Evidence-Based Design in Practice:

Healthcare Design Case Studies from EDAC Champion and Advocate Firms

2015

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Evidence-based design (EBD) is the process of basing decisions about the built environment on credible research to achieve the best possible outcomes. EDAC Champion and Advocate Firms take an additional step, ensuring their healthcare teams become EDAC certified and actively incorporate EBD in their healthcare projects. Each of the projects highlighted in the EDAC Advocate Brochure describe how the evidence-based design process was applied to address challenges in their projects.

Join our growing list of EDAC Advocate Firms.

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American Art Resources
Salvatore Associates

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ArchiMed
Architecture+
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Bouygues Building Canada
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CBLH Design, Inc.
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Corgan Associates, Inc.
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Davis Partnership Architects
Earl Swensson Associates, Inc.
Erdenberger Design Group
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Steelcase® HEALTH

Steelcase Health is EDAC's Educational Partner, offering study sessions and other resources to help prepare for the EDAC exam.

Become EDAC certified.

Evidence-based Design Accreditation and Certification (EDAC) assesses your knowledge of the evidence-based design (EBD) process and its application in the design and development of healthcare environments. This educational program teaches you how to find, use and create relevant research to improve healthcare outcomes and add to the knowledge base of EBD.

Since its launch in 2009, more than 1,700 individuals worldwide have obtained the EDAC credential. Currently, 43 industry organizations endorse the program. Champion Firms participated in the beta testing phase and were the first to commit staff to take the exam. Advocate Firms dedicate a minimum of 25% of their healthcare teams to become EDAC certified.

The evidence-based design process includes eight steps:

1. **Define EBD Goals & Objectives**
2. **Find Sources for Relevant Evidence**
3. **Critically Interpret Relevant Evidence**
4. **Create & Innovate EBD Concepts**
5. **Develop a Hypothesis**
6. **Collect Baseline Performance Measures**
7. **Monitor Design & Construction**
8. **Measure Post Occupancy Results**

EBD STEPS APPLIED:

Challenge: As part of a Cardiac Care Unit addition to the existing hospital, Kahler Slater completed a two-phased sound study at St. Mary's Hospital to help identify ways to decrease noise.

The first phase of the sound study used a multi-strategy approach to inform the flooring selection. There was a preconception that carpet would be the better choice because of sound absorption. The research team conducted a literature review, a comparative review of product manufacturers' information and conducted field observations (recording noise levels and sources) on an existing inpatient unit. The researchers completed more than 20 hours of field observations and collected over 50 hours of noise level data. The noise levels were measured at three different locations and the sound sources were categorized.

Solution: The study found peak and average noise levels exceeded the guidelines set by the World Health Organization. Peak levels measured 73 dB, compared to the recommended levels of 40 dB during the day and 35 dB at night. A wide range of sound sources were observed, – alarms, equipment moving through corridors, conversations, and many other sounds that contributed to excess noise on the unit. Based on these findings, architectural solutions were designed to mitigate noise sources on the new unit, including locating family lounges and elevators separate from patient care areas, providing sound barriers between all patient walls, locating ice machines and printing devices in rooms, and using acoustic materials above corridor charting stations. Behavioral and operational strategies were also recommended to help implement a "culture of quiet". Vinyl flooring was ultimately selected, which reduced the need for daily vacuuming among other benefits.

A year after occupancy of the new unit, Kahler Slater completed the post occupancy phase of the Sound Study, which included submission to St. Mary's Hospital's Institutional Review Board. The process is very intensive to ensure patient privacy is protected during the research. This phase included 30 hours of field observations in which sound levels were measured and 96 sound sources were observed. Sound levels and sources were compared to the baseline levels and sources of the existing unit. The units had different acuity levels, which was a limitation of the study, however there was a reduction in noise occurrences in three of the highest sound sources from the first study: noises related to the elevators, the ice machine and the vacuum. At St. Mary's Hospital HCAHPS scores are currently 13.5% above the "Quiet at Night" national average.

Kahler Slater

SSM Healthcare - St. Mary's Hospital
Madison, Wisconsin

EBD Goal:

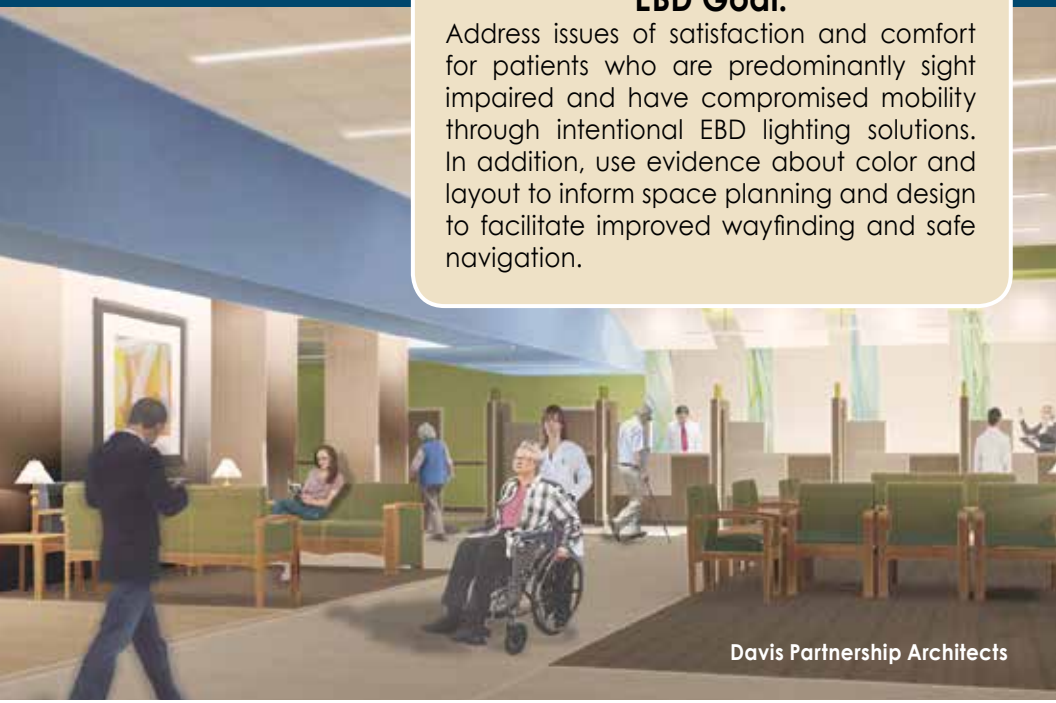
In healthcare settings, noise negatively affects patients and staff, and yet healthcare environments are notoriously noisy places. For St. Mary's Hospital, creating a quieter experience was a main goal.

