



**Alberta Health
and Alberta Health Services
Infection Prevention and
Control in Alberta's Hospitals**

October 2017

About This Audit

Infection prevention and control (IPC) is critical for managing the threat of infections acquired in hospitals. The continual increase in micro-organisms resistant to antibiotic¹ medications is a major threat to the health of Albertans. However, effective infection prevention and control strategies and judicious use of antibiotics may help slow the development of new forms of antibiotic-resistant organisms and may even help control the spread of infections. Practices such as proper handwashing and cleaning of medical devices appear simple, yet they are highly effective for preventing the spread of infections.

The Department of Health has overall oversight of IPC, while Alberta Health Services (AHS) is responsible for developing and implementing appropriate processes and systems to manage the risk of infections in hospitals.

In 2013² we made recommendations on the following:

- oversight of IPC (department)
- cleaning, disinfecting and sterilizing medical devices (AHS)
- prevention and control of antibiotic-resistant organisms (AHS)
- hand hygiene practices (AHS)

Audit Objective and Scope

Our objective in this follow-up audit was to determine:

- whether the department:
 - has developed clear implementation responsibilities for each partner identified under the IPC strategy
 - has improved systems to monitor its progress in implementing the strategy
 - publicly reports on the success of the strategy
- whether AHS has adequate systems to demonstrate its success in managing health risk in hospitals through the following:
 - cleaning, disinfecting and sterilizing multiple-use medical devices
 - managing antibiotic-resistant organisms
 - ensuring compliance with hand hygiene practices

Our work was conducted under the authority of the *Auditor General Act* and in accordance with the standards for assurance engagements set out in the CPA Canada Handbook—Assurance.

Effective infection prevention and control strategies and judicious use of antibiotics may help slow the development of new forms of antibiotic-resistant organisms.

¹ Although the term “antibiotics” is commonly used, its technical meaning is relatively narrow. The medical literature uses the general term “antimicrobials” to refer to classes of medications effective against bacteria (antibacterials), viruses (antivirals), fungi (antifungals) and parasites (antiparasitics). The term “antibiotics” is most commonly used when referring to antibacterial medications. We did not limit our audit work to any particular micro-organism category. However, because the general public is more familiar with the term “antibiotic”, we will use it in this report.

² *Report of the Auditor General of Alberta—October 2013*, pages 17–48.

What We Examined

In performing the audit, we completed the following:

- interviews with management and frontline healthcare workers
- a review of applicable internal and publicly available documentation, data and reports
- visits to a sample of AHS hospitals to perform follow-up audit procedures, which included observation, interviews, examination of IPC documentation, and a review of samples of clinical records

We conducted our field work from September to December 2016. We substantially completed our audit on June 23, 2017.

Conclusion

We conclude that the department and AHS have implemented our recommendations on infection prevention and control at Alberta Hospitals. We saw meaningful improvement in key areas. The department has strengthened its process to oversee implementation of the Infection Prevention and Control Strategy, including better engagement of AHS and professional regulatory bodies. AHS has strengthened its oversight of hand hygiene practices at hospitals, as well as hospital activities related to cleaning, disinfecting and sterilizing medical devices. AHS has also strengthened its systems for managing risk associated with antibiotic-resistant organisms in hospitals.

Why This Conclusion Matters to Albertans

Proper hand hygiene and cleaning of medical devices are vital for protecting patients and healthcare workers. Timely screening and treatment of patients with antibiotic-resistant organisms is key for containing the spread of these micro-organisms. Judicious use of antibiotics is critical for preventing microbes from developing resistance to these medications.

Findings

Oversight and accountability for infection prevention and control—**recommendation implemented**

Context

The department has oversight of the infection prevention and control strategy. Its main partners in the strategy are AHS and three professional colleges.³ In our October 2013 report, we recommended that the department establish implementation responsibilities for each partner and improve its systems to monitor and publicly report on progress.

Our follow-up audit findings

The department has implemented this recommendation by documenting responsibilities for itself and each of its partners under the IPC strategy. The department also developed a monitoring process to check compliance with the strategy and has begun publicly reporting on the status of the strategy.

³ The College and Association of Registered Nurses of Alberta, the College of Physicians and Surgeons of Alberta, and the Alberta Dental Association and College.

Proper hand hygiene and cleaning of medical devices are vital for protecting patients and healthcare workers.

