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Trends in Health Care

Sustainable benefits

The incentives continue to grow for hospitals to reduce their impact on the environment



By Jeff Ferenc



If it's the mission of hospitals everywhere to improve the health and well-being of patients, staff and the communities they serve, health care leaders stressed that sustainability is part of their mission at the "Greening America's Hospitals" conference at the White House earlier this year.

If you're not yet engaged in sustainability, you're "off the ranch" as one hospital executive at the conference bluntly put it. Considering the multitude of benefits that sustainability offers, it would be hard to disagree with that assessment.

In fact, those involved with health care facilities believe that hospitals are in prime position now and in the next five years to make sustainability part of their mission and business plan. Getting there, of course, is the challenge, but

one in which they are better equipped to achieve, thanks to increased availability of information and new technology and design.

"I think more and more health care, especially with the alignment of outcomes with health care reform, is going to be focused on prevention and wellness," says Seema Wadhwa, director of Healthier Hospitals Initiative (HHI), Reston, Va., and director of sustainability for Inova Health System, Falls Church, Va. "Sustainability is tied to those upstream solutions of prevention and wellness and hospitals relating to their communities on a different level."

If some hospitals are late to the sustainability table, it's due in large part to tackling other priorities like health care reform, improving patient outcomes and satisfaction, says Cheryl Koshuta, director of sustainability services, Weston Solutions, West Chester, Pa. That's changing.

"Hospitals haven't had the wherewithal to really focus on sustainability until recently, and I think now they have. They realize it's something to incorporate into the mission and vision of their organization. But more importantly, it has to be part of a strategic business plan," Koshuta says.

Mary J. Larsen, manager, environmental stewardship, Advocate Health Care, Oak Brook, Ill., believes sustainability puts hospitals in a position to fulfill their mission to the community by reducing waste and conserving resources. It's smart business, too.

"Sustainable operations will, in effect, Lean the organization and strengthen its viability in a sector of our economy experiencing increasing financial pressures," Larsen says.

The best news is that hospitals can achieve significant savings even with fundamental

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sustainability efforts that require little or no cost. That's one of the findings from a study titled "Can Sustainable Hospitals Help Bend the Health Care Cost Curve?" published in November by the Commonwealth Fund.

Sustainable savings

After studying nine health care systems or hospitals that implemented energy- and waste-reduction strategies over the last five years, the authors came to an eye-opening conclusion. The same sustainability actions taken by all hospitals across the United States would result in savings of more than \$5.4 billion over five years and \$15 billion over 10 years.

"With little or no capital investments, significant operating savings can be realized," says Blair L. Sadler, one of the study authors and former CEO of Rady Children's Hospital, San Diego. "It is good for patients and staff, and is a better strategy than having to lay off valuable personnel or closing effective programs that lose money."

Streamlining the waste disposal process resulted in major savings at hospitals in the study. Steps included aggressive recycling efforts, reusing or donating supplies and equipment, reducing use of plastics and packaging, and eliminating trash inadvertently mixed with medical waste. Nationwide adoption of the changes would save \$710 million over five years, the study estimated.

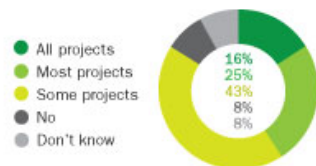
Reprocessing and reuse of some single-use medical devices typically included in operating room (OR) procedure packs resulted in a \$12 savings per procedure, the report states. If all hospitals adopted the measure, the savings would total \$2.7 billion over five years. Eliminating unused devices in OR packs would save \$1.02 billion over five years based on an estimated 45 million surgical cases a year.

Nationwide adoption of energy-saving measures taken by hospitals would result in a net savings of nearly \$4.8 billion over five years, the study found. Among the actions taken were installing upgraded lighting, high-efficiency electric motors, occupancy sensors and high-efficiency boilers, as well as reducing air changes and temperatures in the OR when possible.

