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**The Academy for
Healthcare Infrastructure**
Collaborative Research Program

RESEARCH TEAM 4:

Defining The Next Generation's Focus



Underwriter

Clark Construction

Team Chairs

Kip C. Edwards
Banner Health

Walter B. Jones, Jr.
MetroHealth

Jeffrey Land
Dignity Health

Stephen C. Wooldridge
MedStar Health

Subject Matter Experts

Carlos Gonzales
Clark Construction

Ryan McKenzie
Clark Construction

Zigmund Rubel
Aditazz

Phil Tobey
Smith Group

Team Facilitator

Mardelle Shepley, FAIA
Cornell University

2015 Collaborative Research Program

Team 4

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Authors

Academic Facilitator

Mardelle McCuskey Shepley, FAIA, FACHA
Cornell University

Team Co-Chairs



Walter B. Jones, Jr.
Senior VP, Campus Transformation
MetroHealth System
Cleveland, OH



Stephen C. Wooldridge
VP, Integrated Real Estate & Facilities
MedStar Health
Columbia, MD



Kip C. Edwards
VP, Development & Construction
Banner Health
Phoenix, AZ



Jeffrey Land
VP, Corporate Real Estate
Dignity Health
San Francisco, CA

Team Subject Matter Experts

Zigmund Rubel, AIA
Founder
Aditazz
San Bruno, CA

Ryan McKenzie
VP, Healthcare
Clark Construction
Bethesda, MD

Carlos Gonzales, PE
Vice President
Clark Construction Group
Bethesda, MD

Phil Tobey, FAIA, FACHA
Senior VP
Smith Group
Washington, DC

Underwriter
Clark Construction



Foreword

In 2013, the National Institute of Building Sciences established a collaborative research program to bring leading healthcare professionals together to address industry challenges at a national level. The Academy for Healthcare Infrastructure (AHI) would focus on improving the processes to create and maintain the complex built environment required to support America's healthcare mission. It would serve as a collaborative network with the purpose of exploring large, comprehensive ideas.

Upon establishing its charter and selecting Research Governors, AHI began the process of setting up Interdisciplinary Research Teams to identify current best practices; envision the future of the healthcare infrastructure industry; and engage appropriate industry leaders to develop new approaches for solving critical problems. Each of the resulting five teams consisted of leaders from the healthcare facilities industry and related subject matter experts, as well as an academician to facilitate the process who would be responsible for compiling the data and developing a white paper for publication.

The Academy's research methods were formulated to utilize the power of interdisciplinary collaboration to actively break traditional professional boundaries. Each of these small, focused teams of industry experts have committed to envision materially improved approaches to a specific critical industry issue. The structure is designed to result in breakthroughs in the creation, management and repurposing of healthcare infrastructure.

Each team focused on a specific topic: Owner Organization for Successful Project Outcomes; Developing a Flexible Healthcare Infrastructure; Speed to Market Strategies; Defining the Next Generation's Focus; and Reducing Initial Capital Costs.

Over the course of 2015, the facilitators coordinated with the healthcare facilities industry leaders and related subject matter experts, and began the process of compiling white papers with their findings.

This paper, "Defining the Next Generation's Focus," is the result of Team 4's efforts.

Henry L. Green, Hon. AIA
President
National Institute of Building Sciences

Joe M. Powell
Executive Director
Academy for Healthcare Infrastructure

Introduction

There are times when systemic incremental improvement is desirable. This is not one of those times. Affordable, quality healthcare is essential to sustaining a vibrant society. And yet, the American healthcare industry is facing overwhelming uncertainty in almost every segment.

The Academy for Healthcare Infrastructure (AHI) was established to materially improve the processes used to create and maintain the incredibly complex built environment required to effectively support America's healthcare mission. This collaborative research program is designed to focus on issues that are vital to improving the performance of the healthcare facilities industry, while avoiding the temptation to repeatedly address the same old issues.

Since leaders in the American healthcare industry instigate the needed improvements to the system, it is crucial that experts in that same design and construction environment actively participate in moving the industry forward.

Any discussion of the issues currently being identified and addressed within the healthcare industry must be done so with an eye on shifts in the healthcare environment already underway. With this eye to the future, AHI's Interdisciplinary Research Team 4 wanted to understand the likely focus of the next generation of healthcare administrators, designers, constructors and operators. To begin that process, the team set out to answer a number of questions.

While there is no roadmap to the future, conjecture about long-term developments is useful to weighing current options. Within the past decade, several organizations and journals have explored the future of healthcare infrastructure (e.g., The Joint Commission, 2008; *US News and World Report*, 2014), although the role of future generations has not been clearly addressed. This paper seeks to shed light on the potential paths the next generation can take to move the industry forward.

Methodology

AHI's Interdisciplinary Research Team 4 included leaders in the fields of healthcare administration, design and construction (see Appendix A for information on the team members). AHI and the facilitator identified five key questions to pose to these industry leaders and subject matter experts.

The five questions were as follows:

1. What questions should the next generation be asking?
2. Upon what issues should the next generation be focused?
3. What are the educational and professional experiences that will differentiate the current generation from the next generation?
4. What are the characteristics that will define the leaders of the next generation?
5. What are the hopes and expectations of the next generation?

Over the course of one month in mid-2015,¹ the facilitator individually interviewed the eight experts for a period of 30 to 45 minutes. In addition to answering the five questions posed by the interviewer, the interviewees raised additional topics of interest. This additional information was also captured. In a few cases, interviewees followed up with emails containing further thoughts.

