

Infection Prevention and Control at Long-term-care Homes

Background

Long-term-care homes in Ontario provide care, services, and accommodations to individuals unable to live independently and requiring the availability of 24-hour nursing care and supervision in a secure setting. There are more than 600 long-term-care homes in Ontario caring for about 75,000 residents, most of whom are over 65 years old. The long-term-care homes essentially become “home” for most of their residents. All homes fall within one of four categories: for-profit and not-for-profit nursing homes, charitable homes, and municipal homes for the aged, as illustrated in Figure 1.

There is a high risk of infectious diseases spreading among residents of long-term-care homes (hereafter referred to as “residents” and “homes”) because they often share rooms with other resi-

dents, and generally eat and participate in activities together. As well, residents generally have a higher risk than the population as a whole of acquiring an infection because they are older and more vulnerable to illness. Further, residents who are cognitively impaired may not always mention to staff their symptoms when they first appear, and may wander, both of which increase the opportunities for infectious diseases to spread.

When a resident acquires an infection while in a home, it is considered a health-care-associated infection (HAI), also called a “nosocomial infection.” HAIs have a significant impact on both residents and the province’s health-care system. For residents, the impact of such infections can range in severity from not feeling well for a few days to requiring antibiotics or even being admitted to hospital. In severe cases, HAIs can cause death. Although there is no information available on the total number of HAIs that occur in Ontario’s homes each year, studies indicate that infection is one of the most common reasons for the hospitalization of residents. In fact, one U.S. study indicated that infection was the main medical reason for about 27% of all hospital admissions of residents.

Some HAIs are infectious diseases that can spread throughout a home. Figure 2 provides some background information on four serious HAIs: *Clostridium difficile* (*C. difficile*), febrile respiratory illness (FRI), methicillin-resistant *Staphylococcus aureus*

Figure 1: Ontario’s Long-term-care Homes by Type, November 2008

Source of data: Ministry of Health and Long-Term Care

Home type	# of Homes	# of Beds
nursing home (for profit)	353	40,100
nursing home (not-for-profit)	95	11,200
charitable (not-for-profit)	54	7,500
municipal (not-for-profit)	103	16,400
Total	605	75,200

Figure 2: Four Infectious Organisms/Diseases Acquired in Long-term-care Homes

Prepared by the Office of the Auditor General of Ontario

Cause	How Resident Initially Infected	Examples of Possible Effects	Transmission	Possible Treatments	Other Concerns
<i>Clostridium difficile</i> (<i>C. difficile</i>) bacteria	<ul style="list-style-type: none"> resident takes antibiotics that reduce the normal levels of good bacteria in intestines and colon this allows <i>C. difficile</i> bacteria to grow and produce toxins 	<ul style="list-style-type: none"> diarrhea more serious intestinal conditions (e.g., colitis) that may require surgery death in extreme cases 	<ul style="list-style-type: none"> contact¹ 	<ul style="list-style-type: none"> mild cases: may not require treatment severe cases: antibiotics 	<ul style="list-style-type: none"> can lead to outbreaks because many people in long-term-care homes take antibiotics <i>C. difficile</i> spores are difficult to destroy because they are resistant to a number of chemicals alcohol-based hand cleansers may not be as effective as soap and water
Febrile Respiratory Illness (FRI) (e.g., colds, influenza, pneumonia)	<ul style="list-style-type: none"> person coughs or sneezes droplets containing disease-causing organisms, which contact resident's mouth, nose, or eyes resident touches droplets and then touches mouth, nose, or eyes 	<ul style="list-style-type: none"> fever greater than 38° C new or worsening cough shortness of breath death in extreme cases 	<ul style="list-style-type: none"> "droplet"² contact¹ 	<ul style="list-style-type: none"> antibiotics when applicable immunization prior to exposure to certain FRIs (as a preventative measure) 	<ul style="list-style-type: none"> disease-causing organisms in droplets can live on surfaces for hours but are easy to kill with disinfectants and good hand hygiene
Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)	<ul style="list-style-type: none"> <i>Staphylococcus aureus</i> (<i>S. aureus</i>) bacteria living on the skin, nose, or in the lower intestine cause an infection and resist a common class of antibiotics (many people who carry the bacteria do not have symptoms) 	<ul style="list-style-type: none"> skin infections that can quickly turn into deep abscesses that require surgical draining infections in bones, joints, surgical wounds, the bloodstream, heart valves, and the lungs death in extreme cases 	<ul style="list-style-type: none"> contact¹ 	<ul style="list-style-type: none"> mild cases: may not require treatment severe cases: other antibiotics 	<ul style="list-style-type: none"> although infections caused by MRSA are not more serious than infections caused by <i>S. aureus</i> bacteria, there are fewer antibiotics available to treat MRSA-caused infections bacteria can live on surfaces for months
Vancomycin-resistant enterococci (VRE)	<ul style="list-style-type: none"> enterococci bacteria in lower intestine and/or other areas (e.g., urine, skin) cause an infection and resist Vancomycin antibiotic (many people who carry the bacteria do not have symptoms) 	<ul style="list-style-type: none"> urinary tract infection or skin infection death in extreme cases 	<ul style="list-style-type: none"> contact¹ 	<ul style="list-style-type: none"> other antibiotics 	<ul style="list-style-type: none"> bacteria can live on surfaces for 5 days to weeks and on hands for several hours bacteria are relatively easy to kill with disinfectants (provided the bacteria are in contact with the disinfectant for a long enough period) and good hand hygiene

1. Contact can be from person-to-person touching and touching of contaminated surfaces on which there are spores, droplets, or bacteria. A person who acquires the infection through contact will not necessarily become ill (e.g., a person may become infected with *C. difficile* bacteria from a resident but have enough good bacteria to fight the *C. difficile* bacteria).

2. "Droplet" transmission involves the infected person coughing or sneezing and causing droplets to come into direct contact with another person.

(MRSA), and vancomycin-resistant enterococci (VRE). Each of them can be transmitted through contact—that is, by touching an infected person or a surface on which the bacteria live. Therefore, hand-washing and cleaning and disinfecting surfaces that residents and staff come into contact with are critical to preventing the spread of these infections. The incidence of MRSA has approximately doubled and that of VRE more than tripled between 1999 and 2006, according to data reported by the Canadian Nosocomial Infection Surveillance Program. Although most of these infections were acquired in hospitals (insofar as the point of acquisition was known), 8% of cases of MRSA and 3% of cases of VRE were acquired in long-term-care homes. Increases in antibiotic-resistant organisms are of concern because they suggest that antibiotics are becoming increasingly ineffective against certain diseases.

In addition to HAIs that are infectious diseases, there are other infections to which residents are susceptible, including skin infections following skin breakdowns, such as infected bed sores, and urinary tract infections. Figure 3 provides some background on these infections.

In the 2008/09 fiscal year, the Ministry of Health and Long-Term Care (Ministry), through the Local Health Integration Networks, provided funding to long-term-care homes of \$2.8 billion. This funding only covers a portion of the total costs; therefore, residents also pay between about \$1,600 and \$2,200 a month for their accommodations, depending on whether they occupy a basic, semi-private, or private room. (Private “seniors’ residences” such as retirement homes may charge more, and do not receive government funding.) Because infection-prevention-and-control activities should be thoroughly integrated throughout the homes’ operations, it can be difficult to identify the specific costs of infection prevention and control. None of the homes we visited separately tracked the costs of preventing and controlling infections.

Audit Objective and Scope

The objective of our audit was to assess whether selected long-term-care homes followed effective policies and procedures for the prevention and control of infections.

Our audit work was conducted at three long-term-care homes of different types and sizes that provide services to a variety of communities: Extericare York (a 288-bed for-profit nursing home in Sudbury); Nisbet Lodge (a 103-bed charitable home in Toronto); and Regency Manor (a 60-bed for-profit nursing home in Port Hope). All three homes comply with the structural requirements the Ministry set in 1972 for such criteria as size of rooms and number of beds per room. Our work excluded municipally run long-term-care homes because the *Auditor General Act* does not apply to grants to municipalities (other than permitting the Auditor General to examine a municipality’s accounting records to determine whether a grant was spent for the purposes intended).

In conducting our audit, we reviewed relevant files and administrative policies and procedures, and met with appropriate staff of long-term-care homes and the Ministry. We obtained the perspective of the Ontario Long-Term Care Association and the Ontario Association of Non-Profit Homes and Services for Seniors, which between them represent the majority of long-term-care homes in Ontario. We discussed the prevention and control of infections in long-term-care homes with the Regional Infection Control Networks (RICNs), the Local Health Integration Networks (LHINs), and the Local Public Health Units associated with the three homes we visited. We reviewed relevant research from other jurisdictions, including best practices for the prevention and control of HAIs, such as those issued by the Society for Healthcare Epidemiology of America and the Association for Professionals in Infection Control and Epidemiology, Inc. In addition, we engaged on an advisory basis two independent consultants, who

Figure 3: Two Types of Infections for Which Residents of Long-term-care Homes Are at Risk

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Type	Description	Selected Risk Factors	Examples of Possible Effects	Selected Best Practices for Prevention
skin infections following skin breakdowns/pressure ulcers (such as infected bed sores)	<ul style="list-style-type: none"> • an area of skin breaks down or develops an open wound as a result of, for example: <ul style="list-style-type: none"> • prolonged pressure • friction • bacteria residing on the skin infect the open wound 	<ul style="list-style-type: none"> • being bedridden • age-related deterioration of skin condition 	<ul style="list-style-type: none"> • pain, pus, and redness at infected site • sepsis (infection spreads to blood, with symptoms including fever, chills, low blood pressure, and changes in mental status) • death in extreme cases 	<ul style="list-style-type: none"> • repositioning to minimize ongoing pressure to any one area • assessing skin (upon admission and then quarterly) • good nutrition to minimize age-related deterioration of skin condition
urinary tract infections	<ul style="list-style-type: none"> • bacteria originating from the digestive tract enter the urethra (the tube that carries urine from the bladder to outside the body), multiply, and infect the urinary tract (including the kidneys and bladder) 	<ul style="list-style-type: none"> • being incontinent • having a catheter inserted to drain urine from the bladder 	<ul style="list-style-type: none"> • strong urge to urinate • sharp pain or burning sensation when urinating • sepsis (infection spreads to blood, with symptoms including fever, chills, low blood pressure, and changes in mental status) • death in extreme cases 	<ul style="list-style-type: none"> • minimizing catheter use • using catheters appropriately

have expert knowledge of infection prevention and control in long-term-care homes, to assist us.

