Perkins+Will has continuously investigated and published our findings on the link between interior environment and wellness for all occupants. We draw insights from our incredible clients, ongoing research, and our study of the impact healthcare buildings have on health and well-being. We share this compilation of our 2016 “Designing for Health” articles published online by *Contract* magazine and exclusively authored by Perkins+Will since 2008.

This year’s articles focus on the full-sensory experience, from macro issues to nuanced and even imperceptible; how these factors impact with heightened sensitivities. The articles continue to push our industry towards more informed decision-making by questioning the value of certain chemical additives and impact to overall health. They also investigate design process and spatial influence on positive behaviors and emotional responses.

We invite you to read past and future installment of this series online at contractmagazine.com and of our latest news and information at perkinswill.com.

Wishing you a peaceful and healthy 2017!
<table>
<thead>
<tr>
<th>Date</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>JANUARY/FEBRUARY 2016</td>
<td>Beyond the Building, Leveraging Art To Improve Health Outcomes</td>
<td>Breeze Glazer, LEED AP and Robin Glazer</td>
</tr>
<tr>
<td>MARCH 2016</td>
<td>Exploring The Link Between Light and Patient Recovery</td>
<td>Erica Schneider, Associate AIA, LEED Green Associate and Whitney Hendrickson, RN, CPN, Associate IIDA, EDAC</td>
</tr>
<tr>
<td>APRIL 2016</td>
<td>Investing in a Branded Wayfinding Program</td>
<td>Korinna Hirsch, LEED Green Associate</td>
</tr>
<tr>
<td>MAY 2016</td>
<td>Exploring Proactive Design</td>
<td>Tatiana Guimaraes, Assoc. AIA and Alejandro Branger, LEED AP BD+C</td>
</tr>
<tr>
<td>JUNE 2016</td>
<td>Redefining Waiting</td>
<td>Brooke Horan, IIDA</td>
</tr>
<tr>
<td>AUGUST 2016</td>
<td>Insights For Selections of Furniture In Healthcare Spaces</td>
<td>Antonio A Rodríguez, LEED Green Associate</td>
</tr>
<tr>
<td>SEPTEMBER 2016</td>
<td>Demystifying Added Antimicrobial Chemicals in Interior Products</td>
<td>Suzanne Drake, Research Director, Perkins+Will and Melissa Coffin, Operations Manager, Healthy Buildings Network</td>
</tr>
<tr>
<td>OCTOBER 2016</td>
<td>Finding a Common Environmental Language of Care for Children Across the Autistic Spectrum</td>
<td>Aiko Tanabe, NCIDQ, LEED AP</td>
</tr>
<tr>
<td>NOVEMBER 2016</td>
<td>Holistic Health at the Community Scale</td>
<td>Daniel Windsor, AICP, PP, LEED AP BD+C</td>
</tr>
<tr>
<td>DECEMBER 2016</td>
<td>Enhancing Interior Design Through Interdisciplinary Collaboration</td>
<td>Angena Chang, IIDA, EDAC, LEED AP ID+C and Annie Lehatto, AIA, LEED AP, EDAC</td>
</tr>
</tbody>
</table>

FIRMWIDE PRACTICE UPDATES
DESIGNING FOR HEALTH BEYOND THE BUILDING, LEVERAGING ART TO IMPROVE HEALTH OUTCOMES

Breeze Glazer, LEED® AP and Robin Glazer

The relationship between the built environment and health has long been understood, but only recently prioritized, as a key consideration for both healthcare providers and designers. When the nature of healthcare delivery is considered, we immediately think of the individuals on the frontline: the practitioners, doctors, nurses, and other medical professionals. Within the last several decades an emergence of research connecting health and design has lead to a greater acceptance of additional means to improving health. The notion of integrating environmental qualities into the design of a healthcare building in order to positively impact patient recovery has become widely accepted.

With that in mind, the next frontier may be the role of art in the healing process. Just as with healthcare design, this idea is supported by a growing body of research\(^1\) that reveals the physiologic processes taking place when a person is in contact with different forms of art. Some of these processes are related to the release of endorphins that can function as stress and pain relievers for the human body. Evidence-based artwork is the outcome of the analysis of the impact of specific types of art, such as landscape scenes, on patients and staff in healthcare environments. Hospitals and healthcare institutions have shown an understanding of the value of placing evidence-based artwork in their lobbies, hallways, grounds, and patient-care rooms. A 2009 survey by Americans for the Arts\(^2\) reported that stakeholders overwhelmingly agreed that there is a large investment return in creating an art-filled healthcare environment,
including health benefits, improved perception of the facility by patients and staff, enhanced donor relations, and a greater connection to the public and community at large. The Creative Center at University Settlement encourages patients, family, and staff to turn to the creation of art as a positive distraction in healthcare environments.

Integrating art into the design process occurs at a range of scales. At one end of the spectrum is the most common approach of placing a framed painting on a wall or a sculpture on a pedestal. The ColumbiaDoctors Midtown facility employs this approach and includes significant artwork on permanent loan from the JP Morgan Chase collection. The next step up is the inclusion of site-specific artwork that is created with the project’s unique location in mind. The Johns Hopkins Hospital incorporates over 500 works of art, including many that have been produced specifically for the building itself. The Sechelt Hospital, Expansion and Renovation, designed with Farrow Partnership Architects, demonstrates a full integration of art and architecture. The very shape of the building itself is inspired by the cedar bent-box, which is unique to the individuals that the building serves. Large-scale wood murals in the lobby are visible from the exterior and serve to greet visitors with familiar cultural images. It’s important to note that the selection of art is far from a one-size-fits-all collection. For example, the art that most effectively reduces stress for patients in a low acuity health clinic waiting room may not be appropriate for an oncology patient in the midst of a long-term treatment process.

The majority of existing research in the field is based on a static relationship between patient and object; in other words, how a patient passively engages with art through sight or sound. Although the benefits of this arrangement are clear, there are limitations to this research. What is the impact of supporting an active learning engagement between patient and object? What happens when an oncology patient doesn’t simply look at an art object while receiving chemotherapy, but engages with it throughout their stay?

Design firms typically only play a role in the selection of the art program, with little understanding of the post-occupancy affect of the artworks. To answer these larger questions, engagement across both the design and occupancy phases of a project is needed, thus requiring a new type of collaboration model.

At the recent Healthcare Facilities Symposium in Chicago, we presented alongside Art Force’s Director of Healthcare and Art Services, Leslie Palmer-Ross, about a unique way for healthcare institutions to achieve a greater return on their art investments. By creating programming that integrates design and operations while using existing artworks, patients can become engaged in a variety of settings.

The presentation, Beyond the Built: Using Design to Develop Art Programming for Patients, featured a collection of artwork by professional artists who are living with illness. The collection, entitled Still Life, features artists with an understanding of what will visually impact individuals in hospital beds and clinic corridors. Created through a partnership between The Creative Center, a non-profit organization since 1994, and for-profit Art Force, the collection aims to create a social enterprise that will help fund The Creative Center’s Hospital Artist-In-Residence Programs.

Drawing from research on evolutionary response theory and biophilia, which claims that people in stressful situations prefer nature-driven art, this group of images offers both realism and abstraction in a variety of mediums including painting, drawing, and photography. From the whimsical and humorous to the contemplative and serene, the artworks are available in both large-scale formats—‘art on the walls’—and personal-sized images on greeting cards. The images are also used on small-sized prints as incentives for patients, gifts at the check-in or checkout, or as part of the “rate your hospital” package.

In the recently completed Minneapolis Creative Economic Development Study, the importance of art in influencing employee and patient attitudes was acknowledged. Respondents indicated that they would place a high value on artwork created by individuals with health challenges that provides a social benefit through a non-profit and for-profit partnership.

With over 20 years of experience in using the creation of artwork as a positive distraction in healthcare environments,
The Creative Center at University Settlement\(^1\) provides patients, family, and staff with the technical and aesthetic skills necessary to appreciate art during waiting, treatment, and recovery. Who could better understand what will be visually impactful for these individuals than artists who are, or have been, patients themselves? “I live to paint. After my injury, art became my therapy in both a psychological and physical sense. I stretch and move my hands and body in needed movements while I enjoy the act of creation,” says artist Cliff Enright. “Painting transition in landscape is a metaphor for the possibility of swift and positive change. Through art, I define myself as human, not as one who suffers. Art is hope,” states artist Aleta Wynn Yarrow.

These projects bridge the intentions of the design team and the end users—patients, family and staff members—by using positive distractions to harvest an impact through the creative process.