The facilitator analyzed each interview using the methodology described in *Naturalistic Inquiry* (Lincoln & Guba, 1991), which involves the generation of individual notes and the categorization of these notes into rubrics until saturation is achieved relative to the raising of new ideas.

The following summary captures the collective results from the expert interviews.

Discussion

This white paper addresses the future of healthcare design and construction—specifically how future generations of professionals engaged in the administration, design, construction and operation of healthcare facilities will engage in the delivery of services and how facilities will help deliver such services. Based on interviews with eight leaders in the industry, several themes emerged. The consistency across respondents was remarkable, suggesting that a clear picture is forming in the minds of current leaders in terms of the approaches they must implement today and the challenges new generations will face. This is good news, as a consolidated vision will serve as a compass to the future. The common themes are discussed in greater depth below.

1. Advancing technology, costs, the decentralization of services and the evolution of a continuum of care should drive the questions posed by the next generation of professionals.
2. Issues facing future generations were closely related to the questions they will be asking. These issues include facility adaptability, expansion of technology, integrated healthcare delivery methods, changing revenue models, evidence-based design and public education on the benefits of specific healthcare delivery models.
3. Educating future generations of healthcare facility professionals will require a broader-based academic experience, on-the-job learning and systematic thinking.
4. Characteristics of future leaders include tolerance for ambiguity, awareness of technology and the ability to simultaneously generalize and specialize.
5. Hopes and expectations for the future include providing healing environments and accessing evidence in support of these environments.

Clearly, the future generation has a large task ahead of them. All of the interviewees had confidence that emerging professionals will be up to the challenge and that healthcare design and construction has an inspiring and promising future.

¹ The facilitator performed a series of eight interviews during a one-month period from May 29 through June 24, 2015.

What Questions Should the Next Generation Be Asking?

The responses of the eight interviewees regarding *questions the next generation should ask* fell into four basic categories: technology, reducing costs, the decentralization of services and the continuum of care. Equally important as the changing healthcare landscape is the ability for the design and construction industry to respond to these four areas.

Technology.

Questions regarding technology were associated with how it will drive the future and how big data might be used to enhance care. Noting that the industry is just beginning to explore computer-generated design, one of the significant questions was, “How will technology redefine architecture?”

The next generation will ask many of the same questions being asked by current healthcare facility professionals. For example, how will healthcare evolve in the next 20 years? What technology is going to drive the future? With the current acceleration in the development of technology, assessing its future is difficult. However, predicting developments in technology is critical, as it influences much of what professionals do and how they communicate.

Two questions pertinent to the next generation include: “How will technology influence the practice and delivery of care in the future and how will we enable that process?” and “What can we do with the existing asset infrastructure that will support the objectives of the system?”

Revenue and Cost.

All interviewees mentioned the need to adapt to the new environment of lower revenue streams while maintaining excellent service. Related to this was the need to accelerate the development of appropriate facilities, and measure their effectiveness. The future generation will need to ask, “How do we balance revenue streams with costs?”

Big data presents an opportunity to establish important feedback loops and establish effective and responsive revenue models that optimize the delivery of healthcare services. A question for the next generation is, “How can we use ‘big data’ to change care and chronicle what works and what doesn’t?” Professionals need to work out how to capture, use and share big data regarding the impacts of current practice. This must somehow be addressed, because not serving the health needs of an increasingly aging population as costs continue to increase is not an option. Large underserved and emerging populations, such as China, could play an important role as models, since they are beginning to test more western medicine standards.

Continuum of Care.

Questions were frequently proposed related to the transition from a service that addresses sickness to a service that addresses wellness. Organizations in the business of supporting population health will need to ask, “How can we address the whole continuum of care?”

A second question the next generation must ask is, “How is the healthcare delivery system going to change?” Nearly 100% of the business of healthcare in the future may shift from paying for sickness to paying for wellness. One interviewee stated, “If you are going to be in the business of

population health and assume the risk, you need to address the whole continuum of care.” The next generation must ask how to make such a shift to preserving health. “We’ve got a long way to go and the effort is not trivial.”

In addition to the shift in care models, the quality and consistency of care must remain a priority. The best quality of care is the least costly, most convenient and available at the soonest opportunity via the easiest method possible. Currently, people wait until they are sick to seek care. Access to health counseling via phone, Internet or nearby offices would be more efficient and far more effective.

Consistency of care is important to eliminate variability. The technology and data to do this now exists and should be used to drive decision making. There is a particular need for those who are chronically ill and need care via continuous monitoring. The transition to providing enhanced care services outside the hospital is happening now and complete transformation will likely occur within 10 years.

Leadership is required to help drive changes in the continuum of care and assure quality and consistency. According to one interviewee, the primary question the next generation should ask is, “How can they demonstrate leadership in the cultural change that will be impacting healthcare?” They will have to shape and refine the contents of a continuum of care, which involves a shift from beds and facilities to the community. “Healthcare is not just a place, it is a frame of mind.”

Decentralized Models.

Distribution of services allows components to be placed in new environments, such as schools, drugstores and supermarkets, and services are likely to be configured in a hub and specialization spoke model. The chronically ill need access to continuous local or virtual monitoring services and the public at-large could reduce the load on the system by having immediate access to medical advice. The future generation will have to ask, “Why are healthcare systems what they are?”

While transitions are taking place regarding outpatient care, including transition to the retail environment, it will be bleeding out to the non-inpatient environment even farther. The future will likely see a drive towards the use of home settings and personal technology. A smart phone, for example, may be the most efficacious means of addressing one’s personal health when communicating with a care provider. The question that must be asked by future generations is, “From a facilities perspective, where does that person reside? In a spa? In a personal gym?”