We examined the Ministry's inspection reports and other reports as they related to infection prevention and control in the homes we visited, but did not review the Ministry's inspection process in depth because the Office of the Ombudsman of Ontario was conducting a review of this process at the time of our audit and the Ministry was redesigning its inspection process.

We compared the infection-prevention-and-control processes in place at the homes we visited against the best practices for infection prevention and control for long-term-care homes developed by the Provincial Infectious Diseases Advisory Committee (PIDAC). The best-practice documents that PIDAC has produced reflect recommendations made by various organizations, including the Public Health Agency of Canada and the College of Physicians and Surgeons of Ontario, as well as other best practices. In addition, we discussed the management of infection prevention and control

in long-term-care homes directly with members of PIDAC and also considered legislative and ministry policy requirements.

Our audit focused on *C. difficile*, FRI, MRSA, VRE, and the prevention of urinary tract infections and skin breakdowns (such as bed sores) that can become infected. We selected these HAIs primarily due to their potential negative impact on resident health. We specifically selected MRSA and VRE which, because they are antibiotic-resistant organisms, may be more difficult to treat when they cause infections (because few antibiotics are available to treat them), and have significantly increased in prevalence in recent years. In addition, we looked at *C. difficile* because of the reported widespread use of antibiotics in long-term-care homes, which increases the chance of developing *C. difficile*.

We did not rely on the Ministry's internal audit service team to reduce the extent of our audit work because it had not recently conducted any audit work on infection prevention and control in long-term-care homes. None of the homes we visited had

an internal audit function, although all the homes conducted some procedures, which we reviewed, to help verify whether selected prevention-and-control processes were followed.

Summary

An estimated 30% to 50% of health-care-associated infections (HAIs) are preventable in acute-care institutions that have effective infection-prevention-and-control processes in place. Although little information exists concerning HAIs in long-term-care homes, it should be recognized that homes' main challenges in preventing and controlling infections tend to be somewhat different than those of hospitals. For instance, homes have a very limited ability to isolate residents with an infectious disease, cognitively impaired residents tend to wander, and staff often have limited HAI training. To address these challenges, all three homes we visited had a number of formal and informal processes in place to prevent and control HAIs. For example, most residents at the homes were immunized annually against influenza, the homes had established specific cleaning schedules for residents' rooms, and the homes collected and reviewed information on the cases of certain infections. However, as the following observations indicate, there is room for improvement in a number of areas:

- Although the Ministry of Health and Long-Term Care (Ministry) has introduced a number of initiatives to help prevent and control infectious diseases in long-term-care homes, it does not have information on the total number of cases of most HAIs in long-term-care homes. The information collected at the homes we visited was generally not comparable because the homes defined and counted HAIs in different ways.
- Although the three homes all had policies to screen new residents for febrile respiratory illnesses (FRIs), such as influenza, documentation at two of the homes indicated that just 60% to 80% of new residents sampled were screened. At the third home, there was no evidence of formal screening for FRIs.
- Each home had a policy to test new residents for tuberculosis (TB) within 14 days of admission, as required by legislation. One home tested all new residents in our sample, but the other two homes tested only 70% and 80% of new residents in our sample, respectively. Further, when testing was performed, in some cases it did not take place until 60 to 125 days after a resident's admission to the home.
- Hand hygiene is the most important activity for controlling the spread of infectious diseases. Each home recently conducted its first review of staff compliance with certain hand-hygiene policies. (*C. difficile*, MRSA, and VRE are most commonly spread via the hands of health-care workers.)
- Homes generally did not have unoccupied rooms to move infectious residents into, and indicated that it is disruptive to move other residents (some of whom may have paid a premium for a private or semi-private room) out of their rooms with their personal belongings. According to Ontario's Provincial Infectious Diseases Advisory Committee (PIDAC), residents with an FRI who share a room should have the curtain drawn around their bed. However, all three homes indicated they would only pull a curtain around a resident's bed if the resident requested it.
- Although two of the homes had policies to clean all touched surfaces in residents' rooms daily, in accordance with PIDAC's recommendations, the third home's policy was unclear; but the home indicated that all touched surfaces in residents' rooms are cleaned daily. Although PIDAC recommends cleaning the rooms of residents who have *C. difficile* twice a day, none of the homes did this.
- None of the homes had processes in place, such as sign-off sheets, to record whether

residents unable to reposition themselves were repositioned every two hours in accordance with the home's policies to prevent skin breakdowns (such as bed sores).

- In the 2008/09 fiscal year, 81 *C. difficile* outbreaks in homes were reported to the Ministry. We noted that the judicious use of antibiotics has been shown to reduce the incidence of *C. difficile*. However, although all the homes' contracted pharmacies provided at least some information on antibiotic use, none of the homes had a formulary that lists the antibiotics physicians can prescribe, as recommended by PIDAC.
- Unlike hospitals, long-term-care homes are not required to report publicly on certain patient-safety indicators, such as health-care-acquired cases of *C. difficile*, MRSA and VRE, as well as hand-hygiene compliance among health-care workers. One of the homes we visited posted certain infection rates publicly, but the other two homes did not.
- All three homes had designated an Infection Prevention and Control Professional (ICP), in accordance with ministry requirements, but none of the ICPs had specific training in infection prevention and control as recommended by PIDAC, and they were all performing this role in addition to various other functions.

We would like to acknowledge the good cooperation we received from the long-term-care homes we visited.

We sent this report to the homes we visited and the Ministry, and invited them to provide an overall response. To be succinct and avoid repetition, we summarized the overall responses we received from the homes below, followed by the Ministry's overall response. We also summarized the homes' responses to specific recommendations following each recommendation and included the Ministry's responses, if applicable.

OVERALL MINISTRY RESPONSE

The health, safety, and well-being of residents of Ontario's long-term-care homes are of paramount importance to the Ministry. In considering any aspect of care provided in these homes, it is important to note that they are primarily the "home" of their residents. The Ministry requires homes to comply with legislation and regulations as well as standards and criteria set out in policy and service agreements. Homes are currently required to have an infection-prevention-and-control program, which includes ongoing surveillance to determine the presence of infections and the provision of training to all staff. The Ministry has sent a letter to all homes reminding them of their obligation to meet these standards.

To improve care for residents, the new *Long-Term Care Homes Act, 2007*, which will be proclaimed into force when its regulations are finalized, requires that all homes have an infection-prevention-and-control program. Draft regulations released for public consultation in May 2009 include provisions on various infection-prevention-and-control measures. These regulations enhance current requirements and are consistent with certain key recommendations made by the Provincial Infectious Diseases Advisory Committee (PIDAC) that are relevant to long-term-care homes. The Ministry encourages homes to implement best practices recommended by PIDAC to the extent they are able. During winter 2010, the Ministry will engage the Regional Infection Control Networks, homes, and other stakeholders in discussions on how best to meet the recommendations in PIDAC's August 2009 best-practice document on *Routine Practices and Additional Precautions* in all health-care settings.

In consultation with its sector partners and stakeholders, the Ministry is also implementing a number of initiatives, including a Pressure Ulcer Awareness project, the adaption of the

“Just Clean Your Hands” program for use in long-term-care homes, and a computerized care-management system that will help health professionals in homes assess and monitor the care needs of residents. As well, the Ministry assembled a joint Task Force on Medication Management that examined issues related to medication-management safety in long-term-care homes and their impact on the quality of care and life of residents.

SUMMARY OF LONG-TERM-CARE HOMES' OVERALL RESPONSES

Overall, the homes generally agreed with our recommendations but expressed concerns in some areas that limited financial and human resources may affect their implementation. One home highlighted that its ability to implement the recommendations is limited by its role in the health-care system because, unlike a hospital, it provides a home for its residents to live in and therefore has unique infection-prevention-and-control challenges.

Detailed Audit Observations

ROLES AND RESPONSIBILITIES FOR INFECTION PREVENTION AND CONTROL

Long-term-care homes are licensed or approved by the Ministry of Health and Long-Term Care (Ministry) under three different laws: the *Nursing Homes Act*, the *Charitable Institutions Act*, and the *Homes for the Aged and Rest Homes Act*. These three acts do not have identical requirements regarding infection prevention and control, but the ministry policies set out in the *Long-Term Care Homes Program Manual* apply to all types of homes. All three acts and the manual will be replaced by the *Long-Term Care Homes Act, 2007*, which received royal assent in June 2007 and will be proclaimed into force when its regulations are finalized.

The Ministry is responsible for setting standards of care and conducting inspections of long-term-care homes. The Ministry conducts annual unannounced inspections of all homes to monitor compliance with legislation and ministry policies, among other things. This includes monitoring certain aspects of infection prevention and control. The number of unmet criteria noted during the inspection is publicly reported on the Ministry's website.

Homes are responsible to adopt, follow, and monitor effective infection-prevention-and-control policies and procedures. Physicians and nurses working in the homes have professional responsibilities related to infection prevention and control, as set out in standards and guidelines published by their respective regulatory colleges. Further, other home staff, including personal support workers and cleaning staff, and residents themselves, their families, and other visitors, all play a role in preventing and controlling the spread of infections in homes. So, too, do other organizations, including Regional Infection Control Networks and local public health units, as shown in Figure 4.

