INFECTION PREVENTION AND CONTROL

Annual Report 2011/2012
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Infection Prevention and Control (IPAC) at Providence Health Care is pleased to announce an increase in hand hygiene compliance this fiscal year, reaching an overall compliance rate of 80% in Fiscal Quarter 4. A number of new hand hygiene projects were launched this year, including an expanded “Ask me if I’ve cleaned my hands” campaign, as well as a successful project engaging key medical staff as hand hygiene champions. Continued efforts are already underway to maintain this high rate of hand hygiene compliance.

IPAC continues to broaden its surveillance scope. In collaboration with the Division of Cardiac Surgery and the Surgical Program, we developed a surgical site infection (SSI) surveillance program for patients undergoing cardiac surgery. We have also been working closely with the Department of Obstetrics and Gynecology to expand post-discharge SSI surveillance following Caesarean section.

Refining current surveillance programs to ensure high data quality is as important as launching new surveillance initiatives. This year, we enhanced tuberculosis (TB) surveillance by including daily monitoring of suspected and confirmed TB cases. Furthermore, processes for other surveillance programs have been updated to ensure the data collection process is consistent, comprehensive, relevant and efficient.

Healthcare-associated infection rates reflect a multitude of factors, including laboratory practices, surveillance system refinements, infection control awareness, hand hygiene compliance and practices among healthcare workers. In 2011/12, we saw a slight (but statistically insignificant) increase in Methicillin-resistant Staphylococcus aureus (MRSA) rates, from a rate of 0.6/1000 patient-days to 0.8 cases/1000 patient-days. Vancomycin-resistant enterococci (VRE) rates significantly decreased from 1.7 cases/1000 patient-days to a rate of 1.5 cases/1000 patient-days in 2011/12 (p < 0.05). Compared to the previous fiscal year, Clostridium difficile infection (CDI) rates decreased from 1.3 to 1.1 cases/1000 patient-days (statistically insignificant).

We appreciate and recognize the involvement — and ultimately the ownership of IPAC practices and principles — by the PHC community. Your continued support is integral to the sustainability and improvement of our work.

Sincerely,
The Infection Prevention and Control Team

EXECUTIVE SUMMARY

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INTRODUCTION TO INFECTION PREVENTION AND CONTROL

The Vision of the IPAC team is to create and sustain a culture in which infection prevention and control is integrated into all aspects of care at all PHC facilities.

The Mission of the IPAC team is to be dedicated to the prevention and control of healthcare-associated infections in a supportive working environment. The practices of the IPAC team are based on sound scientific principles. Infection control services are provided to PHC with structure and authority in collaboration with local, regional, and provincial partners.

Surveillance: Monitoring healthcare-associated infections using standardized case definitions is critical to the prevention and control of infectious agents. At PHC, the objectives of surveillance are to:
- Detect cases through enhanced screening so that appropriate interventions can be implemented.
- Detect outbreaks of infectious diseases in order to implement control measures.
- Monitor trends in PHC-associated transmission, and provide a means of determining when interventions are required.
- Interpret trends with a focus on hospital-specific data as opposed to inter-hospital comparisons.
- Determine the burden of specific infectious diseases at PHC.
- Evaluate and improve interventions.

Case management: Control measures for patients identified with a communicable disease are based on how infectious agents are transmitted, and include education and implementation of standard, contact, droplet, and airborne precautions.

Outbreak management: In collaboration with Vancouver Coastal Health Public Health, IPAC is responsible for investigating clusters of cases and determining whether there is an outbreak at a PHC facility. Control measures are promptly implemented when each outbreak is declared.

Education: IPAC provides education to staff, patients and visitors in order to increase awareness of appropriate IPAC measures. Education is provided via classes, presentations, consultations, and the IPAC website.

Research: IPAC conducts research in order to support the integration of evidence-based practices into daily practice and evaluate the effectiveness of current strategies at PHC.

Policies and Procedures: IPAC continuously reviews, develops, and implements policies and procedures to guide evidence-based best practices.

Our vision and mission are carried out using the initiatives described below.