Services can be distilled into different components, allowing the components to be distributed and placed in new environments. This can be seen today in the mental health system, with inpatient facilities, clinics, the jail system and the school system providing services. The healthcare business is now expanding into retail venues via drugstores and supermarkets. The distribution system’s structure has cultural implications. The older generation has a history of direct relationships with providers. Young people may prefer convenience to a personal connection. They can go to the supermarket for blood tests and the pharmacy for shots. They might not need a personal healthcare advisor unless it is an app on their smart phone.

“What are tomorrow’s priorities?” The traditional models of a full-service hospital are antiquated. There is a higher need for distributed outpatient facilities and medical office buildings (MOBs), as well as smaller-scale settings, are increasing. The future is more likely to be configured in a hub-and-spoke model, where the healthcare system may have four or five critical care centers, each with a specialization.

Responsive Design and Construction

The next generation might not be facing different questions from the current generation. The facility component is the “longest pole in the tent,” or the slowest to come to fruition (short of medical research). The questions are then, “How can the development of appropriate facilities be accelerated? “How can they be provided, faster and better?” Return on investment, operational improvement and new technologies impact outcomes via different metrics than the physical environment.

One of the questions the next generation should ask is, “What is the best way to improve care and reduce cost by leveraging the built environment?” Professionals must look across the country and to other parts of the world to explore this question. They must understand the healthcare landscape and how to put oneself in the place of the clinician, the patient and the visitor. “What should the experience ultimately look like? How does the industry migrate from here to there?”

All healthcare systems face the similar problem of needing to consolidate and to lease. The latter is a challenge because they are accustomed to being asset owners. Another challenge is to enhance viability through specialized programs. Healthcare systems can reduce waste either operationally or via capital first costs; most recently the emphasis has been on the former. An effort should be made to reduce square footage and provide better service alignment. The next generation should ask, “What is a better procurement method in lieu of design-bid-build? Can more value be derived from different delivery models (e.g., integrated project delivery (IPD), design-build, guaranteed maximum price contracting)? What are the factors that must be taken into consideration? How do we bring them all to the table and form a cohesive team? What is the role of integrated project delivery?” In healthcare, the integration of design team participants is critical.

For one interviewee, the primary question facing the next generation is, “What will architecture be in the future?” The industry is beginning to use computer-generated design. What does this mean to architecture? Professionals must be more quantitative and systematic in measuring the performance of healthcare facilities from both a clinical and systems perspective. *The Innovator’s Dilemma* by Clayton Christensen (2011) is a good source of questions that the next generation might ask.

The next generation should also ask, “How can we help our partners enhance speed to market?” Options might be prefabrication, fast tracking or risk sharing.

Upon What Issues Should the Next Generation Focus?

Issues that must be addressed in the future are both inspiring and daunting. Of the five topics covered, *issues for the next generation* was the most wide-ranging, although there was significant coalescence around flexibility, technology, integrated healthcare delivery systems and cost. Other topics not addressed by all, but important for the purposes of this exploratory paper, were: use of evidence and public education.

Very few people talk about why decisions are being made. Now, things are hidden. The next generation will have to ask why healthcare systems are what they are. Simon Sinek's book *Start with Why: How Great Leaders Inspire Everyone to Take Action* (2011) may be a good place to start.

Flexibility.

According to many, the primary issue for the next generation will be to provide facilities that are transformable and flexible for up to 50 years. The biggest challenges are unknown, and infrastructure must change and grow as the health system changes and grows. This is only possible if systems and facilities are able to evolve over time.

“How do professionals meet today's needs and plan for what healthcare organizations will need 10, 15 and 20 years from now, in spite of the fact that the future is difficult to predict? The infrastructure must change and grow as the health system changes and grows. Flexibility is essential. As the field evolves, service will move from the medical center and move closer, either physically or virtually, to the populations they serve. Instead of planning for 50 years, perhaps professionals should plan for as long as 100 years. This is only possible if the facilities have enough flexibility to last over time. In the future, beds may only be used for surgical recovery and a family clinic might need to be modified to support operating rooms. Also of importance for the next generation is how to effectively achieve a decentralized model of care delivery.

The biggest challenges are new and unknown, and a large issue for the next generation. Healthcare providers may suddenly need a unit for a particular condition, such as the treatment of Ebola. “Will other, unknown events have to be rapidly accommodated?”

One interviewee noted a trend toward personalized health. The next generation needs to find ways to repurpose spaces to create these programs outside of the hospital. They will have to adapt ways to maximize efficient use of square footage.

Technology.

Healthcare is becoming more about technology than services, and addresses: telehealth, big data, population monitoring, remote care and the convergence of all of these technologies with software that will support the medical records system. Designers should consider the growing opportunity for integration of technology and equipment. A good design allows for the insertion of new technology without having to rebuild.

As medical technologies change, the ability to house them is not currently sufficiently flexible. An issue for the next generation will be to predict the distribution of technology. “How many of each tool will be needed and in which geographic regions? How will we accommodate technologies that haven’t been invented in spaces that haven’t been created yet?”

Future generations must also evaluate the impact of technology on the viability of future healthcare systems. Healthcare service is becoming more about technology than services. Initial capital expenditures will be secondary to the economic impact of technology. The initial cost of technology will pale in comparison to the subsequent upgrading costs.

Integrated Healthcare Delivery Systems.