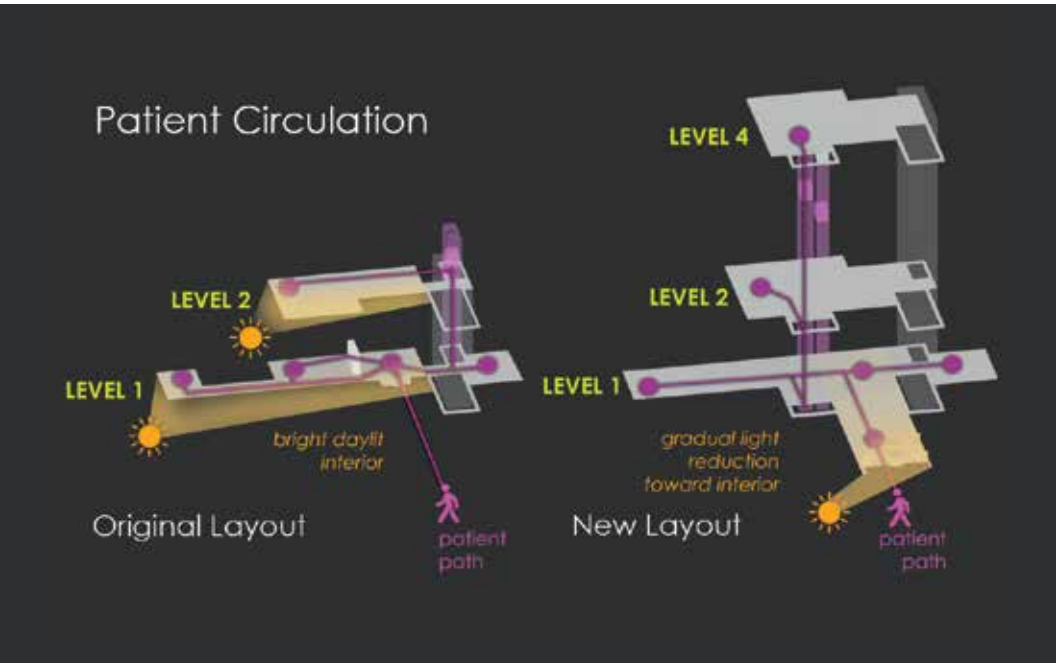
Davis Partnership Architects

University of Colorado Hospital /
Rocky Mountain Lions Eye Institute
Aurora, Colorado

EBD Goal:

Address issues of satisfaction and comfort for patients who are predominantly sight impaired and have compromised mobility through intentional EBD lighting solutions. In addition, use evidence about color and layout to inform space planning and design to facilitate improved wayfinding and safe navigation.





EBD STEPS APPLIED:

Challenge: Rocky Mountain Lions Eye Institute is located on the campus of the University of Colorado Hospital in Aurora, Colorado. The original facility was designed and construction completed in 2000, by Davis Partnership Architects, (DPA). The client approached DPA in 2010 to provide architectural design services to expand and renovate the facility.

The original plan included waiting areas with extensive glazing, filling them with natural light. While healthcare designers typically try to maximize daylight, in this facility, light caused discomfort for patients with impaired vision or whose eyes were dilated. Additionally, the original finishes were muted and did not offer a high level of visual contrast, making it difficult for the sight-impaired to safely navigate their surroundings. In the original design, a greeter desk was positioned inside the main lobby directly in line with the main entry, but was rarely staffed. Patients entering the building had no visual cues on where to proceed.

Solution: Based on evaluation of the evidence-based design literature, tours with the local Veterans Administration Visional Impairment Services, and consultation with Chris Downey from Architecture for the Blind, DPA addressed each of these challenges with innovative design solutions. Additionally, DPA's research team conducted a post occupancy evaluation, (POE), of the original facility (including observation, patient satisfaction surveys, and staff focus groups), which simultaneously served as a pre-occupancy evaluation (PROE) to inform the new design.

- Waiting areas in the new design are centrally located, providing a gradual reduction in the level of light from the exterior of the building into the interior, keeping patients away from windows and glare. The new building plan is organized to maintain natural light in staff offices and break rooms.

- Davis Partnership made recommendations for contrasting colors and textures to help visually impaired patients with wayfinding.