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Hand hygiene (hand-washing with soap and water or using an alcohol-based hand rub) is considered the most important measure for preventing healthcare-associated infections. Overall compliance with hand hygiene among healthcare professionals, however, is known to be suboptimal.

This year, major hand hygiene educational and promotional activities included:

- expansion of unit feedback boards
- engagement of front-line staff in developing hand hygiene slogans
- educational postcards highlighting the first of “5 Moments” for hand hygiene
- ICP led huddles on units focusing on hand hygiene
- increased point of care alcohol-based hand rub dispensers
- hand hygiene education modules for nurses and hand hygiene education modules for physicians were enhanced and expanded
- “Ask Me” poster campaign
- Physician Hand Hygiene Champions

Monitoring hand hygiene is an essential component of programs aimed at improving compliance. PHC has been monitoring compliance since 2005. Systematic quarterly hand hygiene audits, based on “gold standard” methodology developed by the World Health Organization, began in the third Fiscal Quarter of 2008/09. Infection control practitioners measure compliance by direct observation of staff, and compliance is calculated using the following formula:

\[
% \text{ Compliance} = \frac{\# \text{ hand hygiene events}}{\# \text{ opportunities}} \times 100
\]

Overall hand hygiene compliance was 69% for fiscal year 2011/12. Compliance varied by unit, healthcare worker type, and facility. Compared to last fiscal year, overall hand hygiene compliance improved steadily and significantly in 2011/12 and increased from 65% in Quarter 1 to 80% in Quarter 4 (Figure 1). Further initiatives to sustain and improve compliance above 80% are currently being implemented.

Based on our previous audits and published systematic reviews, physicians (as a group) consistently underperform hand hygiene when compared to other healthcare worker groups. To engage physicians in significantly improving hand hygiene compliance at PHC, the Physician Hand Hygiene Champions project was launched with grant funding provided by the British Columbia Medical Association Shared Care and Specialist Services Redesign Committee. The purpose of this project was to improve physician hand hygiene compliance by investigating physicians’ knowledge, attitudes, barriers, and enablers to perform hand hygiene. Findings from this project will allow for the development of targeted interventions aimed at improving physician hand hygiene compliance. This project successfully recruited 103 PHC physician hand hygiene champions. Many of these physicians have since initiated locally relevant quality improvement projects in different clinical settings and have continued to act as positive hand hygiene role models for medical trainees and other healthcare workers. For the first time since our systematic auditing when initiated, medical staff did not have significantly lower hand hygiene compliance compared to other healthcare workers.

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Medical</th>
<th>Nursing</th>
<th>Other</th>
<th>Overall</th>
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<td>59%</td>
<td>65%</td>
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<td>Qtr 4 11/12</td>
<td>77%</td>
<td>83%</td>
<td>66%</td>
<td>80%</td>
</tr>
</tbody>
</table>
METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA)

MRSA is an antibiotic resistant bacterium that can be transmitted in healthcare and community settings. MRSA has the potential to cause serious infections for which treatment options are limited. More patients are colonized rather than infected with MRSA. Medically complex patients, those with more chronic diseases, and those who undergo invasive procedures or who have prosthetic devices are at higher risk for MRSA infection. The primary mode of transmission within healthcare facilities is via the hands of healthcare workers. The data presented below represent newly identified cases of MRSA among patients admitted to a PHC facility.

In 2011/12, 810 new cases of MRSA were identified at PHC facilities. Over half of these cases were seen in outpatient clinics (or emergency department visits). More precisely, 162/810 (20%) were classified as PHC-associated; and further, 138/162 (85%) of these cases were associated with transmission on acute care wards at St. Paul’s Hospital or Mount Saint Joseph Hospital corresponding to an overall incidence rate of 0.8 cases/1000 patient-days (95% CI: 0.6, 0.9) (Figure 2). This corresponds to a 15% increase (statistically insignificant) in the rate of PHC-associated MRSA cases compared to last fiscal year, and a 55% statistically significant decrease compared to 2006/07 (p < 0.05).

