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Ambulatory Specialty Center Construction

Finding the intended purpose

BY: DANIEL K. ZISMER, PhD, GARY S. SCHWARTZ, MD, MHA, AND ELLIOT D. ZISMER MS, MBA

The father of the modern skyscraper, Louis Henry Sullivan, is credited with the maxim, "form follows function". Sullivan believed that a building should enable its intended purpose. Finding "the intended purpose" of an ambulatory medical specialty center should precede facility design and construction. The balance of this article focuses on the presentation of a blueprint for the thinking that leads to consensus on form and function of the integrative ambulatory specialty center.

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Minnesota's Healthcare Workforce Shortage

A growing crisis

BY TERI FRITSMA, PhD

Health care workforce shortages are not new. For years leading up to the COVID-19 pandemic, communities around Minnesota—particularly those outside major metropolitan areas—have had too few physicians, nurses, mental health, dental and direct care providers to meet both the hiring demand and the need for services. Some of these shortages might be more accurately described as a maldistribution, with rural and small town communities lacking adequate staffing even after accounting for population size.

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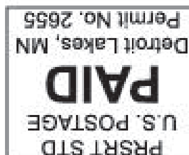

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CARE COORDINATION

Improving Communication and Outcomes

BACKGROUND AND FOCUS:

As health care faces rising costs, chronic workforce shortages and seemingly ever increasing administrative burdens, the pace of evolution is unparalleled. One example is the emergence of care teams; many different licensed and unlicensed providers working together to the top of their training. While this offers benefits it also creates new challenges. The two most critical are ensuring every provider is aware of the care a patient receives and the patient is aware of, and adheres to, his or her individual treatment plan. The complexities of these task have given rise to a new part of the care team, the care coordinator.

OBJECTIVES:

Our panel will examine the role of the care coordinator, how and why it is becoming an increasingly important part of health care delivery. When care coordination may be provided by clinic or health system staff, by third party payers, by private industry contracting out-of state employees, and even by state health agencies, utilization of this tool can present conflicts, confusion and frustration. We will look at the different aspects of care coordination and provide insight into how they work best in various practice settings.

JOIN THE DISCUSSION

We invite you to participate in the conference development process. If you have questions you would like to pose to the panel or have topics you would like the panel discuss, we welcome your input.

Please email: Comments@mppub.com and put "Roundtable Question" in the subject line.

New Partnership Addresses Behavioral Health Workforce Shortage

To address the alarming shortage of mental health providers in Minnesota, where one in four jobs is currently open, UCare, Alluma, a community behavioral health clinic based in Crookston, and the Amherst H. Wilder Foundation have developed a pilot program to make it easier for prospective mental health professionals to join the field. "There has never been more urgency to address the shortage of mental health providers in Minnesota," says Jennifer Garber, UCare vice president of mental health and substance use disorder services. "We are proud to invest in the community in this way and eventually provide our diverse members the opportunity to receive culturally appropriate mental health services." Through the partnership, UCare will fund $100,000 in stipends for clinical interns as they complete the supervision necessary to graduate from and eventually licensed in social work, clinical counseling, marriage and family therapy and other mental health roles. Wilder and Alluma will provide thousands of hours of state mandated supervision at no cost. The pilot will focus on supporting clinical interns from cultural and ethnic minority groups, rural communities and other underrepresented populations where the workforce needs are greatest. "We know we need more clinicians from underrepresented communities and we know there are people out there who want these jobs, but the math doesn't add up, says Dr. Pahoua Yang, Wilder's vice president of community mental health and wellness. "Many students hoping to enter a clinical field are attending school, working a paid job, and trying to make time for a clinical internship at their own expense, all at the same time. By offering paid internships and supervision at no cost, this program will show how we can diversify and expand our mental health workforce at this critical time."

"Our frontier counties are struggling. It's challenging to recruit providers in rural areas throughout northwestern Minnesota," says Alluma CEO Shauna Reitmeier. "Providing students with an incentive to do this work in rural Minnesota will have a profound impact on each student and the communities that they serve. We hope that this partnership will create a ripple effect that results in organizations across the state identifying new and innovative ways to address the workforce shortage."

Carris Health Changes Name to CentraCare

Carris Health recently announced it is changing its name to CentraCare for all Carris Health entities in Willmar, Redwood Falls and New London. The name change reflects a cohesive focus as Carris Health and CentraCare have developed shared processes and strategies, including creating a Rural Health division, since Carris Health was formed in 2018 as a wholly-owned subsidiary of CentraCare.

The name change will further create unity within the CentraCare organization and make it easier for community members to understand how all CentraCare sites are connected. The updated brand identity communicates more clearly that all CentraCare locations are working together to improve the lives of patients across Minnesota. "CentraCare and Carris Health were already connected through our common culture, purpose and mission," Ken Holmen, President and CEO, said. "Now, we will also be connected through one unified name – CentraCare."

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www.aecpmso.com

Associated Eye Care Partners

"When Carris Health formed, we chose a different name because our rural health area was newly defined within the CentraCare family," Cindy Firkins Smith, MD, senior vice president of Rural Health, said. "In 2021, CentraCare developed a Rural Health division, and now our system has further aligned while still focusing on the distinct needs of rural communities. Our commitment to our patients defines us, and that will not change as a result of this name conversion." "Patients and families will benefit from this brand alignment as it makes it easier for community members to understand how each CentraCare location is connected," said Firkins Smith. "For example, patients frequently received correspondence from both Carris Health and CentraCare, which can be confusing. A single brand name will make documents and information easier for patients to understand how we collectively work together to provide expert health care that is close to home."

Work has already begun internally to change names and logos to CentraCare. Communities served by Carris Health will start to see changes on June 1, as the organization changes signage, appointment reminders, email addresses, patient correspondence and more. The Carris Health to CentraCare brand transition is expected to be completed over the next 12 months.

Davis Announces New Allina Lakeville Medical Complex

Davis recently announced it will begin development on a 100,500 square-foot Class A medical complex in Lakeville. The facility, named Lakeville Health, will include a multi-specialty medical center with more than 20 Allina specialties, including orthopedics, oncology, women's health and cardiology. It will also include a new ambulatory surgery center with four operating rooms. Lakeville Health is already 100% leased, with Allina accounting for 60,000 square feet in the specialty center and 18,500 square feet in the surgery center. In addition, MNGI Digestive Health (MNGI) has signed a lease for 22,000 square feet in the facility to house a new clinic and endoscopy center. "We are grateful for our continued partnership with Davis," says Dave Slowinske, Allina Health senior vice president, Operations. "Making complex specialty care more accessible to the south metro and providing a state-of-the-art ambulatory surgery center are critical components to Allina Health's overall strategy to lower the cost of care while adding convenience for our patients." MNGI's president and CEO, Dr. Scott Ketover notes, "MNGI Digestive Health and its caregivers are excited about the new full-service endoscopy center and clinic that will be opening in Lakeville. This location will offer a wide range of gastroenterology and digestive health services, including outpatient procedures, infusion therapy and comprehensive GI care with behavioral and dietary health support. We are using innovative, state-of-the-art technology and equipment to provide the best care for our patients, and our space in this building will be fully designed for operational needs and the comfort and experience of our patients." He added, "MNGI is looking forward to this expanded relationship with its health care partners and being a part of Lakeville and the surrounding community. This location will provide convenient access for adults seeking GI care and provides MNGI the opportunity to serve the growing base of patients in the South metro area and beyond." Lakeville Health is expected to be completed and open to patients in fall 2023.

Gun Violence a Public Health Crisis

Health care leaders across Minnesota joined together recently to express

their shared view that gun violence is a public health crisis. Health care systems share a unique perspective on this growing crisis and the impact the lives lost and those forever changed by gun violence has on the health and well-being of our communities. To address the epidemic of gun violence both locally and nationally, Minnesota's health care systems have pledged to collaborate and take action on the development of solutions to prevent gun violence and advance important conversations on reforms to protect patients, employees and communities. The CEOs from Allina Health, CentraCare, Children's Minnesota, Essentia Health, Fairview Health Services, Gillette Children's, HealthPartners, Hennepin Healthcare, North Memorial Health and Sanford Health have released the following statement: As leaders of some of our state's health care systems, we believe it is time to declare gun violence as a public health crisis and to work to prevent the deaths of innocent people of all ages and backgrounds. We must look no further than the recent shootings on a hospital campus in Tulsa, Oklahoma, at a school in Uvalde, Texas, a grocery store in Buffalo, New York, and countless others just this year to see its devastating impacts. According to the Centers for Disease Control and Prevention, in 2020 more than 19,000 American lives were lost due to homicide involving a gun. That same year, guns became the leading cause of death for children and teenagers. These statistics are appalling and outrage us as health care providers and should outrage us all. Everyone deserves a world where they can feel safe and live their lives without fear of gun violence. Gun violence and its horrific impacts are preventable. It has reached epidemic levels and represents a significant threat to public health. As health care providers, we see the impacts of gun violence firsthand every day. We uniquely understand the devastation of this violence in our hospitals and clinics and the toll it takes on individuals, families, communities and the care providers who treat the victims. We have an important role to play in creating a safer future for all. We will continue to be fierce advocates for the safety of our employees, patients and the communities we serve, inside and outside our hospital and clinic walls. By formally declaring gun violence as the public health crisis that it is, we will collectively seek the solutions required to save lives and stem the tide of violence.

$2 Million in DEED Grants to Help Certify Internationally Trained Health Care Workers

Minnesota Department of Employment and Economic Development (DEED) recently announced recipients of the Internationally Trained Professionals Competitive Grant Program to help fill in-demand health care positions. This program helps internationally trained health care workers earn the professional licenses required to do similar work in Minnesota–which will lead to more qualified health care workers available for this critical sector of the workforce. Health care is the largest industry in our state–as of the fourth quarter of 2021, there were more than 52,000 Health Care & Social Assistance job vacancies in Minnesota, accounting for about one in every four vacancies in the state. This is the largest number of vacancies ever reported, surpassing the peak set in the second quarter of 2021, and by that measure, demand for health care workers has never been higher in the state. The program is granting up to $400,000 over two years to seven organizations to assist internationally trained health care professionals in gaining licensure. Eligible

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organizations include state or local government units including two or four-year post-secondary institutions, nonprofit/community-based organizations, community action agencies or labor organizations physically located in Minnesota and with experience serving immigrant and refugee populations. Immigrants and refugees are critical to Minnesota's economy and the state is home to more than 470,000 foreign-born residents. Over the past ten years nearly 105,000 new immigrants and refugees have moved to Minnesota. Foreign-born workers now account for over 10% of the total available labor force in the state, up from 8% just one decade earlier. Over 50% of our recent labor force growth has been driven by immigrants. "During a time of low unemployment, historic job vacancy rates, and an enormous demand for health care workers, we need to empower every available skilled health care worker in the state," said DEED Commissioner Steve Grove. "This grant program helps organizations prepare internationally trained health care workers for licensure so we can bring those greatly needed workers into health care employment across Minnesota."

