The Facility Response to Health Reform

By James T. Hannon, Senior Vice President, National Health Practice Leader, SmithGroup

Introduction

As healthcare reform legislation extends medical insurance coverage to more Americans, the nation's healthcare system will be compelled to use resources more effectively. The use of bundled payments and shared savings models for medical treatment in lieu of the traditional fee-for-service model is motivating providers to eliminate wasteful practices. These new payment models, coupled with insurance and government programs that do not cover services necessitated by medical errors or adverse effects, are requiring a stronger-than-ever focus on care that is both high in quality and highly efficient. "Do more with less" is the current catchphrase; the question is, "How?" Healthcare facilities designed for quality and efficiency will be a large part of the answer. New designs will involve continued attention to micro-oriented solutions, such as patient safety and energy savings, as well as a more macro-oriented approach that entails redesigning the interface between an organization and its operations. Innovative solutions about where and how care is delivered will provide the best value in facility design moving forward.

Continuing trends

Efficiency and quality are certainly not new goals for medical care or healthcare design. Healthcare reform will encourage the continuation of existing trends that were developed in an effort to achieve these same ends. Medical system integration, for First published in the Academy Journal, the official journal of the AIA Academy of Architecture for Health, November 2010

Abstract

As healthcare reform legislation extends medical insurance coverage to more Americans, the nation's healthcare system will be compelled to use resources more effectively. The use of bundled payments and shared savings models for medical treatment in lieu of the traditional fee-for-service model is motivating providers to eliminate wasteful practices. These new payment models, coupled with insurance and government programs that do not cover services necessitated by medical errors or adverse effects, are requiring a stronger-than-ever focus on care that is both high quality and highly efficient.

"Do more with less" is the current catchphrase; the question is, "How?" Healthcare facilities designed for quality and efficiency will be a large part of the answer. New designs will involve continued attention to micro-oriented solutions, such as patient safety and energy savings, as well as a more macro-oriented approach that entails redesigning the interface between an organization and its operations. Innovative solutions about where and how care is delivered will provide the best value in facility design moving forward.

This paper outlines several strategies employed on recent projects to maximize quality and efficiency, as measured by immediate annual savings, compounded operational costs and long-term institutional flexibility. The designs respond to several ongoing trends advanced by healthcare reform, including health system integration, distributed care venues and departmental reorganization. Through the use of thoughtful planning and strong information technology, facilities are being designed with smaller building areas, optimized patient throughput, operational efficiencies and an improved experience for patients and staff.

> example, aims to streamline processes and eliminate redundant administrative tasks. Under reform, health system mergers, acquisitions, and hospital–physician integration efforts will increase. Other provider services, such as long-term care, will be included in integrated healthcare approaches.

Although there will always be a need for high-tech acute environments where very sick people can receive highly specialized care, system integration is expected to result in fewer acute care hospital towers and a greater emphasis on communitybased portals of care. For the past several years, healthcare design has trended toward smaller centers for ambulatory care, rehabilitation, post-procedure care, and the like. The concept of a "medical home" to coordinate multiple aspects of patient care, first introduced by the American Academy of Pediatrics in the 1960s, is garnering renewed interest. As health systems increasingly integrate, they will rely more and more on treatment venues outside the hospital to provide coordinated preventive care and treatment of chronic conditions.

Information technology that connects these distributed care centers, providing patient information where and when it is needed, both inside and outside the hospital, will continue to be a central component of clinical practice and facility design.

With patient safety paramount to providing quality care and controlling costs, healthcare architects and their clients will need to keep safety as a design priority. Design features meant to help prevent falls or medication errors, improve infection control, or otherwise create a safer environment for patients and caregivers will always be important.

Measures designed for energy savings will continue to be crucial for reigning in operational costs; Integrated Project Delivery (IPD) will remain an effective strategy for lowering construction costs, accelerating schedules and improving overall quality.

A new model

The biggest bang for the healthcare design buck, however, will come from working hand-in-hand with operational experts to optimize departmental organization and patient flow. Lean Design principals can be applied to develop strategies that have a dramatic impact on operational costs



and quality, especially when combined with more traditional safety and efficiency measures.

