

CSA INHEALTH

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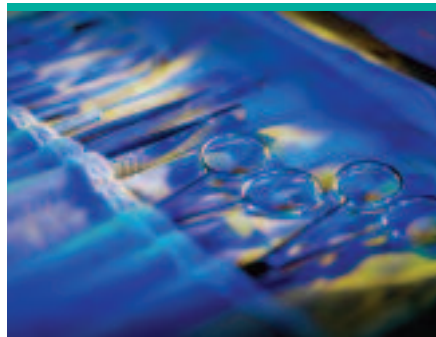
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IN FOCUS

Beating the Bad Bugs

In the wake of last month's tragedy at a Toronto nursing home that saw more than 16 residents fall victim to Legionnaire's disease, our inaugural issue of CSA InHealth puts infection control in the spotlight.

[CLICK FOR MORE](#)



FEATURE

Closing the Loop

Think you can control infection by making every function follow its own policies and procedures? Think again. Bacteria know no bounds, so fighting them requires a system-wide approach. Shared medical devices are a case in point. [CLICK FOR MORE](#)

TRENDS

Lessons Learned From the *C. difficile* Outbreak

Recent news reports indicate the outbreak of *C. difficile* that infiltrated Canadian hospitals in 2003-2004 is a notoriously virulent strain. We examine the outbreak and find out what steps health care facilities can take to stem the tide of so-called superbugs. [CLICK FOR MORE](#)



PIPELINE

The Latest News on Health Care-Related Standards

As recent headlines suggest, ventilation systems are one way infectious disease can spread through a health care facility. CSA's standards in commissioning and maintaining mechanical, electrical and communications systems are now easier to access. [CLICK FOR MORE](#)

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IN FOCUS

President's Message

Welcome to the inaugural edition of CSA InHealth. This newsletter, published three times a year, offers essential information, ideas and tips on current health care issues for busy health care professionals like you.

CSA InHealth is a newsletter with a difference. As you look through the headlines and articles you will see that our focus is not just on medicine, or facilities, or equipment, but on the interrelationships between these essential elements. We recognize that a safe, effective health care system depends on qualified staff, well-designed systems and buildings, and safe, reliable equipment - all working together to deliver the quality health care that people expect. Standards are one way to help this happen, both by promoting the safety and efficiency of individual elements in a system, and by helping to coordinate the larger systems in which they are used.

These days, most would agree that this task is getting more complex. Evolving medical technologies, merged and expanded facilities, new and more persistent infectious agents, and the stresses of regionalization have brought numerous challenges to Canadian health care, and this situation raises concerns about patient safety and quality of care in the current realities of cost containment and limited resources.

People throughout the system, from regulators and hospital administrators to frontline health care workers and the public, are wrestling with these issues and seeking to resolve them in ways that ensure the health and safety of all Canadians. CSA is working with these groups, and others, to deliver solutions that will offer some relief for a system that is increasingly under pressure from all sides.

Our aim for this newsletter is to provide an open forum for the exchange of ideas and the exploration of issues relating to our work at CSA and your work in health care.

This first issue focuses on improving infection control in health care settings, an area that has seen its share of national headlines, including the most recent outbreak of Legionnaire's disease in Toronto. We also get a first look at the new CSA standard on commissioning of health care facilities.

We are excited about this newsletter, and think you will be too. We welcome your comments and suggestions about CSA InHealth. Please write to us at inhealth@csa.ca.

Sincerely,

Pat Keindel
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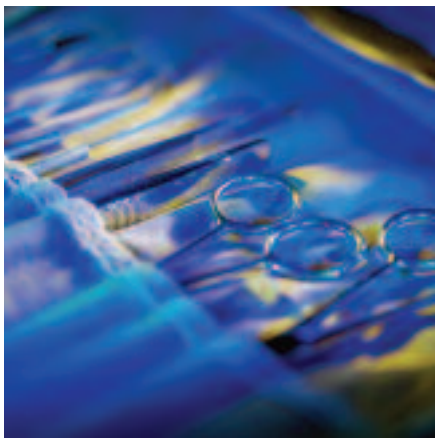
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FEATURE

Closing the Loop How to improve infection control through effective medical device management

A health care facility is an active place, with people and materials constantly in motion. Less visible but no less mobile are the many opportunistic micro-organisms – viruses, bacteria and bacterial spores – carried throughout a complex environment.

