science of healthcare design, which is simply another domain of nursing. Always remember that Nightingale as the first healthcare designer, advocate, researcher and statistician, educator, hospital administrator, and author, left a legacy that serves us well today as nurses in healthcare design.

KEY QUESTIONS

What are the barriers for nurses in healthcare design?

Available resources to attain competency

Access to mentors to gain experience

Peers who fail to recognize the acumen as a nursing domain

Not having an equal place at the table

Lack of knowledge and skills in planning & design.

- *Kathy Okland*

Getting into the field; no standard educational or clinical track

Being recognized as an expert within the field

- *Joyce Durham*

Limited resources prevent healthcare organizations from using internal talent and retain outside consultants to oversee the project.

- *Kay Rademacher*

Not always being brought to the table – or brought too late

Not included in the leadership of the project e.g. Steering Committee

For nurses new to design projects, not being taught about the components of the design process e.g. what has to be done during programming, SD, etc. and how to read plans

Not being heard during meetings

Not being allowed to bring in operational issues that will affect the design

- *Susan Silverman*

Translation of clinical practice into architecture/design language will shed light on the workflow of clinical space for design and functionality

At times, the ability to “think outside of the box”

- *Erin Clark*

What advice do you have for clinicians to succeed in this field?

Seek others who identify with this interest i.e. NIHD

Seize every opportunity to be involved in facility planning & projects

Recognize that this indeed is a nursing specialty in its early stages

Follow your passion

Apply the nursing process

Listen, learn and leverage your advocacy for the patient—like always

- *Kathy Okland*

Consistently represent the needs of the patient

Continually expand the breadth of your knowledge: clinical, operational, and facility design

Join and participate in professional organizations to develop a strong network of colleagues you can turn to for advice

- *Joyce Durham*

Nurses need to continue to engage in the conversation related to innovation and transformation of Healthcare

- *Debbie Gregory*

Take risks and move out of your comfort zone to learn about healthcare design and construction

Network at design industry conferences such as the Healthcare Design Conference

- *Kay Rademacher*

Serve on committees and/or board positions of Nursing Institute for Healthcare Design

Be informed – seek out the resources available; journal articles, events, and organizations who understand the value of having clinicians involved in the design process

Find a mentor – one who will assist in networking with clinicians in the industry

- *Erin Clark*

Identify key points for preparation & developing competency in this field

Seek out & attend CHD/HCD programming & activities

EDAC preparation & certification

Engage in NIHD with intention

Subscribe to *HERD*

Read this book. Keep it on your reachable shelf

- *Kathy Okland*

Diverse experience in clinical, operational and facility planning is valuable

Expertise in all these areas does not come from one source; seek out educational opportunities in all three areas

- *Joyce Durham*

Talk with as many people in the field as you can. There are many ways to serve as an advocate for nursing

- *Debbie Gregory*

Find a mentor in the field of healthcare design, construction, clinical technology or medical equipment planning to learn about project management

Volunteer to be on teams and task forces on your institution's projects to begin a track record of experience

Subscribe to journals online or print publications for facility management and design content

- *Kay Rademacher*

To prepare for this role, the clinician should be current on trends and barriers the industry is facing, not just in the hospital but the economic trends affecting healthcare as well. This includes the ability to understand how these trends may affect patient care over the life of the building in order to develop the design of that structure. The clinician must read and participate in industry news and events and have an open mind about the possibilities for patient care.

- *Erin Clark*

There are many challenges in the design and construction of hospitals and other healthcare facilities. With changing trends in healthcare including the aging population, healthcare reform, with pressure on access, efficiency and decreasing costs and new and evolving technologies, there is an enhanced need to provide patient centered, safe, quality care. Nurses have the expertise to be at the forefront of and ensure that the built environment will support the care that patients and families require.

Clinicians who want to be involved in healthcare design should become a part of their hospital's building projects and actively participate as members of the User Groups for these projects.