Overall, the incidence rate of PHC-associated MRSA cases has shown a downward trend over the preceding six years. The decline in MRSA rates is multifactorial in origin, and to an extent reflects improved infection control practices among healthcare professionals. Additionally, improved molecular testing, accelerated laboratory result turn-around times, and downward MRSA trends in the community may have contributed to decreasing rates.

In 2011/12, over half (56%) of the PHC-associated cases were identified through hospital screening programs. The remaining cases were identified from clinical specimens.

To address the problem of poor adherence to Antibiotic Resistant Organisms (ARO) screening among high-risk admitted patients, IPAC (in collaboration with the Emergency Department) developed universal MRSA screening for patients admitted to Medicine units at St. Paul’s Hospital. We are currently conducting an analysis to determine the impact and the sustainability of this project.
VANCOMYCIN-RESISTANT ENTEROCOCCI (VRE)

VRE refers to certain strains of enterococci that are resistant to the antibiotic vancomycin, making infections caused by these organisms more difficult to treat. Most patients are colonized rather than infected with VRE.

In 2011/12, 351 new cases of VRE were identified at PHC. Nearly all of these cases (84%) were admitted to a PHC facility (as opposed to being seen as outpatients), and 281/351 (80%) of cases were classified as PHC-associated. Of these, 267 (95%) were associated with transmission on acute care wards at either MSJ or SPH, corresponding to an incidence rate of 1.4 cases/1000 patient-days (95% CI: 1.4, 1.7) (Figure 4). This is significantly lower than the 2010/11 rate of 1.7 (95% CI: 1.4, 2.1) (p < 0.05). This decrease was observed at SPH but not at MSJ. Overall, the incidence rate at MSJ increased significantly from 0.5 (95% CI: 0.9, 2.9) in 2010/11 to 1.2 (95% CI: 0.3, 0.8, p < 0.05) in 2011/12, while the incidence rate at SPH decreased significantly from 2.0 (95% CI: 1.8, 2.3) to 1.5 (95% CI: 1.3, 2.0, p < 0.05) (Figure 5). At MSJ, a small VRE outbreak occurred on a medical unit and this contributed to the significant increase in VRE cases at this site, especially in Fiscal Quarter 4. Interventions to control the outbreak included: intensified screening for VRE upon admission; increased frequency of hand hygiene audits, transmission-based precautions audits and environmental cleaning audits; enhanced use of chlorhexidine for bathing patients colonized or infected with VRE; increased education for front-line staff; and improved cohorting of patients.

In 2011/12, the majority (68%) of PHC-associated cases were identified through hospital screening programs. The remaining cases were identified through clinical specimens. Severe infections due to VRE remain an uncommon occurrence. Overall, VRE incidence rates have decreased by 44% since 2006/07.

In consultation with a health economist and biostatistician, we are currently conducting an analysis on the attributable cost of VRE colonization and/or infection. The results of this analysis will help guide future directions regarding the scope of our VRE control program.

FIGURE 4: INCIDENCE RATE OF PHC-ASSOCIATED VRE IN ACUTE CARE FACILITIES, 2006/07 TO 2011/12

FIGURE 5: INCIDENCE RATE OF PHC-ASSOCIATED VRE BY SITE AND FISCAL QUARTER, 2010/11 AND 2011/12
Clostridium difficile infection (CDI) is the most common cause of healthcare-associated infectious diarrhea. CDI can present as mild diarrhea, but occasionally progresses to a severe infection resulting in serious complications such as toxic megacolon and even death. CDI is known to be more common in hospitalized persons who are > 65 years old and those who have been on antibiotics in the preceding three months.

Enhanced surveillance for CDI began at PHC on January 1, 2007, and polymerase chain reaction (PCR) for diagnosis of CDI was implemented in fiscal period 6 of 2010/11. To minimize the spread of infection, measures such as appropriate hand hygiene, stringent environmental cleaning/disinfection, and judicious use of antibiotics need to be implemented. This year, members of the IPAC team contributed to the development of provincial guidelines and tools for the prevention and control of CDI.