Because bacteria know no bounds, fighting them requires a coordinated effort among doctors, nurses, housekeepers, sterilization personnel, engineering staff and others. Communication is essential – not simply to spell out expectations of performance from each of the various functions, but also to accommodate the interrelationships that exist between professions, equipment and hospital systems. People need to know what to do – *and* with whom to consult when setting up procedures, making decisions or handing off equipment. Communication gaps, due to misplaced assumptions or inadequate awareness, make the environment vulnerable to error and the spread of infection.

Loaned or shared medical devices present special challenges. These devices may be supplied by manufacturers for purposes of trial. Or they may be surgical sets too expensive or too rarely used for the hospital to keep in inventory. Because they are shared, these devices require systemic coordination and careful management.

The process may appear straightforward: a device is shipped, received, sterilized and sent up to the operating room for use. However, each of these steps is taken by a different player, and responsibility for the device moves from the manufacturer (or another hospital) to the shipper, to the receiving staff, to the sterile processing department, then to the OR nurses and finally to the surgeon.

While each person follows certain procedures according to his or her role, safety cannot fully be addressed without managing the web of interrelationships. Cases have arisen where the necessary coordination fell short: devices arrived without clear records of what reprocessing had been done, arrived too near to the scheduled surgery to allow for proper processing or arrived with missing parts, resulting in delays.

To help address these problems, a standard was developed by CSA's Technical Committee on Sterilization. As with similar CSA standards, *CAN/CSA-Z314.22 Management of Loaned, Shared and Leased Medical Devices* was designed not only to deal with the subject of decontamination and sterilization, but to address communication requirements too. In this way, the standard aims to present a unified approach, tying together the necessary professional, material and mechanical elements of shared devices in a health care system.

Accordingly, the standard was developed by a multi-disciplinary group representing nearly all of the professions and manufacturers involved: OR nurses, device manufacturers, hospital facility and biomedical/clinical engineers, reprocessing staff, microbiologists and infection prevention professionals. Rather than replacing essential procedures and guides that already exist, the standard closes potential gaps that may occur between individual roles and responsibilities. By connecting the threads, it acts as a safety net minimizing the spread of infection through the effective management of shared devices.

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PIPELINE

Commissioning of Health Care Facilities Standard now on CD-ROM

In each issue of CSA InHealth we present our Pipeline feature which offers news on recent developments in health care-related standards.

Operating a health care facility is a diverse and complex assignment, an element of which is ensuring the labyrinth of mechanical, electrical and communications systems is properly equipped and maintained.

In September 2005, CSA released a revision of the *Commissioning of Health Care Facilities Standard* (Z318.0-05) and has made it available for the first time on CD-ROM. The previous version of the standard was contained in seven hard-copy volumes, covering the major systems: HVAC, plumbing, fire protection, building automation, and electrical. The new interactive CD-ROM combines all of this material in one place, so users can easily access any of the 250 commissioning check sheets for these systems. The check sheets document each of the necessary system inspections, tests, start-up programs, verifications, performance evaluations, and balancing reports.

The new edition of the standard covers all classes of health care facilities including hospitals, outpatient clinics, long-term care facilities, and medical offices. Its primary users are expected to be independent commissioning agents, who fulfill a role similar to house inspectors in residential real estate. These commissioning agents work on behalf of the health care facility to ensure all mechanical, electrical and communication systems operate as per specifications and that there are no surprises once the health care facility is occupied.