Summit Orthopedics Launches First-in-Nation Honduran Physician Training Program

Summit Orthopedics recently announced the launch of a first-of-its-kind orthopedic surgical training program for Honduran physicians. In partnership with the University of Minnesota and One World Surgery, the training program will help build orthopedic surgical capacity in Honduras by providing subspecialty training to Honduran orthopedic surgeons. "Summit has a long-standing and successful mission program through a partnership with One World Surgery in which we send our physicians to Honduras to provide orthopedic care. But we simply can't be on the ground in Honduras as much as we'd like or as much as is needed," said Michael Forseth, M.D., an orthopedic surgeon with Summit Orthopedics who oversees the program. "Through our new training program, we hope to ensure there is a network of orthopedic surgeons who can provide advanced orthopedic care to the Honduran population on an ongoing basis." This is a vision shared by One World Surgery, where Dr. Merlin Antúnez, Honduran medical director and orthopedic surgeon, currently leads a team of 40 local clinical and non-clinical staff to care for patients in the community who otherwise would not have access to healthcare. This new training program launched with Summit will ensure that local staff people are available to provide care for years to come. Honduran orthopedic surgeons are trained in trauma and develop expertise in treating fractures and traumatic injuries, including car accidents or gunshot wounds. With Summit's new yearlong training program, two Honduran physicians will participate in six months of in-person training in Minnesota and six months working alongside both Summit and local surgeons in Honduras to develop orthopedic expertise in subspecialties such as joint replacement, arthroscopic sports medicine surgery, and hand/upper extremity surgery. Upon completion of the program, the newly trained Honduran physicians will train their colleagues, further building surgical subspecialty orthopedic capacity in Honduras. Engels Castellanos, M.D., and Dolly Acosta, M.D. are the first Honduran physicians to participate in the training program after arriving in Minnesota in March. Dr. Castellanos says he looks forward to bringing the technological expertise he develops working with Summit to the surgeons in his country. "That's the idea, that we can help our people with the knowledge we acquire here," he

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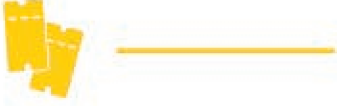

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Providing Leadership in Sexual and Gender Health

Eli Coleman, PhD

Please tell us about the goals and guiding principals that led to the foundation of the Institute for Sexual and Gender Health, which until last year was known as the Program in Human Sexuality and Center for Sexual Health.

The Program in Human Sexuality (the Program), now the Institute for Sexual and Gender Health (ISGH), was founded in 1970, and its goals and guiding principles have essentially remained the same for over 50 years. The Institute was created out of a recognition there was a profound misunderstanding of human sexuality and educating health care professionals and the public was key to everyone's health and well-being. It was also apparent that many of the sexual problems that people were facing were perpetuated by a culture that was uncomfortable talking about sex, did not value the importance of sexuality education and that laws and social policies were not always formulated based upon the best available science. For 50 years, the Institute for Sexual and Gender Health has been educating allied health professionals and the public, conducting research to advance our knowledge, providing clinical care to hundreds of individuals, couples and families each year and advocating for a science-based approach to public policy and laws. We have been changing the cultural climate and providing leadership in the field of sexual and gender health education, research and clinical care.

Last year you celebrated your 50th Anniversary, what were some of the biggest challenges in reaching that milestone?

Funding has always been a big challenge. Research grant opportunities and priorities have waxed and waned over these many years. Sexuality research has not always been seen as a public health priority. It really gained some credibility as we faced the HIV pandemic. Now we see it relevant to addressing many health conditions and a greater appreciation sexual health is critical to overall health, well-being and quality of life.

> "Sexual health is critical to overall health, well-being and quality of life."

We have had to adapt to those highs and lows by shifting some of our research priorities and finding other mechanisms for revenue to support our research. We have been able to build a steady stream of clinical revenue, but reimbursement and insurance coverage has always been a challenge in covering costs. While we have had support for our educational activities from the Medical School, it does not quite cover all of the expenses for faculty time in developing curriculum and delivering content. Our flexibility and the tremendous support we receive from our Department of Family Medicine and Community Health, as well as philanthropic support, has helped us to weather the highs and lows of funding.

What are some of the issues that were involved with attaining the Institute status?

A number of years ago, we recognized that the Program had grown so much in breadth and stature that it had outgrown its status as a "Program." The University has criteria for Institutes and Centers, and everyone understood that we met that criteria. There was not much question; it was more a matter of running it through the bureaucratic challenges.

Please tell us about the range of services you offer.

We offer a wide variety of both clinical and educational services. In terms of clinical care, we provide psychological, medical and psychiatric services related to sexual and gender health concerns. We like to treat the whole person from a biopsychosocial perspective. We not only help individuals, but also work with couples and families as appropriate. This ranges from relationship and sexual problems, such as low sexual desire, orgasmic difficulties, sexual pain and compulsive sexual behavior to gender and sexual orientation identity issues across the lifespan.

Our educational services include our internationally renowned human sexuality curriculum for University of Minnesota medical students, as well as clinical rotations for medical students and family medicine residents. In the last few years, we have expanded our educational services by offering a graduate level certificate in human sexuality and now a master's degree in sexual health. In addition, we lecture and present at professional meetings, host community education events such as our Sex Science Happy Hour series and provide educational workshops around the world.

What are some of the things a primary care physician might look for in their patients that would indicate a referral to your programs could be helpful?

First, they should recognize most of their patients have sexual concerns certainly at different developmental periods, but also as they experience acute or chronic medical conditions. Not only do the conditions themselves impact their patient's sexuality, but the treatments they receive also have an effect. Ask, "How is this… affecting your sexuality or sexual function? Do you have any concerns about your sexual or gender

identity?" If they ask even a simple question, the patient will know they are an "askable physician" and are more likely to bring up questions or issues on their own. Remember that, like everything in medicine, it is the physician's responsibility to bring up topics—even if they are uncomfortable.

How has the work you are doing influenced the development of other similar programs nationwide?

ISGH is the preeminent sexual health institute in the country and certainly one of the most notable in the world. Our faculty are current leaders in our field, and we produce the field's future leaders. Our alumni and former faculty have gone on to develop or reinvigorate programs and institutes around the country. It is always so gratifying to see the influence we have had on the graduates of our medical school or the many postdoctoral fellows we have graduated.

What can you share about health care disparities within the GLBQT community and how they might be best addressed?

ISGH has a very long history of addressing the health care disparities within the LGBTQ+ community. We emphasize training of health care professionals, not only to empower them with knowledge, but also to help them develop cultural humility and competence. We are also proud that we have so many LGBTQ+ faculty, and we actively work to provide opportunities within ISGH for other minoritized people to gain experience in this field. So we are "walking the talk" of diversity, equity and inclusion. Our challenge is to better address the intersectional challenges of racial, gender and orientation issues that are systemic to health care disparities.

How has COVID impacted your work?

COVID forced us to shift completely to telehealth and online educational programming. COVID has created those opportunities, but now we are trying to find the balance of what is valuable and essential in a person and what can be done in a virtual world. We firmly believe that authentic human connections are essential for everyone's health and well-being, and with COVID we have lost some of that. We have also studied the impact of COVID on people's sexuality and relationships, and clearly, COVID has had its short term overall negative impact. In addition to the research that supports this, we are also seeing these negative impacts play out in our existing patient population, as well as in increased demand for our clinical services. It is a challenge to meet all of the needs that are out there.

What are the biggest challenges you organization faces today?

Funding is always an issue to keep us competitive in recruiting and retaining the very best faculty and staff. Clinic, research grant and educational revenue never keeps up with the cost of doing business. Philanthropy has been essential to fill in the gaps and allow us to invest in new resources.

We also recognize that there is growing political and social tension around sexual and gender health issues which does not currently affect our ability to provide clinical services, but very well may in the future. We are constantly

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◂ **Minnesota's Healthcare Workforce Shortage** from cover

Then COVID hit, and a bad situation got worse. Within months, media and industry reports of burnout, turnover and pandemic-provoked health care workforce shortages entered the public discourse. What started as isolated anecdotes quickly turned into widespread reports of severe staffing shortages. Exacerbating this problem was that the COVID-related workforce effects were happening in a broader context of turnover, layoffs and retirements in the economy at large.

We may now be moving into a "new normal" with respect to the virus itself, but its effects on the workforce are still unfolding. COVID has touched nearly every sector of the health care workforce, and the worst of the fallout is likely still to come.

This article summarizes findings from the Minnesota Department of Health's (MDH) Healthcare Workforce Survey. We investigate turnover and workforce exits among much of Minnesota's licensed health care workforce, including physicians, physician assistants, nurses, respiratory therapists and licensed mental health providers.

Health care employers have to focus on retention.

Minnesota Department of Health's Workforce Study

The Minnesota State Legislature mandates that MDH survey licensed health care providers at the time they renew their licenses. The resulting intelligence and analyses often serve as input to state workforce policy. MDH has been conducting this survey on an ongoing basis for more than a decade, and since nearly all providers who renew their license take the survey, our response rates approach 100%. The result is a very rich and robust data source with which to study the full impact of COVID across all professions and regions. In what follows, we compare data from the calendar year of 2019 (pre-COVID) to responses from October 15, 2021 through March 15, 2022. In this way we are able to isolate, as much as possible, the effects of COVID on nearly the entire licensed health care workforce. (Our survey does not cover direct care providers such as Certified Nursing Assistants, Home Health Aides and Personal Care Assistants. Some of the worst shortages are in this segment of the workforce, so the full effects of COVID on the health care workforce are almost certainly understated here.

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Major Findings

Number of license holders. Being licensed to practice in a health profession does not guarantee that a person is actually practicing. However, the number of license holders is effectively a count of the full potential labor supply. During the height of COVID in 2020 and 2021, that number continued to increase modestly. In June 2020, there were a total of 237,995 license holders in health care. By December 2021, that number had risen to 245,056, an indication that—in the aggregate, at least—new licensees continue to offset retirements and other license lapses. The only profession to experience a net reduction in the number of active license holders was licensed practical nursing, and that decline is part of a longer trend, as more nurses opt for the higher-level registered nursing license. This represents a bit of good news, but the devil is in the details, as we will see.

Job vacancies. Job vacancy rates—defined as the number of open-for-hire positions for every 100 jobs in an occupation—are a leading indicator of workforce shortages. They tell a story about the current level of hiring demand. Based on data from the Department of Employment and Economic Development, we know that vacancy rates in most health care occupations were notably higher in 2021 than they were in 2019. The following occupations all saw vacancy rates, regardless of region or work setting:

- Registered nursing.
- Licensed practical nursing.
- Mental health and substance abuse counseling.
- Physical therapy.
- Respiratory therapy.
- Pharmacy.

This broad view supports the anecdotes: Minnesota's health care employers are struggling to find the workers they need, and COVID has exacerbated the situation. Perhaps most alarming is the sharp rise in vacancies for mental health and substance abuse counselors: for every 100 jobs in this profession, 26 are currently open. This is the highest vacancy rate of all licensed health care professions (compared to, for example, 8% for respiratory therapists and 7% for registered nurses). The increase perhaps reflects the so-called "second wave" or

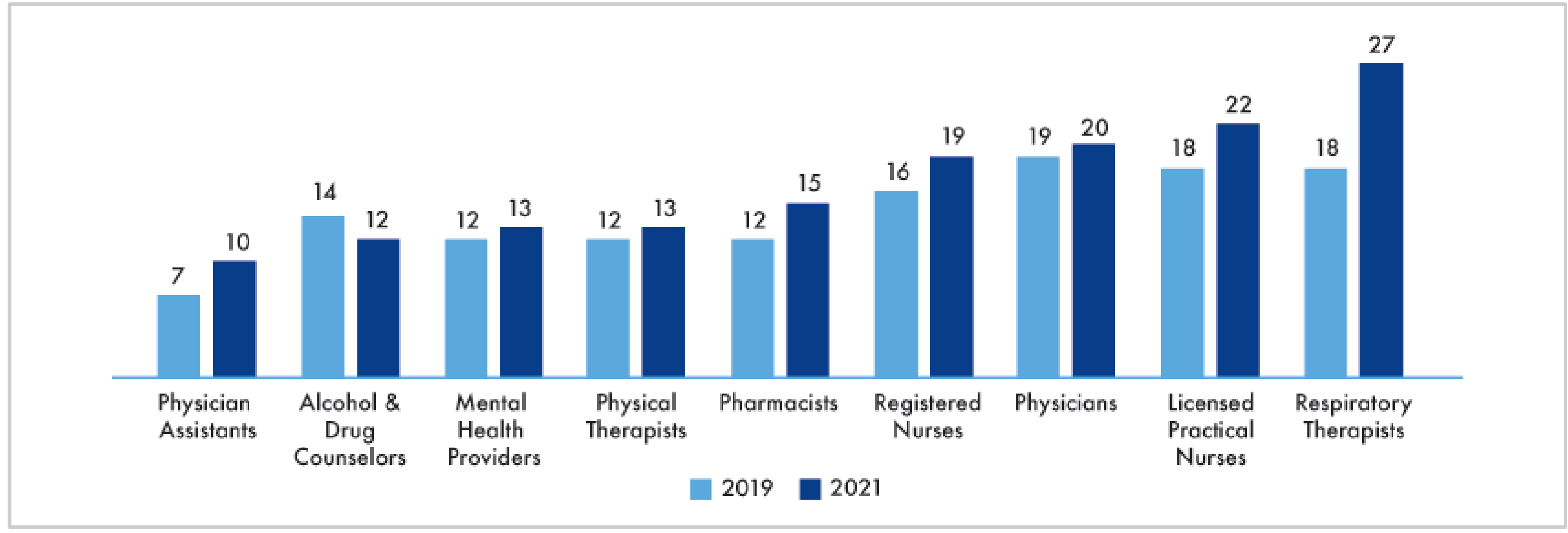

Figure 1. Percentage of licensed providers who plan to leave their profession within the next five years by profession and year.

