VOLUME 30
NUMBER 1

SPRING 2015

CJIC

The Canadian Journal of Infection Control
Revue canadienne de prévention des infections

Official Publication of
ipac Infection Prevention and Control Canada
pci Prévention et contrôle des infections Canada
ISSN - 1183 - 5702

IPAC NEWS:
Board Elections

INSIDE

PM# 40065075 Return undeliverable Canadian addresses to lauren@kelman.ca

Germs are making trips we never thought possible.

Security? Customs? Immigration?

Infectious diseases do not respect borders. Can you prevent their departure and are you prepared for their inevitable arrival? Learn how to keep germs grounded with *Accelerated Hydrogen Peroxide® — AHP®*.

virox.com

VIROX® TECHNOLOGIES INC.

ACCELERATED® HYDROGEN PEROXIDE Patented

The results of a recent study were "MINDBOGGLING"

- Dr. Michelle Alfa
(as quoted on CTV News, January 2015)

A recent study[1] published in the *American Journal of Infection Control* showed that the introduction of a disposable wiping system pre-wetted with an **Accelerated Hydrogen Peroxide**® (**AHP**®) disinfectant cleaner reduced the rate of HAIs caused by key pathogens by 20%!

→ virox.com

VIROX TECHNOLOGIES INC.

ACCELERATED® HYDROGEN PEROXIDE Patented

[1]Alfa, M.J., Lo, E., Olson, N., MacRae, M., Buelow-Smith, L. Use of a daily disinfectant cleaner instead of a daily cleaner reduced hospital-acquired infection rates, Am J Infect Control 2015; 43: 141-6

VANISHpoint®

NEEDLESTICK PREVENTION THAT MEETS YOUR NEEDS

automated needle retraction prevents exposure to the contaminated sharp

ACTIVATED VANISHPOINT SYRINGES REQUIRE LESS DISPOSAL SPACE THAN OTHER SAFETY SYRINGES & PREVENT DISPOSAL-RELATED INJURIES

easy ONE-HANDED activation!

OTHER AVAILABLE SAFETY PRODUCTS

VanishPoint® Blood Collection Set

VanishPoint® Blood Collection Tube Holder

VanishPoint® IV Catheter

Patient Safe® Syringe

RETRACTABLE TECHNOLOGIES, INC.
www.vanishpoint.com

P: 972.294.1770 • F: 972.294.4400
Toll Free: 1.888.703.1010
rtiservice@vanishpoint.com
511 Lobo Lane • Little Elm, Texas 75068-0009 • USA

EDITORIAL OFFICE
Chingiz Amirov, MPH, MSc QIPS, CIC
Director, Infection Prevention and Control
Baycrest Health Sciences
3560 Bathurst Street
Toronto, Ontario M6A 2E1
Tel: 416-785-2500 Ext. 2981 Fax: 416-785-2503
Email: camirov@baycrest.org

WEB COMMUNICATION MANAGER
Shirley McDonald, ART, CIC webmaster@ipac-canada.org

POSTING EMPLOYMENT OPPORTUNITIES/OTHER INFORMATION
IPAC Canada Membership Services Office
info@ipac-canada.org

PUBLISHER
Craig Kelman & Associates

3rd Floor, 2020 Portage Avenue
Winnipeg, MB R3J 0K4
Tel: (204) 985-9780 Fax: (204) 985-9795
www.kelman.ca E-mail: info@kelman.ca

EDITOR - Cheryl Parisien
DESIGN/PRODUCTION - Daniel Goulet
MARKETING MANAGER - Al Whalen
ADVERTISING COORDINATOR - Stefanie Hagidiakow

Send change of address to:
IPAC Canada
P.O. Box 46125, RPO Westdale,
Winnipeg, MB R3R 3S3
info@ipac-canada.org

Publications Mail Agreement #**40065075**
Return undeliverable Canadian addresses to: lauren@Kelman.ca

SUBSCRIPTIONS
Subscriptions are available from the publisher at the following rates: All Canadian prices include GST.
Prices are listed as personal/institutional.
Canada: $30/$38 (GST # 100761253); USA (in US funds): $28/$36; Other countries: $45/$60.
Subscriptions do not include online access to the journal. Members have online access to the current issue.

VISION
IPAC Canada will be a major national and international leader and the recognized resource in Canada for the promotiton of best practice in infection prevention and control.

MISSION
IPAC Canada is a national, multidisciplinary association committed to the wellness and safety of Canadians by promoting best practice in infection prevention and control through education, standards, advocacy and consumer awareness.

IPAC CANADA is now on FACEBOOK, TWITTER and LINKED IN

facebook twitter LinkedIn

SPRING 2015

VOLUME 30
NUMBER 1

CJIC
The Canadian Journal of Infection Control
Revue canadienne de prévention des infections

FEATURES

IPAC CANADA NEWS

The Canadian Journal of Infection Control is the official publication of Infection Prevention and Control Canada (IPAC Canada). The Journal is published four times a year by Craig Kelman & Associates, Ltd. and is printed in Canada on recycled paper. Circulation 3000.

ISSN - 1183 - 5702

Indexed/abstracted by the Cumulative Index to Nursing and Allied Health Literature, SilverPlatter Information Inc. and EBSCO.

The Canadian Journal of Infection Control is a 'Canadian periodical' as defined by section 19 of the Canadian Income Tax Act. The deduction of advertising costs for advertising in this periodical is therefore not restricted.

ipac Infection Prevention and Control Canada
pci Prévention et contrôle des infections Canada

www.ipac-canada.org

OLYMPUS®

Your Vision, Our Future

Olympus Endoscope Reprocessor

The only reprocessor designed by an endoscope manufacturer.

OER-Pro

Easier

- Compact & smart design
- Automated scope ID System

Faster

- Delivers reprocessing time of 29 minutes
- Eliminates 7 of 11 manual cleaning steps

Reliable

- Modified manual cleaning flow
- A single dedicated chemical: Acecide-C

For more information contact your local Olympus sales representative, or call 800-387-0437.

IPAC CANADA
2014 - 2015 Board of Directors

Executive Officers

President
Bruce Gamage, RN, BSN, CIC
Network Manager
BC Provincial Infection Control Network
Suite 504, 1001 W. Broadway, Rm. 514
Vancouver, BC V6H 4B1
Tel: 604-875-4844 ext. 22981
Fax: 604-875-4373
bgamage@phsa.ca

President-elect
Suzanne Rhodenizer Rose, RN, BScN, CIC
Director Healthcare Quality and Patient Safety
Infection Prevention and Control Nova Scotia
1894 Barrington Street, Box 488
Halifax, NS B3J 2A8
Tel: 902-722-1244 Fax: 902-428-2449
Suzanne.rhodenizerrose@novascotia.ca

Secretary
Marilyn Weinmaster, RN, BScN, CIC
Infection Control Practitioner
Regina Qu'Appelle Health Region
430 Pioneer Drive, Regina, SK S4T 6L8
Phone: 306-565-6127 Fax: 306-359-1402
marilyn.weinmaster@rqhealth.ca

Treasurer
Judi Linden, RN, BN, COHN(C), CIC
Regional Infection Prevention & Control
Coordinator
Southern Health
180 Centennaire Drive
Southport, MB R0H 1N0
Tel: 204-428-2738 Fax: 204-428-2774
jlinden@southernhealth.ca

Directors

Barbara Catt, RN BScN MEd CIC
Infection Prevention & Control Coordinator
Sunnybrook Health Sciences Centre
2075 Bayview Ave, B112, Toronto, ON M4N 3M5
Tel: 416-480-6100 Fax: 416-480-6845
barbara.catt@sunnybrook.ca

Mandy Deeves, BScN, RN, CIC
Network Coordinator
Public Health Ontario – Simcoe Muskoka Infection Control Network
80 Victoria Street, Suite 7, Orillia, ON L3V 7E4
Tel: 705-418-0253 Fax: 705-326-5434
Mandy.deeves@oahpp.ca

Victor Leung, MD, FRCPC
Infection Prevention and Control Physician
Providence Health Care
1190 Hornby Street, 4th Floor, Vancouver, BC V6Z 2K5
Tel: 604-806-0357 Fax: 604-806-8165
vleung@providencehealth.bc.ca

Ramona Rodrigues, RN BSc MSc(A) CIC CNS
McGill University Health Centre,
Montréal General Hospital
1650 Cedar ave.
Montréal, QC H3G 1A4
Phone: 514-934-1934 Ext: 42047
Fax: 514-934-8427
ramona.rodrigues@muhc.mcgill.ca

Michael Gardam, MSc, MD, CM, FRCPC
Medical Director, Infection Prevention and Control and Tuberculosis Clinic
University Health Network
200 Elizabeth Street, Toronto, ON M5G 2C4
Tel: 416-340-3758 Fax: 416-340-5047
michael. gardam@uhn.on.ca

Other Positions

Editor-in-Chief – Canadian Journal of Infection Control
Chingiz Amirov, MPH, MSc QIPS, CIC
Director, Infection Prevention and Control
Baycrest Health Sciences
3560 Bathurst Street
Toronto, ON M6A 2E1
camirov@baycrest.org

Web Communications Manager
Shirley McDonald, ART, CIC
RR 3, 4759 Taylor-Kidd Blvd
Bath, ON K0H 1G0
Tel: 613-389-9810 Fax: 613-389-8468
webmaster@ipac-canada.org

Online Novice IP&C Course Coordinators
Heather Candon, BSc, MSc, CIC
Jane Van Toen, MLT, BSc, CIC
basicde@ipac-canada.org

Social Media Manager
Barley Chironda, RPN, CIC
info@ipac-canada.org

Professional Agents

Legal Counsel
Terrance Carter/Theresa Man
Carters Professional Corporation
211 Broadway
Orangeville, ON L9W 1K4
Tel: 519-942-0001
tcarter@carters.ca

Auditor
Philip Romaniuk, CA
Stefanson Lee Romaniuk
1151 Portage Avenue
Winnipeg, MB R3G 0S9
Tel: 204-775-8975
promaniuk@slrca.ca

Membership Services Office

Executive Director
Gerry Hansen, BA
PO Box 46125 RPO Westdale,
Winnipeg, MB R3R 3S3
Tel: 204-897-5990/866-999-7111
Fax: 204-895-9595
executivedirector@ipac-canada.org

Deliveries only:
67 Bergman Crescent, Winnipeg, MB R3R 1Y9

Administrative Assistant
Kelli Wagner
Tel: 204-488-5027 Fax: 204-488-5028
Toll-Free: 1-855-488-5027
admin@ipac-canada.org

Conference Coordinator
Pat Rodenburg
Tel: 780-436-0983, ext. 234
Fax: 780-437-5984
pat@buksa.com

General Information:
info@ipac-canada.org

The truth is, *C. difficile*, MRSA *and VRE may* have been *admitted to all* these rooms.

- 33% of non-CDI rooms have tested positive for *C. difficile*.[1]
- 55% of high-touch areas in patient rooms have tested positive for *C. difficile*.[1]
- Admitting a new patient to a room previously occupied by a MRSA or VRE–positive patient, significantly increases the odds of acquiring MRSA or VRE.[2]

When the problems are facility-wide, the solutions have to be.

Clorox Healthcare™ Professional Disinfecting Bleach Products kill *C. difficile* spores quickly: wipes 3 minutes, liquids 5 minutes, and 46 other pathogens like MRSA & VRE in 1 minute*

CLOROX HEALTHCARE™

1. B. Koll, *American Journal of Infection Control*, June 2009. 2. S.S. Huang, R. Datta, R. Platt, *Archives of Internal Medicine*, 2006.

Learn more at www.cloroxhealthcare.ca *Use as directed on hard, nonporous surfaces

Getting ready:
Infection prevention and control with Accreditation Canada Qmentum program

Authors:
Chingiz M. Amirov, MPH, CIC [a*]
Aurora Wilson, RN, MN, CIC [b]
Sharon O'Grady, BAS, MT, CIC [c]
Shona MacDonald, RN [d]
Karima Velji, RN, PhD, CHE [a]

Infection Control
and Accreditation Canada

[a] Baycrest Health Sciences
[b] Providence Healthcare
[c] Bridgepoint Health
[d] West Park Healthcare Centre

Corresponding author:
Chingiz M. Amirov
Baycrest
3560 Bathurst St., Toronto, ON M6A 2E1
P: 416-785-2500 (2981)
F: 416-785-2503
E: *camirov@baycrest.org*

ABSTRACT

Introduction
The experiences of organizations surveyed under Accreditation Canada's Qmentum program are only beginning to emerge. There is a paucity of published reports on getting infection prevention and control (IPAC) ready for accreditation in this format.

Methods
To summarize the experience of preparing IPAC for accreditation, authors compiled information from four recently accredited chronic- and long-term care facilities using a qualitative/quantitative questionnaire specifically for IPAC accreditation standards and Required Organizational Practices (ROPs).

Results
Participating facilities were accredited with an average mark of 97% for compliance with the applicable IPAC standards and 100% for the ROPs. Specific themes and patterns emerged from the review of participants' detailed responses, including: prioritization of ROPs; development of unit-specific reports; use of "tip sheets"; conduct of mock surveys; use of multiple communication venues; involvement of staff in quality improvement initiatives and development of their capacity for engagement with surveyors; management of information overload; and submission of Leading Practice.

Discussion
Qmentum program emphasizes engagement of staff in quality improvement (QI) activities. Simply demonstrating compliance with the standards is no longer sufficient. It is important to involve staff in QI initiatives and develop their capacity to engage with surveyors. Respondents in this study also emphasized importance of ROP preparedness. Under Qmentum, organizations are expected to meet the ROPs.

Conclusion
Accreditation standards for IPAC continue to evolve. New standards and ROPs are expected to be added in the near future. Practical experience presented in this study may complement the existing body of knowledge on accreditation preparedness.

KEY WORDS
accreditation, Qmentum,
required organizational practice

INTRODUCTION

Accreditation Canada's Qmentum program is a relatively recent survey methodology introduced in 2008 (1), and experiences of organizations accredited in this format are only beginning to emerge. An important step in the Qmentum accreditation program is the on-site survey. During this survey, peer surveyors assess the leadership, governance, programs, and services of healthcare organizations against Accreditation Canada standards (2). A distinct feature of this survey is the Tracer methodology which allows tracing an individual patient using her health records as a roadmap, while collecting evidences both from the original data custodians (e.g., infection control) and frontline healthcare providers (3). With Tracer methodology, demonstration of compliance by IPAC alone is not sufficient. Therefore, preparation for the on-site survey is generally two-pronged: demonstrating compliance with IPAC standards and ensuring frontline staff can effectively convey their understanding of and adherence to these standards.

Although the largest share (26%) of the surveys conducted by Accreditation Canada is in the long-term care (LTC) sector (4), there is a paucity of published reports on LTC experience in getting ready for accreditation. This article summarizes experience of four recently accredited complex continuing care/rehabilitation (CCC/Rehab) and long-term care (LTC) facilities on getting Infection Prevention and Control (IPAC) ready for accreditation. Authors hope that their account of experience and useful tips shared in the article will be beneficial to other colleagues.

METHODS

To summarize their experience of getting IPAC ready for accreditation, authors collected information from four recently accredited CCC/Rehab/LTC facilities based in Toronto, including Baycrest Health Sciences (300-bed CCC/Rehab and 472-bed LTC), Providence Healthcare (262-bed CCC/Rehab and 288-bed LTC), Bridgepoint Health (404-bed CCC/Rehab), and West Park Healthcare (275-bed CCC/Rehab). The information was collected using a questionnaire consisting of a mix of 29 qualitative and quantitative questions structured around Accreditation Canada's IPAC standards and Required Organizational Practices.

Because preparation for accreditation usually targets original data custodians and frontline staff, our questionnaire was designed to examine both of these directions; we asked about how IPAC complied with the standards, and what was done to ensure a consistent response by the frontline staff. Given a distinct significance that ROP compliance carries in accreditation process, Our questionnaire made a particular emphasis on the process of preparation for each individual ROP.

Another part of the questionnaire was dedicated to Leading Practices – exemplary practices identified by Accreditation Canada surveyors as commendable examples of exceptional leadership, with a focus on patient safety and high quality service delivery (5). The remaining part of the questionnaire quizzed overall experience gained in preparation for individual IPAC accreditation standards, and collected tips that would be useful to share with colleagues in the field.

Questionnaires were completed individually by IPAC managers of the four facilities participating in the study. Individual responses were then collated in a single document for data analysis. To validate the emerging themes, we included only the responses that were aligned with at least one of the four areas of IPAC accreditation standards (6):

- Investing in infection prevention and control.
- Keeping people safe from infections.
- Providing a safe and suitable environment.
- Being prepared for outbreaks and pandemics.

As most of the submitted information was qualitative in nature, the analysis looked for common patterns (themes reported by at least two separate respondents) and extracting useful tips (information that might be unique to a reporting facility, but useful to publish, nonetheless). The patterns that emerged from the review of submitted data were grouped into themes and are summarized below.

RESULTS

All four of the participating facilities got accredited, with two of them "Accredited with Exemplary Standing." On average, their IPAC departments met 97% of the applicable accreditation standards, and 100% of ROPs. The following themes and patterns emerge from the review of their detailed responses.

Prioritize the ROPs

Organizations participating in Qmentum are *expected to meet* the ROPs – unmet ROPs affect an organization's accreditation decision level (1). This provision places a high premium on ensuring that the ROPs are met. Three out of four facilities participating in this study clearly indicated that they had prioritized IPAC-related ROP preparedness. They generated ROP-specific roadmaps, developed ROP-specific information sheets, and conducted mock surveys around ROPs using specific tests of compliance provided by Accreditation Canada.

Make unit-specific reports

Although Accreditation Canada's IPAC standards do not require *unit-specific stratification* of the rates (6), standards do speak to the organization determining how infection data is shared within facility. That is why the participating facilities made a special emphasis on developing unit-specific reports on the rates of infections, hand hygiene compliance, and immunizations. Monthly or quarterly reports were sent to clinical managers, posted on the units, and discussed at staff meetings. Stratifying the rates by units has clear advantages compared to aggregate reporting, creating a better association between the "local" rates and the unit-specific context of care, and supporting the principle of accountability.

Use "tip sheets"

All four participating facilities developed and used "tip sheets" for accreditation standards (commonly referred to as "Q-tips") in one form or another. This is a popular preparation tool that can be particularly effective for ROPs that have specific tests of compliance. Developing questions, providing answers, and walking the frontline staff over the drill was a common practice. Such tip-sheets can be made in various formats (from a simple question-answer type, to a more sophisticated type built on specific tracer scenarios), and can be used before and even during the on-site survey. Interesting examples included printed and laminated lanyard cards with the 4 Moments of Hand Hygiene, front-page Intranet-based messages with essential IPAC ROP information, and posters reminding of different information sources to identify patient's infectious status – all in a form of visual cues and readily available references for staff.

Conduct mock surveys

All respondents report extensive use of mock surveys. On some occasions, these would be layered, to include a tabletop mock within IPAC team, a separate mock administration tracer with the IPAC committee, and full-fledged mock exercises conducted with the frontline staff on the floors. As part of the mock, staff would receive Top 10 Questions they might get asked during the survey.

Notably, during mocks, emphasis was made not on memorizing *what to say*, but rather on *where to find* the information, as well as being able to *demonstrate* IPAC practices, such as the 4 Moments of Hand Hygiene, proper donning and doffing of personal protective equipment, and cleaning of equipment in between patient use. One of the reported objectives (and benefits) of mock surveys was to help staff to get into the survey mode and increase their comfort level of engaging with the surveyors.