- In the final design, the reception desk has lighter finishes for visual contrast. The lobby incorporates a linear light and soffit running the length of the lobby to reinforce the path of travel.

The EBD Champion involved in the design from the beginning has been an active member of the construction administration team providing oversight to ensure EBD principles are implemented. Construction is expected to be completed in the spring of 2015, and a POE will be conducted in the fall of 2015.

EBD STEPS APPLIED:

Challenge: Riverside Senior Life Communities identified the need for assisted living and memory care services in the area around Bourbonnais, Illinois. Several project goals were identified: provide above market quality with market rate pricing; increase the census rate; improve both resident and staff satisfaction scores; decrease the rate of resident falls and injuries; lessen staff travel; enhance staff visibility of resident spaces and complete the project at or below budget.

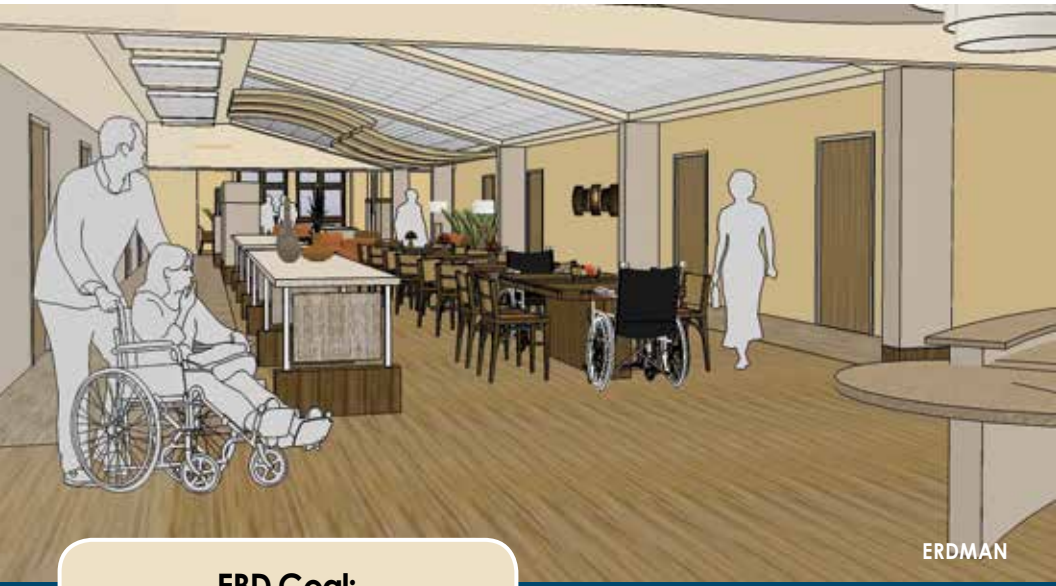
The pursuit of these goals began with a visioning session that explored the principles of the Green House model, which differs from the traditional nursing home model in terms of size, interior design, organizational structure, staffing and care models. A key challenge from an evidence-based design perspective was finding an architectural solution that incorporated Green House strategies and accommodated the client's existing patient care model.

Solution: The proposed design solution embraces the neighborhood concept, allowing the resident population to be separated into smaller neighborhoods (homes), with care ranging from traditional assisted living to the higher acuity levels of memory care.

The project team utilized full-scale mock-ups of the resident rooms as part of the design development process. These mock-ups permitted collaboration among team members, end users and staff in order to validate the size, scale, and amenities of each apartment. Mock-ups of the proposed neighborhood dining and kitchen areas were also researched and assisted the project team's development of the final design solution.

There are two 16-bed neighborhoods for traditional assisted living that share a "town center" for activities of daily living, (ADL), dining, living, kitchen, and activity spaces. There are also four 12-bed neighborhoods, organized around a central ADL space for memory care. In these small, elder-centered neighborhoods, residents have significant autonomy over how they want to live, receive personal attention from direct care staff, and share a full and engaging day-to-day social life. Additionally, the neighborhoods are built around a series of courtyards that permit day lighting, views of nature and access to the outdoors in a safe and secure environment.

The project team will measure outcomes based on metrics in the stated project goals as part of a planned post-occupancy evaluation to follow one, three and five years after occupancy in August 2014.



ERDMAN

EBD Goal:

Create an assisted living environment that offers an exceptional resident experience through a design that emulates a home-like environment and supports operational efficiencies to allow staff to better manage and care for a resident population with diverse and increasing acuity levels, so they may age in place.

ERDMAN

Riverside Assisted Living Facility
Bourbonnais, Illinois

HDR

MultiCare Health System – Mary Bridge Children's Hospital and Health Center
Tacoma, Washington

EBD Goal:

To maximize direct patient care activities and increase caregiver efficiency while incorporating the use of evidence-base design principles in the delivery of a two-floor, 52,000-square-foot children's hospital expansion including both general pediatric beds and a pediatric intensive care unit.

MultiCare Health System - Mary Bridge Children's Hospital and Health Center
Photo courtesy of HDR Architecture, Inc.; ©2013 Andrew Pogue

EBD STEPS APPLIED:

Challenge: HDR was challenged to integrate the latest evidence-based design strategies and Lean operational efficiencies into the children's hospital design while ensuring that it blended seamlessly with the existing connected adult hospital and the surrounding buildings.

Solution: MultiCare Health System, along with HDR, launched a study using work-sampling software on a PDA platform and layout-optimization software to determine how the design of a patient unit impacted nurse circulation patterns, efficiency of service delivery, operations productivity and patient satisfaction on a 28-bed pediatric med/surg unit. Careful analysis of this data informed the design of a new pediatric med/surg unit that minimized wasted steps and redundancy to maximize direct patient care.

