

no. **16**

AIA Academy of Architecture for Health | **Academy Journal 2014**



WELLNESS

CITY  
OUTPATIENT CLINICS  
NEIGHBORHOOD

HOSPITAL  
COMMUNITY  
ANCHOR



## Mission of the Academy Journal

As the official journal of the AIA Academy of Architecture for Health (AAH), this publication explores subjects of interest to AAH members and others involved in the fields of healthcare architecture, planning, design, and construction. The goal is to promote awareness, educational exchange, and advancement of the overall project-delivery process and building products.

## About the Academy

The Academy of Architecture for Health (AAH) is one of 21 member communities of the American Institute of Architects. The AAH is unique in the depth of its collaboration with professionals from all sectors of the healthcare community, including physicians, nurses, hospital administrators, facility planners, engineers, managers, healthcare educators, industry and government representatives, product manufacturers, healthcare contractors, specialty subcontractors, allied design professionals, and healthcare consultants.

The AAH currently consists of approximately 6,954 members. The mission of the Academy is to improve both the quality of healthcare design and the design of healthy communities by developing, documenting, and disseminating knowledge; educating design practitioners and other related constituencies; advancing the practice of architecture; and affiliating and advocating with others that share these priorities.

Please visit the Academy's Website at [www.aia.org/aah](http://www.aia.org/aah), for more information on the Academy's activities. Please direct any inquiries to [aah@aia.org](mailto:aah@aia.org).

### AIA Academy of Architecture for Health Board of Directors 2014

#### President/Vision & Strategy

Charles Griffin, AIA, FACHA

#### President-Elect/Design Awards & Initiative/ Emerging Professionals

Tatiana Guimaraes, Assoc. AIA

#### Past President/Sponsorship/AAHF Liaison

Roger Call, AIA, ACHA, LEED AP

#### Industry Liaison/Regional Initiatives

R. David Frum, AIA

#### Director of Operations

Orlando Maione, FAIA, FACHA, NCARB

#### Communications/Research

Marc Marchant, AIA

#### Education

Fernando Rodrigues, AIA

#### Conferences/Events

Joan Suchomel, AIA

#### Codes & Standards

Chad Beebe, AIA

## CONTENTS

- 3 Letter from the Editor
- 4 Advancing Patient Care in Research Facility Design
- 14 Meaningful Healthcare Planning: A New Era for Needs Analysis Plus Creative Design
- 26 Population Health: the Health and Wellness of People and Communities
- 34 Moving from Volume-Based to Value Based Care...Are You Ready?



AIA Academy of Architecture for Health | **Academy Journal 2014**

## Letter from the Editor

This is the 16th edition of the *Academy Journal*, published by the AIA Academy of Architecture for Health (AAH) knowledge community. As the official publication of the Academy, the *Journal* electronically publishes articles of particular interest to AIA members and the interested public involved in the fields of healthcare architecture, planning, design, research, and construction. Since 2005 we have also published a hard copy version of the *Journal* that has expanded our distribution worldwide. The goal has always been to promote awareness and educational exchange between architects and healthcare providers and to broaden our base of understanding about our clients.

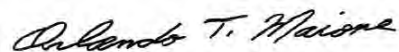
Articles are submitted to, and reviewed by, an experienced nationally diverse Editorial Review Committee (ERC). Over the years, the committee has reviewed hundreds of submitted articles and responded to countless writers' inquiries, and encouraged and assisted numerous writers in achieving publication. The *Journal* has provided valuable opportunities for new and seasoned authors from the architecture and healthcare professions. With this issue, four articles have been selected and printed supporting the enhancement of the built environment for healthcare. Throughout the 16 year history of the *Journal*, the authors have included architects, physicians, nurses, other healthcare providers, academics, research scientists, and students from the United States and many foreign countries.

Published articles have explored a broad range of medical topics, including trends and future of healthcare architecture, cardiac care, future and evolving technology, patient rooms and patient safety, lighting design for healthcare, psychology, workplace design,

cancer care environments, emergency care, women's and children's care, and various healthcare project delivery methods. Visit the *Academy Journal* archives at <http://network.aia.org/academyofarchitecture-forhealth/home/publications> for earlier articles you may have missed. We would like to encourage more graduates who have received healthcare research scholarships and others involved with research within the architecture for healthcare fields to submit their research to the *Journal* for publication consideration. We will continue to develop a cross-referenced article index and a broader base of writers and readers. The deadline for the Call for Papers is the end of May of any calendar year.

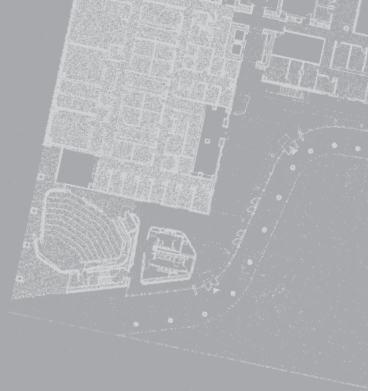
My special thanks to the AIA for its continued support and hard-working staff and to the many volunteers who have contributed to our growing and continued success. I would especially like to thank the other members of the 2013 ERC: James G. Easter Jr., Assoc. AIA, FAAMA, (Tenn.); Ed Jakmauh, ACHA, LEED AP (Pa.); Joyce Redden (Tenn.); John Sealander, AIA, ACHA (Calif.); Professor Kent Spreckelmeyer, PhD, FAIA (Kan.) and Janice Stanton, RN, MBA, EDAC, LEED Certified (IL).

As always, we appreciate feedback, comments and suggestions by emailing [aah@aia.org](mailto:aah@aia.org) or calling me at 631-246-5660.



Orlando T. Maione, FAIA, FACHA, NCARB  
Editor, *Academy Journal*  
September 2013

# Advancing Patient Care in Research Facility Design



by CARRIE BYLES, FAIA; LEO CHOW, AIA; DANIELLE M. MCGUIRE, AIA; TAMARA DINSMORE, AIA, MAUDE BAGGETTO, and AMY KELLER FRYE, EDAC

## ABSTRACT

The Sandler Neurosciences Center on the University of California San Francisco (UCSF)'s Mission Bay Medical and Research Campus redefines modern medical research facility design by co-housing a clinical research unit and research laboratories. The UCSF Memory and Aging Center, a clinic where patients receive state-of-the-art care and take part in clinical trials, is on the ground floor of the Sandler Neurosciences Center. The top four floors house UCSF's Institute for Neurodegenerative Diseases, the Department of Neurology, and the Keck Foundation Center for Integrative Neuroscience. Co-housing clinic space and research laboratories puts researchers in close proximity to patients and affords patients access to an unprecedented amount of resources. The overarching intent of the building's design is to create a collaborative and collegiate environment. The design of a five-story atrium lined with communal space visually connects all floors, exposes them to natural light, and allows room for chance meetings to occur. Having the clinic located on the first floor next to the atrium creates an easily accessible space for patients. The multidisciplinary design of the Sandler Neurosciences Center allows it to be a place where researchers, world-renowned experts, and patients gather to work in tangent to solve the mysteries of neurological diseases.

## ARTICLE

### Advancing Patient Care in Research Facility Design

...

The World Health Organization estimates that 700 million cases of mental and neurological disorders are reported annually—accounting for 13% of global disease burden.<sup>1</sup> Many of these diseases have enormous emotional and economic costs. The scientists at the University of California San Francisco (UCSF) Sandler Neurosciences Center are working hard to find ways of combating these diseases.

Located at the heart of UCSF's Mission Bay Medical and Research Campus, the Sandler Neurosciences Center, along with the adjacent Rock Hall, form the world's largest complex dedicated to the development of treatment, cures, and prevention of neurological diseases and disorders. The clinicians and researchers at Sandler Neurosciences Center are conducting cutting-edge research to uncover new diagnostics, treatments, and cures for Alzheimer's diseases and a number of intractable neurological disorders, including Parkinson's disease, multiple sclerosis, stroke, migraine, epilepsy, autism (see Figure 1).

In 2012, UCSF ranked second among all institutions in biomedical research grants from the National Institutes of Health (NIH) and first amongst public recipients. Furthermore, the UCSF School of Medicine led all schools in NIH grants nationwide.<sup>2</sup> The clinicians and researchers of the Sander Neurosciences Center are using state-of-the-art neuro-imaging, genetics and other technologies to advance understanding of the brain and neurological diseases as fast and as effectively as they can. Just as their research has become



FIGURE 1: South elevation of the Sandler Neurosciences Center from the Koret Quad on the University of California San Francisco Mission Bay Campus. Photographer credit: Cesario Rubio. © Skidmore, Owings & Merrill LLP | Cesar Rubio, 2013. All rights reserved.





FIGURE 2: Located at the heart of UCSF's new Mission Bay campus, the Sandler Neurosciences Center creates strong connections between indoor and outdoor spaces and adjacent buildings. © Skidmore, Owings & Merrill LLP, 2013. All rights reserved.



FIGURE 3: The ground level of the Sandler Neurosciences Center serves as a public interaction zone. It includes the main level atrium that can be opened up to the adjacent gathering garden through large pivoting doors, a patient clinic that supports translational research being undertaken in the labs above, and a 180-person auditorium for symposiums and interdepartmental meetings. © Skidmore, Owings & Merrill LLP, 2013. All rights reserved.

more sophisticated so has their need for an innovative and inspiring research facility. In April of 2012, the Sandler Neurosciences Center opened to help meet their needs.

### Campus Connection

The Sandler Neurosciences Center is located on the growing UCSF Mission Bay campus. The UCSF Mission Bay campus is creating a vital community of next-generation research environments. It has a soon to open state-of-the-art medical center and children's hospital, as well as biotechnology industry research facilities. Upon completion it will be a complete bench-to-bed-side/academia-to-industry community dedicated to the advancement of medical care (see Figure 2).

The Sandler Neurosciences Center has a unique program that includes wet (BSL1, 2 and 3) and dry bench laboratories a vivarium (barrier and non-barrier), clinical research areas, an imaging center, staff offices, meeting rooms and an auditorium. There are over 80 principal investigators and more than 500 additional researchers and staff working in clinical and research programs.

To create strong connections for users to the surrounding campus and community, the Sandler Neurosciences Center includes four separate entrances that are positioned along natural 'desire lines' of movement. One entrance oriented to Rock Hall (which also houses researchers from the department of neurology), another entrance oriented to the Campus Community Center, another entrance to a shared garden, and the final entrance oriented to a separate patient drop-off on Rising Lane. The ground floor has floor-to-ceiling glass walls that create visual and physical permeability. This encourages movement towards and through the building rather than around it, adding to the campus' over all connectivity.

### Co-housing Varied Disciplines

What distinguishes the Sandler Neurosciences Center from other research facilities is that it is a multi-discipline, multi-departmental, translational research facility with the ability to hold a complete process of innovation, drug development, animal research and human trials, testing and treatment. The nucleus of this facility is the Memory and Aging Center, a clinic where patients receive state-of-the-art care and take part in clinical trials. The Sandler Neurosciences Center also houses the Institute for Neurodegenerative Diseases, the Department of Neurology, and the Center for Integra-





FIGURE 4: Typical lab floors of the Sandler Neurosciences Center are composed of an orthogonal, hyper-flexible lab block that supports a wide variety of possible lab configurations that can be tuned to the activities of individual researchers. Also included in this block is an innovative flex zone that can change between support offices or laboratory space.

© Skidmore, Owings & Merrill LLP, 2013. All rights reserved.

tive Neuroscience. Co-housing these varied disciplines helps the clinicians and researchers effectively share and communicate information (see Figures 3 and 4).

Dr. Allison Doupe, MD, PhD explains, *“It is essential in modern science for scientists from different disciplines to be talking to each other and discovering connections where none were recognized before...the new building is laid-out to provide unprecedented opportunities for clinical and basic researchers to cross-paths and start conversations that can lead to that finding those connections.”*<sup>3</sup> Furthermore, researchers have the unique opportunity to have both laboratory and clinic spaces in the building. Associate Professor of Neurology, Physiology and Psychiatry and Director of the Neuroscience Imaging Center Dr. Adam Gazzaley explains, *“It is rare to have that type of integration in one building and it is very exciting for us, especially for those of us that cross over and see patients and also study disease states on a basic level.”*<sup>4</sup>

### Collaboration is Essential

Creating a collaborative environment is not simply a new design trend rather, it is essential to the research being done in the Sandler Neurosciences Center. Collaborating is important in neurology because so many neurological diseases appear to be related. A break-

through in one area of neurology may open the door to many others.

Scientists at the Sandler Neurosciences Center have had a collegial and collaborative spirit since they first came together. Dr. Stephen Hauser, chair of Neurology at UCSF noted, *“30 years ago we were a small group that shared small, adjacent work areas, which resulted in a uniquely fertile environment for the interchange of ideas. Over the years, the proximity of the researchers was held sacred above all else. We had PI’s (primary investigators) using closets as their offices just to stay close together...ultimately this proved untenable as the group grew to the point where they were forced to spread across several buildings on two campuses.”*<sup>5</sup> Now the Sandler Neurosciences Center, along with an existing building immediately to its east, will allow the entire group to be co-located once again.