Two important issues related to integrated systems are home care and wellness. “Why not provide the care at home or a local clinic?” The technology to monitor medication consumption and prescription needs exists. The next generation will have to address how to deal with financial and cultural shifts. Fitness centers, wellness centers and activities that offer choices for the general public will be integrated. The next generation needs to find ways to repurpose spaces to create these programs outside of the hospital.

Integrated delivery systems address beds to home care, as well as education, research and learning. Examples of systems currently undertaking this effort are Kaiser and Mayo. Standalone hospitals are not viable. Fitness centers, wellness centers and activities that offer choices for the general public will be integrated.

Revenue.

Reconciling lower revenue streams with better care will be a challenge. The next generation must determine how to do more for less. Progress is being made in this effort, in that the need to do so has been identified. However, the next generation needs to establish paths leading to more cost-efficient delivery.

In a broad sense, a primary issue for the next generation of facility owners is availability of capital. The Affordable Care Act and the associated risks, which are assumed by healthcare systems, have impacted the economic climate. Professionals will need to determine how much healthcare will be delivered outside of the traditional settings.

“How will large existing facilities be used or repurposed? There are millions of square feet for which strategic planning must account. How do we leverage them?” Delivery method and funding will impact speed to market. Introducing more of a design-build mentality would benefit health facility development. Some organizations have adopted integrated design processes (IDP), but, so far, its success has been limited to smaller-scale projects. A coalition of industry experts needs to refine it to better apply to larger projects. Risk-sharing helps build strong partnerships.

The new generation will need to determine whether there is a need to own assets or adapt those owned by others. Healthcare clients are concerned about this activity, and construction consultants might be in a position to support information about site acquisition.

Life-cycle cost is significant and encompasses energy use, better technology and streamlining program services. Departments should be better-aligned to enhance efficiency.

One interviewee felt that an important issue in the future will be how to skip over the ambulatory environment all together and provide more care directly to the patient at home. In the last 10 to 15 years, the industry has chipped away at what must be done in an acute-care setting and moved it to more ambulatory environments. “Why are individuals always required to travel to the doctors’ offices? Is it possible to provide the same care at home without the stress?” The next generation will have to address how to deal with reimbursement in this new paradigm, as more and more technologies are built to monitor medication consumption and prescription needs. “How do they manage the cultural shift, while providing remote medicine?” The answer to reducing cost in healthcare planning, design and construction may partly be in what we do not build.

Use of Evidence.

One issue facing the next generation is the need to understand ‘big data’ and its impact on the market. Not all data is weighted equally. Designers must determine the data with the most significant fit. “What is the local need for a specific service?”

In the fee-for-service environment, the team talked about high-end revenue service. One issue facing the next generation is the need to understand the data and its impact on the market. For example, “What is the local need for imaging?” Awareness of these markets will result in better decisions.

Professionals must grapple with data-driven design. Not all data is weighted equally. Designers must determine the most significant bit (MSB) of information. The MSB may not be a thermostat setting. The MSB must be related to measuring the business performance of a healthcare facility. The total construction cost is small relative to the operational costs of a healthcare operation. Healthcare facility professionals must focus on the value of the building.

Education.

Americans resist having their choices limited. However, staying within a group practice or network can be to their benefit, allowing consistent quality and sharing of data. The impact of these changes must be demonstrated as part of an educational program. This is a hard concept. In the 1990s, the Health Maintenance Organization (HMO) was a ‘dirty word.’ Now we have a similar system and call it “population health and risk-based contract.” The HMO was there for the right reasons—not just to save money, but also to provide quality. There was a backlash against HMOs, as the initial set up probably went too far. People saw it as taking something away, rather than improving the services. Some HMOs in the 1990s were merely insurance policies. The industry has to make ‘population health’ work and educate the public to understand what they have to gain by it. The transition to wellness care must also be explained. The impact of these types of changes must be demonstrated as part of a public education program.

What Are the Educational and Professional Experiences that Will Differentiate the Current Generation from the Next Generation?

When the current generation was in college, many of the career options and educational fields emerging today had not yet developed, and even more new professions will arise in the future. In light of this, two respondents mentioned the role of innovation in education, regardless of emphasis. The vast majority of interviewee responses fell into one of three categories: more interdisciplinary formal education; on-the-job training; and systematic and strategic thinking.

Broader-based education.

The next generation will have to be broader-based in its education than the current generation. Therefore, their education should support generalists rather than specialists, and have a more diverse view of healthcare. Interviewees agreed that the next generation requires programs that support specialization, but within the context of generalized knowledge regarding adjunct fields. Recommendations of such adjunct fields included: facilities development, engineering, public health, architecture/design, finance, business administration and basic healthcare delivery. The emphasis on education will be different from the past. The new curriculum must be integrated and embrace business, public health, research and design.

From the medical training side, a shift is in progress to include public health and social aspects of the healthcare experience. Educational and training programs should address the whole person/patient. Historically, physicians have studied basic medicine and associated specialties. However, this approach will shift to integrated medical homes and collectives of healthcare professionals. While no single individual can specialize in all areas, better integration with multiple fields, including behavioral health and social work, will be preferred. Emerging professionals will be engaged with larger, multi-dimensional and more complex organizations. Aggregation of current organizations is already taking place. The educational process should help the next generation to thoroughly understand the whole healthcare business, so needs can be prioritized.

Individuals should be multi-faceted and potentially have a background in research. While the core education should remain, there must be a stronger emphasis on problem solving and learning to be comfortable with the unpredictable. Combining engineering and business is a good option, because it would enhance changing economics and revenue streams. Higher education programs should focus on healthcare. In the absence of formal training, professionals will need to seek expertise in the field. All good architects are going to be interacting with user groups during their on-the-job training.

