

CAN DESIGNERS PUT HEALTHCARE BACK ON TRACK IN THE U.S.?

Yes, they can. But the process requires commitment and ingenuity.



by Douglas M. Brant, P.E.

Healthcare in the U.S. is a national nightmare that continues to worsen. Costs are the highest in the world, results are “middle of the road” and the number of uninsured citizens is growing rapidly. To change the current situation and return to a level on par with other developed countries, we need to radically reduce healthcare costs (by 30% or more), while simultaneously improving patient outcomes. The ability of most healthcare providers to accomplish this is severely limited by one common element—the design of the facility in which they practice.

Some providers have been able to produce better than normal results through the professional implementation of evidence-based design principles in the construction of new or the renovation of existing facilities. Improvements achieved include reduced recovery times, shorter wait periods, enhanced patient experiences, and lower levels of stress and fatigue among healthcare providers resulting in decreased incidents of medical error.

Some designers, however, have gone beyond evidence-based design to incorporate business modeling and analysis in the planning phase, creating effective, efficient buildings at a fraction of the national average cost. This unique approach is reinventing how healthcare is being and can be provided.

One of the early healthcare providers benefiting from this process was a large, growing cardiology practice. While planning the consolidation of the practice’s multiple office locations into one headquarter facility, as well as expansion of its service to include imaging, the owner’s goal was to reduce operating costs by identifying ways for their physicians to practice more efficiently. It was determined that a new approach to their practice needed to be developed and a new business model created.

After collaborative discussion and concept development, a unique “pod” design was created. This design and its associated new processes enabled the cardiology practice to increase the number of patients each physician could see per day and allowed for staff sharing opportunities. During periods of low capacity, pods could be shutdown providing significant savings in the cost of operation by reducing staffing requirements, energy usage, and other resources. Pods only become activated as required by patient volume.

To fully achieve the results desired from the cardiology practice business model, careful consideration was given not only to maximize the owner’s resources in long-term operation, but also in the construction of the building itself. Accordingly, economics became a key design

element and upfront identification of the budget goals allowed the building to be very economical with low first costs, while maintaining a high level of quality construction.

The HD+ Process is based on business principles and philosophies combined with a holistic approach to healthcare facility design. Every component and activity is taken into consideration with key issues, such as workflow, staffing, capacity control, energy conservation, reimbursement and debt service/retirement serving as influencing factors in the planning process. Incorporating these issues at the beginning of the project is what makes this approach different, resulting in the ability to deliver low cost solutions and high patient outcomes.

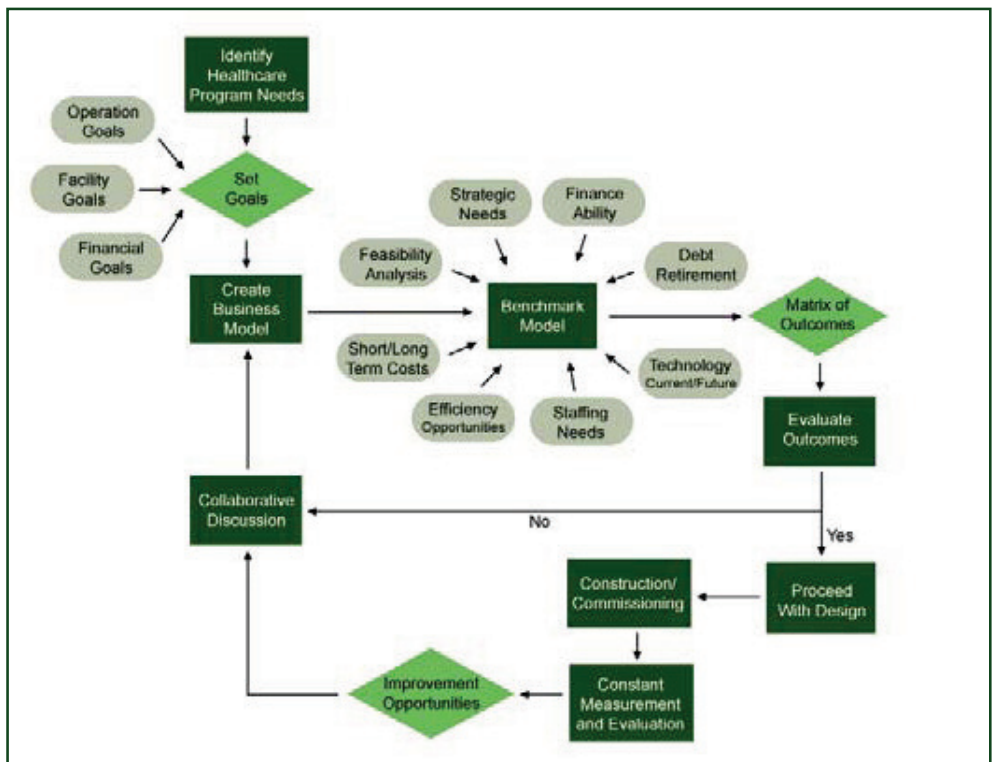
While each project is customized to meet the goals and needs of a specific healthcare provider/client, the consistent framework and approach of the HD+ Process returns a continuity of positive results. The most significant elements are the integration of financial met-