The designers of the Sandler Neurosciences Center focused on designing spaces that facilitate collaboration and connectivity. At the heart of the Sandler Neurosciences Center is a five-story atrium of cantilevered walkways, bridges, and stairs that weave together all functions and users of the building. Unlike atriums in typical lab buildings that are underutilized, the Sandler Neurosciences Center’s atrium is a highly used gathering and unifying space (see Figure 5). Collaboration hubs that concentrate the building’s various destination locations such as kitchens, printers, conference rooms, offices, mailboxes, and lab entrances, are clustered around the atrium. Café tables and chairs are placed at the collaboration hubs making them an ideal place for chance meetings and unexpected discoveries. The striking, naturally ventilated atrium and adjoining multi-functional collaboration hubs provide visual and physical connections throughout the building, bringing revitalizing daylight and energy into the building (see Figure 6).

Dr. Gazzaley states, *“We have a lot of small common areas where people come together when they are not in the lab.”*<sup>6</sup> These common areas are home to casual conversations and chance meetings. They allow room for various synergies and unconventional collaborations to develop that could potentially lead to new hypotheses and discoveries (see Figure 7).

### Collaboration Confirmed

Since the Sandler Neurosciences Center opened, opportunities for cross-pollination amongst the scientists have emerged with startling frequency. For example, Assistant Professor in the Department of Neurology, Aimee Kao, MD, PhD, who studies progranulin, and



Dr. William Seeley began working together after moving into the new building. Dr. Kao walked by Dr. Seeley's lab where he was conducting an autopsy on a frontotemporal dementia patient with a progranulin mutation. The two then began speculating about how to connect observations in humans to those in a model organism. Kao explained that given the dozens of potential neurons she might study for the effect of a progranulin mutation in animals, targeting the neurons affected in humans could streamline her research. "We need to know we're making the right analogies as we move promising therapeutic ideas into human trials... this is another factor critical to speeding discovery,

because it improves the odds of investing in therapies with genuine promise, rather than wasting time on false hope."<sup>7</sup> Dr. Kao and Dr. Seeley's ability to work together exemplifies how sharing space can grow into meaningful partnerships and work.

Early findings from a post occupancy evaluation (POE) conducted in June 2013 have indicated that 75% of individuals surveyed stated that the building has changed the way they interact with colleagues. Comments received included, "the interactions space around the atrium and openness between floors create many opportunities for informal and impromptu interactions—a big plus" and "the layout is very conducive to conversation and idea sharing amongst colleagues."

### The Clinical Trial Patient

The ground floor of the Sandler Neurosciences Center houses the Memory and Aging Center comprised of the out-patient clinic. Both research studies and clinical trials are conducted within the clinic making it a particularly collaborative space. Research studies examine specific areas or topics related to a particular disease or symptom without giving medication. While, clinical trials test new drugs or new invasive medical devices on human subjects. Having both research studies and clinical trials in the same space provides patients cutting-edge.

The clinic is comprised of a patient waiting room, interview rooms, testing rooms, exam rooms and an



FIGURE 5 (opposite): The Sandler Neurosciences Center has a five-story atrium of cantilevered walkways, bridges, and stairs that weave together all functions and users of the building. Photographer credit: Cesario Rubio. © Skidmore, Owings & Merrill LLP, 2013. All rights reserved.

FIGURE 6 (above): Collaboration hubs in the Sandler Neurosciences Center concentrate the building's various destination locations such as kitchens, printers, conference rooms, offices, mailboxes, and lab entrances around the building's natural paths and its five-story atrium. Café tables and chairs are placed at these hubs to help facilitate casual conversations. Photographer credit: Cesario Rubio. © Skidmore, Owings & Merrill LLP, 2013. All rights reserved.

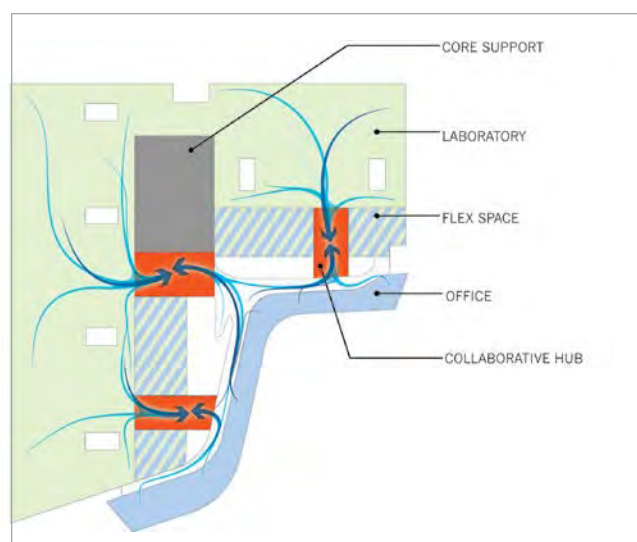


FIGURE 7: Collaboration hubs are woven into the Sandler Neurosciences Center natural flow and placed around its five-story atrium. © Skidmore, Owings & Merrill LLP, 2013. All rights reserved.

imaging center. The imaging center currently includes two 3T fMRIs and is designed to include a MRI/PET. The clinic is designed; so that the patient has a relaxing and comfortable experience while facilitating highly sophisticated tests and medical procedures. Additionally, it was important that the clinical areas were design to be easy for the patients to navigate. First and foremost, the designers began with patient entrance which is separate from the main entrance for safety and privacy reasons. The designers carefully designed an elegant entry and path to the ground floor clinic that are easily assessable, intuitive, and welcoming for the patients (see Figure 8).

The clinic was designed to take what could be a tense moment for the patient and their family and uses design to relax, comfort, and remind them they are receiving expert care. Tamara Dinsmore, Director at Skidmore, Owings & Merrill states, *“the patient experience in the UCSF Memory and Aging Center was taken very seriously when designing the Sandler Neurosciences Center. In order to give the reception area and exam rooms an appropriate feeling, warm colors were adapted in the fabrics and woods were adapted on the floor. Glass walls were used in the reception area so patients could get direct sunlight and peer out onto the lively campus.”*

Furthermore, the reception area’s glass walls face out to the five-story atrium lined with labs and research offices. This design creates a strong visual connection between the scientists, clinicians and patients. Patients can see the researchers who are working to find treatments and cures for their illnesses (see Figure 9). Jane Czech, the Director of Administration Department of the Neurology Administration explains, *“It is very inspirational for the researchers to see the patients and for the patients to feel part of the larger body of work that is being done in the building. The patients remind the researchers that their work is not just about the test tubes and lab work; it is about curing people. The lab conversations are different because there are patients in the space. Researchers are reminded, here is a real person and here is a real problem.”*<sup>8</sup>

### **Patient, Researcher & Community Benefit**

By bringing the Memory and Aging Center inside this multi-discipline research facility the Sandler Neurosciences Center accelerates new discoveries and drives them toward patient care. In a more traditional lab, researchers test their new medicines and it can take weeks, if not months, to get results. At the Sandler Neurosciences Center, clinicians see patients on the first floor and can immediately run samples to labs in the same building, allowing researchers who develop



FIGURE 8 (Above): Warm colors and natural light make the Memory and Aging Center clinic a comfortable space for patients and their families. Floor to ceiling windows allows patients natural light and visibility to the rest of the Sandler Neurosciences Center and the outdoor garden. Photographer credit: Cesario Rubio. © Skidmore, Owings & Merrill LLP, 2013. All rights reserved.

FIGURE 9 (opposite): The Memory and Aging Center clinic entrance is predominately located on the ground floor of the Sandler Neurosciences Center. The passively cooled atrium provides visual and physical connectivity between all departments while bringing natural daylight deep into the building footprint. Photographer credit: Cesario Rubio. © Skidmore, Owings & Merrill LLP | Cesar Rubio, 2013. All rights reserved.



therapies or diagnostic tests to see if their ideas work and understand the reasons why or why not (see Figure 10). Similarly, researchers on the floors above can use high throughput screening to develop therapies safe enough for patients in clinical trials downstairs. The acceleration of this process provides patients the best care and allows the scientists to focus on their work rather than numerous logistical processes. Scientist Michael Geschwind, MD, PhD explains, *“The difference [at the Sandler Neurosciences Center] is I can walk right upstairs, look at the tissue under the microscope, and begin to understand the pathologies causing the abnormalities... this shortens a process that once took several weeks to just a few days.”*<sup>9</sup>

The Sandler Neurosciences Center fosters an unprecedented number of experts to care for and work with the patients at the Memory and Aging Center from a wide variety of disciplines including neurology, neuropsychology, geriatrics, geropsychiatry, pharmacy, nursing, social work and speech pathology.

It was envisioned and designed to be a collaborative place where patients, researchers and clinicians are all working together to fight neurological diseases. It has proven to be a place where the cross-fertilization of ideas amongst those fighting disease has developed. Dr. Geschwind, explains, *“It’s helped us think about things, not just from a clinical perspective, but also from immunological, imaging, and basic science*



FIGURE 10: Researchers at the Sandler Neurosciences Center are able to take results from the Memory and Aging Center on the first floor directly to their laboratories on the top floors. This expedites what is normally a laborious and time consuming process. Photographer credit: Cesario Rubio. © Skidmore, Owings & Merrill LLP | Cesar Rubio, 2013. All rights reserved.

*perspectives, so we can attack diseases and problems in a more multidisciplinary fashion. It makes me much more optimistic about being able to help my patients.”<sup>13</sup>*

When designing a research facility, it is important to consider the benefits of housing a clinic within a larger multi-disciplinary research facility. The Sandler Neurosciences Center on the UCSF Mission Bay Campus stands as a clear testament that the patients, researchers, and the community at large benefits from having a collaborative, translational research facility.

## Acknowledgements

We would like to thank and acknowledge the leadership of:

Dr. Susan Desmond-Hellmann, MD, MPH, Chancellor of UCSF

### THE BUILDING COMMITTEE

Dr. Sam Hawgood, MBBS, Dean UCSF School of Medicine

Dr. Stephen Hauser, MD, Chair of Neurology

Dr. Stanley Prusiner, MD, Director, Institute for Neurodegenerative Diseases

Dr. Allison Doupe, MD, PhD, Center for Integrative Neuroscience

### UCSF REAL ESTATE SERVICES

Ms. Esther Morales, Executive Director

Ms. Victoria Fong, AIA, Director, Project Development

### DEPARTMENT OF NEUROLOGY

Ms. Jane Czech

Dr. Samuel Pleasure, MD, PhD

Dr. Jorge Oksenberg, PhD

Ms. Rosalie Gearhart, MSN, RN

Dr. Adam Gazzaley, MD, PhD

Dr. Bruce Miller, MD

### INSTITUTE FOR NEURODEGENERATIVE DISEASE

Ms. Darlene Groth

Ms. Ana Serban

### CENTER FOR INTEGRATIVE NEUROSCIENCE

Dr. Stephen Lisberger, PhD (now at Duke University)

Ms. Shelley Greene

Dr. Cliff Roberts, DVM

Our thanks also extend to the numerous other UCSF Faculty and Staff members who contributed to the success of the Sandler Neuroscience Center project.

Additionally, we would like to thank the following teams that contributed to the construction of the Sandler Neuroscience Center.