"second pandemic", the mental health pandemic resulting from anxiety, stress, depression and other disorders brought about by the COVID-19 pandemic.

Plans to leave the workforce. Across nearly all professions for which MDH collects survey data, an increased share of providers report that they plan to leave the workforce within the next five years, as shown in Figure 1. Any such increase is concerning, because, as noted, the state is already facing a shortage of providers in critical occupations. However, in some cases, the increases are alarming. Statewide, more than 25% of respiratory therapists; 22% of licensed practical nurses; 20% of physicians; and 19% of registered nurses report that they plan to leave their profession within the next five years. With the exception of licensed alcohol and drug counselors, the proportion of providers who report planning to leave has increased in all professions since 2019.

Burnout is driving a larger share of workforce exits. The most commonly cited reason for leaving the health care workforce is always retirement. However, the share of providers who say they will leave to retire in the next five years has decreased, and the share citing burnout has increased across all licensed health professions. See Figure 2. Among providers who report that they plan to leave their profession within the next five years, physician assistants (PAs), followed by respiratory therapists (RTs), are the two professions most likely to cite burnout or job dissatisfaction as the reason. PAs and especially RTs regularly work in acute care settings, such as hospitals and urgent care facilities. So while this finding may not be surprising, it is a clear example of the devastating effects of COVID on of the workforce.

As concerning as the workforce losses are for the state as a whole, it is important to take special notice of our rural communities. Per capita, rural areas have far fewer providers than do urban areas. Even before COVID hit, we saw a variety of serious patient- and system-level effects as the direct result of these shortages:

- Long wait times to see providers.
- Long travel distances to access care, particularly specialty care.
- A shortage of beds.
- Hospital and clinic service line closings.

COVID has not improved this situation. Regardless of profession, rural providers are all more likely to report that they plan to leave their profession within the next five years. Indeed, if the self-reports are correct, Minnesota could lose nearly one-fifth of its rural workforce to retirement, burnout or other reasons. Most alarmingly, one-third of rural physicians and one-fifth of rural physician assistants say they plan to leave their professions within the next five years, leaving ever-widening gaps in care that would be extremely challenging to fill.

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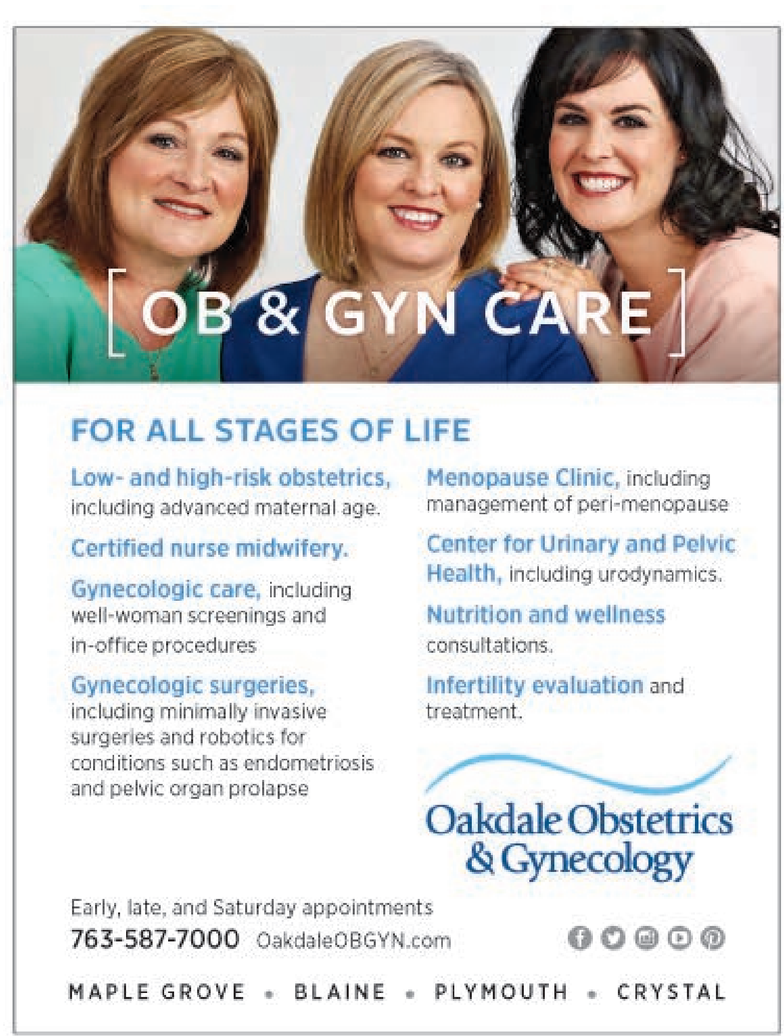

◂ **Ambulatory Specialty Center Construction** from cover

First, the definition of an integrative ambulatory specialty medical center is followed by a rationale for their importance in the delivery of community-based health services into the future. Here "integrative" refers to the aggregation, coordination and collaboration of multiple clinical specialties under one roof. When these specialties are brought together, they serve a wide range of clinical, health, health status and functional needs of defined populations. These services are rendered cost effectively by facilitating an integrative care vision, mission and collaborative patient services strategy between and among provider partners. Primary care is included in the definition of medical specialties, for purposes of this article.

Examining the rationale

The rationale for such larger sized, intentionally integrative ambulatory care delivery environments is supported by five key assumptions pertaining to the near and longer term future of community health care:

- An increasing proportion of all specialty health care services will be supplied in ambulatory settings, not hospitals.
- The ability to provide a satisfying and effective clinical experience for patients, economically, requires the aggregation of a critical mass of collaborating clinical partners, with the potential to generate sufficient demand for facility design.
- The leveraging of the revenue productivity opportunities beyond professional services is necessary to make the facility's and the supporting infrastructure's cost base financially productive and affordable. Larger, well-designed ambulatory specialty centers permit and facilitate "smart" revenue stream diversification strategies. Physician professional work unit productivity (WRVU) is typically highly predictive of "downstream" services demand, imaging diagnostics, surgical and procedural services and consumption of other specific services and products.
- Patients will prefer an environment that provides many needed health services within a single facility, designed to coordinate and manage care by specialized provider teams of collaborating providers.
- An increasing proportion of direct patient care will be provided by sub-specialized non-physician professionals who will require accommodative work environment designs to practice their professions efficiently and productively.

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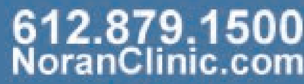

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Reorganizing and reorienting the thinking behind specialty ambulatory facilities

The aggregation of doctors under one roof is nothing new. Medical office buildings (MOBs) have existed for decades. Their intended purpose has largely been the collection of physicians of varying specialties, operating from similar, but different organizational and business models, practice "brands" and strategic plans. Occupants of these generic MOBs may or may not share patients or even know many of the other physicians in the building. The singular goal of simply aggregating doctors in one place has led to the design and construction of millions of square feet of nondescript, non-branded, cuboid, generic physician office buildings that offer the patient the opportunity to enter the facility, locate their doctor's office on the lobby directory, ride an elevator to a designated floor, exit and turn left or right to proceed down a long corridor to a labeled door labeled with a practice name.

This traditional "office-based, MOB ecosystem" design requires referrals out for routine and complex imaging diagnostics, outpatient surgery, rehabilitation services and other ambulatory services. These referrals are often made to one or several hospital campuses or to physicians and practices located off the MOB campus. Real urgent care is rarely available, although physician occupants may claim to serve "add-ons" to their practice, and physicians in the facility may admit to a variety of hospitals which can confuse patients. For MOBs located on a hospital campus, patients may reasonably presume that "their doctor" is closely affiliated with the hospital and all other physicians in the building, and by extension all share a common medical record, participate with the same health insurance providers, integrate and coordinate services that keep billing and record keeping together and have a centralized and integrated approach to services scheduling. For off-campus MOBs, patients can often presume, incorrectly, that all the doctors in the facility know each other refer to each other, and coordinate care together. The important lesson here is mere co-location in an MOB does not guarantee the delivery of integrative care, despite what patients might reasonably presume to believe and want.

Integrated ambulatory specialty medical centers can be successful strategies for independent, single specialty medical groups, for larger independent multi-specialty medical groups, for collections of independent medical groups of varying specialties and for community-based health systems that elect to aggregate employed and/or affiliated independent physicians as partners in ambulatory specialty centers. For purposes of the positions that follow, primary care is included among the array of clinical

specialties that lend well to incorporation with an integrated ambulatory specialty center.

What's in a name

Integrated collaborative ambulatory specialty centers are defined here as larger ambulatory facilities (often ranging from 50,000-200,00 square feet in size). They're designed to aggregate and integrate multiple clinical specialties and sub-specialties within a specific classification of related clinical service lines, such as orthopedics, spine care, sports medicine and connective tissues disorders. Participating providers are supported by a range of ancillary service capabilities, e.g., diagnostic imaging, surgical/procedural care, rehabilitation, urgent care, virtual care and over-night care suite capabilities. While the facility may house a range of independent practices or separately identifiable practice brands, the facility itself has its own brand which is associated strategically with all the practices represented within the facility. Included providers agree to cooperation and collaboration based upon a shared patient care compact and refer within the group, as appropriate.

Integrative ambulatory specialty center design begins with clarity of intended purpose.

Principal driving goals of such strategies are "one stop shopping" for a broader range of ambulatory medical, surgical and rehabilitative care; collaboration among aggregated providers to improve quality of care and the patient experience; to make sophisticated diagnostic, surgical and procedural services available and affordable and to effectively manage total costs of care for patients served. Likewise, participating groups may own the facility together and invest jointly in future facility enhancements. Participating providers may also form "clinically integrated networks" for purposes of third party payer contracting, including bundle pricing for specific care plans and financial risk sharing for defined populations.

The art of the possible

While the facility's form and function certainly contributes to the strategic and economic success of the participants, the "magic" derives from a shared belief in a communal orientation to mission, vision and strategic goals. The project planning exercise that follows is a first test of a buy-in to the "art of the possible." For a group of partners in the initial stages of a proposed integrative ambulatory specialty center here are some important questions and thoughts about them to consider:

What are the compelling reasons to pursue a larger ambulatory specialty center?

Categories of response typically include: an improved patient experience, the improved economics for the partners, the ability to create a larger, more powerful market brand, market share expansion, provision of an attractive platform for provider and staff recruiting, expanded scope of services, provider efficiency and productivity, the aggregation and sharing of the financial productivity of right-sized ancillary services and the market and brand statement and brand promise made by the larger, well appointed specialty center facility.

What composes the critical mass required to get started, i.e., are there "must have" partners and specialties?

Categories of responses typically include: clinical specialties that, when aggregated under one roof, create market and clinical care collaboration synergies, providers who bring an existing patient base to the partnership, and who with a show of collaboration, stimulate interest from other referral-based specialties that find the opportunity to join and affiliate irresistible.

What are opportunities to develop ancillary revenue streams controllable by the owners; what services provide an improved patient experience; create cost and pricing advantages when contracting with third parties; create high barriers of entry for smaller, less well-developed competitors?