**SOURCES**


**Breeze Glazer, LEED AP BD+C,**

is a Senior Associate at Perkins+Will and can be reached at Breeze.Glazer@perkinswill.com

**Robin Glazer**

is Director of The Creative Center: Arts in Healthcare and can be reached at rglazer@thecreativecenter.org
DESIGNING FOR HEALTH
EXPLORING THE LINK BETWEEN LIGHT AND PATIENT RECOVERY

Erica Schneider, Associate AIA, LEED® Green Associate and Whitney Hendrickson, RN, CPN, Associate IIDA, EDAC

Circadian rhythm is the alignment of living organisms to the daily rotational cycle of the Earth. These biorhythms control our rest-activity cycle, while also influencing our immune system and potential for healing. Research has shown that healthy circadian oscillations may help promote tissue recovery and enhance our ability to handle microbial threats. In a healthcare environment, these benefits could potentially improve overall patient wellbeing and reduce the length of hospital stays. Artificial lighting within the hospital environment serves as one of the primary interferences with rest-activity cycles and adversely affects sleep, mood, and pain. Designers should be conscious of the effects of lighting and take simple measures to improve patient circadian rhythm and reduce recovery time.

Light patterns serve as the principal environmental cues that living organisms need to coordinate their internal rhythms within the 24-hour cycle of the earth. Light levels allow us to distinguish time of day and set our rest-activity cycle. Currently our daytime hours are mostly spent indoors, with much lower light intensities than what would be experienced in an outdoor environment. The prevalence of overly-illuminated nighttime hours and nocturnal blue light exposure from LED lighting and electronic devices is leading humans to experience an altered light-dark cycle that does not match the natural environment. This phenomenon is especially sensitive in a healthcare environment. Current hospital lighting schemes are quite dim, due to the assumption that muted lighting promotes patients’ rest and sleep. However, studies have shown that these low light levels are not adequate enough to maintain a healthy light-dark contrast, which threatens human circadian rhythm leading to patient fatigue, pain, and overall mood disturbance. In an environment created specifically to heal, this seems counterproductive to say the least.

New lighting technologies have been introduced to help negate the unhealthy effects of artificial lighting. These products vary in color spectrum and intensity to mimic natural light and preserve circadian system functioning. The new neonatal expansion at Children’s Medical Center in Dallas had the opportunity to specify similar cutting-edge light fixtures in their patient rooms. The design team partnered with Jill Kores, a local lighting consultant, to specify a customizable LED back-lit panel system that was mounted above the head wall. "The original inspiration was to create a clerestory type of ‘window’ for the long walls of the room," said Kores. “There are a few rooms where daylight is not significant due to orientation or window size, so this product was intended to be a component that would supplement the daylight needs.”

The light panel uses RGBA LEDs to mimic natural illumination, and projects light of varying colors and intensities throughout the day. The fixture’s control panel provides a daily circadian lighting scene that starts just before dusk and projects a twilight glow of early morning and then transitions to the pink, reddish, and then saturated orange of sunrise. As the day progresses, the lighting
The scene transfers to the cool white hues of daytime, and then closes with a warm, incandescent glow in the evening. This incandescent glow is especially important in the neonatal environment because it helps the infants adjust to the residential lighting types that they will most likely experience once they leave the hospital environment. While still in the hospital, infants may have difficulty establishing their rest-activity cycle outside of the womb. These types of fixtures help premature and vulnerable infants to establish reliable biorhythms and achieve quality rest for enhanced healing and growth.

The selection of the customizable LED fixtures at the Children’s NICU evolved from a collaboration between the dedicated design team and knowledgeable consultants who recognized how their decisions would affect patient wellbeing, providing the client with intelligent and cost-effective recommendations that drastically improved the light quality of the space. Several other lower-cost architectural interventions and practices that can be implemented to recognize patients’ need for adequate light-dark contrast during their hospital stay are:

**Natural Light**

a. A greater number of larger windows is the best way to promote a healthy circadian rhythm for patients. The encouragement of key hospital personnel to incorporate opening the shades to allow for maximum benefit is helpful as well as automated systems that can be overridden by staff on request.

**Room Layout**

a. The door can be arranged in order to limit corridor light pollution into the patient room when monitoring by staff requires frequent disruptions.

b. The utilization of “nurse servers” and other interventions, to minimize disruptions into the patient’s room at night.

c. The strategic placement of curtain tracks to allow staff to enter room with supplies without shining a light directly onto the bed.

**Night Lighting**

a. Working with the Electrical Engineer in order to consider the specification of amber-red light for the floor night-light, patient restroom, and nurse’s handwashing station. Exposure to the harsh blue light from any of these light sources at
night can disrupt the patient’s circadian rhythm. This intervention is especially important as blue light can pass through a closed eyelid as well.

It is important to recognize that the effects of artificial lighting are unhealthy for all ages within the healthcare environment, not just the vulnerable populations of the premature and the elderly. According to the CDC, patients between the ages of 18 and 44 comprise most of the hospitalized census on a day-to-day basis.

The effects of circadian rhythm should be considered for every age in the planning and design of healthcare environments. Architecture and design professionals should act as the patient’s advocate by educating the client on evidence-based design interventions related to light and its impact on health. By increasing awareness and implementing simple design strategies, we have the ability to positively impact the patient experience.

**Sources**


Klores, Jill. Telephone interview. 09 December 2015.


While sitting in an executive retreat for a Northwestern Healthcare renovation project, I recorded a staggering forty-two of the fifty-five leaders in attendance listing wayfinding as the biggest problem for patients, visitors and staff in the current facility, and the number one issue for improvement in the new facility. That’s powerful fodder for client-driven resource planning, and an indicator of a growing trend in healthcare: investing in wayfinding. The executive team at the CARTI Cancer Center in Little Rock, Arkansas decided to invest in just that: a branded environment and wayfinding system that creates emotive moments throughout the space to support wayfinding, honor the overarching goals of the architectural program, and showcase the authenticity of the CARTI personality.

Patient and visitor disorientation in a hospital building, campus, or parking garage is an all too familiar scenario, especially in older projects with layers of multiple renovations in which sign systems do not work together aesthetically or programmatically. Frustration, perhaps even fear, stemming from missing or misplaced signs, erratic or conflicting communications, or a lack of contiguous visual cues is far too common. Worse is when stress or anxiety accompanies the visit. Given the choice, most people would prefer to navigate a healthcare facility that has elected to integrate visual landmarks and signage in appropriate places with consistent messaging, thus providing a signage system grounded in a broader brand aesthetic that makes sense in its visual home.
“The investment in this branded environment is totally worthwhile...on a 1–10 scale, a 10,” says Alison Melson, vice president of Communications and Marketing at CARTI. “Had we used generic signs, wall finishes, and televisions patients would not have had the patient experience that we wanted. Patients can tell that everything in this building, from the way it is laid out to the spa-like overhead music, was designed with the cancer patient in mind. And they love it. Our patients understand that we wanted to create a serene environment for them while they are going through a very stressful time in their lives.”

“The biggest positive has been the consistent use of brand elements throughout the building, says Melson, commenting on the effects that a brand immersion has had upon circulation and wayfinding. “The feel of the building is carried through everything. … Even base building signage factors in to the overall impact.”

When looking at the cost of poor wayfinding for both staff and healthcare providers, it is helpful to understand that the idea was first addressed more than 30 years ago, when environmental psychologist and architect Romedi Passini, along with co-author Paul Arthur, published data documenting it as a key design issue. “[Annually] in a [hospital] facility of some 800 beds, no less than 8,000 hours of professional time are lost in redirecting patients and visitors to their destinations,” according to Passini and Arthur. Despite millions of dollars in lost revenue for the healthcare industry, as well as reduced staff morale and retention rates, most providers have continued to see ineffective wayfinding as an intangible cost that is difficult to document. As such, they do not usually reserve a line item in the construction budget for it. In hindsight, over the decades, some facilities have created paid or volunteer positions for Hospital Ambassadors whose sole function is to help people find their way, but most facilities’ primary staff continue to shoulder the burden of directing patients and visitors in facilities with wayfinding issues.

On the subject of volunteer recruitment, just a couple of months after opening, CARTI has been pleasantly surprised at the rapid uptick in the number of volunteers. “Since opening, we have held volunteer trainings every other week, and we have had people calling to see how they can get involved,” says Melson. “Our volunteers have more than quadrupled since we opened the doors. Not only can our new space accommodate more help, we are now a destination... that people want to be a part of.”

This attraction extends to paid specialists as well. “The staff is impressed with how we’ve fully incorporated the branding...amazed by the meaning behind it all,” says
Melson. “Employees are owning it. …[they] love the custom glass finishes and wall coverings, everything is so beautiful. CARTI is pleased to be able to generate new marketing materials, which can attract specialty oncology surgeons who want to be part of the multi-disciplinary cancer clinics in the building, which is great for patient care and can contribute to the bottom line.”

Investments in branded wayfinding programs are expected to grow in hospitals as well as in care centers, such as CARTI, due to recent financial rewards and penalties under the Affordable Care Act (ACA). Medicare medical reimbursements are now tied directly to the quality of patient experience in hospitals, so satisfaction with the quality and services directly affects the bottom line. As patients participate in the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey, wayfinding issues can be brought to the center of attention for healthcare leaders. Since hospitals could be financially penalized for low HCAHPS scores, those who do not provide positive experiences and elevate their facilities to be more marketable will lose financial incentives, in addition to market share.

Melson observed that while giving tours of the new care center, representatives of nearby institutions were interested in the use of the rebranding in the building. “There is a new eagerness to partnering with us and working together instead of competing,” says Melson.