Edgemoor/McCarthy Cook – Developer

Clarke Construction group – Design Builder

SOM Structures

SOM Interiors

WSP Flack & Kurtz, inc. (MEP, Lighting Design and Security)

Research facilities Group (Lab Planning)

SOM Graphics

Wilson, Ihrig & Associates (Acoustics and vibration)

The RJA Group (Smoke Control and Code)

Teecom (IT)

Edgett Williams Consulting Group, Inc (Vertical Transportation)

Field Management Services (EMI Testing)

BKF Engineers (Civil)

Treadwell & Rollo (Geotechnical)

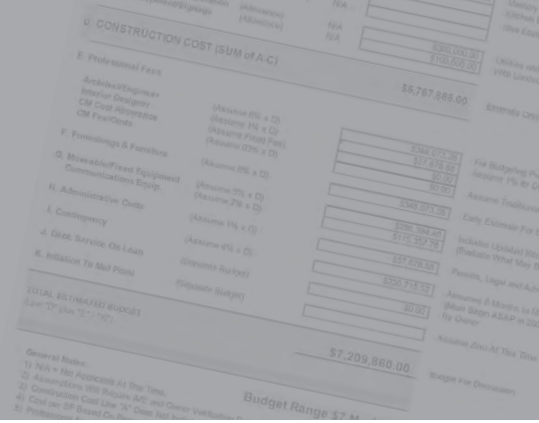
Shen Milsom & Wilke, LLC (audio-visual)

Cermark Peterka Petersen( Wind Tunnel Testing)

## References

1. International Federation of Pharmaceutical Manufacturers & Associations. (2013). Mental and Neurological Disorders Addressing a Global Health Priority. Position Paper. [http://www.ifpma.org/fileadmin/content/Global%20Health/Mental\\_Health/2012\\_IFPMA\\_Position\\_Paper\\_on\\_MNDs.pdf](http://www.ifpma.org/fileadmin/content/Global%20Health/Mental_Health/2012_IFPMA_Position_Paper_on_MNDs.pdf)
2. NIH website <http://report.nih.gov/award/index.cfm> NIH, NIH Awards by Location & Organization (2012).
3. Schwartz, A. (01/24/2013). Sandler Center Collaborations Inspire Discovery & Hope. Retrieved from <http://medschool.ucsf.edu/features/sandler-center-collaborations-inspire-discovery-hope>
4. *Dr. Adam Gazzaley Society for College and University Planning Tour: Intro Remarks 4/28/2012.*
5. Schwartz, A. (01/24/2013). Sandler Center Collaborations Inspire Discovery & Hope. Retrieved from <http://medschool.ucsf.edu/features/sandler-center-collaborations-inspire-discovery-hope>
6. *Dr. Adam Gazzaley Society for College and University Planning Tour: Intro Remarks 4/28/2012.*
7. Schwartz, A. (01/24/2013). Sandler Center Collaborations Inspire Discovery & Hope. Retrieved from <http://medschool.ucsf.edu/features/sandler-center-collaborations-inspire-discovery-hope>
8. *J. Czech, (Personal communication, May, 22, 2013)*
9. Schwartz, A. (01/24/2013). Sandler Center Collaborations Inspire Discovery & Hope. Retrieved from <http://medschool.ucsf.edu/features/sandler-center-collaborations-inspire-discovery-hope>
10. Schwartz, A. (01/24/2013). Sandler Center Collaborations Inspire Discovery & Hope. Retrieved from <http://medschool.ucsf.edu/features/sandler-center-collaborations-inspire-discovery-hope>

# Meaningful Healthcare Planning: A New Era for Needs Analysis + Creative Design



by JAMES G. EASTER, JR., FAAMA, ASSOCIATE AIA

## ABSTRACT

The pre-design phase of healthcare planning and programming is changing rapidly. The response is relevant to several factors; shifts in care management and service delivery, improved processes for enhanced efficiency, governmental intervention through Meaningful Use and the Patient Protection and Affordable Care Act (PP/ACA), enacted on March 23, 2010 by the Federal Government and administered through the IRS for 501 (c) (3) category providers. These regulatory mandates are complementary to many of the efforts in the past to contain costs, improve access, and improve outcomes associated with the care of patients treated in the public healthcare sector.

This position statement addresses the operational, environmental and design factors associated with these process improvements to demonstrate the importance of effective pre-design decision making in a new era of professional practice. Needs based programs and efficient design will be complementary partnerships based on improved outcomes and reduced costs.

Buildings, systems, technology and design operate hand-in-hand to change the consumer and the provider perspective. The built environment and urban planning have significant importance for both improved methods of healthcare delivery. The healthcare system of the future must be a component of the fabric of the community by utilizing urban planning methods, metrics, and processes defined herein. The architect and planner of the future will serve the consumer seamlessly to provide meaningful design that exceeds the performance standards imposed on buildings by regulators and third party payors. Decisions will be made with confidence based on sound business principles, grounded in reliable facts, and directed toward reliable population-based metrics.

## ARTICLE

### Meaningful Healthcare Planning: A New Era for Needs Analysis + Creative Design

...

#### Background

There are options one might consider to achieve a successful healthcare plan. For architects, it is more than the design of a single building but the comparative assessment of an entire system. Utilizing a “working methodology” to achieve an effective plan requires experience, an understanding of the situation, regulatory responsiveness, cultural adaptation and a sensitive “global view” of the client’s vision and mission.

Healthcare design and planning specialization are key success factors. The operational and design features of what were traditionally the core attributes of a “hospital” have shifted from a “stand alone building” to a network of buildings packaged in what has become an “integrated” healthcare delivery system. This approach to service delivery is in response to a number of dynamic market forces:

- Consumer Access Demands Convenience
- Competition Within Markets Requiring Innovative Options
- Disease Awareness and Early Intervention Responsive to Location and Consumer Needs: Specialization and Clinical Aggregation Are Key Factors
- Providers Must Respond to Varying Acuity Levels: Primary, Secondary and Tertiary
- Regulations Are Moving Toward Bundled Care: Reduce The Selection of Preferred Consumer and Disease Types to Ensure A Balanced Care Plan



- Regulations Are Requiring That Needs Be Met To Participate In The Market
- Third Party Payors, Both Public and Private, Require Cost Consciousness and Better Management Methods
- Clinical Programs Will Be Needs Based and Located Where The Consumers Reside
- Transportation And Technology Are Integral to Accessibility
- Healthcare Communities Are Evolving Full Service Continuums of Care: Clinical Integration goes Beyond the Acute Care to Post Acute and Extended Care Services
- Public, Private and Investor Owned Providers Are Blending Services and Networks
- Buildings are No Longer Stand Alone, But Integrated, Personal, Efficient and Consumer Friendly
- Physician Specialization, Employment and Attitudes are Changing The Care Plans: Care Partners and Extenders are Added Value to the Ideal Medical Home Models

The list of market dynamics grows as the planning, programming and design features mature. Fragmented systemic planning and the incremental development of healthcare buildings is no longer affordable or appropriate. Healthcare architects are strategically adding specialty staff including; physicians, nurses and technologists, as well as other team members versed in strategy, finance and operations. Through creative teaming the hospital planner, architect, engineer, financial advisor, strategic planner and lawyer will build better healthcare delivery systems for the future.

The most nebulous terms in the previous statement are planning and programming. Both have different meanings to both architects and hospital clients. Planning may refer to strategic, fiscal, urban and facility concerns. Programming is often confused with service delivery, while architects may refer to the process as functional programming. The sequencing of these events is a key consideration to ensure appropriate decision making and timing. The successful healthcare systems of the future will place the emphasis on doing the right things in the right sequence for the right reasons.

### Getting Started With Healthcare Change

To the architect Louis Sullivan's concept of "*form follows function*" has been added "*follows funding*" which is a guiding premise of most successful businesses. At the same time this premise is the overarching mantra

for healthcare reform at both the public and private sector levels. Healthcare has historically been referred to as a combination of diverse service delivery systems including; private, not-for-profit, public and community, investor owned for-profit, federal sector and governmental. Each provider approaches the early stages of a capital development program differently. These differences vary by region, service delivery philosophy, licensure status and fiscal objectives.

We have added, through governmental incentives, the Critical Access Hospital (CAH) category and more recently the Federally Qualified Healthcare Clinics (FQHC) which often compete with both the county supported clinics, private clinics and the CAH's for market share. Recent private investments have grown in the healthcare sector to flood the markets with low acuity "minute" clinics, urgent care retail centers, pharm-care and "Wal-Care" all aimed at entering the delivery system to gain a competitive business advantage. Consumer demand and third party payers will ultimately determine their success or failure. Success will also be measured by results based on positive and consistent clinical outcomes. Most consumers of higher acuity care will continue to seek care from the "branded providers" with the best outcomes provided in a "transparent" environment. Ideally, the over use of Emergency services provided on an episodic basis will diminish as alternative treatment sites are offered to the consumer.

In many ways competitive market dynamics and the entrepreneurial attributes of healthy economies succeed when free enterprise efforts are encouraged. A core premise of the future healthcare delivery systems are these market dynamics. Healthcare is a dynamic industry complicated by poorly managed entitlement programs like Medicare and Medicaid. The jury is still out on the recently introduced healthcare exchanges and other aspects of the affordable care act.

The Certificate of Need (CON) laws of the mid 70's are being supplanted by more simplistic, but more effective regulation, through new requirements being implemented within the Affordable Care Act and the criteria embedded in the new requirements for "charitable, non-profit" 501 (c) (3) hospitals and healthcare delivery systems. It appears that this new law will have both value and built-in planning incentives for providers of care at all levels.

To paraphrase an initial reading of the law, it will embrace four (4) general requirements on a facility-by-facility basis. It is recommended that the reader contact the IRS, their financial advisor, tax accountant or legal advisor for more details on the impact of this law:

- Establish written financial assistance and emergency medical care policies (EMTALA laws will likely still require compliance as well as board policies on Medical Screening).
  - Limit amounts charged for emergency or other medically necessary care to individuals eligible for assistance under the hospital's financial assistance policy (combined with state-by-state Medicaid laws either in compliance with federal law or not and aide in the growing misuse of emergency services recognized as a concern today).
  - Make reasonable efforts to determine whether an individual is eligible for assistance under the hospital's financial assistance policy before engaging in extraordinary collection actions against the individual, and;
  - Conduct a community health needs assessment (CHNA) and adopt a CHNA implementation strategy at least once every three years (effective future tax years beginning after March, 2012).
- Free Standing Satellite Emergency Departments
  - Free Standing Urgent and Emergent or Quick Care Centers
  - Secondary Care Specialty Clinics and Sub-Acute Centers for Outpatient and Ambulatory Care at Numerous Levels
  - Nursing Homes, Skilled Care, Senior Care, Assisted Living and Memory Care Centers
  - Hospice Care and Respite Care
  - Senior Day Care and Respite Care
  - Continuum of Care Retirement Centers (CCRC)
  - Community Mental Healthcare Centers
  - Inpatient Psychiatric Centers
  - Retail Healthcare Centers
  - Pharmacies and Allied Health
  - Integrated Health Care Centers (see Figure 3 for Award Winner—Duke Medical)

## Responding To Changes Both the Micro and Macro Levels

The teamwork concept begins to have teeth as we review the implications of these new laws and the market dynamics. It is apparent that architects and planners will need specialists on their teams to address these mandates beyond the traditional architect, engineer and facility planner roles.

Even those firms practicing specialty architecture for healthcare delivery and high tech laboratory and scientific design will be impacted. These firms have already embraced the rules of the CON mandates (where applicable), the current FGI “Guidelines for Design and Construction of Healthcare Facilities”—2010 Edition (being updated in 2014): [www.fguidelines.org](http://www.fguidelines.org)” and the myriad of codes and standards adopted and enforced by states, counties and authorities having jurisdiction (AHJ) over the design of the following:

- Acute, Post-Acute and Tertiary Healthcare Facilities
- Medical Research Centers
- Academic Health Science Centers
- Cancer Care and Specialty Care Centers including Comprehensive and Community Based Radiation Therapy Centers
- Free Standing Specialty Care Centers and Those Within Acute Care Settings (Women's Care, Children/Pediatric Care and Neonatal Intensive Care, etc.)

This initial listing identifies the *complexity of the service delivery system*, the need for a comprehensive review of the market served, the quality assurance standards applied to these diverse healthcare providers, and the growing need to conduct a COMPREHENSIVE NEEDS ASSESSMENT as mentioned previously and outlined within the PP/ACA and Meaningful Use standards.

Many of the mission-driven healthcare systems will survive and thrive as their objectives continue to focus on QUALITY HEALTHCARE FOR THE MOST CONSUMERS WITHIN THEIR REGION AT THE MOST AFFORDABLE COST. This approach will gain momentum through the governing tenants of both Meaningful Use and Accountable Care (See Figure 1a for Illustration of Electronic Medical Record (EMR) Step-By-Step Process).

As a corporate member of the healthcare Advisory Board Company, the author has recently reviewed their “*Eleven Insights on the Future of Care Management*”. These insights are relevant to healthcare planning, service delivery, policy change and architecture. In addition to this research, the firm of Lattimore Black Morgan & Cain (“LBMC”) has recently conducted several COMMUNITY HEALTH NEEDS ASSESSMENTS (CHNA) as defined herein and included in the ACA, 501 (c) (3) requirements (particularly general requirement No. 4) required for each facility within a system. The studies should follow the parameters summarized below:

- I. Objectives, Overview and Approach (Input From Stakeholders):
  - a. Local Providers
  - b. Legislative Bodies

- c. Consumer Groups
- d. Third Party Payers
- e. Consumers
- II. Executive Summary of Community Findings:
  - a. Economic Impact
  - b. Development Opportunities
  - c. Gaps Within Region
  - d. Action Plan
- III. Demographic Profile, Service Area and Market Status
- IV. Social Determinants (Defined In Tandem With the Client):
  - a. Economic Status
  - b. Educational Status
  - c. Housing Character
  - d. Employment Status
  - e. Health Insurance and Insurability
  - f. Community Needs Index
  - g. Current Service Delivery Programs and Locations
- V. Key Health Indicators (May Vary By Community and Context Of Market)
  - a. Diabetes and/or Kidney Disease
  - b. Mental Health
  - c. Preventive and Public Awareness
  - d. Cardiovascular
  - e. Neurological
  - f. Women, Infants and Children
  - g. Cancer
  - h. Others By Disease Specific Categories
- VI. Data Gaps Identified Within The Market:
  - a. Service Gaps
  - b. Provider and Recruitment Gaps
  - c. Technology and Systemic Needs
- VII. Conclusions
- VIII. Cited Works and Exhibits
- IX. Appendix and Data References and Reports
  - a. Recent Area wide Plans
  - b. Recent Public Health And/or Area wide Issues Or Concerns
  - c. Anomalies within the Market (Natural Disasters, Market Forces, Population Shifts, etc.)