Disseminate widely

All of the participating facilities reported using multiple venues to disseminate their IPAC-related messages. Rates of hand hygiene compliance, immunization and infection incidence were shared through various committee structures, through middle-level management, and directly to frontline staff during team meetings on the units, rounds, and inter-professional venues with clinical and non-clinical staff. Evidence of compliance with ROPs, tracer questions, IPAC initiatives and improvements were posted on the Intranet, featured in the internal publications/newsletters, and posted on the infection control boards on each unit.

An interesting detail reported by some of the respondents is the continued demand for and reliance on paper-based information materials, in addition to electronic ones. Although most of the participating facilities report active use of Intranet, emails, websites, and other forms of electronic communication, they also acknowledge having to use conventional paper-based materials. Three of the four responding facilities report staff issues regarding varying comfort levels and experience using computers to access information. At the request of frontline staff IPAC had to duplicate certain materials (e.g., IPAC manuals) in paper form, even though they were available electronically.

Don't say "I don't know"

For the frontline staff continuously bombarded with accreditation messages in the months preceding the on-site survey, it is challenging to hold onto countless facts and details related to the upcoming 'big test'. So when challenged with a tracer question by a surveyor, it might seem an easiest way to surrender with an innocent "I don't know." It is also the easiest way to leave a bad impression and get you a low Qmentum score. For this reason, it is imperative to help staff overcome the inertia of slipping in the easy answer, and offer them other more suitable alternatives.

Accreditation surveyors do not necessarily expect frontline staff to memorize their unit's rates of hand hygiene compliance, or infection incidence, or the exact content of an IPAC policy. They do, however, expect them to k*now where to find* this information. All of the questionnaire respondents emphasized this particular approach in their preparation. Unit-specific rates were posted on the units and staff was encouraged to refer to them when conversing with surveyors. Mock tracers prepared specifically on the subject of where to find the relevant information were offered to staff. The bottom line – when asked about your rate of hand hygiene, or immunization, or your outbreak management protocol - don't say "I don't know." Say "Let me show you!" or "Let me refer you to someone," instead.

Make it stick

Just before the on-site survey it is common for staff to go into an "accreditation overdrive" due to multiple competing messages and information overload. In these circumstances, it is ever more important to make your own messaging stick and stand out. Participating facilities used different strategies to achieve this objective. For example, one organization developed an accreditation icon named "Tracey Q. Mentum." She was made of a life-size cardboard and she "walked" around units "asking" staff tracer questions in non-threatening ways. Other respondents highlight their *tell-and-show* approach – rather than going over the policies, tell and show staff where the manual resides in; instead of memorizing the rates (of infection, immunization, etc.), show where they are posted; and, most importantly, when to refer to IPAC. Respondents indicate that these measures helped to reduce staff's information overload and alleviated their accreditation anxiety.

Submit Leading Practice(s)

Three of the respondents report successful submission of IPAC Leading Practices. A total of three candidate Leading Practices were submitted, with all three being approved (Reduction of MRSA Transmission through the Use of Antiseptic-Impregnated Body Cleansers; Electronic Hand Hygiene Audits; and IPAC Partnership with Environmental Services to Reduce HAIs). Although there is no hard evidence to suggest that successful submission of a Leading Practice correlates with high accreditation mark, it is notable that Accreditation Canada actively seeks Leading Practices and recognizes them for what they contribute to specific fields and to health care as a whole (1). Successful Leading Practice submission attests to IPAC's capacity to step beyond its day-to-day operational envelope, and complements its compliance with accreditation standards.

DISCUSSION

There are four main mechanisms responsible for organizational changes promoted by accreditation programs, including (7):

- Engagement of staff in quality improvement activities, such as self-assessment.
- Promotion of quality systems of care.
- Documentation, collation and use of data for internal and external benchmarking.
- Implementation of best-practice guidelines.

Qmentum program works along these same parameters, making an emphasis on the first mechanism of organizational change – engagement of staff in quality improvement activities. It is no longer sufficient for IPAC to simply demonstrate compliance with the standards. Special premium is placed on involving staff in the respective organizational change and developing their capacity to engage with surveyors during a tracer. It is equally important to demonstrate compliance with Qmentum IPAC standards and ensure frontline staff can effectively convey understanding of and adherence to these standards.

Mock surveys have been a popular tool in preparation for accreditations

"It is no longer sufficient for IPAC to simply demonstrate compliance with the standards. Special premium is placed on involving staff in the respective organizational change and developing their capacity to engage with surveyors during a tracer."

in various fields for a number of years (8-11). Such mock surveys are either developed and conducted in-house, or contracted out. Accreditation agencies also regard mock surveys as an effective preparation tool and commonly offer them as an additional service to aid organizations get ready for an actual survey. All of the organizations participating in this study reported widespread use of mock surveys to enhance compliance with IPAC standards.

A key part of accreditation process is determining whether organizations meet the Required Organizational Practices (ROPs) defined as evidence-based practices that mitigate risk and contribute to improving the quality and safety of health services (2). Implementation and monitoring of ROPs is one of the ways that Accreditation Canada fosters ongoing quality improvement. Currently, there are seven ROPs listed under IPAC accreditation standards, including Hand Hygiene Audit, Hand Hygiene Education and Training, Infection Control Guidelines, Infection Rates, Influenza Vaccine, Pneumococcal Vaccine, and Sterilization Processes, each with its own tests of compliance (6).

The ROPs represent a "core curriculum" of accreditation, and organizations participating in Qmentum are expected to meet them (1). This provision determines a starting point and sets a course for accreditation preparedness. Three out of four respondents in this study made ROP preparedness their first priority. This is also evident from the national accreditation statistics. Six of the seven IPAC-related ROPs had the national compliance rates of 75% or greater, the only exception being the ROP on evaluation of compliance with accepted hand hygiene practices (1). IPAC professionals are encouraged to take this into account when setting priorities in preparation for accreditation.

Leading Practices, on the other hand, represent an "extracurricular" activity. Nevertheless, they are recognized and valued by Accreditation Canada for their role in advancing individual fields of practice. Successful Leading Practices may provide a tangible contribution to getting accredited with a high score. In addition to accreditation benefits, Leading Practices available in a publicly accessible database also play a role in the knowledge transfer. IPAC professionals are encouraged to visit this database available on Accreditation Canada's website and familiarize themselves with this useful platform for knowledge dissemination.

CONCLUSION

Accreditation standards for IPAC are evolving together with the field of infection prevention and control and hospital epidemiology, thus becoming more complex and growing in numbers. As an example, evaluation of the new ROP on Antimicrobial Stewardship for complex continuing care facilities will begin in January 2014 (12). Authors hope that their experience and practical examples presented in this study will assist their colleagues in CCC/Rehab/LTC in getting ready for accreditation, and will complement the existing body of knowledge on accreditation preparedness, overall.

REFERENCES

1. Accreditation Canada. (2011). How Safe are Canadian Health Organizations? 2011 Report on Required Organizational Practices. Ottawa, ON: Accreditation Canada.
2. Accreditation Canada. (2012). *Canadian Health Accreditation Report – Required Organizational Practices: Emerging Risks, Focused Improvements*. Ottawa, ON: Accreditation Canada.
3. Sandra Kearns. Accreditation Canada's tracer methodology. *Qmentum Quarterly – Quality in Health Care* 2008; Volume 1, Number 1.
4. Accreditation Canada. (2011). Annual Report 2011. Ottawa, ON: Accreditation Canada.
5. Accreditation Canada. (2008). Leading Practices. Survey Year 2008. Ottawa, ON: Accreditation Canada.
6. Accreditation Canada. (2010). Infection Prevention and Control Standards. Ottawa, ON: Accreditation Canada.
7. BMJ Q&S: Hinchcliff R, Greenfield D, Moldovan M, Westbrook JI, Pawsey M, Mumford V, Braithwaite J. Narrative synthesis of health service accreditation literature. *BMJ QualSaf* 2012;21:979-991.
8. Schaffner M, Almon M. Mock Surveys: A Proactive approach to the Accreditation Visit. *Gastroenterology Nursing*; 1995, Volume 16, Number 6.
9. Sine D. M. How to conduct mock accreditation surveys. *Health Facilities Management*, 1992, 5 (6), 50, 52, 54-56.
10. Barrett J. B. Preparing for an Accreditation Survey. *Provider*, 1996 Nov;22(11):101-3.
11. Dahl M. The 2002 Joint Commission survey. An arduous mock survey can help you prepare. *Health Care Food Nutr Focus*. 2001 Dec;18(4):1, 3-5.
12. Accreditation Canada. (2012). The Link – A Newsletter for Accreditation Coordinators, Fall/Winter 2012. Ottawa, ON: Accreditation Canada.

Our hand hygiene COMPLIANCE IS 95%*

* Only when someone is watching.

Direct observation of hand hygiene compliance is enormously flawed. And unreliable data can put patients at risk.

DebMed's non-intrusive approach to electronic hand hygiene compliance monitoring produces results identical to 24-hour video monitoring. Get the accurate data you need to increase compliance and patient safety.

See the whole picture. ***Visit DebMed.com.***

HealthPRO
Choice. Support. Results.
Now on Contract

debmed
www.debmed.com

SGP
SILVER GROUP PURCHASING
CONTRACT HOLDER

Contain Infection

With Vernacare's Human Waste Disposal Systems

The Recommended Approach

The Public Health Agency of Canada recommends the utilization of disposable bedpans and the installation of macerator systems to help avoid cross-contamination in healthcare facilities.*

Source: *Public Health Agency of Canada - Infection Prevention and Control Guidance for Management in Acute Care Settings.

Vernacare™
cleaner safer healthcare

For more information:
1-800-268-2422 • www.vernacare.com

Evaluation of the representativeness of the Canadian Nosocomial Infection Surveillance Program

Authors:
Katie Rutledge-Taylor, RN, BScN, MPH[1];

Robyn Mitchell, MHSc[1];

Linda Pelude, MSc[1];

Philip AbdelMalik, MHSc, PhD[1];

Virginia Roth, MD[2]

[1]Public Health Agency of Canada, Ottawa

[2]Infection Prevention and Control, The Ottawa Hospital, Ottawa

Correspondence to:
Katie Rutledge-Taylor
Public Health Agency of Canada
120 Colonnade Rd
Ottawa ON K1A 0K9
katie.rutledge-taylor@phac-aspc.gc.ca

Originally submitted:
August 23, 2013

ABSTRACT

Background
The Canadian Nosocomial Infection Surveillance Program (CNISP) conducts surveillance of healthcare-associated infections (HAI) in 54 Canadian acute care hospitals to establish national benchmark rates. This evaluation assessed the CNISP's representativeness based on hospital size, complexity of care provided, and geographic location of sentinel sites.

Methods
Using data from the Canadian Healthcare Association database, CNISP and non-CNISP general acute care hospitals were compared by number of acute care beds and presence of intensive care beds. Using census data and geospatial mapping, the proportion of Canada's 2006 population living within 100 km of a CNISP hospital was estimated.

Results
Significantly more (73%) non-CNISP hospitals have fewer than 100 beds compared to CNISP hospitals (13%). Almost all (96%) CNISP hospitals have intensive care beds, compared to only 25% of non-CNISP sites ($p<0.001$).

Most (78%) of the Canadian population lives within a 100 km radius of a CNISP site. However, there are no CNISP hospitals in Nunavut, Northwest Territories or Yukon.

Discussion
Overall, the CNISP provides important information on HAI from a national perspective, information that is not available from any other source. However, important considerations exist when interpreting the data. HAI data from small hospitals and those in rural and northern areas are underrepresented and thus CNISP data may not be an appropriate benchmark for all Canadian acute care hospitals.

KEY WORDS
Surveillance, evaluations; healthcare-associated infections; Canada; representativeness

Background
Healthcare-associated infections (HAI) are largely preventable, and for this reason, considerable effort is directed towards their control. HAI surveillance is considered an essential component of comprehensive infection prevention and control programs (1). National surveillance of HAIs is conducted by the Canadian Nosocomial Infection Surveillance Program (CNISP), which was established in 1995. CNISP is a partnership between the Centre for Communicable Disease and Infection Control and the National Microbiology Laboratory at the Public Health Agency of Canada (PHAC) and the Canadian Hospital Epidemiology Committee (CHEC), a sub-committee of the Association of Medical Microbiology and Infectious Diseases Canada. The objectives of the CNISP are to monitor the epidemiology of HAI in Canada, establish national rates, trends and benchmark data, and provide information to support the development of infection prevention and control guidelines.

As of 2012, 54 sentinel hospitals contribute quarterly data on four core surveillance projects as part of the CNISP, in addition to other ad hoc projects such as prevalence surveys. The core programs include surveillance of methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococcus (VRE), *Clostridium difficile* infection (CDI), and central venous catheter bloodstream infections (CVC-BSI).

Evaluations of sentinel surveillance systems are important in order to validate their data and interpret their findings. Evaluations of these systems are uncommon in the published literature; however, recent evaluations of sentinel systems (2,3,4) have included comparisons of characteristics, rates and geographic distribution of the sentinel sites to non-sentinel facilities, as well as characteristics of the populations served (e.g., pediatric vs. adult) by the sentinel sites to non-sentinel facilities.

The objective of this evaluation is to systematically assess the representativeness of CNISP data and sites to determine whether the CNISP produces rates and trends that are suitable for national benchmarking and to describe CNISP sites to support interpretation of CNISP results.

METHODS

The "gold standard" methodology to assess the representativeness of a sentinel system would be to compare sentinel site rates to those from the whole population represented by the sites. In the case of Canadian acute care hospitals, it is not possible to know the HAI rates of the whole population. Thus, representativeness is evaluated by comparing characteristics of the sentinel sites with characteristics of the whole population of hospitals. This evaluation consists of an assessment of the characteristics of the sentinel sites with respect to the number of acute care beds and the presence of intensive care units (ICUs) and the geographic distribution of sentinel sites.

Hospital characteristics

CNISP hospitals were compared to a reference population of Canadian acute care hospitals drawn from the Canadian Healthcare Association (CHA) database, 2009-2010 (5). Inclusion criteria for facilities from the CHA database were:
i) provides general (non-specialty) services; ii) cares for adult or pediatric patients, or both; iii) is publicly-funded; iv) has in-patient acute care beds and, v) data on number of acute care beds in the facility are accessible in the CHA database or elsewhere. The following filters were applied sequentially to the CHA database to produce the comparison sample:

1 Facility class: H (acute care, general or specialty hospital): n=909
2 Type: Gen (General, non-specialty) and Ped (pediatric): n=710
3 Status: Public (publicly funded, not private): n=704
4 Acute beds > 0: n=651

For the 53 hospitals which met criteria 1, 2 and 3 above using the filters but had missing data in the number of acute care beds field, effort was made to find the missing data from hospital websites or by phone. This was successful for 14 entries. In some cases, facilities which had been amalgamated were listed separately in the database but only one entry for the number of acute care beds was provided for the whole amalgamated entity (e.g., the Ottawa Hospital has one entry for acute care beds which represents both General and Civic campuses), which is why some campuses appeared to have 0 acute care beds. This was the case for 16 entries, and thus only one entry was retained per amalgamated institution where a single figure for number of acute care beds was provided. Twenty-two entries were found not to provide in-patient acute care and were thus removed from the database. For one entry, the number of acute care beds was unavailable so it was also removed from the database. The resulting database contained 665 entries.

Of the 665 entries, 47 participate in CNISP. This is fewer than the 54 that participated in 2012 due to instances where the inclusion criteria filtered out CNISP sites (e.g., Princess Margaret Hospital and the University of Ottawa Heart Institute were filtered out as specialty hospitals), instances in which amalgamated facilities are listed as one entity in the CHA database but which compromise two or more CNISP sites (e.g., the CHA database includes the University of Alberta Hospital and Stollery Children's Hospital as one entry whereas they are distinct CNISP sites); and other data limitations (e.g., the CHA does not include Winnipeg Children's Hospital as a distinct facility whereas CNISP does).

Comparisons were made between CNISP and non-CNISP facilities with respect to their size, measured by the number of acute care beds, and their provision of critical care, based on the presence of critical care units/ICUs/neonatal ICUs/pediatric ICUs.

The chi-square test was used to compare categorical variables. Two-sided p-values of <0.05 were considered significant.

Geographic representativeness

The distribution of the Canadian population in relation to CNISP sites was compared by province and territory. The ratio of CNISP sites to population was calculated for each jurisdiction. The proportion of the Canadian population in each jurisdiction was compared to its respective proportion of CNISP sites.

A geospatial analysis using ArcGIS and Quantum GIS software was used to assess the geographic representativeness of the CNISP. Canadian population data from the 2006 census was accessed by census divisions[a] and dissemination areas[b] from Statistics Canada (6). Population data was combined with a Canada census division boundary file and manually determined population breaks were used to produce a choropleth map. CNISP sites were overlaid by longitude and latitude.

Buffers of 100 km radius around each CNISP site ("as the crow flies") were created and overlapping buffers were merged. Population by dissemination areas (the most discriminate unit of population ecumene) were overlaid in order to give the most precise population estimate of the buffers. The proportion of each dissemination area (DA) falling within the buffer was calculated and multiplied by the DA's population. These were then summed to produce the buffer zone population estimate. The sum of the buffer zone populations was used to estimate the proportion of the total 2006 Canadian population living within the buffered areas, and therefore within 100 km of a CNISP hospital.

[a] Census division – the second level of Standard Geographical Classification applied to Canada by Statistics Canada after the provincial/territorial boundary. Census divisions sometimes correspond to counties or administrative regions.

[b] Dissemination area – the smallest geographic division applied by Statistics Canada for which census information is publicly available. Dissemination areas represent a population of between 400-700 people.

RESULTS

Hospital characteristics

The majority (73 %) of non-CNISP hospitals have fewer than 100 acute care beds. Proportionally, there are significantly more non-CNISP sites with fewer than 100 acute care beds, whereas there are significantly more CNISP sites with 301 to 400, 401 to 500 and greater than 500 acute care beds (Table 1).

Population representativeness

Ontario is home to the greatest proportion of CNISP sites with 37 % (n=20) of the total, followed by British Columbia with 19 % (n=10) and Quebec with 15 % (n=8). When compared to the distribution of the Canadian population by province/territory, Québec is slightly under-represented (23 % of the Canadian population with 15 % of CNISP sites) while British Columbia and Newfoundland & Labrador are over-represented (13 % of the Canadian population with 19 % of sites, and 2 % of the Canadian population with 6 % of CNISP sites, respectively) (Table 2). Overall, the ratio of CNISP sites to Canadian population is 1:645,935; however in Quebec and Saskatchewan, the ratio is higher, as in, there are more people per CNISP site than the national average (Table 2). There are no CNISP sites in Nunavut, Northwest Territories or Yukon.

Geographic representativeness

All of Canada's major urban centres are represented by one or more CNISP site. When 100 km buffers were applied around each of the CNISP sites, 12 regions emerged (Figure 1).

Using 2006 census data, the population contained within each buffer zone was estimated. The sum of these estimates, 24 693 392 persons, represents 78.4 % of the Canadian population, suggesting that over three-quarters of the Canadian population lived within 100 km of a CNISP site in 2006.

