

Canadian

Healthcare Facilities

JOURNAL OF CANADIAN HEALTHCARE ENGINEERING SOCIETY

Volume 38 Issue 2

Spring/Printemps 2018

LESSONS IN HARMONY

Finding the right balance between technology,
patient interaction to improve care

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Shining a Light on LEDs
What's Lurking in the Sink
Rapid Testing of Legionella

MARITIME CHAPTER



The chapter's 2018 spring conference will be held May 6-8, at the Delta hotel in Moncton, N.B. The theme is, "Efficiency: The Positive Effects on Patient and Family-Centred Care." We are excited to have Mark Black as this year's keynote speaker. Born with a congenital heart defect, Mark barely survived his first week of life. He received a life-saving heart and double-lung transplant and has beaten the odds to become a four-time marathon runner. Mark uses his new gift of life to inspire people to "live life with passion and purpose." In addition to Mark, the conference planning committee has booked a number of guest speakers that are experts in their fields. Steve Claymen of the Thermal Insulation Association of Canada will present a session on mechanical insulation; architect Benjamin Nycum of Nycum and Associates will co-host a seminar on the relocation of the Aberdeen Hospital emergency department; Edmundo Perich of I-Gard will discuss high-resistance grounding as a technology; Hamilton Health Sciences' George Pankiw will give a presentation on the creation of a scorecard based on CSA standards applicable to healthcare operations and maintenance, review some of the ratings and discuss progress to date; and Gordon Burrill of Teegor Consulting will provide a first look at the soon-to-be released second edition of CSA Z8000, Canadian Health Care Facilities: Planning, Design and Construction.

Following the conference, the Maritime chapter will host the Canadian Healthcare Construction Course (CanHCC) May 9-10, at the same Delta hotel in Moncton. The unique educational sessions are geared to contractors and facility personnel who will gain valuable information in key areas such as the planning, design and construction process, building and fire codes, infection control, mechanical and plumbing systems, medical gas systems, electrical systems and emergency preparedness.

2018 is an election year for the chapter executive. Positions to be filled include executive vice-chair, treasurer, secretary, vice-chair Nova Scotia, vice-chair New Brunswick and vice-chair Prince Edward Island. Nominations closed Jan. 29.

The chapter is able to balance its books while offering several financial incentives to members in the way of student bursaries, contribution to Canadian Certified Healthcare Facility Manager (CCHFM) exam fees, webinars and the fall education day.

—Helen Comeau, Maritime chapter chair

Moncton, N.B., and the Petitcodiac River.



MANITOBA CHAPTER



The 2018 Manitoba Education Day will be held April 24, at the Canad Inns Destination Centre Polo Park in Winnipeg. The theme is, "A Safe Worker is a Happy Worker." We have added various levels of program sponsorship to this year's event. Be sure to check the website for delegate registration and exhibitor prospectus.

It is an election year for the chapter executive. Tom Still will take over as chapter chair, leaving the role of vice-chair vacant. Other positions up for election are treasurer and secretary. We continue to seek nominations for all three roles. Please note that the vice-chair position has specific stipulations as noted in the chapter bylaws. If you are interested in one of the available positions, please feel free to contact any member of the current executive team.

Changes have been made to a few bylaws, which were sent out to chapter members in an e-mail blast in January. Please ensure you read through the changes as we will vote on them at our annual general meeting, which will be held April 24, on the chapter's education day.

In order to gain more knowledge and lend support to other local CHES chapters, I attended the Saskatchewan chapter conference and trade show in October 2017. It was a fantastic opportunity to see another chapter in action and to gain additional insight into how the conference planning committee pulled off such a successful event.

On the topic of conferences, don't forget that the 2018 CHES National Conference will be held Sept. 16-18, in St. John's, Nfld. I hope to see you there!

—Reynold J. Peters, Manitoba chapter chair

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- Healthcare acquired infections cost us \$4-5 billion EACH year

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MIGHTY MACHINE

Bacteria-killing robot joins St. Joe's cleaning team

By Amber Daugherty

Patients go to hospital to get healthy, not to catch something that makes them sicker. But more than 220,000 people contract hospital-acquired infections every year in Canada because of being in close proximity to others who are ill. To prevent the spread of bacteria, it's important that healthcare teams continue to evolve their cleaning practices. This helps ensure patients recover faster and staff stay healthy.

St. Joseph's Health Centre Toronto's environmental services team recently introduced a new piece of equipment that's radically changing the cleaning game. After manually cleaning the room, the team wheels a machine called the Tru-D SmartUVC, or 'Trudi,' into it. The five-foot-five robot uses sensors to calculate how much time it will take to disinfect the room, looking at factors including overall size and objects in the room. Once everyone is out, the door is closed and Trudi delivers a precise dose of UVC light

that's known to kill bacteria including influenza, norovirus, *C. difficile*, MRSA and other harmful germs and pathogens that can spread through hospital environments.