This listing is an example of how the NEEDS ANALYSIS PROCESS becomes a key attribute of the global planning and information dissemination methodology. This work product when utilized in a transparent and collaborative manner is a rationale framework for public healthcare service delivery and process improvement. This information may also be used by private parties in a competitive manner which does offer a number of challenges for both the legal and regulatory bodies to

<b>Stage 7</b>	Medical Record fully electronic; CDO able to contribute to EHR as by product of EMR	<b>0.5%</b>
<b>Stage 6</b>	Physician documentation (structured templates), full CDSS (variance & compliance full PACS	<b>1.2%</b>
<b>Stage 5</b>	Closed loop medication administration	<b>4.8%</b>
<b>Stage 4</b>	CPOE, CDSS, (clinical protocols)	<b>4.1%</b>
<b>Stage 3</b>	Clinical documentation, CDSS, PACS available outside radiology	<b>40.4%</b>
<b>Stage 2</b>	CDR, CMV, CDSS interface engine, may have document imaging	<b>29.8%</b>
<b>Stage 1</b>	Ancillaries- Lab, Rad, Pharmacy	<b>7.1%</b>
<b>Stage 0</b>	All Three Ancillaries Not Installed	<b>12.1%</b>

FIGURE 1a: Meaningful Use Illustration (American Recovery and Reinvestment Act—ARA, 2009) 7-Stage Roll Out Diagram From 2009 HHS Statement

consider. These issues will be addressed in more detail as the PP/ACA programs gain momentum moving forward into 2014 and beyond.

### Diverse Market Forces

The need to protect information, manage competitive markets and design accessible public systems challenges all parties from the federal and private sector perspectives. It is apparent that the growing number of linkages between public and private sector healthcare programs will continue. Comparisons to the not-for-profit Kaiser Foundation program and the Kaiser HMO including others, for example; the Cleveland Clinic affiliation with Community Health Systems (CHS), Lifepoint affiliations with Duke Medical and numerous religious affiliated networks provide opportunities to bundle services, reduce waste, improve access, streamline IT/EMR efforts and improve overall service delivery (see Figure 3).

### Systemwide Urban Planning, Needs Assessments and Facility Master Planning: More Than Traditional Thinking; A Global Challenge With Added Value Long Term

The use of the terms “areawide planning” and “functional programming” suggest different meanings to different people. As architects for buildings, we see these terms being *asset driven* and *tangible* commodities that may be sized, formed, moved around, expanded, constructed

FIGURE 1b: The Urban Context (Major Factors Impacting Healthcare Design)

**Predictions From Rusty Yeager, VP and Deputy CIO HealthSouth Corporation – AAMA Conf. Nov., 17, 2009**

*Healthcare Delivery Systems Have Invested Heavily In The EMR Roll Out!*

**Office of the National Coordinator of HIT (ONCHIT)**

- \$300 million for Health Information Exchange (HIE)
- \$20 million to the National Institute of Standards and Technology (NIST) for standards
- Competitive grants to states/ Indian tribes for the development of loan programs
- Development of a plan for "the utilization of a certified electronic health record for each person in the United States by 2014"
- Grants and loans to strengthen the HIT infrastructure
- Privacy and Security Support

**Improving Patient Care (HHS Statement)**

- Complete, accurate, and searchable health information, available at the point of diagnosis and care, allowing for more informed decision making to enhance the quality and reliability of health care delivery.
- More efficient and convenient delivery of care, without having to wait for the exchange of records or paperwork and without requiring unnecessary or repetitive tests or procedures.
- Earlier diagnosis and characterization of disease, with the potential to thereby improve outcomes and reduce costs.
- Reductions in adverse events through an improved understanding of each patient's particular medical history, potential for drug-drug interactions, or (eventually) enhanced understanding of a patient's metabolism or even genetic profile and likelihood of a positive or potentially harmful response to a course of treatment.
- Increased efficiencies related to administrative tasks, allowing for more interaction with and transfer of information to patients, caregivers, and clinical care coordinators, and monitoring of patient care.

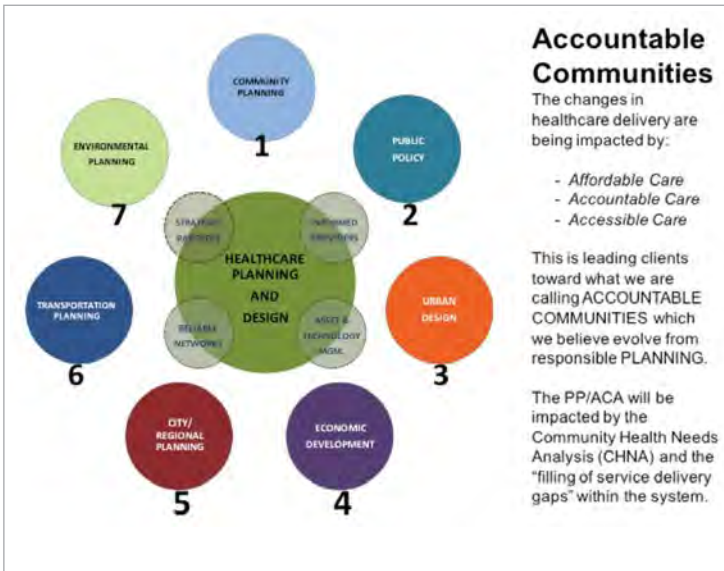


FIGURE 2: The Urban Context (Major Factors Impacting Healthcare Design)

totally new and demolished over time. Defining the "best practice" methods to be utilized is the challenge. We believe the relevant factors to consider within the urban plan are the ones described in Figure 2 herein:

Within a system, it is this author's opinion, that the terms vary by situation and therefore, offer the following step-by-step strategy for FACILITY AND SYSTEM PLANNING being conducted on either the micro or macro level. How the advisor/consultant enters the assignment determines the level of detail and sophistication required. Under the American Institute of Architects (AIA) professional practice recommendations, the Owner is responsible for the program and the plan.

This may vary by building type, but this is generally the case. In some cases, architects and engineers offer this as a "free or reduced fee service" to gain a competitive advantage in the marketplace. This is not recommended for reasons outlined herein. Developing an Integrated Project Delivery (IPD) Team has gained some ground in recent years, but is often discounted due to the perception of increased owner risk beyond the traditional project delivery methods. There are a number of risk sharing programs evolving within larger healthcare delivery systems providing owners the option to engage consultants and pay them on the basis of savings incurred.

As we move into the ACA era and continue, in many states, with the CON programs, we will gain insight into the value of properly prepared and conducted community needs assessments prepared in tandem with Strategic Plans and Facility Master Plans. This would be the ideal course of action and is recommended for future consideration. As endorsed by the American Institute of Community Planners (AICP) and other urban and community planning professionals, this approach to one segment of the community, ie; healthcare and human services, will likely become the model for a new era of improved resource management and leadership accountability across the full continuum of community development and long term sustainability.

The opportunity to address the quality of the built environment” is enhanced utilizing these broader based planning methods. Over time, it is apparent that the sustainability of our earth’s greatest gifts of atmospheric air quality, water and natural resources will combine with natural and man-made disaster relief to offer greater safety potential to the residents of our planet earth. This is illustrated in Figure 2 as the “core elements” which encompass:

- Strategic Partnerships
- Informed and Integrated Providers
- Reliable Networks
- Asset and Technology Management



FIGURE 3a (above): Duke Integrated Health Center (An Award Winner Cited By AIA and Honored By Academy of Architecture for Health)

FIGURE 3b (right): Website background from the Duke Integrated Medicine program.

## An Illustrative Approach To The Master Plan

### STEP ONE: Situation Assessment and Cultural Character (Leadership and Board Discussion).

When engaged to study a facility problem, the key consideration by the consultant is to determine where the leadership team may be “strategically” within their service delivery program (every provider of healthcare is different). The services, policies, personalities, and procedures (legal status) drive their mission, vision, values, goals and objectives. Is there a clear set of policies and procedures in place, effective board of governance, and service delivery program that follows both the regulatory requirements of the region being served and those same mandates by both licensure and accreditation bodies within their service jurisdiction?

These authorities having jurisdiction (AHJ) and accrediting bodies like The Joint Commission on Accreditation of Healthcare Organizations (TJC/JCAHO), vary by category of care from acute to long term care, rehabilitation, and post-acute care. The consultant should understand the “context” of the service delivery continuum and see the potential problems and opportunities from an informed and experienced basis of understanding. Team members may be selectively added as necessary (financial, legal, strategic, clinical, process improvement, architectural, engineering, environmental,



etc). The role the architect plays will vary from single building site to “global system” advisor.

As mentioned in the Advisory Board Company’s recent study report entitled: “*Research Briefing: Eleven Insights on the Future of Care Management*”, the following should be considered by the consulting team (paraphrased and expanded planning and design implications inserted by the author for comparative purposes):

1. Care Management is the Best Way to Reduce Costs.
2. The Ideal Care Management Organization Will Look Different in The Future.
3. Change Care Management Capabilities Incrementally and Strategically.
4. Define and Commit to a Vision and How One Might Achieve That Vision.
5. Cultivate and Staff for Care Management Leadership Throughout the Continuum.
6. Evaluate, Define and Leverage Existing Infrastructure (Buildings Impact Access and Service Delivery).
7. Connect the Infrastructure and Define the Organizational Pathways (Systems Integration Empowered Through Meaningful Use Are Mandating Change).
8. Focus On Patient Service Delivery Pathways, High-Risk ROI and Systemwide Implications (Revenue Enhancement Must Balance With Entitlements and Market Needs)
9. Scrutinize and Beta Test Your Care Management Roll-Out Plan for Short Term and Mid-Term Business Case Implications.
10. Engage the Consumer, Patients, and Family In Their Own Healthcare (Public and Private Third Party Providers Will Mandate This Behavior).
11. Becoming a Population Manager Is A Cultural Transformation Endeavor (The Role of the Physician and Care Giving Extenders Is Changing).

For further reference, these sources; [advisory.com/caremanagement](http://advisory.com/caremanagement), [advisory.com](http://advisory.com), [advisory.com/crimson](http://advisory.com/crimson) and [evolenthealth.com](http://evolenthealth.com).

**STEP TWO: Recognizing The Healthcare System Has A Variety of Care Places and Room-By-Room Service Delivery Spaces** (Leadership and Service Line plus Physician Discussions). The fact gathering process in an advanced healthcare delivery system is data driven and integrated with information available on-line via protected pathways, but easily accessible by the consulting team (companies offer these archi-

val services with high levels of proficiency supportive of advanced asset management and space inventory methods). This fact finding and data gathering process combines the following data-based efforts into several planning pathways. These pathways will overlap contingent upon the sophistication of the provider and their status within their overall asset development programs (reflective of assets owned, managed and leased).

- Work Loads and Data Management Systems Reflecting Historical Utilization (Required to Determine Key Planning Units and Statistics Illustrating Usage Trends)
- Market Share Data Comparable With Data Available Through Private and Public Sources
- Facility Information Reflective of Existing Conditions, Including, For Example:
  - As-Is Floor Plans, Site Plans and Current Functional Affinities
  - As-Is Energy and Engineering Data Suitable to Determine Historical Utilization
  - As-Is Maintenance Records and Equipment Data Suitable to Define Operational, Safety and Security Measures and Metrics
  - As-Is Planning and Design Studies Suitable to Determine Progress
  - As-Is Life Safety, ADA, ICRA and PHAMA Considerations
  - As-Is Network Data Suitable to Determine Engineering Conditions, Low Voltage Requirements and Gaps Within the Existing Engineering and IT Systems

These documents and related data bases form the foundation for on-going planning and facility master zoning and re-purposing endeavors that occur as the campus master planning (MP) process rolls out and individual buildings are assessed for “current condition, value, added value and sustainability over time”. In every case the master plan (MP) may focus on single buildings but more appropriately would be assessed on a system wide basis to permit a re-allocation and re-distribution of resources as defined herein. A key consideration in the management and MP of existing assets is the following:

- Will a Comprehensive Master Plan (MP) Assessment Provide Meaningful Global Information to Offset the Incremental Costs of Fragmented Planning Methods?
- Will This MP Process Also Provide Means and Methods for
- Improved and Enhanced Business Planning and Budgeting Over Time?

