Hospital, Outpatient Facilities & Medical Office Buildings Summit

What's Next for Healthcare Facilities in These Unsettled Times?

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Healthcare Gymnastics – Comparing 2018 & 2022 FGI Guidelines and Texas Hospital Licensing Rules

Tina Duncan, AIA, ACHA, CBO, FGI Board of Directors, AIA AAH Codes and Standards Chair

Duncan presented an insightful overview of the 2022 FGI Guidelines, covering changes from the 2018 FGI version and those of the state of Texas, as stated in the Healthbook, which is also commonly referred to as "the yellow book" and whose standards were set in 2001. She clarified that her presentation on hospitals was from her perspective. Here are the highlights:

TEXAS HAS ITS OWN RULES: States started talking about adopting guidelines pre-Covid, all based on the 2018 guidelines and with the knowledge that our rules are outdated. Now, we've gone through stops and starts and are still using the current rules. The 2022 guidelines that are now out.

SAFETY RISK ASSESSMENT: Under current Texas rules, no safety risk assessments are required.

FUNCTIONAL PROGRAM: The 2022 FGI Guidelines add the project's purpose and expectations of delivery of patient care to its requirements. Duncan suggests we now need different kinds of safety risk assessments, with the intent to proactively identify hazards and risks and mitigate underlying conditions. Under current Texas rules, nearly all requirements specific to a room or department is included within each applicable setting. Compared it to creating our own adventure, using what she termed the "Frankenstein model," which allows one to pick and choose.

INVASIVE PROCEDURES: 2022 adds a non-traditional approach to Cath labs, which are considered invasive. This means your Cath needs to be in the restricted environment. The 2018 and 2022 guidelines do define invasive procedures, but don't include Cath labs. Yet the definition still rests with the state. For those using the guidelines outside of Texas, Duncan recommends for "any procedure that you're doing that is questionable, have those discussions with the state prior to design."

BEDS: FGI does not define bed size. "What they want you to do is determine those clearances that are required around the bed by the bed that's being used or the structure that's being used," says Duncan. "That means you have to know that information at the onset of the project

HANDS-FREE FAUCETS: Texas rules have no specific size for faucet blades. The 2022 guidelines added to definitions including minimum size of 4 inches for a blade to be considered 'hands-free.'

ISOLATION AND ANTEROOMS: Texas requires at least one isolation room per 30 acute beds and one per each type of CCU, with a minimum of one anteroom. For 2022, FGI says that ICRA will determine anteroom requirements and that there be added space for donning and doffing PPE when entering an anteroom from a corridor. There are different requirements for anterooms and isolation rooms depending on the department

NEONATAL COUPLET ROOMS: Under the 2022 FGI Guidelines, if a new mom and her baby both need care, they may be in the same room. Under the 2018 rules, the guidelines were 120 SF per bassinet or crib. For 2022, guidelines require 180 SF per bassinet.

COMMON ELEMENTS – Control Doors: Under current Texas rules, cross-corridor control doors hall consist of two 44'inch leaves which swing in a direction opposite of each other and shall be provided with a view window. There are no requirements listed in the 2018 or 2022 guidelines. For elevators 2022 Guidelines say cab size shall be at least 5'8" wide and 9' deep. Current Texas

rules provided for an elevator lobby with smoke exhaust, a swinging hoistway door and a horizontal sliding door.

HANDRAILS: Under the 2018 guidelines, unless revised in the scoping chapter, handrails shall be installed on both sides of patient use corridors. For 2022, where features preclude continuous handrails, handrails installed on one side is permitted, as in the case of a series of doors only allowing a small portion of a handrail.

PATIENT ROOM WINDOWS: Under current Texas rules, windows in patient sleeping rooms shall be located on an outside wall. These windows may face an atrium, an inner court or an outer court provided the following requirements are met.

EMERGENCY SERVICES DECONTAMINATION ROOM: Current Texas rules indicated they must be connected to interior corridor and must have exterior entrance, with 80 SF min. of space. For 2022 Guidelines, they also must be connected to interior corridor, with exterior entrance and a 100 SF minimum, with no max/min for outdoor structure.

HOSPICE OR PALLIATIVE CARE: In these rooms, the guidelines provide for 153 SF with 10 feet at the head of the patient bed and clear floor area of 33 SF for a family support zone, providing space for overnight stays. In renovation, this may be reduced to 120 SF. A mobile telemedicine cart is permitted.

