BECKER'S
Infection Control & Clinical Quality

Lowell General looks to the air for IC innovation; Reduces airborne bacteria by 69%, surface bacteria by 51%

Written by Dudley Abbe, BA, VP Hospitality and Support Services, Sodexo | September 30, 2016 |

Your Infection Control plan needs airing out. Literally. And new technology can help.

Lowell General & partner Sodexo reviewed cutting-edge air purification technology, VidaShield.

You may know Sodexo as a food services and facilities management provider, but in fact we have a track record of enabling healthcare clients to be first in their markets with important new technology.

For example, we're a strategic partner with Lowell General Hospital in Lowell, Mass., a 400-bed acute care hospital with a daily census between 250 and 330 patients. Sodexo provides a myriad of management services including food and hospitality services, laundry, transportation, maintenance services and environmental engineering.

With that partnership comes a commitment to identify and review cutting-edge technology.

Lowell General celebrated its 125th anniversary in 2016. You don't hit a milestone like that by being slow moving or complacent. This is a place where we try things, always looking at ways to enhance the patient experience and to make continuous operational and process improvements.

Don't wait to innovate

The hospital's commitment to providing quality healthcare includes investment in state-of-the-art technology and a pervasive culture of safety. It was precisely that foundational vision that prompted a team from Sodexo and Lowell General to mount a challenge test in this environment – a live hospital setting, surrounded by patients and staff – to prove the efficacy of a new technology.

The innovation at hand is called VidaShield™. VidaShield is an in-room air purification system that uses short wavelength ultraviolet light (UV-C) to reduce the amount of airborne pathogens.

Together with Geoff Slowman, Director of Facilities at Circle Health, Lowell General Hospital's parent organization, and John Larochelle, Sodexo's Vice President of Brand Management, we framed a proof of concept test to determine if the VidaShield system made an impact on bioburden control over airborne microorganisms.

Lowell General Hospital's Michelle Antonellis, RN, CIC, Infection Preventionist, and Angela Catalanotti, RN, BSN, led the clinical team along with Linda Lee, DrPH, Chief Science Officer, VidaShield. We agreed to install the active air UV-C system and all parties committed to pre- and post-installation studies.

"When Dudley brought up the idea of innovative technology in the form of active UV-C air purification, we saw it as a system that could do no harm and bring only benefit," said Antonellis. "Dr. Lee provided a good deal of research and served as a tremendous partner during and after the testing."

Truly disruptive technology

The system installs in the ceiling, above a standard lighting fixture. Room air is drawn via small fans through a MERV 6 filter into a fully-shielded UV irradiation chamber, disrupting the DNA of airborne bacteria and fungus, rendering them incapable of colonization.

The technology is hidden from view and it operates continuously in occupied spaces.

After the air is purified, it is dispersed back into the room. The device does not interfere with existing HVAC systems, the technology is hidden from view, and it operates continuously in occupied spaces.

We considered many areas for the study: OR, ICU, a decontamination area. Lowell General has a Xenex surface cleaning robot in the OR, and we worried we might generate a false negative by testing there.

The team decided on areas where we expected greatest benefit, with a minimum of interruption for the installation: ICU patient rooms and hallways, and a staff break room and corridors inside a busy operating suite. Site selection came down to choosing areas with controlled access and heavy traffic (ICU) and in a busy area of heavy contamination, with a closed door but near a sterile area (OR break room).

For the study, we conducted business as usual and didn't change any process or procedure. We worked with our facilities people and unit staff, installing the UV-C systems during off hours or when a patient room was vacant.

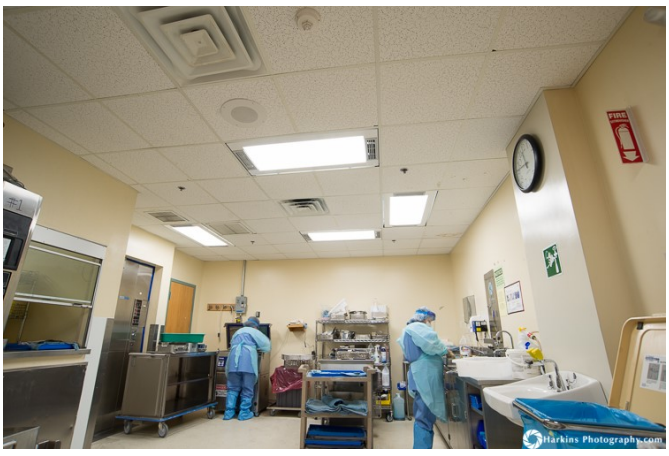
"The air is better and cleaner. It's a direct, positive impact on patient health and our health as well."