The initial study, done prior to the new design, showed that 50.4% of the nurses' time was spent at the centralized nurse station while only 31.2% was spent in the patient's room, well below the national median of 37.8%. A post PDA study conducted three months after occupancy in the new unit, revealed the new processes and design halved the amount of time spent at the central nurse station (23.3%) and almost doubled the time spent providing care in the patient room (75.7%). The overall design and process change for the new unit allowed the percentage of time a nurse spent providing direct care to increase from 28.5% to 55.4%; a direct correlation of cutting the time spent providing indirect care by two-thirds.

Inspired by a growing body of research proving that art in healthcare environments can reduce stress and aid in the healing process, the team also initiated an art program that makes the space look more like an art gallery than an actual hospital. After reviewing multiple submissions, 14 local artists were commissioned to create works of art ranging from expansive tiled mural walls to 30-foot long mixed media paintings and colorful glass installations. The artwork acts as a positive distraction for children and parents who are enduring high-stress situations and whose spirits are often low. Even though most patients are restricted to staying inside the building, the artwork serves as a connection to the outside and a reminder of places they know and love.

EBD STEPS APPLIED:

Challenge: The strict regulations governing the design of Forensics Mental Health facilities result in the use of very institutional design solutions, hardware and accessories. The aesthetic of these facilities carries with it a stigma that follows the patient. Our challenge was to employ creative design solutions and select or design only those products, which would normalize the treatment environment rather than demoralize or stigmatize the patient.

Solution: Daylight and views were integral to the design. Large expanses of glass and views of the adjacent heritage landscape give a sense of openness and transparency, de-institutionalizing and de-stigmatizing the facility from the occupant and observer's perspectives.

De-stigmatization of the patient environment is furthered through integrating security systems within the architecture. Spaces were designed to flow seamlessly through each conceptual PSR zone of the building, house to neighborhood to downtown, encouraging patients to progress in their healing journey, while simultaneously providing staff with extended views along corridors and into adjacent building zones. Located at the center of the cruciform inpatient unit, the care station has uninterrupted views along each corridor. The care station design bears more resemblance to a hotel concierge than a mental health care desk. The open concept design and low transaction desktop encourage patients to interact with staff regularly, making it easier for staff to monitor patient temperament.

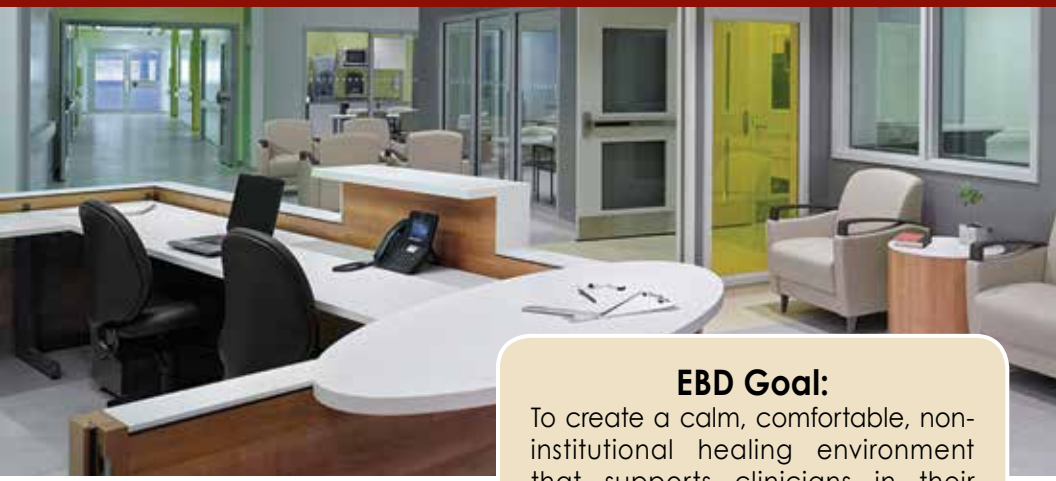
To assist patients in understanding their environment and reduce stress, simple and clear building organization and circulation systems were adopted. Significant research was undertaken to support the interior design layout and strategy. A color palette was overlaid on the building's plan to complement the organization and wayfinding strategies. Blue/cool colors were used throughout the north inpatient building and red/warm colors used in the south.

Patients are afforded the dignity and privacy of a single en-suite bedroom. The washroom wall is canted to provide staff with a view of the entire bedroom from the doorway reducing risk of assault. Single patient bedrooms have led to a significant reduction in patient agitation. Room accessories were researched and reviewed to ensure the safest and least institutional products were selected. Where suitable products were not available, an alternate was custom designed. For example, a residential style wooden handrail with continuous aluminum extrusion and sloped sides was designed for use in patient bedrooms and constructed and tested to ensure it is anti-ligature.

A post occupancy evaluation of the facility is currently being conducted.

Parkin Architects

Southwest Centre for Forensic Mental Health Care
St. Thomas, ON, Canada



EBD Goal:

To create a calm, comfortable, non-institutional healing environment that supports clinicians in their implementation of the Psychosocial Rehabilitation (PSR) model of care which encourages patients to take active ownership of their rehabilitation journey, while providing a safe and secure environment for all users. This was achieved through reimagining and redefining the detention aesthetic typically associated with Forensic Mental Health Care facilities.