INITIATIVES AND BEST PRACTICES FOR PREVENTING AND CONTROLLING INFECTIONS ACQUIRED IN LONG-TERM-CARE HOMES

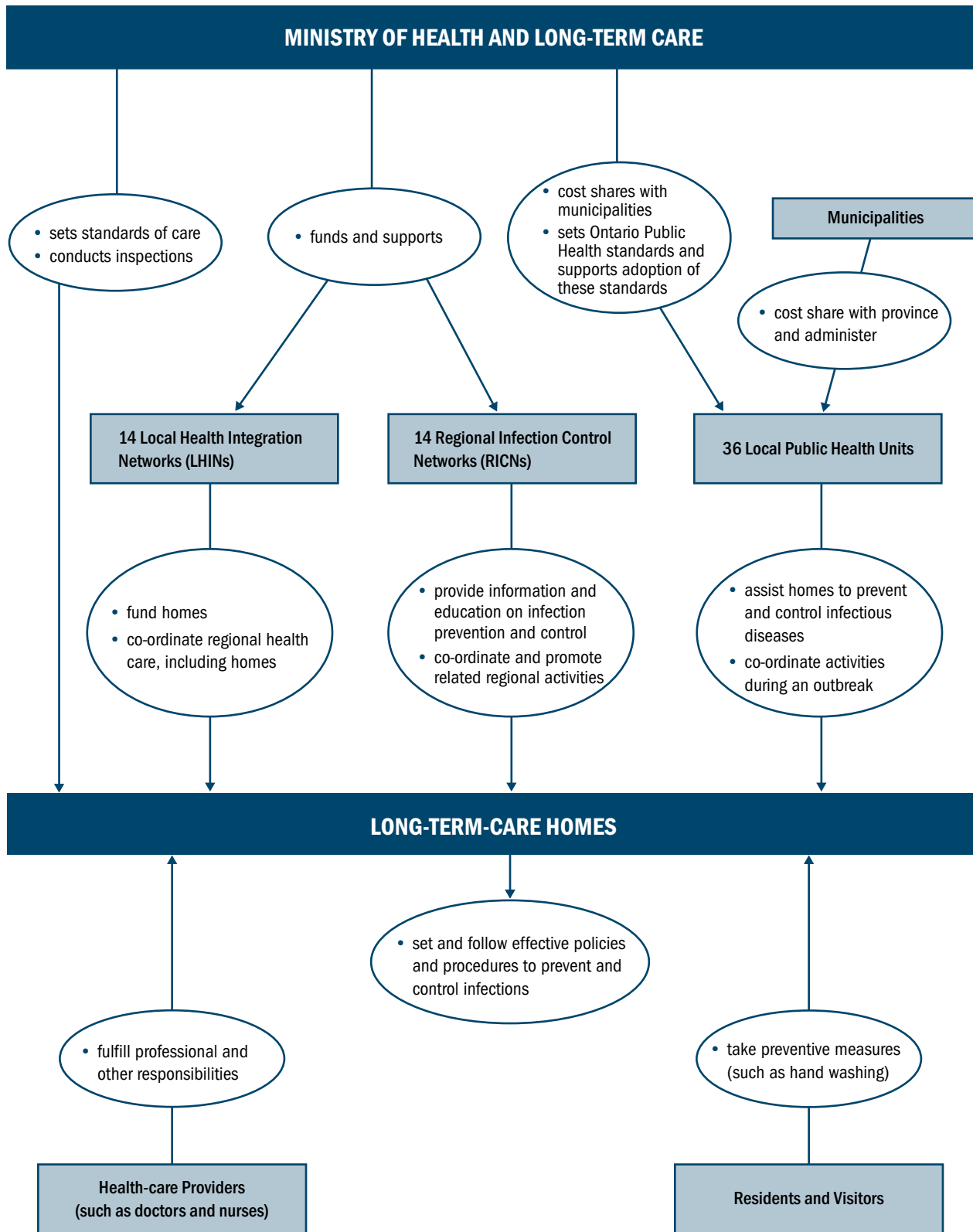
Ministry Initiatives

A number of initiatives for preventing and controlling infections arose from the outbreak of severe acute respiratory syndrome (SARS) in Ontario and other parts of the world in 2003. Key among these were the Ministry's establishment of a Provincial Infectious Diseases Advisory Committee (PIDAC) and Regional Infection Control Networks (RICNs).

PIDAC was established as part of Operation Health Protection, a three-year plan that the Ministry issued to revitalize the public-health system in Ontario, following recommendations from reports written in response to SARS. PIDAC is a multi-disciplinary scientific body that provides evidence-based advice regarding multiple aspects

Figure 4: Selected Key Roles and Responsibilities for Infection Prevention and Control in Long-term-care Homes

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of infectious-disease identification, prevention, and control to Ontario’s Chief Medical Officer of Health. PIDAC’s work on preventing and controlling infections includes:

- issuing a number of best-practice documents that incorporate applicable guidelines and recommendations from entities such as the Public Health Agency of Canada and the College of Physicians and Surgeons of Ontario, as well as recommendations from medical literature (see the Appendix for a list of such documents); and
- in conjunction with the Ministry, developing educational material to enhance infection-control training for front-line staff (see Core Competencies Projects in the Appendix for examples).

Fourteen RICNs have been established throughout Ontario (one in each LHIN), one of which was still in the start-up phase at the time of our audit. The RICNs are to co-ordinate infection-prevention-and-control activities and promote standardization in health-care facilities across Ontario. In 2008, the RICNs issued the results of a province-wide survey of different health-care settings, including long-term-care homes, conducted to identify and evaluate infection-control resources. As well, a number of the RICNs have undertaken various initiatives pertaining to infection prevention and control in homes, including hosting educational sessions and developing and disseminating resource material.

At the time of our audit, the Ministry was in the process of adapting the program materials for its “Just Clean Your Hands” Hand Hygiene Improve-

ment Program for use in homes (see the Appendix for details). It was also providing training and other support for “Stop! Clean Your Hands,” a collaborative effort between the Canadian Patient Safety Institute, the Community and Hospital Infection Control Association—Canada, Accreditation Canada, and the Public Health Agency of Canada.

As well, at the time of our audit, the Ministry was preparing for the new *Long-Term Care Homes Act, 2007*, which is to come into force once its regulations are finalized. The Ministry told us that, as part of the development of these regulations, it is redesigning its inspection processes for long-term-care homes to be more risk-based and will include several risk indicators related to infection control, such as the prevalence of pneumonia and urinary tract infections.

Best Practices

Although there is minimal data available concerning HAIs in long-term-care homes, PIDAC has noted that an estimated 30% to 50% of health-care-associated infections in acute-care facilities, such as hospitals, are preventable. Some of PIDAC’s key best practices, as outlined in the documents listed in the Appendix, are shown in Figure 5. PIDAC has also stated that an infection-prevention-and-control program that is effective in preventing health-care-associated infections can substantially reduce health-care costs. More importantly, such a program can also substantially reduce the morbidity (disease) and mortality (death) associated with these infections.

Figure 5: Selected Best Practices for Preventing and Controlling Health-care-associated Infections

Source of data: Publications of the Provincial Infectious Diseases Advisory Committee

screening: to identify residents with MRSA, VRE, and FRI

routine practices and infection-specific precautions: proper hand hygiene; proper cleaning of resident rooms; use of personal protective equipment—such as gloves, long-sleeved gowns, and face masks—when appropriate; placement of residents in private rooms when appropriate

immunization: Immunization of residents and staff to prevent the acquisition of communicable diseases

antibiotic use: the judicious use of antibiotics to reduce resident susceptibility to certain infectious diseases and help prevent infectious diseases that are antibiotic-resistant

surveillance: tracking and analyzing infection data in order to take timely corrective action

Accreditation

The Ministry recognizes two accreditation organizations for long-term-care homes: Accreditation Canada and the Commission on Accreditation of Rehabilitation Facilities. At the time of our audit, the three homes we visited were accredited by Accreditation Canada. Accreditation Canada examines the quality of health services at homes with the aim of helping them improve the quality of service they provide to residents. The accreditation process includes reviewing organizational practices pertaining to infection control, such as whether the home tracks infection rates and whether the home delivers education regarding hand hygiene.

SCREENING

Screening generally enables homes to identify newly admitted residents who have an infectious organism or disease, and to implement certain additional measures and precautions, if needed. Screening generally involves considering various factors to identify which residents have symptoms of an infectious disease or have a higher risk of having acquired certain organisms or diseases. Samples, where appropriate, are then taken from these residents and forwarded to a laboratory, which determines whether the residents have the organism or disease. In some cases, a home will extend screening to every resident admitted. This is called “universal screening.”

In its best-practice documents, PIDAC notes that screening is an important step in keeping an infectious organism or disease from spreading to other residents, staff, and visitors. PIDAC recommends that homes should:

- assess all residents being admitted or readmitted for symptoms of FRI, such as cough, shortness of breath, and fever. Homes are encouraged to take an “active” approach to this screening; for example, staff should ask residents about possible symptoms and take into account whether the residents have been

in any contact with others that might have put them at risk. Homes may also use “passive” screening, such as posting signs requesting that residents who have FRI symptoms notify staff.

- actively screen all residents being admitted or readmitted to determine their risk of having MRSA or VRE. Staff should ask, among other questions, whether the resident has previously had MRSA or VRE; if he or she has been admitted to or has spent more than 12 continuous hours as a patient in any health-care facility, such as a hospital, in the past 12 months; and if he or she has been recently exposed to a health-care-facility unit with a MRSA or VRE outbreak. A “yes” to any of these questions makes a resident high risk, and homes should take a sample from such residents to determine if they actually have MRSA or VRE.
- regularly conduct audits to evaluate their screening practices as part of a continuous program for managing and improving quality.