The testing and results

Ten active air UV-C purification systems were installed in ICU patient rooms and 11 in ICU hallways. Six more systems were installed in the OR break room. Pre-and post-installation samples measuring total bacteria counts for air and surfaces were taken using an SAS 180 sampler with blood agar and Rodac plates. An independent laboratory analyzed the samples. The results were eye opening:

Airborne bacteria levels in the ICU were reduced 69% and surface bacteria levels in the ICU were reduced 51%.

Airborne bacteria levels in the OR break room were reduced 70% and surface bacteria levels were reduced 48%.



The staff was ecstatic over the bacteria reduction.

"It was a relief the active air UV-C system was so effective at neutralizing pathogens," said Antonellis. "The air is better and cleaner. It's a direct, positive impact on patient health and our health as well."

The impact

Reducing healthcare-associated infections (HAIs) is one of the most important issues facing healthcare organizations. First is the issue of safety for patients and staff. Then there is a financial impact – as a component of value-based purchasing put forth by Medicare, hospitals with higher HAI rates will see less reimbursement. Also, infection rates and outbreaks are publically reported, potentially affecting reputation and loyalty. Hospitals with positive outcomes and scores can use their position in marketing, particularly in a competitive situation. No one is saying they are the cleanest or that there are zero infections. But it's increasingly a Board-level initiative and there is positive movement to put safeguards and protocols in place to stave off infection. It's what industry leaders do, and demonstrates commitment to a community and to employees.

"We are moving now to put VidaShield in place in other areas of the hospital for immediate, continuous benefit."

At Lowell General, we'll use Xenex for cleaning surfaces and VidaShield to clean the air, though we found VidaShield also positively impacted surface cleaning. "Settling" may occur any time, including after a terminal clean. The room is clean but a person comes in and coughs and it's back to square one. Here is smart, practical, innovative technology, some of the best technology out there to create a cleaner, better environment for patients and staff.

Every hospital wants to reduce HAIs. Our earlier study of pulsed xenon UV disinfection in the OR – the Xenex robot – showed a 44% reduction in surgical site infection (SSI) rates. We know that UV technology helps reduce our infections rate. So with VidaShield technology focused on cleaning the air, we felt pretty confident going in that we'd have positive results.

Also in choosing the ICU as a challenge site, where we only run the Xenex unit if there's a multi-drug resistant organism issue, we further demonstrated the efficacy of this active air UV-C technology. VidaShield will be part of our approach in continuing to reduce in HAIs overall or in areas of specific concern.

Hospitals are so used to focusing on surfaces, they're overlooking the air. This needs to change.

That the pilot was a success was not unexpected. We believe in UV and know the impact it makes. People were thrilled with the results. Hospital leadership said, "This is why we have Sodexo here. You bring us innovation."

As we began the pilot, we thought, 'If this is successful, we'll consider using the VidaShield system in renovations and build outs, or in new construction.' But the outcomes in reduction of airborne and surface bacteria were so compelling, we are moving now to put VidaShield in place in other areas of the hospital for immediate, continuous benefit.

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About the author

Dudley Abbe has worked in the hospitality industry for 40 years, most of his career in healthcare, with Sodexo. He was responsible for developing partnerships with organizations that complemented Sodexo's service offering and deliver added value to clients. Currently Dudley is Vice President of Hospitality at Lowell General Hospital, overseeing support services which includes the operation of VidaShield.

http://www.beckershospitalreview.com/quality/lowell-general-looks-to-the-air-for-ic-innovation-reduces-airborne-bacteria-by-69-surface-bacteria-by-51.html

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