TABLE 1. Number of acute care beds, CNISP sites and non-CNISP sites

Bed-size categories	Number CNISP sites (%)	Number non-CNISP (%)	*p*
1-100	6 (13)	451 (73)	<0.001
101-200	6 (13)	74 (12)	ns*
201-300	5 (11)	35 (6)	ns*
301-400	9 (19)	29 (5)	<0.001
401-500	8 (17)	13 (2)	<0.001
> 500	13 (28)	16 (3)	<0.001
Total	47	618	

* ns = not significant

TABLE 2. Canadian population, 2012* and CNISP sites, number and proportion, by province / territory and ratio of CNISP sites to Canadian population, by province/territory

Jurisdiction	Persons (thousands)	% of total Canadian population	# CNISP sites	% of all CNISP sites	Ratio of CNISP sites to population (sites: thousand persons)	Difference in proportions (% Canadian population - % CNISP sites)
Canada	34,880.50	100	54	100	1:645.94	--
Newfoundland and Labrador	512.7	1.470	3	5.56	1:170.90	-4.086
Prince Edward Island	146.1	0.419	1	1.85	1:146.10	-1.433
Nova Scotia	948.7	2.720	2	3.70	1:474.35	-0.984
New Brunswick	756	2.167	1	1.85	1:756.00	0.316
Quebec	8,054.80	23.093	8	14.81	1:1006.85	8.278
Ontario	13,505.90	38.720	20	37.04	1:675.30	1.683
Manitoba	1,267.00	3.632	2	3.70	1:633.50	-0.071
Saskatchewan	1,080.00	3.096	1	1.85	1:1080.00	1.244
Alberta	3,873.70	11.106	6	11.11	1:645.62	-0.005
British Columbia	4,622.60	13.253	10	18.52	1:462.26	-5.266
Yukon	36.1	0.103	0	0.00	0.00	0.103
Northwest Territories	43.3	0.124	0	0.00	0.00	0.124
Nunavut	33.7	0.097	0	0.00	0.00	0.097

* population projection source: Statistics Canada, Population and Demography CANSIM, table 051-0001. Population as of July 1. From: *http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/demo02a-eng.htm*

DISCUSSION

In this evaluation, multiple perspectives of representativeness were explored. Since the "true" rate of HAI nationally is unknown, a number of proxy indicators were used to describe the CNISP's representativeness. The number of acute care beds and presence of intensive care beds were used to approximate level of service and complexity of care provided. Geographic buffer zones around CNISP hospitals were used to estimate their catchment areas, in order to visually demonstrate proximity of CNISP hospitals to the population.

This evaluation found that the CNISP provides good overall geographic coverage, with the exception of northern Canada. CNISP sites are located in close proximity to most (78% in 2006) of the Canadian population. However, proximity and population density may not be accurate reflections of CNISP representativeness. Despite northern regions being sparsely populated, their populations tend to have unique needs and experiences. For example, the Northwest Territories has been experiencing several years of elevated community-associated MRSA activity (7). The relationship of this to healthcare-associated transmission in the territory and in neighbouring provinces has not been established, but likely warrants consideration, despite the territory's small population (approximately 43 000 people in 2012) (8). It is also noteworthy that in some northern communities, when a patient's condition exceeds the capacity of the local healthcare system to manage it, the patient is medically evacuated to an urban centre that can provide the care required. Even in non-acute situations, northern residents travel to the south for treatment not available in their home communities. As a result, northern patients may be treated in CNISP hospitals and as such, they may also be exposed to organisms in southern hospitals, subsequently bringing them back to their local hospitals and communities. Without the participation of these facilities in national HAI surveillance, it is difficult to quantify the contribution of this phenomenon of patient movement to the national epidemiology of HAI.

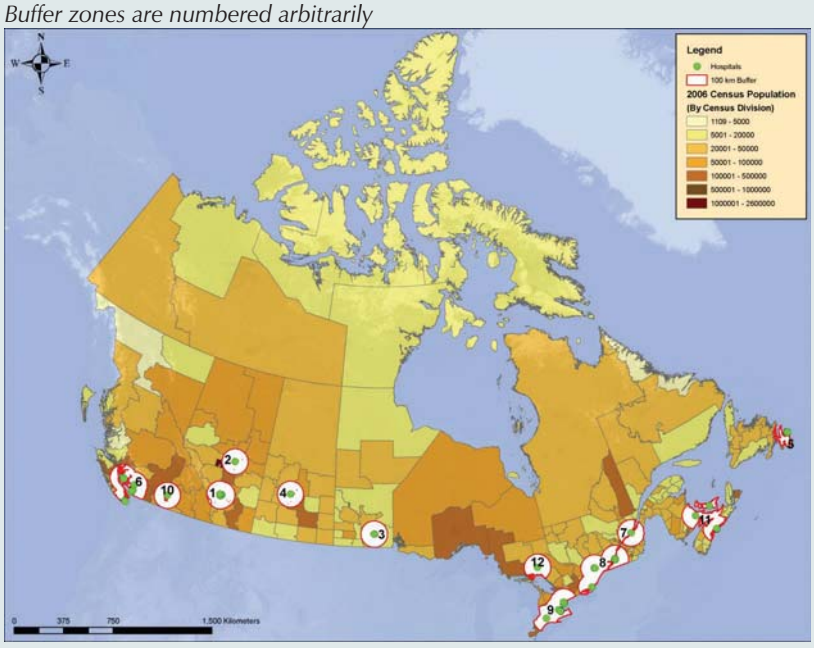
Generally, the CNISP does not represent small, community hospitals. Since most Canadian hospitals are small (73 % have fewer than 100 beds), there is likely an under-appreciation of the level of HAI activity in these facilities in CNISP rates. These small hospitals should use CNISP rates cautiously to benchmark their own HAI rates, since CNISP hospitals are commonly larger and thus may not be suitable for comparison to smaller hospitals. Significantly more CNISP hospitals provide intensive care relative to non-CNISP hospitals; CNISP hospitals provide more complex care and thus care for the sickest patients, who are most vulnerable to HAI. Acknowledging this, CNISP is currently exploring models for risk stratifying HAI rates based on hospital characteristics such as particular clinical services offered.

There are some important limitations to this analysis. With respect to hospital characteristics, the Canadian Healthcare Association database is a directory, not a database established for analyses of this type. Therefore, it lacks some variables of interest, such as services provided by hospitals. In addition, due to administrative amalgamations, there are more entries in the database with high numbers of beds, due to several sites being amalgamated and considered one entity in the database. This may exaggerate the number of large hospitals. Furthermore, hospital characteristics are dynamic and thus these results may not be generalizable beyond the years (2009-10) examined.

The geospatial component was limited by the availability of population data by dissemination area (2006 data was the most recent available at the time of the analyses). The buffer zones created used a 100 km radius "as the crow flies" as opposed to using a 100 km travel distance based on a road network. The 100 km buffer ignores impeding factors such

> "Significantly more CNISP hospitals provide intensive care relative to non-CNISP hospitals; CNISP hospitals provide more complex care and thus care for the sickest patients, who are most vulnerable to HAI."

FIGURE 1. Map of Canada with CNISP buffer zones
Buffer zones are numbered arbitrarily



Return to **TABLE OF CONTENTS**

as indirect routes and geographic features that may interfere with travel time. Therefore, the buffered areas may not represent 100 km of reasonable travelling distance from hospitals to population. In addition, the method used to estimate the population within the buffered area assumes a uniform distribution within the dissemination areas. However, it is likely that these two latter effects are minimised in urban areas, and geographic grids have used similar methodology to estimate urban population in grid-cells (9,10). Also, the 100 km radius buffers do not necessarily reflect the true catchment areas of hospitals, and the 100 km value was selected arbitrarily as a reasonable catchment area.In provinces with few tertiary care centres (e.g., Saskatchewan) those centres in fact serve the whole provincial population.

A part of this evaluation project not described here is the attempt that was made to compare rates of HAI publicly reported by three provincial surveillance systems for two common HAIs (*Clostridium difficile* infection in British Columbia, and MRSA bacteremia in Ontario and Quebec) with rates recorded by the CNISP for the same infections in the same provinces. At the time, our experience attempting these analyses was that the differences in surveillance system methodologies were too great to make reasonable comparisons of rates produced by CNISP and those produced by provincial systems. For example, though case definitions were generally comparable between the CNISP and Ontario, the provincial rate available at the time of the analyses was generated from data (cases as numerator and patient days as denominator) from all publicly funded Ontario hospitals with in-patient beds, including those with rehabilitation, mental health and chronic care beds (11; personal communication, D. Burman, 2013). By contrast, CNISP rates are derived from acute care hospitals only. Since the time of this analysis, Ontario has made it possible to filter the provincial data by hospital type (acute teaching, complex continuing care and rehabilitation, small community, large community and mental health), which would facilitate this type of comparison. In Quebec, episodes of MRSA bacteremia in the same patient, when separated by more than 28 days, are counted as new cases, whereas one case per patient per surveillance year is counted by CNISP (12). For these reasons, it was deemed inappropriate to attempt to compare rates produced by different systems, despite the fact that they ostensibly measure the same outcome.

In conclusion, the CNISP provides important information on HAI from a national perspective; information that is not available from any other source. However, there are segments of the Canadian hospital population which are underrepresented by the CNISP and including smaller hospitals from those provinces and territories which are under-represented would help address this situation. Stratification of rates by hospital size (number of beds) would allow smaller facilities to better interpret results and provide more appropriate benchmarks. Most provinces and territories are engaged in the surveillance of HAI, although variation in surveillance methods impedes direct comparison between provinces and territories. This underscores the importance of CNISP as a national HAI surveillance system.

REFERENCES

1 Provincial Infectious Diseases Advisory Committee. Best Practices for Infection Prevention and Control Program in all Healthcare Settings, 3rd edition. 2012. Available from: *http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/infection-prevention-and-control-programs-in-ontario-in-all-health-care-settings-3rd-edition.html*

2 Rucker G, Schoop R, Beyersmann J, Schumacher M, Zuschneid I. Are KISS data representative of German ICUs: statistical issues. Method Inform Med 2006; 45 (4): 424-29.

3 Zuschneid I, Rucker G, Schoop R, Beyersmann J, Schumacher M, Geffers C, Ruden H and Gastmeier P. Representativeness of the surveillance data the in the intensive care unit component of the German nosocomial infections surveillance system. Infect Cont Hosp Epi 2010; 31 (9): 935.

4 Short V, Marriott C, Ostroff S, and Waller K. Description and evaluation of the 2009-2010 Pennsylvania sentinel school monitoring system. Am J Pub Health 2011; 101 (11): 2178-2183.

5 Canadian Healthcare Association. Guide to Canadian Healthcare Facilities 2009-2010. Ottawa.

6 Statistics Canada. (2007). Population and dwelling counts, Canada, provinces and territories. Available from *http://www12.statcan.ca/census-recensement/2006/dp-pd/hlt/97-550/Index.cfm?TPL=P1C&Page=RETR&LANG=Eng&T=101*

7 Rutledge-Taylor K. Methicillin-resistant Staphylococcus aureus activity in the NWT, January 1, 2009 – May 31, 2011 – Descriptive epidemiology. EpiNorth. 22 (1). Available from *http://www.hlthss.gov.nt.ca/pdf/newsletters/Epinorth/2012/2012_volume_22_issue_1.pdf*

8 Northwest Territories Bureau of Statistics. Current indicators: population. Available from *http://www.statsnwt.ca/*

9 Yetman G. Deichmann U., Balk D. Creating a Global Grid of Human Population from 2000 ESRI User Conference event proceedings. Available from *http://proceedings.esri.com/library/userconf/proc00/professional/papers/PAP552/p552.htm*

10 El Emam K, Brown A, AbdelMalik P, Neisa A, Walker M, Bottomley J and Roffey T. A method for managing re-identification risk from small geographic areas in Canada. BMC Med Inform Decis Mak 2010; 10:18 doi:10.1186/1472-6947-10-18.

11 Ministry of Health and Long-term Care, Ontario. Memo to Hospital Presidents and Chief Executive Officers. October 16, 2008. Available from *http://www.health.gov.on.ca/patient_safety/pro/comm/mrsa_vre_mckinley_20081016.pdf*

12 Institut national de santé publique du Québec. Surveillance provinciale des bactériémies à Staphylococcus aureus. Rapport 2009. Accessed from *http://www.inspq.qc.ca/pdf/publications/1218_SurvAureus2009.pdf*

WORKING HARD TO ACHIEVE HAND HYGIENE COMPLIANCE?

WE'LL HELP YOU **WORK SMARTER.**

With hand hygiene compliance rates at lower than 50% nationwide, maybe it's time to work smarter. GOJO® SMARTLINK™ Hand Hygiene solutions combine 24/7 monitoring with the industry's most trusted soaps and dispensers, plus clinician-based on-site support. It's an innovative hand hygiene compliance monitoring system that represents the most comprehensive way to achieve optimum compliance levels.

Call **800-321-9647** today to learn more about SMARTLINK™ solutions. It could be one of the smartest calls you ever make.

Start making a difference today.
Email SMARTLINK@gojo.com or
visit www.GOJOCanada.ca/SMARTLINK.

Intelligent. Intuitive. Insightful.

GOJO®
SMARTLINK™

Hand Hygiene Rewards Program at William Osler Health System

Adenike Rowiaye, B.Sc, M.Sc

Christine Robinson, RN, BScN

Rajni Pantelidis, B.Sc, CIC

Catherine (Kim) Baker, RN, BScN, CIC

Rachael Sawicki, RN, BScN, CIC

Ellie Clarke, RN, CIC

Kim Presta, RN, ENCC

Maria Hollands, RN

Janine Domingos, RN, BScN, CPN(c), CIC

Corresponding author:
Adenike Rowiaye, B.Sc, M.Sc,
William Osler Health System
2100 Bovaird Street East
Brampton, Ontario
905-494-2120 ext. 57814
Adenike.Rowaiye@williamoslerhs.ca

ABSTRACT

Issue

Healthcare workers' compliance with hand hygiene is very important in preventing and controlling the transmission of infections. Data from daily hand hygiene audits was analyzed and indicated that the hospital compliance rates were lower than the Ontario provincial average.

Project

The "Wash to Win" rewards program was initiated to bring about behavioural and cultural change in order to sustain improved hand hygiene amongst staff. All inpatient units and emergency departments that met and sustained hand hygiene targets for two consecutive months won either an iPAD™ or $500. Phase I ran from May 2012 to September 2012 and targets were 75% and 80% for "before patient/patient environment contact" and "after patient/patient environment contact" respectively. Phase II ran from October 2012 to December 2012 and targets were 85% for "before patient/patient environment contact" and 95% for "after patient/patient environment contact." The program was implemented with regular staff education, daily auditing and monthly circulation of compliance rates to staff, unit managers and senior leadership.

Results

Hand hygiene compliance increased from 73% to 85% for "before initial patient/patient environment contact" and 86% to 95 % for "after patient/patient environment contact" during the eight-month campaign. Since the end of the program, the increase has been sustained.

Lessons learned

Positive reinforcement does change people's behaviour. Rewards were most effective when they were delivered immediately after the change in behaviour. In retrospect, targets would 100% for both "before and after patient/patient environment contact" at the onset of the program. The program would also be extended until targets were maintained consistently for 18-24months.

KEY WORDS:
Hand hygiene, hand washing, compliance rate, audit, positive reinforcement

ISSUE

Healthcare associated infections (HAIs) represent a potentially serious threat to the patient's mental and physical wellbeing. The World Health Organization states that HAIs can lead to extended hospital stays, long-term disability, increased resistance of microorganisms to antimicrobial agents, an immense financial burden for the health system, high costs for patients and their families, and deaths (1). In the United States, HAIs are seen as a major source of mortality and morbidity. The mortality associated with HAIs in 2002 was estimated at 98,987 (2). A Canadian study in 2003, asserts that annually 220,000 patients acquire HAIs resulting in approximately 8000 deaths yearly (3). In fact, it is one of the leading causes of death in Canada (4). The healthcare worker and patient relationship has been described as an interaction between the patient (seeking care) and the health professional (providing care). Unfortunately, healthcare workers themselves may transmit various organisms, which may lead to the development of HAIs. A major source of transmission of HAIs is the hands of healthcare workers (1). Not all HAIs are preventable, but it has been documented that this route of infection may be controlled through the implementation of proper hand hygiene practices among healthcare workers (5-7).

According to the Centre for Disease Control (CDC), hand hygiene consists of performing either hand washing, antiseptic hand wash, alcohol-based hand rub, or surgical hand hygiene/antisepsis [7]. Hand washing is defined as washing hands with plain soap and water while antiseptic handwash is defined as washing hands with an antiseptic detergent or soap.

In Canada, best practice recommends that healthcare workers follow "The 4 moments for hand hygiene" (before patient/patient environment contact, before aseptic procedure, after body fluid exposure risk and after patient/patient environment contact). The four moments are standard for routine care and an expectation for all healthcare workers (7-9). Hand hygiene compliance by healthcare workers remains low and unsatisfactory in many hospitals around the world (10-11). At William Osler Health System (Osler), compliance rates are consistently measured and data analysis performed utilizing results from daily hand hygiene audits. In 2012, this indicated that the Osler rates were lower than the Ontario provincial average, Figure I. Based on these results; a hand hygiene working group was put together in November 2011. The goal of the working group was to increase hand hygiene compliance on all units using a positive reinforcement program. The committee consisted of a representative from senior leadership, unit managers, frontline nursing, ethicist, communications and the Infection Prevention and Control (IPAC) Team. The committee resolved to implement a program that would encourage greater compliance and sustained improvement of the hospitals hand hygiene compliance rates. The objective was to introduce a reward program that would encourage an increase in hand hygiene among staff, and also set a target that must be attained by the healthcare workers for their "before patient/patient environment contact" and "after patient/patient environment contact." As of April 30, 2009, all Ontario hospitals are required to annually post their hand hygiene compliance rates to further promote accountability and transparency within the health system. The program focused on moments 1 and 4 as they are the most frequently observed moments during hand hygiene audits. Additionally, Health Quality Ontario focuses on these same two moments.

PROJECT

The rewards program, "Wash to Win" was initiated as a method of positive reinforcement to bring about sustained behavioural and cultural change for improving hand hygiene rates (12). All inpatient units and emergency departments that met and sustained hand hygiene targets for two consecutive months won an iPAD™ or $500. A total of 37 units participated in the program. A minimum of 20 observations per month, per unit, were completed by the ICPs using the Ontario Ministry of Health and Long Term Care (MOHLTC) hand hygiene observation tool. Although minimum observations were set at 20 per month per unit it was up to the discretion of the Infection Control Practitioner (ICP) to increase the number of audits based on day-to-day requirements (increased transmission or increased number of isolated patients on a unit). All hand hygiene observations were performed throughout the weekdays, most often during ICP daily rounds. At Osler, the ICPs work only weekdays. This data was entered into an Excel™ spread sheet which had been developed to track the process.

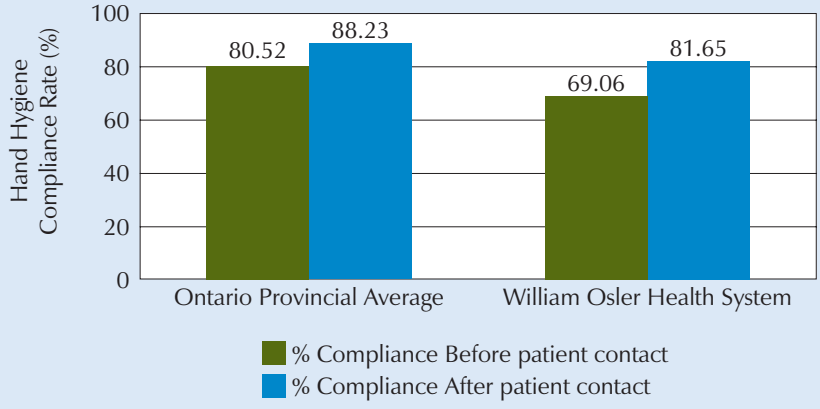
The study adopted a cross-sectional design in order to highlight the prevalence of hand hygiene practices among healthcare workers. The design thus provided a snapshot of hand hygiene practices within the organization.

