

Evidence-Based Design in Practice:

Healthcare Design Case
Studies from EDAC Champion
and Advocate Firms

2014

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from The Center for Health Design



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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Cannon Design
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American Art Resources
Salvatore Associates

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Architecture+
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Bouygues Building Canada
Burns & McDonnell
CBLH Design, Inc.
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Earl Swensson Associates, Inc.
Erdenberger Design Group
ERDMAN

Gensler
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To become an Advocate Firm, contact edac@healthdesign.org



Nurture by Steelcase 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 projects. 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 1,500 individuals worldwide have obtained the EDAC credential. Currently, 41 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 | 5 Develop a Hypothesis |
| 2 Find Sources for Relevant Evidence | 6 Collect Baseline Performance Measures |
| 3 Critically Interpret Relevant Evidence | 7 Monitor Design & Construction |
| 4 Create & Innovate EBD Concepts | 8 Measure Post Occupancy Results |



HDR Architecture

Central Washington Hospital
Wenatchee, Washington

EBD Goal:

To increase caregiver efficiency through the implementation of evidence-based design strategies in the design of a new patient bed tower at Central Washington Hospital.

EBD STEPS APPLIED:



Challenge:

To achieve this goal, HDR was challenged to integrate the latest research findings, EMR technologies, evidence-based design strategies and Lean operational efficiencies into the patient tower design. Specifically, the design team hypothesized that building a standardized and same-handed patient room would decrease errors and increase caregiver efficiency.

Solution:

Lean studies were performed during programming through construction as staff transitioned into the new facility. A workflow analysis was completed as part of a comprehensive process improvement study of travel patterns for nurses and doctors using handheld PDA devices that track staff travel times. This same study was repeated one year post-occupancy in the new bed tower. Data collection for the PDA study was done with “Time Study RN”, a PDA handheld used by the nursing staff. The PDA alerts them at random intervals to indicate their location, what task they just completed, and what task they are currently completing. This was used to track clinical behaviors and to identify opportunities for improvement for the newly designed space.

Three units were analyzed including Critical Care, Medical Oncology and Obstetrics. The care delivery time results were then compared against “Time Study RN” benchmarking data and were stratified into value-added, value-enabling, and non-value-added time categories. Travel densities were also vetted indicating over 49% of nursing travel was spent between patient room and nurse station or document server. This provided clear direction for designers that decentralized workstations could decrease travel distances for clinicians. Layout optimization was then used to map processes in the new design layout. Travel distances were calculated and new workflow processes were identified. The travel study indicated for all units measured, that the time spent on value added care, the time spent on direct care, and the aisle effectiveness all increased from current to future state workflow and generally outperformed the national benchmarks for their corresponding unit types.

Additionally, HDR conducted a post-occupancy evaluation, (POE), one year after occupancy. User focus groups were held to gather feedback from the staff on how well the design of the building supports their work processes. A survey was also distributed to supplement the findings of the focus groups. The POE revealed that overall the staff is very satisfied with the design of the new facility. The surveys also revealed areas in communication and technology that were not functioning properly and have since been addressed.

EBD STEPS APPLIED:



Challenge:

Prior to moving into the replacement facility with decentralized nurses' stations, nurses were confronted with a number of built-in inefficiencies and challenges. These inefficiencies included equipment at opposite ends of the corridor, crowded nurses' stations, one long hall with only one pass through, long distances to the Pyxis medication station and nurses' stations from patient rooms and centralized med room, nurses' station, trash and linen drop. Pre-relocation data collection revealed that nurses walked four miles per shift. While some nurses felt that WOWs (workstations on wheels), long halls, multiple supply/equipment locations and central nurses' station were helpful, some others saw these factors as a hindrance. Other nurse dissatisfiers were a lack of supplies, double rooms, non-grouped assignments and lifting patients.

Solution:

Post-relocation data collection occurred March through May, with nurses from the same three medical/surgical units that participated in the pre-relocation study being invited to participate.

Pre and post-relocation data collection included a socio-demographic form, open-ended questionnaire, and inpatient fall data from each unit during the three-month period and pedometer records completed by participants for each shift worked during the collection period.

Data analysis and synthesis are in progress. Understanding the amount of walking and energy expended by nurses in their daily work, in addition to nurses' work environment preferences, and job satisfaction, may aid architects and engineers in designing hospitals that best meet the needs of these workers.



EBD Goal:

A collaborative research study conducted by St. Anthony Hospital and ESa sought to determine whether or not differences exist in the number of steps taken and the amount of energy expended by nurses when a hospital moves from a facility with centralized nurses' stations to one with decentralized nurses' stations. Additional goals included determining what nurses, who are working on units with these two different designs, perceived as contributing to or deterring from work activities; what changes occurred in reported job satisfaction; and if a reduction in patient falls occurred on the three involved units (surgical, neurology and cardiovascular) during the study period. The study is titled Walk in My Shoes: A Pre/Post Hospital Relocation Research Project.

Earl Swensson Associates, Inc. (ESa)
St. Anthony Hospital, Lakewood, Colorado

EBD STEPS APPLIED:

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Challenge:

The team planned and designed the optimal consultation, exam, and treatment room for a new multi-provider healthcare clinic. A member of the user group challenged the use of carpet. To answer the question, the team decided to setup a research project to determine which flooring material performed the best for each sub treatment area. Three rooms were built with different types of flooring material. The design and construction phases were monitored to assure the three rooms were identical except for the types of flooring materials being studied.