Driven by new financial incentives under the ACA, and an accelerating acceptance of evidence-based design in healthcare environments, the understanding of the importance of investing in custom branded wayfinding programs is moving towards becoming the rule rather than the exception, in hospitals, clinics, and wellness centers. The transition from issuing last minute generic signage specs to the thoughtful implementation of a branded wayfinding package is beneficial for every patient, visitor, and staff member moving through and working within a space.

When owners and operators make the initial investment in a branded wayfinding program, not only do they create healthy, positive experiences for all users, they also stand to secure financial incentives and build meaningful loyalty in patients and staff for the life of the building.

SOURCES


Quotations and paraphrasing printed with permission from CARTI Cancer Center.

Korinna Hirsch, LEED Green Associate, is a Senior Project Designer in Perkins+Will’s Atlanta office. She can be reached at Korinna.Hirsch@perkinswill.com
Diabetes remains a major health issue worldwide. According to the World Health Organization (WHO), the disease is responsible for a rising number of deaths around the globe, especially in under-developed countries. In the Dominican Republic, where approximately 10 percent of the population has been diagnosed with diabetes, and where 4 percent of the country’s mortality rate is attributed to the disease, there is an urgent need to address the health and wellness of the country’s citizens.

The primary goal of the Center for Obesity and Diabetes (CEMDOE) or Centro Medico para Diabetes y Obesidad, is to provide services that not only improve patient management of diabetes, but also encourage prevention of the disease altogether. Located in the country’s largest city and capital, Santo Domingo, CEMDOE is an integrated medical institution encompassing outpatient clinics, medical research, and disease management. As part of its mission to “lower the burden of diabetes in the Dominican Republic,” the Center provides a variety of services—including advocacy, community awareness, and holistic prevention and treatment strategies—to meet needs of patients suffering from or at risk of developing diabetes.
THE FACILITY

CEMDOE presents a new business model that focuses on management of all aspects of diabetes, while reinforcing prevention, research, and education. The building is designed to fit the new operational model and the type of care offered, which focuses on supporting personalized patient transformation. To manage the disease and prevent its progression, patients will need to make key lifestyle changes, including nutrition and physical activity. This is why the facility is designed as a series of active pedestrian zones: the building and the landscape actively promote health and wellness.

“The [business] model calls for involving patients’ families and friends in their care program, it requires a constant flow of specialists to the patients, and creates an ambiance of comfort and tranquility so the Center feels like an extension of our patients’ homes,” says Armando Perez, project manager of MEDICALFOND. “The team did an exceptional job of ensuring the design of the building supported the business model.”

The facility is strategically positioned on the building site to create an internal courtyard, providing views to nature from the project’s public spaces. The entire design promotes...
physical activity and wellness. For example, the courtyard serves as a serene, meditative healing space in which patients can undergo physical rehabilitation and therapy. And inside CEMDOE, the waiting areas and main circulation are oriented to the courtyard to provide relaxing views and abundant, natural daylight. In addition, an open stairwell encourages patients and visitors to walk up it. The building includes light-infusing elements via light wells and skylights to create a bright, airy environment that elevates the emotive and physical experience of the patients and staff.

THE POD
It is critical to not only educate the broader Santo Domingo population about diabetes, but also to teach diabetes patients to manage the disease in order to live a healthier life. For these reasons, patients at CEMDOE are treated by a multi-disciplinary healthcare team that includes doctors, nurses, nutritionists, social workers, and psychologists. The design of the center supports this kind of team-based healthcare environment with a flexible and modular clinical pod, where diabetic and specialty clinics are co-located.

“All aspects of the building were designed to support our model of empowering our patients and encouraging family participation,” says Perez.

CEMCOE, through its proactive design in sustainability and its progressive business model, addresses a fundamental need in Santo Domingo that is consistent with the country’s reinvigorated interest in health and wellness. Through its sustainable design and active design elements, and its innovative pod concept, CEMDOE is able to anticipate the needs of its visitors, patients, and staff, all while tackling the diabetes epidemic and promoting healthy living throughout the Dominican Republic.

SOURCES


Tatiana Guimaraes, Assoc. AIA, is a Senior Associate in Perkins+Will’s Miami office. She can be reached at Tatiana.Guimaraes@perkinswill.com

Alejandro Branger, LEED AP BD+C, is a Senior Associate in Perkins+Will’s Miami office. He can be reached at Alejandro.Branger@perkinswill.com
Hospitals and airports have several things in common, including 24/7 stress and the practical demands of handling high throughput daily. Arrival, wayfinding, check-in, and waiting can set the tone for the entire experience. As with airports, three or more generations are now interacting with the healthcare environment, each with diverse expectations and demands. Airlines compete on brand and experience. The same is true for healthcare providers. This extends beyond the physical look and feel, to the creation of environments and services that support and encourage consumer loyalty, perception, and behaviors.

Largely enabled by technology, airlines have improved the user experience of arrival, check-in, and waiting. These new levels of customer service promote empowerment, allowing users to feel more in control of their environment. Patient experience is an important driving factor in the healthcare industry, as it is an increasingly important metric for Medicare reimbursement. As healthcare designers we must ask ourselves, in addition to HCAHPS Survey questions that are directly related to the perception of cleanliness and noise in the environment, what small improvements can help enhance this experience?
Waiting spaces can't continue to solely focus on capacity and throughput. Airlines are responding to this by beginning to offer diverse seating options and tech-enabled waiting experiences. They are realizing that an enhanced level of experience should not be exclusive to the business class lounge. The healthcare industry has cross-market influences, with hybrid environments that blend hospitality and retail with healthcare. It is time for designers to push further. Hospitality is about more than welcoming, residential-like seating and soothing lighting; it is about a seamless level of service that occurs in a relevant and timely manner. Airlines have reimagined the touchpoints of travel experience, some of which could have a positive influence on the waiting experience in healthcare. The following observations are four service touchpoints where healthcare designers could learn from the airlines:

**EXPEDIENCY**

*Technology enabled check-in and updates*

Remote, mobile, and self check-in at airports have become standard and are arguably more expeditious. Since nothing can completely replace personal service, airport staff has now moved out from behind the large check-in desk, to circulate amongst the kiosks. Thus, self check-in has automated the process and allowed for more staff to focus on direct customer service. Consumers are beginning to expect these seamless, tech-enabled services and processes in all aspects of life.

Healthcare institutions should seek to expand and adapt to our technologies. The ability to check-in for appointments remotely, or at a kiosk upon arrival, and receive status updates via app or sms could expedite and shorten the amount of overall time spent at an appointment, and eliminate the gap of time between arrival and being seen, which is especially relevant when timing is crucial.

**DIVERSITY**

*Settings to support needs and emotions*

Tandem seating may seem more efficient but studies have shown that only 80 percent of this type of seating is used, as the tendency is to leave a gap for privacy, or use an adjacent seat for belongings. Traditional seating that is designed to ‘pack them in’ does not provide enough space to be alone, gather with family, or conduct work. It is important to remember that ultimately we are designing for people, and not for requirements. Rather than maximize capacity, how can the diversity of waiting environments improve the experience?

Airline gates are beginning to replace the rows of tandem seating with lounge furniture, and multiple modes of seating types. These varied seating arrangements support postures associated with our portable technologies, such as tables or armrests with abundant power to keep devices charged, and even collaboration or family spaces in booth-type settings. These changes have largely been furniture and technology improvements within the same footprint that previously housed traditional rows of airport seating. Diverse offerings make users feel more relaxed and in control, while allowing for both separation from others and closeness with companions.

In a healthcare setting, providing varied furniture to support diverse postures and settings can improve communication and social support for family groups, or provide spaces for those who need to be alone. In certain cultures, the healthcare process involves greater numbers of family members. The design of waiting areas should consider more varied, flexible groupings that accommodate diverse needs to support conversation, work, or privacy. The design and planning of waiting spaces must shift the focus away from pure efficiency towards variety, choice, empowerment, and flexibility. It is important to remember that ultimately we are not designing for seat counts, but rather for the people who inhabit them.

**ACCESS**

*Bridging access to amenities*

As technology has increased the demand to become more accessible, it has also made us more demanding as consumers and changed our definition of the quality of experience through the convenience that it affords. Spaces must evolve to support changing behaviors and needs. We see this happening in other aspects of our lives. Spaces are becoming more flexible, convenient, and accessible, particularly with the food service and retail gate experiences during air travel. Airports are incorporating dining experiences that are more open, offering views down the concourse. Users are also less visibly and audibly separated from the gate, and can pause to dine or shop while still keeping an eye on where they need to be. Gates now provide iPads that can be used for checking the status of flights or ordering food and other items, which can be brought right to your seat.

For a healthcare waiting environment, tablets with educational apps related to health and wellness could replace the piles of outdated magazines. These could be curated to showcase the latest in health driven consumer apps or to make use of the endless other multimedia sources available to explain conditions, treatments, and prevention. In the average clinic visit, 20 minutes are spent waiting
versus 10 to 15 minutes of actual appointment time. If the waiting experience could leverage technology as an education tool, it would be time well spent, and patients could arrive to the appointment more educated and more prepared.