A memo was sent to all hospital staff outlining the program. Compliance rates were circulated to each unit at the end of every month. The two-phase program (Phase I and Phase II) ran from May 2012 to September 2012 and

TABLE 1. Overall Combined Compliance

Period	Before initial patient/ patient environment contact	After patient/patient environment contact
8 months before program	73	86
8 months of the program	85	95
8 months after program	87	95

FIGURE 1. Hand Hygiene Compliance Rate for Ontario and William Osler Health System. April 2011 - March 2012



Return to TABLE OF CONTENTS

from October 2012 to December 2012 respectively. The time frame was chosen based on the availability of funds. The study did not receive any substantial external funding which limited the duration and scope of the study. It was funded from May 2012 to December 2012 by the IPAC department. The targets for Phase I were 75% for "before initial patient/patient environment contact' and 80% for 'after patient/patient environment contact." Targets for Phase II were increased to 85% for "before initial patient/patient environment contact" and 95% for "after patient/patient environment contact." Targets were increased in Phase II in an effort to boost overall compliance rates. The program was implemented by means of staff education, daily auditing and monthly circulation of compliance rates among staff, mangers and senior leadership. The rewards program was an additional incentive to what was done previously on the units. Staff education involved the use of interactive tools and viewing the *Partnering to Heal* video. *Partnering to Heal* is a computer-based, video-simulated training program on infection control practices for clinicians, health professional students, and patient advocates created by U.S. Department of Health and Human Services (13). Visual demonstrations utilizing an ultraviolet indicator were performed more frequently. An ultraviolet indicator is a tool that allows the health care worker to see how effectively they have applied alcohol based hand rub or washed their hands. In addition, it shows how transmission of organisms may occur. Members of the IPAC team routinely attended unit based staff safety huddles to discuss the importance of hand hygiene, especially before entering the patient environment.

Hand hygiene rates were reported in graph format so that the patient care units were able to track and evaluate their compliance and make further improvements based on this data. Presentations on hand hygiene compliance rates by health care workers were created and presented to the physicians by the director of IPAC and by the infectious disease physicians.

FIGURE 2. Hand Hygiene Compliance for before initial patient/patient environment contact

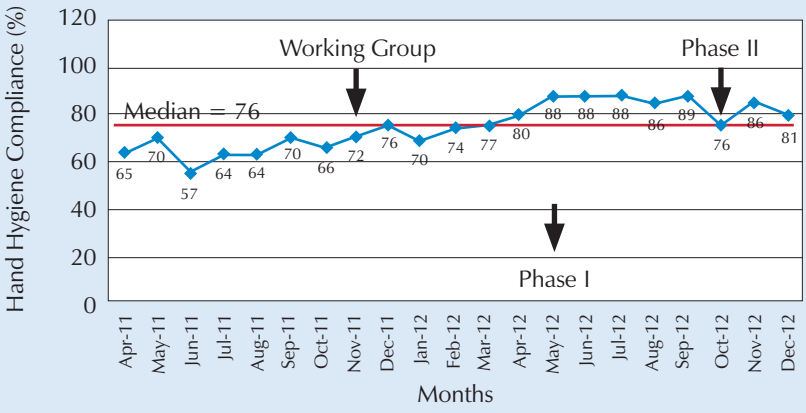
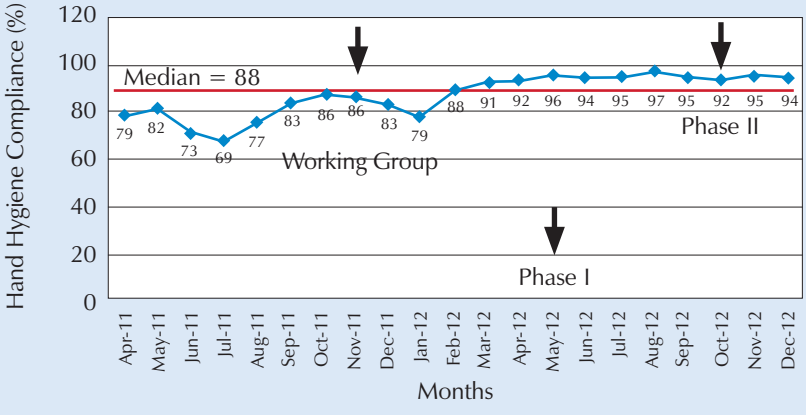


FIGURE 3. Hand Hygiene Compliance for after patient/patient environment contact



DATA ANALYSIS

The improvement was assessed using a run chart. The run chart helped us to visualise the impact of the rewards program, and provided confirmation of effective changes over time. In order to determine objectively when the data signaled a process improvement, we used the median and run chart rules. The data analysis indicated there was evidence of a positive change after the implementation of the rewards program.

RESULTS

Hand hygiene compliance increased from 73% to 85% for "before initial patient/patient environment contact" and 86% to 95 % for "after patient/patient environment contact" during the eight-month campaign, Table 1. With the further increase in target rates, the compliance rates dropped and later increased, Figure 2 and Figure 3. The IPAC team distributed a total of 73 awards to multiple units who met and sustained the targets during the duration of the program. However since the end of the program in December 2012, the increase has been sustained for 10 months, Figure 4.

DISCUSSION

"Good and evil, reward and punishment, are the only motives to a rational creature: these are the spur and reins whereby all mankind are set on work, and guide.''

–John Locke, 1690

Using rewards or incentives to promote positive behavioral change has been adopted by researchers, governments and various organizations. Of particular relevance to this work is the study of where the Hawthorne effect was used with regard to hand hygiene performance in high and low performing inpatient care units (14). Here, the Hawthorne effect was found to be a useful tool for sustaining and improving hand hygiene compliance. Despite the ethical issues involved in the practice and despite its limitations, it still remains a very powerful tool in influencing organizational behaviours. For further analysis, the practice can be conceptualized within the Social Exchange Theory (15). Homans focused his theory on dyadic exchange and he summarized the system in 3 propositions-success, stimulus, deprivation-satiation. In explaining the success proposition, Homans argued that when people see that they are rewarded for their actions, they tend to repeat the action. Also in the stimulus proposition, he stated that the more often a particular stimulus has resulted in a reward in the past, the more likely it is that a person will respond to it. With the deprivation-satiation proposition, he explained that the more often in the recent past, that a person has received a particular reward, the less valuable any unit of that reward becomes. His first two assumptions are particularly relevant here as they have helped to explain why the staff in the present study have adopted the habit or culture of hand hygiene. It was not unexpected that the rates trended upward before the start of the program as discussion about the "Wash to Win" program began as early as November 2011.

The intervention was attractive enough to enable the staff to internalize the ideals and practices expected of them. Almost a year after the withdrawal of the rewards, the compliance rate still remained consistently high thus indicating that the behaviour change has been sustained. This is not surprising since a response followed promptly by an effective reward (reinforcement) will more likely occur again. This is called the "law of effect''; it is the basis of operant conditioning and the major means of changing voluntary behaviour. As stated previously, the rewards program has been used in many studies, in fact, it is one of the most powerful and useful ideas in psychology for affecting behavioral change. It provides a solution of many human troubles. When behaviour is being reinforced by a stimulus, there is the increased probability that the behaviour will occur again in the future (16).

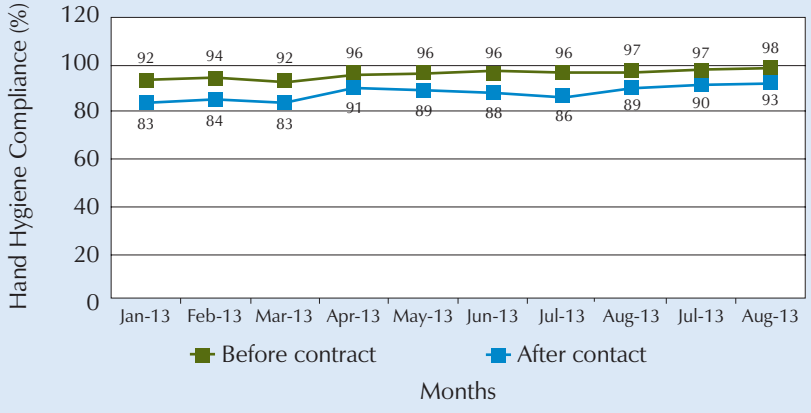
LESSON LEARNED

Positive reinforcement did change behaviour and increased awareness of the importance of hand hygiene. Rewards were most effective when given immediately after publishing compliance rates. Rather than changing the target half way through the campaign, targets should have been set to best practice of 100% for both "before and after patient/patient environment contact." It will require some more work for both the ICPs as well as the staff but this target is attainable and it has been seen on some of the units especially on neonatal intensive care unit (NICU). The program would also be extended until targets were maintained consistently for 18-24months.

MOVING FORWARD

To ensure that the increases in hand hygiene compliance rate are sustained, Phase III of the "Wash to Win" rewards program will be implemented. A random draw will take place among units that meet and sustain the targets for two consecutive months between January 2013 and December 2013. The winning unit will be presented with a $500 cash prize. Also in an effort to be open and transparent, not only the staff, but also the public hand hygiene compliance posters have been strategically placed on every unit. These posters indicate compliance for before patient/patient environment contact. Rewards may be viewed as a source of motivation. Old habits are strong and powerful while the new habits are weak and need special and frequent reinforcement for acceptability and sustainability. In an effort to make a sustained behavioural change it is important to make the change easy, beneficial, attractive and rewarding. If people see the task as difficult, the benefits not great enough, or costly behavioural change is not likely to occur. Rewards give rise to behavioural change by offering an attractive incentive for success. The fact that the rewards are given to them immediately could be another impetus as they do not have to wait days for their compensation.

FIGURE 4. Hand Hygiene Compliance for before and after patient/patient environment contact



REFERENCES

1. World Health Organisation. WHO Guidelines on Hand Hygiene in Health Care: First Global Patient Safety Challenge, Clean Care is Safer Care. World Alliance for Patient Safety. Geneva, World Health Organisation Press; 2009.
2. Klevens RM, Edwards JR, Richards CL Jr, et al. Estimating health care-associated infections and deaths in U.S. hospitals, 2002. Public Health Rep 2007; 122(2):160-6.

3. Zoutman DE, Ford BD, Bryce E, et al. The state of infection surveillance and control in Canadian acute care hospitals. Am J Infect Control 2003; 31(5):266-72; discussion 272-3.
4. Baker GR, Norton PG, Flintoft V, et al. The Canadian Adverse Events Study: The incidence of adverse events among hospital patients in Canada. CMAJ 2004; 170:1678–86.
5. Samraj S, Westbury J, Pallett A, Rowen D. Compliance with hand hygiene in a genitourinary medicine department. Int J STD AIDS 2008; 19(11):782-3.
6. Pittet D, Dharan S, Touveneau S, Sauvan V, Perneger TV. Bacterial contamination of the hands of hospital staff during routine patient care. Arch Intern Med 1999; 159(8):821-6.
7. Centre for Disease Control and Prevention. Guideline for Hand Hygiene in Health-Care Settings: Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. MMWR 2002; 51(RR-16):1-45.
8. Boyce JM, Pittett D. Guideline for hand hygiene in health-care settings: recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. Infect Control Hosp Epidemiol 2002; 23(12 Suppl):S3-40.
9. Public Health Ontario [Internet]. Just Clean Your Hands - Your 4 Moments for Hand Hygiene: 2013 [cited Dec 2013]. Available from: *http://www.publichealthontario.ca/en/BrowseByTopic/InfectiousDiseases/JustCleanYourHands/Pages/JCYH-background.aspx#5*
10. Earl ML, Jackson MM, Rickman LS. Improved rates of compliance with hand antisepsis guidelines: a three phase observational study. Am J Nurs 2001; 101:26–33.
11. Rosenthal VD, McCormick RD, Guzman S, Villamayor C, Orellano PW. Effect of education and performance feedback on hand washing: The benefit of administrative support in Argentinean hospitals. Am J Infect Control 2003; 31:85–92.
12. Stern C, Gibb H. The use of behavioural reinforcement in the management of behaviours of concern associated with dementia. JBI library of systematic reviews 2011; 9(5):122-145.
13. US Department of Health and Human Services (HHS) [Internet]. Washington, D.C: Partnering to Heal (video simulation); Teaming Up Against Healthcare-Associated Infections. [cited 2013 Dec 16]. Available from: *http://www.hhs.gov/ash/initiatives/hai/training/*
14. Kohli E, Ptak J, Smith R, Taylor E, Talbot EA, Kirkland KB. Variability in the Hawthorne effect with regard to hand hygiene performance in high and low performing inpatient care units. Infect Control Hosp Epidemiol 2009; 30(3):222-25.
15. Homans G. Social Behavior as Exchange. Am J Sociol 1958; 63(6):597-606.
16. Skinner B. What is wrong with daily life in the Western world? Am Psychol 1986; 41(50):568-74.

The Hill-Rom® Hand Hygiene Compliance Solution

Badge-based monitoring of hand-washing events

Easy to implement: Caregivers simply wear a badge and go about their normal hand-hygiene activities

Easy to install: Cable-free system devices with minimal disruption to rooms and/or unit

Easy to report: Visibility to real-time hand-hygiene event data at the individual, unit or hospital level to identify patterns in hand-hygiene behavior and to facilitate continuous improvement

Watch an overview of Hill-Rom's solution.

Enhancing outcomes for patients and their caregivers.®

Hill-Rom

www.hill-rom.ca

Retrospective analysis of topical and topical/systemic combined methods of methicillin-resistant Staphylococcus aureus decolonization in an ambulatory patient population

Brandyn Chase, M.Sc.E,
MD candidate
Dalhousie Medical School,
Dalhousie University
Halifax, Nova Scotia, Canada

Duncan Webster, MA, MD, FRCPC
Saint John Regional Hospital
Saint John, New Brunswick, Canada

Stefanie Materniak, BA.
Infectious Diseases Research Unit
Saint John, New Brunswick, Canada

Correspondence to:
Brandyn Chase
46 Technology Drive Apt 402
Saint John, New Brunswick,
Canada, E2K 0H4.
506-642-2606,
brandyn.chase@dal.ca

Conflicts of Interest and Declaration of Financial Support
No conflicts declared.

ABSTRACT

Objective
To compare the effectiveness of topical decolonization against topical/systemic decolonization for the eradication of methicillin-resistant *Staphylococcus aureus* (MRSA) colonization in outpatient populations, and to determine factors which are predictive of treatment failure.

Design
Retrospective cohort study.

Setting
All patients with laboratory confirmed MRSA carriage managed at the MRSA Ambulatory Clinic at the Saint John Regional Hospital (SJRH) from March 2008 to November 2012.

Patients
345 patients were identified and reviewed for possible study inclusion. Of those, 250 (72%) met the criteria for inclusion. In total there were 419 decolonization attempts performed on the patients that were included. The remaining 95 patients were excluded due to spontaneous MRSA clearance with no decolonization treatment (n=36), or insufficient treatment documentation/ follow-up (n=59).

Interventions
The majority (90.1%) of decolonization attempts were performed using one of our hospitals two decolonization protocols. The topical protocol consisted of twice daily mupirocin ointment to the nares and daily chlorhexidine body wash for seven days. The topical/systemic protocol consisted of mupirocin to the nares twice daily, oral doxycycline, oral rifampin, and daily chlorhexidine body wash for seven days. Alternate protocols with variations on the above were employed in 9.9% of cases.

Results
Kaplan-Meier curve analysis demonstrated better efficacy with topical/systemic treatment overall (X^2=8.52, p=0.0035) and in patients with MRSA rectal colonization (X^2=6.16, p=0.013). Patients with no MRSA rectal colonization were not found to derive the same benefit from topical/systemic treatment (X^2=6.16, p=0.013).

Conclusion
Evidence from this retrospective review shows decolonization is a useful tool for MRSA eradication with 33-48% of patients remaining MRSA-negative at one year post-treatment. Topical/systemic therapy, particularly in the setting of patients with MRSA rectal colonization, achieved better initial and maintained clearance.

INTRODUCTION

Staphylococcus aureus is one of the most common causes of healthcare-associated infections worldwide. Methicillin-resistant *S. aureus* (MRSA) infections have been shown to result in increased morbidity, mortality and healthcare costs when compared to methicillin-sensitive S. aureus (MSSA) infections (1-4). Rather than replacing the occurrence of MSSA strains, MRSA has been shown to increase the total prevalence of *S. aureus* infections within the healthcare system (5,6).

Prior research has shown that patients colonized with MRSA are at greater risk of subsequent MRSA infection. It is estimated that 10-60% of patients colonized with MRSA in acute care settings will develop MRSA infection (7,8). MRSA colonized

patients also pose a risk for transmission of this virulent drug-resistant bacteria to potentially vulnerable populations. One strategy aimed at reducing infection risk and potential transmission has been decolonization with the goal of eradicating MRSA carriage. The effectiveness of MRSA decolonization strategies at reducing MRSA infection rates remains highly controversial. Some studies have demonstrated a significant reduction in the occurrence of MRSA infections, while other studies have shown no significant impact (9).

The variable results found in the literature may be attributed in part to highly variable follow-up periods post-decolonization to visualize the long-term efficacy on MRSA eradication (10-12). Numerous protocols for MRSA decolonization have been published, with widely varied success rates (10,13-18). A recent systematic review examining different methods for decolonization reported success rates varying between 23% and 96% (18). Large variation between initial clearance rates and rates of sustained clearance over time have also been noted in the literature. Clearance noted initially, but not sustained over time, may be a result of incomplete decolonization or possibly repeat exposure/re-colonization. This study aims to examine the differences in efficacy of topical and combined topical and systemic methods of MRSA decolonization for both short-term and long-term eradication of MRSA carriage.

METHODS

Design and Setting

This is a retrospective review of patients assessed at the MRSA Ambulatory Clinic at the Saint John Regional Hospital (SJRH) from March 2008 to November 2012, in order to examine the effectiveness of topical versus systemic/topical methods of decolonization. This specialized clinic is dedicated to the management of MRSA colonized and infected patients at the SJRH; the largest tertiary care teaching hospital in New Brunswick, Canada. The study was approved by the Horizon Health Network Research Ethics Board.

For inclusion in the study, patients were required to have laboratory-confirmed MRSA carriage at any body site, documentation of completing MRSA decolonization therapy, and at least one set of follow-up screening cultures obtained greater than 48 hours following completion of decolonization treatment. Per hospital policy, patients had to be free from active infection and without antibiotic therapy for 48 hours prior to MRSA screening swab collection in order for the screening to be considered valid. Patients were also free of other antibiotics during decolonization. All episodes of decolonization for each patient were included in the analysis regardless of whether they were initiated by the clinic or in another setting (e.g., during an inpatient hospital admission). This was done to demonstrate the application of decolonization to varying degrees of patient education, acuity levels, and thoroughness of adherence to decolonization protocols.

