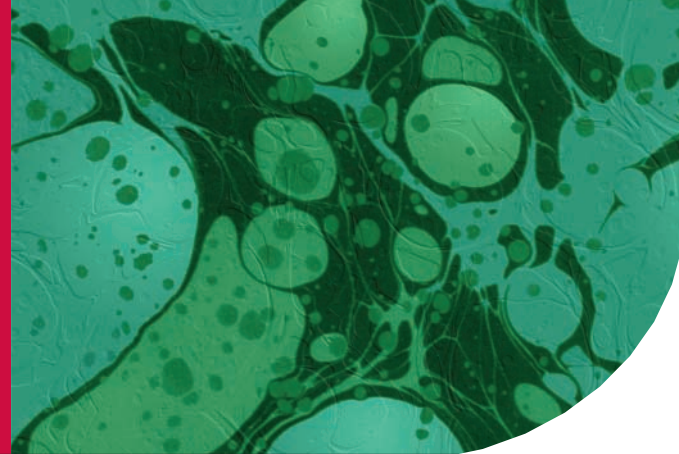


# Laboratory Research Focus



## Reducing Hospital Acquired Infections in Canada's Most Impoverished Neighbourhood Providence Health Care, Vancouver, Receives Special Infection Control Award

*The judges of the Oxoid Infection Control Team of the Year Awards were pleased, this year, to make a special award to the infection control team at Providence Health Care in Vancouver, Canada, for the work that they have undertaken in reducing levels of nosocomial infections in the face of challenges associated with drug users and homeless persons in the local community.*

*Providence Health Care (PHC) is Canada's largest, faith-based health care organisation, operating 14 facilities in Greater Vancouver, British Columbia, Canada, including two acute-care hospitals: St Paul's Hospital, a tertiary-care, academic and research hospital with 520 acute care beds located in downtown Vancouver, serving both the local community as well as those from disadvantaged socio-economic groups; and Mount St Joseph Hospital, a 240-bed acute and extended care facility.*

**“These interventions have resulted in a significant reduction in nosocomial infections throughout PHC.”**

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### INFECTION CONTROL CHALLENGES

Downtown Eastside (DTES) Vancouver is the most impoverished neighbourhood in Canada [1], in which a large percentage of the population are active injection drug users (IDUs) [2]. At St. Paul's Hospital, approximately 15% of admissions are attributable to injection drug use, despite the fact that injection drug users (IDUs) account for only a small fraction of the population served by the hospital. Providing Infection Prevention and Control (IPC) services for those with substance abuse issues, as well as the remainder of the population, presents unique challenges for PHC's IPC Team, including:

- The treatment of DTES residents (at increased risk for HIV, TB and many other medical problems) stretches already limited resources, particularly at St. Paul's;
- Patient groups with high prevalence rates of antibiotic-resistant organisms, including methicillin resistant Staphylococcus aureus (MRSA), vancomycin resistant enterococci (VRE) and Clostridium difficile-associated diarrhea (CDAD);
- Outbreaks of community-associated MRSA (CA-MRSA) among IDUs, causing serious skin and tissue infections [3];
- Vancouver's higher rates of TB and HIV/AIDS compared to the national Canadian average [4];
- The frequent implementation of 'Over Capacity Protocol', resulting in the creation of makeshift beds. This often has serious infection control implications due to the inappropriate placement of patients with antibiotic-resistant organisms (AROs);
- The aging infrastructure at both acute care hospitals, including the predominance of 4-bed rooms and shared washrooms, presents ongoing infection control challenges; and
- Frequent pilfering of alcohol-based hand sanitiser stations from within the hospital by substance abusers.

### IPC ACTIONS TAKEN

The IPC team at PHC tackled these challenges by instituting a broad infection prevention and control programme, based on best available evidence and using local data to support innovative practice. The programme involved a number of interventions, including:

#### Expansion of the IPC team

The IPC team was expanded from two to six Infection Control Practitioners, as well as medical, epidemiological and administrative staff. This has allowed the team to shift their efforts from purely reactive work to more proactive projects and surveillance.

#### Hand Hygiene

The Clean Hands for Life™ campaign, adopted since 2005, was expanded and the concept of educational 'talking walls' was adopted, aimed at staff, visitors and patients. Static images with simple messages were designed to appeal to patients and visitors, while interchangeable graphic panels used humorous slogans and images to get a serious message across.

This was complemented by the appointment of local Hand Hygiene Champions to influence staff. A Hand Hygiene Champions calendar was created and Hand Hygiene Champion inserts were used for the talking walls campaign.

The issue of medical staff compliance was tackled by the introduction of a mandatory Hand Hygiene education module for physicians. The module is evidence-based and interactive.

### The Infection Control Champions Project

During 2007-08, the IPC team launched an innovative study looking at the effects of a local champion on compliance with infection prevention and control procedures. Local IPC champions were recruited from among Registered Nurses and were provided with resources and support to ensure that they made an impact in their clinical area. Analysis of feedback, so far, is encouraging and the IPC team anticipates presenting a business case to the PHC Senior Leadership Team to fully support the implementation of this kind of distributed model.

