KI

HEALTHCARE DESIGN

The Communication Factor: Observations & Opportunities for Improving Clinic Design

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Enhanced communication contributes to positive outcomes for patients and staff.

INTRODUCTION

The healthcare industry is challenged by many variables that reshape the environments in which patients receive care. To expand knowledge and enable the industry to make better, more informed decisions, KI proudly partnered with BBH Design and Parkland Health & Hospital System to explore one of the most uncharted areas in modern healthcare design: the outpatient clinic. With a heightened awareness of the impact of interior space planning and design on the quality of care, these teams worked together to conduct design research and analyze outcomes in support of more effective clinic design. The findings pointed to one key conclusion: Enhanced communication throughout the clinical care experience contributes to positive outcomes for patients and increases team member efficiencies.

The following content describes the background information and design research process. Four subsequent opportunities are identified, qualified by observations, and described in context with options that may enhance communication through clinic design.

Ultimately, the goal of more effective clinic design is to improve the quality of outpatient care and increase efficiencies among medical team members. The insights shared herein will help the healthcare industry make more enlightened design decisions in this area.

ENHANCING HEALTHCARE CLINIC DESIGN THROUGH COMMUNICATION

The nationwide shift toward outpatient (ambulatory) care continues to rise at a steep rate to meet demand. As a result, the growing prevalence of outpatient care facilities has taken on tremendous importance for today's healthcare providers.

From 1992 to 2012, outpatient visits to community hospitals in the U.S. rose from roughly 367 million visits annually to more than 678 million visits a year.[1] Reports state that by even the most conservative measures, the amount of money being spent on outpatient construction is expected to grow nearly 20-30 percent in the next decade.[2]

The rising demand in outpatient procedures can be attributed to several factors:

- The increase of scientific and technological advancements which streamline medical procedures, thus decreasing the need for inpatient care.
- The increase in number of Baby Boomers who continue to boost Medicare enrollment and healthcare spending and comprise the majority of the outpatient population.[3]
- The increase of patients who carry high-deductible plans and are more empowered consumers; as they pay more out-of-pocket, they exercise more choice in where and how to spend their dollars.[4]

Perhaps the biggest driver in the trend toward outpatient care is the recent implementation of the Patient Protection and Affordable Care Act. As new national policies have taken hold and more Americans have insurance coverage, providers face continuous reimbursement challenges and fierce competition in the healthcare industry.

Clearly healthcare organizations are feeling the pressure to keep costs low yet still provide the best possible medical care while pursuing improved population health. The number one strategy they are using to fuel their financial growth and sustain quality delivery is the broadening of their outpatient services.[5]

Cornerstone EyeCare Clinic in High Point, North Carolina

Outpatient care facilities often act as satellites, positioned in the suburbs and beyond to bring more convenient, specialized, or urgent care to further-reaching areas of communities. They go by many names—outpatient facilities, ambulatory care clinics, medical-surgical clinics, urgent care centers—yet all have this in common: In an era where revenue per patient interaction is decreasing, such clinics offer lower-acuity, less costly services. This makes them well-positioned to assume a leading role in a value-based delivery system centered on population health management.[6]

However, pressures on revenue make any capital investment potentially risky. Therefore, successfully designing the outpatient setting requires savvy and strategic planning. Healthcare systems and designers must strive to understand what patients value, what influences their healthcare decisions, and how patients measure quality.

MONITORING EFFECTIVE COMMUNICATION

In a study of approximately one million medical practice patients, there were five major predictors of patient loyalty, which is a common measure of patients' likelihood of both recommending and returning to a provider. Two predictors were the patient's confidence in the provider and the coordination of care. The remaining three predictors were the provider's concern for the patient's worries, the provider's ability to listen, and the courtesy of the provider.[7] In other words, effective communication was critical.

Communication is a recurring theme in established hospital rating systems, such as the Hospital Consumer Assessment of Healthcare Providers Systems (HCAHPS), which makes it easy for patients to compare their choices on a local, regional, and national level.

HCAHPS survey sample

The HCAHPS survey asks patients to rate their experience in a healthcare setting based on their personal interpretation of the care they received. The questions largely focus on various provider-patient interactions throughout a patient's stay, with high levels of communication often translating to greater patient satisfaction.