We reviewed the implementation plan of the department and all its partners and noted that the responsibilities are aligned with the IPC strategy.

Periodic provincial IPC leadership meetings are held. The department and all the partners discuss and monitor progress on their implementation of the IPC strategy. The department's public website now reports on the implementation of the IPC strategy.

Hand hygiene practices—recommendation implemented

Context

When done correctly, hand hygiene is the single most effective way to prevent the spread of communicable diseases and infections. In our October 2013 report we recommended that AHS improve its systems for hand hygiene by:

- clarifying responsibility and accountability for improving hand hygiene compliance across hospitals
- using available data to identify hospital units with poor compliance and take appropriate remedial action
- strengthening the infection prevention and control training provided to hospital healthcare workers

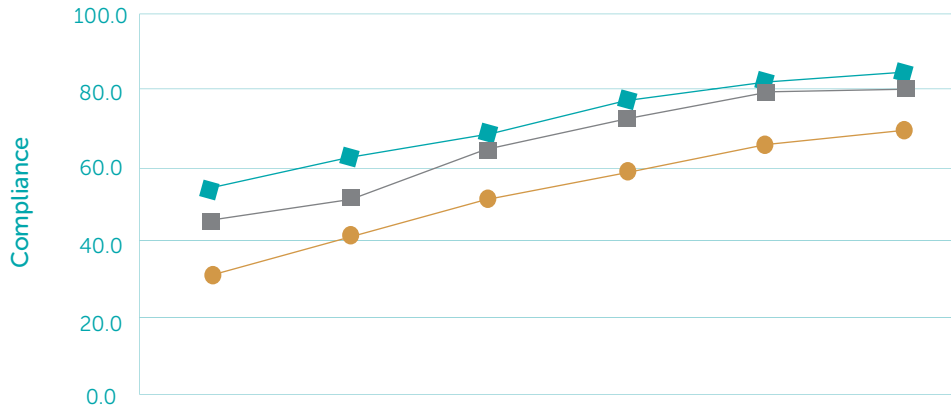
Our follow-up audit findings

AHS has implemented this recommendation by establishing oversight of hand hygiene results at the provincial, zone and hospital levels.

We visited a sample of acute care facilities and noted the following:

- AHS has a process to systematically identify units and program areas with lower hand hygiene rates and take action to improve compliance.
- AHS has strengthened its hand hygiene application system, which allows for the compilation and analysis of hand hygiene compliance data to establish trends by hospital, clinical program and individual unit. Frontline staff receive their hand hygiene data and can compare their unit to other areas within the hospital.
- Hand hygiene compliance rates are posted in individual units for staff, patients and visitors to see.
- AHS has improved the delivery of IPC education and training to healthcare workers. In particular, AHS has established an IPC module within its annual continuing education requirements for frontline clinical staff (e.g., nurses). AHS's IPC function tracks and reports completion of the module.
- Hand hygiene compliance rates among physicians have improved but still remain below those of nurses and other healthcare staff.
- There has been an overall improvement in awareness of and compliance with hand hygiene, as shown in the chart on the following page.

Hand Hygiene Compliance by Healthcare Provider Group



Hand hygiene compliance rates among physicians have improved but still remain below those of nurses and other healthcare staff.

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
◆ Nurse	53.5	63.0	68.6	77.6	81.4	84.4
● Physician	31.3	42.3	51.4	58.9	65.7	70.2
■ Other	45.7	51.5	64.0	72.7	79.9	80.4

Source: Alberta Health Services

Cleaning, disinfecting and sterilizing medical devices—**recommendation implemented**

Context

Medical device reprocessing (MDR) is the cleaning, disinfecting and sterilizing of reusable medical devices. In our October 2013 report, we found that AHS did not have adequate systems to coordinate and oversee the work of individual reprocessing sites. We recommended that AHS establish oversight, accountability for results and consistent processes for medical device reprocessing across the province.

Our follow-up audit findings

AHS has implemented this recommendation by developing oversight of MDR results at the provincial and zone levels. During our visits to a sample of hospitals, we noted that AHS has developed a process to standardize MDR policies and procedures across all sites. AHS has also continued its practice of performing province-wide MDR reviews. Our examination of MDR review records has shown that there has been substantial improvement in the time taken to close deficiencies identified during the MDR reviews. All MDR workers in the sites we visited are now required to obtain mandatory certification. An effective process is in place to track the certification status of MDR employees.