**FLEXIBILITY**

**How you choose to wait**

We talk about the integration of health and wellness into lifestyle, but we should also consider how healthcare can adapt to the lifestyle of the user. We are tethered to technology; our life doesn’t have to shift modes once we enter the healthcare environment, as a patient or a companion. As technology has evolved from a merely work tool to an enabler of access and convenience in nearly all day-to-day interactions, it has changed our expectations as consumers, and the healthcare user experience largely falls short of these expectations.

Airline apps enable users to remotely purchase flights, check schedules, and receive updated information in real time, therefore allowing for more options of where to wait. Travelers no longer need to sit at the gate to know that there’s been an update in flight status. Since the act of waiting no longer needs to be confined to a waiting room, this significantly impacts planning metrics. If patients and family did not need to be within earshot for appointment notification or a status update, but could instead receive a notification through mobile technology, users would be empowered with a choice of where and how they wait.

While there is an ever-increasing shift towards health apps, and the wait time may already be dropping, for certain chronic or extreme situations it will be quite some time before it can completely disappear. It is not always possible to predict how long you will wait for an appointment, or how long you will wait to hear news about a loved one, but we can start to take back control of how we wait. One way is by making waiting spaces meaningful, the moments from appointment through seeing caregiver and in between, providing the virtual and physical space to support improved experiences.

**SOURCES**

https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/HospitalHCAHPS.html

http://www.hcahpsonline.org/files/March%202016_Survey%20Instruments_English_Mail.pdf

---

Brooke Horan, IIDA, LEED AP, EDAC, is a Senior Associate and Senior Interior Designer in Perkins+Will’s New York office. She can be reached at Brooke.Horan@perkinswill.com
Furniture is an integral part of most healthcare projects, providing comfort while expressing a message of optimism in waiting areas, facilitating the communication between physicians and patients, or providing staff members extra support in their tasks. Furnishings complete environments for health in ways that go well beyond appearances. That said, in the recent past most healthcare furniture had an instantly recognizable aesthetic, more unwieldy and less refined than other market’s counterparts. Brochures targeted for healthcare interiors often showed a range of colors, finishes and functional features that did not consider aesthetics or innovation as part of their offering. Today, with a wider range of suitable choices, creativity and programmatic understanding, it’s possible to specify products that not only satisfy practical considerations, but serve more nuanced needs, while remaining visually pleasing.

Large manufacturers, known for products that target the workplace, are expanding to provide rich options for the healthcare market. At this year’s NeoCon, an increasing number of exhibitors offered healthcare solutions. Some of the trends in the expo ranged from waiting area furniture that supports a more active and transitional environment, multi-purpose seating that improves patient’s engagement, and flexible casework products that not only deliver more consistent quality components, but also provide financial benefits like longer warranties.

In a market that hopefully will continue to challenge and reimagine conventions of the past, it’s important for designers to keep an eye on what drivers can inform our furniture specs so that creative and functional solutions can be achieved outside the typical healthcare mindset. Below are some considerations that can make the process more efficient.

**KNOW YOUR CLIENT**

Gathering data related to furniture from the client side early can considerably focus our options from the outset. Standards and guidelines, as well as buying agreements—which are common between large medical systems and manufacturers thanks to the deep discounts the latter can offer—need to be quickly assessed. Furthermore, an understanding of the brand identity of the facility will
guide furniture and finish selection, while also helping to determine how comfortable the client would be with the integration of more unconventional pieces among the more clinically-driven ones.

It’s important to collaborate with users to identify key furniture pieces in our designs. Items like a sleeper sofa can generate a lot of discussion and impact patient satisfaction scores further down the line. These items will require more extensive research and legwork from designers, in addition to the coordination involved in securing samples for testing. According to Robin Mutz, executive nursing director, Women’s and Children’s at the Medical University of South Carolina (MUSC), the feedback most heard is about family sleeping accommodations: “Our most frequent complaint is that sleeping couches are not comfortable. They are too short, too small, and hard. In a Children’s Hospital, we often need two sleep spaces for a parent and another person. Trying to find attractive, concise furniture that can serve a multifunction purpose is very difficult.”

**KNOW THE PATIENT AND FAMILY**

Furniture will change dramatically depending on the facility type. Children’s hospitals present design challenges related to scale and proportion, and even the need for sensory experiences such as toys in bright colors that spin, bounce, or make sound. Facilities for more aging populations will require different accommodations like firmer cushions, arms that extend to the front of the seat to support the weight of users who lean on them to stand or sit unassisted, and more generous seating heights.¹

Attractive, functional pieces with good storage, device outlets and comfort are key requirements. From a cleaning perspective, they must have cleanable surfaces without too many crevices that harbor germs and bedbugs,” said Robin Mutz.

**KNOW THE STAFF**

Staff experience and efficacy can be greatly enhanced depending on the type of furniture solutions used in their work areas. In the same way that office environments are constantly reimagined and questioned by designers (and the media), the workplace for nurses, physicians, and other health professionals is evolving. Furniture solutions for nurse stations and workrooms can diverge greatly from one another, some creating hubs where different members of the facility can meet and discuss patients’ progress, as opposed to other neutral touchdown spaces where online consulting and even the use of props could take place.

With the rise of technology such as tablets and telehealth, older furniture layouts where clinicians had their backs to the patient and family members have been replaced by models in which eye contact is kept and the consultation process seems more double-sided and less intimidating.

**IDENTIFY KEY SPACES**

Certain areas may lend themselves to more adventurous furniture selections in order to reinforce design concepts and/or the theming of departments within a facility. In MUSC Shawn Jenkin’s Children’s Hospital and Women’s Pavilion, waiting lounges are metaphors of Charleston’s historic courtyards, forming zones which allow for different modes of waiting, such as active play, family groupings of different sizes, and sheltered seating for introspection.
ERGONOMICS
Caregivers can receive major strain over their bodies while supporting patients in transferring, walking or standing for considerable amounts of time in their shifts or by sitting for long periods of time while entering patient data. The Occupational Safety & Health Administration (OSHA) has listed a variety of recommendations that could help making the latter less taxing on any workers body. Chairs should include soft armrests, five-leg bases with casters that allow easy movement, and a backrest that conforms to the natural curvature of the spine and provides adequate lumbar support. Desks should allow to place monitors directly in front of the user at least 20 inches away and provide adequate leg space free of clutter that could limit mobility.

PERFORMANCE
In healthcare settings performance will always be prioritized. According to MUSC’s Robin Mutz, “Furniture is difficult to clean and wears out too quickly because stains do not release and it always appears dirty.” BIFMA’s “Health Care Furniture Design - Guidelines for Cleanability” is a resource that numbers a variety of considerations related to cleaning that can help us vetting our furniture specs. Among these, some of the most prevalent are:

- Avoiding joints and seams that create organism reservoirs and bacteria
- Avoiding joints and seams that create organism reservoirs and bacteria
- Furniture with a space between chairs’ backs and seats to facilitate cleaning
- Using sealed zippers to minimize liquid penetration into the cushions
- Favoring impervious upholstered surfaces in patient care areas

Safe bariatric seating that evenly distributes the patient’s weight is also an important factor that can significantly impact performance. As a rule of thumb, in most waiting areas one bariatric seat should be allocated for every 10 seats, and while no universally accepted standard has been developed yet, typically furniture manufacturers list that their bariatric chairs will hold between 300–400 lbs.

MATERIAL HEALTH
Material health is another key element while selecting furniture, as it should be every designer’s commitment to avoid specifying products that contain substances damaging to human health or the environment, like asthma triggers and carcinogens. Perkins+Will’s Precautionary List identifies many of these ingredients based on information from multiple regulatory entities. Selecting manufacturers committed to sharing material health information through Healthy Product Declarations (HPDs) or other methodologies –allowing us to look for these harmful substances in their products- can play a big part in narrowing our furniture search.

While specifying furniture designers should be on the lookout for graded upholstery options that are PVC-free (impervious fabrics like polyurethanes are great alternatives to vinyl), and avoid the presence of harmful flame retardants, which have been associated with diabetes, cancer and reproductive health effects in upholstered furniture.

THE FUTURE
Healthcare furniture offerings continue evolving and adapting to new needs. The presence of charging plugs in side tables and seating is an example of a design element that has been quickly adopted by the industry, to the point that it’s starting to feel like a standard for waiting lounges. What other features could the industry be looking at to adopt and integrate as fast?

As designers we can help to drive this conversation. If something that the client needs doesn’t exist, some manufacturers are open to creating custom pieces that may not be cost prohibitive. These collaborations can ultimately lead to realizing spaces with furniture that has an optimized balance of performance and aesthetic value.