- *Susan Silverman*

GLOSSARY PREFACE

The Center for Health Design (The Center) is thrilled to support this wonderful collaboration between Herman Miller Healthcare and NIHD by providing the glossary of terms that follows.

At The Center, we're focused on the connection between design and health and we're dedicated to improving the quality of healthcare through design of the built environment. We believe this book will serve to help develop clinicians who share our focus and dedication.

Through design research, education, and advocacy, The Center is leading the way in transforming hospitals, clinics, wellness centers, doctor's offices, and residential care facilities for a safer, healthier tomorrow.

The glossary is an outgrowth of our internationally recognized Evidence-Based Design Accreditation and Certification (EDAC) program that awards certification to healthcare planners, architects, designers, contractors, clinicians and management professionals demonstrating an understanding of applying evidence-based design to healthcare facilities.

We hope you will find it useful and explore more about becoming EDAC-certified by visiting the CHD website—<https://www.healthdesign.org/>.

Sincerely,

Debra J. Levin, EDAC
President and Chief Executive Officer
The Center for Health Design

GLOSSARY (A-E)

AIA

American Institute of Architects.

ACA

Patient Protection and Affordable Care Act. Legislation passed in 2010 to increase access to healthcare for all Americans and expand Medicaid coverage.

AACN

American Association of College of Nursing.

AAMC

Association of Medical College.

ACHE

American College of Healthcare Executives.

ASHE

American Society for Healthcare Engineering.

Accountable Care

An accountable care organization is a group of healthcare providers that give coordinated care and chronic disease management to improve quality of care.

Acuity

The intensity of care necessary to meet the needs of a patient.

Acuity-Adaptable Rooms

Healthcare patient rooms that swing from acute care to critical care, thus reducing patient transfers.

Adverse Drug Events (ADE)

Generally unwanted, negative consequences associated with the use of given medications.

Ambulatory Care

Constitutes diagnostic and therapeutic services and treatments provided to the walking (ambulatory) patient. In a restricted sense, ambulatory care refers to care rendered to patients who come to physicians' offices, outpatient departments of hospitals, and health centers to receive care.

As-Built [drawings]

Usually refers to drawings prepared after construction and describes the actual construction of a project.

Asclepieion

A healing temple sacred to the god Asclepius in ancient Greece. In the sixth century BC, an asclepieion intuitively placed patient rooms with an orientation to the sun.

Before-After Study

A study that measures outcomes by comparing data collected before a strategy with those collected after a strategy is put in place. By comparing data, researchers can tell whether the strategy is effective in improving outcomes.

Bid

A written agreement between an organization or party (such as a hospital) to enter into a contract in which labor, and possibly materials, are provided and specified within the document.

Bid Documents

Written and graphic documents prepared by the architect used to aid bid preparation. A bid document might include construction drawings, specifications, instructions to the bidder, and a bid form.

Bid Negotiation Phase

The phase in which the project team solicits project fees for construction services.

Big Data

An evolving term that describes any voluminous amount of structured, semi-structured, and unstructured data that has the potential to be mined for information.

Board of Trustees

The governing body of an organization or corporation that is generally elected by stakeholders to make decisions and policies.

Boolean Logic

A logic system using operator words to formulate queries for building search strings. This form of logic is based on binary logic and can be used to search most full-text search engines as well as subject directories.

Built Environment

Manmade surroundings where human activity occurs.

Bundled Payments

Bundling payment for services that patients receive across a single episode of care, such as a knee replacement, designed to improve the quality of care and lower costs.

Business Planning

Determining the strategies, goals, and objectives of the business by translating the current and strategic state in terms of costs and revenues with regard to investments.

Case Study

Involves in-depth investigation of one or several cases: individuals, units, or projects. In a case study, researchers use multiple quantitative or qualitative methods. Multiple methods are used to collect extensive data of one case or several cases.

CAUTI

Catheter-associated urinary tract infections.