Categories of responses include: ambulatory, single or multi-specialty surgery centers, sophisticated imaging centers, rehabilitation services, pharmaceutical infusion capabilities and dialysis and related retail products, such as eyeware and orthopedic appliances.

Aside from the facility itself, what strategy and support services can be shared to create scaled economies and improved capital investment returns?

Categories of response include: marketing and brand development design, efforts recognizing each participating partner retains their own practice brands, clinical technologies and equipment, information systems, group purchasing on supplies, joint third party payer contracting (with the

Ambulatory Specialty Center Construction to page 14 ▸

◂ **Ambulatory Specialty Center Construction** from page 13

creation of a suitable clinically integrated network partnership), facilities management, self-insurance opportunities through co- ownership of a captive insurance company, health insurance addressing professional liability and workers compensation coverages, and bundled clinical services packages.

What are methods for real estate and facility asset ownership and management?

Categories of response address: the nature of the model design permits the participants to collectively afford a larger, more sophisticated facility, which creates an enhanced brand and market statement opportunity. Integration of co-owned, profitable "ancillary services" opportunity expands the collective balance sheet positions and potential for practice growth and development of participating owners, i.e., the ability to expand the practice profitability of the participating practices beyond the potential of smaller groups operating independently. Facilities that are "pre-leased" bring sophisticated medical real estate developers to the game as potential co-investors and asset and property managers. The developer can then serve as the manager of the real estate holdings of the owners, providing a source of liquidity as individual investors retire from their practice and exit facility ownership with a guaranteed buy-out.

Lessons learned

Rarely is an ambulatory specialty center ever over-built. More often than not, they are under-built by as much as 25%. Why? The main reason is prospective, independent physicians interested in participation are often reluctant to risk capital for growth of their independent practice. Likewise, independent physicians and even health system executives often look at operating lease costs for larger Class A medical facilities as being too high. While it's true that larger, sophisticated ambulatory centers are almost always more expensive per square foot of space, when compared with older facilities occupied by smaller single specialty or multi-specialty practices, what is often missed are the value propositions that inure from co-locating with other providers in a facility specifically designed for a collaborative ambulatory strategy. Such benefits include the ability to design and build for practice growth economically, co-ownership in various revenue producing services, affiliation with an umbrella brand positioning strategy (including a high visibility location), practicing in an environment with increased foot traffic through the facility, participation in group purchasing, shared facilities management and managed ownership of the facility where partners have a guaranteed, qualified buyer of individuals' interests when they wish to sell.

Another learning from the development of such centers often goes unappreciated, which is while absolute space costs per square foot are almost always higher than a practice is paying currently, the ability to design a new space that improves efficiency, patient flows and enhanced provider productivity results in increased revenue per square foot of usable space. These benefits make the ostensibly more expensive space incrementally more economical and financially productive over the full term of the lease.

Independent practitioners who own their own real estate and prefer a small facility that is wholly owned by the physicians in the practice often find that real

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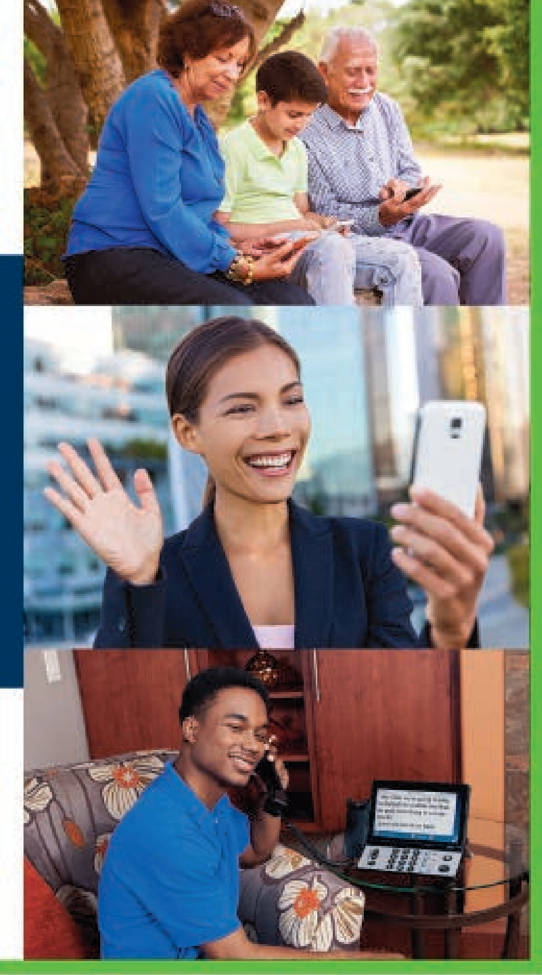

◂ **Ambulatory Specialty Center Construction** from page 14

estate ownership can become a mill stone around their collective necks. How? New physicians offered partnership are often obligated to buy into the real estate, along with the practice, adding more debt to an already over-burdened personal balance sheet. Moreover, when a partner retires, one of two problems typically occurs. The retiring physician has an automatic "put"; meaning the buyout of the real estate by the other owners is mandatory. If retired partners individually or collectively hold the deed to the facility, new partners may become trapped as lessees in practice real estate that is old and inadequate, and the landlord won't reinvest. As was cited previously, with larger facilities, there are many more models that permit individuals opportunities for ownership while in active practice, and provide for efficient and affordable avenues for liquidity at a reasonable price when retiring or leaving the practice.

Summation and Discussion

There is an abundance of evidence to support the assertion that an increasing proportion of medical and surgical health care services will be delivered in ambulatory settings. Likewise, the complexity of care delivered in ambulatory settings will increase. As such, the intended purpose of ambulatory specialty center designs will likely take two paths, going forward. On one path, they will house single specialty, integrated focused factory strategies. This model will aggregate multiple clinical sub-specialties working together to serve constellations of related clinical conditions, for example, orthopedics and connective tissues, injuries and disorders. The other path will aggregate providers from multiple clinical specialties. With this path, the commonalities to be rationalized within facility design include: the potential for inter-group referrals, utilization of imaging diagnostics, projected demand for surgical/procedural services, sophisticated urgent care, drug infusion therapies, rehabilitation services, specialized pharmacy needs, virtual care delivery space and related technologies and areas for staff training and patient group education.

In either case, integrative ambulatory specialty center design begins with clarity of intended purpose. From purpose comes function; form is next and strategy follows. Design "wraps" around function and strategy to create a facility that enables realization of the shared mission and vision.

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Energy use in Health Care Facilities

Higher performance and lower costs

BY MARK BRADBY, PE, AND NED RECTOR, PE, LEED BD+C, CEM

The health care industry focuses on continuous improvement and adoption of best practices. Therefore, It may come as a surprise that health care facilities are the second highest energy consumers in the built environment and consume close to 10% of the energy used across all commercial buildings. There are good reasons for health care facilities to consume more energy–stringent codes, standards, best practices around indoor air quality, heating and cooling parameters and infection control require complex mechanical and electrical systems which are energy-intensive. The high value placed on providing a safe environment for health care means the industry has been slower than others to embrace energy efficiency. As mechanical, electrical and plumbing (MEP) professionals, engineers at CMTA have been at the forefront of tracking energy usage and pioneering cost-effective strategies to reduce energy consumption while maintaining the high standard of indoor comfort and air quality required in health care facilities. This article will review standard ways to measure the energy usage of a health care facility, then outline both conventional and unconventional methods of driving down energy consumption.

While there are many ways to measure the energy usage in a building, one has come to the forefront–Energy Use Intensity (EUI). EUI provides a consistent way to quantify the energy used in a building. EUI takes the overall combined energy consumed in a building over one year in kBtu (thousand British thermal units) and divides it by the building square footage. A building's energy use includes its heating, cooling, ventilation, plug-loads, lighting and water consumption. By calculating EUI, buildings can be compared and benchmarked against each other. It is important to note that EUI does not factor in climate zones–buildings in more temperate climates will use less energy than buildings in climates with hot or cold extremes. Another important distinction to note with EUI is Source EUI versus Site EUI. Site EUI measures the energy used at the building level, while Source EUI includes energy used at the building plus inefficiencies in energy generation and transmission. Source EUI is usually significantly higher than Site EUI due to inefficiencies in power plants and transmission lines. Source EUI can be reduced by generating energy on-site with renewable energy sources such as solar panels.

Another critical measure of a building's energy efficiency is the building's Energy Star score. Energy Star is a government program that takes multiple factors about a building, including how it compares to similar buildings, adjusts for weather and building usage, and gives the building a score from zero (worst) to 100 (best). A building with a score of 75 is considered an average building that meets current energy codes, while buildings with scores in the 90s are considered highly efficient.

When looking at energy use in hospitals across the U.S., Energy Star has published that the median Site EUI for health care facilities is 234kBtu/sf/yr. Facility EUIs range from below 100 to over 1,500kBtu/sf/yr. The engineers at CMTA aim to reduce that number to under 150 kBtu/sf/yr in climate zones 6 and 7. Minnesota is a predominantly heating-dominated region, which increases buildings' EUIs due to high heating, cooling, humidification and dehumidification needs depending on the season. Understanding where this energy use is going is especially important when trying to lower energy usage. A national publication recently asked hospital staff where they thought most of the energy was consumed–a majority answered they thought the building's imaging equipment, such as MRI machines and CT scanners, would use the most energy. The true answer is the HVAC system–consuming 56% of the energy in a hospital, with lighting and hot water being the next two highest at 19% and 16%, respectively. The systems designed by MEP engineers consume most of the energy used in a health care facility, presenting a significant opportunity for improvement.

Conventional strategies

In order to improve energy efficiency in the design and construction of health care facilities, it is essential to start at the beginning of the process. Health care providers are comfortable giving the design team requirements for how many procedure rooms or ICU beds are required, but many facility owners do not feel empowered to tell the design team how the building should perform. With a few notable exceptions, energy efficiency is left up to energy efficiency codes and to the discretion of the engineer. One large

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health care provider is setting a good example by placing an EUI target at the beginning of a project and writing it into the design team's contract. It is appropriate that a health care ownership team's highest priority should be patient care. However, lower energy consumption saves costs, and these cost savings can be rolled directly back into providing high-quality care. One recent survey found that for nonprofit health systems, each $1 saved in hospital energy costs is the equivalent of $20 of earned revenue.

When the owner has set the tone with an EUI goal, the design team can work on the massing and orientation of the building to optimize it. For example, a building with a lot of glass on its south-facing walls will require more energy to cool than a similar building with more windows on its north-facing walls. Shading elements on the exterior of the building can also reduce glare and cooling energy requirements. The architectural teams can also play a significant role in carefully detailing the envelope–exterior construction–of the building, which will reduce air infiltration. The design and construction teams will take additional steps to ensure a tight envelope when they know there will be a blower door test to confirm air leakage is within specified limits. This step not only saves energy, but also ensures all air entering the building is properly filtered and conditioned. Other building level opportunities for energy reduction include reducing square footage and floor to floor heights. If there is building area or height that can be eliminated, the heating, cooling and ventilating (HVAC) systems can become smaller.

When the building envelope and orientation are optimized with the architectural team, engineers can design HVAC, water heating, lighting and building automation systems. An energy model can be created very early in the design process using high-level building-wide modeling. As the design progresses from programming to schematic design, the energy model can be refined as more details about spaces and occupancy are chosen. It is important to conduct energy and cost modeling early in the design process since that is the time when changes can be made to the building with the lowest cost. As more design time is invested in a building, the cost of making changes increases because changes require costly redesign efforts. This approach also avoids unpleasant surprises at the end of the design process–no owner wants to find out their building is going to consume more energy or cost more than budgeted at the end of the design when they are going out for bid.

Lighting can represent 20% of a typical building's energy consumption, and the adoption of LED lighting has saved a significant amount of energy. Further reductions can be achieved by lighting modeling, shading analysis and right sizing lighting fixtures to spaces. While it may be easier for the lighting designer to have three of four types of lights for a project, an efficient lighting design might have 12-15 types of fixtures. Daylight harvesting uses automatic dimmers that reduce the amount of electric lighting when sufficient light enters through windows or skylights.