In 2011/12, 397 new cases of CDI were identified at PHC. 264 (66%) of these were classified as PHC-associated cases. Of these, 224 (85%) were associated with either SPH or MSJ, corresponding to an incidence rate of 1.1 cases/1000 patient-days (95% CI: 1.0, 1.3). This is a slight, but not statistically significant, decrease from 2010/11 (Figure 6).

As shown in Figure 7, the incidence rate of CDI at MSJ and SPH remained relatively unchanged over the four Fiscal Quarters of 2011/12.

Complications related to CDI in the 30 days following diagnosis are considered an indicator of the severity of illness, and are also closely monitored as part of our surveillance program. In 2011/12, 2 cases (0.5%) were admitted to the ICU, 1 case (0.3%) underwent a colectomy, and 1 case (0.3%) was diagnosed with toxic megacolon. In addition, CDI was determined to be a probable contributing factor in the death of 2 (0.5%) cases. This case fatality rate is consistent with rates from other facilities in Canada.

In order to engage front-line staff in basic infection prevention and control interventions, IPAC has started monitoring patient placement in the selected acute care wards. Infection Control Practitioners (ICPs) are providing medical wards at SPH and MSJ with a visual map of the unit identifying patients with Clostridium difficile infection. The bed maps also identify patients with MRSA and VRE colonization/infection. The goal is to minimize mixed cohorting of patients on the hospital wards. ICPs also actively follow patients with CDI to ensure that contact precautions are followed, and communicate regularly with housekeeping staff to ensure enhanced environmental cleaning and disinfection is initiated.

Using PCR, we examined a subsample of CDI cases to determine strain type. Epidemiologic differences of CDI were identified when PCR was used to differentiate between mutant and wild type strains. This type of molecular testing provides a more accurate classification of CDI cases. In addition, we are collaborating with an epidemiologic consulting firm to create a CDI burden of illness model for Canada.

Recently, IPAC physicians were selected to participate in a multi-centre randomized controlled trial comparing a novel antibiotic with vancomycin for the treatment of CDI. The study will likely start recruiting patients in the winter of 2012.

FIGURE 6: INCIDENCE RATE OF PHC-ASSOCIATED CDI CASES IN ACUTE CARE FACILITIES, 2006/07 TO 2011/12

FIGURE 7: PHC-ASSOCIATED CDI CASES BY SITE AND FISCAL QUARTER, 2010/11 AND 2011/12
SURGICAL SITE INFECTION (SSI) SURVEILLANCE

Although surgical techniques have advanced over the years, surgical site infections (SSI) continue to be a major source of post-operative morbidity, longer hospital stays, increased healthcare costs, and readmissions to hospital. SSI surveillance has been identified as a key priority for IPAC and the PHC Surgical Program, and is an Accreditation Canada required organizational practice.

Surgical site infections are identified following the development of an infection at the site of surgery within a specified period of time following the procedure. For most surgeries, 30 days is the standard follow-up period; however, this can be extended to one year if a prosthetic device or material has been placed (e.g., prosthetic joint or heart valve). The case definitions used for SSI surveillance are consistent with those from the Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN).

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Although challenging, it is important to implement a post-discharge surveillance program for SSI. A large percentage of SSI occur in the post-discharge period, particularly with the recent trend toward shorter hospital stays! IPAC has been collaborating with BC Women’s Hospital in developing a post-discharge surveillance system for SSI following Caesarean section. The post-discharge surveillance project was piloted at the end of fiscal year 2011/12, and we anticipate further expansion of post-discharge surveillance in the coming year.

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All PHC facilities are monitored for outbreaks of respiratory and gastrointestinal infections. Surveillance allows for the early detection of clusters so that control measures can be implemented swiftly. Outbreaks are declared in collaboration with Vancouver Coastal Health Communicable Disease Control.

Recently, improved laboratory detection of influenza and norovirus using molecular methods has allowed for rapid implementation of control strategies. The frequency, duration and severity of outbreaks depend on the type of organisms circulating in the community.