Learn by Doing.

The requirements and culture, and the regulatory requirements and code will change for each condition and event. The next generation will need to understand the ebb and flow, and flex with them while immersed in a project. “How do they keep up with what’s new? What’s best?” That is still part of on-going education. Learning can be augmented by interaction with professional groups.

The next generation will have to hold the current project planning processes “with their hands

open,” and be okay with it morphing in real-time through the project. Education will have to change. The next generation will need to spend time “learning by doing.” One interviewee stated, “the best thing a university can do is mess ‘em up. Place a rock in their path. Tell them they may have to change their minds several times when deciding what to build and then possibly several more times in the delivery process.”

The future generation will be more technically savvy. They are accustomed to being able to accomplish significant tasks “within the palm of their hand.” They will need an interdisciplinary curriculum with a technical focus, but supported by business classes and courses to support a better understanding of the healthcare system from the perspective of the owner. Additionally, they will need education, primarily in the field, but also in the classroom, that enables them to develop leadership and communication skills. Experience in design-build will be an important future skill.

Systematic and Strategic Thinking.

The next generation will need to be more general and systematic in their training—other professions have done better in achieving this goal. They need to engage in educational experiences involving more systems thinking, rather than systems engineering, using knowledge in digital libraries, computer coding and design animation. Strategic thinkers and problem solvers are essential. The core education may remain, but should have a stronger emphasis on problem solving. Solving problems is part of architectural design education. Leaders of the next generation will have to identify, address and resolve problems.

One interviewee said, “Gone are the days of looking at a hospital as a one-off job...we must now address its role in the system.” The culture, the regulatory requirements and codes will change for each condition and event. Students will need to learn the ebb and flow and flex with it. Education will have to address the following, “How do you keep up with what’s new? What components need to be included? What’s best? What are the good examples?”

Education must also support innovation. Clayton Christianson’s work on disruptive innovation is important to a discussion of innovation. Innovation is premised on three things: simplification of technology, creation of a new business model, and changing the value proposition of the service.

What are the Characteristics that Will Define the Leaders of the Next Generation?

Leaders of the next generation will share some of the qualities of leaders of the current generation. They have to know how to work in teams and communicate, be compassionate and enjoy leadership. They must like people and support them in doing their jobs. They will likely have had personal experiences that motivate them to practice healthcare architecture and a strong desire to have a profound positive impact on people. Leaders in the future must be focused on the collective good and engaged in more open-source information and sharing. They need to be honest, self-aware and demonstrate integrity. However, they may need to be radically better in terms of their ability to deal with tolerance for ambiguity and relationship to technology.

Leaders of the future will be “strategists, innovators, multi-taskers, holistic thinkers, communicators, synthesizers, integrators and humanists.” It is difficult to teach these skills and

successful leaders will likely come by these abilities naturally. Architectural education has attributes associated with these characteristics. Solving problems is part of the design process—leaders of the next generation will have to identify, address and resolve problems and find the path forward. Leaders of the next generation should be characterized by “a decent self-view, and the ability to assess oneself and how one is influencing events.” Those individuals should have the ability to interpret processes in a real way, in context. These traits, together with integrity and the ability to be honest with oneself and others, create the framework for executing a vision. Another aspect of leadership is the mentoring of the younger generation.

Tolerance for Ambiguity.

Compared to the systems managed in the 1980s and 1990s, today’s systems and organizations are increasingly complex. Therefore, future leaders will require tolerance for ambiguity and the ability to work in a multifaceted, non-linear organization. Teamwork will be basic.

More than tolerating the complexity, the leaders must embrace it to be effective. They must have a broad perspective, be more agile, able to change directions more and do so effectively. The next generation must be flexible, receptive to change, dynamic and willing to resolve major efficiency challenges. They must enjoy this pace of change—it can’t be a burden. They need to be strategic thinkers, constantly thinking about future change and the impact a decision will have two to four years in the future. Not everyone thinks that way.

Future leaders need to be comfortable in controlled chaos and the unknown. They must be able to adapt quickly to ongoing change and identify multiple alternatives that they keep alive as long as possible to provide options throughout the process. The millennials have shown they will be early adopters of technology. The healthcare planning, design and construction leaders of the future will need to have the flexibility to deal with changes in healthcare delivery and, in many ways, anticipate them. With previous generations, the change was “fully baked” and adjusted to. While the next generation is adapting to change, new changes will be taking place. This is a significant cultural transformation in the industry.

People who are willing to share risk and be a partner will likely emphasize value above cost and have a stake in the outcomes. On the flip side, they will need to get past first cost. Clients still view engineers, architects and contractors as a commodity.

Technology.

New leaders must maximize the use of, and be comfortable with, technology for speed, quality and cost. Designing a building involves a great deal of technology, with which designers must be comfortable. Everything is going to be quicker, require greater precision and involve the use of building information modeling (BIM) and communication technology, including social media, to bring teams together earlier in the project. Everything is going to be real-time, including satisfaction indicators—professionals need to be aware of it, work with it and appreciate it.

Future professionals have to understand the impact of technology, but not necessarily be expert in all facets. The next generation should be engaged in more open-source information and

sharing. The notion of transparency will be critical. Leaders in the future must be focused on the collective good. Education and other building types will also rely on technology.

Generalists & Specialists.

Healthcare designers and planners are “an interesting lot.” They span the gamut, some are specialized and some are far-reaching. Both the generalists and the specialists are needed. These individuals need to have a healthy curiosity and the desire to understand the problem. They will need a collegial knowledge of what is going on around them so they can provide the best support. The needs of the service institution will be broader than they used to be. Patients are touching the system at all different levels and are aware of what is appealing and attractive. A characteristic of a future leader will be the ability to assess patient needs and preferences for a specific organization.