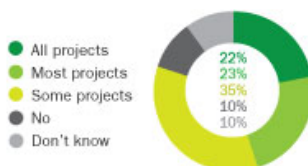
"These findings should encourage hospitals that have not started sustainability programs or that are tentative about making sustainability investments," says John Messervy, AIA, director of capital and facility planning, Partners Healthcare, Boston, and chairman of HHI.

GREEN CONSTRUCTION

Percentage of hospitals specifying any green/environmentally-friendly construction materials in current projects



Percentage of hospitals evaluating the cost/benefit of green construction methods for building projects



SOURCE: HEALTH FACILITIES MANAGEMENT/ASHE 2012 CONSTRUCTION SURVEY

Shooting for 100

How much more sustainable can hospitals expect to become further down the road? Quite a bit as it turns out. To get a handle on what's feasible, it's helpful to look at a hospital's energy use intensity (EUI), a measurement that describes a building's annual energy use relative to its size.

The Department of Energy says that as of 2010, the 2.24 billion square feet of inpatient medical facilities required an average of 213.7 kBtu per square foot per year in site energy. That's down from the average 229 kBtu in 1999 for U.S. hospitals.

But it's a long stretch from reaching goals set by Architecture 2030, an influential nonprofit, nonpartisan and independent organization that was established in response to the climate change crisis by progressive architect Edward Mazria in 2002. The organization established the 2030 Challenge with a goal to reduce standard energy use by 60 percent in all new buildings in operation from 2010 to 2015 and then continue reducing it until buildings reach net zero energy demand by 2030.

To help, the University of Washington's Integrated Design Lab and Northwest Energy

Efficiency Alliance's BetterBricks Initiative developed the Targeting 100! research project. This provides a framework for how hospitals can cut site energy use by 60 percent now to reach 100 kBtu per square foot per year and then net zero by 2030.

Sound like a fantasy? Not when you consider that years ago some European hospitals reached 70 to 127 kBtu per square foot per year in site energy, or from one fourth to one half the average energy consumed in U.S. hospitals.

Nevertheless, many of the recently built U.S. hospitals are making impressive energy-saving strides. They're attaining 150 to 180 kBtu per square foot per year site energy levels through a combination of smart design, newer technology and optimized mechanical systems, says Colin H. Rohlfing, associate AIA, LEED AP BD+C, senior associate sustainable design leader, HOK, Chicago.

Getting to 100 kBtu per square foot per year site energy will require a design process based upon building physics that utilize massing and orienting to optimize day lighting and reduce costly heating and cooling loads associated with high ventilation demands as much as possible, he says. Technology such as displacement ventilation, radiant heating and cooling, and increased ventilation control can reduce costly reheating and power associated with fans and motors.

Installing occupancy sensors to reduce the number of air changes in a space, especially unoccupied OR suites, will increase in application as a way to reduce ventilation rates, Rohlfing says. While use of some renewable energy technologies such as solar may have a better payback in the future, he insists that greater energy savings can be found in passive design strategies, HVAC solutions and optimizing the central utility plant.

"Make sure your chillers and boilers are as efficient as possible. If you can take your money and put it into the central utility plant, you'll get a much better payback for your hospital," he says.

Building to the power grid likely will come into play more frequently for hospitals as health care facilities look for additional ways to minimize utility costs, says Bruce Sher, vice president, energy services, Weston Solutions Inc., West Chester, Pa.

Demand-response programs that utilize smart energy systems will allow hospitals to get paid for reducing energy use for specified periods of time or to sell excess power back to the grid, yielding a lower utility rate or payment, he says.

The sustainability link

Conservation and management of water will intensify over time as its supply declines. That will cause hospitals to take a hard look at the link between design and operation, because water plays an integral role in so many functions such as cooling, says Mara Baum, AIA, LEED AP, senior associate sustainable design leader, health care, HOK, San Francisco.