Solution:

An EDAC certified PhD researcher using critical research from the CDC and other sources developed a “Flooring Checklist”. Our Clinical Planning team expanded and customized the checklist into 47 points. This checklist was used for the first phase of research and was customized for the three rooms, each with different flooring: carpet, textured luxury vinyl tile (LVT) or sheet vinyl flooring. This expanded checklist will also be used for all areas of the hospital, clinic, and lab environments. An evaluation was completed for the three rooms. Evaluation respondents included the:

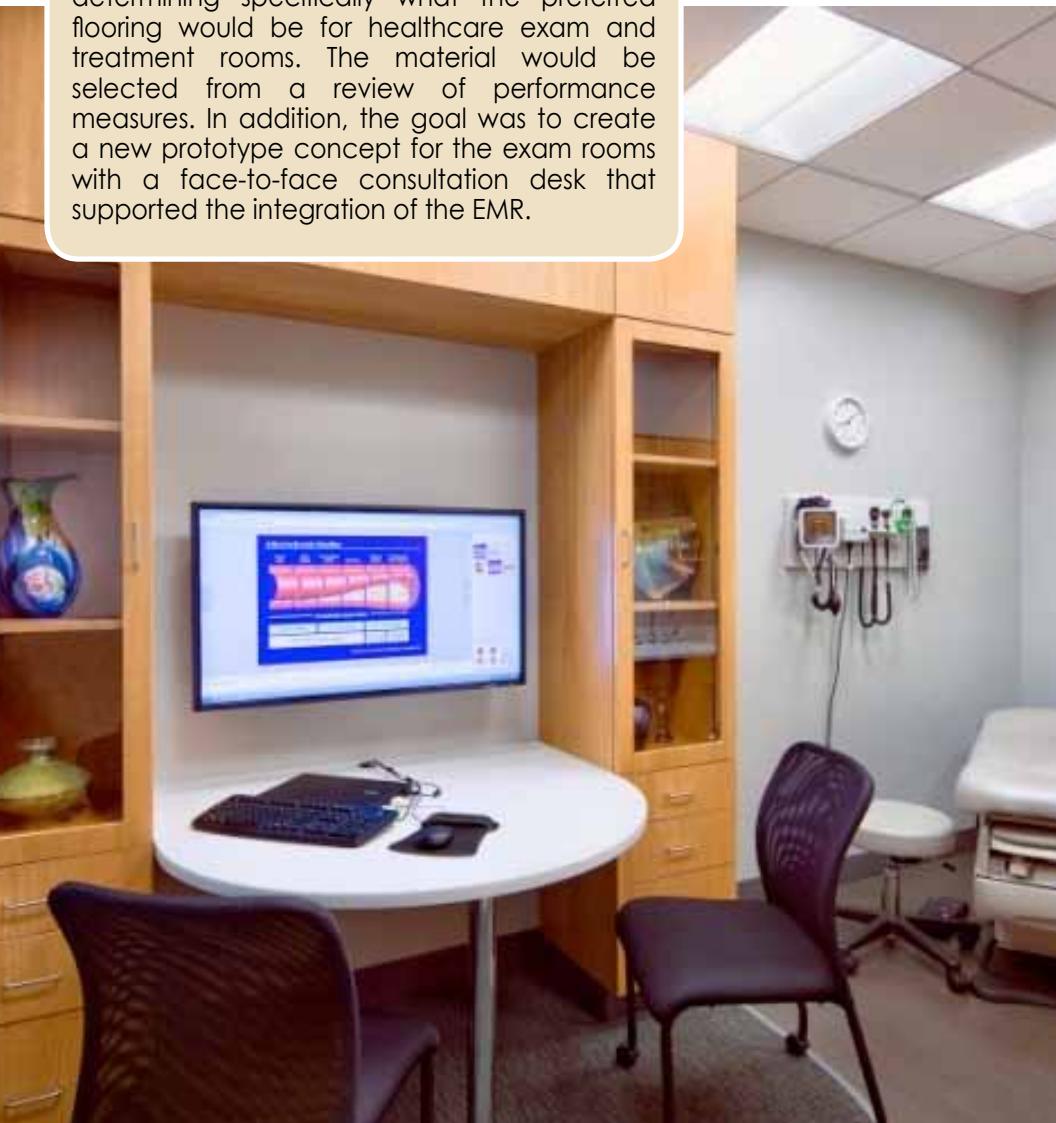
- Project designers
- Designers not part of project design
- Healthcare providers who use the space
- Maintenance teams that clean and maintain the floors

Preliminary results of the checklist evaluation determined the preferred flooring for consultation areas was carpet, LVT for the exam area (the back part of the room with the exam table and caregiver countertop/ cabinets), and textured LVT or textured sheet vinyl for the treatment area. Carpet in the front half of the room tremendously improved the acoustic performance and limited the slip of chairs on wheels. LVT is preferred for clean-ability and acoustic performances; as rolling chairs are quieter on the specified LVT over the sheet vinyl. Both LVT and sheet vinyl were preferred for clean-ability over the carpet in exam and procedure areas. This detailed flooring checklist will be used for future projects to determine best flooring for each area in a hospital, clinic or lab.

Burns & McDonnell has teamed with Acceleration Lab to provide lab testing and a PhD researcher to determine if there is a significant difference in the bacteria contamination of the air and high touch surfaces in each of the three flooring materials to determine if flooring material affects clinical outcomes.

EBD Goal:

One goal for this project was to answer the often-asked question "what flooring performs best in which healthcare environments", and determining specifically what the preferred flooring would be for healthcare exam and treatment rooms. The material would be selected from a review of performance measures. In addition, the goal was to create a new prototype concept for the exam rooms with a face-to-face consultation desk that supported the integration of the EMR.



Burns & McDonnell
Medical Clinic (Confidential Owner)
Kansas City, Missouri

EBD STEPS APPLIED:



Challenge:

Healthcare facilities across the country are facing tremendous challenges due to a multitude of factors, including increasing populations, growing demands from aging baby boomers, pressure to achieve high scores on performance measures through the Patient Protection and Affordable Care Act and increasingly strained budgets. Cheyenne Regional Medical Center (CRMC) approached the design team at Davis Partnership Architects (DPA) with these concerns and a specific focus to resolve the challenge of crowding in their emergency department.

Solution:

Early on in the design process, CRMC and DPA worked together to define the goals and objectives based on the challenges. The design team conducted a literature review from the existing evidence to create innovative concepts. During our EBD journey, we came across the study conducted at the University of Kentucky (UK) by Christmann, Zborowsky, Kelly, and Taylor. In this study, researchers examined the impact of the chair-centric model in the Fast Track area of the ED.