Here again, communication and connection emerge as unifying themes that have a strong impact on patients' experiences and ultimately a medical practice's bottom line. Additionally, enhancing communication among team members can improve care delivery, reduce errors, and increase efficiencies.[8]

In fact, in one recent study, primary care team members with more face-to-face interaction had patients with substantially lower healthcare costs, 72 percent fewer emergency department visits, and 37 percent fewer hospital visits. In addition, costs per patient dropped $594 with increased face-to-face interaction.[9]

What does this mean for the architectural design of outpatient facilities?

The development of strong clinic communication systems is thought to be a top priority in the expansion of care to outpatient sites.[10] In design terms, this implies that ambulatory care floor plans and furniture configurations need to promote improved personal interactions, thereby enhancing the outpatient experience and attracting new patients at a rate that is consistent with, if not better than, the competition.

How can this be accomplished?

Despite the giant strides in the growing body of knowledge of design research, information is limited when it comes to optimal furnishing and architectural design solutions for clinics.

As a result, KI teamed up with Parkland Hospital of Dallas, Texas, and BBH Design to study the impact of design on a current, more traditional outpatient clinic. The intent was to inform the design of new medical-surgical clinics planned for the system.

Designers must understand what patients value, what influences their decisions, and how they measure quality.

During the study, 2,872 observations revealed where physicians, nurses and patients spent their time and how their whereabouts impacted their interactions with colleagues and patients. The findings showed that design elements had a tremendous impact on the amount and quality of provider-patient interaction in the outpatient setting.

As a result, four key design opportunities were revealed that could enhance communications in outpatient facilities.

By integrating these considerations into future ambulatory care design, improved communications for both patients and team members and increased emphasis on the patient experience can be addressed and achieved. The following opportunities, observations, and options were concluded as a result of this research. The metrics and percentages referenced are from the subset of findings from the primary care clinic.

Parkland Hospital
Photo Credit: Architect: HDR + Corgan
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Design elements had a tremendous impact on the amount and quality of provider-patient interaction.

HOW THE STUDY WAS CONDUCTED

In conjunction with BBH Design, KI performed a pre-occupancy evaluation to inform the design of the new Parkland clinic buildings. Methods of evaluation took place at two outpatient clinics at the current Parkland Hospital and included five days of systematic behavioral observation, one day of ethnographic observation, team member interviews to determine opinions and behavioral patterns of patients and physicians, and space syntax analysis.

The evaluation sought to understand the impact of outpatient floor plan design on interaction and communication, as well as patient satisfaction and engagement.

Methods

• *Behavioral Observations.* Data collectors piloted and deployed a tablet-based observation tool, DOTT™ (Detailed Observation of Task and Timing Tool). Using DOTT™, researchers were able to collectively gather 2,872 separate and usable observations. As the data collectors walked through a clinic space, a dot was placed in the tool representing the role of the person observed (i.e., patient, nurse, provider, visitor), the room situation (i.e., door open, blinds open, lights on), a person's location, and the activities in which each person was engaged. The statistical analyses of the observational data involved regressions and chi-square. Only statistically significant findings are shared within this document.

• *Interviews/Ethnographic Observation.* This included one day of ethnographic observations and team member interviews to determine opinions and behavioral patterns of patients and team members.

• *Space Syntax Analysis.* Layout analysis of the floor plan using space syntax techniques yielded additional clues about the impact of clinic layout on opportunities to communicate and connect with team members and patients.

Opportunity #1: Create a Floor Plan That Improves Communication

Observations: The charts below compare the locations where physicians, nurses, and patients were most often observed. Patients spent the majority of their time in the waiting room and exam rooms. Physicians were primarily at their workstations. Nurses were interspersed throughout the clinic, splitting their time between their workstations or the hallway (likely "in transit") throughout much of the day. As a result, patients, nurses, and physicians spent their time in places that rarely overlap, which can prevent essential communication among all parties.