### IPC Rounds

A programme of IPC ward rounds was introduced to address the immediate concerns of frontline staff, as well as to raise the profile of IPC by visiting clinical areas on a regular basis.

The expanded team has also been able to conduct rounds in the PHC residential care sites, a commitment that the team was previously unable to fulfil.

### IPC Education

A proactive approach to educating staff has been adopted, with regular education sessions, in addition to brief 'Safety Huddles' on the units. In the last year, the IPC team has delivered over 120 hours of education, reaching over 2800 staff.

In addition, the IPC website has been expanded to include educational resources, and links to CDC on-line courses and the Vancouver Coastal Health Infection Control module.

### Introduction of IC Pocket Reference Card

To help improve staff compliance in the appropriate isolation and cohorting of patients, a pocket reference card was introduced. This card allows staff to access 'in the moment' information without consulting the Infection Control Manual. So far, the card has been distributed to over 2000 nursing, medical and support staff. Although evaluation of this intervention is ongoing, it has been well received and Infection Control Practitioners have noted fewer issues about isolation of patients coming up in their day-to-day work.

### Surveillance

The surveillance systems have been improved, in order to ensure the validity of the data collected, and used to inform the infection prevention and control programme. Information is provided to help in the investigation of outbreaks and new databases have been created to ensure that the team has access to the most up to date local information to inform practice.

Hand hygiene compliance data is now provided and observational audits form a regular part of the IPC programme. Epidemiological data are also used in PHC to target areas for enhanced cleaning.

### Communication Strategy

The IPC team has worked closely with the PHC communication team to ensure consistency and appropriateness of the IPC message. For example, a 'Frequently Asked Questions' section was included with the 2007-8 annual report to ensure that it could be clearly understood. This was the first PHC IPC annual report to be made available to the general public and it was commended for its simplicity and ease of use. Features on IPC also appear regularly in PHC's intranet site, newsletters and bulletins.

## RESULTS AND SUCCESS

These interventions have resulted in a significant reduction in nosocomial infections throughout PHC.

### Meticillin resistant Staphylococcus aureus (MRSA)

There has been a 35% decrease in nosocomial (or PHC-associated) MRSA cases compared to the previous year. Reasons for this decrease include improved identification of cases associated with other facilities, improved laboratory detection, improved hand hygiene, as well as improved infection control awareness among staff.

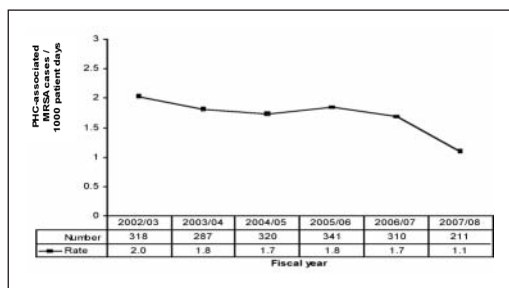


Figure 1. Incidence of PHC-associated MRSA cases in acute care facilities, 2002/03 to 2007/08.

### Vancomycin Resistant Enterococci (VRE)

There has also been a 36% decrease in nosocomial VRE cases compared to the previous year. Reasons for this decrease are similar to those for MRSA, as well as enhanced environmental cleaning directed by daily surveillance.

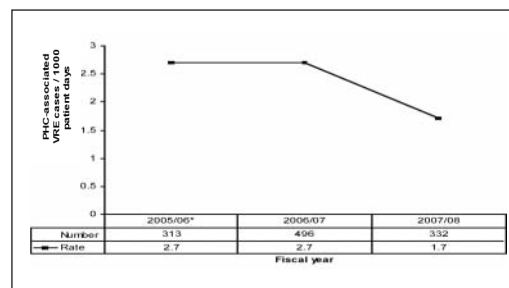


Figure 2. Incidence of PHC-associated VRE cases in acute care facilities, 2005/06 to 2007/08.

\*Data available for fiscal periods 6-13 only (August 12, 2005 – March 31, 2006)

### Clostridium difficile-Associated Disease (CDAD)

Overall, there was a decreasing trend in the incidence of CDAD cases at PHC in 2007/08. Again this can be attributed to increased awareness of hand hygiene, specifically the use of soap and water among staff resulting from the high profile campaigns run by the IPC team, and enhanced environmental cleaning using surveillance data.

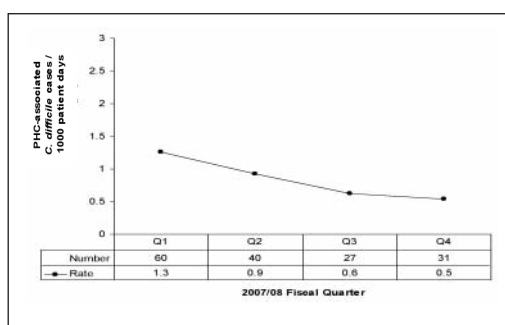


Figure 3. Incidence of PHC-associated C. difficile cases in acute care facilities, 2007/08.