SOURCES
5 http://transparency.perkinswill.com/Home/PrecautionaryList

Antonio A Rodríguez, LEED Green Associate, is an interior designer in the New York Perkins+Will office. antonio.rodriguez@perkinswill.com
Paints, countertops, fabrics, furniture, hardware—virtually any product considered an interior finish—may contain antimicrobial additives. These agents are considered pesticides and are regulated differently depending on whether they are added to control disease-causing germs or used to preserve the product against decay. There appears to be an increased use of these additives that exploits a complex regulatory system, resulting in biocides that are incorporated into products solely to play on the mistaken belief that antimicrobial products are superior to standard ones. It is incredibly difficult to identify these additives, creating a hurdle for the informed selection of products with reduced negative impacts.

It needs to be stated clearly that no evidence yet exists to show that interior products incorporating antimicrobial additives designed to curb disease actually result in healthier populations. But there is plenty of evidence that antimicrobials can have significant negative impacts on people and the environment. Widespread use of these substances has become associated with a microbial resistance known as superbugs. It is becoming apparent
that these additives migrate from products and find their way into wastewater systems and the larger environment, with causing ecological implications.

Credible organizations question the merits of products that make health claims. Despite the high rates of potentially lethal1 infection endemic to hospitals, the Centers for Disease Control still conclude that products treated with antimicrobial additives are an unnecessary component of a hospital’s infection control program. Kaiser Permanente has directed their own operations teams to avoid the use of added biocides in construction and renovation projects. Why, then, would these products be necessary in any other building project where serious infectious germs are far less likely? The short answer is they’re not. The longer answer requires a deep understanding of the reality of antimicrobials. Biocides vary in their specificity; some are effective against a wide variety of bacteria while others are only effective against fungi. A biocide will not affect microbes that it does not target. For example, an antibacterial additive will not destroy a virus.2

Another complexity is that antimicrobials are by definition pesticides.3 In the United States, the Environmental Protection Agency (EPA) regulates antimicrobial agents used in building products under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). FIFRA defines a pesticide based on the function the substance provides to a product. For example, nano-silver is classified a pesticide on a case-by-case basis,4 despite the fact that the toxicological profile of the substance does not change.5

The final twist is that the EPA further differentiates products incorporating these ingredients based on whether the product aims to protect the public from germ-caused illness (making a health claim), or whether the biocide is added as a preservative (treated article exemption). This distinction is an important one, because a manufacturer making a health claim about a product must abide by strict advertising limits. Conversely, manufacturers of treated articles are essentially free to advertise these as they see fit, as long as they refrain from making a health claim.6 Lastly, the EPA does not evaluate treated articles for their health and environmental impact, nor are claims made about their ability to control target organisms verified.7

Misplaced consumer confidence in antimicrobial products has created a market incentive for these additives. The treated article exemption offers a legal pathway to do this. Microban highlights a case study on its website where a manufacturer “looking for a way to innovate and differentiate from their competition,” incorporated an antimicrobial ingredient into its engineered stone countertop product. The countertop company saw a 38 percent rise in annual revenue and a 48 percent increase in market share.8 The product literature boasts that this is the only countertop on the market with built-in antimicrobial protection, which battles odor-causing bacteria and stain-causing mildew.9

When reviewing these types of claims, one must question whether or not this additive is a solution for a real problem. In other words, are countertop odors and mildew buildups a problem commonly cited by end users?

Given the human and environmental impacts that these pesticides carry, their ability to leach out of the products in which they were incorporated, and indications that they contribute to antibiotic resistance, it is difficult to justify using these products in interior environments.

In theory, several of the most popular disclosure tools in the building industry should allow specifiers to determine if antimicrobials are used in a building product.

- The Pharos Project database, Health Product Declaration, and the ILFI Declare label program all require that every intentional ingredient be itemized in order to earn full disclosure status.
- Safety Data Sheets require disclosure of all hazardous ingredients over 1 percent of the product composition, or .1 percent for ingredients with specific hazards.10

However, in practice these programs can, and often do, miss antimicrobials, especially those added further up the supply chain. For example, a preservative incorporated into a nylon fiber might not be reported or even known by manufacturers using it in an assembled carpet.

These existing platforms intended to inform do not guarantee disclosure. Governmental registration is complex and opaque, and publicly available resources are not able to fill in the gaps. The lack of transparency about biocide use and the apparent lack of antimicrobial-free alternatives makes these substances difficult to control on projects.

When antimicrobial products are suggested, or found in any product specification, the designer should see a red flag. If the antimicrobial functionality is optional, opt out.

Ultimately, the decision to include these products is at the discretion of our clients. The intentional use of antimicrobials in building products beyond what might be required for product preservation, in our opinion, should be avoided. Many of our clients request antimicrobial qualities for products we select; as trusted advisors to our
clients, it is our responsibility to provide information on the pitfalls of antimicrobials and lack of proven benefit to the healthfulness of spaces.

SOURCES


Suzanne Drake, LCID, LEED® AP ID+C, EDAC, as Co-Chair of the Material Performance Lab, leads Perkins+Will’s efforts to understand, educate, and advocate around issues of toxic building materials. She can be reached at Suzanne.Drake@perkinswill.com

Melissa Coffin, Operations Manager, Healthy Buildings Network (HBN), is responsible for leading the development of various research projects, including the Building Products Library of the Pharos system, and works with the HBN research team to identify the composition of various building products and materials, and engages with manufacturers to expand HBN’s understanding of industry practices.
How does one create a delightful pediatric experience while serving the needs of those children who may be hypersensitive to environmental stimuli? While working with the Medical University of South Carolina for design principles for the MUSC Shawn Jenkins Children’s Hospital and Pearl Tourville Women’s Pavilion, their hospital leadership aspired to become the most “Autism-friendly pediatric hospital in the country.” Naturally when we were first faced with this challenge, we found a conundrum. “How do we create a space that are not overly sensory-provoking, but still a wonder-inducing and appropriate for all children?”

Autistic Spectrum Disorder (ASD) is a developmental neurological disorder of unknown cause which affects sensory modulation, verbal and nonverbal communication skill, cognitive skill, and control of a habitual behavior. It manifests itself mostly in children aged 3–5, in greatly varying degree with different conditions. CDC reports that there are one in 68 8-year-old children with ASD in the US currently, as opposed to one in 150 in the 2001 report.¹ This dramatic increase could be attributed to more diagnosis given due to increased awareness in recent years, or actual increase in number of cases due to unknown modern environmental factors. The debate for the causes continues, while it is inevitable that this is becoming more integral issue for the everyday setting, not just in the special-needs education or home environment.
As awareness increases, society is adjusting to integrating people with ASD and helping them access standard joys and comforts of everyday life. For example, Theater Development Fund (TDF) of New York City has organized Autism Theater Initiative since 2011 to host “Autism Night” showing of plays and musicals with lower sound volume, with lights on in the audience, and the coordinators and “break rooms” available in the lobby. AMC offers similar special showing for the children’s movies. Several major airports offer simulation program for the passenger with ASD to have a walk-through with the specialist ahead of time, so the environment which is stressful even for the neuro-typical population, would be more tolerable during the actual travel.

Since the ASD patients are most affected by environmental factors, it is important for Interior Designers to be aware of what to keep in mind, especially in the hospital environment, to be able to accommodate the particular needs of patients and caregivers, as well as allowing the nurses and the physicians to provide uncompromised quality healthcare.

CHALLENGES
The study of Autism has a relatively short history, and the ones focused on environmental factors are even shorter. Most of them are concentrated on the educational environment, and even within this limited category the findings are far from conclusive. Some studies say a high ceiling is disruptive, while others say a low ceiling is disruptive. To add to the complication, people with ASD are often hyper-sensitive to one sensory while hypo-sensitive to the other, and the combination and the degree of severity are infinite. It is a stereotypical view of autism to dislike being touched, however in some case they cannot have enough of it. Also as it is called “spectrum” disorder, the degree of their functioning varies greatly. The complexity of this issue makes it particularly difficult to provide designers with some set of guidelines.

Still, some of the research for therapy and the educational environment are helpful in gaining insight such as Dr. Magda Mostafa’s 2008 study. When we reference these studies, we must understand that the educational environment sometimes intentionally challenges the comfort level of the student in order to acclimate them into the real world. In healthcare setting however, the focus might be shifted more towards making sure there are no factors to trigger panic, meltdowns or self-destructive behavior. These children are often in the hospital for non-neurological treatment and already in pain or discomfort, and definitely in a fearful, stressful situation. As parents of a neuro-typical child might try to pamper the child to soothe them, our focus on the design solution for the autistic patients should be paid towards how to avoid sensory stressors from environment, and should the panic happen how the architecture and the operational protocol can assist alleviating the condition, and how the families and caregivers can find the assistance readily available.

CONSIDERATION FOR SENSORY STRESSORS
Visual
It is understood since early on that fluorescent lighting effects the autistic population negatively due to the flickering, which is almost invisible to neuro-typical eyes. Also the almost inaudible hum of the ballast can be excruciating to some with hypersensitive ears. Using LED lighting is a great solution to this problem. The indirect lighting or repressed housing, wall grazer are favorable, because the glare from the visible light source can also create too strong a visual contrast which can be a trigger. Wherever you can the dimmable switch should be incorporated to adjust to varying tolerance of the patients with ASD.

