Executive Summary

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Hospital, Outpatient Facilities & Medical Office Buildings Summit

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Future of Healthcare Facilities

Tackling Aging Infrastructure & Supporting New Delivery Models

Planning, Real Estate, Design, Construction, and Operation of

Hospitals | Clinics | ASCs | MOBs | Retail | Telehealth

Home Health | Non-Clinical | Research Facilities

This Education and Networking Event is Presented by

Corporate Realty, Design & Management Institute

Association of Medical Facility Professionals

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Tackling Aging Infrastructure, Rising Demand, and New Care Models

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Association of Medical Facility Professionals (AMFP) Greater New York Chapter
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Getting The Mix Right! Balancing Demand, Capacity, Care Models, Money, & Facilities

Mark Bultman, Principal/Healthcare Market Sector Leader, HGA

Jonathan Bykowski, AIA, Lean Six Sigma Black Belt, President, Array Advisors

Curtis Skolnick, System Director/Real Estate Strategy, CommonSpirit Health

Richie Stever, MHA, SASHE, Vice President Real Estate and Construction, University of Maryland Medical System

Moderator: Anahita Razavi, Director of Strategic Planning, Architecture, Development & Construction, Inova Health System

- "We often see as healthcare continues to consolidate, systems grow, sometimes there's a failure to account for volumes across the system," Bultman says.
- Planning based on volume at the facility level only increases the risk of overbuilding or underbuilding a system. Instead, Bultman advises master planning with a focus on "systemness," or looking at how volume can be diverted across campuses.
- Bykowski agreed systems need to look deeper into data before launching capital projects. He offers an example: System leadership saw high capacity at one emergency department and determined they needed a bigger ED. When the planning team focused data analytics on average length of stay, they found a disparity between admitted and discharged patients. The data determined the system didn't have an ED problem, but a bed problem. "Expanding the ED would have meant building an expensive waiting room."
- Skolnick adds that ED problems sometimes are rooted in system of care issues. "We can build great facilities, but if we can't operationalize them to meet the staff and patients where they are, it's going to fail."
- When planning for ED expansions, Skolnick says to first "meet the patient and staff where they are. That means thinking about how they're accessing the system of care—starting at home. How will that impact the math?"
- Stever suggests that the "next frontier" for facility planning is leveraging technology to maximize use of healthcare real estate. He offers an example: UMMS was experiencing high rates of in-utero deaths. To understand the cause, the system set up a command center, called NEST (Neonatal Outcomes Impacted by Escalation Safety Telemetry), from which it could monitor pregnant individuals via wearable technology and send out an alert on unusual readings. This innovative use of real estate reduced fetal deaths from 15 per year to one in two years.
- "To make sure pro formas work, we're looking at strategy," Stever says. Part of UMMS's shift from rate-regulated to non-rate regulated income is its construction of a 417,000-square-foot logistics center to house all supplies. Supplies are purchased in bulk at discount rates and distributed to all facilities from there in a strategy that reduces dependency on supply chain fluctuations and secures the discounts distributors previously secured. "We will eventually outsource that work – and distribute supplies to

other systems to increase revenue," he says. Plans are being made to expand this strategy to pharmacy, bed management, and IT.

- Bultman notes that vacant retail and corporate offices continue to see financial pressure, continuing the trend toward adaptive reuse in healthcare." We're seeing healthcare systems where the cost of upgrading that space is much cheaper than building new."
- "Leverage those spaces where real estate brokers are struggling to pay their mortgages," Stever adds. "A lot of them have 10- or 15-year balloons on them and they're coming due. They're willing to offer deals to owners and developers."
- Speed to market is even more important today. The cost to borrow is high, and fluctuating, due to the impacts of tariffs and labor shortages. "The faster we can get a project done, the better off we are financially. Finding opportunities to bring space to life faster will help healthcare as a whole," Stever says.
- Achieving flexibility is a priority for many health systems. Bultman says, "Healthcare design has become incredibly customized. Every room is specifically sized for the function that will happen in that space and that intense customization is counter to flexibility. The more universal you can make your buildings across your service platform, the more flexibility you'll have."
- Bykowski adds that flexibility depends upon looking at master plans "not as a series of sequential projects, but as plans with forks in the road. When you get to each point, you'll need to make a decision." This will move systems away from having hyper-specific solutions that may not meet population needs in 15 years.