To support collaborative teams, leaders of the next generation must be more than experts in their field to arrive at the best solutions. Individuals must be multidisciplinary and be acquainted with finance streams, equipment needs, etc. Team respect will be enhanced when everyone feels that that the participants are able to focus beyond their own subject areas.

What are the Hopes and Expectations of the Next Generation?

Hopes and expectations of the next generation are similar to those of the current generation, such as the desire to have a balanced life, work in a more integrated fashion, identify cost-effective systems, develop world-class facilities and improve client partnerships. Balancing a strong work ethic and quality of life will be an objective of the next generation. Current professionals are rarely able to disconnect from their jobs. In the future, this situation may become even more entrenched. Like the current generation, the future generation hopes to leave the world in a better place. They hope to have the skills, the experience and the relationships to realize improvements. They hope to influence enough people along the way to have sufficient credibility and respect to achieve the changes they intend to accomplish. Two additional themes rose to the top: the desire to create healing environments and to produce and use evidence to support design decisions.

Healing Environments.

Future generations hope to continue and extend what the current players are trying to do to create a continuum of care and a healing environment that is conducive and supportive of the missions of the institutions these designs are serving. The next generation will strive to keep the concept of population health on track in a way that provides better quality and lower-cost healthcare. The expectation of the next generation will be to provide remedial and curative support for the people they serve.

Current expectations will be similar to expectations in the future. The hope is that “more people would walk out vertically” due to their contributions. The current desire, and potentially the desire of the next generation, is to balance the science of what can be done with the reality, kindness and dignity of what should be done. Society must address the limits of science relative to the dignity of the person, quality of life, end of life (hospice, palliative care) and how to balance caring for a person’s body, mind and spirit. Another expectation of the future generation will be that the populace will have greater access to healthcare at a reduced cost. The desire of

the next generation is to balance the science of what we can do with the art of what we should do, and “leave the world in a better place.” Lastly, an expectation of the next generation is that it will be able to create a model that provides faster speed to market.

One hope of the next generation will be that the traditional definition of a hospital will evolve from a focus on healing to the promotion of wellness. In this context, the continuum of care will be more universal and accessible from post-acute care to organizations that focus on social issues. The next generation will hope to achieve world-class medical facilities. The U.S. Department of Defense has developed a definition of ‘world class,’ a portion of which follows:

“A world-class medical facility is one where the best of the art and science of medicine come together in a focused effort to meet the needs of the patient by providing the best in physical, mental, social and spiritual care. A world-class medical facility routinely performs at the theoretical limit of what is possible and consistently and predictably delivers superior healthcare value – i.e., high-quality care and optimal treatment outcomes at a reasonable cost to the patient and society” (National Capital Region Base Realignment and Closure Health Systems Advisory, 2009).

An engagement model is created where healthcare administrators, designers and contractors come together early in the process; this allows the customer to make selections, to make people accountable and to benefit from the value of an integrated (though not necessarily the cheapest) approach. Solutions must be more than a small slice of options.

Connection between Setting and Outcomes.

The future generation may hope to use data more effectively to inform decisions. Access to applied research results was also identified as an expectation for the future.

New machinery is evaluated in terms of performance, enhanced imagery, comfort, time and noise. There is a connection between equipment and information technology (IT) clearly expressed in terms of how it supports patients or staff. The physical space has not yet seen such connections of space and IT. There is some semblance of outcomes data in terms of way-finding, but the overall conversation does not “dial back” quite as directly. Evidence-based design needs expansion.

Healthcare is a market where true partnerships are being created and success is not just getting the job done on time. One possibility is a new job where design and construction professionals help health systems develop their financing or maintain their buildings. This collaboration is critical and the polar opposite to what currently is being done. Leaders of the future will be in a position to serve the clients of the future, as they will be better qualified and will expect to address their client’s need effectively.

One interviewee recalled that when he was in architecture school, his hope and expectation was to create incredible design solutions that would serve the client. He wasn’t one of those “design like you don’t give a damn” students. He believes leaders in the future will share this socially aware ambition.

Conclusion

The American healthcare industry is undergoing a major transition. As the next generation of healthcare administrators and facility designers, constructors and operators enters the industry, it must be prepared to move into this evolving environment. Eight experts identified the challenges these new entrants will face and offered insight to help prepare the next generation of administrators, designers, contractors and operators.

Both the next generation of professionals and the facilities they provide will need to be flexible and adaptable to changes in technology, healthcare delivery methods and revenue streams. Decentralized service delivery and the complex organizations that will deliver such services, will require professionals to be collaborative, adaptive and multi-disciplinary. Educational models must support specialization, coupled with generalized knowledge across facilities, finance, business and health. Strategic thinking and experiential learning is essential.

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Appendix A

AHI Interdisciplinary Research Team 4

Team Co-Chairs



Kip C. Edwards

Kip C. Edwards is the Vice President (VP) for Development and Construction at Banner Health in Phoenix, Arizona. Prior to joining Banner, Edwards' education as a civil engineer led to a long career with Kaiser Permanente (KP) in a variety of roles that included VP of National Facilities Services and VP/General Manager of KP Consulting and Business Services. In his capacity as a Vice President at Banner, Edwards is responsible for the development, design and construction of all facilities for the system. "More than just a facilities guy," he is a leader who is committed to working with people and emphasizes enabling staff to evolve their practice.