"Introducing technology like Trudi is incredible because it acts as an additional layer on top of the cleaning practices we already have in place," says Michael Rotstein, St. Joe's infection prevention and control manager. "It allows us to guarantee our patients and staff that we're taking an extra step to protect their health."

TRUDI IN ACTION

When UVC light hits bacteria, it essentially deactivates it, making the bacteria unable to infect or reproduce. Because of Trudi's unique design, it's able to cover every inch in a space, even bouncing around corners and underneath equipment, allowing it to clean an entire room without having to be moved.

"Our staff are specially trained to use this piece of equipment," says Carlo

Sebasta, environmental services supervisor at St. Joe's. "And while we're currently using it in patient rooms, we're also working on getting it into the operating room to do a final disinfection after the suites have been cleaned at the end of the day."

The machine is also being used to clean equipment that's shared by staff, including mobile work stations and patient tools and supports, including wheelchairs and walkers — items that can often be the culprit for bacteria spreading between patients in a hospital setting.

"When patients are in hospital, they're impacted by the spaces that they receive care in," says Sebasta. "So we want to make sure their rooms and any equipment that's being used on or around them are also contributing to their recovery." ■

Amber Daugherty is a communications associate at St. Joseph's Health Centre Toronto.



SOMETHING'S IN THE AIR

UVC technology improves IAQ by effectively destroying unwanted germs

By Alan Pinkerton

This year's seemingly unyielding flu season has contributed to overloading at healthcare facilities worldwide. On track to be one of the nastiest in decades, it is expected that influenza alone will cost employers billions in lost productivity.

Airborne transmission of disease-causing organisms and fomites is well-proven to not only originate from sneezing or coughing droplets. There has been clinical contention

that this may be a non-factor; however, several case studies and papers, along with ample data on morbidity and mortality, clearly show otherwise.

A new University of Maryland-led study examined how the influenza virus is transmitted by capturing exhaled breath from 142 infected subjects across four potential modes of transmission: natural breathing, talking, coughing and sneezing.

The study shows the virus can be easily spread through normal breathing, finding neither coughing or sneezing is necessary. It found that people with influenza generate infectious aerosols that stay suspended in the air for a long time, even when they are not coughing or sneezing, and especially during onset of symptoms. This suggests they should not remain in the workplace to infect others during that period.

A 2013 study from the same team found that wearing a surgical mask significantly reduces the transmission of influenza via airborne droplets. So, without a good mask, it doesn't matter whether those with influenza aren't coughing or sneezing — they're still effectively shedding the virus to others just by exhaling. Infectious droplet nuclei will travel near and far. Air and surfaces are contaminated as infectious aerosols move throughout spaces and entire buildings. Recommended vaccinations, strong hygiene compliance and utilizing proven engineered infection prevention technologies provide the best defence.

In a 2012 study of a high-traffic university building with a hybrid HVAC (mechanically and naturally ventilated) system, the authors attempted to determine the origins of indoor airborne bacteria, discussing aerosolization of particles from surfaces. Similarly, another study actively measured norovirus in the air of medical facilities and found that it was responsible for more than 50 per cent of gastroenteritis cases worldwide, and it can spread through air up to several meters.

THE POWER OF LIGHT

Indoor air purification, such as HEPA (high-efficiency particulate air) filtration, is an important first step in air cleaning but it is not effective on the smallest particles, which are now believed to be the most damaging to health. Air purifiers are widely available and most are effective against pollen, dust and smoke; however, sufficient air sterilization is also required to neutralize nano-size particles that HEPA filters cannot catch. The American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE) requires minimum efficiency reporting value, or MERV rating, of 14 filters or higher in patient areas. HEPA filters are used in the supply air for surgical areas but most hospitals don't have adequate air filtration when comparatives to sterilized air are made.

CSA standard Z317.2-15, Special Requirements for Heating, Ventilation and Air-conditioning (HVAC) Systems in Health Care Facilities, states that internally mounted disinfection systems using ultraviolet light should be considered as a supplemental

measure for HVAC systems, particularly for those that serve rooms or areas where there could be an elevated risk of infection from the supplied air. System designers should evaluate the most recent available clinical evidence when deciding whether and where to install UV systems.

Implementing UVC disinfection, also referred to as ultraviolet germicidal irradiation (UVGI), with photocatalytic oxidation (PCO) has proven to be extremely effective and can be installed within ductwork, added on to air handling equipment or used as portable equipment to provide higher risk areas with sterilized air.