“For example, they’ll check dampers in a heating, ventilation and air conditioning (HVAC) system to ensure they open and close properly,” says George Schidowka, the CSA Project Manager responsible for the standard. “There have been cases where construction is complete and workers have left pieces of two-by-fours sitting in there and the damper can never close or open.”

Although it is designed primarily as an inspection and evaluation tool, Z318.0 is also a useful reference for architects, engineers, contractors, and health care facility administrators in the planning, design, and operation of health care facilities. The standard sets a benchmark for the health care facility engineering and maintenance personnel and can aid them in maintaining system specifications.

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TRENDS

C. difficile outbreak brings infection control into focus

Infection prevention and control is a constant battle in health care facilities, where pathogens can be spread on equipment, clothing, skin, and even the air and water. At one time modern medicine, with powerful antibiotics at its disposal, believed it had gained the advantage; but the evolution of antibiotic-resistant bacteria has turned the tables, and health care professionals are finding themselves facing renewed challenges from nosocomial (hospital-acquired) infections.

When the subject of antibiotic-resistant microorganisms comes up, attention is usually focused on MRSA and VRE (methicillin-resistant *Staphylococcus Aureus* and vancomycin-resistant enterococci), but recent evidence suggests that *C. difficile* (*Clostridium difficile*) can be at least as great a threat as the more commonly known antibiotic-resistant "superbugs." This point was brought home during a recent outbreak of a particularly virulent strain, which appears to have killed well over a thousand patients in Quebec in 2003/2004. It seems there is a stealthy killer in Canadian hospitals, and infection control practitioners are becoming more and more aware of just how dangerous it is.

C. difficile is a bacterial infection that causes illness related to the production and action of toxins in the body. It is the most common cause of hospital-acquired diarrhea, due to overgrowth of the bacteria in the patient's bowel. Patients receiving antibiotics or chemotherapy are at increased risk of being infected because the drugs upset the normal balance of microorganisms in the colon. *C. difficile* can easily spread from person to person because spores are shed in the feces of infected individuals. These spores can survive for a long time on surfaces and can be spread on the hands of health workers who have contact with infected patients or surfaces contaminated with *C. difficile*.

There were more than 7,000 cases of *C. difficile* across Quebec from April 1, 2003 to March 31, 2004. Estimates of the number of people who died from this infection rose dramatically in September 2005, as reported in a Canadian Medical Association Journal (CMAJ) news item on an as-yet unpublished study by Jacques Pepin and associates from the Centre hospitalier universitaire de Sherbrooke (CHUS). Pepin's study estimated that as many as 2,000 people may have died in Quebec in 2003-2004 because of *C. difficile* infection. Earlier estimates had pegged the number of deaths at 1,200.

Although *C. difficile* is endemic in hospitals across the country, the results of the CMAJ study indicate that it is becoming more deadly. "This represents a major change in the epidemiology and pathogenicity of *C. difficile*, which until recently was considered a nuisance pathogen with no measurable impact on mortality," writes Pepin. This position is consistent with a study published in *The Lancet* in 2004 that noted that the proportion of patients who died with *C. difficile*-associated disease within 30 days of diagnosis jumped from about five per cent in 1991-1992 to almost 14 per cent in 2003.

According to a recent report in the *Lancet*, investigators are finding that the bacterium appears to have mutated into a highly contagious and lethal strain – and they don't know why. Dubbed NAP1/027, it produces sixteen times as much toxin A and twenty-three times as much toxin B as do regular strains of *C. difficile*. It causes almost four times the usual number of cases of severe diarrhea in hospitals and can persist in the

body for months despite repeated antibiotic treatments. The report says that this newer, more virulent strain has also shown up in the United States and the United Kingdom. Canadian sources say that Ottawa and Calgary have also experienced periodic outbreaks.

In a post-SARS health care environment, with a heightened awareness of infectious disease, some question how such a strain of *C. difficile* ran rampant through Canadian health care facilities, and what can be done to reduce the likelihood of future outbreaks of *C. difficile* and other infectious diseases.