## CONCLUSION

The crisis in Downtown Eastside, Vancouver, relating to poverty, homelessness, injection drug use and transmission of infections, is ongoing.

However, despite significant challenges, PHC continues to provide effective leadership in infection prevention and control. The work of the IPC Team is extensive, varied and frequently innovative.

The team is collaborative and multi-disciplinary in nature, with a strong emphasis on ensuring that everyone has a responsibility for infection prevention and control.

The significant reductions in nosocomial rates of MRSA, VRE and CDAD demonstrate that the PHC IPC programme has been effective.

## THE OXOID INFECTION CONTROL TEAM OF THE YEAR AWARDS

Since 2003, the Oxoid Infection Control Team of the Year Awards have been recognising and rewarding those who are making a real difference to improved standards of infection control within hospitals worldwide.

The Awards are supported by the Hospital Infection Society, the Infection Prevention Society, the Association of Medical Microbiologists, and the International Federation of Infection Control. The judging panel includes representatives from each of these associations together with other experts in infection control:

**Judy Potter**, former President of the Infection Prevention Society and Director of Infection Prevention and cControl, Royal Devon and Exeter NHS Foundation Trust.

**Dr Tim Boswell**, Consultant Medical Microbiologist and Infection Control Doctor, Nottingham University Hospital NHS Trust, Queen's Medical Centre Nottingham, and representative of the Hospital Infection Society.

**Dr Nizam Damani**, Clinical Director Infection Prevention & Control, Southern Health & Social Care Trust, Northern Ireland and representative of the International Federation of Infection Control.

**Dr Stephen Barrett**, Director of Infection Prevention and Control, Southend University Hospital, editor of The Journal of Hospital Infection and representative of the Association of Medical Microbiologists.

**Laura Ward**, Clinical Marketing Manager, Oxoid

**Fiona Macrae**, Oxoid Awards Manager and Chairman of the judging panel.

## REFERENCES

- [1.] City of Vancouver. 2005/6 Downtown eastside community monitoring report. 10th ed. 2007. Available at [www.city.vancouver.bc.ca/commsvcs/planning/dtes/pdf/2006MR.pdf](http://www.city.vancouver.bc.ca/commsvcs/planning/dtes/pdf/2006MR.pdf). Accessed 19 January 2009.
- [2.] Wood E, Tyndall MW, Montaner JS et al. Summary of findings from the evaluation of a pilot medically supervised safer injecting facility. *Canadian Medical Association Journal* 2006; 175: 1399-1404.
- [3.] Al-Rawahi GN, Schreuder AG, Porter SD et al. Methicillin-Resistant Staphylococcus Nasal carriage among Injection Drug Users: Six Years Later. *Journal of Clinical Microbiology* 2008; 46 (2): 477-479.
- [4.] BC Centre for Disease Control. 2007. Annual Summary of Reportable Diseases. Available at <http://www.bccdc.org/content.php?item=33&PHPSESSID=b6aa0d64375af3dd0f0ab9270c7abf91>. Accessed 29 January 2009.



## Automated Filling of Biplates and Pour Plate Functionality

**Integra Biosciences** has announced several new features and a product range extension expanding the versatility and further improving the reliability of its popular MEDIAJET automated Petri dish filler.

Developed in response to customer feedback the new MEDIAJET now offers the unique flexibility for high throughput filling of

Petri dishes of various sizes, Petri dishes with two compartments and test tubes of various diameters and length. Furthermore, an integrated shaker function provides a convenient solution for pour plate applications.

For many applications, the amount of required agar can be reduced by using two-compartment Petri dishes. However, pouring biplates by hand is time-consuming and inefficient. With the MEDIAJET biplate option users have an efficient and reliable solution to fill two-compartment Petri dishes automatically. A new MEDIAJET shaker function enables the automation of pour plate production. Depending on the volume or viscosity of the medium used for pouring, different shaking levels are selectable according to requirements. Furthermore, a new special Petri dish processing mode has been implemented that allows generation of agar dishes with highly planar surfaces. Designed to incorporate seamlessly into IQ/OQ certified environments - the new MEDIAJET provides facility, via an optional inkjet printer module, to automatically imprint Petri dishes with all the relevant data on either the side or bottom of plates to ensure complete traceability.

The MEDIAJET vario Petri dish filler can be converted from filling 90mm diameter dishes to 60mm or 35mm diameter dishes in less than 5 minutes. Using a proven mechanical dish guidance system, monitored by a set of sensors throughout the filling process, the compact MEDIAJET provides truly reliable, walk-away operation. Operational downtime and media loss due to 'dish jams' resulting from variations in the diameter, shape and rim profile of the disposable plastic Petri dishes are completely eliminated.

**Autoclaves**  
23 - 1000 litres

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- 5 Programs (Optional 10)
- Virtual Printer
- Data Archiving
- Internal Fault Detection
- PIN Code Security
- Service-independent Safety Closure

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