CDC

Centers for Disease Control and Prevention.

C. Difficile

Clostridium difficile, also known as C. difficile, C. diff is a species of Gram-positive spore-forming bacteria.

Chair Centric Model

A room where less acute patients are evaluated and treated while in a recliner, instead of the traditional bed or stretcher.

Chi-Square

A statistical test used to determine the likelihood that an observed variation from the anticipated outcome occurs solely by chance.

Clinical Outcomes

Observable signs and symptoms relating to the patients' health conditions such as mortality, morbidity, and infection rates.

CLABS

Central line-associated blood infections.

Cloud Computing

Recently evolved computing terminology or metaphor based on utility and consumption of computing resources. Cloud computing involves deploying groups of remote servers and software networks that allow centralized data storage and online access to computer services or resources.

CMS

Centers for Medicare and Medicaid Services.

Confounding Variables

Extraneous variables not under the control of the experimenter that vary systematically from the independent variable, making it difficult to isolate cause and effect.

Commissioning

A quality-oriented process for achieving, verifying, and documenting that the performance of facilities, systems, and assemblies meets defined objectives and criteria.

Construction Phase

The construction phase includes the following components: complete the bid, negotiation, and award process; monitor implementation of construction; finalize the research plan; prepare for occupancy; and commissioning.

Construction Documents

Drawings and specifications produced by an architect that detail the requirements for the construction of the project.

Contractor

A builder who has won the bid and enters into an agreement with an owner to complete a specific project. Sometimes contractors are referred to as general contractors because they may bring in subcontractors to work on the project.

Correlational Coefficient

Measures the direction and strength of the relationship between two variables. A positive value indicates positive correlation, and a negative number indicates a negative correlation. The values are between -1 and +1, and the closer the correlational coefficient is to the -1 or +1, the stronger the correlation.

Correlational Study

Two or more characteristics or variables of research subjects that are collected and examined to see if the differences in one variable are related to the differences in other variables.

Credible Research

The believable and convincing study of a subject or topic to discover new information and understanding through reliable and defensible sources.

Descriptive Statistics

Numerical data summarized in meaningful ways. Various descriptive statistics can be used depending on the type of measurement scale.

Design Development

The stage in the design process in which more detailed drawings are prepared and final design plans with correct sizes and shapes for rooms are completed. During this stage, the construction specifications are outlined.

Design Guidelines

Rules-of-thumb summary statements that designers turn to for guiding aesthetic, functional, or compositional decisions.

Design Phase

The design phase of a construction project includes the following components: conceptual design, schematic design, design development, and construction documents.

DOE

Department of Energy.

EBD Glossary

Standard vocabulary of key environmental variables and healthcare outcomes developed by The Center for Health Design.

Economic Outcomes

Results of an action(s) pertaining to the finances of a hospital or health system, such as cost of patient care, staff turnover, and philanthropy to the hospital.

ED

Emergency department.

EDAC

Evidence-Based Design Accreditation and Certification.

EDRA

Environmental Design Research Association.

EHR

Electronic health record

empirical research

The systematic investigation of the tangible facts (empirical data) aimed at gaining knowledge, making discoveries, testing or revising theories and applying the new knowledge.

Emergicenters

Care centers that are open 24 hours a day, 7 days a week and accept patients with no appointments. They provide a wide range of routine services for basic and acute conditions on a first-come, first-serve basis.

ENERGY STAR

A U.S. Environmental Protection Agency voluntary program that helps businesses and individuals save money and protect our climate through superior energy efficiency. It is an international standard for energy efficient products originated in the United States.

Environment of Care (EOC)

The understanding that the experience someone has in a healthcare delivery system is a function of six components: concepts, people, systems, layout and operations, physical environment, and implementation.

Environmental Psychology

An interdisciplinary field focused on the interaction between humans and their surroundings.