The Kids Are Not Alright: Trauma-Informed Design for Youth

Kimberly Jones, VP Clinical Operations, Connections Health Solutions

Robyn Linstrom, AIA, ACHA, EDAC, Senior Associate, Senior Medical Planner, Behavioral Health SME, Stantec

Stephen Parker, AIA, NOMA, NCARB, LEED AP, Architect + Mental Health Planner, Stantec Architecture

Jimmy Venza, Ph.D., Executive Director, The Lourie Center for Children's Social & Emotional Wellness, Adventist HealthCare

- Venza explains, "A core idea of trauma is that an overwhelming threat has occurred and it is pressed upon the memory, usually beyond words. That stress and feeling of overwhelm are what's walking into the building in need of services and support." It's up to architects to design spaces that optimize "relational support."
- Jones explains that at Connections Health, a 24-hour walk-in facility for mental health crisis, space is important. "Treatment starts at Minute One and it starts with calming lighting in the lobby and designs that reduce the stigma of what they're walking into…" Patients are connected to a psychiatrist within 90 minutes and discharging to the least restrictive environment, which it must feel both welcoming and safe.
- "Dignity is a piece of design," Jones says. "It's hard enough to walk in that door."
- How you walk into the front door is also important, Linstrom says. For example, a parent bringing in a child who is under stress deserves a different entrance from where law enforcement may be bringing in an individual in crisis.
- Linstrom: trauma informed design at the core is about understanding the individual and passive experiences that may be contributing to undesirable coping mechanisms.
- "Trauma informed design is not a checklist," says Linstrom. "There's no formula. It's about working with caregivers, understanding individuals in that space, and developing it to reduce safety concerns and empower people within the space."
- As one example, a residential day program for children with mental health issues that prevented success in a traditional school environment had multiple classrooms that dumped students into a single narrow corridor. Most problems between students occurred in this space. Better design helped reduce that sense of confinement and anxiety among children pushed together. "In terms of cost model, we can't design to the tightest space. We need to look at it from a care model," Linstrom says.
- Venza says that trauma can make people feel as though they are alone because it ruptures systems for getting help. As a result, it is essential to create a sense of belonging and connection through all aspects of facility design. "Facilities can make you feel separate. It's a place you're sent to. There is an opportunity to show we designed with you in mind," he says.
- Jones says that sensory design is important for many populations. She also noted that individuals with intellectual or development disabilities need something more than a tactile room. "I've had to purchase weighted vests and blankets."

- Parker notes that themed rooms are a good strategy for giving patients choice and control over their environment in a situation where they don't have a lot of control. One facility was designed featuring five themed calming rooms.
- Linstrom advises designers consider how they create space for patients and their families. "The environment from which the patient is coming can be a part of the issue. You need to balance need to design for family in the room and to separate them in order to keep the safety of the patient intact."

Successes and Setbacks: Lessons in Technology Integration for Healthcare Spaces

Michael Crawford, Assistant VP Strategy and Innovation, Howard University Hospital

Paul Remke, PE, RCDD, Principal, Director of Technology, Introba

Braheem Santos, Healthcare Segment Leader, Schneider Electric

Moderator: Mike Swanson, PE, LEED AP BD+C, WELL AP, Vice President/Healthcare, Introba