Legislation also generally requires homes to screen all new residents for tuberculosis within 14 days of admission unless the resident was tested in the last 12 months.

Respiratory Illnesses

We found that the three homes we visited all had policies requiring new residents to be screened for FRIs on admission, as well as for tuberculosis within 14 days of admission. In addition, two of the homes used a checklist to document when FRI screening was complete.

For FRIs, our sample of new residents at the two homes that used checklists indicated that, at one home, there was documentation that 80% of new residents were screened and, at the other, 60% of new residents were screened. At the third home, there was no evidence of formal screening for FRIs; however, the home informed us that all new residents were informally screened.

With respect to tuberculosis, our sample indicated that one home had screened all new residents, while the other two only screened 70% and 80%. Where screening was done, it was completed more than 14 days after admission for 29% of new residents sampled at one home; for 40% at the second home; and for 75% at the third home. We noted cases in which screening did not take place until up to 60 days after admission at two homes and 125 days at the third.

Except for one home's evaluation of its tuberculosis-screening practices and another home's review of five resident files, none of the three homes had conducted any formal review of their screening practices for respiratory illness in 2007 or 2008. The home that had formally evaluated its tuberculosis screening practices noted that, in 2007, only 53% of new residents sampled had been screened for tuberculosis as required. As a result, in December 2008, the home began monitoring whether all required steps are completed whenever a new resident is admitted, including screening for tuberculosis.

Methicillin-resistant *Staphylococcus aureus* (MRSA) and Vancomycin-resistant Enterococci (VRE)

Although there is little authoritative guidance on when universal screening is appropriate, two of the three homes we visited had policies to screen all residents for MRSA and VRE on admission and readmission, such as from a hospital. The third home did not screen new or returning residents for MRSA or VRE; however, in early 2009, it began asking its sending facilities, such as hospitals, whether residents admitted to the home had MRSA or VRE. In addition, at the time of our audit, this home was in the process of arranging electronic access to the results of hospital tests, such as for MRSA and VRE, which its residents have undergone. Doing this may reduce the need for additional testing for some residents. We noted that the other two homes generally did not request similar information.

We reviewed a sample of new residents and readmitted residents for 2008 at the two homes with policies to screen for MRSA and VRE. One of these homes screened all residents in our sample for MRSA, but told us it did not screen any residents for VRE because it had not had a case of VRE in the last couple of years. At the other home, almost two-thirds of residents sampled were not screened for MRSA and VRE. Neither of the two homes had undertaken any formal reviews to ensure that residents admitted or readmitted to the home were screened for MRSA and VRE, something that their established policies stipulate should be done.

We also observed that none of the homes visited had a policy to screen residents considered to be a VRE contact (that is, for example, a resident whose roommate has VRE or who has been in physical contact with a resident found to have VRE). Only one of the homes had a policy to screen residents considered to be a MRSA contact.

RECOMMENDATION 1

To ensure that residents with infectious diseases are identified quickly enough to minimize the risk of the disease spreading to others, long-term-care homes should periodically monitor whether their screening processes are in accordance with the recommendations made by the Provincial Infectious Diseases Advisory Committee and legislative requirements.

SUMMARY OF LONG-TERM-CARE HOMES' RESPONSES

The homes generally agreed with this recommendation. One home noted that it will work with its Regional Infection Control Network to update certain screening processes to be in accordance with recommendations from the Provincial Infectious Diseases Advisory Committee. As well, it will review its screening processes quarterly, with summarized results reported to its Infection Control Committee and Professional Advisory Committee. Results

will be tracked electronically and reviewed for trends. Where needed, an improvement action plan will be put into place. Further, this home indicated that it will continue to pursue access to hospital electronic records, including lab test results, and will request that hospitals provide information on any infectious diseases that new and returning residents may have. This home also indicated that it would work with infection-control organizations to identify appropriate time intervals after which re-testing for key infections, such as MRSA, would be prudent.

Another home commented that it will establish policies concerning the screening of all residents re-admitted to its home, and will monitor to ensure that all admissions are screened for FRIs, MRSA and VRE, and that residents admitted with diarrhea are screened for *C. difficile* in accordance with its policies. Using information gained from the monitoring process, its Continuous Quality Improvement Committee will review potential methods to improve the home's processes. This home also indicated that because many cases of illness are acquired by residents when they are at other health-care organizations, such as hospitals, it would be beneficial both to the home and system-wide if these organizations had a standardized exit surveillance-screening process. In particular, the organizations should provide homes with screening test results, as appropriate, because this would assist the homes in controlling the spread of infectious diseases.

RESIDENT CARE

Routine Practices and Infection-specific Precautions

There are a number of practices that, if always used by homes with all their residents during all care, can help prevent and control the transmission of microorganisms that cause infectious diseases.

Health Canada and the Public Health Agency of Canada call these “routine practices.” According to PIDAC, only the consistent use of routine practices—particularly washing hands before and after contact with a resident and the resident's environment—will prevent the spread of infectious diseases. PIDAC has also noted that additional precautions are necessary to prevent and control certain infectious diseases such as MRSA, VRE, and *C. difficile*. With respect to these practices and precautions, PIDAC states the following:

- *Hand Hygiene*—Before and after contact with each resident and the resident's environment, staff must wash their hands with an alcohol-based rub (70% to 90% alcohol preferred) or soap and water. An alcohol-based rub is generally preferred when hands are not visibly soiled. However, soap and water may be more effective than an alcohol-based rub in removing *C. difficile* spores. All health-care settings, including long-term-care homes, must develop and implement a hand-hygiene program that includes ongoing monitoring and observation of hand-hygiene practices.
- *Use of personal protective equipment*—When entering the room of a resident infected with *C. difficile*, health-care workers must wear gloves and gowns. When providing direct care to a resident with MRSA or VRE, they must wear gloves and should wear gowns. They must remove their gloves and gowns before exiting the resident's room. Homes should monitor compliance with the recommended use of personal protective equipment.
- *Use of private rooms*—Long-term-care homes should place residents with certain infectious diseases and residents suspected of having *C. difficile* in a private room with its own toilet. If all the home's private rooms are occupied, infection-prevention-and-control staff should be consulted to arrange for residents to share a room with similarly infected residents (this is known as “cohorting” residents).

- *Cleaning of resident rooms*—All touched surfaces in each resident’s room must be cleaned daily. As well, homes should take special precautions in cleaning the rooms of residents having or suspected of having *C. difficile* because this organism has been found on surfaces such as door handles and faucets. (We understand that PIDAC expects to release a best-practice document on environmental cleaning in spring 2010.) Disease-specific recommendations for *C. difficile* include:
 - If the resident has or is suspected of having *C. difficile*, homes should clean all horizontal surfaces in the resident’s room and all items within reach of the resident twice daily with a hospital-grade disinfectant. Staff should pay particular attention to cleaning frequently touched areas such as bed side-rails, telephones, and toilets.
 - Homes must communicate clearly with cleaning staff to ensure that they know which rooms require twice-daily cleaning.
 - Homes should develop and use a checklist to monitor that cleaning is done twice daily.

Similarly, Health Canada recommends that homes clean resident rooms according to a predetermined schedule that assigns staff to specific tasks for keeping surfaces clean and dust free. This is consistent with the Ministry’s *Long-Term Care Homes Program Manual*. As well, PIDAC states that homes should conduct periodic audits of their cleaning protocols to make sure that they are followed.

Hand Hygiene

PIDAC notes that the most common way microorganisms are transmitted is on the hands of health-care providers and that, therefore, hand hygiene is the most important activity for controlling the spread of infectious diseases. However, PIDAC also notes that, despite the importance of hand hygiene, compliance with hand-hygiene protocols by health-care providers is low. Health Canada has also observed that studies have repeatedly documented

that health-care providers, including resident-care staff in long-term-care homes, fail to wash their hands. A 2005 study at two Ontario homes noted that overall hand-hygiene compliance was less than 15%.

Various studies have noted that impediments to handwashing include:

- lack of time due to, for example, understaffing and inaccessibility of sinks;
- inadequate supplies for handwashing;
- concerns over handwashing products and the effects of frequent washing on hands;
- belief that handwashing is not necessary if gloves are used; and
- skepticism about the value of washing hands when they are not visibly soiled.

All three of the homes we visited had policies in place with respect to hand hygiene that were consistent with best practices noted by PIDAC, including when hand hygiene should take place, which products to use, and appropriate handwashing techniques. Also, they had all provided one or two hand-hygiene educational sessions to staff between January 2008 and March 2009.

In 2007, one of the homes participated in a pilot project for the “Stop! Clean Your Hands” initiative. The home indicated that its involvement included an educational session for staff, as well as displaying hand-hygiene posters throughout the home.

At the time of our audit, all three homes had recently conducted their first audit to determine compliance with their hand-hygiene policies. We reviewed the results of the audits and noted that, with a few exceptions, homes were reporting 80% to 100% compliance. Given Health Canada and others’ observations that resident-care staff often fail to wash their hands, such unexpectedly good results may indicate the need for these homes to review their audit-monitoring methodology to ensure that it is independent and objective.

As previously noted, the use of alcohol-based hand rub is generally preferred for hand hygiene if hands are not visibly soiled. PIDAC states that for maximum efficacy, alcohol-based hand rub must

be available at the place where staff provide care to residents. We noted that one of the homes had alcohol-based hand rub available in resident rooms and in its dining room and nursing stations. At the second home, alcohol-based hand rub was available near one sink on each floor, and, starting in spring 2009, health-care staff were to carry a caddie containing the hand rub. The third home had alcohol-based hand rub available in numerous locations including corridors, resident dining rooms, and nursing stations.