"Our hospital buildings may use somewhere between one-fourth to one-half of our water consumption to cool the building," Baum says. She believes mechanical systems hold great potential for conservation because of the large amount of water they use.

"One of the best ways to reduce the amount of water you need is to reduce the amount of cooling the building needs overall," she says.

Eric Sheffer, LEED AP BD+C, manager of sustainability consulting services, SSRcx, Nashville, predicts that possible changes in building codes or interpretation of codes within five years may result in increased implementation of water reuse strategies. One such strategy would utilize rainwater harvesting for nonpotable water functions such as flush fixtures in restrooms, he says.

He agrees with Baum that HVAC system design holds underutilized promise for water conservation. Closed-loop mechanical designs can reduce potable water, and collecting condensate from air handling units is ideal for cooling tower makeup water or for landscape irrigation.

While low-flow faucets and toilets will continue to be the jumping off point for water conservation, Baum says that kitchen and food services are prime areas to cut water use through the installation of mainstream Energy Star appliances and other efficient equipment.

Waste not

One of the biggest potential game changers for waste management is the ongoing growth of single-stream recycling, which allows for only two containers: one for trash and another for all types of recyclable materials. While its adoption varies by region

and service provider, it will continue to become more common, industry experts say.

"I think in five years it's going to be the norm. I think all hospitals will have it," predicts Kevin Pollack, corporate director, sustainability and strategic sourcing, Stericycle, Lake Forest, Ill.

Laura Brannen, senior environmental performance consultant, Mazzetti, San Francisco, and founding executive director of Hospitals for a Healthy Environment, says the push is on at most hospitals to optimize recycling and to get regulated medical waste levels to 15 percent or less of the total waste stream. Increased education about recycling is becoming a larger priority, she adds.

A growing trend is for hospitals to look at opportunities to reduce waste at the purchasing stage by buying products that are durable or at least recyclable, she says. Eliminating as much packaging with equipment and supply deliveries is becoming more of a priority, too.

"Hospitals are interested in working with their suppliers to reduce waste," consultant Cheryl Koshuta says. "Packaging is a big issue and they're talking to suppliers and GPOs about that."

Reducing food waste will continue to become more common, Pollack says. Some hospitals on both coasts are beginning to reduce food waste by composting, donating it to farms for feed and using services that mechanically break down the waste using anaerobic digesters.

"This technology is still in its infancy, so we likely will see development of different options in different geographies," he says. "Regardless of which approach wins, it's definitely a trend we're seeing in the market."

Healthier cleaning

Is a future with chemical-free cleaning and disinfection of patient rooms and common areas within a hospital possible? It's not as farfetched as it sounds, considering the technology already exists to move in that direction. Brannen says the advent of floor scrubbers that use ionized water and no chemicals is a major advancement in high-performance cleaning.

"More hospitals are starting to use it," she says about the technology. "You can't get much greener or sustainable than using systems that use water instead of harsh chemicals to effectively clean."

Koshuta says that environmental services (ES) staff need to balance the goal of keeping hospitals as clean and safe as possible, while still being sensitive to the safety of patients and staff.

"Obviously, people are still worried about health care-associated infections," she says. "But ES is doing stringent due diligence in trying to pick the right cleaners that make sense for their facilities."

Brannen predicts that the growth in ultraviolet light products to disinfect rooms will provide more impetus to reduce chemical use for cleaning and disinfection. The standardization of microfiber mops means less water and fewer chemicals are needed to achieve the same, or even better, level of cleanliness, she says.

"With the remarkable advances in technology, equipment and safe cleaners, it's not inconceivable to think that chemical-free cleaning could be a possibility in the future," according to Brannen.

For more information on the Healthier Hospitals Initiative or to join, go to www.healthierhospitals.org. To read the issue brief, "Can Sustainable Hospitals Help Bend the Health Care Cost Curve?", go to www.commonwealthfund.org.

Jeff Ferenc is senior editor of Health Facilities Management.

This article first appeared in the December 2012 issue of HFM magazine.

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