The experienced answer to these overarching questions is an unequivocal yes, but often the “trial and error, lumps and bumps and band-aid methods” occur repetitively until healthcare leadership recognizes the implications of this errant methodology. Experienced architects, planners and designers are equipped to demonstrate these concerns, but are often over-ridden by fiscally conservative managers who cannot see or understand the “big picture”.

In this new era of accountable care and needs-based analysis (including the buildings), we will begin to see more clearly the OPPORTUNITIES FOR ASSET MANAGEMENT AND ENHANCEMENT. It does appear the following drivers are legitimate considerations:

- Many Healthcare Campuses Include Antiquated And Obsolete Buildings (Incremental and Inefficient Expansions Over Time)
- Many Hospitals Are Over Sized and Forced Into Awkward Renovations By Dated Codes and Obsolete Standards (AHJ’s Are Rapidly Improving Methods and Standards)
- Many Healthcare Systems Have Created Inefficient Non-Integrated Systems That Are Not Properly Positioned Within Their Marketplace or Community
- Many Buildings Are Technologically Dated, Energy Wasteful and Inefficient
- Many Users Face Daily Labor Challenges Due to Inefficiency and Poor Design
- Many Systems Aren’t Properly Integrated Within The Careplace and Workplace
- Most Older Hospitals Are Not Re-Useable and Don’t Meet Current Standards or Codes
- Most Older Buildings Aren’t Safe and Create Both Service Delivery and Safety Liabilities
- Many Building Linkages Are Improperly Packaged and Designed
- Newer Buildings Offer Advantageous Wayfinding
- Newer Buildings Are More Efficient and Provider Friendly
- Newer Buildings Are One Time Costs Paid Back Readily Through Increased Business
- Newer Buildings Offer Better Image, Character, and User Convenience
- Newer Buildings Meet Codes and Standards and Improved Process and Performance Methods (Innovative Service Methods Balanced With Creative Design)
- Newer Buildings Are Typically Less Costly to Operate and Maintain
- Newer Buildings Offer Energy and Maintenance Pay Back
- Newer Buildings Offer Major Consolidation Opportunities (Reduce Capital Demands and Asset Ownership Responsibilities)
- Newer Buildings Are More Readily Packaged Within Better/Lower Cost Construction Areas (MOB’s and Clinics and Outpatient Centers Have Fewer Cost Restrictions)
- Newer Buildings Are Sustainable
- Newer Buildings Offer Both Retention and Recruitment Opportunities With Significant ROI Factors
- Newer Buildings Can Be Placed in The Right Location for the Right Reasons and the Right Time for the Right Cost and Reasonable ROI
- Buildings May Be Managed By External Parties or Real Estate Investment Trusts (REIT)

### **STEP THREE: Functional Programming Service-By-Service and Building-By-Building.**

The fact gathering, situation assessment and clinical aggregation of services strategically leads comfortably into the architect/engineer phase of programming. This is space programming as compared to service delivery programming but is fundamental to the training of architects and embodies these overlapping and “matrixed” tenants; Goals, Facts, Needs, Concepts and Issues compared with Function, Form, Economy and Time. These tenants are ingrained in the overall design process and must be applied on an as-need basis during the development of every healthcare related project. A description of this “matrix” is illustrated on Figure 4 herein.

The important considerations for healthcare include the matching of work loads and volumes into Key Planning Units (KPU) that define the “realistic needs” for those clinical and service line programs that may be considered in most healthcare projects, for example; the number of exam rooms, the number of procedure areas, the number of imaging spaces, the quantity of emergency rooms and the number of beds for both inpatient and outpatient programs. The assimilation of existing plans with the existing spaces on a room-by-room basis and compared to the new spaces in a linear and parallel fashion offer immediate clarification for the following programmatic efforts:

- Comparison of Existing To New Areas (Gaps in Functionality and Code Compliance)
- Comparison of Existing Space To Proposed Space For Short Term and Long Term
- Accurate Tabulation For Pricing
- Accurate Tabulation For Operational Assessment
- Accurate Tabulation For On-Going Master Zoning and Process Mapping

## A PROGRAMMING MATRIX FOR HOSPITAL PLANNING

	GOALS	FACTS	CONCEPTS	NEEDS	ISSUES
<b>FUNCTION</b>	Mission Maximum Number Individual Identity Interaction/Privacy Hierarchy Of Values	Statistical Data Area Parameters Manpower/Workloads Utilization Trends User Characteristics	Service Groups Departmental Groups People Groups Special Activities Priority	Space Requirements Room By Room Equipment Systems/Services Parking	Unique and important Performance standards that will ultimately shape/drive function and Building design.
<b>People</b>	Security Progression	Community Apathy Value of Loss	Sequential Flow Separated Flow Linkages/Networks	Outdoor Spaces Building Efficiency Functional Alternatives	The existing building is obsolete...should be replaced.
<b>Activity</b>	Segregation Encounters Efficiency Safety Community Continuum	Time/Motion Studies Behavioral Patterns Space Adequacy Existing Plans Existing Systems	Separated Flow Mixed Flow Relationships		Can't recruit physicians Impact of Meaningful Use
<b>Relationships</b>					
<b>FORM</b>					
<b>Site</b>	Site Elements Land Use Property Ownership	Site Analysis Climate Conditions Code Survey Neighbors Engineering Survey Soils Analysis FAR/GAC	Enhancement/QA Climate Control New Image/Character Safety Special Foundations Density	Quality (Cost/SF) Environment and Site Influences On Cost	Major considerations that will ultimately impact building function and design quality.
<b>Environment</b>	Direction Access/Egress Image Quality Level	Surroundings Physiological/Psychol. Cost/SF Efficiency	Interdependence Home Base Network Orientation/Access Integrated Care	Critical Access Hospital FQHC Public Health	The building is in the wrong Location No land available nearby.
<b>Quality</b>					
<b>ECONOMY</b>					
<b>Initial Budget</b>	Amount Of Funds Return on Investment Cost Effectiveness Operational Cost Capital Costs	Cost Parameters Maximum Budget Time-Use Factors Market Analysis Income/Reimbursement	Cost Controls Allocation Of Resources Multi-Functional Merchandising JV/Investment Energy Conservation Cost/Benefit (ROI)	Project Budget Operational Costs Debt Capacity Life Cycle Costs Energy Costs Loan Capacity Reserves Sustainability	What is the general attitude? related to the initial budget expectations and real project cost and that relationship to project quality standards?
<b>Operating Costs</b>	Maintenance Capital Expenses Life Cycle Reductions	Energy Source/Costs Economic Data Competition Activities/Climate Historical Position Credit Rating Bond Rating	Design Related Groups Capital Cost Pass Through		No Money for IT/EMR/Tech
<b>Life Cycle</b>	Equipment Systems/Energy Automation Robotics				
<b>TIME</b>					
<b>Past</b>	Presenation Master Plan Static/Dynamic Change	Significance Behind/Ahead Space Parameters Activities Projections Linear Schedule Progress	Adaptability Phased/Staged Tailored/Loose Fit Convertibility Expandability Concurrent Schedules Interchangeability Fast Track GMP or DP	Escalation Phasing Plan Workplan IPD PM/CM/CA CMAR	Implications Of Change, Growth on the overall long-range performance of service Leadership is key Conservative leadership today.
<b>Present</b>	Growth Controls/Limits Occupancy Date Revenue Streams Process Improvement				
<b>Future</b>					

### What Is The Statement Of The Problem....Opportunity?

FIGURE 4: Functional Programming Matrix (Illustration for Comparative Purposes)

- Planning Blocks or Dominos For Relocation and Re-Alignment
- Planning Blocks for New Site Selection and Improved Image and Branding
- Planning Blocks and Spaces Linked Electronically To Engineering and Budget Forms

Utilizing an interactive space planning process that aligns existing services with new programs and expanded services is mandatory (see Figure 4 herein). The traditional "Excel Spread Sheet" and parallel data based management and programming "tool kits" are both reasonable methods and may be combined with more contemporary methods of space management

including the Onuma models which are gaining ground in university and federal sector programs. The ability to combine space analysis with "space arrangement" is key to efficient and "real time" results.

**STEP FOUR: Service Line Reviews, Concept Development and Master Zoning** (User Reviews and Leadership Updates). This phase of the process brings together the multi-tasked and multi-faceted parties to compare findings and "test strategic objectives". The overlapping attributes of Needs, Strategy, Facility/Engineering and Operations is apparent and applicable as the PROCESS MAPPING, INTEGRATION OF PROGRAMS and RE-ALIGNMENT of SERVICES begin



to take on form and functional character. This Master Zoning (MZ) process utilizes the planning blocks in tandem with the buildings, sites and components to carefully assess the short and longer term asset implications. Key questions asked at this stage may include:

- Are Our Current Programs On Track For The Market
- Are Our Partnerships and Systemwide Linkages Viable and Sustainable
- Are We In the Correct Businesses and Are Our Priorities In Order
- Are The Volumes Adequate to Support Asset Investments
- Are We Properly Located And Sized For Growth Over Time
- How Do We Fit Programs Into Existing and/or Proposed Locations
- How Do We Consolidate and Streamline Space to Maximize Efficiency of Operation
- How Might We Off Load Losers and Expand Winners
- What Are the ROI Factors and Who Will Facilitate the Changes

The new concepts are prepared in both electronic and digital format through the use of Onuma, Revit, and Building Information Modeling (BIM) formats for purposes of time, cost and spatial assessments (ideally A/E teams are on common and linked formats). The use of BIM technology in tandem with satellite and GPS plus “Google Earth” programs offer accuracy and campus planning refinement on a case-by-case basis with a very high level of efficiency and the optimum use of consultant labor. With these features applied, the informed consultant can benchmark each case, prepare business proformas and insert budgetary information into the overall Owner generated business plans suitable for annual budgeting and project funding.

**STEP FIVE: Combining the Planning, Architectural, Engineering and Medical Technology Into a Cohesive and Workable Master Zoning Diagram and Total Project Budget.**

Previous MP programs have been short sighted in the development of the MP “big picture” due to the lack of understanding of the impact of equipment and technology on the overall capital budget. Without this level of “advanced detail” the Owner and User (building tenant in some cases) misses the mark on the actual needs and project costs. When consultants fail to disclose or discuss these “hidden costs”, Owners often fall short of budgets suitable to complete large scale and smaller scale projects adequately. The

most salient costs are often the “hidden costs” generally found in existing building renovations and expansions. These costs relate to the engineering, mechanical, plumbing, electrical, low voltage, infrastructure and IT/Cabling needs which demand both technical support and adequate space to operate effectively. See Exhibit No. 5 and No. 6 herein for illustrative budget and space listing details.

**STEP SIX: The Master Plan Phasing and Alternative Scenarios.**

This phase of the project is the combined efforts of all consulting parties to present the short term and longer term road map for development. These scenarios may range from expansion and renovation of the main hospital, to the addition of a new ambulatory care center, to post acute care beds, to a CCRC, to new housing for physicians and families, to urgent care or free standing emergency (ER) departments with the intent to grow this satellite ER program into a full service hospital over time. Many of the strategic moves that may roll out at this phase become both fiscal and facility in nature with planning scenarios that respond to what might be referred to as an “integrated health-care delivery system”. Illustrations of this methodology are provided in Exhibit No. 7 herein.

**STEP SEVEN: The Review and Approval Process.**

Ultimately the completion of MP studies, optional service delivery scenarios and concepts for either new and/or existing buildings requires a review and approval phase by Senior Management and the Board of Directors. In traditional hospital planning this has been relative simple but in the growth of systems and the expansion to broader based efforts this process takes on a totally new and more complex nature. It is important the “big picture” needs assessment be linked to the strategic plan and developed carefully as a “driver of business decisions” with the facility MP and subsequent phased recommendations following the operational, strategic and business objectives. The sequencing and time factors are important. Rolling out these recommendations will require preparation, team planning and concise development. System wide leadership will rely on service units to provide guidance prior to final roll out. Each Owner/System approaches this process differently.