Although physiologically speaking the natural light is beneficial to the early recovery, the strong glare and contrast from it can have equally negative effect. Shading should be incorporated, and if the switching is sensor-based, an option for manual control override should be provided.

The use of strong colors and contrasts can upset some of the patients with ASD. The patterns or expressed seaming of tiled product can be positive distractions, or can trigger their pattern-obsessive tendencies. This does not necessarily mean that everything has to be solid gray. Some color can be helpful for identifying the environment if it is within their comfort level of intensity. The colors can be selectively used where there are options. It could be in furniture, or in a nook in the waiting area. Selecting colors in the finishes and the location that can easily be added or changed later such as paints, rather than in the semi-permanent architectural features would be a good approach. Since the recent trends of the children’s residential furniture or product design are stepping away from the explosion of primary colors in favor of more sophisticated and curated palette with mix of natural textures the consider wider age groups and demographics, this ASD-friendly palette could work in alignment with this strategy.

Visual clutter can be debilitating to the autistic patients. In order for them to become comfortable in the environment, they look for its patterns and familiar attributes. Simple recognizable shapes and color can help them become familiarized with the environment. However,
if the familiar exam room has equipment in a different place they might as well be in yet another unknown environment since they have difficulty deciphering and giving hierarchy to the information they take in. This can trigger anxiety and a panic.

**Auditory**
Good acoustics are imperative. The subtle echoes, hums and beeps of equipment, footsteps and unrelated paging announcements can all add up to be too taxing to decipher for the sensitive nerve of an autistic child. The sound-absorptive surfaces as well as sound separating structure should be incorporated carefully.

Attentions should also be payed to removing the noise makers that might not be too bothersome to neuro-typical ears, such as automatic toilet flushers, a hand-blower in the restroom, automatic paper-towel dispensers, push-plate type door handles, the ticking of the clock, or the hum and rattling of the air conditioning. It might not be possible to really replace all of them with alternate solutions for budgetary or operational reasons, but it is worth evaluating.

**Olfactory**
There have been studies that implicate the tendency of ASD children to have immune system problems. The autistic population might not be able to cough up, or hold breathing to deter an unpleasant smell from coming into their systems. Designer should make a conscious effort in specifying low- or no-VOC finish products and coatings as well as eliminating the products that require high-VOC products for cleaning and maintenance.

**Tactile**
Providing opportunities for variety of tactile sensations can help to provide positive distraction. The placement should be intentional and strategic, so the texture that can be cleaned and disinfected, durable and safe for the patients. Some find a calming effect in a swing, or weighed blanket, or a beanbag. It is useful to have them readily available.

**ARCHITECTURAL & PLANNING CONSIDERATIONS**
Predictability is consistently noted as a key to providing the autistic people with sense of security. Well-organized floorplans and clear wayfinding is helpful for the autistic patient to be able to see where they are taken to without having to turn so many corners and face yet another unknown. The master-planning of Camp Southern Ground, a campsite in Georgia designed to be autism friendly by Perkins+Will, is organized around two orthogonal spines, with sub-divided areas with coherent themes arranged along them.

Having a secondary route mapped out for the children particularly averse to the crowd to be able to skip the possibly overwhelming lobby or waiting area would be effective for a large healthcare institution as well. MUSC
The team is considering the creation of a fly-through of the access route to the departments and check-in process on the website or with the tablets, so the patients can be prepared in the comfort of their home or car.

The plan should account for small “safe” areas where the patients can be mentally prepared between the change of scenery, or in case of panic episodes, duck in and be away from any possible sensory triggers and objects that might be harmful.\footnote{15}

Portable sensory equipment is a great way to bring relief to a distressed ASD pediatric patient. MUSC has had success in providing a special machine to engage these children. It typically has color changing light emitting through water bubbles in an enclosed pipe or fiber optic strands, and sometimes has projector casting waves or a star-like pattern on the walls and ceiling. They are child-safe and able to be disinfected. These could be stationed in the “safe” rooms, or wheeled into the bedrooms to provide them with positive distraction.

**OPERATIONAL APPROACH**

Although it is effective to address ASD with the design of the environment, it is equally critical to map out how to navigate the ASD patient through the environment operationally. Nemours Children’s Hospital in Orlando, Florida has set up one of the first programs for an Autism-friendly Emergency Department by training the nurses with the protocol to guide the patient through the process based on the severity of spectrum, how to use communication tools loaded on tablets, and how to treat the parents and caregivers.\footnote{16} It is important to engage the hospital team as the design develops, so the design can appropriately assist their effort, while the intent of the design to help Autistic patients can be maintained in post-occupancy.

**CONCLUSION**

Many of these recommendations for an ASD-friendly environment are just as beneficial to almost all children, as all of them are sick and scared of being in an unfamiliar environment, and witnessing equally nervous parents. Of course, it creates limitation to some type of design traditionally considered as child-friendly, however the designers should consider this as a welcome challenge to explore beyond what is expected, and provide creative solutions to the future of pediatric healthcare design.

In his essay “The Reason I Jump,” which is considered the first bestselling book told first-person by a person with a severe non-verbal autistic case, 13-year-old Naoki Higashida has given us the first glimpse into the very rich, sensitive and emotional inner-world of the autistic people that had been inaccessible to most of the world, let alone to their loved ones. He says, “The hardest ordeal for us is the idea that we are causing grief for other people.”\footnote{17} This is eye-opening in the sense that the grievance, judgement, and non-acceptance is not benefitting anybody, while empathy can be a powerful tool in dealing with the population with...
autism and their brave families who are in it with their children. Architects and interior designers have the rare opportunities of putting themselves in the shoes of other people, and solve the untold problems. As the autistic pediatric population grows up and integrates into broader society, there will be broader possibilities and responsibility for the designers to open their senses, and seek the environmental dog-whistles in this sensory- and information-overloaded world.

SOURCES:
2. Theatre Development Fund website: https://www.tdf.org/nyc/40/Autism-Theatre-Initiative
8. Paron-Wildes, A. J. 2013

“Aiko Tanabe, NCIDQ, LEED AP, is an Interior Project Designer in Perkins+Will’s New York office. She can be reached at Aiko.Tanabe@perkinswill.com”

“Sensory” medical equipment demonstrated by MUSC staff.

Photo: Aiko Tanabe
DESIGNING FOR HEALTH
HOLISTIC HEALTH AT THE COMMUNITY SCALE
Daniel Windsor, AICP, PP, LEED® AP BD+C

THE NEW REALITY OF HEALTHCARE DELIVERY
According to the Centers for Disease Control and Prevention (CDC), chronic diseases are responsible for seven out of ten deaths each year, and treating people with chronic diseases accounts for 86 percent of our nation’s health care costs.¹

As outlined in the Patient Protection and Affordable Care Act, healthcare delivery is shifting from a fee for service model to a holistic preventive and population wellness focused model. This paradigm shift has created a ripple effect across many scales. It still focuses on the individual’s health but is also much more attentive to what makes us sick, where sicknesses occur and how to prevent it.

Evidence shows that our behaviors and built environments can contribute to up to 70 percent of our overall health.

And this is changing for young and old, in a recent New York Times article it describes how as the country ages, walkable compact neighborhoods are becoming a new trend to create healthy and socially cohesive senior focused communities.²

Beyond hospitals, clinics and medical campuses are in the distinct position to contribute to the overall health of a community. They are civic anchors and are fundamentally committed to the communities they service. They are a beacon of health and wellness and a display of local identity.

How they chose to be physically part of the fabric can determine whether there is isolation or continuity and set a tone for continued health beyond the hospital. They can be a catalyst in the local economy, as suppliers and purchasers

Sea View Healthy Community. A senior-focused, wellness based, mixed-use community at Sea View. Providing a framework for a health-focused lifestyle that capitalizes on existing site assets and the proximity to the second largest contiguous park land in New York City. NYCEDC, Staten Island Borough President’s Office, NYC HHC with Perkins+Will.
of many things. They are large employers and can influence daily habits of a workforce beyond just the patients. They are often large holders of real estate inside and outside of a campus and therefore have a physical reach and influence well beyond their walls. How these institutions expand this role as a community influence will be critical as we move toward a more holistic approach to health and wellness.

HEALTH AND WELLNESS FOCUSED COMMUNITIES
Communities are a confluence of so many things: people, infrastructure, history, culture, housing, food, open space, streets, jobs, social interaction, and so on. All of these factors converging together ultimately have a direct impact on who we are inside and out. Research efforts have delved into understanding how our built environments affect our health and how as designers we can begin to positively contribute to this. For example, in 2013 the Urban Land Institute launched it’s “Building Healthy Places Initiative” that outlined over 20 recommendations across three themes: physical activity, healthy food and drinking water, and healthy environment and social well-being. The Centers for Disease Control and Prevention created a Parks, Trails, and Health Workbook which is a quick guide for incorporating public health considerations in the development and improvement of a park or trail. Our built environments are crafted by public and private development, community plans, visioning, zoning, design guidelines, urban design, and public policy. These are distinct moments where health and wellness focused thinking can be ingrained into communities.