It is important to note that on the surface, some of the key findings throughout this design research may seem intuitive. (Of course nurses are less likely to speak with patients when at workstations!) However, what is worth noting is the sizable impact of such activities (in this case, they were 99 percent less likely to speak with patients when at workstations deeper into a clinic space).

This design research suggests that by focusing not only on the activities but also on their frequencies, design teams can decide how best to address and improve communications. For example, what improvements in patient care and communications could be achieved by designing a clinic that reduced that 99 percent factor to 80 percent?

Key findings include the following:
- Patients spoke with providers in dedicated care spaces; there was little incidental or natural communication (e.g., at workstations or in hallways).
- Nurses were 99 percent less likely to speak with patients when deeper inside the clinic at places such as workstations.
- Nurses were 10 times more likely to speak with another nurse deeper inside the clinic at places such as workstations.
- Nurses act as a "glue" mechanism; they frequently walk around in their attempts to engage both the patient (onstage), the physician (often deeply off-stage), and complete documentation.

More natural communication can have a positive influence on patient-centered care and team member interactions. While the isolation of workstations from patients supports nurse-to-nurse and some physician-to-nurse communication, it does not adequately support communication with patients.

Lyra® Lounge Collection

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These findings suggest that adjustments to design can help bolster communication in the clinic setting.

Options: Traditionally, outpatient clinic layouts have featured lobbies and waiting rooms in the front of the facility, exam rooms in the middle, and offices in the back or lining the outer walls. Because patients, nurses, and physicians spend the majority of their time in separate spaces, this layout encourages segregation and therefore significantly less communication in the outpatient setting. An open-concept clinic design could lend itself to more effective personal interaction across the board. Clinics can consider exploring open layouts for heightened communications, an enhanced patient experience, and overall improved patient care.
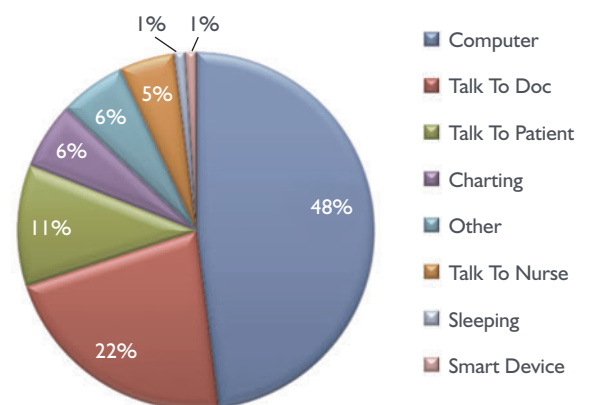
Workstations can be located in highly accessible areas of a clinic to promote more face-to-face experiences for physicians and patients. Since workstations act as the hub of the business, clustering physicians and nurses together encourages the likelihood of dynamic discussions and powerful collaboration among team members.

With a more open concept, team members would have views of the entire clinic, allowing patients to remain more visible as they wait for appointments and are then relocated to exam rooms—all opportunities for greater patient communication and improved workflow.

These diagrams and charts represent the locations and associated activities observed from physicians, nurses, and patients within a standard healthcare clinic, as documented during the design research evaluation.
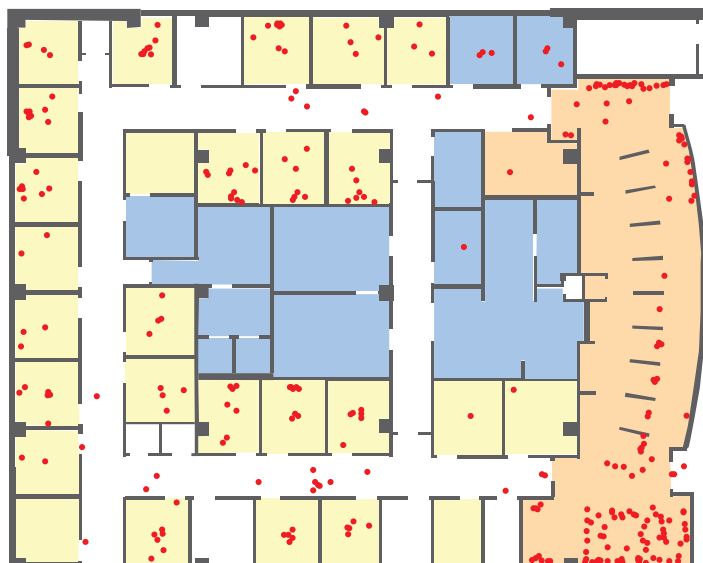
■ Exam Areas   ■ Lobby/Waiting Areas   ■ Staff Work Areas