Environmental Stewardship

Refers to responsible use and protection of the natural environment through conservation and sustainable practices.

Environmental Variables

The variables involved in the physical environment. Research focuses on one or two environmental variables that are easily quantifiable such as noise level, room size, patient bed distance, and lighting levels.

GLOSSARY (E-M)

EPA

Environmental Protection Agency.

Ethnographic Study

An example of qualitative research; focuses on a group of people who share a common culture. It gathers in-depth data related to patterns of interpretation and is particularly helpful in understanding a complex work situation.

Evidence-Based Design (EBD)

The process of basing decisions about the built environment on credible research to achieve the best possible outcomes.

Evidence-Based Medicine

A form of medicine that aims to optimize decision making by emphasizing the use of evidence from well-designed and conducted research.

Experiential Knowledge

Knowledge gained through experience.

Expert Experiential Knowledge

Experiential knowledge held by stakeholder groups involved in the project due to their professional qualifications.

External Validity

The generalizability of findings to other settings.

Facility Master Plan

Sometimes referred to as the facility portfolio.

A document that describes an overall physical development concept through maps and narrative.

Failure Modes and Effects Analysis (FMEA)

Provides a safety evaluation tool when reviewing emerging project design documents.

Federated Search Technology

The simultaneous search of multiple online databases; an emerging feature, often referred to as a portal instead of Web-based search.

Functional and Space Programming

Defines the quantitative space requirements needed to support the future operational model, service volumes, staffing, and physical adjacencies

Genomics

The study of genes and their implementation in the development of healthcare products and services.

GHG

Greenhouse gas. A gas in an atmosphere that absorbs and emits radiation within the thermal infrared range. This process is the fundamental cause of the greenhouse effect.

GGHC

Green Guide for Healthcare. First quantifiable sustainable design toolkit integrating enhanced environmental and health principles and practices into the planning, design, construction, operations and maintenance of healthcare facilities.

HCAHPS

The HCAHPS (Hospital Consumer Assessment of Healthcare Providers and Systems), pronounced “H-caps”, survey is the first national, standardized, publicly reported survey of patients’ perspectives and perceptions of hospital care and experience.

HCWH

Health Care Without Harm

Healing Environment

Nurturing, therapeutic, and stress-free environments that promote wellness. Describes a physical setting of a hospital and organizational culture that supports patients and families through the stresses imposed by illness, hospitalization, medical visits, the process of healing, and, sometimes, bereavement.

Health Maintenance Organizations (HMOs)

A type of managed care that provides healthcare coverage; most require a primary care physician.

Healthcare Delivery System

Refers to all facilities and services that provide healthcare.

Healthcare-Associated Infections (HAIs)

Infections that people acquire while they are receiving treatment for another condition in a healthcare setting. This includes infections acquired while being treated, but appearing after discharge, as well as occupational infections among facility staff.

Healthgrades

A U.S. company that provides information about physicians, hospitals and health care providers. Healthgrades evaluates hospitals solely on risk adjusted mortality and in hospital complications. In addition to star ratings, Healthgrades recognizes facilities for: *America’s 50 and 100 Best Hospitals, Distinguished Hospitals for Clinical Excellence, and Excellence Awards in 26 areas.*

HERD

Health Environments Research and Design Journal is a peer-reviewed journal that features evidence-based articles and research papers on the relationships among health and environmental design and organizational, provider, and patient outcomes.

Hierarchical Databases

A database structured in hierarchy format. All data starts at the top of the hierarchy and moves its way down.

HIPAA

Health Insurance Portability and Accountability Act of 1996. The primary goal of the law is to make it easier for people to keep health insurance, protect the confidentiality and security of healthcare information, and help the healthcare industry control administrative costs.

HHI

Healthy Hospital Initiative.

HHS

US Department of Health and Human Services.

HIT

Health information technology. The umbrella framework to describe the comprehensive management of health information and its secure exchange between consumers, providers, government and quality entities, and insurers.