Use of Personal Protective Equipment

All three homes we visited had policies in place regarding the use of personal protective equipment, such as gloves, gowns, and face masks, which were consistent with best practices noted by PIDAC. As well, for residents who had infectious diseases, such as *C. difficile*, the homes' policies were to place signs on the doors stating that additional precautions, such as wearing gloves and a gown, must be taken by anyone entering the room.

We noted that the three homes reviewed, to varying extents, whether their resident-care staff wore gloves when appropriate. Two of the homes had completed one review of a few resident-care staff, while the third home conducted regular reviews three times a week in 2008. As well, two of the homes reviewed whether resident-care staff washed their hands after removing the gloves, and one home looked at whether staff washed their hands before putting on gloves. Our review of the results indicated few problems at two of the homes, whereas the third home indicated compliance was just over 50%.

None of the homes had conducted reviews of the use of other personal protective equipment, such as gowns and masks.

Use of Private Rooms

One infection-specific precaution PIDAC recommends is isolating in private rooms residents who have certain infectious diseases. At the homes we

visited, between about 5% and 49% of residents had a private room. When placing residents in private rooms is not possible, PIDAC recommends cohorting residents with similar infectious diseases. All three homes told us that isolating and cohorting residents is generally not practical because each resident's room is his or her "home" containing his or her own personal belongings. The three homes also told us that they generally do not have unoccupied rooms, it is disruptive to move residents out of their rooms, and many residents have paid a premium to be in a private or semi-private room.

If a resident with *C. difficile* has to share a room or bathroom with other residents, PIDAC recommends that the resident be provided with a commode chair. Two of the homes had policies consistent with PIDAC's recommendation; the third home did not. Only one of the two homes with policies to provide commode chairs reported having residents with *C. difficile* in 2008. However, this home had not conducted any reviews to determine whether staff had provided a commode chair to residents with *C. difficile*.

Health Canada indicates that homes should consider separating residents with an FRI who share a room from other residents by at least one metre. Further, PIDAC recommends that homes should have the curtain drawn between resident beds. One of the homes we visited had reviewed the distance between residents in four rooms and found that these residents were often not adequately separated. As well, all three homes indicated that curtains are only drawn around a resident at a resident's request; for example, if they want privacy.

Cleaning of Resident Rooms

PIDAC indicates that all touched surfaces in each resident's room must be cleaned daily. Health Canada recommends that homes clean resident rooms according to a predetermined schedule that assigns staff to specific tasks.

Two of the three homes we visited had policies to clean all touched surfaces in each resident's

room daily. The third home's policy was unclear, but the home indicated that all touched surfaces in each resident's room are cleaned daily. All three homes had a schedule of cleaning duties assigned to specific staff. As well, two of the homes began using microfibre cleaning products, such as microfibre cleaning cloths and mops, in 2008. Various studies indicate that these cleaning products are more effective than conventional products at removing microorganisms.

PIDAC's best practices identify special requirements for cleaning the rooms of residents with certain infectious diseases, such as *C. difficile*. This is because *C. difficile* produces spores that a number of chemicals are unable to destroy. Even with the right chemicals, applying force to create friction is necessary to remove the spores. PIDAC also recommends that the rooms of residents who have *C. difficile* be cleaned twice daily, and that when the infection clears up, a more thorough cleaning should occur, including throwing away toilet brushes and disposable items such as paper towels and toilet paper.

All three homes had policies on cleaning the rooms of residents with *C. difficile*. However, only one home's policy required that the rooms of residents with *C. difficile* be cleaned twice a day. Notwithstanding this policy, this home, like the other two homes, only cleaned the rooms of residents with *C. difficile* once a day. Two of the homes indicated that they inform housekeeping staff when a resident becomes better so that his or her room will be cleaned more thoroughly. The third home did not have processes to notify housekeeping of the need for a more thorough cleaning.

We observed that two of the three homes monitored their cleaning practices as recommended by PIDAC. Both of these homes inspected the cleanliness of resident rooms on a regular basis and identified some areas where cleanliness was deficient, including floors, vents, windows, and door handles. Both homes indicated that deficiencies were discussed with staff and corrective action was taken. We noted that the results of these audits were not

summarized to determine an overall level of cleanliness in the homes. One of these homes also audited the cleanliness of a room whenever it was vacated, such as when a resident passed away or moved to another room. The third home did not inspect the cleanliness of resident rooms on a regular basis.

Immunization

PIDAC notes that immunization is one of the most effective measures for preventing residents and staff from acquiring communicable diseases. PIDAC recommends that homes have immunization programs for residents that include pneumococcal pneumonia immunization and annual influenza immunization. PIDAC notes that homes should offer appropriate immunization for staff, such as annual influenza immunization, which can protect not only staff but also residents from acquiring influenza.

The Ministry set certain target immunization rates for residents and staff of long-term-care homes up to January 2009. As Figure 6 shows, in 2008, the homes we visited were generally close to or above the targeted rates for influenza immunization of residents and staff. However, all three homes were below the targeted pneumococcal immunization rate for residents. The Ministry indicated that it was reviewing the appropriateness of developing updated target vaccination rates because these targets have not been shown to influence immunization rates.

Figure 6: Target and Actual Immunization Rates at Three Long-term-care homes, 2008

Source of Data: Ministry of Health and Long-Term Care and audited long-term-care homes

Type of immunization	Ministry Target (%)	Range at homes visited (%)
annual influenza immunization for residents	95	91 to 96
annual influenza immunization for staff	70	63 to 85
pneumococcal immunization for residents	95	63 to 77

Prevention of Selected Infections

Research indicates that following best practices can help prevent certain other infections, including infected skin breakdowns, such as infected bed sores, and urinary tract infections. For example, repositioning an immobile resident every two hours may help prevent skin breakdowns, and minimizing catheter use may help prevent urinary tract infections.

Skin Infections Following Skin Breakdowns

Skin breakdowns, also known as pressure ulcers (for example, bedsores), can become infected, causing pain and possibly more serious complications, or even death in extreme cases. Although little Canadian data is available, U.S. studies have found that the prevalence of pressure ulcers ranges from 2% to 28% of residents in long-term-care facilities.

The Ministry's *Long-Term Care Homes Program Manual* requires that homes develop and follow policies for managing skin care, including assessing each resident's skin upon admission and quarterly thereafter. The Program Manual, as well as other best-practice guidelines, also states that people at risk for pressure ulcers should be repositioned at least every two hours.

All three homes visited had policies in place requiring that each resident's skin be assessed upon admission and quarterly. We examined a sample of files of residents with skin breakdowns and noted that all residents had a skin assessment completed upon admission. However, although one home completed all quarterly assessments in 2008, the other two completed 73% and 82% of the assessments respectively. In February 2009, one of these homes implemented a checklist to document that various items were being performed, including quarterly skin assessments.

All homes indicated that they conducted a periodic review to ensure that the skin assessments were being performed as required. However, none of the homes summarized their reviews to determine whether there were any home-wide issues to be addressed.

All three homes had policies on managing skin care, including repositioning residents who could not reposition themselves at least every two hours. One of the homes had developed a sign-off sheet to document that a resident had been repositioned. However, at the time of our audit, staff at the home were generally not using it. Neither of the other homes were using a sign-off sheet to document that a resident was repositioned.

Urinary Tract Infections

Research indicates that urinary tract infections are generally the most commonly reported bacterial infection in residents. Because these infections are particularly associated with incontinence, it is important to periodically assess a resident's continence. A practice for preventing these infections is to minimize the use of catheters. Although there is little authoritative research on other ways to prevent urinary tract infections, some sources suggest that ensuring adequate fluid intake may help in preventing these infections.

All three homes visited had policies for performing continence assessments within seven days of a resident's admission and quarterly assessments thereafter, in accordance with the Ministry's Program Manual. We found that initial continence assessments were completed for all residents in our sample. However, although one home completed almost all the quarterly assessments, the other two homes completed less than 75%. In February 2009, one of the homes we visited began using a checklist to document that various items, including quarterly continence assessments, were completed as required. The other two homes had no formal monitoring practices to ensure that the quarterly continence assessments were being completed.

Various studies indicate that, for general good health, the recommended minimum daily fluid intake for residents is 1,500 millilitres. All three homes visited had policies consistent with this and monitored the amount of fluid consumed each day by each resident. We noted that only 10% to 20% of

resident files sampled at two of the homes showed that the resident had consumed the recommended amount of daily fluid. In contrast, at the third home, all resident files sampled showed that the residents had consumed at least the recommended amount of fluids.

RECOMMENDATION 2

In order to better prevent the transmission of infectious diseases:

- long-term-care homes should monitor whether prevention best practices (such as hand hygiene and the use of personal protective equipment) and infection-specific precautions (such as twice-daily cleaning of rooms of residents who have *C. difficile*) are conducted in accordance with the recommendations made by the Provincial Infectious Diseases Advisory Committee (PIDAC) and review their monitoring methodology to ensure that abnormally high compliance rates are reflective of actual practices;
- the Ministry of Health and Long-Term Care should develop guidance to assist homes in determining how best to meet PIDAC's recommendations on isolating and cohorting residents who have or are at high risk of having infectious diseases, given the limited availability of private rooms; and
- long-term-care homes should continue to promote and monitor the immunization of residents and staff.

To help prevent residents from acquiring an infected skin breakdown, long-term-care homes should adopt processes, such as using a sign-off sheet for recording when residents are repositioned, to enable supervisory staff to monitor compliance with established procedures.