- Swanson: "Nothing is more exciting in healthcare design right now than technology. It's transforming everything, down to building operations … but implementation often causes friction."
- Lots of challenges can create this friction: Implementing systems late so that new systems must be made to work with existing systems. Lack of clinician buy-in. Poor maintenance, that causes unpredictable operation over time and, ultimately, leads to lack of use. The solution? Communication across departments, buy-in from end-users, and support from ownership.
- Crawford says effective technology comes down to education. "Often you implement a cutting-edge technology that is designed to do a couple of things – improve access, reduce administrative burden, improve patient care – but individuals don't know how to adequately use the technology as intended. This creates a pain point, leads to resistance from staff, and hampers the implementation of future technology."
- To educate staff on technology use, Crawford suggests involving a multidisciplinary group of stakeholders from the technology design phase. These technology champions can help train staff at every level of the organization, ensuring that this knowledge is retained even in the event of turnover.
- Not all technology should be deployed at once. Remke suggests developing technology use cases that serve building users on Day One – and putting infrastructure in place for Day Two technology installations.
- To develop those use cases, Santos encourages communicating early with end users about their pain points. "Late conversations cost more money and move you further away from what you actually need and want."
- To develop use cases for technology, Crawford suggests starting with a focus on building occupants' pain points. Develop a use case to solve this pain point. Then, establish KPIs to determine that the technology works. For example: does the technology address clinical goals? Does it enhance the system's ability to capture reimbursement or increase revenue? Does it reduce an inefficiency in operations?
- Santos says that understanding pain points starts with communication with all stakeholders, from patients down to the EVS staff who impacts patient progression. Following these conversations, identify synergy in ways to solve these challenges. "There are so many pain points that can be solved with a single device or build upon existing devices."

- Remke shares an example: A health system was moving from an existing hospital to a new facility. At the existing hospital, separate location systems were installed for infant protection, staff assist, computers on wheels, and patient tracking. This was brought into a single solution in the new facility. The same can be applied to temperature monitoring and countless other systems within a hospital.
- Santos says that technology installations can be scary because there's constant second-guessing about how to future-proof it. He suggests focusing instead on being future-ready. "Something that is indicative of success is if you been able to go back into that initial investment and build upon it without having to rip and replace."
- Crawford says that when organizations aren't ready for the technology you're designing due to gaps in infrastructure or inability to maintain systems, facilities are starting with a high probability of failure. Before designing, perform an assessment to gauge readiness and internal bandwidth for maintaining and optimizing solutions.
- To be future-ready, Remke suggests thinking about the fact that everything is moving to become wireless. "The problem is you've got super-saturated bandwidth in hospitals. You're starting to have technology that fights each other."
- Crawford adds that given the length of time it takes to build a hospital, by the time you go live a number of the technologies you selected are antiquated. As a result, having conversations about goals, and aligning goals along flexibility for the facility, is important – especially as more care moves to outpatient and home settings. Understand how technologies in hospital are compatible with the home setting.
- Santos says that when it comes to adopting new technology, "You need to be a little vulnerable. It's scary, but if you have the conversations upfront, you can have the most technology-advanced building – and it can turn out to be cheaper and more efficient."

Using Cleanroom Technology to Improve Critical Environments in Healthcare

Cliff Yahnke, PhD, Chief Science Officer, SLD Technologies

- "If you go into a hospital room, you're three times more likely to get an infection if the person before you had an infection," Yahnke says. "That tells you we need to create cleaner, safer environments."
- Solutions from the cleanroom industry are now being used to reduce risks of infection that come from the built environment.
- Manufacturers of sensitive materials developed airflow solutions to reduce risk of contamination. A single large diffuser creates laminar airflow, which pushes contamination out of working environment. Hospitals are now adopting this technology in ORs.
- Turbulent airflow is when air swirls around. This moves contamination. Laminar flow is a uniform, directional air that pushes contamination away. A single large diffuser reduces turbulence by reducing the gaps across diffuser components that create high- and low-pressure fields.
- Because contamination is everywhere, and can mobilize into the air, cleanrooms adopted continuous use of visible light to reduce infection. This antimicrobial blue light disinfects in real time and, unlike UV light, is safe for use around humans.
- A combination of airflow and visible light disinfection creates a safe system that can operate 24/7 and kill contaminants missed during manual cleaning.