HITECH Act

The American Recovery & Reimbursement Act of 2009.

Hospital-Acquired Condition (HAC)

A medical condition or complication that a patient develops during a hospital stay, which was not present at admission.

Hospital Engagement Networks (HENs)

A national contract awarded by the Centers for Medicare and Medicaid Services to hospital associations and health systems to identify what is already working to improve patient safety and quality and achieve lower costs.

HPP

Hospital Preparedness Program that provides leadership and funding through grants and cooperative agreements to States, territories, and eligible municipalities to improve surge capacity and enhance community and hospital preparedness for public health emergencies.

Hypothesis

A tentative assumption made in order to draw out and test its logical or empirical conclusions.

IHI

Institute for Healthcare Improvement.

Infection Rates

The rate or chance at which patients acquire infections while in a healthcare facility that are caused by the facility or persons in the facility.

Inferential Statistics

Statistics that go beyond descriptive statistics and extend the conclusion to more general conditions and can be used to determine whether the differences or correlations found in a study represent true differences between groups or whether they happened by chance.

Informatics

Gathering and managing of information through the use of computer science and statistical methods.

Information Repository

A place to store current evidence and visioning that should be developed in the early stages to be used for reference throughout the project and into post-occupancy.

Institutional Review Board (IRB)

A group that approves studies (such as clinical trials and nonclinical research studies) proposed by investigators involving human subjects. All clinical trials, by federal regulation, must be approved by an IRB prior to enrolling participants.

Integrated Design Delivery

In an integrated project, the project flow from conceptualization through implementation and closeout differs significantly from a nonintegrated project. Moving design decisions upstream as far as possible to where they are more effective and less costly suggests a rethinking of typical project phases.

Interdisciplinary Approach

An approach involving two or more disciplines; can maximize the outcome associated with the implementation of the EBD process by providing expertise into as many areas of a project as possible.

Interdisciplinary Project Team

A team composed of people representing multiple disciplines and roles within the design and construction process.

Interdisciplinary Research Team

A team composed of people representing two or more disciplines. The team is created to provide expertise into as many areas of a project as possible and, therefore, maximize outcomes associated with the implementation of the EBD process.

Internal Validity

Refers to or reflects the strength of casual relationships.

IOM

Institute of Medicine.

Journal Publication

Periodical or individual articles within a publication dealing with matters of current interest or research.

Just-in-time Study

Quick research done to inform decision making critical to time-sensitive healthcare building projects with a set deadline.

Knowledge Repository

Designed as a living library, this repository provides a one-stop, complete source of healthcare EBD research that will continue to grow as healthcare design evolves. The repository allows users to search by types of publications, terms, design category, outcome category, environmental condition category or setting, and provides the number of references available for each defined category.

LEAN

A method to design and build facilities that identifies, locates, and removes operational process waste.

Leapfrog Group

National nonprofit watchdog and the nation's premier advocate of transparency to galvanize giant leaps forward in quality and safety of care in US hospitals.

LEED

Leadership in Energy and Environmental Design. A green building certification program that recognizes best-in-class building strategies and practices. To receive LEED certification, building projects satisfy prerequisites and earn points to achieve different levels of certification.

Lifecycle Operational Costs

A comparison of costs between the original costs for equipment and buildings, including all operating and maintenance costs, with the useful life of the equipment.

Likert Scale

A research tool, a list of statements or items to which respondents indicate their extent of agreement or disagreement on several ordered levels or points.

Literature Review

A comprehensive survey of available information related to a particular line of research.

Long-term Care

Refers to any personal care or assistance an individual might receive on a long-term basis because of a disability or chronic illness that limits his or her ability to function.

MacLeamy Curve

A visual that demonstrates the advantages of integrated project delivery.

Managed Care

An individual or group insurance plan that includes health maintenance organizations (HMO) and preferred provider organizations (PPO).