Going a step further, titanium dioxide absorbs and reacts with UVC light to create the world's strongest oxidizing agent. Hydroxyl radicals are formed through PCO. Molecules of air pollutants are neutralized. Bacteria, viruses, volatile organic compounds, nitrogen dioxide, mould, fungi, toxic gases and more are decomposed. Harmless water and carbon dioxide molecules are emitted. HEPA alone has distinct limitations, as does PCO technology. Combining both, properly configured, will provide the cleanest air possible, especially where good carbon filtration is also included in the airflow, which aids in odour removal and assists the reaction. The best portable equipment available will pull room air through HEPA, UVC/PCO and carbon filtration very effectively. Creating a positive or negative pressure room and limiting carbon dioxide while heating/cooling an outdoor fresh air intake are options to consider.

Hospital infection control teams must become engaged with facility managers and evaluate HVAC systems, IAQ and specific clinical needs for clean air because delivery systems can be a source as well as a route to transmit disease within a facility. These sources and transfer routes are rarely considered by infection control staff. UVC treatment of air and surfaces are proven to reduce hospital acquired infections. ■

Alan Pinkerton is president and CEO of Radic8 Canada, a leading provider of UVC indoor air purification and sterilization equipment. He can be reached at alan@radic8canada.com or 1-888-247-8001.

➤ SOCIAL MEDIA COLUMN

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Showing your social media ROI

By Steven Chester

As the year winds down, a big challenge for many of us in the social media field arises as we produce our analytics reports and show our worth.

Simply saying "I've gained 50 Twitter followers a month for the year" doesn't translate to the business owner who needs to understand how these efforts are furthering their bottom line.

The first step is to understand your goals. Was your business looking to sell a product online, acquire customers, gain brand awareness, drive traffic to a sign-up page, or increase overall traffic to your website? If the answer to this loaded question is "yes," then you'll have to look at several metrics and ensure you've built campaigns around each goal.

Then, you'll need to assign a value to those goals. Think of your hours spent — which you absolutely must be logging for ROI to work — and assign a value to each of those metrics. This is tough, but consider items such as cost per impression and clicks if you were to buy an advertisement.

You'll be able to track your referral traffic and other goals via your site's Google Analytics dashboard, and most social platforms have decent internal analytics where you can delve a bit deeper into your numbers. There are a handful of great third-party tools that you can also use, which will provide even more insight.

This is one of the more complex topics that can't be fully covered in this space. As always, I invite you to stay social and continue the conversation via my contact info below. Happy holidays, and all the best for 2018.

Steven Chester is the Digital Media Director of MediaEdge Communications. With 15 years' experience in cross-platform communications, Steven helps companies expand their reach through social media and other digital initiatives. To contact him directly, email gosocial@mediaedge.ca, or follow him on Twitter at @chestergosocial.

TIME TO PIPE UP

Sinks, drains reservoir for gram-negative bacteria

By Natasha Salt, Lorraine Maze dit Mieusement & Heather Candon

Dedicated hand hygiene sinks in healthcare facilities have been the mainstay of infection prevention and control (IP&C) for many years. Clean hands reduce the transmission of microorganisms that cause infection. However, there is growing evidence these sinks can pose a risk to patients.

Sinks are often erroneously used for reasons beyond their intended purpose, including the disposal of wastes, such as body fluids, intravenous (IV) solutions, food and beverages. Using sinks for waste disposal supports the growth of biofilm in plumbing through the addition of microorganisms and nutrients that encourage their growth. These biofilms are notoriously difficult to eradicate and in healthcare settings may include multidrug-resistant organisms (MROs).

BIOFILMS AND HUMAN HEALTH

Biofilms are formed by water-dwelling bacteria and can be disrupted by the force of flowing water when faucets are activated. Microorganisms dislodged from the biofilm can then contaminate the surrounding environment and/or hands of a healthcare worker. This is not a new problem and published literature has continuously supported the contribution of sinks to healthcare-associated infections with gram-negative organisms. There is urgency to address this problem now; MROs pose serious threat to patients since treatment options are limited and MROs are associated with increased morbidity and mortality.

PROBLEM WITH SINKS AND PLUMBING

The historic designs of sinks, plumbing and fixtures have made them a magnet for microorganisms; aerators, overflow holes and valves, pipe materials and design, drain alignment with faucet and shallow basins promote contamination and spread of microorganisms. It is also well established that sink p-traps create the perfect environment for biofilms to adhere to plumbing, proliferate and continue to grow upwards toward the drain opening on the walls of the tailpiece.

Cleaning the p-trap seems like a simple solution but it's not so easy. Environmental sampling of drains contaminated with MROs has shown that even after diligent cleaning/disinfection with chemicals or steam, microorganisms may re-contaminate the tailpiece. This likely occurs due to the inability to fully eradicate biofilms in sink plumbing.