One of the best examples of wholesystem micro and macro reorganization is SmithGroup's new plan for California Pacific Medical Center (CPMC). CPMC is part of Sutter Health, a Sacramento-based network of physicians, hospitals and other healthcare providers located in Northern California.

Today, CPMC is a four-campus system that reaches every neighborhood in the city of San Francisco. The medical center's 282bed main hospital is located at the system's Pacific campus, the 186-bed Women's and Children's hospital and general ambulatory care facility is located at the California campus, a 100-bed hospital is located at the Davies campus, and a 229-bed hospital is located at the St. Luke's campus. Much has been published in other venues regarding the IPD process for the replacement of the Pacific hospital at a new, fifth campus. The replacement hospital, a 555bed facility known as Cathedral Hill Hospital, will be joined by a new medical office building along Van Ness Avenue, a major north-south San Francisco thoroughfare. Beyond IPD, the project is notable because well in advance of current trends and healthcare reform mandates, CPMC planned to use the design of the Cathedral Hill facility as a catalyst for more general system integration to improve efficiency and quality of care. The new CPMC design is a model for the community-based care of the future.

Above:

Sutter Health/CPMC community-based care model

Regionalization

The original concept for the project, from a 1990s master plan, was to replace the seismically-deficient Pacific and California hospital structures in kind with two new hospital buildings. Step one in revisiting that idea was a revised plan SmithGroup developed to integrate the Pacific and California hospitals into one new main tertiary care facility, Cathedral Hill, to be constructed on a new site. At 910,000 square feet, the planned Cathedral Hill facility has 32 percent less overall area than two separate facilities would have required. It also eliminates the need to develop two sites, two lobbies, two emergency departments, and many other costly duplications. In the new concept, outpatient services will be distributed throughout the community through the use of a repurposed Pacific campus and a new Cathedral Hill outpatient facility.

The next part of the new system plan involves the regionalization of certain support services and the redevelopment of the St. Luke's and Davies campuses. These campuses will provide select acute care and added outpatient services for the network. An 80-bed general community and urgent care replacement hospital for the St. Luke's campus is in the design stage; a repurposed specialty hospital for system-wide integrated neurosurgery-neurological-orthopedic care, rehabilitation, and additional outpatient services is under construction on the Davies campus.

The satellite acute care functions on the St. Luke's and Davies campuses will receive core services, including pathology, biomedical engineering, environmental services and selected materials management and pharmacy support, from the Cathedral Hill hub locations. CPMC's robust system of outpatient points of care allowed for the distillation of most outpatient functions from the hospital facilities, which are more expensive to build and operate in terms of space and overhead than separate outpatient facilities.

Together, these strategies allow for a much more efficient acute care configuration. St. Luke's Hospital was planned with thirty percent less overall facility space per bed than would have been possible in a traditional stand-alone, all-in-one hospital scheme.

Technology backbone

Supporting CPMC's community-wide system plan is an essential technology backbone. Without strong information technology, the regionalization and integration of patient care management cannot be achieved at the level of efficiency and quality needed today. CPMC's Health Information Management System will fully integrate the regionalized patient care systems and clinical and logistical support. It will eliminate redundant locations for gathering and storing patient information, track patient flow through the hospital and provider system, and allow for bedside admitting and other processes that reduce the number of patient waits or stops.

System-wide clinical platform integration strategies include centralized laboratory results reporting, digital imaging access from multiple locations, and materials tracking. By tracking materials across the system, CPMC will be able to maintain just-in-time periodic automatic replacement levels and reduced backup storage.



Service integration

To maximize value and quality of care for patients, such broad institutional facility changes must be coupled with organizational priority-setting and planning for greater efficiency. The CPMC design team applied Lean principals to develop plans for the Cathedral Hill facility that break down traditional departmental boundaries — both functional and physical — in favor of an integrated services platform.

The Cathedral Hill program aimed to enhance patient care and improve workflow and productivity throughout the system by reintegrating departments around each point of service. This also eliminated excess capacity and support spaces, reducing the overall amount of space needed. The design includes eighteen operating rooms, three cardiac catheterization rooms, five gastroenterology/endoscopy rooms and three interventional radiology rooms arranged on a single floor, centered around an innovative post-operative care unit and prep/Level-2 recovery operation called the Universal Care Unit (UCU). The UCU will reduce patient transport distances, enhance post procedure safety, and afford great flexibility in meeting differing patient recovery needs.