GLOSSARY (M-R)

Meaningful Use (MU)

Using certified electronic health record (EHR) technology to improve quality, safety, efficiency, and reduce health disparities; engage patients and family; improve care coordination, population, and public health; and maintain privacy and security of patient health information.

Medical Tourism

The travel of people to another country for the purpose of obtaining medical treatment in that country.

Meta-Analysis

A quantitative, statistical analysis of experiments or studies that analyzes the collective data for statistical meaning.

Metadata Harvesting

A technique used by the Open Archives Initiative; used to facilitate the understanding, use, and management of data.

Mixed Methods Approach

Adopts methods from both qualitative and quantitative research methods in order to understand and research problems.

MHS

Military Health System is the enterprise within the United States Department of Defense that provides health care to active duty and retired U.S. Military personnel and their dependents.

Mock-up Environments

A space that can be simple—using foam board—or complex—a fully operational room—that provides an opportunity for users to test the design concepts prior to making final design decisions.

MRSA

Methicillin-resistant *Staphylococcus aureus*. A bacterium responsible for several difficult-to-treat infections in humans.

Nominal Scales

Scales that classify data into mutually exclusive categories and arbitrarily assign a number to represent each category. The number does not indicate any quantity or value.

NQF

National Quality Forum is a United States-based nonprofit membership organization that promotes patient protection and healthcare quality through measurement and public reporting.

Null Hypothesis

Suggests that the differences and relationships found in the data are due to chance alone.

Occupancy

Represents the act of moving to full functional residency in a new facility or space.

ONC

Office of the National Coordinator for Health Information Technology.

Online Journals

Publications published only on the Internet.

Open Archives Initiative

Develops and promotes interoperability standards that aim to facilitate the efficient dissemination of content.

Operationalization

The process of defining a fuzzy concept to allow it to be measured empirically and quantitatively.

Operations

Begins with post-occupancy EBD evaluations and represents the routine maintenance and repair activities necessary to keep the building in good working order over the life of the building.

Ordinal Scales

Scales that classify data into several discrete ranks and assign values to the data according to the ranking order.

Outcomes

The target goals for a healthcare organization, many being linked to the built environment.

Outpatient Services

Also referred to as ambulatory care. Constitutes diagnostic and therapeutic services and treatments provided to the walking (ambulatory) patient and do not constitute an overnight stay.

P Value

A statistical test result presented by computer software. The p value indicates how likely the test statistic would be as extreme as what is calculated from the collected data given that the null hypothesis is true.

Partnership for Patients

A public-private partnership working to improve the quality, safety, and affordability of healthcare for all Americans.

Patient

The person seeking healthcare service in the healthcare industry.

Patient Protection and Affordable Care Act (ACA)

The ACA refers to two separate pieces of legislation—the Patient Protection and Affordable Care Act (P.L. 111-148) and the Health Care and Education Reconciliation Act of 2010 (P.L. 111-152)—that together expand Medicaid coverage to millions of low-income Americans and make numerous improvements to Medicaid and the Children's Health Insurance Program (CHIP).

Pay for Performance

Refers to a method to foster quality performance by providing pay incentives or bonuses for quality work.

Pebble Project

A joint research effort between The Center for Health Design and a healthcare organization to demonstrate how an organization has improved outcomes using an evidence-based design process.

Peer-Reviewed Journal

A scholarly periodical that requires each article submitted for publication be reviewed by an independent panel of experts.

Performance-Based Building (PBB)

Specifies particular materials or designs that a building must include to achieve a targeted performance level.

Pharmacogenomics

The study of how genes affect a person's response to drugs.

Physical Environment

Refers to the external, tangible surroundings that can influence behavior and development.

Planetree

An approach that guides organizations in making patient-centered care the centerpiece of a cohesive strategy that accelerates quality improvement and positions organizations to create lasting change.

Post-Occupancy Evaluation

A post-occupancy evaluation (POE) is one way to measure results and is one of the most common types of research used to inform EBD.