Revolutionizing Care Models: The Role of AI in Driving Change

Carl Fleming, Healthcare Strategy & Digital Transformation, DPR Construction

- AI is transforming healthcare on two fronts: in how care is delivered and, through that, the spaces in which care is delivered.
- Healthcare systems are watching health technology firms use AI, and will be coming to their design and construction partners to say "now it's your turn. What are you doing to make are projects safer, more efficient, etc." The expectations are higher. The owners are there now. Are you?
- Construction firms are using AI now to support predictive maintenance, for supply chain monitoring, on site management, and through use of autonomous equipment and robotics. AI-fueled cameras are identifying hazards on the jobsite. Construction simulators are delivering optioneering to find the most efficient, safest, and lowest-risk way to manage projects.
- AI technology has to be woven into the fabric of new healthcare building, just like it is woven into the digital environment. The combination of physical + digital = phygital. AEC must get comfortable with the digital environment, and the idea that we have to blend the built and digital environment.
- Health systems are evaluating their phygital footprint and what those touchpoints will look like. To get results, health systems need AEC partners who understand this paradigm.
- Start to consider: How does the built environment need to act to optimize AI? Buildings need to be "ambient friendly." This is about using sensors and processors to create an environment where AI can be responsive to people inside. "It's about creating environments that adapt to the user and not make the user adapt to the environment."
- There will be a need to redefine "human centered design" in an AI world. We need to continue designing for empathy, not just efficiency.

Security in an Era of Increased Violence

Fred Carmen, Sr. Director of Security, Holy Cross Health System; President of IAHSS Maryland Chapter

Paul R. Quigley, Executive Director, Security, Parking, & Transportation Services, Children's National Hospital (AF colonel, former DoD)

Moderator: Bill Navejar, Director of Business Development, Beacon Hill Hospitality; President of IAHSS Foundation

- Every year, IAHSS publishes a Healthcare Crime Survey that health systems can access for free at https://iahssf.org/crime-surveys.
- "If we don't start from the ground up, we miss a real opportunity to provide the safest atmosphere possible," Carmen says.
- When Quigley moved into his current facility, he found the hospital had 14 different entry points. Containing that traffic required a redesign. Because patients, visitors, and families now enter through four main entrances, the facility is able to make efficient use of a weapons detection system.
- Quigley suggests bringing security professionals in early to reduce redesign. They know where to put cameras and card readers, and how to support emergency response by reducing signal dead zones.
- Carmen encourages designers to improve transfers – particularly when law enforcement brings in behavioral health patients – to keep people safe and contained but make their space less intimidating. "Lighting sets the mood," he says. "For some patients, lighting can set them off or calm them down."
- Quigley says 90% of violence in his hospital is caused by its behavioral health patients. That's pushing the facility to think differently about security. For example:
- The facility has examined how it secures belongings for behavioral health patients; it requires a location that is secure and monitored to prevent accusation of theft.
- Search areas require solid camera coverage to support security and reduce legal risk reduction. Installing personal duress systems in these rooms means that every staff member has their own button. "We've seen calls to our department get dispatched within 15 seconds of the call."
- Children's older hospital has created a separate area within its ED, called Safe Side, for behavioral health patients. "We do have overflow at times, and it's important to have a plan for segregating populations."
- Emergency egress systems can present vulnerabilities. For example: In children's hospitals, teenagers who don't want to be in the hospital wait until parents leave before heading down the stairs and out the door. Having egress systems with 15-second alarms can reduce risk.
- Pay attention to loading docks. "There are spaces in hospitals that are huge vulnerabilities and this is one," Quigley says. Design should provide a single access point

coming in, then create a waiting area for suppliers and a visitor management system in that area for vendors. “We had vendors coming in loading dock entrance into the hospital without any ID on them.”

- Carmen advises designers to keep sightlines in mind. It helps security guards view an area and “can help us make the most of our cameras.”
- Don’t forget the outside target hardening. “There have been lots of cases of people who get mad then crash their car into the ER,” Carmen says. Bollards don’t have to be ugly; the federal government commonly uses concrete planters to serve this role.