GERIATRIC CARE: The new guidelines have added requirements for geriatric patient care and new safety provisions. Trauma rooms are not allowed to be used for exams. The 2022 guidelines added a Transcranial Magnetic Stimulation (TMS) room, an Intensive Outpatient and Partial Hospitalization Program (IOP/{HP) and new safety provisions in entrances, reception and waiting spaces.

BURN TRAUMA CRITICAL CARE UNIT: For 2022, they must meet ICU criteria, have an available operating room with a temperature of 95 degrees, a maximum of one patient per room, a patient room designed as a Protective Environment (PE) and Radiant heat panels over the bed.

SECURITY: A video surveillance system for public entrances and duress alarm systems must be placed where entrances are located.

PUBLICATION OF THE 2022 FGI GUIDELINES: Now available on Facility Guidelines Institute website, https://fgiguidelines.org/guidelines/purchase-the-guidelines/

Be advised that the 2018 version will no longer be available after July 1, 2022

Strategies to Resolve Tough Workforce Issues in the Healthcare Industry

Peter Beard, Senior Vice President for Regional Workforce Development with the Greater Houston Partnership,

Lisa Bogany, Strategic Projects Manager, Workforce Solutions,

Steve Klahn, MBA, RN, CCRN-K, FACHE, Virtual Medicine-Inpatient Services Clinical Director at Houston Methodist

Dennis Yung, Executive Vice President with Skanska.

Peter Beard opened discussion of regional development and new initiatives facing the workforce, as this related so pre-pandemic demographics and the need for more diversity today. He asked, "Is it harder today to find diverse, skilled labor? Houston has experienced population growth of 69,094, from July 2020 to July of 2021. By comparison Phoenix' gained of 78,220, Atlanta's gained 42,920 and Dallas-Fort Worth's gained 97,290. Industries like healthcare are driven by population growth, which in turns means more capital expansion.

"We had equal net migration and natural population growth," says Beard. We have people helping to drive production – more skilled labor and greater production.

Beard compared the 2010 composition and with the 2020 composition from the U.S. Census. Amid the Hispanic segment, which is 35 % of the total, 60 per cent have a high school education or less. Around 20% have some college, but no degree. Among the Black population, 30% have a high school diploma, and 35 % have less than a college degree. The pandemic truly disrupted early childhood education, with many daycare centers closing. These students will need ongoing training.

CONSTRUCTION: Construction was the second-largest gaining sector over the month up 3,200 jobs, or 1.5% from March of 2021 to March 2022. Construction has added an average of 1,700 jobs over the month, which indicates that this month's gains are substantially above the long-term average. Specialty Trade Contractors was the largest contributor to the overall sector's increase, up 1,600 jobs over the month. The second largest contributor was Construction of Buildings, which added 1,000 jobs from February to March 2022. Heavy and Civil Engineering Construction contributed 600 jobs. Construction employment was revised upward by 1,300 jobs for a January to February larger net gain of 3,600 compared to an original estimate of 2,300 jobs.

Lisa Bogany, who specializes in upskilling current and future workforce and building strategic partnerships, presented the long-term projections,

PROJECTED HEALTHCARE WORKFORCE NEEDS OVER NEXT TEN YEARS: The growth in jobs for Registered Nurses will rise from 56,318 in 2021 to 66,418 in 2031, predicts Bogany. Similarly, for Licensed Practical and Licensed Nurses there is an expected expanded need from 13,903 in 2021 to 16,894 in 2031.For doctors, the projected growth is smaller, rising from 7,121 in 2021 to 7,98 in 2031. Physical therapists will see a rise from 3,770 now in Houston to 4,896 ten years down the road. Respiratory therapists' need will grow from 2,712 last year to 3,567 in ten years. The rise in need for radiologic technologists and technicians is around 700 for the next ten years, growing to 5,081 from 4,358.

CONSTRUCTION WORKFORCE NEED GROWTH: For a first-line supervisor of construction, job growth will hit 26,022, up from 22,254 in QQ last year. Electricians tally 20,751, up from 17,376 in 2021's Q4. Plumbers, pipefitters and steamfitters will see an increase of almost 2000, rising

from 12,420 to 14,255. There will be an expected growth in need for rotary drill operators in oil and gas from 1,561 to 2,093 in 2031.