TABLE 1. Comparison of Different Treatment Protocols in Achieving Initial MRSA Clearance

Treatment Description	# initially Cleared (% total)	OR (95% CI, p-value)
Topical Treatment (n=342)	**155 (45.3)**	**-**
2% mupirocin ointment BID to anterior nares / 4% chlorhexidine gluconate full body wash OD x 7 days (n=314) *[Standard hospital protocol]*	144 (45.9)	-
Polysporin® BID to anterior nares / 4% chlorhexidine gluconate full body wash OD x 7 days (n=8) (Used for mupirocin allergy or documented mupirocin-resistant MRSA strain)	2 (25.0)	0.39** (0.38-2.25, p=0.30)
2% mupirocin BID to anterior nares / non-medicated Dial® full body wash UID x 7 days (n=14) (Used for chlorhexidine allergy)	8 (57.1)	1.57** (0.46-5.63, p=0.43)
2% mupirocin BID to anterior nares and other sites / 4% chlorhexidine gluconate full body wash OD x 7 days (n=6) (Used for patients with additional MRSA positive sites)	1 (16.7)	0.23** (0.00-2.15, p=0.23)
Topical/Systemic Treatment (n=77)	**58 (75.3)**	**3.68† (2.05-6.82, p<0.00001)**
Doxycycline 100mg BID / rifampin 300mg OD / 2% mupirocin BID to anterior nares / 4% chlorhexidine gluconate full body wash UID x 7 days (n=66)* *[Standard hospital protocol]*	49 (74.2)	-
Trimethoprim/sulfamathoxazole 160mg/800mg / rifampin 600mg OD /2% mupirocin BID to anterior nares / 4% chlorhexidine gluconate full body wash OD x 7 days (n=11)* (Used for doxycycline allergy)	9 (81.8)	1.56§ (0.28-16.18, p=0.72)

*One participant in this category had mupirocin applied to one or more additional body sites during treatment.
** Compared to standard hospital protocol for topical treatment.
† Compared to topical therapy alone.
§ Compared to standard hospital protocol for systemic treatment.

In addition to recording the specific protocol used for decolonization treatment, each attempt was classified into one of two categories: topical only treatment (i.e., the use of ointments, creams and body wash) or a combined topical and systemic treatment (i.e., topical treatment as described above with the addition of one or more systemic antibiotics). The hospital topical protocol consisted of twice daily mupirocin ointment to the nares and daily chlorhexidine body wash for seven days, where as the hospital topical/systemic protocol consisted of twice daily mupirocin to the nares, oral doxycycline, oral rifampin, and daily chlorhexidine body wash for seven days. Alternate protocols presented in Table 1 are modifications of the topical or topical/systemic decolonization protocols due to patient allergy, additional sites of colonization and physician discretion. These protocols include: Polysporin® twice daily to anterior nares and 4% chlorhexidine gluconate full body wash once daily for seven days for patients with mupirocin allergy; 2% mupirocin twice daily to anterior nares and full body wash with non-medicated Dial® soap once daily for 7 days for patients with chlorhexidine allergy; and oral trimethoprim/sulfamethoxazole and rifampin with 2% mupirocin twice daily to anterior nares and 4% chlorhexidine gluconate full body wash daily for seven days for patients with a doxycycline allergy undergoing topical/systemic therapy.

Follow-up data was obtained for all patients from review of infection prevention and control records as well as the patient's main electronic health record. Outcomes for each MRSA-positive episode were measured from the time of treatment to either the time of treatment failure, reconversion or last known follow-up. Patients who had three complete negative screening sets at least 48 hours apart consisting of both nasal and rectal swabs, and where applicable: urine (if catheter was present), ostomy sites, open wounds, and any previous positive sites – were classified as achieving initial clearance. A patient was defined as a reconversion if they achieved decolonization but then had a subsequent positive culture for the presence of MRSA.

Statistical Analysis

Descriptive statistics were used to describe demographic characteristics and basic rates of treatment allocation and initial clearance. Univariate analysis was performed using two-sided Student's *t* tests and X^2, as appropriate.

The primary outcome of the study was successful initial clearance following decolonization treatment comparing those receiving topical treatment with those receiving topical/systemic treatment. Secondary outcomes of this study examined the duration of MRSA negative status and the effect of rectal colonization on both initial and long-term decolonization success stratified by treatment type. These outcomes were analyzed using Kaplan-Meier analyses to compare the probabilities of being MRSA-negative over time using completion of treatment as the starting point (time 0). Log-rank tests were used to assess the significance of treatment allocation.

RESULTS

Initial review of clinic records identified 345 patients for review and possible study inclusion. Of those, 250 (72%) met the criteria for inclusion and collectively totaled 419 decolonization attempts for analysis as part of the study. The remaining 95 patients were excluded for either spontaneous MRSA clearance without decolonization treatment (n=36) or insufficient treatment documentation/follow-up (n=59).

Of the 419 decolonization attempts, 342 (81.6%) were classified as receiving topical only treatment and the remaining 77 (18.4%) received a combined regimen of topical and systemic treatment. The majority of decolonization attempts (90.1%) were performed using our defined hospital's standard topical or systemic/topical protocols as indicated in Table 1. Patients receiving combined topical/systemic therapy were more likely to be younger (p=0.0097). The two groups did not significantly differ on the basis of gender, number of MRSA-positive body sites and proportion with rectal colonization (Table 2).

Overall 75.3% (n=58) of patients who received combined topical/systemic treatment achieved initial clearance in contrast to 45.3% (n=155) of those who received topical treatment. Combined topical/systemic treatments were found to be more effective at achieving initial clearance (OR 3.68, 95% CI 2.05, 6.82, p<0.00001). Table 1 shows a comparison of the variations of topical and topical/systemic treatment to the standard hospital protocol with the goal of achieving initial clearance. Odds ratios suggest that the combination of 2% mupirocin and non-medicated Dial soap body washes may achieve a higher rate of clearance than the standard topical hospital protocol but this was not found to be statistically significant (OR 1.57, 95% CI 0.46-5.63, p=0.23). The same statement can be made for the use of trimethoprim/sulfamethoxazole in lieu of doxycycline for systemic/topical therapy, which initially appeared to have greater success but lacked significance (OR 1.56, 95% CI 0.28-16.18, p=0.72).

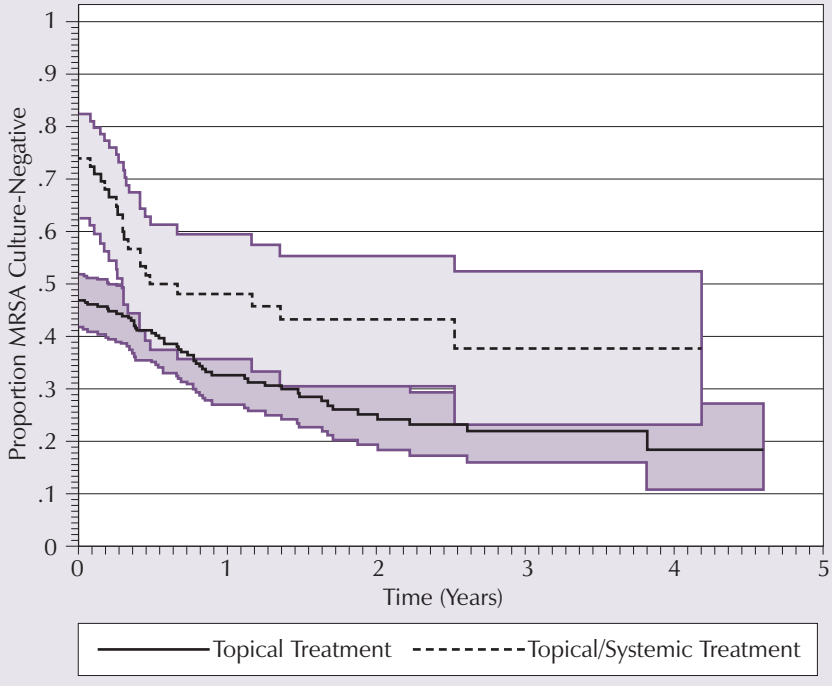
TABLE 2. Demographics of topical and topical/systemic treatment protocols

N=419	Topical Treatment (95% CI)	Topical/Systemic Treatment (95% CI)	p-value
Mean Age	57.9 (55.1, 60.6)	49.8 (45.0, 54.5)	0.0097
Mean # Positive Sites	1.68 (1.58, 1.78)	1.74 (1.53, 1.94)	0.6368
% Female	53.2 (47.9, 58.5)	54.5 (43.4, 65.7)	0.8327
% with Rectal Colonization	56.4 (51.1, 61.7)	59.7 (48.8, 70.7)	0.5963

Using a Kaplan-Meier curve (Figure 1), we analyzed whether the initial success of clearance demonstrated in the topical/systemic group continued to translate into long-term sustained decolonization. Overall, 61 (14.6%) patients were known to have reconverted to MRSA-positive on subsequent testing following initial clearance. Forty-one of these reconversions were in the topical treatment groups (67.2%), and 20 were in the topical/systemic group (32.8%). Analysis of the Kaplan-Meier curve using the log-rank test showed that the two treatment curves were significantly different (X^2=8.52, p=0.0035). Much of the significance appears to be a result of the marked greater success of initial clearance found with topical/systemic treatment. In the long-term, topical/systemic treatment's superiority over topical treatment becomes less clear as the confidence intervals begin to overlap.

The effect of rectal colonization on the initial clearance rates for decolonization can be seen in Figure 2. The long-term success of decolonization in those with rectal colonization (n=168) was analyzed using a separate Kaplan-Meier curve (Figure 3). The pattern of these curves was markedly similar to those in Figure 1, and they were also found to be significantly different using the log-rank test (X^2=6.16, p=0.013). In contrast, the log-rank test on the Kaplan-Meier curves for only those without rectal colonization (figure 4) was not found to be significantly different (X^2=3.02, p=0.082)

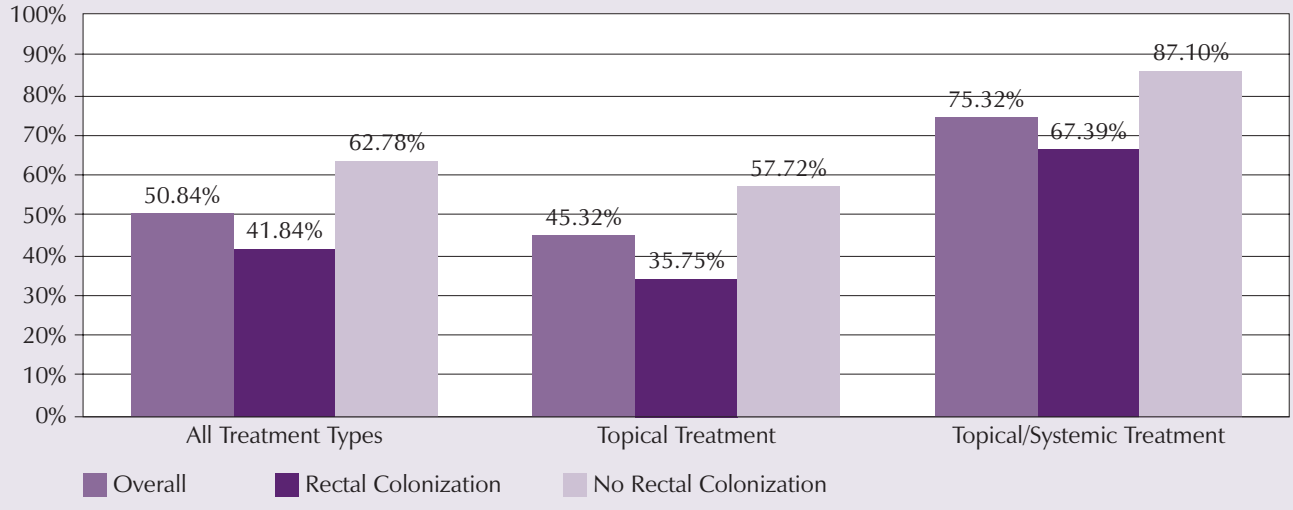
FIGURE 1. Proportion of MRSA-positive patients remaining negative over time (Kaplan-Meier curve, x^2=0.21, p=0.65 by log-rank test – shaded areas denote the 95% CI)



DISCUSSION

MRSA infections cause increased morbidity, mortality, and health care costs when compared with MSSA strains (1-4). As such, eradication of MRSA carriage through decolonization therapies may serve as an important tool in the fight to reduce the risk of MRSA infection, and to limit the spread of MRSA to vulnerable patient populations (7,8). This retrospective review of MRSA decolonization therapies in a predominantly ambulatory

FIGURE 2. Initial clearance rates dependent on decolonization treatment and the presence of rectal colonization



Return to TABLE OF CONTENTS

FIGURE 3. Proportion of rectally MRSA-positive patients remaining negative over time (Kaplan-Meier curve, x^2=6.16, p=0.013 by log-rank test – shaded areas denote the 95% CI)

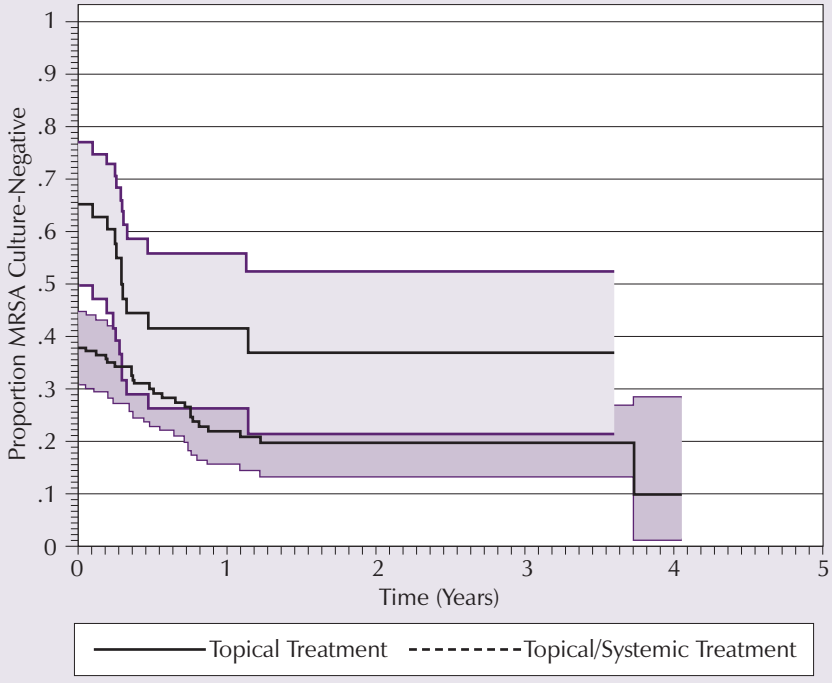
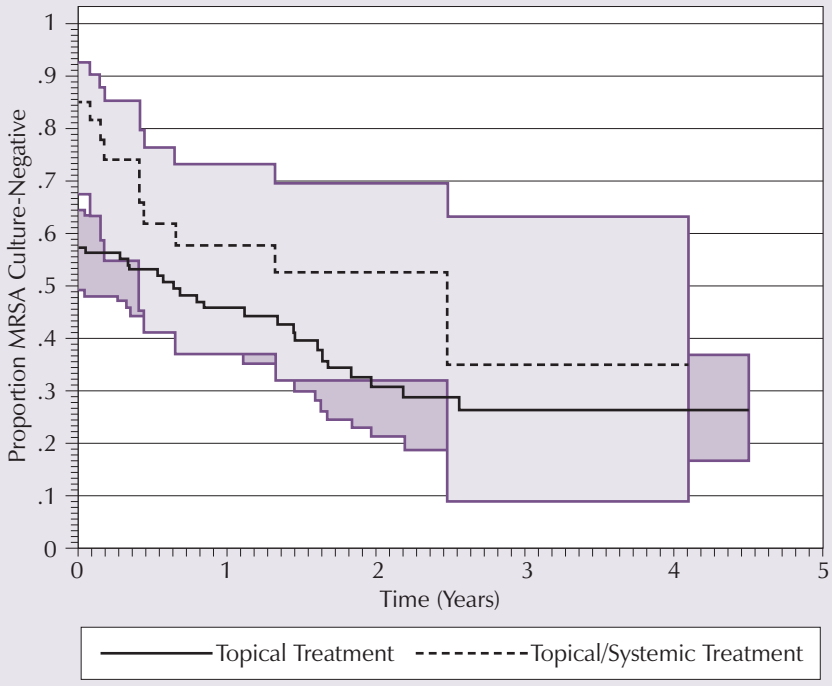


FIGURE 4. Likelihood among *non-rectally colonized patients* of remaining MRSA culture-negative from time of treatment completion and stratified by treatment type using a Kaplan-Meier curve (log-rank test, X^2=3.02, p=0.082). Shaded area denotes 95% confidence intervals.



MRSA colonized population demonstrates that topical/systemic decolonization therapies were significantly more effective at eradicating MRSA colonization initially than topical therapies only. The initial rates of clearance for both the topical and the topical/systemic therapies are consistent with the clearance rates identified in other MRSA decolonization studies in the literature whose initial clearance rates ranged from 23% to 96% (10,15,18). The high likelihood of initial clearance success seen in the topical/systemic therapy group shows that it can be a valuable tool when dealing with patients who require immediate clearance, such as those undergoing surgery.

The superiority of topical/systemic therapies observed in this study may be attributed in part to the inability of topical regimes to eradicate gastrointestinal MRSA reservoirs. Boyce et al. had previously shown the gastrointestinal tract to be a clinically important reservoir of MRSA (19). This is supported by the findings of the Kaplan-Meier curves in this study, which show that among the rectally colonized cohort, the addition of systemic antibiotics to standard topical therapies results in higher rates of successful decolonization.

Although several studies have shown MRSA decolonization to be an effective strategy for producing initial clearance of MRSA carriage, only a few have had follow-up greater than 30 days in duration (10,20-22). The lack of long-term follow-up data in the literature limits discussion on the long-term success of decolonization procedures for the eradication of MRSA. A prospective 2007 randomized-controlled trial by Simor et al. using a seven-day course of doxycycline and rifampin combined with intranasal mupirocin and chlorhexidine body wash (a topical/systemic therapy) for MRSA decolonization demonstrated that at nine months post-decolonization, 58% of patients who received topical/systemic therapy remained MRSA-negative (10). Our retrospective review showed a slightly lower probability of maintaining MRSA clearance with 48% remaining MRSA-negative at the same point in the Kaplan-Meier curve. Topical therapy was marginally less successful at this same interval with approximately 38% remaining MRSA-negative.

There are important limitations to the findings of this study due to the retrospective study design that should be noted. The availability of follow-up screening was limited for many patients. It has been observed that many patients do not seek or attend additional follow-up screening when they have obtained official clearance. As such, patient's who have obtained clearance are unlikely to be re-screened unless subsequent issues arise with possible infections or re-admission to hospital. Therefore, reconversion to MRSA colonization may not have been detected in an unknown number of cases. The use of the Kaplan-Meier curves assists in addressing the variation in follow-up, as it enables censoring of patients where no further data beyond a point is known.

In conclusion, topical/systemic decolonization therapies appear to have greater efficacy toward achieving both initial and long-term MRSA clearance, particularly among those with documented rectal colonization prior to the start of treatment. More prospective randomized control trials are needed with longer follow-up periods to definitively state whether topical or systemic decolonization is more effective at producing long-term MRSA eradication.