**STEP EIGHT: Deliverables.** The traditional “deliverable products” are no longer applicable to the world of “system wide and integrated care”. The decision by Owners to approach planning studies incrementally or holistically in a comprehensive manner will impact the way the deliverable products are prepared and delivered. It

# Medical Office Building: Project Budget

Preliminary Order of Magnitude

PROJECT BUDGET ANALYSIS FORM  
Schematic Design Budget I

Free Standing New Facility

Category of Cost	Area/Unit	\$/SF	Sub-Total	Remarks
A. Raw Const Light			\$0.00	Basement Under Kitchen
Raw Const Medium			\$0.00	Kitchen Renovation At First
Raw Const Heavy			\$0.00	
New Construction	24,555	\$200	\$4,911,000.00	Current SD Building Size
Demolition Phase 2	38,074	\$12	\$456,888.00	Memory Care New Construction Kitchen Equipment To Be Added (See Equipment Allowance Below)
<b>Total Area Involved</b>	<b>62,629</b>			
B. Fixed HVAC/EI Equip	(Allowance All New)	N/A		
C. Site Development/Preparation	(Allowance)	N/A	\$300,000.00	Utilities and Parking Improvements
Site Development/Signage	(Allowance)	N/A	\$100,000.00	With Landscape Improvements
<b>D. CONSTRUCTION COST (SUM of A-C)</b>			<b>\$5,767,888.00</b>	Estimate Only - Not Final Bid Number
E. Professional Fees				
Architect/Engineer	(Assume 6% x D)		\$346,073.28	For Budgeting Purposes Only
Interior Designer	(Assume 1% x D)		\$57,678.88	Assume 1% for Discussions
CM Cost Allowance	(Assume Fixed Fee)		\$0.00	
CM Fee/Costs	(Assume 03% x D)		\$0.00	Assume Traditional CA Agreement
F. Furnishings & Furniture	(Assume 6% x D)		\$346,073.28	Early Estimate For Budgeting Only
G. Moveable/Fixed Equipment	(Assume 5% x D)		\$288,394.40	Includes Updated Kitchen Equipment
Communications Equip.	(Assume 2% x D)		\$115,357.76	(Evaluate What May Be Moved To New)
H. Administrative Costs	(Assume 1% x D)		\$57,678.88	Permits, Legal and Admin. Support
I. Contingency	(Assume 4% x D)		\$230,715.52	Assumes 6 Months to Mid Construction (Must Begin ASAP in 2006 to Meet %)
J. Debt. Service On Loan	(Separate Budget)		\$0.00	By Owner
K. Inflation To Mid Point	(Separate Budget)			Assume Zero At This Time
<b>TOTAL ESTIMATED BUDGET</b>			<b>\$7,209,860.00</b>	Budget For Discussion
(Line "D" plus "E" - "K")				

**General Notes:**

- 1) N/A = Not Applicable At This Time.
- 2) Assumptions Will Require A/E and Owner Verification During Basic Design Services Phase.
- 3) Construction Cost Line "A" Does Not Include Inflation...Add To Budget Once Schedule Is Verified.
- 4) Cost per SF Based On Regional Trends and Comparative Building
- 5) Professional Fees Will Be Negotiated...Percentage May Vary.

**Budget Range \$7 M - \$7.5 M Approx Total Project**

FIGURE 5: Illustrative Project Budget (Illustration To Demonstrate Key Budgetary Variables)

## RURAL HEALTH CLINIC

Space Designation	No. of Rooms	NSF/ Room	Total NSF	Comments
Waiting Area				
Seating	12 @	12 SF	144	
Reception and Office Area	1 *	120	120	Could Share With Provider Based See Midwest Clinic Window For Check In and Check Out
Reception/Clerical	1 @	40 SF		
Secretary	1 @	40 SF		
Files	4 @	5 SF		
Copy/FAX/Phone	1 @	20 SF		
Weight and Height Plus Misc Work.	1	40	40	
Scales				
Charts				
Shelf/Notes				
<b>Nurse Work Station</b>				
Nurse Work Areas	4 @	20 SF		
Clean Utility	1 @	60 SF		
Soiled Utility	1 @	60 SF		
Pharmacy Locked Unit	1 @	20 SF		
Laboratory	1 *	80	80	
Counter/Sink/Shelf	1 @	20 SF		
Refrigerator	1 @	20 SF		
Misc Work Space	1 @	20 SF		
Exam/Treatment	8	120	960	Dedicated to Rural Health
Minor Procedure	1	150	150	Lesions and Misc Clinical Support
Office, Physician	1 *	560	560	Full Time Physicians Review With Team
Test Shared Work Area	4 @	60 SF		
Review Physician Consult and Collaboration	4 @	60 SF		
Data Entry and Internet Connections Plus PAC	1 @	80 SF		
Lounge/Kitchenette/Meeting	1	100	[100]	Shared With MOB Support
Storage, Pharmaceuticals	1	20	20	Vendor Supplied Items
Storage, General	1	80	80	
Warehouse and Misc Storage Area			0	Large Attached Area Not in Program
Dept. Net Square Feet			2,374	
Dept. Circulation @ 25%			594	
Dept. Walls @ 8%			190	
<b>TOTAL DEPARTMENTAL GROSS AREA</b>			<b>3,157</b>	

FIGURE 6: Illustrative Space Listing

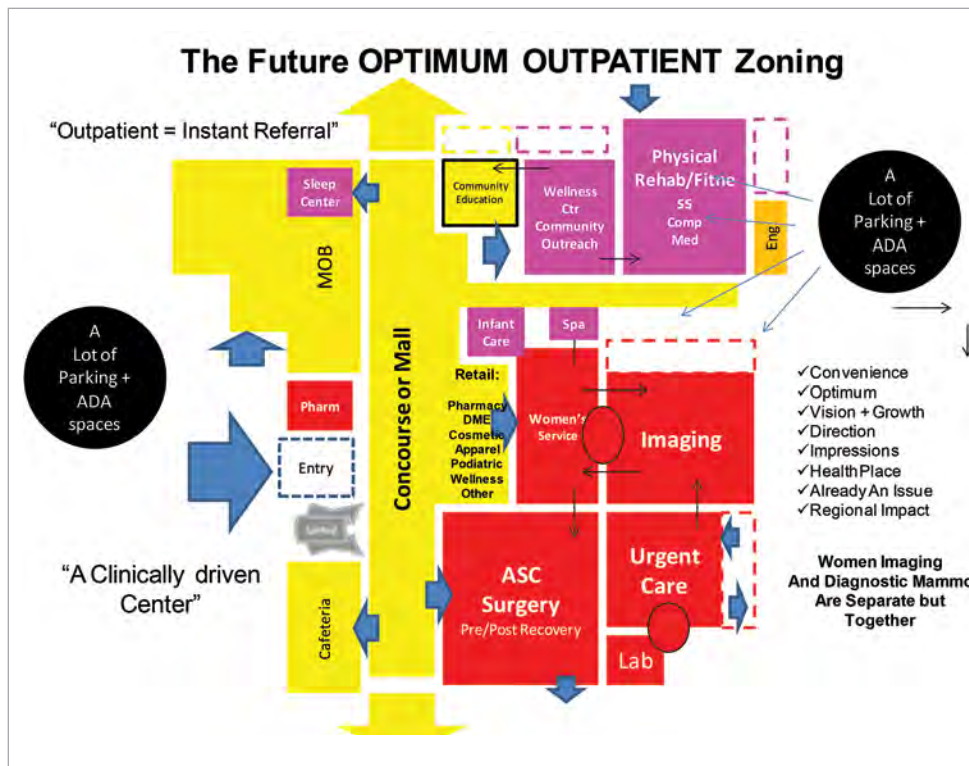


FIGURE 7: Master Planning Diagrams and Illustrative Scenarios (Illustration From Recent Planning Studies Utilizing Prototype Models)

has been our experience over the past two years to deliver fewer hard bound, 3-ring binder reports and more “electronic and super PowerPoint style” reports which are handed to the client at the end of each presentation via CD or thumb drive. In many cases we forward electronic pdf reports via the internet using “drop box”, Newforma, ftp site or traditional email attachments. This technology transfer of deliverables requires the following:

- The Use of Computers Or Hand Held iPad Technology In the Field
- The Ability to Produce Work Products Real Time and Deliver At The Site
- The Use of Automation Linked to Owner Provided Assets and Systems
- The Ability to Orient Clients to Service Delivery Methods Using Video Technology
- The Use of Go-To-Meeting (GTM) Technology To Reduce Travel Expense
- The Use of Newforma and Equivalent Technology To Better Manage Data
- The Willingness Collaborate With Team Members In a Transparent Manner
- The Desire to Expand the World Of Healthcare and Systemic Planning Beyond The Norm Into Broader Avenues of Thinking Beyond the Physical Facility

- The Desire to Improve the Global Healthcare Service Delivery Market

In conclusion, it would be ideal to have a “transparent service delivery” world for healthcare where the benefits of the eAsset, eImaging, eMR, ePharm, eLab, eICU, etc. were all linked and working for the greater good of the healthcare consumer. The Meaningful Use principles and those of the HIPAA compliance world have “opened up avenues” for change that embody these integrated measures and systems. Patient privacy and confidentiality will remain a challenge and the ability to create the most appropriate “portals of entry” and “firewalls of protection” will certainly be our future challenges.

Ideally these principles of RESPONSIBLE PLANNING AND PROGRAMMING will become standard operating procedures and, over time, our TEAMWORK EFFORTS will place the planner, strategic thinker, architect, user and healthcare policy maker and board member at the decision-making table together. The more transparent our system, the greater our chances of fair and equitable service delivery. There will never be one “pure standard of care”, much like there will never be one “perfect, evidence-based clinical pathway”, but there is a VISION FOR AMERICA that we can improve quality, access and reduce costs by being empathetic, technologically savvy and informed.

# Population Health: The Health & Wellness of People and Communities

by MASON COUVILLION, LINDSEY WATERS, AND SHANNON KRAUS

## ABSTRACT

Healthcare and cities in the United States are simultaneously evolving with a focus on the individual and a renewed understanding of health and wellness. As the population becomes more aware of its health, urban areas continue to grow in ways that promote walkability, healthy food choices and green space for recreation and respite. The healthcare industry has an opportunity unlike ever before to be involved directly with the consumer on a near daily basis. By developing a full spectrum of population care points within communities, healthcare providers can effectively address wellness and disease management, minimizing the need for acute care. While more people will find care outside of the acute care hospital, the hospital will remain a staple of American healthcare. The hospital, like the healthcare system, will have to evolve and become more than a destination for sick people. It will need to be integrated into a mixed use wellness district that features not only hospital centric spaces, but also elements that add to the community as whole serving as a catalyst for urban renewal and healthy living.

## ARTICLE

### Population Health: The Health & Wellness of People and Communities

...

#### Refocusing on the Individual

Shifting forces in our society are creating a dynamic movement in the way people understand health through the lens of the healthcare system and individual lifestyle choices. The demystification of the healthcare system, partially driven by legislation such as the Affordable Care Act, is pushing healthcare to become more transparent and accessible with an overarching focus on individual health.

On the other hand, a renewed awareness of personal health, as influenced by lifestyle decisions, is bringing greater awareness to how the physical environment influences and supports individual health. Young and old are increasingly driven to locate in urban environments which offer a quality of life that supports a healthier lifestyle. As the country experiences a growth in its aging population, communities will be faced with questions on how to support the health of this population as influenced by urban design and planning. “Thirty-seven percent of (Baby) Boomers indicated that their personal health most influences how long they think they will live” (MetLife Market Institute). This force is pushing urban revitalization efforts in many communities to refocus urban design on the individual.

Just as a city fosters a healthy community through a diverse system of housing types, transportation networks, green space, retail and commercial uses, healthcare is a system of services supporting the health of its patients. “Highly hospital-centric

healthcare systems over-rely on hospital-dispensed care. They have historically tended to undervalue sickness prevention in public education and awareness. In such a system, a patient may not take “ownership” of his/her health condition until it is far too late- by then accruing, by default, very costly hospital-based emergency care that could have otherwise been avoided at far less expense” (Verderber, 3).

## A Wellness Network

As cities and healthcare refocus on the individual, health and wellness becomes the overarching connection. The changing paradigm of the healthcare system requires a shift in focus to create a dynamic ecosystem of locations and services. This moves the focus of healthcare from a hospital-centric healing system to a patient (individual) centered wellness network that interacts with the population they serve on a more regular basis. As healthcare systems grow into their role as wellness networks, the hospital’s physical location and its ability to serve as a community anchor is vital. To be successful, wellness networks will integrate themselves into the community where the population they serve lives, works and plays, becoming seamless in the community, and interfacing directly with the individual.

Population management begins in the individual’s home where technology plays a key role in keeping the patient connected with their providers. As care is

needed, patients should have access to a full spectrum of physical care points embedded into their neighborhoods. These care points range from community care that could be located within a pharmacy, school, or other community center, to stand alone urgent/emergent care centers to the acute care hospital. This spectrum provides opportunities to manage chronic illnesses and population wellness, as well as tend to the most acute patients in the community.

On the far left of the spectrum lies in-home chronic disease management and diagnostic technologies. These systems have great potential to change the way care is managed, and thus shape the way hospitals and clinics are designed. In the coming years, as the computer savvy population ages more of our routine medical tasks will take place in our home. Personal devices will connect patients and their health information directly to physicians. Physician’s practices will need less space to accommodate diagnostic equipment driving clinics to be smaller. The future neighborhood clinic will serve only patients that are screened and determined necessary for them to come into the clinic. The new smaller clinic typology will be more nimble and will be able to infiltrate retail storefronts in community centers.