Though women have made important gains in the corporate pipeline, they still make up less than 25 percent of executive-level positions. They are also significantly more burned out—and increasingly more so than men. There is also a disconnect between companies' growing commitment to racial equity and the lack of improvement we see in the day-to-day experiences of women of color. McKinsey reports that Women leaders continue to feel the burn of burnout. Statistics show men think childcare is affordable while women don't.

Bogany collaborates with UpSkill Houston, a division of the Greater Houston Partnership, Gulf Coast Workforce Solutions for the Houston-Galveston Area (wrksolutions.com), Construction Career Collaborative (c3.org) which goes into schools as well as a program called SheBuild, plus ABC and CMEF, Mysite (onlinesmef.org). "More females are showing up, tending to perform better than some of their male counterparts," says Bogany. Also, S&B Engineers & Constructors did a female internship in construction, as did the HLS&R with a craft competition for Three Ton Smokers.

"We pay them and they work for you. The City of Houston has Hire Houston Youth going on. Workforce Solutions has funds to offset costs of training. Part of the success was the identification of which workers needed to be reskilled and the opportunity to have a match reimbursement for 25 to 95% of the costs.

WHAT MINDSET SHIFTS DO WE NEED? Bogany suggests looking at non-traditional talent pools and seeing how we can adjust and make better use of talent among veterans and those who are no longer incarcerated.

Dennis Yung, with Skanska heralded work experience through internship programs. He says work/life balance is a new, post-COVID focus and he sees their projects focusing on opportunities for diverse thought and true inclusiveness. "They expect to have time to devote to family and companies are figuring out ways to rotate shifts to accommodate these needs. Houston is the second largest population of returning service men. Next Stop is a great way to tap into this population – they have wonderful experience in problem solving every day and they are resilient.

Also, plumbers, welders, skilled craftsmen who may have been through the justice system are another resource in the talent pipeline.

Flexible Spaces - Designing for the Unknown

Sunita Ganjoo, BArch, MBA, PMP, Senior Project Manager, PMO at Harris Health System,

Jill Pearsall, Senior Vice President, Facilities Planning & Development, Texas Children's Hospital,

Ginger Smith, Senior Facilities Construction Project Manager, UTHealth and President of Construction Owners of America, Texas Chapter and

Gary Longbotham, President, AMFP Houston and Executive Vice President/Principal of J. Tyler Services.

Ganjoo shared that they were caught by surprise by the global extent of the pandemic. "The predicting models tell you only so much. There's a whole gamut of changes in the building codes that impacted the industry. Construction costs escalated, causing a ripple effect from the pandemic. She focused on what is next and on preparing for other emergencies such as cyberattack.

Smith said, "It's a cliché, but the past does predict the future." We look at adversities we've had to overcome, put some procedures in place and collaborate on how do you plan for the unknown? We have a way to go on this and costs are greater for renovation. One space I have renovated six times due to occupancy changes. There are things we could have done with things that are moveable. Unfixed spaces will be an asset in the future. The tough questions we ask our collaborative teams for better solutions is "How do you know or define what you don't know? Or does this square with your assumptions about the future?' Smith said, "I was taught early that change will happen – adapting to change is what we do. We move forward with the best solutions possible.

Pearsall said that if you could spend a day with an ER nurse, you learn that every situation is different. Anyone's condition can change in a heartbeat. Think about whom we are creating the space for and how can we create the best environment for them? If you do that, you are best staged for the next pandemic or crazy disaster.

Ganjoo said Ben Taub, the emergency care hospital, is the most populated and was designed 40 years ago. "We decided to change. The nursing staff demanded that we have daylight in treatment rooms. As facility planners, we look at how the needs are changing and plan for that. We also consider how this will impact the budget with financial models that sometimes don't make sense with the new needs.

New Construction vs Renovating/Repurposing: Pearsall shared that in her experience, new construction can be far easier to manage and predict than renovating/repurposing. "Renovations are a different animal than new construction, and it takes talented, engaged, committed partners to know how to work through it, manage all of the balls in the air, and look for and appropriately respond to finding the skeletons in the closets," Pearsall says.

Confronting Healthcare's New Reality After COVID: Enduring Drivers, Disruptors and Opportunities

Supina Mapon, Healthcare Strategist, DPR Construction. She has advised numerous health systems, academic medical centers, community hospitals, and provider groups across the globe.