Post-Occupancy Phase

The final state of the design process is to measure post-occupancy results, when designers and researchers assess the effectiveness of a building.

Pre-design Phase

The initial phase of a project's design process that results in the determination of the alignment, layout, and technology for the project.

Preferred Provider Organization (PPO)

An organization providing health insurance coverage that encourages participants to visit certain physicians, laboratories, and hospitals at a decreased rate.

Press Ganey

The organization's mission has been to support health care providers in understanding and improving the entire patient experience. They develop standardized tools asking patients to rate their experiences regarding their inpatient stay and patient perceptions of care by physicians in an office setting. These ratings are shared with the public.

Project Steering Committee

A group of high-level stakeholders who are responsible for providing guidance on overall strategic direction. The steering committee usually consists of organizational peers and combines direct customers and indirect stakeholders.

Project Vision

The project vision articulates the intentions of the project, the direction in which the project needs to head, the business data supporting the investment in new capital (construction), and target objectives of the project.

Practice Greenhealth

A nonprofit membership organization founded on the principles of positive environmental stewardship and best practices by organizations in the healthcare community.

Primary Care

Coordinates the delivery of health services between the patient and various delivery components, which includes both preventative and curative, over a period of time to coordinate all the care a patient receives. Regarded as essential healthcare.

Process

A set method of doing something involving ordered steps or operations.

Professional (trade) Journals

Publications specific to a trade or profession.

Programming

An American Institute of Architects guideline updated every 4 years, which reflects a number of design strategies. Programming, along with other research, helps determine the number and size of rooms to support the described concept of operations for each area in the hospital.

Project Planning

A detailed concept of operations for each clinical or administrative area.

Prospective Study

A study that looks forward in time and usually includes a research plan before outcome data are collected. Most studies related to EBD are prospective studies.

Qualitative Approach

The systematic investigation of properties and their relationships that cannot be measured quantitatively; also called the constructivist approach and emphasizes multiple participant views and theory generation. The goal of qualitative research is to understand the complexity of the topics under study.

Quality of Life

Refers to the patient's ability to enjoy normal life activities or comfort. While in healthcare facilities, quality of life generally refers to providing a high standard of comfort and existence within the facility.

Quantitative Approach

The systematic, scientific investigation of measurable properties and phenomena and their relationships; also called the traditional or positive approach and emphasizes empirical measurements and theory verification. The goal of quantitative research is to explain and predict phenomena by examining the relationships between empirically measured variables and to generalize findings and contribute to theory in which significant efforts are given to justify cause-effect relationships.

Quasi-Experiment

Refers to a kind of research similar to true experiments, but lacks the rigorous control usually found in true experiments.

Randomized Control Trials (RCT)

Quantitative, comparative, controlled experiments in which researchers study two or more interventions in a group of persons who receive the interventions in a random order.

Range

The difference between the highest and lowest values in the data.

Relational Databases

A database that maintains a separate set of related files or tables, but combines them when necessary.

Relevance

The applicability of research based upon a variety of factors, e.g. the date, scope and location of the study and the source of the information.

GLOSSARY (R-W)

Reliability

The degree to which a measurement tool produces consistent or similar results on the same phenomenon at different times or when used by different people.

Research

The systematic investigation and study of a topic or idea, based on empirical data, aimed at gaining knowledge, making discoveries, testing new theories, and applying the new knowledge.

Research Designs

A plan for gathering and utilizing data to obtain desired information so that a hypothesis can be properly tested.

Research Plan

Delineates each aspect of the research study in detail and includes the primary documents required for approval by the research committee, funding agencies, or other authorities.

Research Process

A sequence of components that should be adjusted to fit a particular situation.

Retrospective Study

A retrospective study looks back in time and examines existing data to find the cause of certain outcomes.

Return on Investment (ROI)

A framework that represents the common tool used by chief financial officers to financially evaluate major investment decisions in terms of cost and revenue.