The following control measures are implemented to prevent and control nosocomial outbreaks:

- prompt laboratory detection of the etiologic agent
- early involvement of the IPAC team to support frontline staff
- thorough review of each patient case and strict adherence to outbreak case definitions
- isolation of affected patients in private rooms (or cohorting of patients if private rooms not available)
- closure of the affected patient unit or ward
- enhanced surveillance for the duration of the outbreak
- targeted staff education to reinforce the need to implement syndromic based precautions
- exclusion of sick staff from the workplace
- restriction of visitors and postponement of group activities
- enhanced environmental cleaning in the unit/facility

In 2011/12, 4 respiratory outbreaks and 4 gastrointestinal outbreaks were identified at PHC facilities (Tables 1 and 2). On average, respiratory outbreaks lasted 10 days (range: 5-14 days). All of the respiratory outbreaks occurred in residential care. On average, gastrointestinal outbreaks lasted 11 days (range: 7-15 days). Two gastrointestinal outbreaks were identified in acute care and 2 were identified in residential care. All gastrointestinal outbreaks were caused by laboratory confirmed norovirus.

### Table 1
Respiratory outbreaks at PHC facilities, 2006/07 - 2011/12

<table>
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<tr>
<th>Year</th>
<th>Total</th>
<th>Residential</th>
<th>Acute</th>
<th>Total</th>
<th>Residents</th>
<th>Staff</th>
<th>Cause</th>
</tr>
</thead>
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<td>4</td>
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<td>0 (0%)</td>
<td>55</td>
<td>55 (100%)</td>
<td>0 (0%)</td>
<td>Influenza, Other</td>
</tr>
<tr>
<td>2010/11</td>
<td>1</td>
<td>0 (0%)</td>
<td>1 (100%)</td>
<td>3</td>
<td>2 (67%)</td>
<td>1 (33%)</td>
<td>Influenza, Other</td>
</tr>
<tr>
<td>2009/10</td>
<td>0</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>Influenza, Other</td>
</tr>
<tr>
<td>2008/09</td>
<td>2</td>
<td>2 (100%)</td>
<td>0 (0%)</td>
<td>25</td>
<td>20 (80%)</td>
<td>5 (20%)</td>
<td>Influenza, Other</td>
</tr>
<tr>
<td>2007/08</td>
<td>4</td>
<td>4 (100%)</td>
<td>0 (0%)</td>
<td>116</td>
<td>107 (92%)</td>
<td>9 (8%)</td>
<td>Influenza, Other</td>
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<tr>
<td>2006/07</td>
<td>4</td>
<td>4 (100%)</td>
<td>0 (0%)</td>
<td>84</td>
<td>82 (98%)</td>
<td>2 (2%)</td>
<td>Influenza, Other</td>
</tr>
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</table>

### Table 2
Gastrointestinal outbreaks at PHC facilities, 2006/07 - 2011/12

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Residential</th>
<th>Acute</th>
<th>Total</th>
<th>Residents</th>
<th>Staff</th>
<th>Cause</th>
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<td>2 (50%)</td>
<td>2 (50%)</td>
<td>80</td>
<td>51 (64%)</td>
<td>29 (36%)</td>
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<td>2010/11</td>
<td>4</td>
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<td>3 (75%)</td>
<td>59</td>
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<td>2009/10</td>
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<td>56</td>
<td>50 (89%)</td>
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<td>6</td>
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<td>6</td>
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<td>6 (100%)</td>
<td>48</td>
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<td>20 (42%)</td>
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<td>2006/07</td>
<td>10</td>
<td>5 (50%)</td>
<td>5 (50%)</td>
<td>254</td>
<td>124 (58%)</td>
<td>90 (42%)</td>
<td>Norovirus, Other</td>
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Tuberculosis (TB) is caused by the bacterium Mycobacterium tuberculosis. TB is spread primarily via aerosolization of respiratory secretions when someone with active pulmonary disease coughs or sneezes. The risk of TB transmission in healthcare settings is driven by the prevalence of disease in the community and the effectiveness of prevention and control measures. The most important determinant of transmission risk in hospitals is the number of patients with active TB being cared for in the facility. Patients suspected or known to have active pulmonary TB are placed on airborne precautions to reduce the risk of transmission. A facility is considered to have a higher risk of TB transmission if six or more individuals are seen with active TB annually. In 2011/12, 23 cases of pulmonary tuberculosis were diagnosed at PHC acute care facilities; 12 (52%) were among admitted patients. Among hospitalized patients, 50% were placed on precautions within 4 hours and 42% had roommates who required TB exposure follow-up. No nosocomial transmission of TB was detected in 2011/12. No cases were identified in residential care facilities. PHC provides care for a relatively high number of TB cases. In this fiscal year, we initiated an enhanced system to ensure that all patients with suspected pulmonary TB are placed on airborne precautions in a timely manner. ICPs have also been more involved in assessing the appropriateness of discontinuing airborne precautions. To further characterize the risk of TB transmission at PHC, the IPAC team, in consultation with multiple hospital services, has developed an institutional TB risk assessment. The findings from this assessment will help prioritize the key areas for improvement with regards to mitigating risk of TB transmission at PHC.