Physician Activities

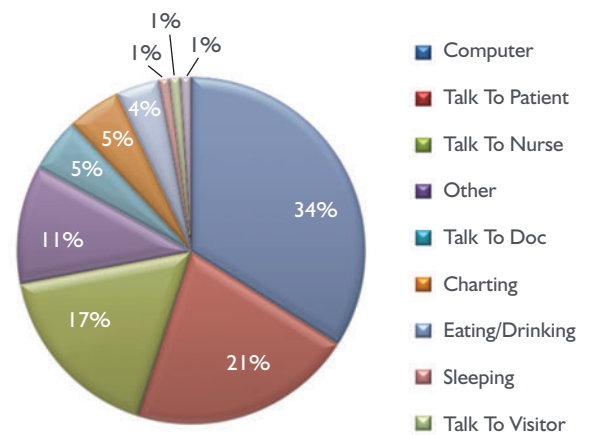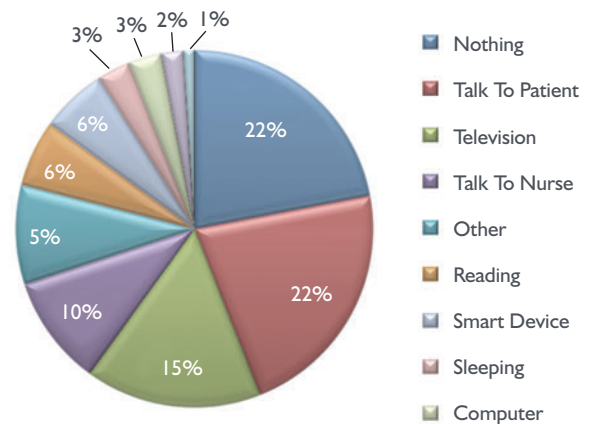| Activity	Percentage
Computer	48%
Talk To Doc	22%
Talk To Patient	11%
Charting	6%
Other	6%
Talk To Nurse	5%
Sleeping	1%
Smart Device	1%

Traditionally, patients, nurses, and physicians spend time in places that rarely overlap, preventing essential communication.

Nurse Activities

- Computer — 34%
- Talk To Patient — 21%
- Talk To Nurse — 17%
- Other — 11%
- Talk To Doc — 5%
- Charting — 5%
- Eating/Drinking — 4%
- Sleeping — 1%
- Talk To Visitor — 1%
- 1%

Patient Activities

- Nothing — 22%
- Talk To Patient — 22%
- Television — 15%
- Talk To Nurse — 10%
- Other — 5%
- Reading — 6%
- Smart Device — 6%
- Sleeping — 3%
- Computer — 3%
- 3%
- 2%
- 1%

Consider exploring open layouts for heightened communications, an enhanced patient experience, and overall improved patient care.

Healthcare staff—from administrative support to the medical team to managerial members and more—work in many ways, be it alone, together, on-the-go; doing whatever necessary to be productive. To define these different work styles, KI set out to observe how workers work. Backed by years of experience and expertise, the KI team identified four common work styles with specific examples. Each work style encompasses employee preferences and considers different types of work.

• **Focus.** The FOCUS work style is about the individual. Work is accomplished alone, requiring minimal input from others. This would include individual FOCUS work that a physician may need to study medical records or analyze test results. Walls and a door are important elements of FOCUS space.

• **Interaction.** The INTERACTION work style accommodates those who require a semi-private but shared environment. While most work is individual in nature, this style requires defined space that spurs conversation among coworkers. This would include interactions among nurses-to-nurses and some nurses-to-physicians. These types of touchdown spaces are defined work areas that provide a high level of control but also provide open access to coworkers.