MINISTRY RESPONSE

The new *Long-Term Care Homes Act, 2007*, which will be proclaimed into force when its

regulations are finalized, requires that all homes have an infection-prevention-and-control program that includes daily monitoring to detect the presence of infection in residents as well as measures that prevent the transmission of infections. Draft regulations on infection prevention and control released for public consultation in May 2009 include provisions on various measures including hand-hygiene programs, the availability of personal protective equipment, and immunization.

The Ministry plans to redevelop 35,000 beds in older long-term-care homes over the next decade to ensure more equitable access to quality accommodation. These beds will be redeveloped according to structural requirements detailed in the Ministry's Long-Term Care Facility Design Manual (May 2009) which provides for larger rooms that have a maximum of two beds and that all have wheelchair-accessible washrooms. This will assist homes in keeping residents with infectious diseases adequately separated.

SUMMARY OF LONG-TERM-CARE HOMES' RESPONSES

The homes generally supported this recommendation. One home indicated that it will develop an objective tool to monitor compliance with various best practices recommended by the Provincial Infectious Diseases Advisory Committee (PIDAC), including hand hygiene and the use of personal protective equipment, and will develop a plan to address any items arising from this monitoring. The home's Infection Control Committee and Professional Advisory Committee will review summarized results twice a year and provide direction. In addition, to increase hand hygiene compliance, the home will install moisture stations to protect staff's hands from over-washing and will use new technologies to enhance staff education, such as a substance applied to the hands that visually demonstrates

the contamination left behind if hands are not washed properly. This home also noted that it will institute room cleaning checklists to ensure that rooms are cleaned in accordance with PIDAC recommendations, especially the rooms of residents with *C. difficile*. The checklists will be placed on housekeeping carts and will be completed by staff as each room is cleaned, thereby enhancing data accuracy and enabling supervisors to access this information quickly. Another home indicated that it will continue to improve its strategies to prevent the transmission of infections, including following the best practices recommended by PIDAC. However, the home commented that it is constrained by its funding: it would need additional staff because existing staff do not have time available to take on more responsibilities. The home also recognized the need to validate the results of its review of hand hygiene. It will continue to monitor the use of personal protective equipment and cleaning activities on an informal basis and, if risk indicators demonstrate a need for change, will establish a formalized process. Nonetheless, the home indicated that it will review its procedures and routines, within the limitations of its human resources, with the goal of enabling twice daily cleaning of rooms with residents who have *C. difficile*.

Two homes highlighted a number of the challenges regarding isolating or cohorting residents who have or are at a high risk of having an infectious disease, including the impracticality of moving a resident's furniture and belongings, and the possible traumatic impact a move may have on frail residents and residents with dementia. One of these homes noted that putting an infectious person in a private room will delay the admission of another resident and result in lost income for the home. However, this home suggested that having an infirmary in the home, where infectious residents could be temporarily moved, would be one way of helping prevent the spread of certain infectious diseases.

With respect to promoting and monitoring the immunization of residents and staff, one home noted that it will continue to promote the importance of immunization for residents and staff, as recommended by its local public health unit and other regulatory authorities. Another home indicated that it will develop an immunization strategy to further promote the immunization of residents and staff, which will outline the location and optimal time for staff vaccinations. This home is exploring the use of automatic reminders for staff when it is time for their next immunization. Further, committees in this home will continue to monitor the immunization rates of residents and staff over time, and will put in place an improvement action plan, if required.

Regarding the use of a sign-off sheet when repositioning residents who are unable to reposition themselves, one home indicated that it has implemented "point of care" electronic tablets at nursing stations and near residents' rooms to enable more accurate tracking of certain information including pressure-ulcer-prevention activities. This home noted that it will continue identifying residents with a high risk of a skin breakdown and developing strategies to prevent these, such as by using pressure-relief mattresses. In addition, the home will continue to track and analyze pressure ulcer rates, and benchmark with other homes and with industry-wide benchmarking through participation in the Canadian Institute for Health Information's long-term-care quality indicator database. Another home worried about the potential time involved to document when residents are repositioned and therefore supported the use of sign-off sheets only for residents with a high risk of a skin breakdown or pressure ulcer. The third home also implemented the use of sign-off sheets for high-risk residents. This home commented that, in addition to the sign-off sheets, informal monitoring by supervisors enables it to verify residents' well-being.

ANTIBIOTIC USE

Residents in long-term-care homes use antibiotics primarily to treat infections. However, infectious bacteria are becoming resistant to antibiotics, which is increasing the risk that antibiotics will no longer effectively treat certain infections in the future. In fact, certain bacteria that cause infections have become resistant to the preferred antibiotics for their treatment.

Research indicates that there is an association between a person's increased use of antibiotics and the resistance of infections to certain antibiotics. In addition, individuals are at increased risk for acquiring certain infections, such as *C. difficile* and MRSA, if they are taking antibiotics. As mentioned in Figure 2, *C. difficile* infection usually occurs when the use of antibiotics reduces the normal levels of good bacteria found in the intestines and colon of a resident. This reduction in good bacteria allows the *C. difficile* bacteria to grow and produce toxins that make the resident sick. Because of this risk, the U.S. Food and Drug Administration revised the safety warnings for certain antibiotics in June 2007. The warnings now indicate that taking the antibiotic poses a risk of *C. difficile* and that nearly all antibiotics have been associated with an increased risk of *C. difficile*.

Unlike hospitals, long-term-care homes are not required to identify outbreaks of *C. difficile* to their local public health unit. They are also not required to report outbreaks of *C. difficile* to the Ministry, although quite a few of them do. In 2008/09, 81 *C. difficile* outbreaks were reported to the Ministry. However, the reported information did not include the total number of residents who acquired *C. difficile* during these outbreaks or the resident outcomes (for example, deaths).

The fact that there have been a number of *C. difficile* outbreaks in long-term-care homes in Ontario reinforces the need for the judicious use of antibiotics. Further, medical research indicates that antibiotics are frequently prescribed in long-term-care homes, with one study of Canadian and U.S. homes

identifying that antibiotics were prescribed to 79% of residents over a one-year period.

PIDAC's recommendations to limit the increase and spread of antibiotic-resistant infections include that homes should:

- develop an “antibiotic stewardship program” by implementing policies and procedures to promote judicious antibiotic use—one policy should be that homes have a drug formulary that lists the antibiotics physicians can prescribe; and
- review actual antibiotic use to assess prescribing appropriateness.

None of the three homes we visited had implemented the recommended antibiotic drug formulary. However, the physicians we spoke to at these homes indicated that they do try to minimize the use of antibiotics.

All three homes we visited had a process in place to monitor antibiotic usage to some extent. At one home, the pharmacy periodically provided information to the home's physician on the use of particular drugs, including certain antibiotics. The other two homes received certain information on antibiotic usage directly from their pharmacy:

- One home received information on the use of specific antibiotics overall and by physician.
- The other home periodically received information on the use of specific antibiotics overall, as well as on the total number and percentage of residents taking antibiotics. It also received a comparison of the percentage of residents on antibiotics relative to the other long-term-care homes that the pharmacy services (approximately 135 homes and 17,000 beds). No information was received on antibiotic-prescribing patterns by physician.

These two homes indicated that their professional advisory committee, which included, among others, the home's administrator, director of care, and physician, reviewed the information provided by the pharmacy. These reviews were informal and not documented.

None of the three homes had overall summary information on the reasons why certain antibiotics were prescribed, and therefore they could not analyze antibiotic use patterns. Although each home indicated that either its physician or professional advisory committee examined the reports from its pharmacy, to be able to fully evaluate the information would require a labour-intensive review of residents' health records to determine the reason for the drug use. All three homes relied primarily on their physicians—who prescribe the antibiotics—to tell them whether any changes were required regarding the use of antibiotics.

In our *2007 Annual Report*, we noted that the Beers Criteria lists certain high-risk drugs that experts have indicated are generally more harmful than beneficial to older adults. At that time we found, however, (using information from the Ministry's Ontario Drug Benefit Program), that at least 20% of residents in 30 homes were dispensed at least one of the eight high-risk drugs in our sample. While acknowledging that there may be situations where the use of these drugs is warranted, given the higher level of usage of the selected Beers Criteria drugs we detected in certain homes at that time, we recommended in our *2007 Annual Report* that the Ministry, in conjunction with the College of Physicians and Surgeons of Ontario, periodically review the use of higher-risk drugs. Our current audit did not review the use of Beers Criteria drugs. However, with respect to antibiotic use, we believe it would be beneficial for the Ministry, in conjunction with the College of Physicians and Surgeons of Ontario, to perform a similar periodic review of the use of antibiotics in long-term-care homes.

RECOMMENDATION 3

To help prevent antibiotic-resistant organisms and reduce the susceptibility of residents to certain infections, the Ministry of Health and Long-Term Care, in conjunction with other interested stakeholders, should:

- assist long-term-care homes to develop a drug formulary; and
- periodically review the use of antibiotics in long-term-care homes so that follow-up action can be taken where the use of antibiotics seems unusually high.

MINISTRY RESPONSE

The *Ontario Drug Benefit Act* and the *Drug Interchangeability and Dispensing Fee Act* govern the administration of Ontario's public drug programs. The Ministry maintains and publishes the Ontario Drug Benefit Formulary/Comparative Drug Index (Formulary), which identifies all the drug products that eligible individuals, such as residents in long-term-care homes, may receive under these programs. The Formulary is to be used by prescribers and pharmacists as a guide for prescribing and reimbursement. Creating a separate formulary for antibiotic use in homes would lead to duplication of the process and may result in undue confusion for physicians and pharmacists. However, the Ministry is supportive of each home developing internal policies based on evidence-based information to promote best practices for antibiotic use. This is based on the Ministry's recognition that decisions relating to the use of antibiotics are generally the responsibility of a resident's physician. The Ministry relies on the physician's professional judgment in deciding which antibiotic to prescribe based on each resident's unique medical history.