Cultures of mycobacteria

Every year, influenza infections result in a significant number of hospitalizations and deaths. The elderly, pregnant women and those with underlying medical conditions are at increased risk for influenza-related complications. In 2011/12, and consistent with previous years, nearly all of the residents at PHC residential care facilities were vaccinated against influenza (Figure 9). Healthcare workers are also at an increased risk of acquiring and transmitting the influenza virus. Influenza immunization is the most effective way to prevent the spread of influenza. Despite the benefits of the influenza vaccine, vaccine uptake rates among healthcare workers remain low. In 2011/12, the percent of acute care staff immunized against influenza decreased slightly for seasonal influenza vaccine (48%; n = 2191). Additionally, 469 (55%) residential care staff at PHC facilities were immunized against seasonal influenza (Figure 9). Although these coverage rates are far from ideal, they are consistent with those reported in other healthcare facilities in BC. IPAC is working closely with Occupational Health & Safety and VCH Communicable Disease Control to implement innovative approaches to improve vaccination rates. Mandatory influenza vaccination of healthcare workers or wearing a surgical mask is expected to be introduced in 2012/13. In addition to receiving the influenza vaccine, healthcare workers are encouraged to always practice hand hygiene, respiratory etiquette, and to stay home from work if they have influenza-like symptoms.

FIGURE 9: INFLUENZA IMMUNIZATION COVERAGE RATES AMONG PHC STAFF AND RESIDENTS, 2009/10, 2010/11, AND 2011/12

![Influenza Immunization Coverage Rates](figure9.png)

<table>
<thead>
<tr>
<th></th>
<th>2009/10</th>
<th>2010/11</th>
<th>2011/12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Care Staff</td>
<td>48%</td>
<td>50%</td>
<td>48%</td>
</tr>
<tr>
<td>Residential Care Staff</td>
<td>58%</td>
<td>55%</td>
<td>64%</td>
</tr>
<tr>
<td>Residents</td>
<td>92%</td>
<td>89%</td>
<td>92%</td>
</tr>
</tbody>
</table>

INFLUENZA
The Infection Prevention and Control (IPAC) team strives to provide PHC staff with timely and relevant education, based on current evidence-based recommendations. Messages are communicated using various strategies with the goal of promoting a culture in which IPAC is integrated into all aspects of care.

Educational resources, such as the infection control manual, information brochures, results from current research, and links to online courses, are made readily accessible to all PHC staff via the IPAC intranet website.

In addition, the IPAC team provides consultations on a daily basis to address patient-, procedure- or unit-specific concerns. IPAC delivers educational sessions to all new employees at PHC. IPAC Physicians provide consultations through telephone interactions, regular ward visits, resident teaching sessions and IPAC rounds.

Infection control practitioners (ICPs) deliver the bulk of infection control education sessions at PHC. In the past year, the IPAC team delivered over 113 hours of education sessions, reaching over 1900 staff (Table 3). This year, most of the education time was spent on hand hygiene and general infection control principles. The percent of education time spent on hand hygiene and general infection control was substantially higher than in recent years.