REFERENCES

1. Kim T, Oh PI, Simor AE. The economic impact of methicillin-resistant *Staphylococcus aureus* in Canadian hospitals. *Infect Control Hosp Epidemiol* 2001;22:99-104
2. Simor AE, Ofner-Agostini M, Gravel D, et al. Surveillance for methicillin-resistant *Staphylococcus aureus* in Canadian hospitals in a report update from the Canadian Nosocomial Infection Surveillance Program. *Can Commun Dis Rep* 2005;31:33-40
3. Cosgrove SE, Sakoulas G, Perencevich EN, Schwaber MJ, Karchmer AW, Carmeli Y. Comparison of mortality associated with methicillin-resistant and methicillin-susceptible *Staphylococcus aureus* bacteremia: a meta-analysis. *Clin Infect Dis* 2003;36:53-59
4. Engemann JJ, Carmeli Y, Cosgrove SE, et al. Adverse clinical and economic outcomes attributed to Methicillin resistance among patients with *Staphylococcus aureus* surgical site infection. *Clin Infect Dis* 2011;53:592-598
5. Herwaldt LA. Control of methicillin-resistant *Staphylococcus aureus* in the hospital setting. *Am J Med* 1999;106:11s-18s
6. Stamm AM, Long MN, Belcher B. Higher overall nosocomial infection rate because of increased attack rate of methicillin-resistant *Staphylococcus aureus*. *Am J Infect Control* 1993;21:70-74
7. Rubinovitch B, Pittet D. Screening for methicillin-resistant *Staphylococcus aureus* in the endemic hospital: what have we learned? *J Hosp Infect* 2001;47:9-18
8. Datta R, Huang SS. Risk of infection and death due to methicillin-resistant *Staphylococcus aureus* in long-term carriers. *Clin Infect Dis* 2008;47:176-181
9. Simor AE. Staphylococcal decolonisation: an effective strategy for prevention of infection? *Lancet Infect Dis* 2011;11:952-962
10. Simor AE, Phillips E, McGeer A, et al. Randomized controlled trial of chlorhexidine gluconate for washing, intranasal mupirocin, and rifampin and doxycycline versus no treatment for the eradication of methicillin-resistant *Staphylococcus aureus* colonization. *Clin Infect Dis* 2007;44:178-185
11. Laupland KB, Conly JM. Treatment of *Staphylococcus aureus* colonization and prophylaxis for infection with topical intranasal mupirocin: an evidence-based review. *Clin Infect Dis* 2003;37:933-938
12. van Rijen M, Bonten M, Wenzel R, Kluytmans J. Mupirocin ointment for preventing *Staphylococcus aureus* infections in nasal carriers (Review). CD006216.DOI:10.1002/14651858.CD006216.pub2 *Cochrane Database Syst Rev* 2008:4
13. Kohler P, Bregenzer-Witteck A, Rettenmund G, Otterbech S, Schlegel M. MRSA delonization: success rate, risk factors for failure, and optimal duration of follow-up. *Infection* 2013;41:33-40
14. Buehlmann M, Frei R, Fenner L, Dangel M, Fluckiger U, Widmer AF. Highly effective regimen for decolonization of methicillin-resistant *Staphylococcus aureus* carriers. *Infect Control Hosp Epidemiol* 2008;29:510-516
15. Dow G, Field D, Mancuso M, Allard J. Decolonization of methicillin-resistant *Staphylococcus aureus* during routine hospital care: efficacy and long-term follow up. *Can J Infect Dis Med Microbiol* 2010;21:38-44
16. Gilpin DF, Small S, Bakkshi S, Kearney MP, Cardwell C, Tunney MM. Efficacy of a standard methicillin-resistant *Staphylococcus aureus* decolonization protocol in routine practice. *J Hosp Infect* 2010;75:93-98
17. Loeb M, Main C, Walker-Dilks C, Eady A. Antimicrobial drugs for treating methicillin-resistant *Staphylococcus aureus* colonization. CD003340. DOI:10.1002/14651858.CD003340. *Cochrane Database Syst Rev* 2003:4
18. Ammerlaan HSM, Kluytmans JAJW, Wertheim HF, Nouwen JL, Bonten MJ. Eradication of methicillin-resistant *Staphylococcus aureus* carriage: a systematic review. *Clin Infect Dis* 2009;48:922-930
19. Boyce JM, Havill NL, Maria B. Frequency and possible infection control implications of gastrointestinal colonization with methicillin-resistant *Staphylococcus aureus*. *J Clin Microbiol* 2005;43:5992-5995
20. Berg HF, Tjhie JH, Scheffer GJ, et al. Emergence and persistence of macrolide resistance in oropharyngeal flora and elimination of nasal carriage of *Staphylococcus aureus* after therapy with slow release clarithromycin: a randomized, double-blind, placebo-controlled study. *Antimicrob Agents Chemother* 2004;48:4183-4188
21. Martin JN, Perdreau-Remington F, Kartalija M, et al. A randomized clinical trial of mupirocin in the eradication of *Staphylococcus aureus* nasal carriage in human immunodeficiency virus disease. *J Infect Dis* 1999;180:896-899
22. Sotto NE, Vaghjimal A, Stahl-Avicolli A, Protic JR, LutwickLI, Chapnick EK. Bacitracin versus mupirocin for *Staphylococcus aureus* nasal colonization. *Infect Control Hosp Epidemiol* 1999;20:351-353

Fast + Effective

A Fast and Effective Equipment Washer...

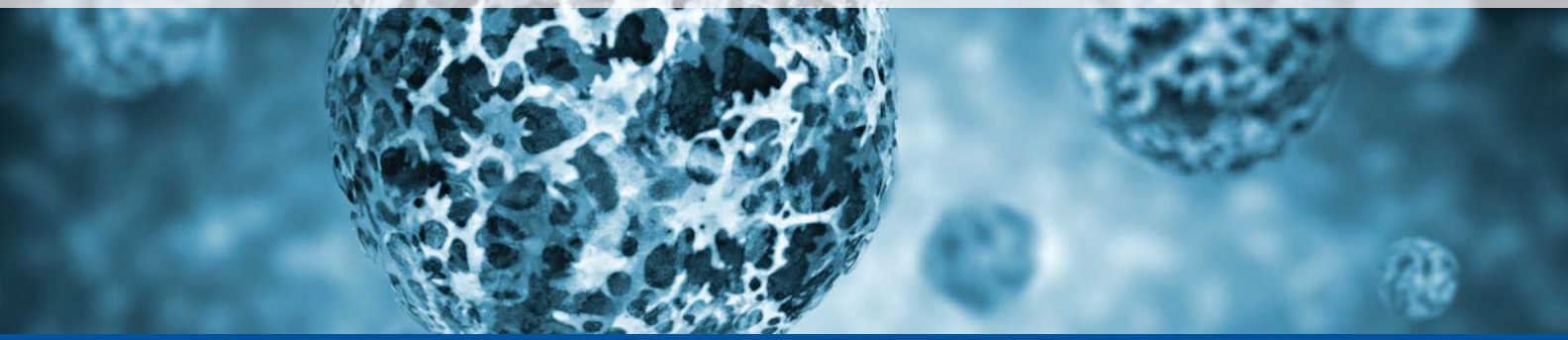
Medco Equipment, Inc.'s multipurpose portable equipment washer provides dramatic bacteria reduction. Independent lab tests have documented an impressive 99.9% reduction in bacteria ***after one wash***! This machine washes and sanitizes two wheelchairs in five minutes. It also cleans commode chairs, shower chairs, walkers, carts, window screens etc. **2,000 customers worldwide are now sanitizing more than 3.4 million wheelchairs yearly!** Free 30 day trial and delivery. Rent, lease-purchase or purchase. It's a portable dishwasher for wheelchairs and equipment! All stainless steel. CE.UL and CUL listed, 5 year wall to wall warranty. Seven day delivery.

Medco® EQUIPMENT

For more information call (800) 717-3626 or visit
www.medcoequipment.com

PROCESS CLEANING SOLUTIONS
Bringing Science to the Art of Cleaning®

QUICK FACTS
BIOFILMS ARE NOW COMMONLY FOUND ON DRY SURFACES.



Fifty years of promoting a one step cleaning and disinfecting process creates sales, but the evidence suggest label disinfection claims have not been achieved. Practicing a one step process may promote the development of biofilms!

BIOFILMS CONTAIN BACTERIA THAT HAVE A CHANCE TO ATTACH TO SURFACES AND EXCRETE EXTRACELLULAR ORGANIC SUBSTANCES, OR SLIME, WHICH MAKES THEM MORE RESISTANT TO REMOVAL AND TOLERANT OF DISINFECTANTS.

BACTERIA WITHIN DRY BIOFILMS MAY BE IN A VIABLE BUT NON CULTURABLE STATE.

BACTERIA WITHIN BIOFILMS CAN BE 1000 TIMES MORE RESISTANT TO DISINFECTANTS.

BACTERIA IN A VIABLE BUT NON CULTURABLE STATE MAY NOT BE DETECTED IN LABORATORY DISINFECTANT TEST.

BACTERIA WITHIN DRY BIOFILMS MAY BE PROVIDED ALL THE NOURISHMENT THEY NEED TO SURVIVE FROM CLEANING.

WATER AND BIODEGRADABLE INGREDIENTS IN DETERGENTS (SURFACTANTS) OR DISINFECTANT DETERGENTS PROVIDE NUTRIENTS NEEDED FOR BACTERIAL SURVIVAL.

DISINFECTANT LABEL CLAIMS DO NOT INCLUDE BACTERIA IN BIOFILMS OR BACTERIA IN A VIABLE BUT NON CULTURABLE STATE.

CLEANING AND DISINFECTING PROCESSES NEED TO ADAPT TO THE REALITY THAT SURFACES ARE LIKELY CONTAMINATED WITH BIOFILMS.

BIOFILMS ON DRY SURFACES DIFFER IN PHYSICAL STRUCTURE THAN BIOLFILMS FOUND ON DAMP SURFACES.

Clostridium difficile contamination of reprocessed hospital bedpans

Authors
Devon Metcalf, PhD, CIC
Sherri Beckner, MLT, CIC
Jo-Anne McConnell, RN, BScN, CIC
Gary Tutin
J. Scott Weese, DVM, DVSc, DipACVIM

Institution:
Department of Pathobiology
Ontario Veterinary College
University of Guelph, 50 Stone Rd East
Guelph, Ontario, Canada, N1G 2W1
Fax: 519-824-5930

Correspondence to:
J. Scott Weese
jsweese@uoguelph.ca

ABSTRACT

Background
The role bedpans play in transmission of *Clostridium difficile* between patients in hospitals is poorly understood. Although no outbreaks of *C. difficile* attributed to bedpans have been reported, bedpans contaminated with spores may be involved in transmission, possibly as a vector themselves or contributing to hand contamination of healthcare workers.

Methods
In a community hospital, 83 bedpans, used by both diarrheic (n=20) and non-diarrheic patients (n=63), were sampled for *C. difficile* contamination before and after reprocessing. Cultured isolates were characterized using molecular methods and the prevalence of *C. difficile* between the groups was compared.

Results
C. difficile was found on 26% (43/166) of the bedpans. There was no significant difference between contamination of bedpans used by diarrheic (12/40, 30%) and non-diarrheic (31/126, 24.6%) patients. There was significantly more *C. difficile* found on reprocessed bedpans (28/83, 33.7%) compared to pre-reprocessed bedpans (15/83, 18%).

Conclusion
This study indicates that bedpans can remain contaminated with spores after reprocessing and could serve as a vector for transmission. Of additional concern is the evidence that bedpans initially free of *C. difficile* can become contaminated during reprocessing.

KEY WORDS:
Clostridium difficile, bedpans

INTRODUCTION

Clostridium difficile is an anaerobic, spore-forming pathogen that is a leading cause of hospital- and antimicrobial-associated diarrhea. Transmission occurs via the fecal-oral route but the sources of transmission have been poorly defined. The sporulation ability of *C. difficile* contributes to its ability to spread and persist in the environment. *C. difficile* spores are resistant to otherwise damaging environmental conditions such as heat, dessication, oxygen, and many disinfectants (1). The persistence of spores on surfaces in healthcare facilities can lead to the infection of patients or recurrent disease as a result of reinfection (2).

C. difficile contamination of environmental surfaces has been well documented in healthcare facilities (3,4) and despite bedpans having been implicated in outbreaks of various pathogens (5,6), no confirmed outbreaks of *C. difficile* associated with contaminated bedpans have been reported. Bedpans are considered non-critical items according to Spaulding's criteria (7) and would, therefore, only require cleaning and low level disinfection, which would not be sufficient to eradicate spores from the surface of the bedpans. "Clean" bedpans still contaminated with spores could contribute to environmental and hand contamination.

The role of re-useable bedpans in the transmission of *C. difficile* remains unclear. In this study, we sought to determine the extent of *C. difficile* contamination of bedpans pre- and post-reprocessing in a community hospital.

METHODS

Sample Collection and Processing

The study was performed at a 232 bed community hospital in southern Ontario, Canada. All sampling was performed over 20 non-consecutive days between July-Sept 2012. Nursing staff were instructed to separate bedpans used by diarrheic (defined as three or more loose stools in a 24 hour period) and non-diarrheic patients. Hygienic bedpan liners (Hygie, Texas, USA) were used in the bedpans used by diarrheic patients. The gross material (including the bedpan liners) was removed from bedpans and discarded. Bedpans used by diarrheic patients were then placed in a brown plastic bag prior to being placed in the storage bins for used bedpans. Bedpans used by patients with no signs of diarrhea were placed in storage bins unbagged, and bins were taken to the sterile processing department (SPD) for processing. A total of 83 Vollrath sterilizable bedpans were sampled (Medical Action Industries, Inc., Brentwood, NY).

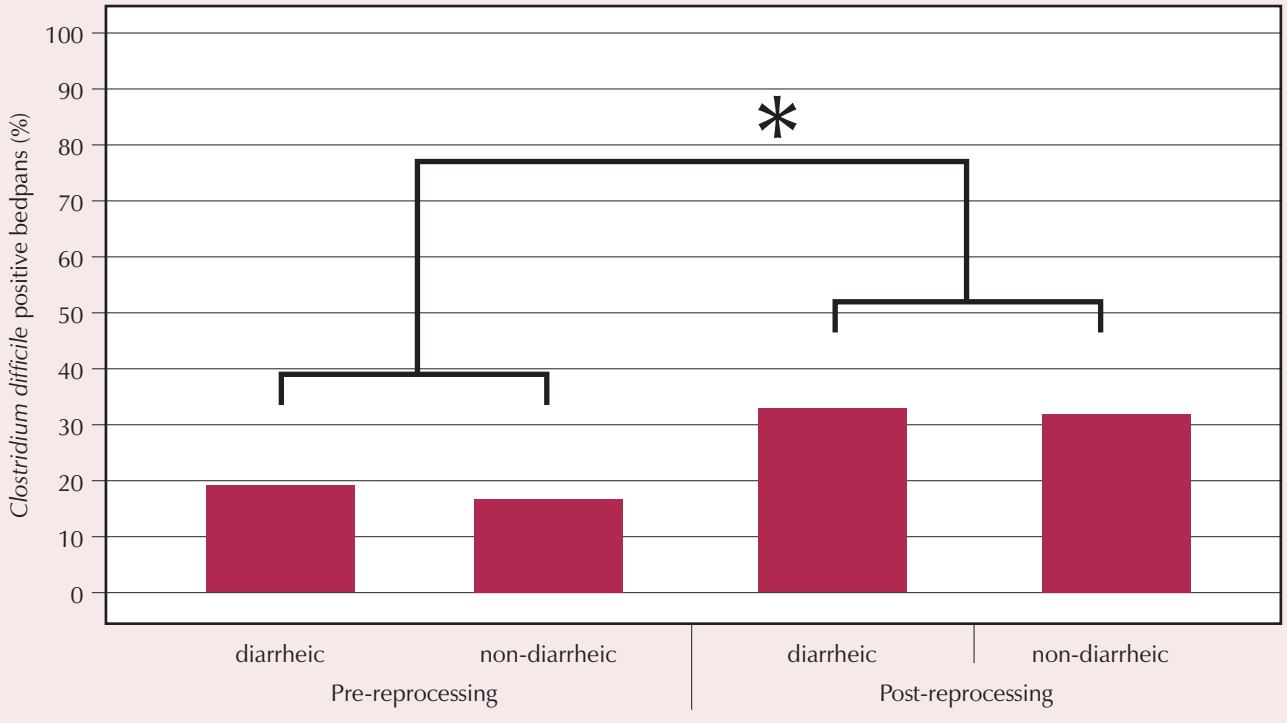
Electrostatic cloths (Swiffer Dry Cloths, Proctor and Gamble, Toronto, ON) were used to wipe half of the bedpans prior to reprocessing. All sampling was performed by the same individual. Hand hygiene was performed and clean gloves were donned between sampling of each bedpan. Cloths were immediately bagged individually in clean sample bags and batches were submitted to the laboratory. For every 10 cloths, a new cloth was immediately bagged to serve as a negative control. Briefly, the negative control cloths were immediately bagged and processed as the others wiped bedpans were then processed using standard hospital protocols. Briefly, bedpans were subjected to manual cleaning using Endozyme® AW Triple Plus with Advanced Proteolytic Action (Ruhof, Mineola, NY) and were rinsed. Bedpans were then loaded into a cartwasher and washed using the acidic detergent Iso-Gone® (Ruhof) and a standard run cycle. The bedpans were removed from the cart washer at the end of the cycle and allowed to dry. Electrostatic cloths were used to wipe the other half of the bedpan after reprocessing.

Upon arrival to the laboratory, the cloths were subjected to enrichment culture to grow *C. difficile*. The cloths were immersed in approximately 50 ml of *C. difficile* moxalactam norfloxacin (CDMN) broth with 0.1% sodium taurocholate and incubated anaerobically at 37°C for seven days. After seven days, cultures were alcohol-shocked (at a 1:1 ratio) for 60 min for spore selection and plated onto CDMN agar. Plates were incubated anaerobically at 37°C for 48 hours. Suspected colonies, based on colony morphology and a distinctive *C. difficile* odour, were subcultured and identity was confirmed using the L-proline aminopeptidase activity test (Prodisk, Remel, Lenexa, KS, USA).

Isolate Characterization

All isolates were ribotyped (8), toxinotyped (9), and screened by PCR for the genes encoding toxin A (*tcdA*), toxin B (*tcd*B), and binary toxin (*cdtB*) (10, 11).

FIGURE 1. Percent of total bedpans sampled that were positive for *C. difficile*, comparing bedpans from both diarrheic and non-diarrheic patients and pre-reprocessing versus reprocessed bedpans. Star indicates a significant result. Fisher's exact test was used as a test of significance and a P value <0.05 is considered significant.



Return to TABLE OF CONTENTS

Statistical Analysis

Fisher's exact test was used to determine statistical significance. P values ≤ 0.05 were considered significant.

RESULTS

A total of 182 electrostatic cloths were submitted for culture (166 sample cloths and 16 negative control cloths). Forty of the 166 (24%) cloths were from bedpans used by diarrheic patients (20 pre- and 20 post-reprocessing) and 126 (76%) were from non-diarrheic patients (63 pre- and 63 post-reprocessing). *C. difficile* was found in 26% (43/166) of bedpans; 30% (12/40) of those from diarrheic patients and 25% (31/126) from non-diarrheic patients (P=0.41).

There was no statistically significant difference between the *C. difficile* contamination on bedpans from diarrheic versus non-diarrheic patients before (P=0.34) or after (P=1.0) reprocessing (P = 0.34) (Figure 1) or when pre- and post-reprocessing samples were combined. However, when all bedpans were included, the prevalence of *C. difficile* contamination was significantly greater on reprocessed bedpans (P=0.03) (Figure 1). All control cloths were negative for *C. difficile*.

The isolates were classified into nine different ribotypes. The most common ribotype identified was ribotype 027 (NAP1), which accounted for 28% (12/43) of the isolates. The other eight ribotypes were given an internal laboratory designation because they did not belong to any of the internationally recognized ribotypes in our collection. All ribotypes consisting of more than one isolate were found on multiple sampling days.