Mapon shared her perspective as it impacts six generation and six sets of expectations. Those include The Silents, aged 83 to 100 by 2030, who have a PCP and who are technology averse and rely on word of mouth; the Baby Boomers, aged 63 to 82 by 2030, who have a PCP and who are one of the unhealthiest generations than any previous one at the same age; Gen X, aged 48 to 63 by 2030, among whom half have PCP and fell less comfortable opening up to a doctor (1 in 4 say they've lost trust in doctors or hospitals); the Millennials, aged 31-47 in 2030 among whom one-third have a PCP and 1 in 4 use alternative care sites and are more likely to say they can tell their doctor anything; Gen Z, aged 14 to 33 in 2030 for whom time is a premium and require more information for health decisions; and Gen Alpha, 0 to 16 years in 2030, who will live in a world of complete immersion in technology, with a longer life expectancy, smaller family size with older parents and more culturally diverse.

A DYNAMIC MARKET: A market shift shows a weakening of physician recommendations with the growth of new primary care options, transparency that could undermine traditional PCP relationships. The effect on the market is an increase in self-referrals and more steerage of provider referrals.

Among findings: 73% of chronically ill seniors aged 65 and up with chronic disease searched for online health information, with 35% searching for provider reviews. Only 3% used live video telemedicine and 10% used digital health goal tracking, while 17 % of the vulnerable population with an income of less than $25K tracked goals online; with 39% of aging adults aged 35 to 55 with incomes greater than $50K tracking health goals online.

She looked at four sets of expectations among four generations of employees in tomorrow's workforce, comprised of Baby Boomers, Gen X, Millennials and Gen Z. Gen Z wants ongoing training, considering it essential and has a technology based learning style, requesting consistent and frequent feedback. For them, change equals an expected outcome. For the Baby Boomers, change equals caution and they prefer an annual review, with training preferred in moderation.

HOW DOES REAL ESTATE RESPOND: Hospitals are keeping the consumer brand experience in mind and focusing on stronger recruitment, physician management and compliance. They are looking at planned obsolescence of healthcare functions

SHIFTING PURPOSEFULLLY TO AN AGILE CULTURE: in the workplace of tomorrow, in a hospital, agility isn't just about being faster and more-patient centric; it's also about finding new ways of working more purposefully.

AN INDUSTRY CHALLENGED: Hospitals operating margins are still below pre-pandemic levels, driven in large part by the massive growth in expenses. Today's total expenses are 11% higher than in 2019. There has been a 13% increase in labor expenses and a 20% expense growth on a per patient basis. Hospitals still face a long road to recovery. There are signs of margin improvement at the end of Q1 2022, but hospital operating margins remain in the red for a third consecutive month.

Hospital of Future: What Technology Elements are Required to Build a Hospital that's Truly Advanced

Brian Gray, Senior Project Manager, Page,

Zac Hillyard, Technology Principal, SSR Innovation Group,

Sherrill Lanthier, RN, BSN, Construction Planning Coordinator, Houston Methodist,

Murat Uralkan, Director of Innovation, Houston Methodist

Rhona Vogt, Associate Principal, Page.

What elements are required to build a hospital that is truly advanced? Everything comes back to the patient, from all perspectives. At the same time, tech hubs are used to create a flexible place to pilot these technologies.

Uralkan asked the audience to consider what happens before, during and after a hospital stay. Houston Methodist is using My Methodist, with 2,348 tablets and 378 tele rounding tablets, voice over text as a common denominator to interact and remove some burden from the nurses. They are looking at ambient intelligence and remote monitoring of patients. Some monitoring results in removing bulky devices from the room, which impacts both people and the design of the facility. Service robots are also being considered to improve supply chain on food service. Security robots are already in place, as well as autonomous wheelchairs for more effective patient transport.

Uralkan looked at how do you balance privacy (with wider camera use) and technology, and says they are starting the educational component on this before a patient gets to the hospital. The family can look on the phone to get an update on the patient. This technology, with a camera, will also be used to monitor you at home.

Gray says they are engaged in more in-depth space planning, looking at how to save space in areas such as the admissions process. He's reviewing what worked well in the Woodlands and Baytown as they build Cypresswood. Murat mentioned engagement TV, more IT functions and who will maintain all of this. They reached out to Stanford as a model

Gray says the main goal is that we have a seamless experience that creates calmness and better patient outcomes. They will eliminate patient boards in the room, moving those outside the room that may be on a TV screen, serving as a foundation for white board. They are thinking about user experience and the fact that if technology is part of the native behavior, it will be more familiar.