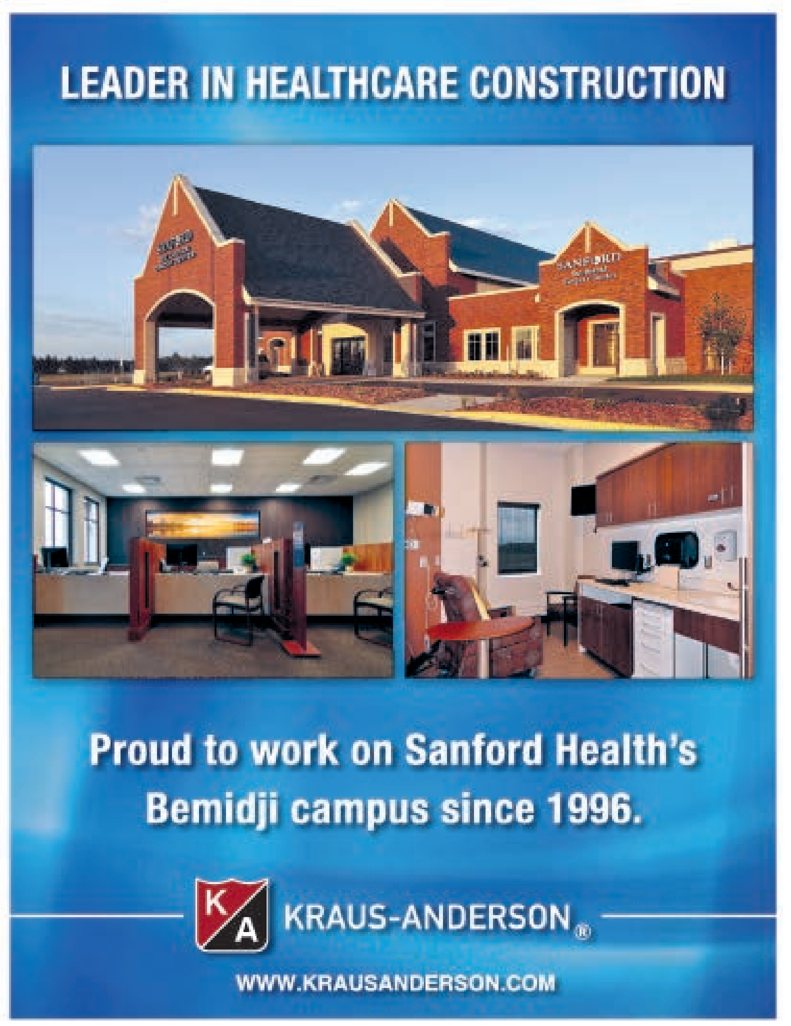
Using variable systems can reduce the amount of heating, cooling and ventilation air delivered to spaces during unoccupied times, leading to energy savings when a room or area is not used. Because hospitals have high ventilation and exhaust requirements, energy recovery is often used to reclaim energy from exhaust air–heat energy in the winter and cooling in the summer. Air side heat recovery uses heat wheels or cross flow heat exchangers to transfer the energy. Water side heat recovery uses coils in the exhaust and ventilation air streams to transfer heat. The concept of economizing refers to the practice of making use of the ambient temperature outside the building when conditions are correct to reduce the amount of energy used by building systems. Air side economizers take outdoor air when it is the correct temperature and humidity, filter it and introduce it to occupied spaces. Waterside economizers have water coils that are heated or cooled by the air outside; the water in the coils is then circulated through coils in the building to achieve the required temperature air inside the building. One example of waterside economizer use is during the winter; the outside air cools the coil, which can then be used for cooling loads such as for an imaging machine or data closet that have year-round cooling requirements.

Unconventional strategies

As energy costs rise, more attention is being paid to new strategies for saving energy. Some of the strategies have been successfully implemented in other building types but have not been widely used in health care. These systems have the benefit of having a positive track record and of being somewhat familiar to contractors and building engineers. Heat pump chillers can be used for simultaneous heating and cooling loads. Even in the middle of winter or the heat of summer, most hospitals have both heating and cooling needs. Domestic water needs to be heated year-round, while cooling is required by imaging machines and computer rooms. A heat pump chiller allows the owner to share heat between these functions.

Direct outside air (DOAS) units can reduce the size of duct mains in a building and provide more control of ventilation airflow and moisture control by providing 100% outside air through smaller ducts to ventilated spaces. This can save energy by improving fan efficiency and improving system redundancy.

Energy use in Health Care Facilities to page 32 ▸



HEALTH CARE ARCHITECTURE & DESIGN

HONOR ROLL 2022

Regions Hospital Family Birth Center

Type of facility: Hospital Birth Center
Location: St. Paul, MN
Ownership organization: HealthPartners
Architect/interior design: BWBR Architects, Inc.
Engineer: Multiple firms were used
Contractor: Krause Anderson Construction Company
Completion date: June 2021
Total cost: $58 Million
Square feet: 160,000

The new birth center offers the latest care choices and a design that resonates with the multicultural desires of urban millennial mothers. To provide a more family-centered approach, the center offers enhanced couplet care rooms—a progressive birthing model that allows mother and baby to remain together in the same room, even when special needs, such as Level III NICU status, are involved. These rooms are more flexible to accommodate multiple births, as well as larger and culturally diverse families. Clean, fresh finishes pair a modern color scheme with geometric patterns to enhance wayfinding. Signage translated in seven languages and meditation spaces aid in the comfort of sometimes stressful situations. Staff experience similar soothing touches in break rooms, lactation spaces, and accessible, gender-neutral amenities.

For the past 34 years, Minnesota Physician's Health Care Architecture Honor Roll has recognized outstanding achievement in new facilities design. The projects featured this year were all begun under the shadow of COVID-19, which somehow did not slow both the start and completion of a surprisingly large number of outstanding new facilities. The projects featured this year will serve patients at sites throughout Minnesota and on the borders of neighboring states. Our thanks to all those who participated in this year's Honor Roll.

Summit Orthopedics Lakeville Clinic

Type of facility: Ambulatory Surgery Center and Specialty Care Clinic

Location: Lakeville, MN

Ownership organization: MSP Commercial

Architect/interior design: Pope Architects

Engineer: Civil Site Group (Civil)/Innovative Structural Solutions (Structural)

Contractor: Bauer Design Build

Completion date: January 2022

Total cost: $9.1 Million

Square feet: 25,005

Modeled after other Summit Orthopedics locations, this two-story ASC and specialty care clinic uses a patient-focused, contemporary design to create a comforting, healing atmosphere. The two-story building uses high-quality building materials, HVAC systems and electrical systems to accommodate and comply with a variety of complex health care needs, providing a full spectrum of orthopedic care to the growing southern metro community. The building maximizes the limited site with architectural interest, using intersecting masses, bold materials and expansive glass to showcase the activity within the building. The covered entrance is highlighted with wood-style paneling, opening into a spacious lobby featuring multiple sitting areas, a fireplace and an open staircase with a branded feature wall upstairs. Branded purple lighting and on-building signage take advantage of the building's proximity to I-35.

Helmsley Behavioral Health Center

Type of facility: Hospital

Location: Sioux Falls, SD

Ownership organization: Avera McKennan Hospital & University Health Center

Architect/interior design: BWBR Architects, Inc.

Engineer: Ehrhart Griffin & Associates (Civil), Apex Structural Design, LLC (Structural)

Contractor: Journey Group

Completion date: March 2022

Total cost: $28 Million

Square feet: 60,000

A new four-story wing was added to the Avera Behavioral Health Hospital in Sioux Falls. The Helmsley Behavioral Health Center adds 60,000 more square feet for treating psychiatric needs among children, youth and adults. This wing adds several new services including 24/7 Behavioral Health Urgent Care, observation care, youth addiction care services and partial hospitalization for youth. The wing also houses Avera's senior behavioral health unit. In total there are now 146 inpatient behavioral health beds plus eight addiction residential beds for adolescents–all private rooms. The Leona M. and Harry B. Helmsley Charitable Trust generously donated $13 million in grant and matching funding to help make this $28 million wing a reality. Around 770 other donors joined the cause.

Associated Skin Care Consultants

Type of facility: Dermatology Clinic

Location: Minneapolis, MN

Ownership organization: Associated Skin Care Consultants

Architect/interior design: Mohagen Hansen Architecture | Interiors

Engineer: Design Build

Contractor: Greiner Construction

Completion date: April 2022

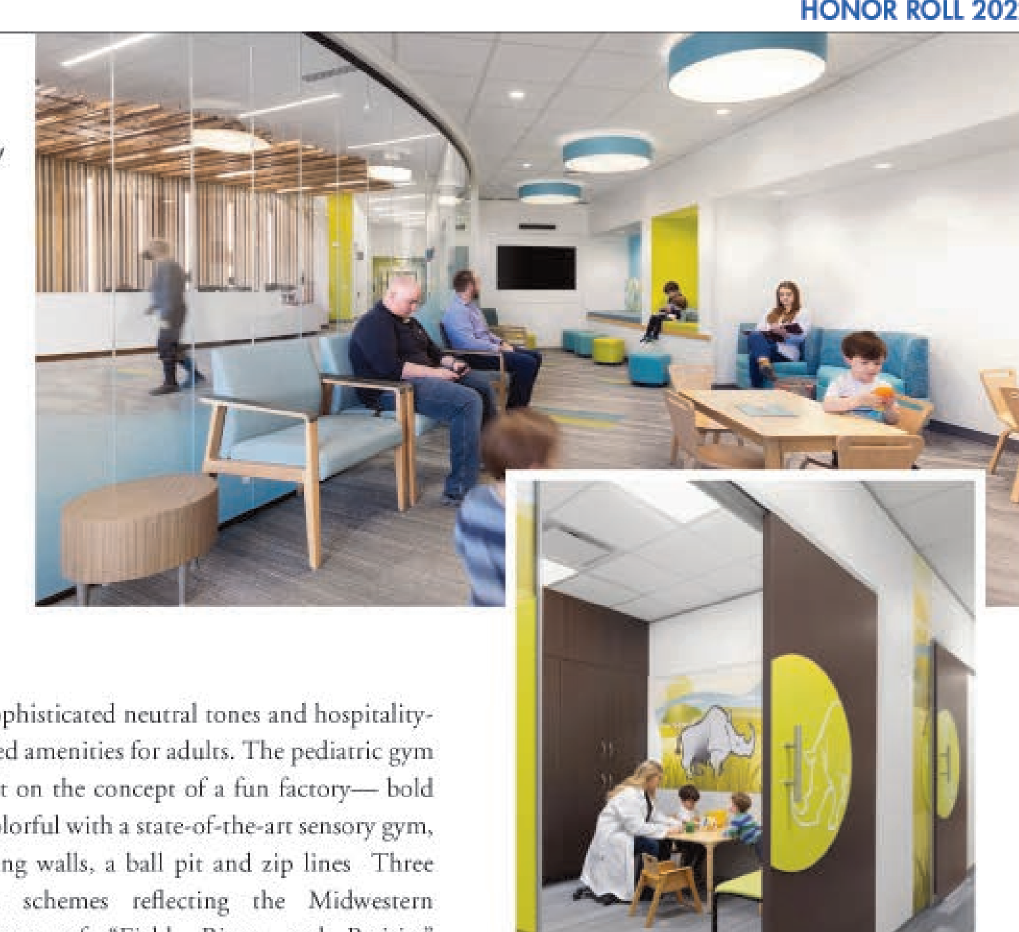
Total cost: $1,153,344.50

Square feet: 4,415

A two-story building in the Linden Hills neighborhood was repurposed, creating a boutique look and feel for a clinic that would highlight the practice expertise. The design concept was an inspired blend of industrial, mid-century modern and bohemian aesthetics. Redesign included a dramatic renovation to transform a previous restaurant tenant on the upper level and a yoga tenant on the lower level. A reworked split-level entry creates a welcoming and natural feel. The existing building was not ADA accessible, requiring a lift to transport patients between floors and a ramp for the back entrance. Biophilic design is found within the clinic through the use of a living plant wall at the entry, as well as having live plants placed throughout the clinic.