It is the mandate of the physician's and other drug prescriber's professional regulatory colleges to educate, direct, and, potentially, sanction prescribers regarding prescribing practices. Also, many pharmacies contracted by homes review medication-use patterns and trends, including those for antibiotics, to identify issues, and will work with the home as appropriate. In addition, an interdisciplinary team at each

home is responsible for reviewing residents' charts to determine, among other things, the patterns and appropriateness of antibiotic use. Furthermore, the Ministry received the Joint Task Force on Medication Management in Long-Term Care's report in fall 2009, which examined issues relating to medication-management safety and was reviewing its recommendations. The report and its recommendations is to be shared with stakeholders.

SUMMARY OF LONG-TERM-CARE HOMES' RESPONSES

Although the homes were not requested to respond to this recommendation, two of the homes highlighted that they rely on their physicians' clinical judgment in prescribing medication for residents on a case-by-case basis, and that their physicians were aware of the risks associated with the medications. One home questioned whether a formulary was necessary and was concerned that physicians might be reluctant to have any restrictions placed on what drugs they can prescribe under the Ontario Drug Benefit Plan. The other home, however, commented that it will present this matter to its Professional Advisory Committee, which reviews drug utilization, for opportunities to improve monitoring of antibiotic use that would result in value-added data for resident care. As well, this home indicated that it would work to support Ministry-led initiatives that promote the effective and safe use of antibiotics for its residents.

SURVEILLANCE

PIDAC defines surveillance as the systematic, ongoing collection, collation, and analysis of data with timely distribution of the information to those who require it in order for action to be taken where necessary. PIDAC notes that there is conclusive

evidence to show that the establishment of a surveillance system is associated with reductions in infection rates. Surveillance is particularly useful in monitoring the effectiveness of infection-prevention-and-control programs.

The Ministry requires long-term-care homes to have an ongoing program of surveillance to determine the presence of infections. As well, the standards set by Accreditation Canada, under which the three homes we visited were accredited, require homes to monitor infection rates. Recommendations regarding surveillance of infections that PIDAC has issued and that other organizations have published include that homes should:

- identify which infections they will track, based on evaluation of the types of infections for which their residents are most at risk. PIDAC suggests the homes consider tracking various infections, including *C. difficile*, MRSA, VRE, FRIs such as influenza, skin infections, and urinary tract infections.
- use standard definitions for determining when a resident has a particular infection and when infections should be counted in the home's tracking system. This ensures that the information collected is consistent, accurate, and reproducible.
- regularly analyze the information gathered and identify trends signalling the need for corrective action, such as staff education or changes in practice.
- Have a certified Infection Prevention and Control Professional (ICP) and/or trained individuals who have passed an education program endorsed by the Community and Hospital Infection Control Association–Canada. The ICP's responsibilities generally include the surveillance of infections.

The Ministry's annual unannounced inspection of each home identifies, among other things, whether homes have an ongoing program of surveillance in place to determine the presence of infections. According to ministry information, over 95% of homes had such a program in place in 2008/09.

Selecting and Defining Infections

None of the homes we visited had conducted a formal evaluation to identify which infections their residents were most at risk for. However, all the homes had informally selected certain infections to track and periodically added new infections based on circumstances in their homes.

PIDAC has standard definitions for over 15 infections. Most definitions are based on symptoms, such as “two or more loose watery stools within 24 hours,” but some require laboratory confirmation. Two of the homes we visited had adopted all of PIDAC’s recommended infection definitions. The third home had adopted only three specific definitions and otherwise used general symptoms that may indicate an infection, such as cough, diarrhea, or vomiting.

Tracking Infections

At the homes we visited, resident-care staff, including personal support workers and nursing staff, identify if a resident has symptoms of an infection. Either the nursing staff or the home’s physician assesses the resident and if the resident has an infection, this information is recorded on an infection-control tracking form. Staff collect the forms monthly and input the data into each home’s electronic tracking system. Using their systems, the homes can compile infection statistics for review by various internal committees and/or senior management.

We noted that all three homes used a manual form to track resident infections. Although they included certain infections, such as FRIs, skin infections, and urinary tract infections, on their forms, many infections, including *C. difficile* and MRSA, were not specifically tracked. However, the homes informed us that they would record these infections in a category labelled “Other.”

For their infection statistics to be as meaningful as possible and able to be compared with those of other homes, and to facilitate the most appropriate follow-up action, long-term-care homes should

distinguish between infections acquired within the home and pre-existing infections of newly admitted residents. PIDAC’s best-practice document on surveillance (June 2008) states that any “health-care-associated” infection, such as ones acquired at long-term-care homes, is an infection that includes those occurring in the period beginning more than 48 to 72 hours after admission of a resident. PIDAC has more specific guidance with respect to tracking *C. difficile* in its best-practice document (November 2007), which indicates that the case is considered to be acquired in the home if the resident’s symptoms occur more than 72 hours after his or her admission, or if the resident was readmitted with *C. difficile* that he or she had acquired at the home sometime in the previous four weeks.

We found that the homes we visited had different policies for counting infections in their tracking systems. For example, one home used PIDAC’s definition to track *C. difficile* infections. Another home tracked *C. difficile* infections that occurred more than 72 hours after a resident’s admission, as well as all reoccurring infections, whether acquired at the home or elsewhere. The third home tracked all new and reoccurring *C. difficile* infections regardless of whether they were acquired at the home or elsewhere. Because the three homes have different policies for tracking infections, their infection rates were not comparable.

Reviewing and Reporting Infection Data

We requested information for the 2008 calendar year on MRSA, VRE, *C. difficile*, FRIs, and urinary tract infections from each of the three homes we visited. Two of the homes reported no cases of either MRSA or VRE in 2008; the third reported only a few. With respect to *C. difficile*, although one home reported no cases, the other two reported six and 15 cases respectively. As well, we noted that the incidence of FRIs and urinary tract infections varied considerably among the three homes. With respect to FRIs, using data provided by the homes, we estimated that the number of cases per 10,000

resident days ranged from seven to 18. With respect to urinary tract infections, we estimated that the number of cases per 10,000 resident days ranged from four to 18. Each home established its own data-collection methodology, so the comparisons may not be exact.

All three homes indicated their senior management review daily reports that highlight concerns about specific residents, such as the onset of new or worsening symptoms of an infection.

PIDAC indicates that it is a best practice to evaluate infection rates against benchmarks. Benchmarks provide homes with a targeted maximum rate for infections and enable homes to evaluate their actual infection rate against the target. Possible benchmarks that a home could use include the rate of infections in the home at a particular point in time in a prior year (known as a baseline rate), and the incidence rate of infections at other homes. A 2008 report issued by the Regional Infection Control Networks noted that only 15% of non-acute-care facilities (primarily long-term-care homes) used external benchmarks, and 21% did not use any benchmarks at all.

Although none of the three homes we visited had formally established baseline rates, all three indicated that they compare their current infection statistics against statistics from previous periods. For example, one home compared its infection statistics to infection statistics from prior months and from the previous year. Another home indicated that it generally does a month-to-month comparison of statistics four times a year. The third home said that it generally reviews each quarter's infection data for changes from previous quarters. All three homes told us that their comparison of infection statistics in 2008 with statistics from prior periods did not identify any areas requiring corrective action.

We also observed that two of the homes were comparing their number or rates of certain infections against other homes. One of these homes had adopted a benchmark of having infections in its home be no more than the median of rates of infec-

tion of the other homes against which it was tracking. We noted that this home exceeded the median rate of certain infections during a number of months in 2008. For example, the home exceeded the median rate of FRIs in five of the six months it analyzed. The home told us that it communicated the results to staff and offered additional infection-control training.

Under the *Health Protection and Promotion Act*, homes are required to report information to their local public health unit on certain diseases, such as tuberculosis and influenza, as well as outbreaks of respiratory infections and gastroenteritis (symptoms of which include diarrhea and vomiting). The Ministry requires that homes report directly to it any outbreaks that the home reported to its local public health unit. However, homes do not have to report many other infectious diseases, such as MRSA and VRE. Hospitals have similar reporting requirements but, effective September 1, 2008, they must also identify when a gastroenteritis outbreak is caused by *C. difficile*. Long-term-care homes are not required to identify this.

Ontario hospitals are required to report publicly on several patient-safety indicators including health-care-acquired infectious diseases, such as *C. difficile*, MRSA, and VRE, and on hand-hygiene compliance among health-care workers. Long-term-care homes, however, are not subject to similar reporting requirements. Although one of the homes we visited publicly posted information on the number of certain infections within the home, no other information on infection rates was publicly reported. As well, neither of the other two homes publicly reported any information on infection rates.

Staff Training on Surveillance Activities

PIDAC states that if resident-care staff, such as personal support workers and nurses, are responsible for reporting infections or suspected infections, it is critical that they undertake training to ensure that potential infections are identified and reporting expectations met. As well, the Ministry requires

homes to provide an educational session to all staff annually that includes infection-control practices.

A 2009 Canadian survey of infection prevention and control in long-term-care homes noted that almost one-third of responding homes identified as an important issue the need for infection-prevention-and-control education. In addition, a recent Ontario-wide survey, facilitated by the Regional Infection Control Networks, noted that 47% of non-acute facilities—mostly long-term-care homes—indicated that educating staff on infection prevention and control was a key issue they were facing.

None of the homes we visited had provided specific training to staff on their surveillance responsibilities, such as training on the case definitions for different types of infections and the reporting requirements for these infections. However, all three homes required new nurses and personal support workers to “shadow” more experienced individuals in the same position for varying lengths of time prior to working independently to learn their duties, which, we were informed, would include infection-surveillance responsibilities. As well, the orientation sessions for new staff at the three homes all included some discussion of surveillance. The homes also provided some specific training regarding certain infections, such as influenza, and indicated that the symptoms of the infection are discussed to enable staff to better identify residents with infections.