Also, the design of older sinks and drains in healthcare facilities make them virtually impossible to clean. Features such as sealed drain grates impede the ability to clean the p-trap and tailpiece thoroughly. Overflow holes are equally challenging to access and may also be a source of contamination. Even when disinfectants, such as accelerated hydrogen peroxide gel, are poured down the drain, it is impossible to ensure all surfaces of the tailpiece remain wet for a sufficient amount of time to allow complete penetration of the biofilm. Microorganisms may regroup and populate the p-trap and

tailpiece again with the addition of further nutrients.

What does this mean?

Entire sinks, plumbing and fixtures may need to be removed and replaced to eliminate the source of contamination, though a last resort.

FOCUS ON PREVENTION

Routine cleaning is always suggested to prevent the transmission of microorganisms. Engaging facilities management (FM) colleagues is often the first step for IP&C professionals when deciding how to deal with/prevent contaminated plumbing. However, FM staff are frequently inundated with other maintenance concerns in hospitals with aging infrastructure. More importantly, the most significant questions of how and when to perform routine maintenance remains unanswered in published literature and plumbing standards.

Another way to mitigate risk is to design sinks in a way that microorganisms are prevented from contaminating drains. Many new designs incorporate the use of ozone, vibration and/or heat to make pipes a less hospitable environment for microorganisms; however, the effectiveness of these is currently under investigation.

Whenever a need to replace a sink arises, it should be viewed as an opportunity to ensure replacement parts facilitate access for cleaning (for example, removable drain grates) and contain features that reduce the risk of contamination as outlined in the CSA

standard Z317.1, Special Requirements for Plumbing Installations in Health Care Facilities.

Educating staff on the proper disposal of clinical waste is likely the easiest way to prevent contamination. However, reshaping the use of sinks for their intended purpose is difficult when they are often the most convenient and accessible dumping zone close to the patient. To ensure success in reducing inappropriate disposal in sinks, appropriate, safe and convenient ways to discard fluid wastes must be incorporated into healthcare design.

KEEPING IT CLEAN

Biofilms are composed of microorganisms embedded in a tough, slimy matrix that are able to withstand many cleaning/disinfecting agents. While there are an abundance of disinfectant options on the market, many are not formulated to adequately tackle biofilm. For example, disinfectants are vertically challenged, as their fluid nature causes them to move quickly down a pipe. Manufacturers are developing more viscous cleaners/disinfectants that can adhere to vertical surfaces long enough to break down biofilm and kill microorganisms. Disinfectant foams and gels certainly hold some promise but their efficacy and long-term effects on plumbing infrastructure need to be explored more closely.

Currently, individual facilities have developed a range of innovative methods for decontaminating plumbing infrastructure using a combination of enzymatic, disinfectant and steam treatments. However, there is a lack of evidence to support any one of these methodologies in the short or long-term. Collaboratively, guidelines need to be developed to deal with this age-old problem that has become more complicated with the proliferation of MROs.

DESIGN FOR THE FUTURE

Sinks that are self-cleaning and equipped with offset drains, no aerators, deep, soft sloping basins and are rimless have been blossoming with the advent of this draining concern. These features are intended to prevent biofilms and microorganisms from contaminating sink drains, minimize or eliminate back splashing from the drain to the basin, and discourage the use of sinks for storage of medical equipment and draining of IV fluids.



The design of shower drains, shower heads, faucets, toilets and their plumbing components should also be considered as there are reports these fixtures have been contaminated with MROs and have been implicated in transmission to patients.

THINKING OUTSIDE THE SINK

IP&C professionals have lobbied for the inclusion of hand hygiene sinks in each patient care area since Ignaz Semmelweis championed handwashing in the late 1800s.

But with the advent of waterless hand hygiene products, is the risk of placing an unmaintained and misused hand hygiene sink in every patient care area worth the risk it may carry?

There are products on the market that minimize the need to have water available in patient care areas: pre-moistened wipes that

can be used for patient bathing, and disposable bedpans and kidney basins to eliminate the need for rinsing these products after use.

Perhaps the time has come to re-evaluate workflow and patient/staff needs and design healthcare facilities that consider these modern-day advances and eliminate potential MRO reservoirs in patient care areas. ■

Natasha Salt is director of infection prevention and control (IP&C) at Sunnybrook Health Sciences Centre. Lorraine Maze dit Mieusement is the professional practice lead of IP&C at Sunnybrook. Heather Candon is manager of IP&C at Mackenzie Health. Together they have been raising national awareness of the risks posed to patients by contaminated sinks and drains.

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