Altru Performance Center

Type of facility: Adult and pediatric physical therapy and sports training
Location: Grand Forks, ND
Ownership organization: Altru Health System
Architect/interior design: JLG Architects
Engineer: CMTA - Mechanical & Electrical
Contractor: Construction Engineers - CM
Completion date: March 2019
Total cost: N/A
Square feet: 40,000



An adaptive reuse of a former sporting goods store, located across the street from Altru Health System's main campus, the space includes prefabricated DIRRT wall systems that help prevent future remodeling waste. The lobby features warm elements of wood and nature-derived blues, making a smooth transition to more private seating areas. These include a playful design of seating nooks and vibrant colors for pediatrics and sophisticated neutral tones and hospitality-inspired amenities for adults. The pediatric gym is built on the concept of a fun factory— bold and colorful with a state-of-the-art sensory gym, climbing walls, a ball pit and zip lines Three design schemes reflecting the Midwestern landscapes of "Field, River, and Prairie," immerse guests in an outdoor experience while traveling through the interior space.

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MNGI Digestive Health Clinic

Type of facility: Ambulatory Surgery Center and Specialty Care Clinic

Location: Vadanis Heights, MN

Ownership organization: MSP Commercial

Architect/interior design: Mohagen Hansen Architecture/Interiors

Engineer: Civil Site Group (Civil), Innovative Structural Solutions (Structural)

Contractor: Gardener Builders

Completion date: June 2022

Total cost: $8.2 Million

Square feet: 21,500

Developed on a parcel shared with an existing specialty clinic, the MNGI Digestive Health ASC & Clinic builds upon a micro-market of health care providers in the vicinity. It offers a wide range of gastroenterology and digestive health services including outpatient procedures, infusion therapy, and comprehensive GI care with behavioral and dietary health support. To match neighboring structures, the clinic features brick, stone, and metal panels, with some creative architectural flourishes. A strong visual element, the main entrance features silver-colored panels surrounded by expansive high-performance glass and plentiful landscaping. These elements create a spacious feeling with abundant sunlight in the front lobbies. This theme is reflected throughout the building.

Spectra Health

Type of facility: Community Health Center/Clinic

Location: Grand Forks, ND

Ownership organization: Spectra Health

Architect/interior design: JLG Architects

Engineer: Lunseth Plumbing and Heating (Mechanical) Right Choice Electric (Electrical)

Contractor: Construction Engineers

Completion date: September 2021

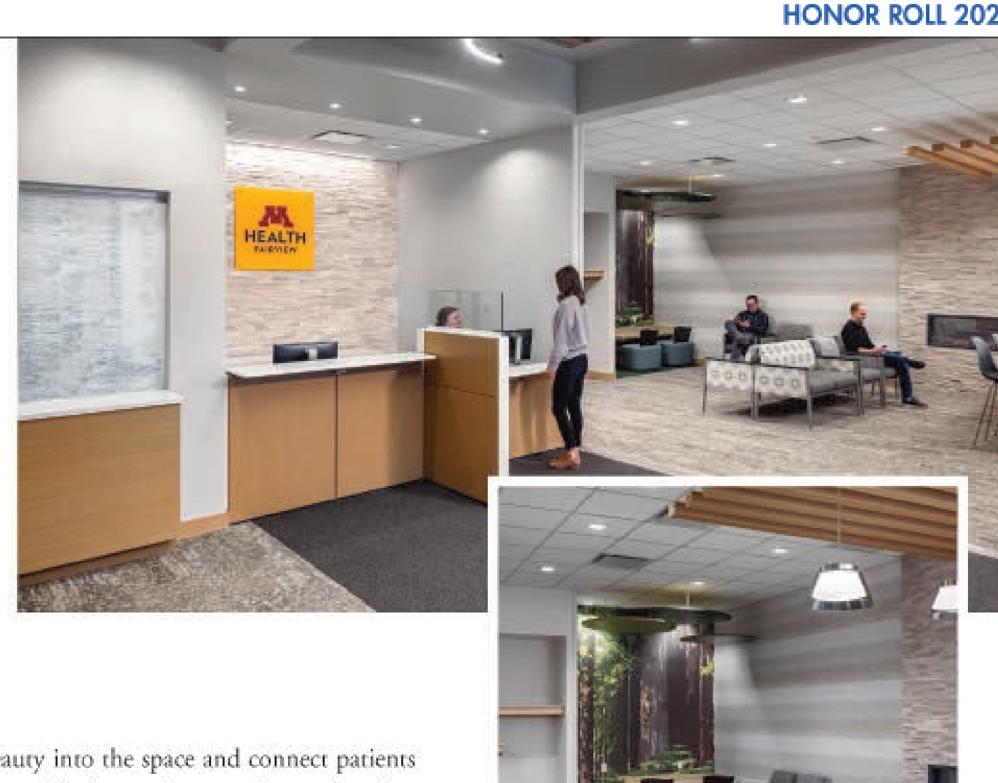
Total cost: $419,000

Square feet: 2,880 - 2nd Floor

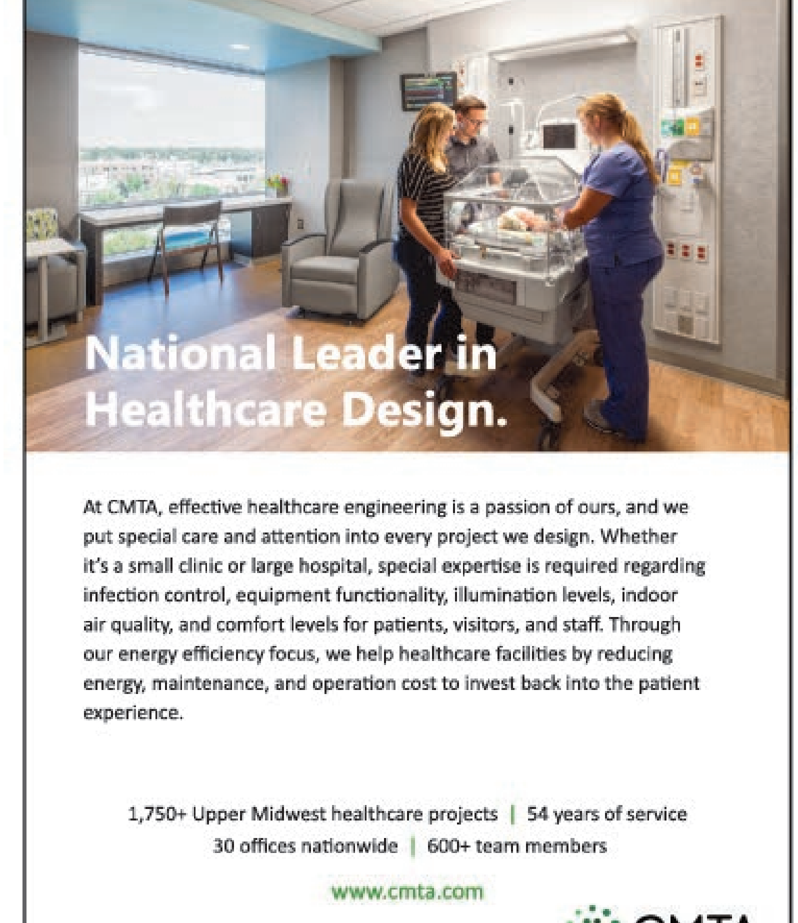
Located in the heart of downtown Grand Forks, ND, and East Grand Forks, MN, a coalition of provider partnerships created space to provide primary health care for vulnerable residents nearby who may lack insurance or transportation. Remodeling a former hospital's second floor provided three behavioral health exam rooms, an optometry department, provider flex space, staff respite space, a lobby, reception alcove and waiting area —all connected by intuitive wayfinding that reduces communicative barriers for patients who do not speak English as their first language. Modular, demountable partitions were used for future adaptability and behavioral health patient privacy. Two large windows lighting the main corridors and waiting area were reconfigured to capture natural light and avoid obstruction, specifically in the behavioral wing where environmental wellness is concentrated.

M Health Fairview - River Falls

Type of facility: Clinic
Location: River Falls, WI
Ownership organization: M Health Fairview
Architect/interior design: BDH
Engineer: MEP Associates
Contractor: Market & Johnson
Completion date: March 2021
Total cost: N/A
Square feet: 19,200



The M Health Fairview - River Falls clinic was relocated and expanded. Providing a comfortable experience for patients of all ages, the welcoming lobby features a play area for children and a wide variety of seating options. The clinic features two different check-in processes — an automated self-check-in, or check in with the receptionist. The larger-than-life environmental landscapes depicted in the floor to ceiling murals bring beauty into the space and connect patients with nature. The large planter and stone fireplace incorporated into the lobby bring natural elements indoors. The clinic separates care teams into four pods, each with nine exam rooms, a nursing station, and offices for the practitioners. The pods are differentiated by carpet color and accent walls that coordinate with nearby murals to promote patient wayfinding.



M Health Fairview Southdale Hospital EmPATH Unit

Type of facility: Emergency Psychiatric Treatment

Location: Edina, MN

Ownership organization: M Health Fairview

Architect/interior design: BWBR Architects, Inc.

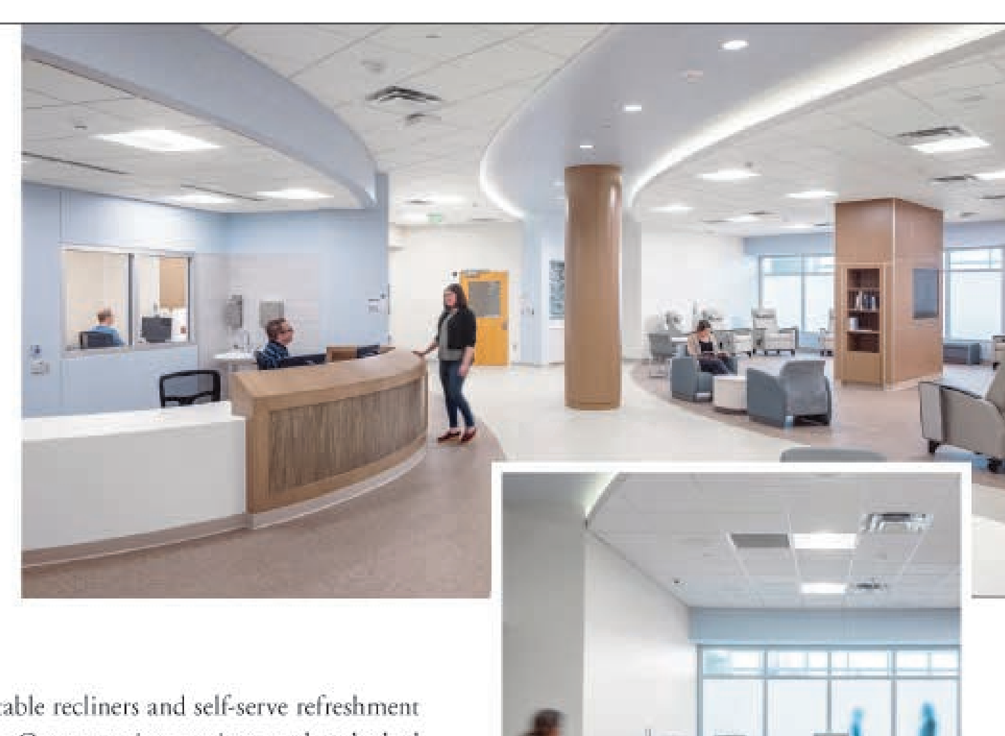
Engineer: Dunham Engineering Associates, ESI Engineering, Inc.