A total of 98% (42/43) were toxigenic. Thirty percent (13/43) had *cdtB*, the binary toxin gene (Table 1). Although ribotype B is classified as binary toxin negative (Table 1), only 4/5 isolates were negative for the binary toxin gene. The binary toxin gene was present in one of the ribotype B isolates, suggesting these isolates are different strains with indistinguishable ribotype patterns.

The extent of contamination prompted additional sampling around the reprocessing environment. Ten additional sites were selected for sampling from the SPD environment and three additional isolates were recovered from a wash basin, a soap bucket and the inside of the cart washer. All isolates belonged to ribotype H.

DISCUSSION

While *C. difficile* contamination of bedpans is not unexpected, numerous findings in this study were surprising and should be studied further to determine their clinical relevance. Significantly more *C. difficile* was found on reprocessed bedpans compared to pre-reprocessed bedpans suggesting the process of cleaning may spread *C. difficile* spores from contaminated to uncontaminated equipment. Contaminated bedpans may pose a risk to patients via direct exposure to spores or indirectly through environmental or staff hand contamination, when handling bedpans thought to be clean. A high number of the bedpans used by non-diarrheic patients were found to be contaminated with *C. difficile*. This may reflect persistent survival of spores on bedpans through multiple cycles through SPD or asymptomatic colonization of patients who contribute to the environmental bioburden. Of additional concern is the evidence that a bedpan or other patient equipment initially free of *C. difficile*, can become contaminated if processed with contaminated bedpans.

The removal of *C. difficile* spores from patient equipment is challenging. In a recent study, *C. difficile* spores were eradicated from the surface of reusable bedpans using an alkaline detergent and a water temperature of 85oC for a minimum of 60s (12). The study hospital performed a manual cleaning step followed by the use of cart washer during reprocessing of the bedpans. The use of an acidic detergent and the questionable ability of the facility's aging cart washer to achieve and hold an appropriate temperature were suspected as contributing to inadequate cleaning of bedpans and insufficient removal of spores.

TABLE 1. *Clostridium difficile* characterization and sampling days the isolates were recovered on.

Ribotype	No. of Isolates	*tcdA/tcdB*	*cdtB*	Toxinotype	Sampling days isolates were recovered
027	12	+/+	+	III	2, 4, 6, 9
A	8	+/+	-	III	8, 9
B	5	+/+	-	II	4, 10
C	1	+/+	-	II	5
D	2	+/+	- *	II	11, 18
E	1	-/-	-	NA	3
F	1	+/+	-	II	4
G	8	+/+	-	XXVII	18, 19
H	1	+/+	-	Unknown**	20

Note: * Four of five isolates were *cdtB* negative and one was *cdtB* positive. ** Toxinotyping was not successfully performed for this isolate. *tcdA* and *tcdB* represent the toxins A and B genes, respectively. *cdtB* represents the binding component gene of the binary toxin.

A variety of different ribotypes were isolated and 55% (5/9) of the isolates were found on multiple non-consecutive days suggesting that multiple patients could be contributing to the *C. difficile* bioburden or multiple strains could be colonizing the same patient. The bedpans were not, however, linked to specific patients therefore no comparison between known *C. difficile* positive patients and contaminated bedpans could be made. Although the majority of the isolates (42/43) were toxigenic, and therefore capable of causing infections, the role the bedpans play in the transmission of *C. difficile* remains unknown. Over the course of the study period, the hospital documented 12 confirmed *C. difficile* cases. Nine cases were deemed hospital associated, two were considered indeterminate and one case was a relapse. Further studies connecting bedpans to specific patients with a known *C. difficile* status could provide insight into the source of the contamination.

The frequency of the isolation of ribotype 027/NAP1 isolates (12/43) was not particularly surprising since this ribotype is widespread in healthcare facilities in Ontario, even in the absence of outbreaks (4, 13). However, it is of concern given this type's association with outbreaks, enhanced pathogenesis and multidrug resistance resulting in a poorer patient prognosis and increased transmissibility (14, 15, 16).

Although not feasible in the long-term, the hospital began soaking bedpans in bleach prior to reprocessing. This process involved manually washing the bedpans, soaking the bedpans in a 5.25% sodium hypochlorite (1:500 bleach to water ratio) solution for 10 min followed by the standard cleaning in the cart washer. Additional sampling was performed to assess *C. difficile* contamination of the bedpans pre-soaked in bleach and all of these bedpans were found to be free of *C. difficile*. Pre-soaking bedpans in bleach or another sporicidal disinfectant would be a potential course of action in the event of a *C. difficile* outbreak. In June 2013, the hospital transitioned to single use bedpans for all patients (Medegen, Tennessee, USA). During the following nine months, this facility had only one case of hospital-associated CDI. Although the noticeable reduction in cases during this time period can't be directly attributed to the change in bedpans since a randomized controlled trial was never used to investigate the association, the anecdotal data is sufficient to warrant further attention.

This study demonstrates that bedpans remain contaminated with spores after reprocessing and could potentially serve as a vector of transmission. Of additional concern is evidence that initially *C. difficile*-free bedpans and other patient equipment can become contaminated during reprocessing. Further studies are required to determine which cleaning steps are ineffective in removing *C. difficile* spores, and if bedpans do play a role in *C. difficile* transmission.

REFERENCES

1. Setlow P. I will survive: DNA protection in bacterial spores Trends Microbiol 2007;15:172-180.
2. Gerding DN, Muto CA, Owens Jr RC. Measures to control and prevent *Clostridium difficile* infection Clin Infect Dis 2008;46 Supp 1:S43-49.
3. Weber D, Rutala W, Miller M, Huslage K, Sickbert-Bennett E. Role of hospital surfaces in the transmission of emerging health care-associated pathogens: norovirus, *Clostridium difficile*, and *Acinetobacter* species Am J Infect Control 2010;38(S1):S25-33.
4. Faires M, Pearl D, Ciccotelli W, et al. A prospective study to examine the epidemiology of methicillin-resistant *Staphylococcus aureus* and *Clostridium difficile* contamination in the general environment of three community hospitals in southern Ontario, Canada BMC Infect Dis 2012; 12:290-303.
5. Pitten F, Panzig B, Schröder G, Tietze K, Kramer A. Transmission of a multiresistant *Pseudomonas aeruginosa* strain at a German University hospital J Hosp Infect 2001;7:125.130.
6. VanKnippenberg-Gordebeke G. Dutch surveys bedpan management (1990 & 2010): progress in correct use of washer disinfectors. BMC Proceedings 2011;5(S6):P308.
7. Spaulding E 1968. Chemical disinfection of surgical and medical materials. In: Block SS, Lawrence CA, eds. Disinfection, Sterilization and Preservation. Philadelphia: Lea & Febiger, 1968: 517-531.
8. Bidet P, Barbut F, Lalande V, Burghoffer B, Petit JC. Development of a new PCR-ribotyping method for *Clostridium difficile* based on ribosomal RNA gene sequencing FEMS Microbiol Lett 1999;175:261-266.
9. Rupnik M, Avesani V, Janc M, von Eichel-Streiber C, Delmee M. A novel toxinotyping scheme and correlation of toxinotypes with serogroups of *Clostridium difficile* isolations J Clin Microbiol 1998;36, 2240-2247.
10. Lemee L, Dhalliun A, Testelin S. Multiplex PCR targeting *tpi* (triose phosphate isomerase), *tcdA* (Toxin A), and *tcdB* (Toxin B) genes for toxigenic culture of *Clostridium difficile* J Clin Microbiol 2004;42:5710-5714.
11. Stubbs S, Rupnik M, Gibert M, Brazier J, Duerden B, Popoff M. Production of actin-specific ADP-ribosyltransferase (binary toxin) by strains of *Clostridium difficile*. FEMS Microbiol Lett 2000;186, 307-312.
12. Alfa M, Olson N, Buelow-Smith L, Murray B. Alkaline detergent combined with a routine ward bedpan washer disinfector cycle eradicates *Clostridium difficile* spores from the surface of plastic bedpans Am J Infect Control 2013;41:381-383.
13. Martin H, Willey B, Low D, et al.Characterization of *Clostridium difficile* strains isolated from patients in Ontario, Canada, from 2004-2006 J Clin Microbiol 2008; 2999-3004.
14. Loo VG, Poirier L, Miller MA, et al. A predominantly clonal multi-institutional outbreak of *Clostridium difficile*-associated diarrhea with high morbidity and mortality N Engl J Med 2005;353:2442-2449.
15. Warny M, Pepin J, Fang A, et al. Toxin production by an emerging strain of *Clostridium difficile* associated with outbreaks of severe disease in North America and Europe. Lancet 2005;366:1079-1084.
16. Lanis J, Barua S, Ballard J. Variations in TcdB activity and the hypervirulence of emerging strains of *Clostridium difficile* PLoS Pathog 2010;6:e1001061.

Sealed Air
Diversey Care

Oxivir®

5 minute
contact time

1 minute
contact time

Fast. Effective. Safe. Responsible.

powered by AHP®

AHP® - Accelerated Hydrogen Peroxide delivers the cleaning and disinfection performance you need to combat today's pathogens. It works quickly and effectively, yet it's gentle on people, assets and the environment.

Accel®

Is Now Part of Sealed Air Diversey Care.

10 minute
contact time
sporicidal

5 minute
contact time

3-5 minute
contact time

1 minute
contact time

Combining the leading disinfectant brands for excellence in infection prevention and support.

www.sealedair.com

Gain the Advantage

over Healthcare Acquired Infections

Introducing YANEX™ and the Power of the full Ultraviolet Spectrum.

YANEX Mobile Pulsed Xenon UV Disinfection Device, a completely new approach to UV disinfection, delivers an optimal solution for quick and complete disinfection of the air and surfaces in healthcare facilities.

YANEX's unique system of high intensity pulsed UV irradiation, achieves germicidal 3 to 5-log disinfection efficacy within minutes. This innovative technology damages the vital cell structures of pathogens (DNA, proteins, lipids and nucleic acids) and renders them inactive.

It's also simple to use, easy to move and non-toxic too.

Learn more at scican.ca/yanex

SciCan | Your Infection Control Specialist™

A Sanavis Group Company

scicanmedical.ca/yanex

STEVENS

"Where service is a commitment" | "Où le service est un engagement"

STEVENS

BRAND PRODUCTS

Exam Gloves

STYLES AVAILABLE:

- Nitrile
- Accelerator-Free Nitrile
- Synthetic Vinyl
- Stretch Synthetic Vinyl

Accel®

Authorized Distributor for HealthPRO #CL02240PL

Proud Partners Of

GOJO

Coloplast

Kimberly-Clark PROFESSIONAL*

MEIKO

WIPAK

PRIMAGARD® PROCEDURE & SURGICAL MASKS

WEIMAN®

ARJOWIGGINS HEALTHCARE

3M

www.stevens.ca

HALIFAX	MONTREAL	TORONTO	WINNIPEG	CALGARY	VANCOUVER
800-565-0765	855-660-7750	800-268-0184	800-665-1229	800-665-0368	800-565-8444

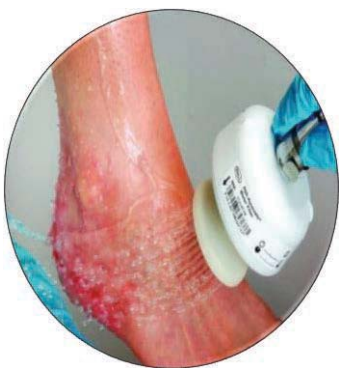
Chem-Aqua provides custom designed programs and control options to minimise the risk of Legionella bacteria and other water borne pathogens

Chem-Aqua Environmental & Healthcare offers expertise in …

- Copper Silver Ionization: Proven efficacy, residual protection and easy to maintain.

- Safe on site Chlorine Dioxide Generators: Well documented reduction of biofilm and Legionella.

- Point of Use Filters: Provides effective barrier in high risk patient areas against Legionella, Aspergillus, P. Aeruginosa and more.



Scientifically Validated 0.2 Micron Filters:

- ✓ Water Faucets and Shower Heads
- ✓ In-Line Filters and Hydrotherapy
- ✓ Ice Machines and Water Features
- ✓ Rinsing Medical Devices

Find out which is the best solution for you

CHEM-AQUA®
ENVIRONMENTAL & HEALTHCARE SERVICES

253 Orenda Road, Brampton, ON, L6T 1E6 CAES@nch.com 1-800-268-0838 x 214

Kimberly-Clark PROFESSIONAL*

Exceptional Workplaces*

Take the WetTask* System "Kick the Bucket" Challenge

60 Days, 30% Chemical Savings Guaranteed

The Challenge is simple. Just replace your open buckets and cotton rags or towels used for disinfection with the **WetTask* System** for 60 days. If you don't see a 30% savings† in your chemical costs, Kimberly-Clark Professional* will reimburse your chemical costs for 60 days with up to $1,000 in free product per customer facility.

To register for the WetTask* System "Kick the Bucket" Challenge, visit **www.kcprofessional.ca/wettaskchallenge.**

Limited Time Offer

60 days 30% savings guarantee

At the 2015 IPAC Conference?
Visit Kimberly-Clark Professional* at **Booth 76** to learn how we can save you 30% on chemical costs.

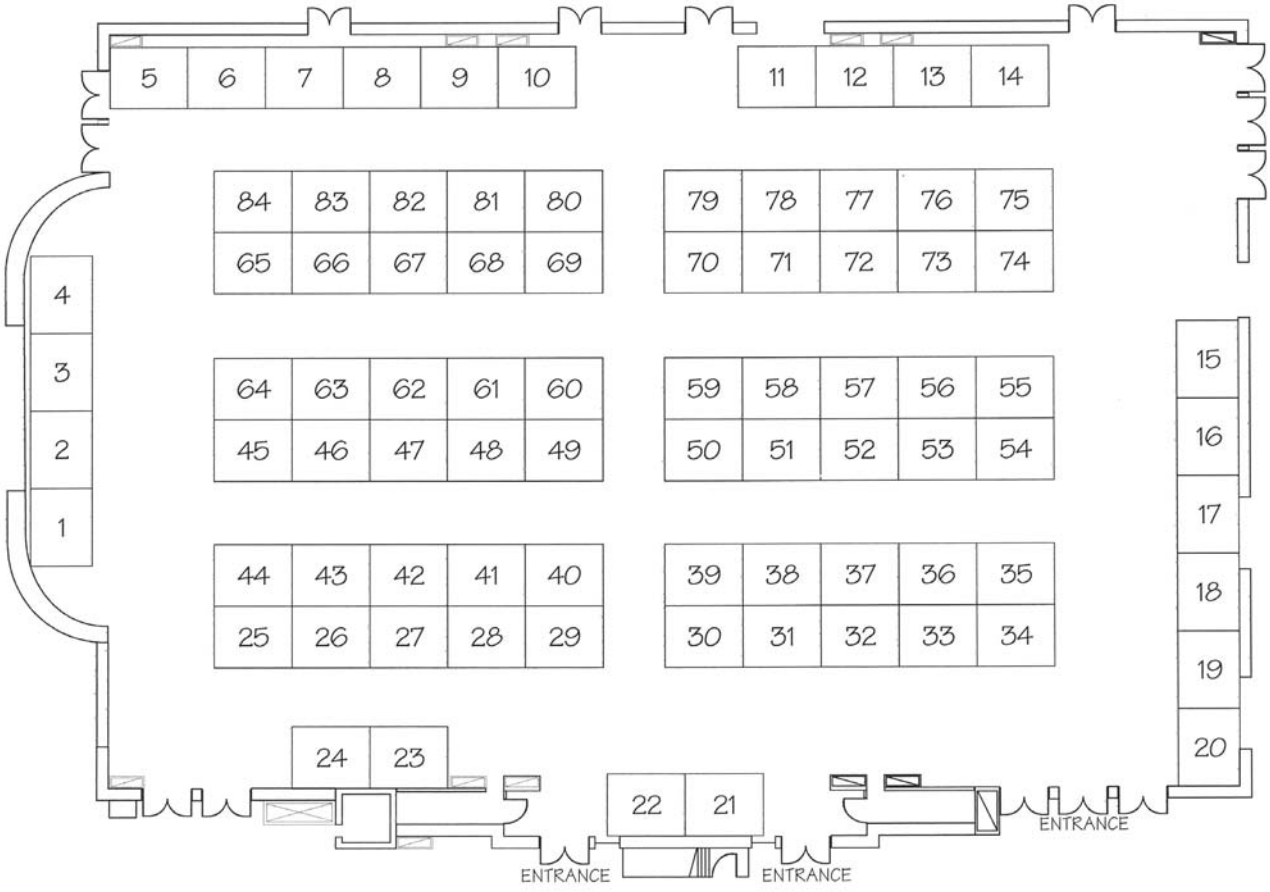
KIMTECH BRAND

*The **WetTask* System** consists of a dry roll of Kimtech* wipers placed in a reusable enclosed bucket or small canister. You add the disinfectant you're already using and you're good to go. The **WetTask* System** maintains target disinfectant concentration over a prolonged period of use, making surface disinfection simple and reliable.*

† Savings calculated based on a 60 day chemical cost for an open-bucket and cloth rag system as compared to a 60 day chemical cost during WetTask* System trial

2015 National Education Conference

June 14 - 17, 2015
Victoria Conference Centre



Exhibitors

3M Canada
Booths 30, 31
800-364-3577
3M.com/ca/healthcare
Trusted partner committed to helping hospitals reduce the risk of infections, improve patient outcomes, and control bottom lines.

Allied BioScience Inc.
Booth 38
214-432-5580
alliedbioscience.com
SurfaceWise™, creates a hostile microscopic environment on surfaces, making it difficult for disease-causing microorganisms to live and multiply.

Ansell
Booth 47
450-266-1580
ansell.com
Innovative medical safety solutions in a quickly evolving healthcare environment.

ArjoHuntleigh Canada Inc.
Booths 74, 75
800-665-4831
arjohuntleaigh.ca
Thermal disinfection of human waste receptacles and chemical disinfection of baths to disposable patient handling slings and lateral transfer devices.

Bard Canada Inc.
Booth 46
289-291-8024
Array of high quality urology products and featuring infection control catheters and complete care closed system trays at IPAC.

Baxter ICNet Systems
Booth 16
647-631-3195
icnetsystems.com
The ICNet™ Clinical Surveillance Suite improves patient safety in healthcare settings by allowing clinicians to focus on infection prevention.

Bioxy AFD
Booth 37
613-859-9334
bioxyafd.com
New broad-spectrum powered disinfectant that created 3 distinct disinfectants within the same solution with a pH 8.5 and a C. difficile kill claim.

Bowers Medical Supply
Booth 63
800-663-0047
bowersmedical.com

Exhibitors

Canadian Agency for Drugs and Technologies in Health
Booth 6
866-988-1444
cadth.ca
Independent, not-for-profit organization responsible for providing Canada's healthcare decision-makers with objective evidence to help make informed decisions about the optimal use of drugs and medical devices in our health care system.

Canadian Association of Medical Device Reprocessing
Booth 66
416-480-6100
camdr.ca
National association on medical devices reprocessing in all provinces.

Canadian Patient Safety Institute
Booth 81
780-409-8090
patientsafetyinstitute.ca
Not-for-profit organization for raising awareness and facilitating transformation in patient safety.

Certification Board of Infection Control & Epidemiology
Booth 83
414-918-9796
cbic.org
Provides direction for and administers the certification process for professionals in IC and applied epidemiology.