Based on this research, the design team worked closely with physicians and nurses to develop a results waiting area with a chair-centric design and a pod configuration that allows the emergency department to open and close pods depending on volumes. We believe the new design will increase throughput, thereby reducing issues of crowding in the ED. In addition, it is hypothesized that the new model will improve patient, family and staff satisfaction.

Davis Partnership's research team is in the process of collecting and evaluating the baseline data in the current ED including patient and family satisfaction surveys, staff focus groups, staff job satisfaction surveys and archival data including time stamp data and Press Ganey ED Survey data. The new ED opened in August 2013, and a post occupancy evaluation (including the same measures used in baseline data collection) will be conducted in the summer of 2014.

The EBD champion involved in the design from the beginning has been an active member of the construction administration team providing oversight throughout construction to ensure EBD principles were implemented.

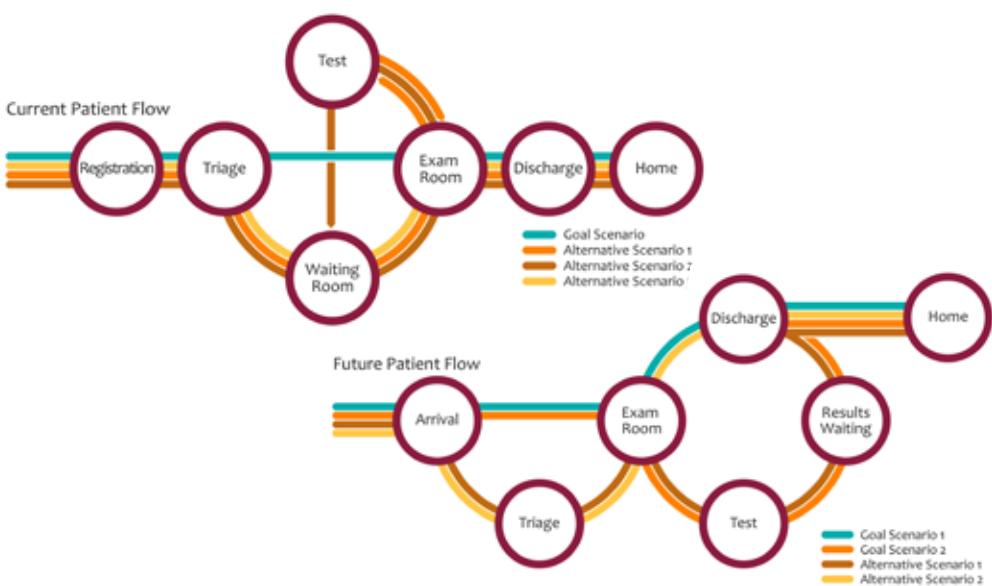
We expect that by incorporating the EBD process into the design, the goals of increased capacity, facilitating throughput while shortening length of stay, will be achieved giving Cheyenne Regional Medical Center a flexible space that can adapt to future models of care.

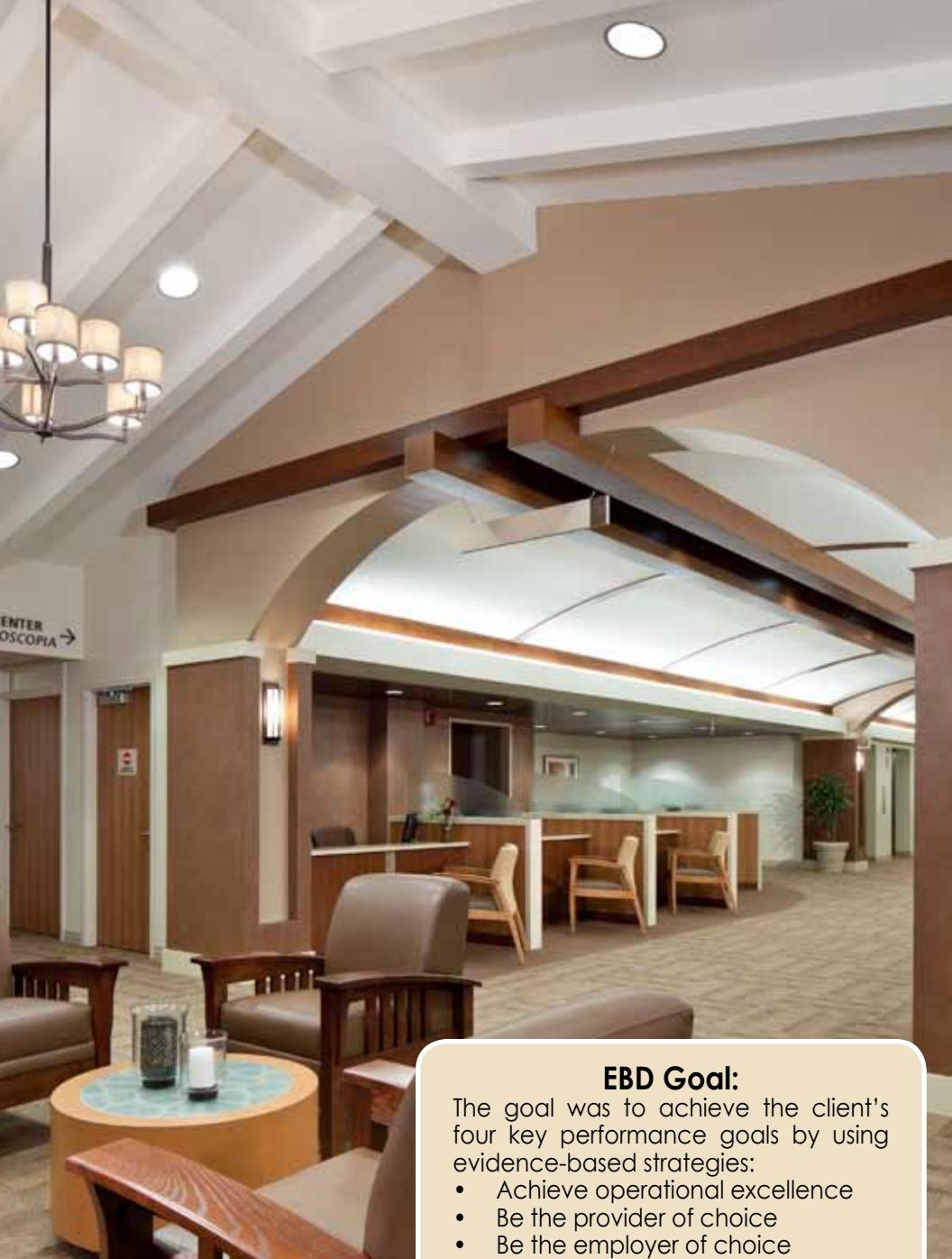
Davis Partnership Architects

Cheyenne Regional Medical Center Emergency Department
Cheyenne, Wyoming

EBD Goal:

The design team was tasked with designing a patient-centered emergency department that achieves improved throughput and increased patient, family and staff satisfaction.