A new education module for the upcoming fiscal year will focus on the prevention of catheter-associated urinary tract infections.

### Table 3
IPAC educational sessions by number of hours and participants reached, 2011/12

<table>
<thead>
<tr>
<th>Type of education</th>
<th>HOURS / YEAR</th>
<th>PARTICIPANTS / YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPAC Links workshops</td>
<td>16</td>
<td>27</td>
</tr>
<tr>
<td>New employee orientation</td>
<td>18</td>
<td>668</td>
</tr>
<tr>
<td>Hand hygiene</td>
<td>37</td>
<td>996</td>
</tr>
<tr>
<td>Transmission-based precautions</td>
<td>5</td>
<td>131</td>
</tr>
<tr>
<td>Influenza/Gastrointestinal outbreaks</td>
<td>6</td>
<td>95</td>
</tr>
<tr>
<td>Antibiotic-resistant organisms</td>
<td>10</td>
<td>122</td>
</tr>
<tr>
<td>Clostridium difficile infection</td>
<td>7</td>
<td>84</td>
</tr>
<tr>
<td>Other</td>
<td>14</td>
<td>175</td>
</tr>
<tr>
<td>Total</td>
<td>113</td>
<td>1903</td>
</tr>
</tbody>
</table>

A new education module for the upcoming fiscal year will focus on the prevention of catheter-associated urinary tract infections.
IPAC Links was established following the successful implementation and evaluation of the Infection Control Champions (ICC) project, a study which was led by IPAC and funded by the Canadian Institutes of Health Research (CIHR). The ICC project goal was to evaluate the feasibility and cost-effectiveness of supporting local front-line nurses in infection control leadership initiatives. Local stakeholders also considered the project a success and the ICC project was renamed and re-launched as the IPAC Links program. Since its inception, IPAC has trained 124 individuals to the Link Program.

Building upon the previous accomplishments of IPAC Links, the scope of the program was broadened considerably, and an additional 17 new healthcare workers were recruited to serve as Links. Based upon a distributed model of infection prevention and control, the Links program now includes Social Workers, Licensed Practical Nurses, Respiratory Therapists, Laboratory Technologists, Ward Aides, Radiology Technicians, as well as Registered Nurses.

In addition to the general orientation sessions, updates are presented through IPAC held education in-services and a monthly newsletter entitled The Bug Brief.

Many Links have been playing a pivotal role in a number of local Infection Control issues including: changes to the physical layout of the unit, increasing access to point of care alcohol-based hand rub, engaging staff in hand hygiene peer reviewers, improving compliance with ABO screening and transmission-based precautions, and promoting educational material and surveillance data on unit feedback boards.

APPENDIX A:
INFECTION PREVENTION AND CONTROL TEAM

Marc Romney, MD  
IPAC Medical Director / Medical Microbiologist

Howard Green, MBA  
Leader, Infection Control

Victor Laxer, MD  
Infection Control Physician / Medical Microbiologist / Infectious Diseases Consultant