Sherrill looked at how the technology supports staff such as taking iPads into the room so patients could visit with families. At Cypress, there'll be nurses who will learn how to better care for patients through Telehealth, with the camera in the room (Telesight). Expect at least two more generations of technology in the next three to five years. There may be greater above ceiling infrastructure. The planners are trying to anticipate the needs and weave AI into the fabric building, so it's not a major surprise to anyone.

Artificial Intelligence in Health Facilities Planning

Dr. Ray Pentecost III, DrPH, FAIA, FACHA, LEED AP, Ronald L. Skagg FAIA and Joseph G. Sprague FAIA Chair of Health Facilities Design Director, Center for Health Systems & Design, College of Architecture, Texas A&M University

He shared the latest on proposed changes; including behavioral health, clinical treatment, patient care spaces and how it applies in Texas. Our leadership stands dedicated to helping healthcare facilities care for their patients and staff, and offering support to manage post-pandemic financial setbacks and challenges.

AI REALLY HAS OUR ATTENTION: Pentecost says AI is not one technology, but rather a collection of them, combining "If-then" rules – equation, machine learning, deep learning and neural networks along with natural language processing. AI is a huge economic force. In the 2021 Healthcare Market Size was $6.9 Billion, growing to $67.4 Billion in the 2027 HC Market Size, with a compound annual growth rate of 46.2%.

WHAT IS DRIVING THE AI WAVE IN HC? Larger and more complex HC datasets, including 300 million books that take AI 29 hours to read are among ¼ of the primary drivers. Secondly, 2/4 primary drivers are more pressures to reduce HC costs. Pentecost asked the audience to consider that national tipping point, between spending in the HC percentage of the GDP and other economic interests. Faster computers and lower costs also drive AI, which otherwise would take 1M years to process and more HC partnerships, disparate domains in medical school curriculum drives the growth as well. He cited 127 new devices per second.

WHAT ARE CHALLENGES IN AI IN HC? Among the top 10 challenges, the first is data collection and accuracy.. Secondly, data privacy, permissions and accountability in deep learning and the neural networks factors in. Thirdly, there is disagreement on what the data means. At No. 4, integration into electronic medical records (NLP: text and images) is a challenge, as is No. 5, the standardization of AI workings and outputs. No. 6 considers how clinicians do more than single tasks (AI), for example, radiologists and treatments such as ablation therapies that concern image guided interventions like biopsies and stents. At No. 7, clinical processes differ, within specialties. Transparency is the eight challenges, as with drug approval and why one may be successful and No. 9 is the approval by regulators – process. The analytics concern deep learning's hidden neural networks. Finally, No. 10 is the approval for payment in care plans. Is automated image analysis a liability or are other opinions to be considered? What about the quality and comparability of proprietary analytics? The greatest challenge to AI in these healthcare domains is not whether the technologies will be capable enough to be useful, but rather, ensuring their adoption in daily clinical practice.

ENMED PROGRAM AT TEXAS A&M: Now four years blending engineering and medicine for a combined degree from the College of Engineering and Medicine. To complete the degree, the student must develop something innovative.

ROLE OF THE ARCHITECT: The HC architecture team must change; expand. We are no longer vendors; we are integrators – Jim Bills, Novell. Architects need to be doing/using research. We know every building impacts health. How? How do architecture and nature work together? What is the ethical response to design research? Process mapping will change with AI. Now it will be possible to build 1 hospital in 1 year, saving 1 million mutes and 8 Person-years saved. There will be design for possible capacity reduction. The AI value: good for reducing mistakes and medical errors, fewer complications with chronic diseases and earlier diagnosis with AKI, infections. AI can make any HC facility a research center. The implications translate into larger rooms for students, some classroom spaces and digital connectivity spaces.

2022: THE UAI YEAR OF DESIGN FOR HEALTH: Design to protect health, develop health and restore health. There is a webinar series on June 20, 2022 focused on Health Facility Design and Planning. October 3, 2022 is Architecture for Wellbeing (World Architecture Day). November 21, 2022 is Design for Health with Emerging Technology. Contact rpentecost@tamu.edu, with Center for Health Systems & Design, AMFP Houston,