ERDMAN
Facey Mission Hills Clinic
Mission Hills, CA

EBD Goal:

The goal was to achieve the client's four key performance goals by using evidence-based strategies:

- Achieve operational excellence
- Be the provider of choice
- Be the employer of choice
- Create and maintain a sustainable long-term business model that promotes the general health of the community

EBD STEPS APPLIED: 1 2 3 4 6 7

Challenge: The 124,600 square-foot multi-specialty clinic was designed to replace several of Facey's smaller regional clinics, and be the provider's flagship facility. It includes a variety of specialties: Behavioral Health, Optometry, Primary Care, Oncology, Endoscopy and Women's Health. With the client's performance goals in mind, the project team was challenged to create a facility that optimized the square-footage on site, while maintaining the capacity for future growth.

Solution: The project team leveraged the capabilities of simulation modeling during their operational planning process to ensure that all significant design strategies directly aligned with the client's performance goals.

Med Model was used to map several key operational aspects of Facey's existing facilities, including patient flow, site entry and waiting. The project team then compared these models against another version that reflected the industry's best practice, which was informed by the most current research studies available.

Simulation modeling was also used to determine the implications, including staffing requirements of different registration models. Both decentralized and centralized approaches were explored, and ultimately both were implemented in different departments. For example, decentralized registration was used in the oncology department to reduce contact that immune-compromised patients have with others, and centralized registration was used for most of the other departments.

The modeling also helped the team identify the most efficient space program possible. The facility was designed with fewer exam rooms and less square feet than the combined totals of the existing facilities, but patient volumes are higher in the new location.

Additional outcomes of the operational planning process include:

- Centralized reception
- Lab draw on every floor to add convenience and reduce travel
- Exam rooms located closer to waiting areas to reduce travel distances

The operational planning process also informed a well-developed way finding strategy that incorporates color coded nursing stations, clear graphic numbers for the waiting rooms, and traffic cues through carpet selection.

Upon project completion, the team met for a thorough "Lessons Learned" session to capture the successes and challenges of the project process. Additionally, the team plans to conduct a 2014 performance evaluation that will compare the post-occupancy results to the initial facility planning performance data.



Gresham Smith & Partners

Florida Hospital Waterman
Tavares, Florida

EBD Goal:

To reduce noise levels, decrease fall risks and improve overall patient perceptions of privacy and quality of care, designers and hospital staff studied the impact of two different patient room configurations at Florida Hospital Waterman.

EBD STEPS APPLIED:



Challenge:

Renovations to Florida Hospital Waterman in Tavares, Fla. offered an excellent opportunity for an experiment comparing conditions on the existing 5th floor with those on the recently renovated 6th floor. On the 5th floor, the head of the patient's bed is clearly visible from the radial nursing station, unless patients elect to close a privacy curtain. While nurses commented that they liked this configuration and could observe patients without having to enter the patient's room, the hospital had received numerous complaints from patients about noise and privacy levels. Additionally, hospital administrators were concerned that patient perceptions of the quality of care received were adversely impacted when nurses and staff viewed patients from the corridor or central nursing station instead of entering patient rooms.

Solution:

To improve acoustics and address privacy concerns, designers relocated the head of the patient bed to the wall behind the inboard toilet, out of sight of the central nursing station. The hypothesis was that relocating the patient bed would increase staff member presence in patient rooms, lower noise levels in the patient rooms, and improve patient perceptions of privacy and quality of care at Florida Hospital Waterman. Additionally, designers anticipated a decrease in patient fall rates because of the increased likelihood of nurses being present in the patient's room.

A research study, conducted by representatives from Gresham, Smith and Partners and representatives from Florida Hospital Waterman, observed hospital staff and evaluated patient HCAHPS ratings for the 5th floor and the renovated 6th floor to determine the impact of the new patient bed configuration. Complete results of this study are not finished, but preliminary indications support the hypotheses. For example, the acoustical portion of the study has been completed, and results indicate an estimated 5-decibel reduction in noise levels on the 6th floor, where patient beds were relocated. This represents a significant reduction in overall noise, and will likely impact how patients perceive their environment and level of care.

EBD STEPS APPLIED:

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Challenge:

Our vision for the children's art program was to create an environment in which art reduces stress, fosters well-being and functions as a supportive component in the overall healing process of the patient. After reviewing EBD literature, researchers discovered the evidence base for pediatric art was slim. All too often pediatric spaces are designed for children without asking children what they like, but asking children for their opinion is also challenging. In this study, all the children included were cancer patients, many severely ill and unable to respond to long surveys. To address this, the survey needed to be designed in a simple format. Additionally, all images used in the survey needed to be within the budget and scope of the MD Anderson design, such that the exact imagery selected by children could be used in the facility.

Solution:

As a champion of research, MDA facilitated a partnership with the current art teacher at the school at MDA Children's Cancer Hospital. She was able to administer the survey both to inpatients and outpatients during her normally scheduled class times or clinic times, as well as go to children at the bedside and get their feedback. Since she was already familiar with most of the kids, she was able to elicit meaningful feedback and encourage them to fill out the survey.