rics, process knowledge, and key stakeholder input.

Together, through an open and collaborative environment, these elements are integrated to create a comprehensive business model before the project team even begins designing the building. Conceptual ideas then flow from, and are checked against the business model with input from all team members and stakeholders resulting in unique insights and creativity.

The use of financial metrics during the planning process was especially important to a large urban hospital’s Emergency Department that was facing economic challenges. The administration wanted to determine if it was possible to lower costs and improve patient service as a result of an extensive renovation/expansion. The business model created through the HD+ Process stated that they would need to double the number of client visits while using just half of the current staff.

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between all parties including the trade contractors. Using IPD, digital images were created to precisely depict every aspect of the MEP construction and to simulate real-world installation. Creating a comprehensive virtual model of the above-ceiling space and gathering input from all parties made it easier to coordinate the installation of MEP building systems.

The improved coordination and communication enabled the MEP subcontractors to pre-fabricate a significant amount of their work in an assembly facility off the job site. The mechanical systems were assembled at the mechanical contractor's plant and brought to the project site in sections. This pre-fabrication resulted in less waste, less expense, and a quicker installation time. This also made for a safer job site since the work was performed in a better organized and controlled environment.

It is estimated that using BIM and the IPD approach saved Salem Hospital approximately \$1.5 million. In addition, the project was completed three months earlier than using the design-bid-build process. The use of IPD and BIM made it easier to not only predict pre-fabrication of materials, but also to achieve high-production outcomes in the field.

The lessons learned from the BIM experience included selecting subcontractors at the project conceptualization phase and increasing the scope of work included in BIM services such as in-wall MEP.

Using direct digital exchange, the steel detailers discovered that the digital model did not provide enough detail for steel shop drawings. The current version of Revit offers much improved accuracy and detail.

As part of the IPD closeout process, Salem Hospital received a building information model for long-term use for building maintenance and up-keep. They received two tablet PCs loaded with the as-built drawings, all RFIs and change documents.

The IPD approach was obviously a big success for Norm Gruber and Salem Hospital. There are many advantages and benefits to utilizing this type of project delivery method and owners are being encouraged to explore this approach on their future capital projects.

Jerry Grogan was Turner's Project Executive for the Salem Hospital Expansion Project. He is based in Portland, Oregon.

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In this project, the stakeholders, consisting of physicians and nursing staff, were highly creative and worked closely with the designers to meet the requirements of the business model. The outcome was a free-standing Emergency Department with an unusual geometry that offered the hospital significantly improved results (patient wait times under 15 minutes), a significant rise in visits per day (close to 3-to-1 when compared to the original Emergency Department), and a sharp increase in staff efficiency and productivity.

It is clear that healthcare has become a significant cost that no country can afford to overlook. The use of creative and collaborative design approaches, like the HD+ Process, provide new perspectives needed to cut the growth of these costs, increase efficiency in the practice of healthcare and generate improved return on investment. It will require the creation of new business models to be utilized as roadmaps for design and construction as well as the incorporation of constant evaluation for continuous improvement. Following these models and integrating metrics will allow our healthcare system to once again be competitive with the rest of the world.

Douglas M. Brant, PE, is President of Healthcare Developments (HD+), a fully-integrated consulting and design firm focused on creating profitable healthcare-based facilities that offer optimum return on investment for clients. HD+ was formed as an affiliate of the Georgeson Group and their architecture and engineering firm, BETA Design.

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