Neighborhood retail clinics will become the community interface for health networks serving as the first touch point for the individuals. These retail clinics will have minimal diagnostic and treatment services driving it to function as a community center for health education and well patient care.

The new retail clinic typology is a perfect candidate for adaptive re-use in urban environments. Retired storefronts on main street America can be revitalized providing a physical interface for the health network within their community. The key to retail clinics is accessibility and being a welcoming environment. It is imperative that patients want to enter the clinic and seek care and advice on wellness. As healthcare designers we need to look for inspiration in the retail industry where design reflects the need to bring customers in the door, and make them comfortable once they are there.

Retail clinics are the first place for a physical connection between providers and patients. They are the one stop wellness shop that provides accessible care within any given community. More acute patients or patients seeking treatments that cannot be delivered at the retail clinic require a more clinical environment that is still accessible. Ambulatory surgery centers and free standing emergency departments serve these patients. They provide non-hospital environments that

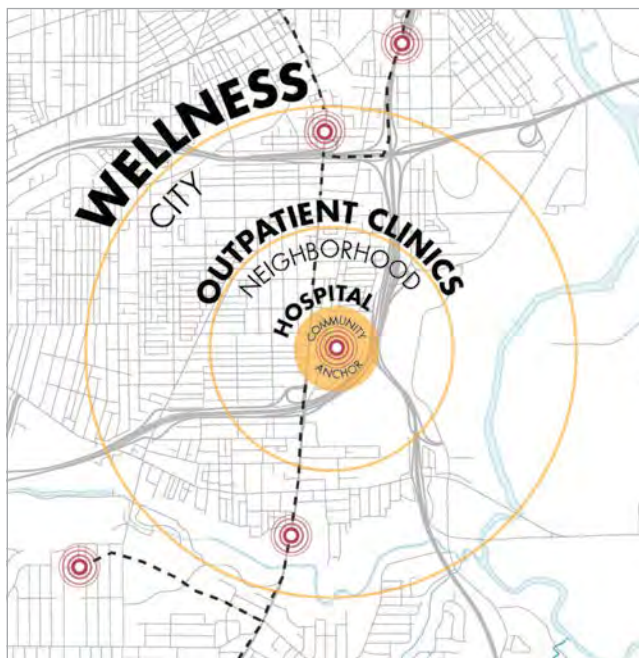


FIGURE 1: A Scaled Healthcare System. Credit: HKS.

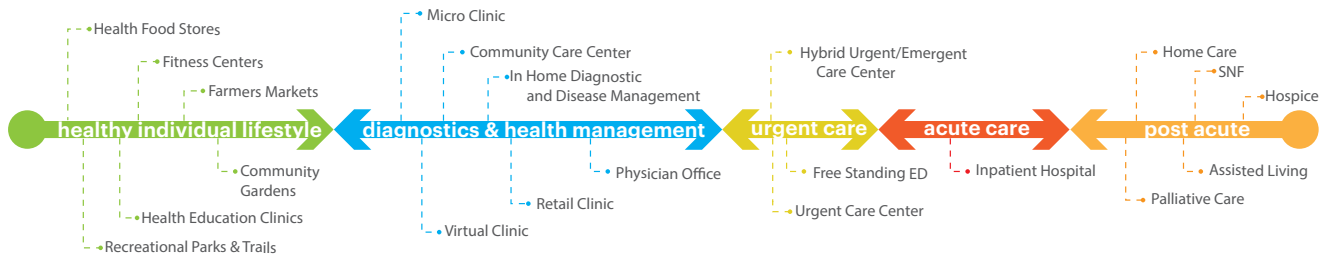


FIGURE 2: Spectrum of Care Points. Credit: HKS.

emphasize accessibility and quick care. These centers can be shared between several smaller communities. These larger care centers need to be situated to provide physical connections to the communities they serve.

By integrating into the community, the wellness network becomes a part of the daily lives of the individuals. As the wellness brand grows throughout the community, it is even more important for the hospital to avoid the stigma of being the place you go when you are sick. Although hospitals will always serve the most acute cases, they should also be a part of the community at large and incorporate other aspects of the wellness network in their physical location.

The parallel shift in urban design towards strategies that support healthy living through healthy places also operates at several scales. On a regional and political level, healthy cities support diversity, affordability, mobility and a robust economy. It is also important to consider the scale of the individual. Individual health in communities is supported through pedestrian-friendly streets that promote walkability, small scale grocers and farmers markets with healthy food options, distributed neighborhood parks for recreation and green housing with better indoor air quality. A renewed focus on health is increasing the livability of and changing priorities in what constitutes good place making. Wellness networks within the healthcare system can also influence and contribute to healthy communities.

## The Wellness District

The hospital lies at the acute end of the wellness spectrum. The hospital will always be the place where the highest level of acute care is provided and the majority of specialists are located. However, the hospital does not need to remain introverted and purely focused on treating illness. Like cities, hospitals have the opportunity to be more accessible to their populations and become active centers for health and wellness. Hospitals should be vibrant community centers where people

gather to partake in a healthy lifestyle, rather than solely a place to go when someone is sick. Being a place of respite and activity will reduce the anxiety associated with hospitals. This subsequently makes getting care at a hospital more comfortable and less stressful, which studies have shown to be directly related to recovery time.

The design and planning process of a community anchored hospital should prioritize the following four overarching goals, while keeping in mind early planning with key community partners is critical to success to generate community ownership and support.

First, the location of a hospital and its connection to a public transportation network is a major key to building community connections across a broader context. A site with multimodal connections enables accessibility to a more diverse demographic while also encouraging sustainable methods of transportation. A site's connections to public transit may further support successful mixed use development within or in proximity to the hospital. Initial siting studies should consider how the hospital becomes an anchor in regards to the needs of its population. Understanding the population and generating a preliminary plan for community engagement early in the process can help drive a siting strategy for the hospital to better serve as an anchor in the community.

Second, at the scale of the building, opening up to the community begins at the ground level of the hospital. The front door of the building should open to and engage the public by creating an inviting entrance. The primary entrance of the hospital is an opportunity to embrace its surrounding context with public amenities such as a park or plaza that invites surrounding neighborhoods to utilize the space. Green spaces and healing gardens act as links to the community, hosting markets or occasional exercise classes to again, put healthy living on display while engaging the community.

Third, and perhaps less to do with the physical environment is programs and outreach. Methods for

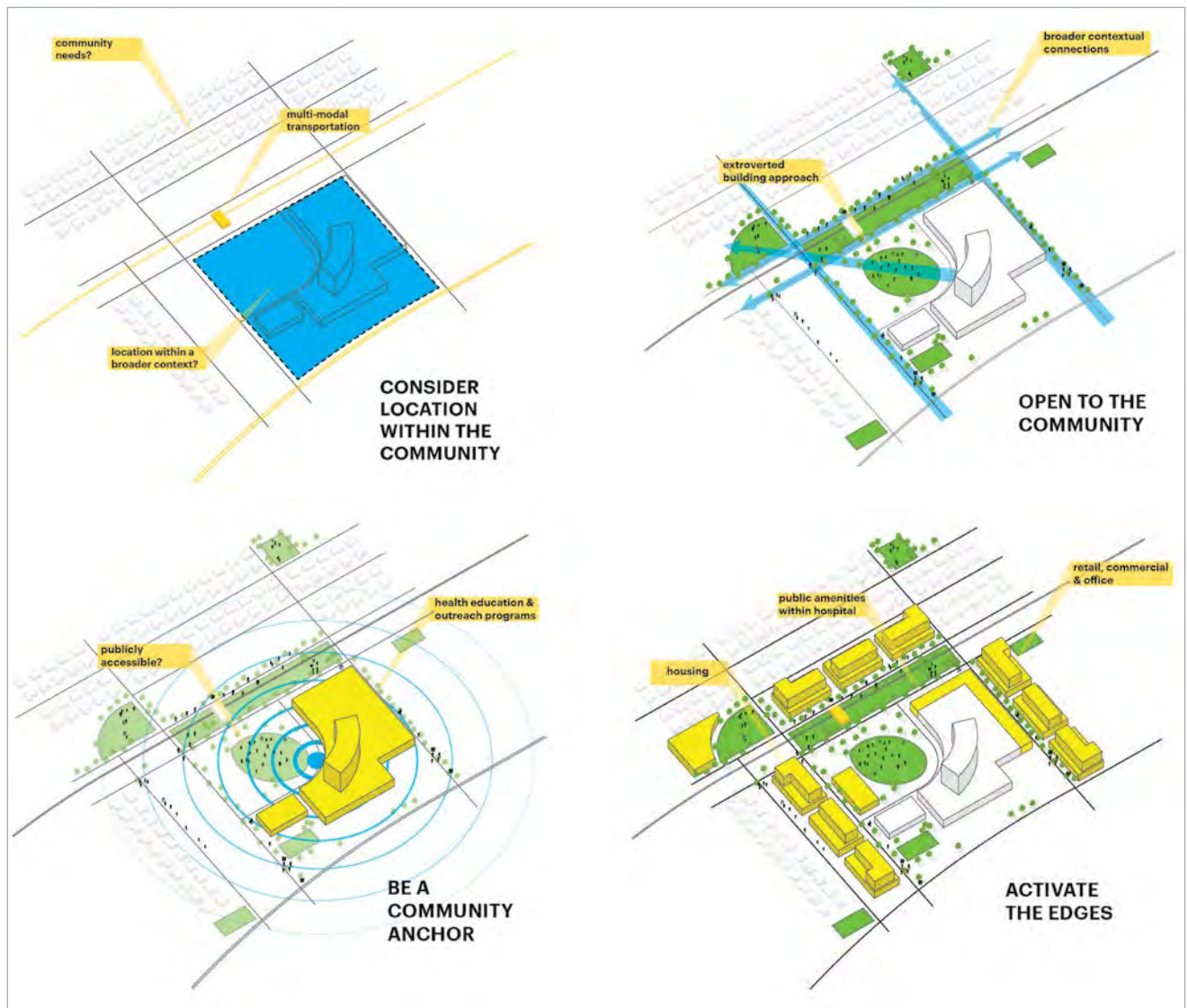


FIGURE 3: Place Making with Hospital as Community Anchor. Credit: HKS

local health engagement may include fitness classes, nutrition education or providing a community classroom for public meetings for other local health related organizations. While classrooms and public resources may be integrated into the ground level of the hospital, a distinct entrance for these amenities may better encourage public accessibility.

Lastly, outside of the hospital walls the neighborhood that it creates or supports should work in harmony with the facility to create a sense of place through pedestrian oriented streets and a mix of uses. Retail and commercial ground floors may be oriented to support population health and wellness uses or depending on the needs of the local community may better serve as other needed programs. The hospital's integration

beyond its site boundary is key to better serving its population and truly becoming a community anchor. Wellness related retail and healthy dining located within the doors of the hospital may serve as amenities, bringing people in and demystifying the hospital.

The hospital is a catalyst for development whether planned or unplanned. The traffic a hospital generates brings marketable value to an area and by default, increases surrounding property values. The key is for a hospital to leverage this development value by capitalizing on the ability to direct future plans which support the hospital and guide thoughtful place making. This does not imply more expensive building solutions, but rather suggests making trusted partnerships with the surrounding community and a developer to help guide a workable vision.

## A Community Anchored Response

A community anchored response can be successful in an urban or suburban context. A project's success is determined in its focus towards the changing paradigm of health and wellness rather than the hospital as the center of care. The following is a compelling example of a suburban typology which takes into account the four place making goals. Located on the outskirts of the city boundary the facility reflects a vision for a single delivery system that will represent the present and future state of healthcare. It is characterized by a mixed use campus that will serve to enhance community health, wellness and prevention in state-of-the-art, lean and efficient facilities. The phased development will include medical offices, retail space, restaurants, a hotel, and office space.

Early in the planning phase campus design principles were established to guide development of the hospital and future phases of the mixed use components. The design principles focus on creating a vibrant public realm through connectivity, a mix of uses, walkable streets and neighborhoods, a campus-like feel and stylistic building diversity.

The campus is zoned into “neighborhoods” of distinctive character. The Hospital Campus is located at the heart of the development, opposite a nature park. Hotel and retail components anchor one edge, while offices anchor the opposing edge of the campus. In addition, a mixed-use commercial neighborhood includes ground floor retail, restaurants, and medical offices in support of the hospital. Buildings are planned in such a way that they front onto streets forming defined built edges, with storefronts lining the street.

Landscape and nature connections play an important role in creating healing spaces throughout the development for public use and in proximity to the hospital to enhance the patient experience. A scaled variety of spaces include a community park with wetlands, an entry park and plaza, healing gardens, pocket parks near retail and an outdoor dining terrace for patients. These green spaces fuse seamlessly with the urban character of the campus to create an inviting experience for patients and to serve as an amenity for the local community.

In addition to campus-wide design principles, architectural design principles were established to guide the future development of the mixed-use buildings.