Prevention and control of antibiotic-resistant organisms— recommendation implemented

Context

From the latter part of the 20th century onwards, antibiotic-resistant⁴ organisms (AROs) have become a serious threat to human health. Alberta is not facing this threat alone. It is an international problem. Each jurisdiction will have to do its own part to solve it.

A key factor in the rise of AROs has been the overuse of antibiotic medications. Antibiotics are among the most commonly prescribed medications in acute care settings, accounting for about 15 per cent of drug expenditures at some hospitals in Alberta.⁵ While antibiotics are good at killing most bacteria, some micro-organisms tend to develop resistance with repeated exposure to medication. In effect, we have experienced a race in the last few decades between medical science and microbes, whose ability to adapt has rendered many antibiotics ineffective.

To slow down this adaptation in microbes, antibiotics should be prescribed only when needed, and medications would ideally be matched to the specific micro-organism.

Management of risk associated with antibiotic-resistant organisms (AROs) involves managing the spread of AROs in hospitals and ensuring, through good stewardship, that antibiotics are used only when appropriate. In our October 2013 report we recommended that Alberta Health Services improve its systems to manage risk posed by antibiotic-resistant organisms at hospitals by:

- developing an evidence-informed approach for evaluating and aligning antibiotic-resistant organism policies and procedures in hospitals
- developing an approach to provide antibiotic stewardship in hospitals across the province

Our follow-up audit findings

AHS has implemented this recommendation by developing an evidence-informed approach for identifying and managing patients with AROs, standardizing processes for cleaning shared patient equipment, and launching a formal antibiotic stewardship program in hospitals.

ARO screening

In Alberta, ARO screening involves two steps that should be taken when a patient is admitted to hospital:

- ask the patient a set of questions to assess their risk of ARO infection
- test the patient if they show a high risk

We found that AHS used an evidence-based approach to standardize ARO screening practices at hospitals across the province. Although findings from our review of clinical records show that compliance with the ARO screening protocol has improved compared to 2013, it remains a challenge. In response to this challenge, AHS started to periodically sample hospital nursing units and review patient charts for compliance with ARO screening protocols. The results of these reviews are discussed with managers of the corresponding program areas. Compliance statistics are tracked and reported quarterly.

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5 Internal AHS documentation.

Shared patient equipment

AHS has developed a standard process for cleaning shared patient equipment (e.g., wheel chairs, IV pumps) in hospitals. At the time of this follow-up audit, we observed that AHS had deployed the new process at major hospitals in Calgary and Edmonton (over 60 per cent of all hospital beds in the province), and was getting ready to deploy the process at other hospitals across the province.

Antibiotic stewardship

AHS has launched an antibiotic stewardship program in hospitals and created formal provincial and zonal Antimicrobial Stewardship Committee structures. A number of antibiotic stewardship initiatives have been started across the province. Many of these initiatives are driven from the front line, with provincial and zonal committees providing coordination and support.

We highlight some examples of antibiotic stewardship initiatives:

- AHS collaborated with other entities in the province to introduce mobile apps for prescribers that offer easier access to lab data on what antibiotics are most effective for what microbes in different hospital settings across the province. AHS is working to increase the uptake of this data by individual prescribers.
- At a number of hospitals, AHS has put in place a process to restrict prescription of some antibiotics. The process prompts physicians to verify that the right symptoms are present, and suggests other drugs that may be more suitable for the situation.
- At a number of hospitals, AHS has started to deploy a peer review process⁶ where another physician, or a specially trained pharmacist, reviews a sample of current patient cases and provides their suggestions directly to the treating physician.
- AHS has started to systematically analyze and report data on hospital antibiotic use at the zone and site levels. Some of the initiatives mentioned above are beginning to show promising results, with some hospitals reporting improvements in clinical indicators and cost savings from reduced use of antibiotics in hospitals.

AHS has implemented our recommendation by introducing a formal antibiotic stewardship program in hospitals. Although the program is a work in progress, it is important to recognize that antibiotic use in hospitals is part of a broader antibiotic stewardship effort that includes antibiotics prescribed to patients outside hospitals, as well as antibiotics used in animals. Further progress would likely require a coordinated effort that is outside the scope of our 2013 audit.

⁶ In clinical literature, this process is often referred to as prospective audit and feedback.