What Makes a Great Owner

Lucas Klock, Director, Design + Construction, School of Medicine & Infrastructure, John Hopkins Health Systems

Brian Martin AIA, LEED AP, EDAC, Regional Healthcare Director, Principal, Page

Rahul Tikekar, Principal, Healthcare Group Leader, Loring Consulting Engineers

Rhona Vogt, AIA, Vice President of Facilities Planning, Children's National Hospital

Moderator: Megan DeTratto, Director of Workplace Strategy, Design Force

- Klock says the owner is responsible for setting the tone and direction of a project and establishing trust across the team.
- Tikekar advises architects against going into projects with preconceived notions and instead relying on effective communication to come to a shared goal. "We really want everyone to come together in the beginning to hash out what will make the project successful," he says. "We also ask our engineers to go out in the field and ask questions of your FM staff, some of whom have been there for decades."
- Vogt says it's important for owners to have a clear idea of what they want in order to set expectations for consultants.
- Martin says that virtually every project experiences a constructive tension between the design team and the market, typically focused around cost and schedule. "Regardless of the project size or the number of players involved, cost and schedule drive [decisions]." It's up to the owner to align with the design team to work against the market in this constructive tension. Collaboration, he says, is key for effective results.
- As an owner, you want the best technical team, Klock says. Yet hiring decisions often comes down to the soft skills. The hard part is finding the right balance. In some cases, it's best to compromise the "smartest individual in the room" because you get the team player.
- "When you win a big project, everyone is excited to go. Harnessing that energy into something that brings the team together is important," Vogt says. |Everyone wants to show up on Day One and show their worth – but it may not be their time to shine."
- Everyone comes to table with different knowledge but, to build a collaborative team, everyone needs a clear understanding of their role, responsibilities, and what they're expected to bring to the table, Vogt says.
- As project manager at a major hospital in Texas, Vogt had the design and construction team share their experiences about what had worked well on previous projects. Through this collaborative process, the team created rules for engagement and a team charter that was frequently revisited. "Over time, we trained the team to understand that we are part of a collaborative web with a shared goal: to open the hospital months early by taking time out design and construction." The project, scheduled to open in Nov. 2024, opened in Feb. 2024.

- “As an owner, we’ve got to create a safe place to fail,” Martin says. “We create the change orders, etc. We need to make it okay to have someone come to you and say ‘I made a mistake, here’s what I think we should do.’”
- Tikekar says healthcare needs more owners who are forward-thinking with regards to resiliency and addressing the risk of unexpected disruptions. To this point, Vogt says, “I’ve been telling my teams we need to bring to the owner decision-ready materials, thoughtful stories to tell owners to get them to think about resiliency. Providing enough information helps owners make decisions they can stay true to.”

Money Saving Solutions

Gerrick McPhearson, STARC Systems

- Modular temporary wall systems provide a rapid and sustainable solution for construction projects. “A 2-man crew can install our wall in an hour or so, allowing you to complete projects faster.”
- Modular walls can help increase patient satisfaction. “Our goal is to eliminate disruption from dust, debris, noise. Our panels reduce noise significantly, so your staff and patients don’t know construction is taking place.”

Bill McCann, Biamp

- Rather than installing redundant technology, combine different technology with systems for better outcomes – or apply new technology to advance existing solutions. For example, integrate page distribution with nurse call for single button, multi-channel distribution.
- The right AV technology can enhance the patient and clinical experience by reducing noise and distraction, delivering sound masking for better sleep and faster recovery, ensuring privacy for conversations in the waiting room, adding natural sounds to create a more comfortable space, and more.

Gene Jones, Allegion

- The concept of sliding doors took off about 15 years ago for saving space. Patient restrooms are the most popular application in acute care facilities, as a sliding door can save up to 30 square feet of space. In ambulatory care, sliding doors are typically used in the exam room.
- Providence Health & Services in Renton, Wash., found that for every 11 rooms they designed with sliding doors they achieved space savings that allowed them to pick up an additional room.
- Emerging features include the ability to lock doors for use in staff areas; telescoping doors, often used in admissions or other areas where staff may need to move a bariatric wheelchair; access control integration; advancements in soft close systems; and standardization programs.

Jason Adkins, Assa Abloy

- The same Power over Ethernet system used for cameras can now be used for access control. No more panels, power supplies, or door controllers. Systems use up to 86% less energy than traditional electromagnetic locking system.
- There are new options for wireless access control, eliminating the need for additional electronic access control infrastructure. This enables use of individual pin codes, increasing accountability in tracking who is entering and exiting.

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