FIGURE 4 (opposite and above): A Suburban Typology.  
Credit: HKS

Architectural principles for the primary retail boulevard are intended to shape and enhance the pedestrian experience. While each unique building contributes to the character and vibrancy of the neighborhood, a pedestrian's experience is largely shaped by a building's ground floor. The principles set a framework to guide the character and experience of the neighborhoods while still allowing for stylistic diversity from building to building.

### **Design Principles:**

- Connectivity
- Mix of Uses
- Walkable Streets & Neighborhoods
- Campus-like Feel
- Stylistic Diversity

As the hospital turns itself out to the community, the community will more readily find itself inside the doors of the once ominous and confusing hospital. This will make it more important for the hospital to be designed in a way that instills the same sense of health and wellness individuals have come to expect from their communities.

### **Cities, where is your healthcare? Hospitals, where is your community?**

The future impact of hospitals to create places that support individual health lies at the fusion of urban design and healthcare wellness networks. Healthcare will be a key component of urban design in creating healthy places. Advocacy within the healthcare system will need to refocus on the hospital's value as a community anchor. Healthcare and urban design issues range from the scale of the individual to the scale of the collective system. Looking towards the future of healthy communities and individuals, a coherent plan to encourage health and wellness infused at many scales will be most

successful by forming alliances between healthcare leaders and city leaders.

Three big ideas emerge out of a wellness focused approach. First is the broader scale concerning a health and wellness network with a spectrum of care points. Second, a wellness district should be established with a long term vision and lastly, designers and planners must continue to consider how to optimize and plan for technology within wellness networks, districts and the hospital itself. The implementation of these ideas demand early planning and decision making with an integrated team of planners, designers, community members and leaders. A community centric approach focused on catering to the unique needs of its population should ultimately serve as the guiding framework for the project.

In the future, cities will ask questions regarding healthy place making and "focus more on the 'urban' of urban design, and become less infatuated with the "design" of urban design. Urban design must begin with cities: how they work, how they change, and what impacts they have in creating enabling versus destructive impacts" (Inam, 20). Healthcare systems must ask themselves a similar question, "where is your community?" And "what impact could the system have in creating enabling versus destructive impacts?" to not only support a community, but to be a *catalyst* for enabling healthy lifestyles.

### **Healthcare as a Community Anchor: Three Big Ideas**

1. A wellness network must be established as a spectrum of care points, interwoven into communities, engaging with them and be easily accessible.
2. A wellness district should be established with trusted partners in the community to spur development and create a long term vision that will revitalize and renew towns and neighborhoods by providing a variety of amenities
3. Wellness networks need to consider and be optimized for technology, as it will continue to drive innovations in bringing care out of the hospital and into community care points and the home

## References

American Institute of Architects. (2012). Local Leaders: Healthier Communities through Design. Retrieved from <http://www.aia.org/aiaucmp/groups/aia/documents/pdf/aiab096790.pdf>

Inam, A. (2008). Meaningful Urban Design. In D. Kelbaugh & K.K. McCullough (Eds.), *Writing Urbanism* (pp.14-23). New York: Routledge.

MetLife Mature Market Institute. (2009). Insights Into the Oldest and Youngest Boomers. *Boomer Bookends Study*.

Stanwick, S. (2008). Making places, healing spaces. *World Health Design*, 36-41. Retrieved from [http://www.farrowpartnership.com/images/stories/articles/O2-health-wellness/WHD\\_CVH.pdf](http://www.farrowpartnership.com/images/stories/articles/O2-health-wellness/WHD_CVH.pdf)

White, D. (2010). Joining Healthcare Planning with Urban Planning. *Healthcare Design*. Retrieved from <http://www.healthcaredesignmagazine.com/article/joining-healthcare-planning-urban-planning>

Verderber, S. (2012). *Sprawling Cities and Our Endangered Public Health*. New York: Routledge.



# Moving from Volume-Based to Value-Based Care...Are You Ready?

by THOMAS REUTER, AIA AND GERALD PUCHLIK, AIA, ACHA

## ABSTRACT

The Affordable Care Act is changing the concentration of healthcare services from sickness-based to wellness-focused. This new care model will change the idea of “doing everything regardless of the need” to “doing what is required for the best outcomes”. Discussions were initiated with Healthcare Leaders to understand the care delivery patterns of the past and the future uncovering several common themes:

- Business Case Delivery
- Value and Quality
- Exposure and Obligations
- Alliances and Relationships
- Capitalizing the Outcomes
- Prepare to Up-End Patterns
- Space for Essential Use

Healthcare leaders should evaluate healthcare architect’s ensuring that they possess the following skills that fit the hospital’s goals and vision:

1. Architects should develop designs that are responsive to growing community needs.
2. Architects should be able to look at reusing what exists and plan new spaces based upon anticipated care models.
3. Architects should supply the foresight that will bring responsible, long-term solutions to changing technology and patient care delivery.
4. The planning team should help to isolate the vital decisions from the trivial issues.
5. Architects should use multidisciplinary teams, planning cannot be done in isolation.
6. Architects should develop a design that respects what exists while providing new views.
7. A planner for the new age should validate that the project fits the goals and business plan of the organization.

The overarching principle is to develop bold new ideas through decisive leadership and becoming stewards of the community.

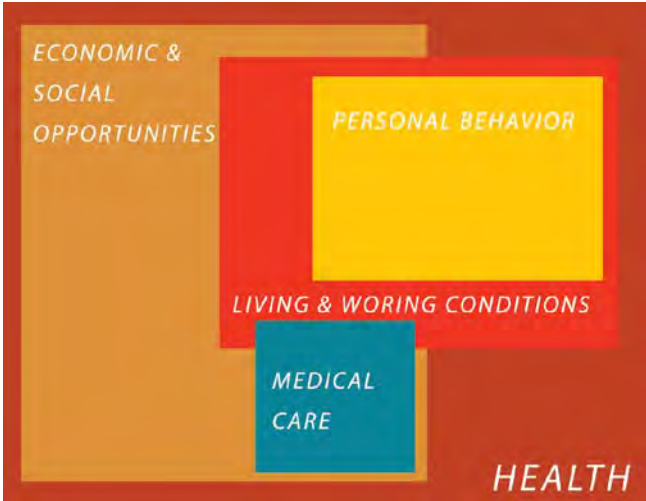
## ARTICLE

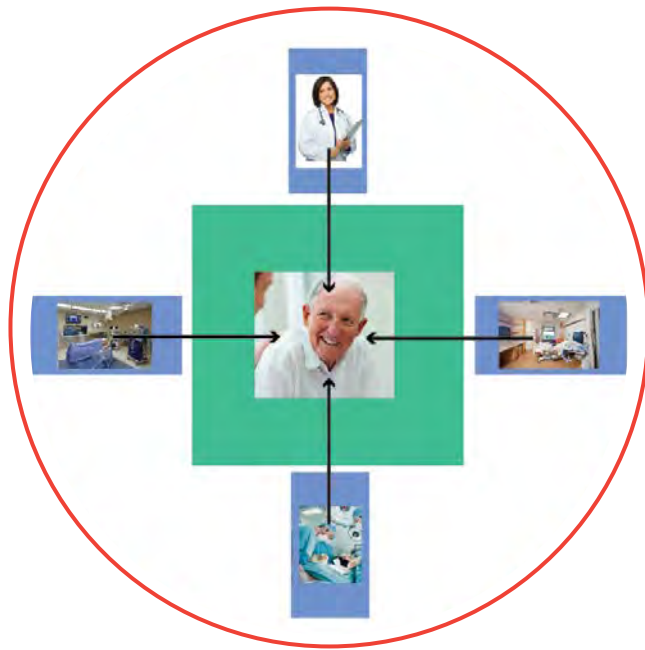
### Moving from Volume-Based to Value-Based Care...Are You Ready?

...

In a world where “the only constant is change,” providers are faced with planning a strategic direction in the midst of shifting sands. The mandate to provide healthcare for all, has resulted in many provider organizations feeling like they’re “rolling the dice” when planning for the future in the midst of uncertainty.

The Affordable Care Act is changing the concentration of healthcare services from sickness-based to wellness-focused. Healthcare is evolving from reactive medical care to a more comprehensive proactive health model, encompassing economic and social opportunities, living and working conditions and personal behaviors. This new model also transitions from a “more is better” approach to identifying specific treatments targeted for the best outcomes. Providers currently compensated on a per-treatment basis will ultimately be incentivized to provide care that more closely reflects the needs of their communities. Healthcare executives are realizing that evolving to a more patient-centric model





with a focus on outreach, requires an understanding of who their clients are, where they are and where they come from. This will lead providers to focus on patient and caregiver experiences, care coordination among caregivers, patient safety, preventative health education and serving the at-risk (frail and elderly) population.

Design professionals need to be responsive to these changes and embrace the future direction by becoming trusted advisors. By providing services that specifically address these new directions, designers can assist in positioning the healthcare provider for success in the community. While some healthcare managers will continue to work to protect their personal agendas, the successful design professional needs to be willing and able to draw people out of their comfort zones. Designers displaying a clear understanding of the facility's vision and needs—both short and long-term—will have the ability to flourish.

Discussions were held individually and in small groups with healthcare leaders from medical organization types including: university/teaching medical centers, major health systems, large medical centers and community hospitals, in order to understand the care delivery patterns of the past and what is needed to better prepare for the future. These interviews uncovered several common themes, which are paramount to the success of care delivery. From these came correlated planning tenets that require “pattern alterations” to the norm.

**Business Case Delivery**—Designers must understand the new healthcare paradigm, provide plans that are LEAN from start to finish and provide outcomes that are RESILIENT to a fluid environment. Design must become integrated into the business of healthcare rather than being over the top and misplaced. The future requires a shift to new responses; it is time to make changes.

**Value and Quality**—Planning must account for volume surges by building in TRANSITIONAL spaces to accommodate the ebb and flow of healthcare needs. Empowering the patient and the family in care decisions helps to promote health and wellness by working as a team with the primary caregivers, reinforcing a new model.

**Exposure and Obligations**—Healthcare providers must be able to see the SHELF LIFE of facilities and assist in evaluating their alignment for services and staff.

**Alliances and Relationships**—The planner must create an atmosphere of collegiality and assist the organization in becoming the GO-TO medical and wellness provider.

**Capitalizing the Outcomes**—Requested capital projects must be based upon facts that support the organization's mission and BRAND. This is not a new trend, but one that is sometimes overlooked in the interest of enhancing one service line over another. It is important to insure that every option has an operational/financial overlay aligning it with the facility's mission and long-term expenditures.

**Prepare to Up-End Patterns**—As the shape and nature of the healthcare CULTURE is changing, so must the processes that support them. New processes will lead to new solutions. Planning must support a new patient/staff model, within a network of commitments demanding open communication and agreement at all milestones.

**Space for Essential Use**—Planning must be evaluated in consideration of where the services and service lines are going and growing, before any planning and design work begins. The planning team must understand the vision of the organization in order to design for the future.

What should Healthcare Providers expect from architects and planners who are tasked with assisting in the decision making process? Healthcare leaders should evaluate architects to ensure they possess the following qualities that align with the hospital's goals and vision:

1. Architects should develop designs that are responsive to growing community needs, improve on planning efficiencies and anchored to measurable results. Planning options should be based on a positive business model that support increased care and patient satisfaction at all levels.
2. As a starting point, architects should consider reusing what exists today and plan new spaces based upon anticipated care and business models. Planners should explore how space can be transitioned to other functions as the needs and service lines change.
3. Architects should supply the foresight and vision that will bring responsible, forward-thinking solutions to changing technology and patient care delivery, understanding the long-term expenditures required by any venture.
4. The planning team should be able to differentiate the vital decisions from the trivial issues that are found in all projects. For example, Standardization of room design, furniture and equipment, etc. will uncover duplication and variations that create unnecessary expenditures.

5. Architects should recognize that planning cannot be done in isolation. Clients should use multidisciplinary teams to lead to solutions that are an asset to the organization and improve care management and outcomes.
6. Architects should develop a design that respects what exists while providing creative new options; challenging the organization to consider different ways to deliver care. Remember, "business as usual" no longer applies to healthcare in general and should not apply to the design team.
7. A planner for the new age should use "Target Teams" that will study options quickly and succinctly, understand implications for staffing and patient interactions, and validate that the project fits the goals and business plan of the organization.

Creating the right design goals and environment equates to reengineering the planning process, eliminating reworks while stretching the combined thinking of the organization, resulting in a positive healthcare experience. Managing duplication is no longer an option, as variation and alteration of the same processes equates to added costs and extended times. Healthcare architects must help with understanding the exposure that this presents to the industry. The overarching principle is to develop bold new ideas through decisive leadership and becoming stewards of the community.

broader contextual  
connections



OPEN TO THE  
COMMUNITY



**The American  
Institute  
of Architects**

1735 New York Avenue, NW  
Washington, DC 20006  
[www.aia.org](http://www.aia.org)