

BUILDING ON A LEGACY

CSA Z8000:24 charts new course in infection control

By Barry Hunt



The first edition of CSA Z8000, Canadian Health Care Facilities, was a landmark success when published in 2011. It was the culmination of years of collaboration and thoughtful debate from healthcare experts across the country that literally set the gold standard for hospital design in Canada.

One of Z8000's crowning achievements was the advent of 100 per cent single patient rooms in new hospitals. Not only did these rooms offer more peace and privacy for patients and their families, but there was the very reasonable prospect of delivering better patient outcomes as well.

The standard paid off, handsomely. A post-occupancy review has since confirmed new healthcare facilities built to Z8000:11 have 50 per cent lower healthcare-acquired infection (HAI) rates.

The long-awaited third edition of Z8000 is now hot off the press. Z8000:24 is another bold step forward for Canada, and the right thing to do for patients, particularly for its welcome new safety-first focus on infection control: "The healthcare facility shall be planned and designed to be safe for all building occupants in terms of both the prevention of healthcare-acquired infections and the control of infectious diseases."

Going forward, under the standard, planning for new hospitals "shall include participation by representatives of the stakeholders that are involved and have expertise in infection prevention and control issues and practices."

Z8000:24 breaks new ground by clearly advocating for a prudent approach to infection control.

"The health status of occupants in a healthcare facility is not always known and so every precaution should be taken to prevent the transmission of illness from patient to patient,

from the patient to the healthcare provider and from the building to its occupants,” the standard says.

In 2011, Z8000 specified requirements for hand hygiene sinks, including offset drains, no overflows, no aerators and to be of generous minimum dimensions to reduce splash and aerosolization that may lead to transmission and infection.

What does post-occupancy evaluation show?

A Z8000:11 sink makes a big difference. But in the wake of current global trends, more protection is needed.

There is exponential growth of sink and drain-related pathogens of high consequence like *Candida auris* and carbapenem-resistant *Enterobacter* propagating in hospitals around the world. Z8000:24’s approach to address this menacing reality — the new normal that is anything but normal — is objective-based, stating hand hygiene sinks shall be designed to minimize transmission of pathogens.

Leaving no doubt, Z8000:24 goes on to say, “Mandatory: Hand hygiene sinks shall be designed and engineered to prevent the growth of bacteria, mould and biofilm in drains, and to prevent the release of pathogenic bioaerosols.”

The approach and message couldn’t be clearer.

Despite the healthcare industry’s best efforts to employ traditional practices, HAIs have continued to increase for more than a decade. Perhaps, unsurprisingly, with the onset of COVID, HAIs have risen to a level beyond what was projected even a few short years ago.

Just as Z8000:11 was bravely on the forefront when it specified single patient rooms in 2011, Z8000:24 has boldly taken the position that the “planning processes for infection prevention and control should include consideration of new and emerging technologies.” This includes incorporating automated infection prevention technologies like ultraviolet (UV) disinfection and self-sanitizing surfaces that are approved by Health Canada.

Many of these emerging technologies have been in use by early adopters now for up to 15

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years, but they are still new to the vast majority of people working in Canadian healthcare. It’s often said about healthcare in Canada that it takes 17 years from innovation to implementation. In 2015, CSA published the express document, *Evaluating Emerging Materials and Technologies for Infection Prevention and Control* — the very items now included in Z8000:24 — to try to reduce Canada’s implementation lag.

UV is still considered ‘new’ by many. Fortunately, the updated standard includes an informative and comprehensive addendum to facilitate understanding and implementation. Annex E not only details UV technology, types of devices and their applications, but outlines the qualifications necessary for operation, maintenance and commissioning. Guidance for annual preventive maintenance, testing, safety and training is also included.

According to HealthCareCan, Canada renews healthcare infrastructure at a rate of about two cent per year. At that rate, it would take 50 years and several hundred billion dollars to update the country’s hospitals to Z8000:24. Alternatively, existing hospitals could be retrofitted to include the infection control measures included in the standard in relatively short order for much less.

The average length of stay (ALOS) in Canadian hospitals is seven days, reports Statista. Peer-reviewed studies have found that the 10 to 15 per cent of patients who acquire a HAI are in hospital an extra week for common infections and two extra weeks for multi-drug resistant organism infections. Hospitals that are compliant to Z8000:11 are twice as effective at preventing infections as older hospitals.

Simple math suggests the overall improvement in ALOS of Z8000:11 is likely to translate into a productivity gain (bed gain) of five to 10 per cent. It’s quite conceivable the newest version of the standard could lead to a further productivity gain of five to 10 per cent for new hospitals. That could deliver a total 10 to 20 per cent gain for older non-Z8000 facilities.

In today’s overcrowded healthcare facilities, freeing up five to 20 per cent of patient beds would be welcome relief. Canada currently operates on average at 99 per cent of bed capacity across the country’s 95,000 beds with some hospitals now peaking at 200 per cent capacity during respiratory season. Reducing HAIs nationwide has the potential to free up somewhere between 5,000 to 20,000 sorely needed beds — with the same staff and no additional workload.

In 1863, Florence Nightingale wrote, “It may seem a strange principle to enunciate as the very first requirement in a hospital that it should do the sick no harm.” She started the world on a new evidence-informed, systematic, engineered approach to hospital design to reduce infections with concepts like good ventilation, sunshine and fastidiously clean, sanitary conditions.

Today, CSA Z8000:24 picks up where Nightingale left off, charting a new course in infection control with the advent of automated infection control technology and a commitment to the precautionary principle. ■

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