Same-Handed Patient Rooms

A design strategy that provides consistent orientation or position of all the elements in a patient room, such as door, bed, headwall/footwall, toilet, shower.

SAS (Statistical Analysis System)

A computer software program that works to access, manage, analyze, and report data.

Semistructured Interview

A flexible set of questions that makes allowances for the responses of the interviewee. The interviewer will have a structure of themes to be addressed during the interview.

Serious Reportable Event (SRE)

An incident involving death or serious harm to a patient resulting from a lapse or error in a healthcare facility.

Schematic Design

The preparation of studies to ascertain the requirements of the project, consisting of drawings and other documents illustrating the scale and relationships of the project components for approval by the owner.

SharePoint

A Microsoft software product that enables a website to provide document and information sharing using a central location through a website.

Simulation Modeling

The process of creating and analyzing a digital prototype of a physical model to predict its performance in the real world.

Sociotechnical Theory

Refers to the relationship between social and technical aspects of an organization, usually based on designing different kinds of organizations where the relationship between socio and technical elements lead to the emergence of productivity and well-being.

SPSS software

Statistical Package for the Social Sciences software used for statistical analysis.

Standard Deviation

A statistic that measures how data cluster around the mean. A high value of standard deviation indicates wide dispersion of data.

Stakeholders

Those with a vested interest in a project or those involved at the implementation of the project who care about its success.

Strategic Facilities Plan

A document that outlines the goals and objectives of the organization, the market position driving the need for change, and specific architectural projects focused on bringing the physical environment in alignment with operational goals. As part of a design project, the strategic facilities plan also defines the project scope, a preliminary budget, and implementation requirements. It is also very likely that the strategic facilities plan will outline decision-making protocol based on the culture of the organization.

Strategic Planning

A top-down approach concerned with the mission and long-term objectives of an organization.

Sustainability

The quality of not being harmful to the environment or depleting natural resources, and thereby supporting long-term ecological balance.

Telemedicine

The use of telecommunication and information technologies to provide clinical healthcare at a distance. It helps eliminate distance barriers and can improve access to medical services that would often not be consistently available in distant rural communities.

Theory

A theory is a comprehensive framework of conceptual statements that describe, explain, and predict natural or social phenomena.

Transition Planning

An additional phase in the Facility Life Cycle Model that ensures that all the necessary steps are planned and implemented to successfully move the organization from its present state to the envisioned future.

Triangulation

The application and combination of several research methodologies in a study of the same topic.

Triple Aim

A framework developed by IHI for optimizing health system performance.

T-Test

Shows if a real difference occurs among treatments in controlled clinical trials.

Type 1 error

The chance of accepting the research hypothesis when the null hypothesis is actually true (false positive).

Universal Healthcare

Healthcare coverage that is extended to all residents of a governmental region.

Users

In EBD, those whom the physical environment was created for, including patients, their families, staff, and others.

User Experiential Knowledge

Information acquired from the central user groups (such as patients, residents, families) on their experience.

Value-Based Purchasing (VBP)

Changes the paradigm from paying for volume to payment for quality. Hospitals are paid for inpatient acute care services based on the quality of care, not just quantity of the services they provide.

Validity

The extent to which a measurement tool measures what it is supposed to measure.

Value Engineering

Indicates that value can be increased by either improving the function or reducing the cost. Therefore, a primary tenant of value engineering is that basic functions are preserved and not reduced as a consequence of pursuing value improvements.

Visioning

The process of developing, identifying, and documenting the values of an organization or project through a written vision statement.

Vision Keeper

A person or small group of people on the interdisciplinary team who hold the team on point and maintain the integrity of the design so that it is always aligned with the project guidelines and developed with the project wisdom.

Wayfinding

In the context of architecture, refers to the user's experience of orientation and choosing a path within the built environment.

WHO

World Health Organization.

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