Elisa Lloyd-Smith, PhD  
Epidemiologist

Jim Curtin, RN CIC  
Infection Control Practitioner

Mary McNaughton, RN MSA CIC  
Infection Control Practitioner

Craig Pienkowski, RN  
Infection Control Practitioner

Celia Ambery, RN  
Infection Control Practitioner

Wayne Gilbert, RN  
Infection Control Practitioner

Aza Sharma, MSc  
Infection Control Practitioner

Danielle Richards, RN MA  
Infection Control Practitioner

Thomas Kind, RN  
Infection Control Practitioner

Bajinder Sidhu, RN  
Infection Control Practitioner

Marie McCoy, RN  
Infection Control Practitioner

Camila Palacio  
Nursing Clerk

Luz Viernes  
Administrative Assistant

Sylvie Champagne, MD  
Medical Microbiologist

Christopher Sherlock, MD  
Medical Microbiologist

APPENDIX A:
INFECTION PREVENTION AND CONTROL TEAM
## APPENDIX B: PROVIDENCE HEALTH CARE FACILITIES

<table>
<thead>
<tr>
<th>NAME</th>
<th>TYPE OF FACILITY</th>
<th>ACUTE CARE BEDS</th>
<th>RESIDENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Paul’s Hospital</td>
<td>Acute care</td>
<td>435</td>
<td>0</td>
</tr>
<tr>
<td>Mount Saint Joseph Hospital</td>
<td>Acute care</td>
<td>101</td>
<td>100</td>
</tr>
<tr>
<td>St. Vincent’s Hospital</td>
<td>Residential care</td>
<td>101</td>
<td>100</td>
</tr>
<tr>
<td>—Brook Calm Pavilion</td>
<td>Residential care</td>
<td>101</td>
<td>100</td>
</tr>
<tr>
<td>Holy Family Hospital</td>
<td>Rehabilitation</td>
<td>75</td>
<td>142</td>
</tr>
<tr>
<td>—Langara</td>
<td>Residential care</td>
<td>75</td>
<td>142</td>
</tr>
<tr>
<td>Marion Residence</td>
<td>Residential care</td>
<td>75</td>
<td>142</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>612</td>
<td>698</td>
</tr>
</tbody>
</table>

## APPENDIX C: DEFINITIONS

### SURVEILLANCE DEFINITIONS

**Colonization:** The presence, growth, and multiplication of an organism without observable clinical symptoms or immune reaction.

**Infection:** Invasion by and multiplication of a microorganism in body tissue resulting in clinical manifestations of disease.

**CDI case:** Laboratory confirmation of *Clostridium difficile* in an unformed stool specimen.

**MRSA case:** Laboratory confirmation of methicillin-resistant *Staphylococcus aureus* from specimens indicative of colonization or infection.

**VRE case:** Laboratory confirmation of vancomycin-resistant enterococci from specimens indicative of colonization or infection.

For MRSA, VRE and CDI cases, the following sub-classifications are made:

- **PHC-associated case:** Admitted for ≥72 hours in a PHC facility OR admitted to a PHC facility within the preceding 4 weeks/12 months.
- **Non-PHC-associated case:** Admitted for <72 hours in a PHC facility AND has not been admitted to a PHC facility within the preceding 4 weeks/12 months. The assumption is that these cases were acquired in the community or in another healthcare facility other than PHC.

**Patient-days:** The number of patients currently admitted at a facility by day (counts are usually conducted at midnight) and multiplied by the number of days in a given time period. Patient days are used as denominators in the calculation of rates to adjust for length of stay. For MRSA and VRE rates, acute care (including newborns) patient days are used as the denominator. For C. difficile rates, acute care patient days exclude newborns.

**Fiscal year/period:** April 1 to March 31 of the following year, divided into 13 fiscal periods, and 4 Fiscal Quarters.

**95% Confidence Interval (CI):** An interval estimate of the rate with 95% degree of certainty.

### OUTBREAK DEFINITIONS

**Gastrointestinal outbreak:** Three or more cases of suspected gastroenteritis among patients, residents, or staff, that cannot be explained by admitting diagnoses or by noninfectious causes of symptoms (i.e., recent use of laxatives or stool softeners, chronic diarrhea, etc.), within a four-day period in the same unit or patient care area.

**Respiratory outbreak:** Two or more cases of influenza-like illnesses (fever, chills, headache, myalgia, sore throat, cough, nasal congestion, etc.) among patients, residents, or staff within a one-week period in the same unit or patient care area.

**For MRSA, VRE and CDI cases:**

- **PHC-associated case:** Admitted for ≥72 hours in a PHC facility OR admitted to a PHC facility within the preceding 4 weeks/12 months.
- **Non-PHC-associated case:** Admitted for <72 hours in a PHC facility AND has not been admitted to a PHC facility within the preceding 4 weeks/12 months. The assumption is that these cases were acquired in the community or in another healthcare facility other than PHC.
REFERENCES