Top: **Southwest Centre for Forensic Mental Health Care - Entrance to inpatient units**

Bottom: **Southwest Centre for Forensic Mental Health Care – Atrium**

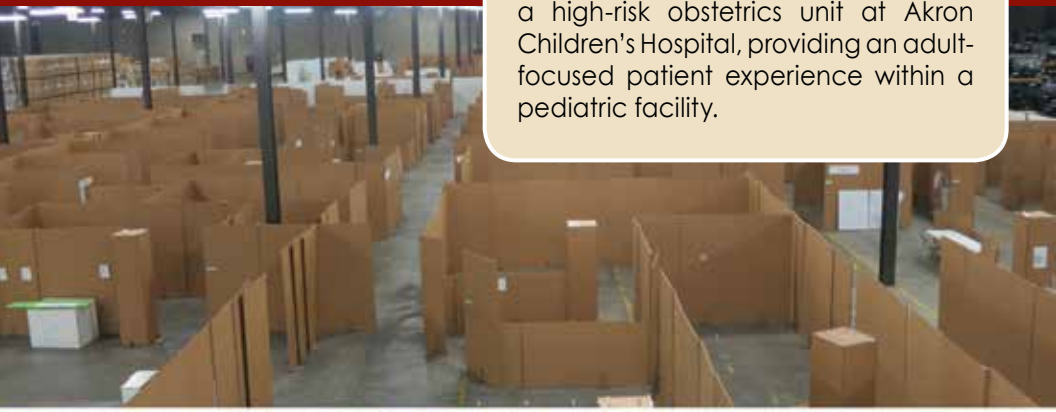
Shai Gil Photography Inc.

HKS Architects and Hasenstab Architects

Akron Children's Hospital
Akron, Ohio

EBD Goal:

To design a 20,575-sf build-out of a high-risk obstetrics unit at Akron Children's Hospital, providing an adult-focused patient experience within a pediatric facility.



Design Process for HROB, HKS

EBD STEPS APPLIED:

Challenge: This project was to complete the interior finish of a shelled floor in a building that is currently under construction. The infrastructure and overall footprint had already been defined and influenced room placement, key adjacencies and supply flow throughout the new department. Obstetrics is a brand new service within Akron Children's Hospital, which required time at the beginning to establish and understand the hospital's vision, goals and mission for this new service line. Extensive research and market studies were completed by the hospital to recognize and define the opportunity to create a service line for the Akron area that had not existed before: a location where high-risk births could take place where both mother and baby would receive care and recover under one roof.

Solution: To achieve the team's goals, the architect planners and service line representatives began with lean training, reviewed the available body of evidence for leading practices and conducted site visits. They began with process mapping to define future workflows, implemented paper doll exercises to study plan and adjacency options, drew spaghetti diagrams to test options against the seven flows of healthcare and built full-scale mock-ups of the entire unit for scenario testing. All members of the integrated lean project delivery team contributed to the design, including the NICU staff, obstetricians, OB staff, support services staff and families.

Use of the full-scale mock-ups provided the obstetric representatives with an opportunity to test future-state operational processes. This testing led to many design decisions including, the placement of the infant resuscitation space immediately adjacent to all four C-section operating rooms, outfitting one operating room to flex into an NICU procedure room and placed operating rooms along a short, straight path of travel from the elevators making transport of an infant to the NICU on the floor above a quick task. Private triage and recovery rooms were planned to be interchangeable, so the new department could open with minimal rooms while waiting for the service line to grow. The planned phasing and time needed to see an increase in volumes required the patient room to be designed for an LDR (labor, delivery, recovery) model upon opening and an LDR /Post-Partum model after patient volumes increased.

Another key focus was a separate family lounge on the unit, with many homelike amenities to enhance the patient and family experience during a time that can be both exciting and stressful. After occupancy, an evaluation is planned to analyze the benefits of evidence-based design and lean processes, and the full-scale mock-up used to design the space.

EBD STEPS APPLIED:

Challenge: UT Southwestern Medical Center and Moncrief Cancer Institute are dedicated to research; therefore evidence-based design is a natural fit for the project. Both entities desired a care environment that would set itself apart in its landscape, much like they hope their concept will set itself apart as a nationally known cancer care center. Prior to beginning design work, a literature review was conducted bringing to light numerous relevant sources of data for the investigation. Upon synthesizing this data, the team developed the following hypothesis for the design of the Moncrief Cancer Institute infusion center.

Hypothesis: The innovative design of the infusion center, that includes patient selection among three private infusion room layouts and various types of comfortable community spaces for patients and care partners, will result in reduced side effects and increased patient satisfaction within 72 hours of treatment.

Solution: The 30,000 sq ft second phase of the replacement facility will bring comprehensive services, including chemotherapy, diagnostic imaging, and cutting-edge cancer therapies as well as National Cancer Institute clinical research trials to Moncrief Cancer Institute's current programs. At the outset of the project, the Corgan design team conducted an intensive visioning session with key stakeholders. The vision of a facility that is socially balanced, clean and modern provided direction for the project.

Several options for infusion areas were studied – private, semi-open, and open. The angled room design provides choice of treatment location depending upon the patient condition on the treatment day:

- Option 1 – Orients the patient toward the more open view of the community space encouraging patients feeling more social to choose this room.
- Option 2 – Provides patients who may not be feeling well, a larger view of the healing garden below.
- Option 3 – Places infusion rooms not directly next to the window to support patients who are sensitive to sunlight.