• **Regenerative.** The REGENERATIVE work style gets back to basics. It revitalizes creativity, facilitates sharing, and generates new and fresh ideas. A REGENERATIVE work style aids employees several ways. In REGENERATIVE spaces, healthcare team members are working but not within a traditional workspace. These include public or open spaces such as on-site café areas to set up and work. New surroundings have a positive effect on productivity.

• **Ideation.** The IDEATION work style promotes idea sharing and collaboration among individuals. Whether brainstorming or educating, this work style brings ideas and people together. In a transparent environment, idea sharing and the free flow of information and communication is encouraged. IDEATION spaces, such as open meeting areas and training labs, allow team members to participate in ongoing education and learning among peers.

Defining and identifying these preferred work styles sheds valuable light on the environments needed to support staff workspaces in any industry, importantly including healthcare.

Learn more about KI's approach to work styles at www.ki.com/workstyles.

Opportunity #2: Heighten Interactions by Increasing Visibility

Observations: In the outpatient facility setting, the old adage "what you see is what you get" rings especially true as it applies to visibility among physicians, nurses, and patients. The design research showed that if a patient was in a more visible area of the clinic, the provider was more likely to speak with the patient. In fact, the likelihood of a provider talking to patients increased with each additional increment in visibility. Conversely, observations showed that when visibility was minimized, communication between the parties greatly decreased.

Key findings included:
- Physicians were less likely to speak with patients when the patients were less visible during their visit.
- Nurses were 7 percent more likely to speak with a physician when they could see them. Knowing where the physician was and what the physician was doing at a glance helped nurses identify the appropriate time to engage in dialogue related to care.

In traditional clinic design, patients wait in a waiting room, which is often closed off from the rest of the clinic and rarely visible to physicians and nurses throughout the day. They are then escorted to their exam rooms, where they are again out of sight as they continue their wait. These solitary waiting scenarios, often called "cold waits," are thought to contribute to patient anxiety and restlessness.[11]

Furthermore, the isolation of team member workstations from patient rooms may support nurse-nurse and physician-nurse interactions, but it may not adequately promote vital patient communication efforts.

Options: In addition to a more open-concept floor plan design, increasing visibility through architectural solutions across the entire clinic setting can further support communications and reinforce an enhanced patient experience. Providing patients with a visual connection to healthcare providers can help them feel less isolated, and therefore more at ease and satisfied with their clinical experience overall.

Two key design strategies may greatly increase visibility and allow for enhanced flexibility across the clinical setting: (1) Reduce the height of view-impeding walls and

Genius® Architectural Wall

(2) Increase transparency where walls are necessary. This may seem a challenge in a setting where patient privacy is a top priority, but integrating a mix of solid and glass architectural walls into outpatient design offers creative solutions without compromising confidentiality. Architectural walls that can easily conform to the needs of any clinic are excellent for creating an open, collaborative work environment. The solutions make it easy to erect floor-to-ceiling walls, low-height walls, and other customizable partitions throughout a clinic. Easily reconfigured, architectural walls provide maximum flexibility, making them an ideal investment for accommodating future changes in clinic floor plans.

Unitized glass wall systems and dividers can also support the modern outpatient facility. In clinic areas where acoustic privacy is necessary, glass architectural walls make excellent sound barriers while contributing to an aesthetically pleasing design. An attractive alternative to solid walls, architectural glass walls allow natural light to flow throughout a clinic space, while also providing patients and providers with far-reaching visibility.

Considered to be semi-permanent privacy barriers, freestanding mobile screens act as temporary workspace dividers in

Connection Zone® Mobile Screens

administrative spaces or at care provider-patient touchpoints and are easy to move and reconfigure when design needs change. Mobile screens with writeable whiteboard surfaces can help facilitate collaboration and communication in the clinical work environment, making these areas multi-functional. In turn, this simple solution maximizes valuable real estate in facilities.

In addition to opening up sight lines—and lines of communication—among clinic personnel and with patients, the use of glass architectural walls and freestanding mobile screens allow for quick reconfigurations when the time comes—and it always does.

