

the NEWS

THE HVACR CONTRACTOR'S WEEKLY NEWSMAGAZINE SINCE 1926

NOVEMBER 2, 2009 ■ VISIT US ONLINE AT WWW.ACHRNEWS.COM ■ A **bnp** PUBLICATION
media

HVAC's Role in Health Care Reform

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It seems that change is coming to the health care system in one form or another. Helping them keep their expenses down will be more crucial than ever. There also is a great deal of awareness of infection control, another area where mechanical systems play key roles.

According to Robert Scheir, Ph.D., president and chairman, Steril-Aire Inc., "It is well established that a properly designed, equipped, and maintained HVAC system will use less energy and be less costly to maintain."

The relationship between HVAC and infection control is not as widely understood by the public, he said, "but there is growing evidence of a strong connection between the two."

In a recent report from the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, the ASHRAE Airborne Infectious Diseases Position Document states that "airborne transmission of diseases through HVAC systems is actually much more prevalent than previously thought, and that proper control is critical," said Scheir. "The importance of this finding cannot be understated. Hospital-acquired infection (HAI) results in 90,000 deaths per year at a price tag of \$4.5 billion to hospitals."

According to Laura Rygielski, director of health care, Trane Commercial Systems, this division "focuses on the impact that the physical environment has on patient outcomes, patient and staff satisfaction, and the financial performance of the organization. By ensuring that the physical environment of care has a positive impact on these issues, the cost of health care should be reduced through lower infection rates,



The new Muskogee Community Hospital uses Steril-Aire UVC devices on the heat pump units for infection control and HVAC energy and maintenance savings.

higher staff retention, higher patient satisfaction, energy savings, etc."

IAQ AND UVC

The HVAC industry can help them hold their costs down, for example, by helping them apply higher degrees of maintenance and more advanced IAQ products.

Poor IAQ can impact people, processes, and productivity, and can contribute to employee absenteeism, pointed out Rygielski. "Research shows that improving air quality can help to reduce the amount of airborne pathogens and increase overall health and safety. Better air quality leads to better overall health, thus reducing health care costs.

"In addition," she said, "some of the best technologies that help to mitigate the spread of influenza are HEPA filters, germicidal (C) UV lights, ozone air purification systems and/or bi-polar ionization — which cleans the air and helps to improve overall

air quality — as well as certain magnetized filters. A process called photocatalytic oxidation using UV light also can help to break down pollutants and purifies indoor air."

High-output UVC germicidal technology "provides a green solution with multiple benefits," said Scheir. According to Scheir:

- It offers proven HVAC energy savings. Typical savings are in the 15 percent range, he said, "though we have had hospital customers who have exceeded this figure substantially. And perhaps the greatest energy saving can be on the increased efficiency of the chiller systems."

- UVC also helps reduce or eliminate coil and drain pan cleaning, Scheir said. "In a large facility, savings can be in the six figures."

- UVC can help extend the life of air-handling equipment for added sustainability, Scheir said.

- "It greatly reduces the spread of infectious disease microbes for enhanced infec-

tion control.”

- It also eliminates the coil and drain pan as a source of HAI, he said.

“In recognition of these facts, ‘ASHRAE Airborne Infectious Diseases’ position document cites UVC as one of their recommended control strategies,” Scheir said.

“It’s never been more important to reduce the economic and environmental impact of medical centers while maintaining a commitment toward improved patient experiences,” said Gene Dassing, health care solutions manager, Johnson Controls.

Boston Medical Center and Johnson Controls were recently honored by the New England Chapter of the Association of Energy Engineers (AEE) for the Best Energy Project — Medical Facilities, based on significant energy savings from the infrastructure renewal and energy conservation improvements.

REFORM ISSUES

Reform of the existing health care system may contain opportunities for mechanical contractors. “Simply stated, the goal of health care reform is to deliver affordable, quality care to all Americans while at the same time reducing long-term growth of health care costs,” explained Scheir.

“Whatever version of the bill that may be signed into law, one thing is certain: We will see increased pressure on institutions to hold down costs. As noted, energy and HAI are leading factors that are driving these costs higher. Green HVAC strategies will therefore be an important element in the overall cost-containment effort.”

Muskogee Community Hospital (MCH), Muskogee, Okla., is the first hospital to use a closed-loop, ground-source geothermal system that covers the facility’s entire heating and cooling needs. Through this and other energy-saving measures, MCH is expected to be 24 percent more efficient than a regular hospital.

“The use of geothermal heat pumps in place of a traditional central HVAC system will give MCH much better zoned control while also saving energy,” said Glenn Martin, president of Martin Engineering Design. “The small heat pump units, being located on a mechanical interstitial space, are very easy to access and service.

“Even with the ease of service, UVC offers an important advantage,” Martin said. “It continuously cleans the coil and drain pan surfaces of biofilm buildup, reducing or eliminating the need for costly manual cleaning and keeping the units in



Muskogee Community Hospital is expected to be 24% more efficient than a regular hospital through the use of energy-saving technologies.

‘as-new’ condition so they run more efficiently,” he explained. “As a result, UVC saves on maintenance and energy.”

“Any time we can save money by being green, it’s a win-win situation,” said Mark Roberts, president of MCH, noting that “whether the savings go into better care or lower costs, the patients will benefit.”

“Energy use has a dramatic impact on operating expenses and the environment,” said Rygielski. “Installing energy-efficient and environmentally responsible systems and services can help to reduce risk by creating and sustaining high performance buildings.”

Due to the increasing age of health care facilities, she said, “many can take advantage of advancements in technology. Facilities should consider whether to replace aged equipment with more energy-efficient equipment, which can save money and ultimately cut patient costs.”

The manufacturer provides services for maintaining and operating facilities, improving reliability, and monitoring critical building functions such as temperature, air quality, electricity, lighting, and plumbing, “which can help health care facilities save time and money.”

CONTRACTORS’ QUESTIONS

According to Rygielski, contractors should be ready to anticipate the following questions:

- What HR policies are in place for sick workers?

“Policies to consider include encouraging workers with illness to stay at home; and those most susceptible to illness should consider wearing germicidal masks and use hand sanitizers. If possible, add hand cleaner and hand sanitizer supplies at air handler loca-

tions, equipment controls, railings, and access doors. Also encourage everyone to wash their hands frequently and thoroughly.

- What are your containment and isolation procedures when working in hospitals?

“Completing Infection Control Risk Assessment (ICRA) and containment procedures are critical to ensuring everyone’s safety,” she said. “This process can help you determine priorities for infection-prevention activities and reduce risk from infection throughout the facility.”

- What procedures are in place to communicate with staff regarding influenza?

Rygielski’s recommendations include communicating influenza safety tips and precautions to all building departments, “especially those whose primary function includes occupancy of guests, visitors, and the general public. Direct contact is the most common pathway for the spread of disease,” she said.

“Provide staff with basic training and increase overall awareness about the risks of influenza exposure and the likely ways to contract the virus.”

- What staff training has been conducted regarding maintenance procedures?

“Trane recommends conducting formal training of staff technicians and subcontract workers in how to work with building systems to reduce risk and increase health and safety, as well as reducing exposure to other harmful airborne particles.” ■

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