Community spaces offer various innovative seating arrangements that are meant to encourage patients and visitors to socialize. Several infusion chairs on each end allow "infusion buddies" to socialize while receiving their treatment. It is anticipated that the design team will collect baseline performance measures, as well as measure post occupancy results in future phases of the project.

UTSW Moncrief Infusion Room
Corgan

EBD Goal:

Patients receiving cancer treatment often feel they are in a situation beyond their control. Offering them a care environment that gives patients control over their environment reduces stress levels. By providing patients a choice of infusion room layouts, the goals of the project are to:

- Increase satisfaction and enhance hope
- Encourage social interaction

Corgan

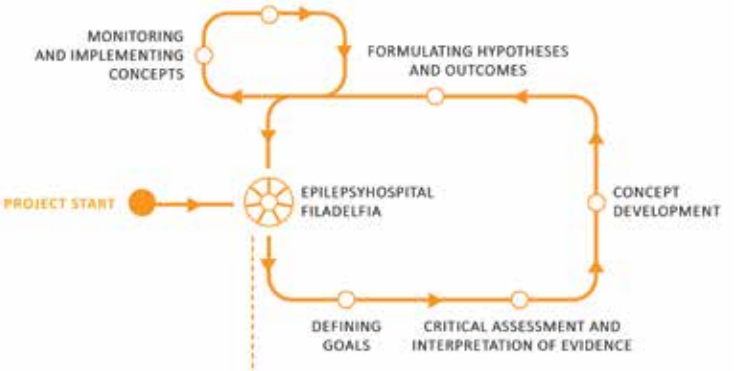
Moncrief Cancer Institute -
UT Southwestern
Fort Worth, Texas

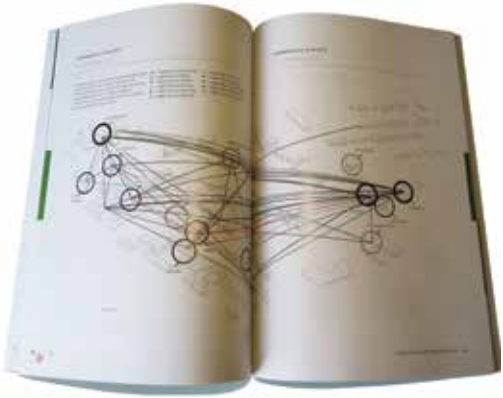
ArchiMed

Filadelfia Epilepsy Hospital
Dianalund, Denmark

EBD Goal:

To ensure optimal physical settings that create a positive and productive synergy with the processes and clinical pathways taking place within them. To increase satisfaction for staff, patients and relatives and have a positive impact on management and finance, strengthening the hospital's professional profile and competitive position. Filadelfia Hospital wants to become a 'Center of Excellence' in the fields of neurology and epilepsy.





Jesper Andreasen

EBD STEPS APPLIED:

Challenge: To be an internationally recognized 'Center of Excellence' for patients diagnosed with epilepsy or acquired brain damage requires provision of complex and specialized diagnostics, treatments, nursing and rehabilitation. As a specialty hospital, this demands documented high quality, financially efficient, top-class research, and excellent communication with patients, relatives and business partners.

To help realize this goal, ArchiMed worked to analyze and identify the opportunities and resources within the existing physical settings and how they are used in relation to the hospital's core services.

Solution: Throughout the project, several approaches were used to gather the knowledge, experience and viewpoints, from hospital management, the board of directors and employees. ArchiMed began by conducting surveys of the physical building followed by observations and analyses of working procedures and clinical pathways. Additionally, ArchiMed facilitated interviews with relevant staff in all departments and representative groups, with the purpose of understanding how the hospital could become a known entity making the process transparent and providing the staff and community the chance for input. ArchiMed gathered and analyzed quantitative data that was compared to the qualitative information obtained earlier in the process. Focus points, identified from this process, were further developed into hypotheses. These hypotheses were subsequently discussed with the management and board of directors in order to secure a concept and a common direction for the progress of the project.

The final product is a report that contains thorough mapping and analyses of the building mass and potential operational optimizations, as well as concrete solutions to the challenges and opportunities identified. The focus points are described and calculated, and investments are weighed against the possible gain, both long and the short term. The report was subsequently presented to the board, who is in charge of making the final decisions concerning future investments. The project is the first step towards the final goal for the hospital to become a 'Center of Excellence' within the fields of neurology and epilepsy.

EBD STEPS APPLIED:

Challenge: A main artery branded The Pike (after the Massachusetts Pike) connects multiple buildings and serves as the primary path of travel across the campus. New construction has led to increasingly complex, confusing and crowded way finding and increased the distance from the parking garage to clinical destinations. Signage to remedy the problem adds to the visual clutter with reliance on staff for directions which research shows is costly.

Solution: An interdisciplinary team: Klopher Martin (landscape design), Cloud Gehshan (way finding), NBBJ (architecture), Bruner-Cott (architecture), and CAMA, Inc. (interior design) developed a vision. Designed from the *patient's point of view*, the concept of optimizing the "time between" that patients and visitors spend between medical events emerged. The hypothesis was: offering convenient and unique events along the Pike would increase patient satisfaction. An article in the New *England Journal of Medicine* reveals "patients said that the nonclinical experience is twice as important as the clinical reputation in making hospital choices" (Goldman et al., 2010).