Although image selection had certain constraints, the images allowed for some valuable feedback. A lower preference was found with child art images and images with no animals. Also incongruent images, such as a dog surfing, gave the children positive feelings and were found to be humorous; however, children did not want them in their rooms. Trends in the data were analyzed and implemented into the design of the new space.



American Art Resources

MD Anderson Children's Hospital
Houston, Texas

EBD Goal:

The goal of this project was two-fold; first to obtain user feedback by conducting a survey using art typically selected for pediatric spaces and second, to use the findings in designing the art program for the newly renovated 35,000 sq. ft., children's floor at MD Anderson (MDA), which consists of 46 new inpatient rooms and classrooms, playroom, and Ronald McDonald suite.

EBD STEPS APPLIED:



Challenge: The design challenge was to provide improved and more intuitive vehicular arrival and pedestrian circulation patterns that would result in a better patient and family experience of care. The experience of care is tied directly to the first impressions formed as one navigates access from parking structures and curbside drop-off, to the facility. These impressions continue to form as one experiences pedestrian arrival and exiting patterns.

At the same time the health system was in the process of developing a system-wide vision to improve the patient experience, creating healing environments by addressing facility related issues from "clean" to "quiet". Changes in operational models always create challenges in facility design. New hospital branding and electronic systems integration through multi-phased renovations within an active environment also provided obvious challenges.

Creating a design solution that resonates as a place of wellbeing generally causes one to pause and reflect on the difference this facility experience would be from a stereotypical healthcare experience. Using evidence and baseline data to launch design solutions, helped to mitigate some of the concerns to support full patient and visitor empowerment while maintaining a safe and easily secured environment of care.

Solution: Solutions were created that offered positive distractions through retail amenities, options for respite in a variety of seating options, and improved circulation patterns providing clear and calming wayfinding to key first floor portals and central elevators located deep within the facility.

The design solution's intent was to create a place to pause and gather navigational information intuitively or through interaction with a live greeter before one went on a journey to get to a final destination in this large medical facility. A water feature at the entry was placed amidst a computer cafe that segregated the hustle and bustle of a busy lobby from those that were seeking respite in an open environment, much like a quiet urban setting within a natural park.

The use of a variety of materials reflected both the access to natural light and helped highlight landmarks making it easier to find one's ultimate destination. The floor plans provided evidence-based design circulation features and respite choices, designed to the scale and pattern of the population's needs. The hypothesis was to develop a place of wellbeing by taking a busy commercial space and allowing it to reflect the variability one senses when traveling through natural elements that are calming, clear and intuitive.

Consultants: CAMA, Inc, New Haven, CT Interior Planning and Design, www.camaincorporated.com; Vincent Babak Architects, Guilford, CT Architecture



CAMA, Inc.

Bridgeport Hospital, Yale New Haven Health System
Renovation of Existing Infrastructure
Bridgeport, CT

EBD Goal:

Bridgeport Hospital's project goal was to update its community hospital lobby and sub-brand it as a connection to its newly affiliated Yale New Haven Health System network.



HKS Architects

Riley Hospital for Children at Indiana University Health
Indianapolis, Indiana

EBD Goal:

Riley Hospital for Children is a new construction project of 60 NICU beds (52,851SF), with the majority of patient rooms being 220 square feet and a few at 290 square feet for ECMO and bedside procedures. The goals for this project were to maintain and improve staff camaraderie and communication; provide easy access to information; create a collaborative work space; balance staff visibility with family privacy and include families in decision-making.

EBD STEPS APPLIED: 1 2 3 4 7

Challenge:

This project was a “finish out” of one shelled floor in an existing 10 floor building. The existing footprint with defined infrastructure influenced room placement, key vertical adjacencies and flow of clean and dirty materials. The old NICU was built in 1986 with four - 15 bed modules, minimal circulation and no physical/visual separation between beds. The tight modules made it difficult to flex for high acuity procedures such as ECMO, and to move carts, computers, and patients through the space.

Changing from the shared room module to private NICUs resulted in significant changes in process and operations that needed to be understood by the design team. VCT flooring in the current unit corridors was an issue due to extensive cleaning and maintenance requirements. Family space in the current unit consisted of one large shared room for visitors and inpatient families. Lack of space at the patient bedside required continuous use of the shared family room.

Solution:

To achieve the stated goals, the design team reviewed the available body of evidence, went through intense Lean training, used process mapping to examine current and future state workflows, and identified potential areas for improvement. A day was spent shadowing users, drawing spaghetti diagrams, observing behaviors, and collecting metrics.

Next, patient scenarios were conducted in full size mock-ups of individual rooms as well as a representative section of a bed unit including support spaces. All members of the integrated project delivery team including the NICU staff, procedure staff, and families contributed to the design. Some of the key design decisions made were to size the room appropriately for all levels of acuity and types of procedures, use black out shades to reduce glare, and provide dedicated family space with television, sleeper sofa, and storage. Rubber flooring in the corridors was installed to decrease noise, time and cost associated with cleaning and maintenance. Dedicated family spaces located within patient room pods were designed for breaks, delivery of breast feeding trays and meal preparation.

The new NICU is now operational and a Functional Performance Evaluation is planned to evaluate the efficacy of the evidence-based design and Lean process used to design the space.



EBD Goal:

The Women and Newborn Hospital in Winnipeg, Manitoba, a 37,000 sq. meter, 173-bed facility currently under construction is replacing the 60-year-old Women's Pavilion. A public consultation process envisioned a place:

- To serve the diverse healthcare needs of women through the cycle of life
- To advance care, through excellence in research and education
- To be welcoming, respectful, calming and peaceful
- To improve patient and staff comfort and experiences, as well as their safety and outcomes and their general attitude towards the care environment

Parkin Architects Limited
Winnipeg Health Sciences Centre
Winnipeg, Manitoba, Canada

Challenge:

The facility houses diverse and complex programs that include inpatient/outpatient gynecology, specialized surgical suites, inpatient/outpatient obstetrics programs for low and high-risk births, and a single room neonatal intensive care unit (NICU). The hospital serves a broad age range and cultural demographics, with clients predominantly from aboriginal communities in Winnipeg and remote communities in Northern Manitoba.