The average attendance rate, by topic, for a sample of educational sessions that we examined ranged from approximately 15% to 45% at the three homes. None of the homes tracked whether staff attended at least one educational session annually on infection control practices. Nevertheless, we noted that, during 2008, two of the three homes held more than one session on each specific infection-control topic, and they would also pay staff to attend the session if they attended outside of their regular shift. However, the third home, which had the lowest attendance rates, only pro-

vided one session per topic and did not compensate staff who attended.

Infection Prevention and Control Professional

According to PIDAC, the responsibilities of an Infection Prevention and Control Professional (ICP) may include various functions, such as the surveillance of infections. The Ministry’s *Long-Term Care Homes Program Manual* requires that homes designate an ICP, and indicates that the individual should possess expertise or be willing to acquire expertise in infection control. The Program Manual also states that the ICP is responsible for surveillance activities in the home. Further, PIDAC recommends that homes have a staffing ratio of one full-time ICP per 150 to 200 beds.

A recent Canadian survey of infection prevention and control in long-term-care facilities identified that only 8% of ICPs were certified and that there was only an average of 0.6 full-time-equivalent ICPs per 250 beds. This is well under PIDAC’s recommended ICP-to-bed ratio. In addition, an Ontario survey of the non-acute-care sector, primarily long-term-care homes, issued in 2008 by the RICNs, identified that just 5% of ICPs were certified.

Although each of the homes we visited had a person designated as its ICP, this role was on top of various other functions performed by these individuals. None of the designated ICPs had attended a program endorsed by the Community and Hospital Infection Control Association–Canada, nor had any of the ICPs obtained a Certification in Infection Control. The homes indicated that it has been a challenge to obtain and retain well-trained ICPs.

None of the homes had an ICP-to-bed staffing ratio within the range recommended by PIDAC. All three homes told us that they did not have the resources to meet this recommendation. However, all three homes indicated that, if needed, they could contact other sources for information related

to infection prevention and control, such as their local public health unit or Regional Infection Control Network. All three homes told us that, if necessary, their physicians could contact physicians at their local hospital who had expertise in infection prevention and control.

RECOMMENDATION 4

To enhance the effectiveness of infection-prevention-and-control programs, the Ministry of Health and Long-Term Care, in conjunction with the long-term-care homes, should:

- require long-term-care homes to identify and track infections in a consistent and comparable manner, using standard definitions and surveillance methods;
- establish reasonable targeted maximum rates/benchmarks for the more prevalent infections; and
- look into requiring that long-term-care homes report publicly, as hospitals do, on certain patient-safety indicators, such as cases of *C. difficile* and hand-hygiene compliance among resident-care staff, using standard definitions and surveillance methods.

As well, long-term-care homes should ensure that staff, including designated infection-prevention-and-control professionals, have the infection-surveillance training recommended for their position.

MINISTRY RESPONSE

Current Ministry requirements on infection prevention and control outlined in the Program Manual state that every long-term-care home must have an ongoing program of surveillance to determine the presence of infections and provide education and training for all staff. As well, draft regulations under the new *Long-Term Care Homes Act, 2007*, include provisions on surveillance and education. In particular, the draft regulations will require homes to ensure

that the presence of infections in residents is monitored and recorded, and that this information is analyzed daily and reviewed at least once a month to detect trends, for the purpose of reducing the incidence of infection and outbreaks. The computerized care-management system announced in January 2009 and expected to be fully implemented in homes by summer 2010 will help health professionals in homes assess and monitor the care needs of residents. In particular, this system will better enable homes to identify and assess residents with various infections, including MRSA, *C. difficile* and respiratory infections. Further, the system will enable homes to track and monitor resident infections in a consistent manner using the same definitions, such that the data gathered will be comparable across all homes. The Ministry will receive data quarterly.

The Ministry will review the appropriateness of establishing targeted maximum rates/benchmarks for the more prevalent infections. However, the rates of certain infections, such as influenza and noroviruses (whose main symptoms include diarrhea and vomiting), in each long-term-care home often reflect the rates of these viruses in their local communities. As well, the rates are influenced by the vulnerability of the residents in the home. Therefore, the rates of these infections may not be reflective of the home's internal infection-prevention-and-control practices. However, for other specific infections (such as skin infections), each home should establish its own baseline because this provides the home with the information necessary to assess the impact of the home's infection-prevention-and-control program's improvement activities over time.

The Ministry fully supports public reporting and is looking into the reporting of patient safety indicators for long-term-care homes.

SUMMARY OF LONG-TERM-CARE HOMES' RESPONSES

The homes generally supported this recommendation. However, one home was concerned with publicly reporting information on certain patient safety indicators because it believed it would be difficult to select the indicators and that there would be a negative public perception of homes unless the indicators were thoroughly explained. This home also highlighted that implementing best practices, reviewing whether practices are followed, and tracking indicators is very time consuming. Therefore, this home strongly believes the key to moving forward in this area is for the government to strengthen the overall staffing in long-term-care homes and, more specifically, to provide for a trained full-time Infection Control Practitioner (ICP) in each home. The home is also looking forward to the Provincial Infectious Diseases Advisory Committee's (PIDAC's) release of additional information for long-term-care homes.

Another home indicated that, while it continues to identify infections using PIDAC's case definitions, it has been working to improve the consistency of its tracking methods to ensure comparability of data. This home commented that clear definitions of outbreaks and guidelines for tracking infectious illnesses would be helpful on a system-wide basis. The home noted that the establishment of targeted maximum rates/benchmarks that are applied to all long-term-care homes might be helpful in tracking system-wide success over time. With respect to public reporting, this home commented that additional research into meaningful measures that reflect the unique circumstances of long-term-care home residents is needed. For example, the size of a given long-term-care home, the ability to restrict resident movement between areas within the home, and seasonal infection rates in the local population that visits

the home are factors that influence infectious disease transmission. This home commented that, although various courses are offered to its staff, it agreed that a designated professional with infection-surveillance training would be of benefit to its residents. The home indicated a number of challenges in recruiting a nurse to take the ICP training program, such as the shortage of qualified nurses in its area, the need to maintain appropriate staffing levels, and the availability of funding.

The third home commented that it will continue to work with its Regional Infection Control Network and other infection control bodies to identify and obtain the most appropriate level and type of training and education for its ICP. As well, in the interim, the home will clarify the components of the ICP role and implement electronic tracking of activities falling within each of these components to ensure complete coverage.

Appendix—Details of PIDAC and Ministry Initiatives

BEST-PRACTICE DOCUMENTS

PIDAC has developed the following documents on best practices that are applicable to long-term-care homes. These documents incorporate the applicable guidelines and recommendations from entities such as the Public Health Agency of Canada and the College of Physicians and Surgeons of Ontario, as well as recommendations from medical literature.

- *Best Practices for Cleaning, Disinfection and Sterilization* (March 2006, revised April 2006)—focuses on medical equipment.
- *Best Practices for Hand Hygiene* (May 2008, revised January 2009)—includes guidance on when, why, and how staff in long-term-care homes should wash their hands.

- *Best Practices for Infection Prevention and Control Programs in Ontario* (September 2008)—includes guidance on the human resources and skills needed for an infection-prevention-and-control program, as well as the specific activities that should be included.
- *Best Practices for Infection Prevention and Control of Resistant Staphylococcus aureas and Enterococci* (March 2007)—includes guidance on controlling the transmission of MRSA and VRE and managing residents with MRSA and VRE.
- *Best Practices Document for the Management of Clostridium difficile in all Health Care Settings* (December 2004, most recently revised January 2009)—includes guidance on identifying clusters of *C. difficile*, preventing their transmission, and managing residents with the infection.
- *Best Practices for Surveillance of Health Care-Associated Infections in Patient and Resident Populations* (June 2008)—includes guidance on tracking and monitoring health-care associated infections.
- *Preventing Febrile Respiratory Illnesses* (September 2005, revised August 2006)—includes guidance on detecting and containing clusters and outbreaks of common respiratory infections, such as influenza.
- *Routines Practices and Additional Precautions* (August 2009)—includes guidance on reducing the risk of the transmission of microorganisms.

In addition, at the time of our audit, PIDAC was expecting to publish in spring 2010 a best-practice document that would provide additional guidance to long-term-care homes on environmental cleaning.

CORE COMPETENCIES PROJECTS

In response to the 2004 *Final Report of the Ontario Expert Panel on SARS and Infectious Disease Control*

by Dr. David Walker and the Ministry's Operation Health Protection plan, PIDAC and the Ministry developed educational material to enhance infection-control training for front-line staff. In spring 2007, the Ministry and PIDAC developed three educational modules: routine infection-control practices; hand hygiene; and the chain of infection transmission for hospital staff. These modules were posted on the Ministry's website for health-care professionals. According to the Ministry, at the time of our audit, work was underway to adapt these modules for other health-care workers and other facilities, such as long-term-care homes. The Ministry also indicated that further educational modules will be developed on topics such as additional precautions and surveillance.

HAND HYGIENE IMPROVEMENT PROGRAM

Proper hand hygiene (that is, using alcohol-based rub or soap and water to clean hands) by health-care workers is one of the most effective ways of preventing HAIs. In March 2006, the Ministry and the Public Health Agency of Canada held a workshop to learn from the world's leading authorities—such as the World Health Organization and experts from across Canada, the United States, and the United Kingdom—about programs that resulted in sustainable change in hand-hygiene practices. The workshop also discussed how these programs could be adapted for use in Ontario. On the basis of this workshop, the Ministry developed the “Just Clean Your Hands” Hand Hygiene Improvement Program, which it originally focused on implementing in hospitals. At the time of our audit, the Ministry indicated that it expects to have this program adapted for use in long-term-care homes by the end of 2009.