The way a community and its systems are designed and planned can create an environment that increases our health and wellness. Communities can offer a variety of housing options with a mix of complementary land uses oriented towards walkability. They can support multigenerational populations and encourage aging in-place. Healthcare can be integrated into the fabric of the neighborhood and become an extension of our everyday lives. Development and hardscape can be offset with useable open space and access to larger trail networks. Clear, easy and enticing active design can be incorporated inside and out to encourage movement. Local and healthy food can be established as a standard and woven into everyday life. These communities can increase physical and visual access to nature and prioritize social engagement. These communities can increase physical and visual access to nature and prioritize social engagement. They can be beautiful, inspiring places that invoke pride and opportunity.

THE IMPORTANCE OF PARTNERSHIPS
While the realignment of healthcare delivery puts a larger emphasis outside the walls of a healthcare provider, these systems can’t do it alone. They are a single partner within the community and while influential their reach and resources are limited. A larger network of partnerships can have an exponential impact to address population health and wellness. If we think back to all of the various systems that make up a community and the numerous agencies, organizations, and programs that touch each and every one, we begin to imagine a much more unified approach. Religious organization, research centers, local schools, neighborhood organizations, universities, developers, government, grass roots groups, insurance, and foundations—just to name a few—are all in some way impacting our communities as well as our health and wellness. These groups’ agendas and resources often overlap. By aligning goals and focusing resources, this network can have a sustainable and meaningful influence. For example, Detroit Public Schools are integrating farming into curriculum by working with local businesses and the farming community to engage, invest, and provide healthy food to combat childhood obesity.

Baton Rouge Health District. Sponsored by the Baton Rouge Area Foundation, the vision for this master plan is a world class, high-performing health destination at the heart of a healthy walkable, cohesive community.

Many forms of public policy and programs have been implemented but they are often fragmented or underutilized. For example, the Healthy and Sustainable Food for San Francisco Program provides tax incentives and development bonuses to promote regional agriculture and economic opportunities to encourage access to healthier foods. In New York City, VisionZero sets out to make streets safe and end traffic deaths and injuries. The list of public health
and wellness programs and initiatives is extensive across the country, but unfortunately, there are rarely overarching structures to include a more holistic approach and as a result these programs are applied as one offs and isolated fixes.

Public and community agencies are the gatekeepers for truly creating transformative and progressive health and wellness focused communities. A single hospital or developer reaching out to various partners is often seen as self-serving or part of brand strategy. It is limited by its resources and often begins and ends with their sites and bottom lines. But if a city agency takes the lead on choreographing a health focused community it becomes a culture, an open door for opportunity and sets the tone for a community and policy. A healthcare provider becomes a key partner but isn’t left to lead the charge alone. A city agency can establish design standards and performance requirements that directly impact our health. They can subsidize land and rents to attract key partners and they can reward users and owners through tax incentives, development bonuses and open funding streams at various levels.

OUTSIDE INSIDE PATIENT EXPERIENCE

If the delivery of healthcare begins long before you arrive at the doors of a hospital, shouldn’t the patient experience also be rethought to begin long before you arrive at the doors of a hospital? As we broaden our approach to health and wellness, we also need to broaden our approach to partnerships and the physical manifestation of our communities that ultimately dictate our longterm wellbeing. This means that before we ever get sick our healthcare delivery should be integrated into our everyday lives. Its present in our homes, it’s in the food we eat, it’s on the walk down the street. It’s a culture and lifestyle that extends into our streets, leads to the front door of the hospital and follows you throughout your stay.

Imagine connecting with your doctor virtually in the comfort of your home, walking along beautiful tree lined streets, arriving at entrance to your hospital at the same plaza that hosts a weekly farmers market, walking through a lobby that doubles as a community gallery and event space, seeing your favorite walking trail outside the window of your room, eating a delivered meal from your favorite health cafe. A seamless progression designed to reinforce your wellbeing. For a long time, patient experience has taken a back seat to the science and logistics of medicine. As we refocus our healthcare delivery lets be sure the patient experience is considered at every turn.

SOURCES:
1  http://www.cdc.gov/chronicdisease/index.htm

Daniel Windsor, AICP, PP, LEED AP BD+C, is a Senior Urban Designer and Senior Associate in Perkins+Will's New York office. He can be reached at Daniel.Windsor@perkinswill.com
THE NEW REALITY OF HEALTHCARE DELIVERY
The ultimate goal for a successful healthcare facility is to improve patient outcomes, while making the experience positive for staff, visitors, and patients alike. Some of the key considerations during design, planning, and visioning sessions include implementing a successful workflow to increase staff efficiency while encouraging staff collaboration and reducing staff travel distance and the risk of healthcare acquired infections. Achieving these objectives while also enhancing patient, family, and staff experience can be quite an intricate process as we begin to shape interior spaces. It is imperative that all members of the team are involved throughout this process in order to achieve that ultimate goal of the best healthcare facility possible.

DESIGN WITH PURPOSE
Holistic design is not just a linear approach. By setting up project goals and guiding principles during visioning sessions early on, they will become the main driver for functional design and a greater reminder of the client’s needs as we put together the design concept, space planning, materials palettes, and FF&E selections. This allows the designers to make each design movement with a purpose, always circling back to design principles interpreted based on established project goals and guiding principles. Eventually, when it comes to budget review and the inevitable value engineering session, these guiding principles will serve as design tools throughout the course of project whenever a cost reduction decision shall be made without compromising the integrity of the design. Further along in the construction phase of a project, it can be helpful to review the original project goals in making decisions during the fast-paced nature of this part of the project.

EARLY INTEGRATION
Holistic Design and team collaboration can advance not only the interior design of a project but also the patient and family experience, while improving working conditions for hospital staff. Forming an interdisciplinary project team is the key to a successful project. Engaging all members of the team early on can inform the process and enhance design through different perspectives.

During the schematic design process on a recent healthcare project in Seattle, the team realized that due to many factors, including a desired number of patient rooms, critical circulation paths, and a connection to an existing building, the waiting area for the surgery floor would be too small to accommodate the number of patients and visitors needed. Fortunately, since the interior design team and planning team were engaged and working together early on, they collectively—along with the structural engineer—were able to work together to solve this problem by creating a small mezzanine area overlooking the main waiting area. Through
the collaboration of the team members, the overall design was improved, along with the functionality of the space.

**ESTABLISHING A HEALTHY WORKFLOW**

It is important to understand, respect, and utilize everyone’s expertise. Being familiar with available resources within your own organizations, clients and consultants, as well as industry partners, will save time on research that might have already been done. A face-to-face meeting is often the most productive and successful way of communication because it allows you to detect non-verbal cues and boost collaboration.¹ This is not always practical; hence the use of technology in enhancing team communication is crucial. Tools that provide video and voice conferencing while sharing screens can help a team come together to look at the same plans or renderings even when not in the same room. Learning to take advantage using different time efficient means of communication channels to collaborate is extremely important especially since some of the responses are time sensitive in our industry.

This communication should begin early on in the project. Often the process of incorporating interior design occurs late in the overall design of a healthcare facility and focuses mainly on the design of public spaces. Involving the interior design team early on, in close collaboration with the medical planning team, can help shape spaces that feel like part of a holistic building, public spaces, and clinical spaces as a whole. The interior design of the patient care spaces can perhaps be even more impactful, helping to decrease patient stress and anxiety, and improving hospital staff environments.

Obtaining a deeper understanding of medical planning to increase the effectiveness of interior design in a healthcare built environment is one of the key factors to a better design process. Understanding essential department adjacency and workflow, primary functions of each space, and basic knowledge of medical equipment placement can significantly reduce time to re-design and re-planning and allow more time to focus on details.

**BLUR THE LINES BETWEEN PUBLIC SPACES AND CLINICAL SPACES**

During the design and planning process, the design of public spaces may seem like a lower priority to medical planners at times and the design of clinical spaces may seem to be a lower priority to interior designers, but both are critical to the overall experience. A truly well-designed facility will feel as though it is designed as one cohesive architecture. Public spaces serve as the first impression to family, patients and staff to experience as they enter a healthcare facility. It is a space to connect with community and cultural experience and an extension to a social and healing environment. Accessibility for public spaces means more than just barrier-free and bariatric design; “it is a multi-dimensional concept that ranges from the physical spatial-temporal context to the social and virtual one and that of information and transportation”.² The same considerations used when planning clinical spaces should not be overlooked as we are planning public spaces. Here are some of the design & planning factors to think about during design process:

- **Branding, Wayfinding and Artwork:** create subtle, clear and intelligent solutions to ease the stress of accessibility traveling from one space to another.
- **Lean Design and Evidence-Based Design:** standardize room placement to reduce medical error, reduce caregiver burnout and increase efficiency.
• Acoustics – understand and review STC, NRC and CAC factors. Identify program workflow and design acoustical treatment solutions to support family, patient and staff interaction patterns in order to increase patient recovery rate and reduce stress.

• Material Health & Healthy Product Declarations (HPD) for a healthier hospital.