Solution:

Four evidence-based design steps have been or are in the process of being implemented to evaluate the significance of the design measures. Relevant documentation was reviewed including:

- Health information on Canadian aboriginal communities
- Lighting effects on pre- and post-term infants and shift workers
- Acoustics for staff communication and concentration, patient sleep and pre-term infant hearing development
- Human factors in equipment and visual display screen use
- NICU and LDR planning typologies
- Regional/cultural content on client identity

Qualitative and quantitative data were gathered from subject matter experts and site visits to recently built NICU and labor/delivery rooms were conducted.

A hospital-wide user process document was developed to question, evaluate and document systemic processes. Observation studies were conducted on NICU, LDR, C-section and Gynecology OR processes. Various mockups, cardboard to full construction, helped investigate the usability of patient service walls and point-of-care areas.

This research led to the development of lighting systems within the NICU to support the melanopsin function of pre-term infants and the circadian rhythms of post-term infants, family members and staff. Flexible lighting was designed for the comfort and control of staff and patients. Acoustic measures were implemented to facilitate staff communication and reduce noise, particularly in NICU and LDR patient rooms. Integration of nature and cultural identity is captured by an extensive application of expansive windows in patient and public areas, views to roof top gardens, a staff solarium and a hospital-wide implementation of prairie wildflower artwork.

Currently, our team is creating mock-up and pre- and post-occupancy questionnaires for staff and patients to evaluate and compare any significant differences in patient and staff attitudes and outcomes.

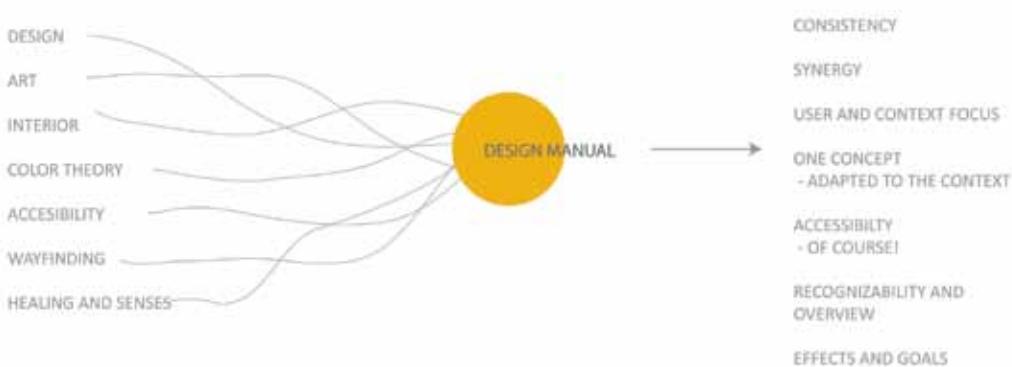
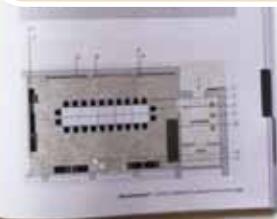
ArchiMed

Sygehus Sønderjylland og Psykiatrie

Aabenraa, Region Syddanmark, Denmark

EBD Goal:

The Hospital of Southern Jutland is being built in several stages over the next eight years, and will include both a general and a psychiatric hospital. There will be additions to the existing facilities that will include an acute care clinic, a family house and the psychiatric hospital. The goal of the project is to tie the existing facilities together with several new buildings to create a uniform healing experience for patients, staff and visitors and improve workflow and operational costs.



EBD STEPS APPLIED:

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Challenge:

The challenge is to create a holistic environment inside the hospital walls with an overarching, consistent concept for all interior design solutions that includes use of art and way finding strategies for each of the three additions and the existing facilities. Another challenge is that the design teams will work separately, the facilities will be developed over an eight year period and the architectural project teams design from the exterior inwards. The outcome of the project is to enable the hospital to execute the strategy and concept themselves on an everyday basis.

Solution:

The project started by involving the end users and began with a day of presentations and workshops followed by focus groups. Thought leaders in various fields were invited to speak and helped to open participant's minds about new ways to do things and to raise the bar. They taught them about evidence-based design and how the physical environment can be healing and can contribute to improved outcomes and the well-being of patients, staff and visitors.

These workshops were followed by focus groups to allow collection of valuable knowledge from staff and patients. This process fed the design team with this information and the users were challenged to think of new possibilities and improved methods of working. The output from the collected user-involvement process was combined with relevant evidence and an in-depth analysis of different architectural concepts.

The architectural project teams began designing from the exterior and will progress to the interior, providing archetypical rooms and a design manual with easy-to-use instructions for the staff to use. This will allow both the technical and medical staff to design each room as they build, using the pre-approved model and manual as guidelines.

It was the hospital's wish to be able to carry out the interior outfitting of the rooms themselves. Therefore, a series of archetypical rooms was identified and the final result of the project was an easy-to-use, practical design manual, for both technical and medical staff to use when outfitting the new hospital, moving the functions around and redecorating and maintaining departments.



EBD Goal:

To design a behavioral health setting within the emergency department (ED) that is non-institutional and calming for patients. To provide solutions that will meet the needs of a diverse behavioral health patient mix.

Cannon Design

Trinity Rock Island UnityPoint, Rock Island, Illinois

EBD STEPS APPLIED:

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Challenge:

Behavioral health settings are guided by strict safety design regulations often resulting in spaces that are stark, plain and isolated—potentially exacerbating environmental stressors and escalating already difficult patient situations. Acute care emergency settings also have a particular set of challenges and the organization predicts that there will be increased visits from behavioral health patients in the ED.

Solution:

Faced with this challenge of designing a behavioral health setting in the ED, the project team developed a variety of design solutions based upon literature reviews, institutional experience, tours and case studies. Using client feedback, the team hypothesized that the creation of a crisis stabilization unit (CSU) that featured a “living room” would help to provide a higher quality of care to patients and also support the staff’s ability to quickly consult and treat a diverse set of patients entering the ED.