The consensus seems to be that no single measure will stop pathogens; rather there must be a coordinated effort that looks at all aspects of patient care. Much focus has been placed on the liberal use of broad-spectrum based antibiotics which kill many kinds of bacteria, including natural bacteria in the gut that protects against *C. difficile* infections. But blame has also been placed on aged facilities, underfunding, and inadequate infection prevention and control practices.

The Public Health Agency of Canada (PHAC) publishes infection control guidelines for use by the provinces, territories, and health care organizations. As with any infectious disease, frequent hand washing is one of the best defenses; and while it may seem elementary, this common wisdom is often ignored by doctors and other health care workers. A 2004 study in the *Annals of Internal Medicine* found that only about half of 163 doctors followed hand washing guidelines.

Appropriate cleaning, disinfecting and sterilizing of patient care equipment is also important in limiting the transmission of organisms related to reusable patient care equipment. Decisions concerning the appropriate processes, methods or products are complex, given the many types and compositions of medical devices and the great variety and combination of cleaning, disinfection and sterilization methods available.

In response to the Quebec outbreak, plans were made for heightened surveillance of *C. difficile* at the annual meeting of hospital infection control officers in September 2004. PHAC announced it would conduct a six-month surveillance study in 25 teaching hospitals across Canada to get a better understanding of their infection prevention and control practices for *C. difficile*. Results are pending.

A key lesson for all health care professionals, administrators and government health ministries to learn from the *C. difficile* outbreaks is that taking proactive steps could mitigate the risk such infections can present.

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CSA: Protecting the Health and Safety of Canadians

For more than 40 years, health care professionals, industry and hospitals have relied on the Canadian Standards Association and its expert committees to develop practical, effective solutions to ever-changing health care issues and needs.

In health care, CSA's mission is two-fold: to raise awareness about the importance of standards in the lives of Canadians while remaining at the forefront of health care standards development, both domestically and abroad.

Here at home, under the Canadian national standards system, CSA has responsibility for developing national standards in many areas of health care.

These standards protect patients and workers in the health care system by setting minimum requirements to enhance the safety of medical devices, buildings, systems, and management of professional practices. They also contribute to increasing efficiency in health care facilities and systems, enabling the system to save money without compromising patient care.

From the 1960s, when CSA published a standard that promoted safe practices for hospital operating rooms in the use of flammable anesthetics, to the 2004 publication of the *Blood and Blood Components* standard which works to maintain and enhance the quality and safety of Canada's blood system, CSA's work in health and safety standards reflects the incredible advances made in health care within a generation. Today CSA continues its work in developing and maintaining health care standards by bringing together health care sector stakeholders to address standards issues and needs in key areas, including:

- Blood and Transplantation
- Health Care Facilities
- Health Informatics
- Labels and Packaging
- Medical Devices
- Medical Laboratories
- Sterilization

On the global front, CSA participates in international forums through the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC), and other organizations that create standards aimed at promoting safety and well-being. Where appropriate, CSA Technical Committees adapt international requirements to the Canadian context, or develop new requirements to meet unique Canadian needs.

CSA also offers advisory services in a number of technical areas, including health care. Among the services offered are

- Research and analysis;
- Needs assessment;
- Stakeholder consultation;
- Strategy development and implementation.

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Foreground, left to right:
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Boehmer, Nicki Islic

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Mike Dodd, Rita Mezei (seated),
George Schidowka, Diane Palm,
Randall Boyle (seated),
Kim Emmerson

About Us... the CSA Health Team

In health care, clear and effective standards in areas such as infection control, injury prevention, health informatics, and many others, make a genuine difference in people's lives.

Members of our CSA health team work with committees representing government, industry, health care providers, independent experts, consumers, and others to provide national, regional and international leadership within the field of health care.

We encourage you to contact us to learn more about the work we do and how we can work with you to enhance the safe and effective application of health care standards for the benefit of patients and health care staff.



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