Support services were also decentralized and refocused on the point of care in the patient room, increasing the number of services that could be delivered bedside. This reduces patient transport and reduces or eliminates the need for dedicated, centralized departmental spaces for such activities

Above: Integrated Services Platform

© 2013 SMITHGROUP



as dialysis, electroencephalogram/electromyogram (EEG/EMG), admitting, imaging, and materials storage.

Other CPMC advances include an integrated patient intake function that demystifies the check-in location and process. Generous patient and family space is provided after a value-focused review determined that this space counts most for care and customer satisfaction; nursing unit rooms are all planned with a dedicated family zone in place of the traditional single, larger general waiting areas. Other projects are applying similar strategies. SmithGroupJJR's design for the new Dameron Hospital, a 240-bed community hospital in Stockton, Calif., features a tightlyplanned interventional platform floor with six operating rooms, a minor procedure area, a cardiac catheterization laboratory, an interventional radiology suite, and a gastroenterology suite.

For a major hospital system in the southwest, SmithGroup has developed a highly efficient split-flow emergency department (ED) plan for new template hospitals. The template ED concept focuses on patient flow improvements by separating lower acuity patients — those with an emergency severity index number of 1, 2, or 3 — from high acuity cases. The design also provides ample space for results waiting and patient discharge, to allow for much faster patient throughput and greater utilization of the main ED treatment rooms. Efficient ED design is especially important as the nation moves toward expanded health insurance coverage. Previously uninsured citizens with limited access to primary care physicians or other avenues of care may turn to ED care instead. This has been the experience in Massachusetts following a state health reform initiative.

Building systems

Other common concepts getting renewed attention in light of the current drive toward efficiency and quality involve base building and building systems organization. Plans that decant many functions — such as pharmacy and laboratory support, materials management and environmental services — out of hospital, or I-occupancy, structures and into less intensive B-occupancy structures are an obvious move. But once the unbundling is done, several systems have found fresh interest in tightly bundling

Above: Plan Detail of Universal Care Unit



the remaining hospital building, with beds placed on top of the base diagnostic and support block.

The benefits of this arrangement include no restrictions in matching floor heights for dissimilar functional elements; less horizontal travel; a better ability to separate public circulation routes from those designed for patients, staff, or materials management; and easier future expansion for the most complex diagnostic and treatment areas of the hospital. Although challenges remain, including some limitations on nursing units and their flexibility, many hospitals are finding an overall lower construction cost in the bundled schemes. A recent study SmithGroup conducted for an east coast system's new 100-bed community hospital found a thirty-nine percent reduction in normalized construction cost per bed after decanting support services and using a bundled scheme for the hospital building,

compared to initial concepts for a diagnostic/support chassis with attached nursing wings.

For the southwest system's template hospital project, SmithGroup developed an alternative bundled template hospital. The system has concluded that this design, for facilities ranging from 80 to 160 beds, will provide long-term benefits from greater patient, staff, and service transport efficiencies. The reduced travel distances are also expected to reduce staff fatigue.

Above:

Figure 4: Hybrid unbundled/bundled scheme

Long-term view

In the current environment, we must demonstrate a project's impact beyond the traditional categories of building-related performance, increased capacity, improved environments for patients and staff, better marketability and so forth. We must evaluate our projects in terms of their measurable ability to contribute to operational cost reduction. This should be considered not only in terms of immediate annual savings; it should encompass the long-term compounded operational costs and flexibility of our hospitals.

References

Sia, C., T. Tonniges, E. Osterhus, & S. Taba (2004). History of the medical home concept. Pediatrics, May, 13 (5 Suppl), 1473-1478.

Long S. K. & K. Stockley (2009). Emergency department visits in Massachusetts: Who uses emergency care and why? Retrieved from **http://www.urban.org/url. cfm?ID=1001335**



James T. Hannon Senior Vice President, SmithGroup

Correspondence concerning this article should be addressed to James Hannon, Senior Vice President, SmithGroup, 301 Battery Street, 7th Floor, San Francisco, CA 94111. Telephone: 415.365.3440. E-mail: **jim.hannon@smithgroup.com**