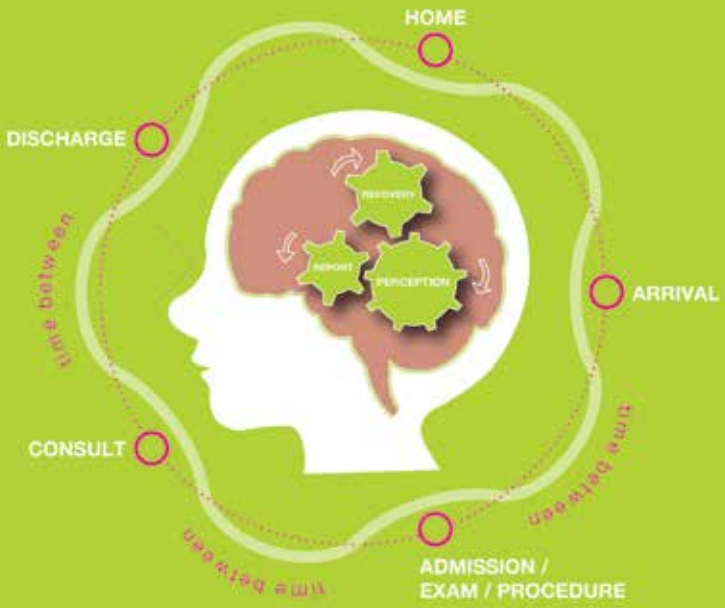
Harness the Healing Power of Nature – An extensive landscape master plan will rebrand the hospital, soften the property edge, ease the transition from outside to inside and increase the visibility of three major entrances and parking. Underutilized exterior spaces will be repurposed as healing gardens including a large plaza leading to a main historic entrance. Future programming to strengthen community connections and promote health includes farmer's markets, concerts, and brown bag picnics. A possible partnership with Boston's Emerald Necklace Conservancy to distribute a "health map" to visitors would highlight walking paths and accessible gardens on and off campus.

Improve Campus Legibility and Ease of Way finding – An improved campus map and mobile website will coordinate with electronic directories and kiosks with a seated concierge and roving wellness ambassadors. Interior landmarks will display art by local artists along with portals accentuating clinical destinations, and a simpler signage system to encourage independent navigation.

Provide Places of Respite for Patients and Visitors – Recommendations include easing ambulation by offering benches, mobility devices, and handrails; moving offstage operations to another floor; providing places for active rest with charging outlets and furniture to support reading, writing, and computing; and providing places to replenish including restrooms, hydration stations, snacks, and views of nature.

CAMA, Inc.

Brigham and Women's Hospital
Boston, Massachusetts



EBD Goal:

The landscape master plan and enhancement of interior environments along the *The Pike* should harness the healing power of nature, improve way finding, provide places of respite and positive distractions for patients and visitors and include nutritious food offerings.

Nutritious Dining – A cafeteria renovation and future food venues along the Pike will create unique food experiences with a range of menu options to include vegetarian and international cuisines, cooking displays, grab 'n go options and healthy dessert options with multiple dining areas featuring communal tables, counters and stools, lounge chairs and tables.

Earl Swensson Associates, Inc. (ESa)

St. Anthony North Health Campus
Westminster, Colorado

EBD Goal:

To create a non-traditional model of an ambulatory-focused care environment that incorporates evidence-based design concepts and supports Centura Health's ability to deliver human-centered care services across the full continuum of need.

EBD STEPS APPLIED:

Challenge:

With this new model, Centura Health is seeking to move beyond the walls of the traditional hospital, creating instead a health and wellness campus focused on providing an environment conducive to prevention, education and treatment, while embracing Planetree and evidence-based design principles.

Being built around the existing medical pavilion, the expansion's primary design challenge was to visually establish a wellness approach. The new building includes a 282,000-square-foot hospital and ambulatory care center attached to an integrated 58,000-square-foot physicians' office building. The connection to the existing freestanding emergency department, outpatient imaging and medical offices needed to be seamless and efficient operationally for true integration.

Another challenge was to design ways to include evidence-based design strategies, e.g., the incorporation of daylight into patient care areas and creating opportunities for patients, staff and families to have outdoor exposure.

Solution:

The new 96-bed facility is based on a model that fully integrates outpatient services and physician practices with inpatient services and the existing facility. The new hospital and ambulatory care center connect to the integrated physician office building in a seamless manner with shared elevators, registration and access points. Design supports the integration and physician alignment on particular floors, while also providing both front-of-house and back-of-house connectivity between physician offices and the outpatient service lines, and/or beds.

For maximization of daylight into the patient rooms, individual bathrooms on patient floors are inboard to allow as much glass as possible on outside walls. This also created the opportunity for a more visually private patient room. Multiple outdoor spaces were also created for patients, staff and visitors to relax and recharge. For example, indoor dining extends to an outdoor healing garden that contains a fountain and fireplace. A prayer garden, adjacent to the chapel and convenient to the ED, is provided in the courtyard between the new and existing buildings.

Although the hospital's NICU has only a few beds, Centura Health made a commitment to provide all private rooms rather than curtained bays. Privacy allows the babies and parents more opportunity to bond. A patient room with a traditional bed is included, allowing families to better transition to home at the end of their stay.

EBD STEPS APPLIED:

Challenge: Three years ago Advocate Health Care, Downers Grove, IL, collaborated with CannonDesign to develop a system-wide standard for the Med/Surg Patient Room. Advocate and CannonDesign are now working together to ensure the standard evolves to meet the needs of all users over time.