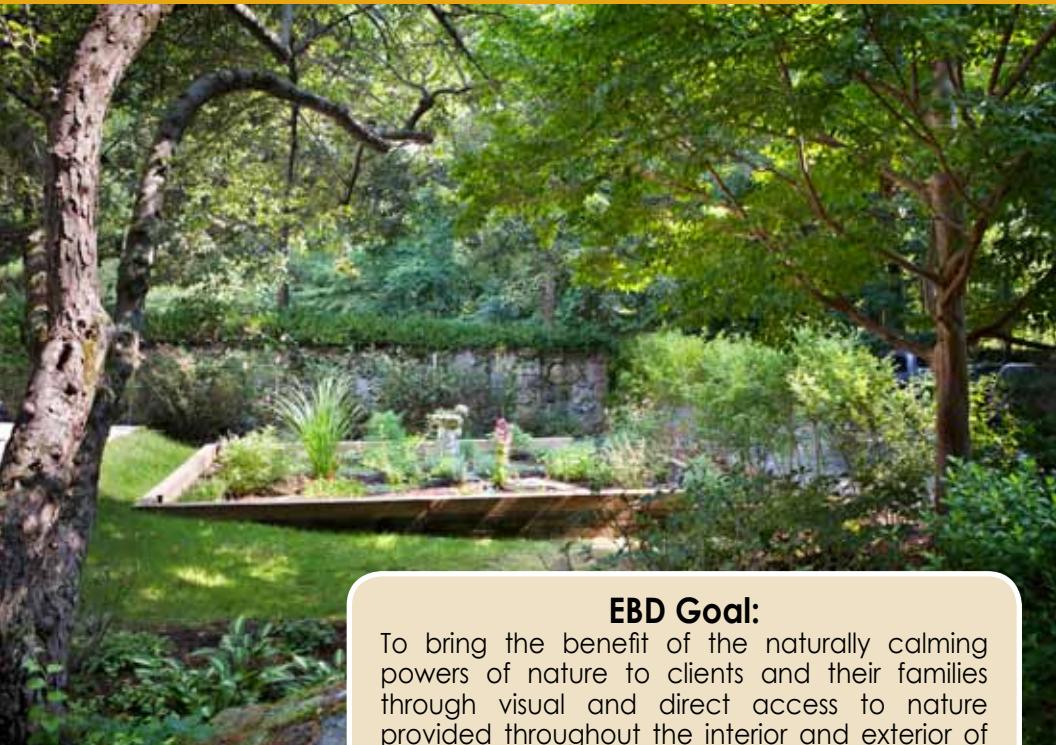
The CSU was created to separate the behavioral health patients from the main ED to better address their unique needs and avoid unnecessary inpatient admissions to the hospital. Once patients present at the ED, they are evaluated and medically cleared before moving into the CSU. Within the CSU, various acuity levels can be accommodated with six rooms that are designed to be safe for patients while also creating a desired aesthetic to avoid feeling “institutional.”

The “living room” within the CSU looks similar to a home living room—complete with wood millwork, comfortable seating, artwork, a round dining room table, glass French doors, and a fish tank. The upgraded materials and design are intended to be therapeutic for patients and help put them at ease. The fish tank and the associated calming effect of the water is a main feature of the design.

The space is intended to be a place where peer counseling can occur with stable patients, along with simultaneous caregiver and family care. Special attention was given to reduce environmental stressors so that patients will be able to relax and “de-escalate.” The intended result is for patients to react more positively to treatment, report reduced negative outcomes, and aid in the care of one another. The project will be completed in 2014 and an in-depth, multi-year research study is planned to develop and test a new model for how environmental and operational determinants are linked to improvements in patient care, quality, safety, and other key project performance targets.

Salvatore Associates

Stanley Tippett Hospice
Needham, MA



EBD Goal:

To bring the benefit of the naturally calming powers of nature to clients and their families through visual and direct access to nature provided throughout the interior and exterior of the Stanley Tippett hospice. To allow clients that are able, and their families to enjoy direct access to outdoor spaces that include visual interest, color and shade including a variety of spaces for small and large groups.



Challenge:

The Stanley Tippett Hospice Home is located on a very scenic, historic road in Needham, Massachusetts. The site is approximately six acres of peaceful, wooded grounds that abuts the Charles River. Along with maximizing the natural elements of the site, the project focused on further supporting the overall functional operation of the home.

While maintaining the historic character of the existing 10 room home, renovation of each of these spaces was necessary to create interior spaces that have an openness and visual access to the outdoors, to maximize access to nature and control of natural light for staff and patients. The site and home had to continue to support the community, residents, their families and friends, and allow the staff enhanced support spaces to facilitate the efficient and effective provision of care. The team wanted to create a space that integrated the existing landscape architecture and would work for the community gardeners who would maintain these gardens.

Solution:

Initial meetings with the administration and the staff identified the guiding principles and the design guidelines for the project. This was accomplished by creating an interdisciplinary design team that included the administration, staff, community advocates, resident advocates, contractor, engineers, landscape architects, architects, and the local authorities having jurisdiction in the planning and design process. This process allowed for the definition of the success factors for the project early on and guided the development of options to address them. At each step of the process, the designs were evaluated against the criteria for evaluation (success factors) to assure that all components were aligned and that the related budget and schedule issues that were established at the initiation of the project could still be met. At each step of the process, informed decisions were made and the resulting adjustments were made to avoid the need for “value engineering”.

Along with the improved driveway, a wider drop off area and multiple gardens, the project also included improved site lighting, a new covered entry, a new kitchen, updated bathrooms, updated room conditioning, an additional nutrition area on the second floor, and an additional handicap bath and shower area. It also included additional support spaces and a larger elevator to ease resident transport. Care was taken to include these features while enhancing the existing architectural character of the home. The 10 private bedrooms and associated support spaces were fully renovated with new flooring, furnishings and finishes.

The design allows visual access from the interior rooms to the multiple gardens. A specific effort was made to design interior spaces that open directly to these gardens and outdoor areas that welcome and support residents, their families and friends. The existing site allowed for the use of shade trees and other existing natural elements of the site to enhance the overall environment of care.