Contractor: JE Dunn Construction Company

Completion date: March 2021

Total cost: $2.1 Million

Square feet: 8,500



Minnesota's first EmPATH (Emergency Psychiatric Assessment, Treatment and Healing) unit provides an innovative approach to emergency mental health care. It is designed for acute psychiatric patients to receive assessment and evaluation in a therapeutic and minimally restrictive setting. It provides a calm and comforting environment, allowing for movement and human interaction. It offers living room style open space with comfortable recliners and self-serve refreshment stations. Open nursing stations and unlocked rooms create an atmosphere of trust and allyship with the staff, while the mix of daylighting, views to nature and appropriate imagery establishes a sense of hope. In addition to providing a conducive environment for treatment, the EmPATH unit provides a gentle and benign setting for the care team to constantly evaluate a patient.

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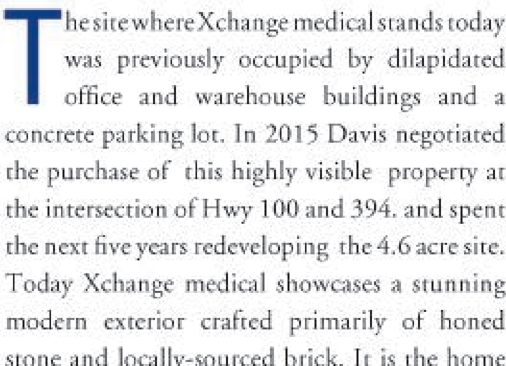
Xchange medical

Type of facility: Medical Office Building
Location: St. Louis, Park, MN
Ownership organization: Xchange MOB Partners, LLC
Architect/interior design: Synergy Architecture Studio, LLC
Engineer: Loucks (Civil), KOMA (Structural)
Contractor: Timco Construction
Completion date: November 2021
Total cost: $32 Million
Square feet: 78,000



The site where Xchange medical stands today was previously occupied by dilapidated office and warehouse buildings and a concrete parking lot. In 2015 Davis negotiated the purchase of this highly visible property at the intersection of Hwy 100 and 394. and spent the next five years redeveloping the 4.6 acre site. Today Xchange medical showcases a stunning modern exterior crafted primarily of honed stone and locally-sourced brick. It is the home to a full-service ENT practice, an exquisite six-room surgery center, specialty ophthalmology services and a state-of-the-art laser practice. Some notable features include a 5,000 square foot exterior healing garden, a two-story living wall, and a timeless yet modern overall design presence. Its sleek and contemporary aesthetic has created a positive economic impact and elevated community reputation.

610 Medical

Type of facility: Ambulatory Surgery Center
Location: Brooklyn Park, MN
Ownership organization: 610 MOB Partners, LLC
Architect/interior design: Synergy Architecture Studio
Engineer: Loucks (Civil), KOMA (Structural)
Contractor: Timco Construction
Completion date: June 2022
Total cost: N/A
Square feet: 41,642

A state-of-the-art ambulatory surgery center at the new 610 Medical joins the expanding medical corridor off HWY 610 in Brooklyn Park. Allina Health Surgery provides its patients with exceptional healthcare in a comforting setting complete with site-specific artwork. Specialty surgery sites such as this have been coined "the future of care" as they provide a safe and convenient option for general surgeries that allow hospital beds to remain available to those who need them most. The building exterior is crafted primarily of natural stone, locally sourced brick, and resilient composite metal panel. The public lobby is brought to life through its floor-to-ceiling windows which welcome natural light deep into the space and frame the stunning statement chandelier glowing from within.

Children's Minnesota - Minneapolis

Type of facility: Pediatric Intensive Care Unit
Location: Minneapolis, MN
Ownership organization: Children's Minnesota
Architect/interior design: Ryan A+E, Inc.
Engineer: N/A
Contractor: McGough
Completion date: November 2021
Total cost: $858,000
Square feet: 9,700

Conversion of an existing medical/surgical unit into a new 10-bed, 9,700 square foot Pediatric Intensive Care Unit (PICU). Located on the sixth floor, the remodel project updated existing patient rooms for young patients who are critically ill or injured, incorporating new life-saving medical and monitoring technology into the design. A welcoming reception desk/nurse station provides clear lines of sight to patient rooms and the entrance to the unit, adding extra visibility and security. The rebuild included a dedicated medication room, staff workroom, oxygen storage and two storage rooms. Also included was a family lounge with fantastic views of the downtown Minneapolis skyline and a comforting family conference / bereavement room. The space is bright, fresh and balances a sophisticated design with touches of whimsy and playfulness.

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To learn more about JLG, contact Todd Medd, tmedd@jlgarchitects.com or Kristine Sallee, ksallee@jlgarchitects.com
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4D Holographic Surgery

Advances in treating Atrial Fibrillation

BY JACOB DUTCHER, MD, FACC

Atrial Fibrillation (Afib) is a very common heart arrhythmia affecting approximately six million people in the U.S. and is one of the most important risk factors for stroke. To reduce the risk of stroke, many patients with Afib are treated for years with blood thinners, and while effective in reducing the risk of stroke, they do pose a significant risk of bleeding complications. Therefore, many patients who take anticoagulants live in constant fear of nosebleeds, internal bleeds, falls or injuries and even necessary medical procedures, such as a colonoscopy, which could result in bleeding. Unfortunately, many of these patients ultimately cannot or choose not to be treated with a blood thinner and run a marked increased risk of stroke. Thankfully, these patients now have an effective alternative to blood thinners— left atrial appendage occlusion (LAAO).

Afib affects the contractility of the atria of the heart, which can lead to a blood clot forming within the left atrial appendage (LAA). If a blood clot forms and escapes from the LAA, it can travel to any part of the body, such as the brain, cutting off the blood supply and resulting in a stroke. In people with non-valvular Afib, more than 90% of stroke-causing clots form in the LAA. As such, closing off the LAA has been targeted as a potential alternative to blood thinners in reducing the risk of stroke.

There are now two FDA-approved devices for LAAO: WATCHMAN (Boston Scientific) and AMULET (Abbott). Both the WATCHMAN and AMULET require a one-time procedural implant, where the device can be placed within the LAA, permanently closing it off. In closing off the left atrial appendage, these devices remove the greatest source of clot formation and dramatically reduce the incidence of stroke in patients with Afib.

Shortly after LAAO, most patients can safely discontinue their blood thinner. Both devices have now been studied extensively in multiple clinical trials and the consensus opinion is that LAAO is just as effective as blood thinners in reducing the risk of stroke, but with the additional benefit of reducing bleeding complications. In addition, results of some studies suggest that there may be a mortality benefit of LAAO when compared to long-term anticoagulation. Because WATCHMAN was FDA-approved approximately six years before AMULET, most of CentraCare's experience thus far has been with the WATCHMAN device.

Implanting the WATCHMAN

To implant the WATCHMAN, the cardiologist inserts a small sheath into the femoral vein in the groin and advances the sheath into the right atrium. From there, a transeptal puncture is performed to give access to the left atrium. Once in the left atrium, the WATCHMAN delivery catheter is advanced into the left atrial appendage where the WATCHMAN device is ultimately deployed and released. Up until just recently, the procedure was most commonly performed under general anesthesia and routinely took 45 minutes to one hour to complete. Patients typically stayed in the hospital overnight and would go home the subsequent day.

While the steps may sound relatively simple to perform, there are challenges that arise with a WATCHMAN implant. For example, to complete a WATCHMAN implant, cardiologists rely heavily on X-ray-based 2D-imaging to guide the implant of the cardiac device. Since soft tissues (such as the heart) do not show up well on X-ray, this type of imaging requires the use of contrast dye to identify and delineate cardiac anatomy during procedures. Unfortunately, contrast dye can cause allergic reactions and can also be toxic to the kidneys, especially in patients with pre-existing kidney disease. This scenario is present in nearly 15% of our patients, which may increase their risk or even preclude them from LAAO.

Ultrasound-based imaging, in either the form of Transesophageal Echocardiography (TEE) or Intracardiac Echocardiography (ICE), are also widely used. However, they are also predominantly 2D-based, with some recent expansion into 3D- and 4D-imaging. However, the imaging is not always ideal, and it does require additional personnel and expertise to understand the images and guide a LAAO procedure.

Due to these challenges in imaging, I have wondered if, with improved imaging, there could be a faster, safer and more precise way to perform LAAO.

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An improved method to implant the WATCHMAN

For several years, I've been working with EchoPixel, an innovative Silicon Valley-based company that is aiming to revolutionize the future of the procedure room. EchoPixel has developed pre-operative True3D holographic planning and intra-operative Holographic Therapy Guidance (HTG) platforms. These new imaging platforms allow physicians to interact with patient-specific organs and tissues as if they were actual, physical objects in the form of a hologram. We describe these holograms as a digital twin of the human body.

I initially began to use EchoPixel's True3D CT planning tool in 2017. After completing approximately 75 WATCHMAN procedures using this planning tool, we did a comparative analysis to other WATCHMAN procedures performed at our institution where the True3D CT planning tool was not utilized. The results of these observations were striking and presented at the annual American College of Cardiology Conference in March 2020. The main conclusions were that when using the True3D CT planning tool, procedure times were significantly reduced and we more accurately predicted the correctly sized WATCHMAN device in an LAAO procedure.

In early 2020, Sergio Aguirre, CEO of EchoPixel, showed me a prototype of the company's new 4D HTG technology. Essentially, 4D HTG takes a standard live 3D image (often based in ultrasound) and converts that data into a live, interactive and glasses-free 4D holographic experience. Working in tandem with EchoPixel to evolve this technology further, we first practiced using the technology on a silicone-based heart model, as well as in a dog. With practice came improved confidence in the technology. We then successfully completed the world's first WATCHMAN implant in a human using 4D HTG in May 2021.

We have seen a significant decline in our procedure times, often now done in 20 minutes or less.

To date, we have performed over 50 successful LAAO procedures using 4D HTG. While there still are improvements to be made, the benefits of this technology are already clear. First, it allows us to perform an LAAO procedure with improved confidence and visualize the devices and anatomy in a way we've never been able to do before. With EchoPixel 4D HTG, we are able to recreate and interact with images as if we were physically standing inside that person's body; we call this creating a digital twin. Having this quality of imaging and ability to interact directly with the patient's anatomy has given us improved confidence in the success of the procedure.

Also, by using EchoPixel 4D HTG, we have seen a significant decline in our procedure times, often now done in 20 minutes or less. As a result, we have moved away from general anesthesia and now routinely perform

4D Holographic Surgery to page 30 ▸

◀ **4D Holographic Surgery** from page 29

the LAAO procedure with conscious sedation. In addition, with our greater success and reduced procedure times, we are now discharging patients the same day—approximately six hours after the completion of the LAAO procedure.

Another tremendous benefit of this technology is that it dramatically reduces our use of harmful radiation and contrast dye. Most of our procedures are now performed predominantly using EchoPixel 4D HTG, with X-ray being used solely in a supportive role. This has allowed us to perform multiple procedures with very little or even no contrast dye. We have now performed LAAO procedures on a few patients with a history of life-threatening allergic reactions to contrast dye and on patients with end stage renal failure who were previously felt not to be candidates for LAAO. EchoPixel 4D HTG has allowed us to expand access to the LAAO procedure to these groups of patients, who were previously felt not to be candidates to this tremendously beneficial technology.

A success story

That was the case for Sheldon Kittelson of Clarkfield, Minnesota, who had been on blood thinners since 2011 and felt trapped between the fear of having a stroke and the fear of spending a lifetime on blood thinners. His lifestyle brings increased opportunity for cuts and bruises, as he is frequently around equipment, farming 1,400 acres of corn, soybean and sugar beet crops with his sons. After a routine colonoscopy, Kittelson suffered a massive intestinal bleed. Because his medical team feared he could bleed to death during the two-hour ambulance ride, they airlifted him to CentraCare–St. Cloud Hospital, where he spent seven days.

It became clear that blood thinners were no longer a practical, long-term solution for Kittelson, and yet going without would put him at a much greater risk of stroke. Because Kittelson has significant kidney dysfunction, we felt he would be a good candidate for conducting the WATCHMAN implant using EchoPixel's HTG technology without the use of contrast dye. The procedure was successful, and Kittelson was back on his tractor a few days later, free from the worry of the risk of stroke or bleeding.