Walter B. Jones, Jr.

Walter B. Jones, BArch, MArch, is Senior Vice President of Campus Transformation for MetroHealth System in Cleveland, Ohio. He worked in standard architectural offices for several years prior to engaging in healthcare design, but has been involved this specialization for the last 25. His role as vice president is multifaceted. At the most basic level, he is the senior leader of facility management, as well as construction management. His main focus now is to shepherd the major campus transformation for MetroHealth, where retaining many of the old facilities is untenable.



Jeffrey Land

Jeffrey Land is Vice President of Corporate Real Estate for Dignity Health in San Francisco, California. Land's career has focused on running portfolios and addressing asset related challenges in large organizations. Over the past 20 years, he has focused on healthcare, particularly with regard to not-for-profits. He is particularly drawn to the spiritual message of his institution and is motivated in his work by the belief that he can influence people's behavior and outcomes through the built environment.



Stephen Wooldridge

Prior to becoming Vice President of Integrated Real Estate & Facilities at MedStar Health in Washington, D.C., Stephen Wooldridge worked for 23 years in military health. His role at MedStar Health is to "provide leadership for an emerging system," which includes the full cycle of capital projects activities, including: developing standards for capital requirements, strategic planning, operations, real estate transactions and acquisitions, and project management and delivery. He holds a bachelor's degree in electrical engineering, and master and doctoral degrees in construction and management.

Team Subject Matter Experts



Carlos Gonzalez

Carlos Gonzalez is Vice President of Clark Construction Group, based in Bethesda, Maryland. Gonzalez has been involved in the construction industry for 20 years. He has bachelor's and master's degrees in engineering, as well as a master's degree in business administration. Gonzalez works at Clark Construction Group. He has served as a project manager and supervisor on multiple healthcare projects, including a 450-million square foot facility for the Navy. He notes that healthcare offers the most diverse challenges and building systems and complex technology in the construction industry and brings all the challenges that you could face in a building. "You can check all the boxes."



Ryan McKenzie

Ryan McKenzie is Vice President for Healthcare for Clark Construction for the Mid-Atlantic region. He is responsible for operations, preconstruction and predevelopment. His educational background is in finance and management. Mr. McKenzie is dedicated to his work in healthcare because it is a market sector that has more than monetary value; the prototype involves working with community and patients.



Zigmund Rubel

Zigmund Rubel, BArch, MArch, AIA is a healthcare architect who practiced traditional architecture for over 20 years. Six years ago, he and a computer chip designer co-founded a company, Aditazz, in San Bruno, California, that applies "computational processes" to enable planning, design and construction of complex buildings. Half of this 40-person venture-funded firm consists of software engineers. The other half are architects, clinicians, engineers and general contractors.



Phil Tobey

Phil Tobey is Senior Vice President of Smith Group, a 900-person architectural/engineering firm with 11 offices. 30-35% of the firm's activities are focused on healthcare. He directed the health design practice at Smith Group for many years and is currently focusing on strategic planning and mentoring. Mr. Tobey has a BArch from Rhode Island School of Design, where he was a member of the board for 20 years. A graduate with MArch from Harvard's Graduate School of Design (GSD), he served as an officer in the Air Force while engaged in healthcare projects for the U.S. Surgeon General. He has served on panels on healthcare design for the U.S. Department of Defense (DOD).

2015 Collaborative Research Program
White Paper Teams

Team 1. OWNER ORGANIZATION FOR SUCCESSFUL PROJECT OUTCOMES

Underwriter:  *Gilbane*

Academic Facilitator: **Kirk Hamilton, FAIA, Texas A&M University**

Chair:



Peter R. Dawson, AIA
Sr. Vice President
Texas Children's Hospital
Houston, TX

Chair:



Brian Holmes
Sr. Vice President
Texas Health Resources
Dallas, TX

Chair:



John A. Becker
Director, Facilities Division
Defense Health Agency
Washington, DC

Chair:



John Kouletsis, AIA, EDAC
Sr. VP, National Facility Services
Kaiser Foundation Health Plan, Inc.
Oakland, CA

Subject Matter Experts:

William R. Calhoun, Jr., Clark Construction
Bruce Raber, Stantec Architecture
Doug Harper, Gilbane
Judy Quasney, National Institutes of Health

Patrick E. Duke, CBRE Healthcare
Sam Gioldasis, Walker Engineering
Stephen C. Wooldridge, MedStar Health

Team 2. DEVELOPING A FLEXIBLE HEALTHCARE INFRASTRUCTURE

Underwriter:



Southland Industries

Academic Facilitator: **David Allison, FAIA, Clemson University**

Chair:



Spencer Moore
VP, Chief Facilities Officer
MD Anderson Cancer Center
Houston, TX

Chair:



Walter B. Jones, Jr.
Senior VP, Campus Transformation
MetroHealth System
Cleveland, OH

Chair:



Tom Kinman
Vice President, Facilities
Cincinnati Children's Medical Center
Cincinnati, OH

Chair:



Michael H. Covert
President & CEO
CHI St. Luke's Health System
Houston, TX

Subject Matter Experts:

Victor Sanvido, Southland Industries
Kurt Stahl, Hunt Construction Group
Chip Cogswell, Cogswell, LLC

Richard M. Harris, HDR, Inc.
R. Clay Seckman, SSR Engineers
George Sterling, Trane Healthcare Practice

Team 3. PROJECT ACCELERATION / SPEED TO MARKET STRATEGIES

Underwriter:  *Balfour Beatty*

Academic Facilitator: Rebekah Gladson, FAIA, rggroup global

Chair:



Donald H. Orndoff, AIA
Sr. VP, National Facility Services
Kaiser Foundation Health Plan, Inc.
Oakland, CA

Chair:



Frank F. Aucremanne
Executive Director, Buildings & Properties
Cleveland Clinic Foundation
Cleveland, OH

Chair:



Scott Nelson, AIA
Director, Planning & Design
Advocate Health Care
Chicago, IL

Chair:



Dana E. Swenson, PE, MBA
Sr. VP & Chief Facilities Officer
UMass Memorial Healthcare
Worcester, MA

Subject Matter Experts:

Eric T. Burk, Balfour Beatty
Brent Willson, HKS Architects
Victor Sanvido, Southland Industries
Barbara Wagner, Clark Construction

Paul Strohm, HOK Architects
Coker Barton, Hoar Construction
Michael Weiss, Working Buildings, LLC
Brian J. Smith, Cleveland Clinic Foundation

Team 4. DEFINING THE NEXT GENERATION'S FOCUS

Underwriter:  *Clark Construction*

Academic Facilitator: Mardelle Shepley, FAIA, Cornell University

Chair:



Walter B. Jones, Jr.
Senior VP, Campus Transformation
MetroHealth
Cleveland, OH

Chair:



Stephen C. Wooldridge
VP, Integrated Real Estate & Facilities
MedStar Health
Columbia, MD

Chair:



Kip C. Edwards
VP, Development & Construction
Banner Health
Phoenix, AZ

Chair:



Jeffrey Land
VP, Corporate Real Estate
Dignity Health
San Francisco, CA

Subject Matter Experts:

Carlos Gonzales, Clark Construction
Zigmund Rubel, Aditazz
Ryan McKenzie, Clark Construction

Phil Tobey, Smith Group

Team 5. REDUCING INITIAL CAPITAL COSTS

Underwriter: **JACOBS** *Jacobs Project Management*

Academic Facilitator: **Dennis Bausman, PhD, Construction Science & Management, Clemson University**

Chair:



Robert F. McCoole
Senior VP, Facilities Resource Group
Ascension Health
St. Louis, MO

Chair:



Skip Smith
VP, Physical Asset Services
Catholic Health Initiatives
Denver, CO

Chair:



Jeffrey Land
VP, Corporate Real Estate
Dignity
San Francisco, CA

Chair:



Don Wojtkowski
Executive Director, Plant & Properties
SSM Health
St. Louis, MO

Subject Matter Experts:

Richard Onken, Leo A Daly
Geoffrey Stricker, Edgemoor Infrastructure
Chris Kay, Jacobs Project Management

Randy Keiser, Turner Construction
David Prusha, HKS Architects
Brian Garbecki, Gilbane

Governors



Mark Tortorich, FAIA
Vice President
Stanford University Medical Center
Palo Alto, CA



Howard W. Reel, Jr.
Senior Director of Facilities
Johns Hopkins Health System
Baltimore, MD



Spencer Moore
VP, Chief Facilities Officer
MD Anderson Cancer Center
Houston, TX



Robert F. McCool
Senior VP, Facilities Resource Group
Ascension Health
St. Louis, MO



Donald H. Orndoff, AIA
Senior VP, National Facility Services
Kaiser Foundation Health Plan, Inc.
Oakland, CA



Frank Aucremanne
Executive Director, Buildings & Properties
Cleveland Clinic Foundation
Cleveland, OH



John A. Becker
Director, Facilities Division
Defense Health Agency
Falls Church, VA



Walter B. Jones, Jr.
Senior VP, Campus Transformation
MetroHealth System
Cleveland, OH



Brian Holmes
Senior Vice President
Texas Health Resources
Dallas, TX



John Kouletsis, AIA, EDAC
Senior VP, National Facility Services
Kaiser Foundation Health Plan, Inc.
Oakland, CA



Dennis Milsten, CCM
Associate Executive Director, Facility Programs
U.S. Department of Veterans Affairs
Washington, DC



Scott Nelson
Director, Planning & Design
Advocate Health Care
Downers Grove, IL



Stephen C. Wooldridge
VP, Integrated Real Estate
MedStar Health
Columbia, MD



Clayton Boenecke
Chief, Capital Planning
U.S. Defense Health Agency
Washington, DC



Michael H. Covert
President & CEO
CHI St. Luke's Health System
Houston, TX



Peter R. Dawson, AIA
Senior Vice President
Texas Children's Hospital
Houston, TX



Dana E. Swenson, PE, MBA
Sr. VP & Chief Facilities Officer
UMass Memorial Healthcare
Worcester, MA



Gregory Mohler
VP, Planning Design Construction
BJC Healthcare
St. Louis, MO



Denton Wilson
AVP, Design & Construction
Methodist Health System
Dallas, TX



Tom Kinman
Vice President, Facilities Management
Cincinnati Children's Medical Center
Cincinnati, OH



JoAnn Magnatta
Senior Vice President
Main Line Health System
Radnor, PA



Joanne Krause
Director, Medical Facilities
U.S. Navy NAVFAC HQ
Washington, DC



Kip C. Edwards
VP, Development & Construction
Banner Health
Phoenix, AZ



Mark P. Ehret, AIA
AVP, Inova Facilities Management
INOVA Health System
Falls Church, VA



Robert Mitsch
Vice President
Sutter Health
Sacramento, CA



Jeffrey W. Land
VP, Corporate Real Estate
Dignity Health
San Francisco, CA



Skip Smith
VP, Physical Asset Services
Catholic Health Initiatives
Denver, CO