EBD STEPS APPLIED:

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8

Challenge:

Each exam room required two doors for the patient self-rooming concept, so keeping the overall building square footage down was a challenge, as was locating the clinical staff and provider workstations as close as possible to the exam rooms. In addition, we had to develop a communication system that alerted clinical staff that the patient had arrived and their location. Providers were practicing the self-rooming concept in the previous clinic location, but the physical environment did not allow them to achieve their goals and efficiencies.

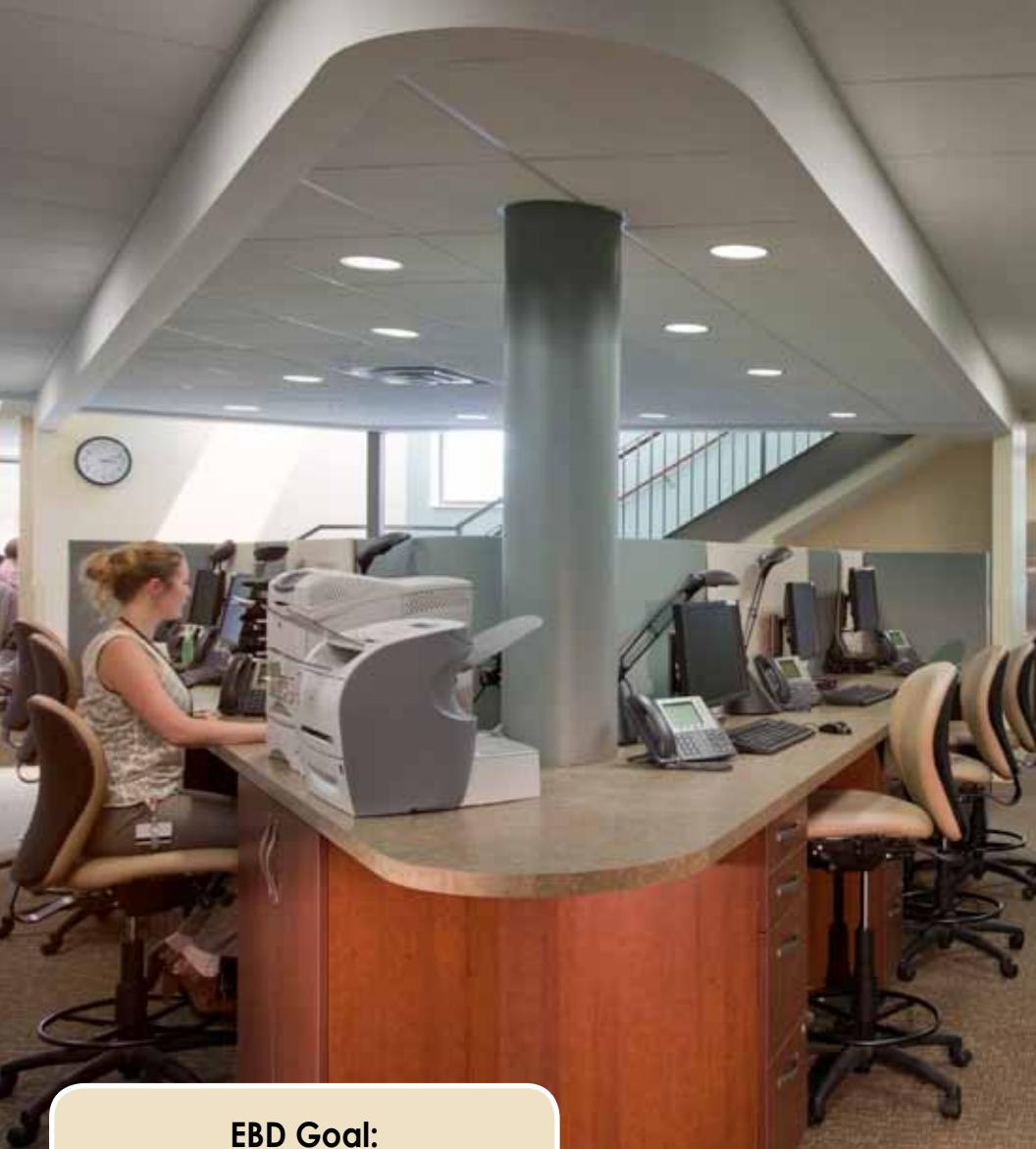
Solution:

Design researchers from Kahler Slater conducted observations in the existing clinic to understand the clinical staff's workflow patterns when seeing patients. Those solutions informed the design of the new clinic layout and provided baseline data about common paths of travel and important adjacencies.

The floor plan features back-of-house Flow Stations that allow caregivers to collaborate openly and not be overheard or interrupted by patients. The Flow Stations are directly adjacent to the exam rooms, allowing providers to chart between patients without needing to go back to their offices. A door leading directly into the exam rooms is located in the Flow Station. Patients come into the room through a second door off the public corridor. A light system was developed that communicates the arrival, the status, and location of each patient. This information is derived from the patient's electronic medical record. Efficient use of circulation in the Flow Stations kept the overall square footage per exam room comparable to a typical clinic layout; therefore the building size did not increase as a result of the self-rooming concept.

The self-rooming layout at the Yahara Clinic reduced the travel distance from the clinical staff workstations to the exam rooms by 83% compared to the previous clinic environment. The clinical workstations are located directly adjacent to the providers' workstations and increased the opportunity for direct communication and collaboration about patient care. It also increased patient privacy, as patients cannot overhear conversations about other patients.

Post occupancy observations and interviews with clinical staff and providers confirmed the Flow Stations are being utilized as designed and clinical staff and providers are enjoying the efficiencies and collaboration. The clinic's overall patient satisfaction scores increased by 25% (Avatar top box scores) with 12-22% improvements in the categories relating to the environment, getting around (way finding) and general reputation.



EBD Goal:

To design a layout for the new family medicine clinic at The University of Wisconsin Medical Foundation that supports patient self-rooming (an innovation in their clinic setting). The self-rooming concept helps reduce wait times for patients, improves infection control, increases privacy and maximizes staff efficiency.

Kahler Slater
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