Opportunity #3: Enhance Communication By Promoting More Standing

Observations: Studies have shown that adults in the workplace report increased productivity when standing. Alternating between sitting and standing more often throughout a workday is proven to increase blood circulation, which enhances alertness. Standing often keeps people more engaged and provides a sense of urgency to focus and accomplish.[12]

These findings easily translate to the clinic setting. Case in point, the design research showed that the act of prolonged sitting often stymied communication in the outpatient facility.

More frequent standing interactions may increase dialogue among all parties and improve patient-centered care.

Findings concluded that:
- Physicians were 88 percent less likely to speak with a nurse while sitting.
- Patients were 66 percent less likely to speak with nurses while sitting.

More frequent standing interactions may therefore increase positive and widespread dialogue among all parties and improve patient-centered care.

Options: Such findings indicate the need for flexible sit-stand solutions throughout the clinic to foster communications, as well as personal health and productivity benefits.

Height-adjustable tables can be easily maneuvered to adapt to various needs throughout the clinic. Task stools are also available for sit-and-stand workstations, labs, and other areas where patients and providers may benefit from standing.

Even fixed café-height tables and stools are beneficial for patients who are often required to take in and comprehend new information. Strategically placing taller stools and tables throughout the clinic could also help facilitate more meaningful "chance" interactions among team members. For example, if there is a high-traffic area where nurses are often passing by one another, a café-height table would offer a convenient opportunity to stop and exchange information impromptu.

It would also make sense to have workstations accommodate sit-stand solutions that complement the clinic's work energy and flow. The nature of the clinic setting is often fast-paced, making every minute of a physician-nurse interaction valuable.

Toggle® Adjustable-Height Tables with Privacy Screens

Opportunity #4: Strategize Computer Use to Increase Interpersonal Engagement

Observations: Patients and clinic team members are becoming increasingly more tech-savvy as the use of tablets, smart devices, teleconferences, video consults, and electronic medical records are integrated within the modern outpatient experience. Yet the observations

A care provider using a computer inside an exam room is 86 percent less likely to talk to a patient.

showed that while computers and smart devices are finding their niche in the healthcare industry, these tools are also impacting patient communications in less positive ways. Computer use strongly predicted less interaction throughout the clinic. The design research found:

- Anyone using a computer was 67 percent less likely to interact with a patient.
- Physicians and nurses were less likely to communicate with one another when using computers, even when space was shared.
- 48 percent of a physician's time was spent on a computer.
- 34 percent of a nurse's time was spent on a computer.

This suggests that in a setting intended to foster team-based care, computer location and position can be impairments.

In addition, the behavioral observation of patients revealed a substantial amount of idle time. Patients spent most of their time doing nothing, talking to other patients, using smart devices, or sleeping. There is an opportunity to better engage patients in their own care, such as self-triage or online patient check-in via mobile devices.

Interestingly, the picture shown in the next column is a child's interpretation of her current clinical outpatient experience, complete with the influence of technology.

Source: JAMA, 307(23): 2497,2013

The drawing shows a patient and her family on the right. On the left a physician sits with his head bent over a computer, his back turned to the patient.[13]

This colorful depiction of reality supports our observations, which revealed that a person inside an exam room using a computer is 86 percent less likely to talk to a patient. How does one change the realities and the perception of the provider-patient relationship where technology is concerned?

Options: Since computers are universal to healthcare delivery, opportunities to connect all parties in a clinic abound. Embracing the benefits of technology can help to engage and empower patients on their health journey. Outpatient clinics can benefit from enhancing technology use with tactical design strategies.

For example, clinics can make computer use an interactive experience between the caregiver and patient. This can be accomplished by integrating any table that encourages shared interactions. The computer becomes the starting point for important dialogue, and communal seating arrangements encourage providers and patients to share a monitor while discussing medical issues more in-depth. To facilitate even greater interaction, a clinic space should integrate a variety of seating solutions that are highly flexible and easily movable.

Incorporating tablet-arm chairs and wall-mounted monitors into outpatient facilities could also set the stage for a collaborative experience between the patient and providers. Tablet-arm chairs offer comfortable seating for patients while providing them with a surface for a tablet or smart device. Clinics could also mount monitors on walls, where they are easily visible to both the patient and provider and could help initiate meaningful discussion on health issues and care opportunities.