The future

This is just the beginning for 4D HTG. Our plan is to continue to use and perfect 4D HTG in LAAO, but soon expand the use of the technology to other structural heart-based procedures such as percutaneous mitral and tricuspid valve interventions, closure of atrial and ventricular septal defects, and plugging of perivalvular leaks. It has been an exhilarating yet humbling experience to be involved in the development of this novel imaging modality, and I am very excited for the future.

Jacob Dutcher, MD, FACC, is an interventional cardiologist and director of the structural heart and STEMI programs at the CentraCare Heart & Vascular Center.

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◂ **Providing Leadership in Sexual and Gender Health** from page 9

aware of these threats and have a strong emphasis on advocacy as a guiding principle for our work as a result of the social climate in which we exist.

What are some examples of success stories your work has created?

We have been successful in not only establishing the first academic chair in sexual health in the world, but also an additional three endowed faculty positions. This allows us to recruit and retain the best leaders in this country to Minnesota to carry on the rich tradition in perpetuity that the pioneers began over 50 years ago. These resources allow us to have fundamental impact on our patients' lives, and in many cases, this has been lifesaving.

We have developed models of clinical care that influence how these issues have been addressed around the country and the world. We have trained over 10,000 of our own University of Minnesota medical students in sexual health, who have gone out to practice all over Minnesota and around the country to be knowledgeable and "askable" physicians, thereby impacting millions of individuals under their care.

We have conducted groundbreaking work to better understand the sexual and gendered lives of people that has informed treatment, further research and public policy. We have had a profound influence on public health policies to recognize the importance of sexual health as fundamental to overall health and well being.

> It is the physician's responsibility to bring up topics—even if they are uncomfortable.

What would you like physicians to know about the work you are doing?

ISGH is a beacon and one of the crown jewels of the University of Minnesota Medical School unparalleled in other parts of this country. It is not something that we can take for granted. We will need more support to advance sexual and gender health in Minnesota, around the nation and around the world. We recognize that our physicians will touch so many more lives than we can ever possibly reach, and that is why our mission to train physicians is so very important. We are here to handle your complex cases and give you more tools to provide the sexual health care that your patients need and want.

Eli Coleman, PhD, is the director and academic chair in Sexual Health at the Institute for Sexual and Gender Health (ISGH) at the University of Minnesota Medical School. He began his career at ISGH in 1977 and has been the director since 1991.

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◂ **Energy use in Health Care Facilities** from page 17

At a programming level, patient rooms can be designed so that the same room can be used for different health care functions–a flexible room could be converted from a med-surg room to an ICU or isolation room simply by changing the control of airflow to the room. Flexible rooms could reduce the total number of rooms and therefore square footage required by the facility. The most efficient space is space that does not have to be built.

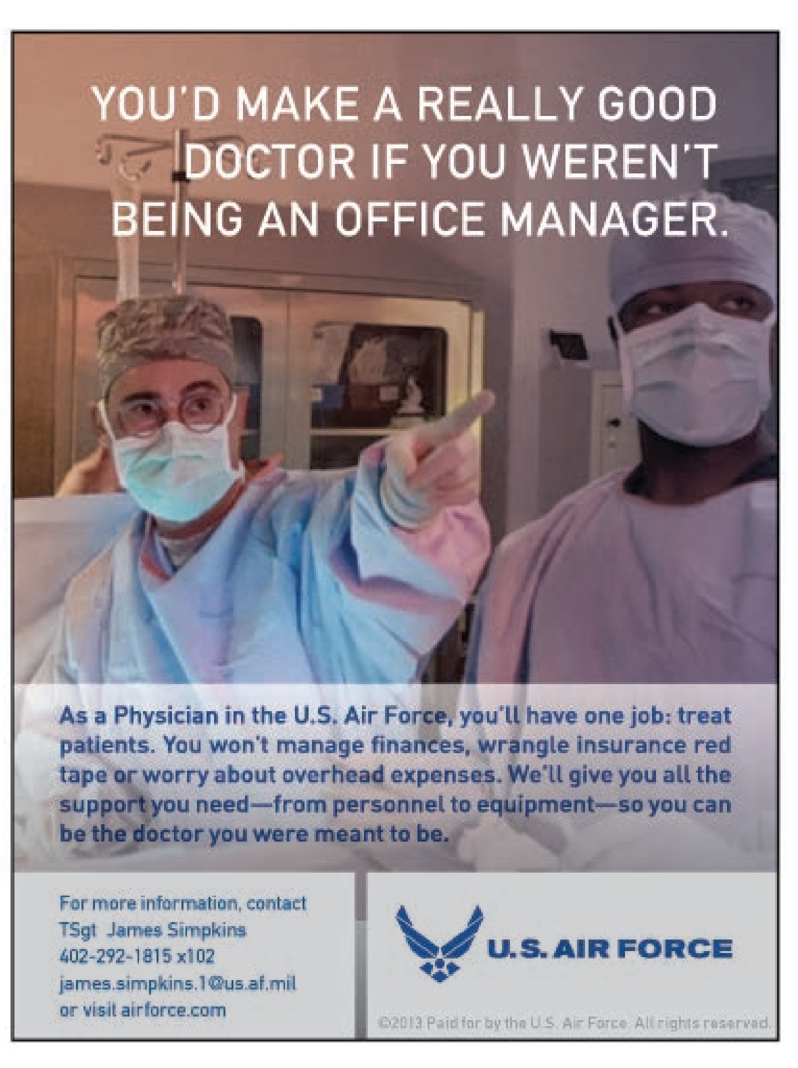
Each $1 saved in hospital energy costs is the equivalent of $20 of earned revenue.

Many of the high-performance hospitals designed at CMTA utilize geothermal heat pump systems. While geothermal systems have not been widely used in health care settings in the past, improvements in equipment and controls mean they are worth considering, whether for new construction or retrofitting buildings. Many think of geothermal heat pumps as being only used at the terminal level, where many small heat pumps are used to heat and cool zones with loads under 800 square feet. However, large air handler heat pumps are now available on the market and can be used to replace a standard air handling unit. The benefit of this approach is that the replacement work is limited to the mechanical room and does not require invasive replacement of duct mains and branch ductwork.

The journey to high performance buildings is not a simple one. It requires input and careful thought from many diverse groups of people, from physicians to hospital administrators, to architects, engineers and the construction trades. Two important takeaways to consider are: first, start measuring the energy use intensity of facilities. When things are measured, they can be improved. Physicians and building owners can affect the design of their facility by setting EUI goals and comparing their facility to similar facilities in the same climate zone. The second takeaway is: start now. There is no time like the present for improving energy efficiency in health care facilities. There are multiple benefits: to the energy costs of running the building, to improving patient care, to the stewardship of the environment and to the world we leave to future generations.

Mark Bradby, PE, has over 20 years of mechanical systems experience and has been involved in the design of various building types with a focus on health care. Throughout his career, Mark has been passionate about sustainable design, and continues to advocate for the use of sustainable technology and techniques in buildings.

Ned Rector, PE, LEED BD+C, CEM, has over 35 years of various roles in the health care built environment including mechanical contractor and design engineer. As a Certified Energy Manager, Ned holds unique insights into affordable energy conservation and works with owners to understand their potential for energy and cost savings across their facilities.



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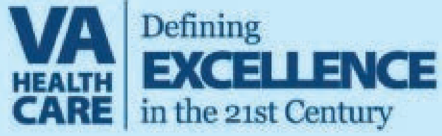

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◂ **Minnesota's Healthcare Workforce Shortage** from page 11

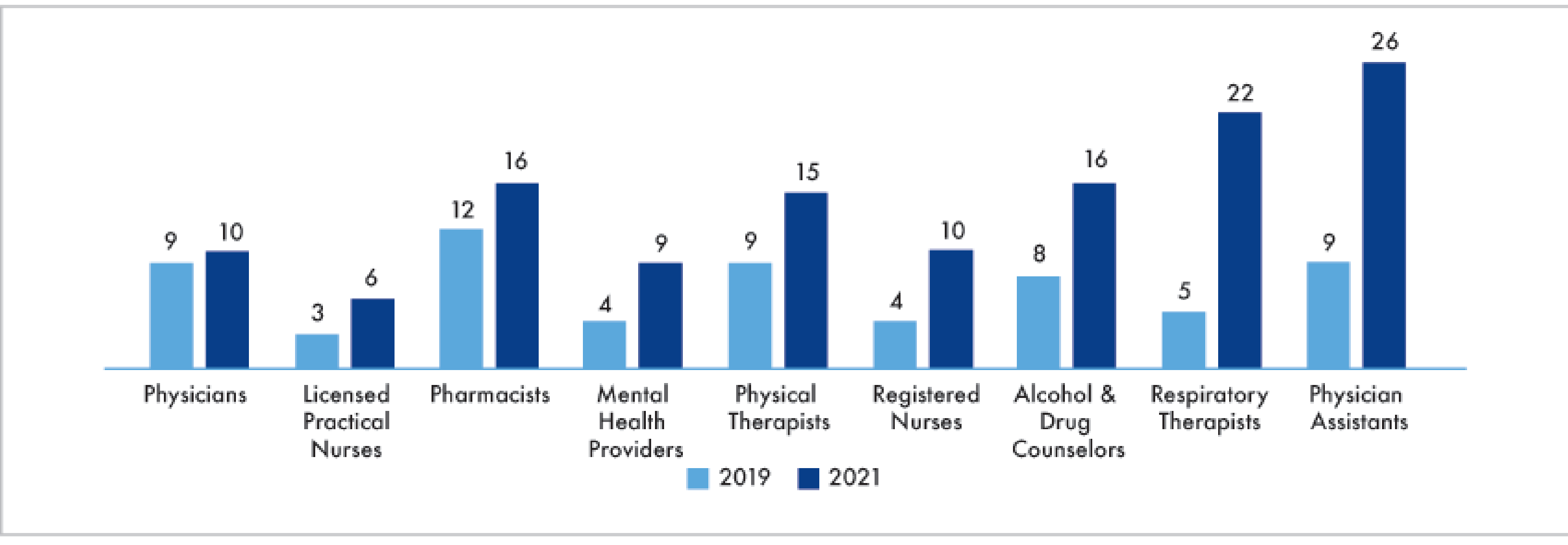

Figure 2. Percentage of planned exits that are due to burnout or job dissatisfaction.

What can be done? What is being done?

The data presented here paint a fairly alarming picture. With populations growing and baby boomers aging, health care services are needed more than ever. Workers are already in scarce supply, and the next five years very likely will usher in a wave of retirements and premature exits that cannot be fully replaced by the current level of new entrants into the workforce. We are right to search for a fix. However, very likely there isn't a single fix. This multifaceted issue needs a multisectoral solution that involves all aspects of workforce development, recruitment and retention.

Our first charge must be to stop the leaks; health care employers have to focus on retention. Given the cost and the length of training required for many of these positions, we cannot rely exclusively on training new providers to address the immediate problem. Health care workers need more than appreciation; employers must do more to address burnout. Jobs should be as safe, flexible, lucrative and family-friendly as possible.

Second, we have to continue to grow the supply. Health professional education programs need to expand education and clinical training opportunities, particularly in rural and small town areas of the state so their graduates are rural practice-ready.

Third, workforce recruitment and retention efforts need to reach across all levels of the workforce—focusing solely on the nursing or physician shortage will have impact, but alone will not solve the health care workforce crisis. The stress and shortages that have created the current crisis affect all aspects of the workforce. Targeted solutions are needed for other critical members of the health care team, such as physician assistants and respiratory therapists, who are also exhibiting high levels of burnout and planning early exits.

Finally, the state must engage all sectors and policy levers at its disposal to grow and nurture the health care workforce pipeline. Loan forgiveness for health care providers, scholarships, stipends and career exploration initiatives for new and dislocated workers and programs aimed at increasing the diversity of the workforce are all good places to start.

Teri Fritsma, PhD, is the lead health care workforce analyst at the Minnesota Department of Health. Prior to this position she was a labor market analyst for both DEED and the Minnesota State Colleges and Universities system.

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