Solution: The original Med/Surg Patient Room standard was developed during the process of designing the Advocate Lutheran General Hospital private room bed tower in Park Ridge, IL. A room mock-up, informed by best practices identified in literature related to safety, patient-centered care, efficiency, cost-effectiveness, and sustainability, provided future users the opportunity to give feedback on the design. Key evidence-informed attributes included:

- Outboard patient toilet rooms located on the headwall
- Same-handed rooms and standardized headwalls
- Nurse servers to enhance efficiency and access to supplies
- Family zones to support patient and family well-being

In anticipation of three new patient bed towers utilizing the standard, CannonDesign met with members of the nursing, maintenance, and security staff after they had occupied the new space for three years to solicit feedback on their experience. Advocate is now surveying nursing staff in both the "classic" and new patient bed towers to compare their experience and use data to validate these qualitative findings. Simultaneously, a new mock-up of the Med/Surg Patient Room standard has been created at Advocate Good Samaritan Medical Center in Downers Grove, IL to get additional input on the standard.

While several modifications will be made, the redesign of the nurse server illustrates how the standard is evolving to support best practices. Specifically, issues related to the doors latching on the patient side and securing medication drawers are being addressed. The nurse server that will be specified in the new standard includes the following features:

- Patient room side millwork doors to address warpage and hardware issues.
- An upgrade to electronic commercial grade latching/locking hardware for medication drawer.
- Reversing the corridor side door swings to accommodate the isolation room layout.

Moving forward Advocate and CannonDesign will continue to evolve this and other standards to ensure that they continue to meet the needs of the organization and reflect best practices.

Photographer: Craig Dugan
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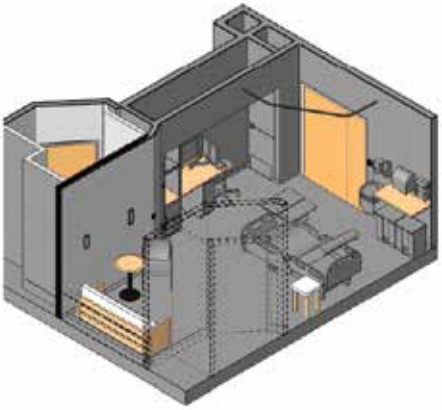
CannonDesign

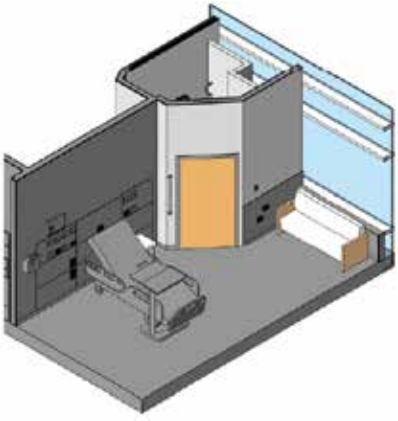
Advocate Health Care
Downers Grove, Illinois

EBD Goal:

Proactively support standardization of the Med/Surg patient room across Advocate Health System while continuing to enhance the patient experience.



Advocate MedSurg Axon 1
CannonDesign



Advocate MedSurg Axon 2
CannonDesign

EBD STEPS APPLIED:

1 2 3

Challenge: The city of Doha has taken an approach to urban planning that spaces buildings far away from each other – a natural impediment to fostering community. With the desert climate, the design must find ways to maximize health-promoting exposure to natural light and views without creating excessive energy demands. Other challenges included creating a sharia-compliant design, (essentially doubling every flow to accommodate men and women separately), and at the same time creating one hospital to meet the needs of those in custody of the state of Qatar as well as staff, patients and visitors.

Solution: Planning a hospital on this scale was effectively an exercise in both architecture and urban planning – creating a facility that functions as a self-sustaining community within itself. At the same time, the integration of family and the community at large was paramount as these connections are key to the healing process.

The following strategies were employed to create a facility that responds to the distinct needs of its various populations while creating equal wellness-enhancing environments for all:

- Public amenities are organized around the main lobby - providing separation between front- and back-of-house functions and creating community connections.
- Patient care wings partially surround courtyards, to allow public access to these outdoor spaces, while at the same time augmenting the amount of natural light that reaches patients.
- In response to EBD findings indicating that single-patient rooms promote patient healing and reduce the risk of nosocomial infections, the majority of inpatient rooms were designed as single-patient rooms, providing the space and privacy for greater family engagement (the precedent in the Middle East is for multi-patient rooms).
- Patient unit family lounges are situated in corners to give 180-degree+ views outside as well as providing view and light to patient corridors as a wayfinding feature. Sub nurses' work stations are strategically located close to patient lounges giving the benefit of natural light as well as ease of viewing the patients.
- Separate circulation routes were planned for men and women to ensure equity of treatment in the same quality of healing environment.

B+H Architects

Ministry of Interior (MOI) Hospital
Doha, Qatar

EBD Goal:

To design a hospital that will:

- Provide exposure to light and views for patients
- Provide security for patients, visitors, family, and staff in every part of the hospital
- Offer a comfortable healthcare environment in a desert climate
- Achieve operational efficiencies and minimize travel times

MOI Hospital Arial View
Photographer: Cirada

Top-left: **MOI Hospital Outpatient Services Courtyard**
Shanghai Baihui Visual Art Illustration Co. Ltd.

- Outpatient services are located in a park-like setting adjacent to the mosque, with a generous courtyard and portico (for all-important shade). This functions as a community space convenient to both treatment and an important traditional social/religious hub.

- The secure patients' area has equal access to view and daylight for staff and patients.

The hospital is envisioned as a nucleus within a larger future campus, with a portion of the site being set aside so that additional community and primary healthcare facilities can be provided in future.

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