Because the use of technology also inhibits conversation among team members, interdisciplinary workstations can be reconfigured to encourage more face-to-face interaction. In workstations, for example, computers lining the walls force healthcare team members to have their backs to one another. Instead, clinics could make the use of computers a "semi-interactive" experience. Computers and desks could be centrally located, and providers could

easily see other team members around their monitors. This arrangement fosters more eye-to-eye contact, conversations, and collaboration among colleagues.

Trellis™ Power System, Pirouette® Tables, Grazie® Task Chairs

Genius® Architectural Wall

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CONCLUSION

Now more than ever, patients are "shopping" for quality care, and they have the means to find it. National rating systems allow patients to research and compare physicians and facilities. For many patients, the best care equates to high levels of meaningful communication throughout their health journey.

Moreover, increased communication and interaction improves patient care, reduces errors, and increases team member efficiency.

For these reasons, new outpatient designs should consider incorporating elements that enhance personal interaction and provide the means for more effective communication at all stages of care. Open-concept layouts, mobile furniture and movable architectural walls that promote visibility, sit-stand solutions, and strategic technology placement should all be explored in support of the vital communication objective. In addition, the use and integration of flexible, responsive furniture solutions will more easily adapt to meet modern standards for interior design, operations, and technology.

With the right floor plan and furniture elements, designers, architects, and healthcare providers can support improved communications, and by doing so, they can be better positioned to meet patient satisfaction needs.

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Esperanza Harper is an experienced healthcare planner at BBH Design, with a passion for designing healing environments. She has worked on a variety of healthcare projects from hospital master planning and mobile clinics to ambulatory surgery centers and full hospital renovation and expansion projects. Ms. Harper's passion is fueled by her years in developing workshops for the Annual Planetree Conferences, helping clients discover innovative planning solutions and more recently by her EDAC accreditation and involvement in evidence-based design. Ms. Harper's strengths lie in her ability to translate relevant research findings into design concepts and discovering ways to seamlessly integrate design research into project delivery.

Debbie Breunig, Vice President of Healthcare, is responsible for marketing strategy and planning for KI's healthcare division. With a background in nursing and business, Ms. Breunig brings a unique experience and expertise to the healthcare industry. Her leadership in developing a focused marketing segmentation combined with direction in new product development has supported KI's growth and leadership in the market. Ms. Breunig holds a bachelor's degree in nursing (BSN) from the Bellin College of Nursing in Green Bay, Wisconsin, and an MBA from the University of Wisconsin-Madison. She is a licensed Registered Nurse in the State of Wisconsin.

Tad Lenhart is a senior industrial engineer within KI's design department. He develops integrated product solutions using a thoughtful combination of art and engineering. Managing the product lifecycle from concept idealization to production support, he applies his 12+ years of experience to bring a high level of expertise from the field to the design studio. In addition to contract furniture, Mr. Lenhart has experience in developing commercial lighting solutions. He has a degree in mechanical engineering from the University of Wisconsin-Madison, with additional education in industrial design from the Milwaukee Institute of Art & Design.

Gena English has more than 18 years of healthcare design experience and is responsible for overseeing management of Interior Design, including the finishes, furnishings, artwork, equipment and wayfinding, for the New Parkland Hospital Campus. Ms. English is also involved with the design research efforts through the Pebbles Partnership. She has a bachelor's degree in Organizational Management and Interior Design and is a Registered Interior Designer in the State of Texas. She is also certified by the American Academy of Healthcare Interior Designers (AAHID) and served on its board from 2011-2013. She holds an EDAC certification and is a Registered Accessibility Specialist.

Gay Chabot functions as the clinical liaison for the Parkland Health & Hospital System, primarily representing Medicine, Surgical Services, and Peri-operative Services. Other ancillary departments she represents are the campus Police Department and Patient Financial services. In this role, she makes certain that clinical and end user input for architecture and design is integrated into the overall function of the new hospital. Ms. Chabot has been a nurse for 30 years and at Parkland for 24 years. Her clinical expertise is adult critical care. Before moving into her current role, she was a Director of Nursing responsible for several service lines.

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