• Color and materiality consideration for different healthcare facility settings.

• Design with Flexibility and enhance ergonomics: utilize a modular system to optimize staff interaction and reconfiguration possibility to adapt changes. Use height-adjustable furniture to meet personalize need.

• Lighting to provide visual comfort, enhance staff productive and speed up patient recovery rates.

• Mockup & Simulation to help end users to understand clinical spaces three-dimensionally. Consider the use of 3D virtual tools in early design phase since it has been gaining more and more popularity.

Many acoustical design solutions were created throughout the project including acoustical soffits, ceiling tiles, fabric-wrapped panels in strategical placement. Hand-held devices for clinical staff, decentralized workstations, dedicated, separated elevators to cut down foot traffic and partitioned systems.

**INNOVATIVE DESIGN APPROACH SHOULD BE CONSIDERED EVERYWHERE**

We talk about innovative design approaches every day. These discussions should occur everywhere and influence even the slightest design movement. From sustainability and energy-saving approaches to materials and FF&E selections, it is important for all of us to absorb and understand the fundamental planning knowledge first then push the boundary in creative design thinking and not limit ourselves to what is only available in front of us. Be ahead of the curve and challenge all interdisciplinary team members to evolve to create a healthier hospital built environment.

**SOURCES:**


2 Nicoletta Setola and Sabrina Borgianni “Designing Public Spaces in Hospitals”, 2016


4 Erica Ryherd, PhD, LEED AP, and Craig Zimring, PhD, “Too Noisy to Heal - Using advances in hospital acoustics to bridge the gap between architecture, engineering, and medicine” November 1, 2010. Retrieved from http://www.healthcaredesignmagazine.com/article/too-noisy-heal
RANKED #1 IN HEALTHCARE INTERIORS THREE YEARS IN A ROW.

#1 IN HEALTHCARE 2014, 2015, AND 2016
“Healthcare Giants” Survey by Interior Design Magazine

+ AWARD OF MERIT, 2016
   Chinook Regional Hospital – Lethbridge, Alberta
   Interior Designers Institute of British Columbia

+ AWARD OF EXCELLENTCE
LEED PROJECT OF THE YEAR:
INTERIOR DESIGN & CONSTRUCTION, 2016
Whitman-Walker Health Center – Washington, D.C.
USGBC National Capital Region
37 LEED-CERTIFIED HEALTHCARE PROJECTS; MORE THAN ANY OTHER DESIGN FIRM IN THE WORLD.
37 TOTAL LEED HEALTHCARE PROJECTS

- 22 Hospitals
- 13 Outpatient / Ambulatory Care
- 2 Long Term Care
- 32 in the U.S. and 5 International

5 CERTIFIED
14 SILVER
18 GOLD
PERKINS+WILL PARTNERS WITH HEALTHY BUILDING NETWORK AND GOOGLE ON MATERIAL HEALTH AND TRANSPARENCY TOOL

A new tool makes it easier to assess and choose healthy products.

A new web-based tool aims to make it easier for building owners, architects, contractors, and manufacturers to collaborate on assessing and choosing healthy products and materials. Known as Portico, the tool—originally developed by the Healthy Building Network (HBN) and Google to help the tech company identify the healthiest products and materials for its offices worldwide—allows users to search and compare materials for human and environmental health hazard information. Perkins+Will, a founding partner of Portico, will be the first architecture and design firm in the world to offer the tool to its clients. Other founding partners include The Durst Organization, Harvard University, and HomeFree Affordable Housing Cohort.

“At Perkins+Will, creating places that promote and nurture health has long been part of our ethos. To that end, transparency into what’s in our building products and materials is critical. It’s why we spearheaded the development of the Perkins+Will Precautionary List in 2008, and shortly thereafter, launched our Transparency website,” says Perkins+Will CEO Phil Harrison. “Today, we’re proud to be among the founding partners of Portico. We look forward to working with HBN, Google, and others to ensure that safe, healthy, high-performing products are both manufactured and used in place-making projects around the world.”

Portico is designed to integrate with a typical design and construction delivery process, connecting data with project workflow. The tool has three main functions: project management; product research; and product information requests. Users can manage a project by defining criteria, setting goals, and tracking progress. Portico’s growing library of more than 2,500 products are cross-checked against a list of 40,000 known or suspected chemical hazards. Additionally, the tool connects manufacturers and their supply chain directly to users, allowing users to request more detailed information about specific products, and allowing manufacturers and suppliers to provide it swiftly and easily.

“Portico is a tool that complements our efforts to promote health and material transparency, so we’re thrilled to be one of the first adopters,” says Mary Dickinson, co-director of Perkins+Will’s Material Performance Research Lab and frequent HBN collaborator. “The tool will make it easier for our clients to learn what’s in various products, set performance goals for their projects, and evaluate and choose alternative materials that allow them to meet those goals. Being an early adopter of Portico allows Perkins+Will to help build, and have access to, the data we use to make recommendations to our clients.”

Eventually, HBN and Google hope to broaden the number and type of organizations that use Portico to increase transparency in the area of building materials. For the tool’s first release, however, they sought only a small number of partners from the building industry to help evolve and strengthen the tool through an early adoption program. In selecting those partners, a key criterion was a commitment to the mission of building materials health. HBN and Google specifically sought Perkins+Will for the firm’s innovative ideas, broad range of clients, and diversity of market sectors—all of which can help expand the tool’s use and improve it.
FIRST COMPANY TO ADOPT FITWEL, A NEW GOVERNMENT-BACKED RATING SYSTEM FOR HEALTHIER WORKPLACES
Perkins+Will Commits to Achieving Fitwel Certification for all of its North American Offices

In a bold move solidifying its commitment to evidence-based, healthier workplace design, global architecture and design firm Perkins+Will has become the first company to pursue—with the intent to achieve—Fitwel certification for all of its North American offices. The firm announced today that its Atlanta, Chicago, Minneapolis, New York, San Francisco, and Vancouver offices will become Fitwel certified before the end of 2016. The rest of the company’s North American offices, including Boston, Dallas, Los Angeles, Seattle, Toronto, and Washington D.C., will certify in 2017 and 2018.

Fitwel, a new evidence-based design standard developed by the U.S. General Services Administration (GSA) and the U.S. Centers for Disease Control and Prevention (CDC), enables positive impacts on building occupant health and productivity through improvements to workplace design and policies. Fitwel certification assesses building and workplace features—like the design of stairwells and outdoor spaces, proximity to public transit and fitness facilities, indoor air quality, and healthy food standards—against a baseline of criteria that create a health-promoting environment. It is administered by the Center for Active Design (CfAD).

Read more about Fitwel in Fast Company’s CoExist blog.

“Increasingly, research is showing that the design of our built environment is linked to occupant health and wellness. This includes everything from access to healthy foods, physical activity and mobility, and protection from common indoor pollutants,” says Perkins+Will CEO Phil Harrison. “At Perkins+Will, we take this very seriously—not only for our own staff, but also for our clients. We hope that by achieving Fitwel certification for our own offices, we will raise the industry bar while demonstrating to our clients that we proudly practice what we preach.”

Fitwel uses a weighted scoring system to assess the healthfulness of a workplace. It evaluates a space’s performance in seven health impact categories: healthy food options, occupant safety, physical activity, social equality, well-being, reduction of morbidity and absenteeism, and community health. Depending on the results, a workplace can achieve one, two, or three certification stars, with three stars representing the highest score. Fitwel then provides strategies to help building managers improve their scores—and, by extension, the healthfulness of their workplace.

In office environments, the expected improvements in employee wellness may result in lower health care costs, lower rates of absenteeism, and increased revenue from enhanced employee performance.

“Fitwel certification responds to the growing demand for recognition of healthier buildings and workplaces, and serves as a market differentiator to retain and attract tenants and future employees,” says Joanna Frank, executive director of CfAD. “That Perkins+Will is adopting the standard and committing to certifying its various offices is a testament to the firm’s role as an industry trailblazer.”

Of the 89 public buildings that piloted Fitwel over its five-year development period, two of them—the U.S. Centers for Disease Control and Prevention Building 106 and the U.S. Centers for Disease Control and Prevention’s National Center for Environmental Health—were designed by Perkins+Will. Both earned three certification stars. Of the 89 buildings piloted, 35 did not receive certification, 26 earned one certification star, 22 earned two stars, and six earned three stars. Ninety-seven percent of pilot study participants reported that Fitwel’s digital tool is easy to use, and 84 percent reported that they now have a good or very good idea of how their buildings support healthy behaviors.
ON THE COVER:
Rice Memorial Hospital Rehabilitation Center
Willmar, Minnesota

BE WELL.
Perkins+Will is leading the architecture industry worldwide with its innovation, deep expertise, and commitment to sustainable design. The firm’s LEED-certified healthcare portfolio includes community hospitals, academic medical centers, medical office buildings, and specialty facilities.

“Designing for Health” is a monthly, web-exclusive series from healthcare interior design leaders at Perkins+Will that focuses on the issues, trends, challenges, and research involved in crafting today’s healing environments.

perkinswill.com