Chem-Aqua
Booth 55
905-487-4202
chemaqua.com
Custom designed solutions for boilers, cooling & process water systems. Our Resourcefully Green Approach delivers outstanding results and savings to meet sustainability goals, improve efficiencies, increase asset life & minimize therisk of Legionella bacteria & other waterborne pathogens with a program of products, equipment & services that address the unique requirements of each system.

Christie Innomed
Booth 73
800-361-8750
christieinnomed.com
Fast, efficient, and environmentally friendly solutions for ultrasound probe disinfection.

Clorox Healthcare Professional Products
Booths 28, 29, 40, 41
866-789-4973
cloroxhealthcare.com
Most trusted healthcare brands in North America.

Cornerstone Medical
Booths 42, 43
905-945-2522
cornerstone-medical.com
Provider of Silentia Privacy Screens, an alternative and innovative product that deals with today's issues relating to infection control and prevention.

Crede Technologies Inc.
Booth 12
604-828-8945
credetechnologies.com
Dedicated to building specialized custom software solutions to support improved quality and patient safety and ROP accreditation standards in acute, residential, and community settings.

CSA Group
Booth 10
416-747-4005
csagroup.org
Working with key stakeholders in healthcare to develop & maintain standards and related solutions to provide safe, reliable healthcare.

DebMed
Booths 69, 80
888-332-7627
debmed.com
Offering the most comprehensive hand hygiene solution.

Diversey, Inc.
Booths 18, 19, 20
262-631-4001
sealedair.com
World leader in cleaning and hygiene solutions offering expertise in disinfectant and cleaning solutions, dosing and dispensing tech, and training and consulting services.

Draeger Medical Canada Inc.
Booth 62
905-212-6600
draeger.ca
Develops innovative equipment and solutions that people the world over trust.

Ecolab
Booths 48, 49
800-268-0465
ecolab.com/healthcare
Partners with healthcare customers to deliver foundational infection prevention solutions.

Fraser Health
Booth 68
604-953-5115
careers.fraserhealth.ca
Located in Metro Vancouver and Fraser Valley region of BC, with numerous infection prevention and control practitioner career opportunities.

GOJO Industries Inc.
Booths 32, 33, 34
800-321-9647
gojocanada.ca/healthcare
Single source provider to help increase hand hygiene compliance.

healthcentric
Booths 35, 36
866-438-3746
healthcentric.com
Medical grade seating for healthcare facilities wanting durable, easy-to-clean and affordable seating.

Hygie Canada
Booth 39
450-444-6777
hygie.com
Develops, manufactures, and markets specialty products that effectively limit the spread of bacteria.

Immunize Canada
Booth 9
613-725-3769
immunize.ca
Our goal: contribute to the control/elimation/eradication of vaccine-preventable diseases in Canada by increasing awareness of the benefits and risks of immunization for all.

Imperial Surgical Inc.
Booth 60
514-631-7988
surgmed.com
Specializes in the fabrication of stainless steel equipment.

Infection Prevention and Control Canada
Booths 1, 2, 3, 4

Inter-Medico
Booth 23
800-387-9643
inter-medico.com
Canadian provider to the clinical laboratory with over 35 years' experience supporting customers with advanced solutions and innovative products.

International Federation of Infection Control
Booth 82
304-388-4259
theific.org

Kimberly-Clark Professional
Booth 76
800-437-8979
kcprofessional.ca
Disinfectant concentration levels in open buckets drop off dramatically after one hour. The solution? WetTrask.

Kontrol Kube by Fiberlock Technologies
Booth 11
800-342-3755
kontrolkube.com
Mobile containment units designed to be set up quickly and easily to establish a temporary negative pressure environment.

Lalema
Booth 72
514-645-2753
lalema.com
Cleaning supplies and products in Montreal.

MaxAir Systems
Booth 71
800-443-3842
maxair-systems.com
Leads in developing advanced PPE for use in healthcare.

Medic Access Inc.
Booth 56
877-782-3017
medicacces.com
Manufacture high quality hospital PPE organizers and dispensers crafted and recognized for durability.

Medical Mart
Booth 78
905-624-6200
medimart.com
Healthcare sales, marketing, and one-stop medical supplies distribution company serving markets across Canada.

Metrex
Booth 15
800-841-1428
High-quality enzymatic detergents, high-level disinfectants/sterilants, surface disinfectants, liquid medical waste disposal products, hand hygiene products, eye shields, and MRSA prevention products.

MIP Inc.
Booths 25, 44
514-356-1224
mipinc.com
We believe in providing cost-effective products, systems, and solutions to the healthcare industry.

Exhibitors

Olympus Canada Inc.
Booth 58
289-269-0100
olympuscanada.com
Develops leading edge technology for healthcare professionals that help improve outcomes and enhance quality of life for patients.

Process Cleaning Solutions Ltd.
Booth 77
877-745-7277
processcleaningsolutions.com

Prodaptive Medical Innovations Ltd.
Booth 67
250-642-5124
proadaptivemedical.com
The STAL Shield is an engineered level biohazard control providing at-source dynamic contamination blockade.

Public Health Agency of Canada
Booth 8
phac-aspc.gc.ca
Promotes and protects the health of Canadians through leadership, partnership, innovation and action in public health.

Public Health Ontario
Booth 7
647-260-7100
publichealthontario.ca
Crown corp. dedicated to protecting and promoting the health of all Ontarians and reducing inequities in health.

Quorum Technologies Inc.
Booth 13
519-824-0854
quorumtechnologies.com
The Hand-in-Scan system identifies and records the effectiveness of an individual's hand washing technique.

RL Solutions
Booth 14
416-410-8456
rlsolutions.com
RL6:Infection helps hospitals better detect, manage and control infections.

Rubbermaid Commercial Products
Booth 61
416-525-7027
rubbermaidcommercial.com
Delivers the broadest line of cleaning systems to help healthcare professional reduce the chain of infection.

Sage Products Inc.
Booth 59
815-455-4700
sageproducts.com
Worldwide leader in infection prevention products that deliver extraordinary outcomes.

SciCan Medical
Booths 70, 79
416-445-1600
scican.com
Leader in three areas: endoscopy, dental and ophthalmology, in the field of infection control in over 100 countries.

Southmedic Inc.
Booth 57
705-720-1902
southmedic.com
Highlighting the Steriliz UVC Disinfector, the only UV technology that delivers a validated, measurable and recordable cycle that kills pathogens, including CDiff spores.

STERIS Canada Inc.
Booth 22
800-661-3937
steris.com
Unique combination of infection protection and contamination control products and services.

The Stevens Company Ltd.
Booth 17
800-268-0184
stevens.ca
A pillar in the Canadian healthcare community since 1874 and one of the largest medical supply distributors in Canada today.

Vernacare Canada Inc.
Booths 26, 27
416-661-5552
vernacare.com
Established world leader providing environmentally responsible solutions for human wste disposal that help improve infection control.

Virox Technologies Inc.
Booths 50, 51, 52, 53, 54
905-813-0110
virox.com
Mission is to equip the entire spectrum of global markets concerned with infection control with state-of-the-art antimicrobial technology AHP.

Webber Training
Booth 21
800-363-5376
webbertraining.com
Teleclass education for infection prevention and control professionals worldwide.

DON'T MAKE A RASH DECISION

GAMMEX®
Surgical Gloves

NON-LATEX SENSITIVE

You don't make rash decisions in the OR, and your choice in surgical gloves should be just as educated. **GAMMEX Non-Latex Sensitive** surgical gloves:

- Superior sensitivity while maintaining glove strength
- Chemical accelerator-free formulation delivers comprehensive allergy protection
- The fit, donning properties and grip you expect
- Exceptional value in synthetic category

When you are looking for exceptional value and quality look no further than **GAMMEX Non-Latex Sensitive** surgical gloves.

To request a sample, call Ansell today at 800-363-8340 or send an email at infoclientcanada@ansell.com

Ansell

2015 National Education Conference

We wish to thank our generous sponsors for their support of the 2015 IPAC Canada conference (*at time of printing*):

Surfing Waves of Change
VICTORIA BC JUNE 14-17, 2015

PLATINUM

CLOROX
VIROX TECHNOLOGIES INC.

GOLD

ECOLAB

SILVER

3M
GOJO
hygie
Sealed Air Diversey Care
SAGE PRODUCTS
Vernacare
Webber Training

CONFERENCE SUPPORTER

BD
deb
CAMDR Canadian Association of Medical Device Reprocessing
cpsi icsp Canadian Patient Safety Institute / Institut canadien pour la sécurité des patients
Public Health Ontario PARTNERS FOR HEALTH
Santé publique Ontario PARTENAIRES POUR LA SANTÉ
MIP

Rise Above the Curve

Introducing the new AMSCO® **V-PRO®** *maX* Low Temperature Sterilization System — the next innovation in surgical flexible endoscope processing from the pioneers of low temperature sterilization.

The V-PRO maX is above the curve in:

Versatility

- Process single or dual channel surgical flexible endoscopes[1]
- 35-minute Flexible Cycle, a 28-minute Non Lumen Cycle and a 55-minute Lumen Cycle

Productivity

- Process 2x more lumened devices per load[2]
- Process two surgical flexible endoscopes or one surgical flexible endoscope and non lumened load up to 24 pounds
- Low sensitivity to moisture[3] helps minimizes aborted cycles

Contact your STERIS representative today or call 1.800.661.3937.

[1] Single channel lumen scopes up to 1050mm. Dual channel scopes up to 998/850mm.

[2] As of April 2012, STERRAD® 100NX and NX are cleared to process 10 stainless steel lumens per load. V-PRO maX is cleared to process 20 stainless steel lumens per load.

[3] Compared to the STERRAD 100NX.

STERRAD is a registered trademark of Advanced Sterilization Products, a Johnson and Johnson Company.

STERIS

www.steris.com

IT'S NOT CLEAN UNLESS YOU WIPE IT ALL AWAY

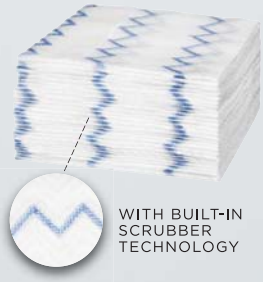
KILLING MICROBES DOESN'T MAKE THEM DISAPPEAR.

Stop the chain of infection with the Rubbermaid HYGEN™ Disposable Microfiber System, proven to remove dead microbes and eliminate the food source for live pathogens.

Removes

99.9%

of microorganisms, including c.diff*



WITH BUILT-IN SCRUBBER TECHNOLOGY

Rubbermaid® Commercial Products

HYGEN™

*BASED ON THIRD PARTY TESTING WITH WATER ONLY. THE PRODUCT CAN BE USED WITH A WIDE ARRAY OF CLEANING SOLUTIONS.

Conference survival skills making the most of the 2015 IPAC Canada Conference

Over the past years, IPAC Canada conferences have gained recognition as the premier Canadian education and networking opportunity for Infection Prevention and Control Professionals (ICPs). With the dynamic educational programs developed by a committee of infection prevention and control experts, delegate attendance has grown significantly and offerings of current research via poster and oral presentations have tripled in the last five years. Notable has also been the increased response of industry to have a presence at the event.

With this growth comes an almost dizzying mix of education, networking, industry showcase, interest group meetings, committee meetings, and special events. How does a delegate ensure that they make the most of their time and money while at the conference?

Set Goals And Objectives

What are your reasons for attending? Do you need to brush up on clinical applications? Do you want to find out about the latest research? Do you want to get comparative product information for product recommendations? Start planning your days well in advance of the conference. Think about information that you will personally need for your practice and also consider what others at your institution might need as well. Before leaving for the conference, talk to others whose work involves infection prevention and control. Show them the conference schedule and exhibitors list and ask if they would like you to gather specific information for them.

Establish Priorities

If your primary goal is to learn about the latest in clinical applications, your energies should be directed toward the education sessions. There is a lot of knowledge being offered. Simply, you cannot possibly attend every session or every meeting. Decide which topics are the most important to you and which sessions you will attend. Find out how to get information on interest group or committee meetings that you cannot attend. Obtaining product information from industry suppliers to the profession is a valuable education in itself. Spend as much time as possible touring the exhibits, using the following hints.

What!? No Program! No Handouts!

Printed programs will not be distributed at the conference. The Final Program will be posted to *www.ipac-canada.org*. We are very happy to announce that we will have a conference app for programs, speaker bios, special events, and a special game for the Exhibit Hall with wonderful prizes afterwards. If you need any help, look for the App Guy at the conference (he will be near the IPAC Canada registration desk).

Printed handouts will NOT be distributed at the conference. Speakers have been asked to provide their handouts, in a format that is easily downloaded, prior to the conference. These will be posted to *www.ipac-canada.org*. Check the website regularly to download handouts of interest.

Take notes while listening to the speaker. Ask pertinent questions. Turn off your Smartphone! Leave the outside world behind.

Attendance Certification

Every attendee receives a Continuing Professional Education form to complete and return to their regulatory body, or to keep in their professional file, as a record of session attendance. Our conference is accredited by SOFEDUC (Société de formation et d'éducation continue/Society of training and continuing education) and the Canadian Institute for Public Health Inspectors.

Important Information For Post Conference

Visit the IPAC Canada Live Learning Centre to receive FREE recording and presentation materials for all sessions. Access information will be provided at the conference and through follow-up emails.

Map Out Your Exhibit Hall Flight Plan

Look through the Exhibitors List (Page 67) and decide which ones are the most important to you. Make an "A" list for the first day of exhibits and a "B" list for the second day. Visit the exhibiting companies you are familiar with but also stop to visit companies new to the conference who are sure to have information of great importance to your practice.

Know The Questions – Get Your Answers

Before going to a booth, formulate a list of well-defined questions. Those that directly address product performance are most helpful. Make sure to ask specific, yet open-ended questions. That way the exhibitor's representative has to really address the issue.

Ask for peer review articles or ask the representative to compare his or her product with a competitor's. It is always helpful to compare notes with your peers. Remember that applications at a 700-bed teaching facility will be different from those at a 200-bed long-term care facility. Ask for a list of the institutions that are currently using the product or service.

There is a terrific Exhibitor Hall game in place that helps increase traffic in the exhibit hall and has some wonderful giveaways at the end of it. But, don't forget that time is money to a sales representative as well, and they have a job to do. It is polite to be courteous and listen to what a representative has to say. Industry is an additional source of education for ICPs. However, if you are not interested, be honest and move on. It is better for the representative to have 10 solid leads than 100 poor ones.

Take notes while talking to the exhibitors before moving on to the next booth. This will help you sift through and share all that information when you return to work. This tip applies to education sessions as well.

Evaluations

After each session, complete the evaluation form which will available on the conference app. Not only does this assist next year's planning committee in the development of an education program that meets the needs of attendees, but it also gives our speakers an evaluation so they too can improve upon their presentation in the future. After the conference, an online evaluation of the conference itself will be posted to *www.ipac-canada.org*. One lucky submitter will receive a complimentary registration to our 2016 conference.

The Most Important People? Right Beside You!

Use this opportunity to meet people outside of your chapter or employment place. Talk to those with similar fields of expertise; ask for permission to communicate with those who might be able to mentor you in the future. Attend the Interactive Lunch on Sunday, June 14. Members of IPAC Canada's Leadership Team (the Board, Chapter Presidents, Interest and Committee Chairs) will host the tables and are prepared to encourage conversation around IPAC Canada, and your own practice.

Have Fun!

Don't let stress build up. Attend the special events that are designed to let you meet, greet and eat! But it is most important to take time for yourself to rest, reflect, re-organize, and re-energize. We want you to have the best experience at the 2015 conference and come back to us next year!

First-Time Attendee?

Here's what to expect…

Plan Ahead. Plan your travel days carefully. For example, you may not want to arrive or depart on days that you also plan to attend sessions or activities. Know in advance where your hotel accommodations are in relation to the conference, and plan adequate time to get to conference sessions and activities. For planning purposes, we have asked you which sessions you expect to attend. You are not bound by this. You can change your mind and attend any session you wish. At the same time, indicating which sessions you may attend does not guarantee a place in the room. Arrive at the session rooms as early as possible. Sessions fill up quickly, and you'll want to arrive early to help ensure you can attend the sessions you want. Be prepared for varying temperatures that occur in large-scale rooms. Layering works indoors as well as outdoors. Wear comfortable shoes. Need we say more?

See more of beautiful Vancouver Island. Watch the Conference page at *www.ipac-canada.org* for updates on sightseeing information.

Assistance. The IPAC Canada Registration Desk at the Victoria Conference Centre will be the focal point of all information and assistance. Need directions? Need to find out about the city? Need to leave a message for a colleague? Pick up your registration materials early so that you are not waiting in line when the next session starts. Then drop by the registration desk at any time – the friendly staff will be very happy to help you out. Our wonderful Course Coordinators, Pat and Pascale, will also be nearby to help you at any time.

Time well spent. IPAC Canada National Education Conferences are carefully and meticulously planned. All the details have been worked out for you; all you need to do is plan your days to gain the best experience.

For further information or assistance, contact:

Gerry Hansen, Executive Director
204-897-5990/1-866-999-7111
Fax: 204-895-9595
Email: *info@ipac-canada.org*

Pat Rodenburg, IPAC Canada Conference Coordinator
pat@buksa.com

KILLS GERMS, SAVES SKIN.

Sterillium® broad spectrum antiseptic with 80% alcohol.

Skin Maintenance
Balanced emollient blend leaves hands feeling soft and smooth, never greasy or sticky.

Quick and Easy Gloving
Sterillium dries quickly and leaves no buildup.

Hand Hygiene Compliance
Caregivers with healthier skin are more likely to comply with hand hygiene protocols.

To schedule a free demonstration, visit www.medline.ca, or call 1-800-396-6996.

FOLLOW US

CLOROX®

THE COMPLETE CLEAN

Urine Trouble?

Eliminate urine stains and odour with new Clorox® Urine Remover.

3 in 4 People are **DISGUSTED** by urine stains and odours.

Cleaning professionals report that **removing urine odours** is their **No. 1 CLEANING PRIORITY.**[1]

Tough jobs demand smart solutions.

Urine is one of the toughest stains to clean and odours to remove. New Clorox® Urine Remover breaks down urine to quickly eliminate odours and remove stains.

1. *Clorox Professional Products Company and ClearVoice Research* (February 2012). *Online Survey of Professional Cleaning Service Industry Decision Makers. (Survey of 933 cleaning industry decision makers across various industries)*

Learn more at www.cloroxprofessional.com

Use as directed on label.

ipac pci NEWS

Infection Prevention and Control Canada

Prévention et contrôle des infections Canada

INSIDE:

ENABLING BETTER CARE NOW!

Consistent Quality
Evidence-Based
Value-Driven

When spending "more"
is not part of the solution ...
IN-SOURCE SUSTAINABLE IMPROVEMENT℠

Improve patient safety, reduce waste and avoid cost through Environmental Hygiene and Infection Prevention & Control excellence

CLINICIANS | MANAGEMENT | EXECUTIVES

905-361-8749
Mississauga, ON, Canada
info@hygieneperformancesolutions.com
www.hygieneperformancesolutions.com

HyGiene performance solutions

Fecal microbiota transplantation – it's time to get off the pot!

Bruce Gamage, RN, BSN, CIC
President, IPAC Canada

Fecal microbiota transplantation (FMT) is rapidly becoming recognized as a viable treatment option for recurrent *Clostridium difficile* infections (CDI). The first randomized control trial evaluating FMT, published in 2013, found that FMT is considerably more effective in treating persistent CDI than antibiotics alone.

Recognizing the potential value of FMT is crucial as CDI is currently the leading cause of antibiotic-associated nosocomial diarrhea and colitis. Hospitalized patients are considered to be at especially high risk for infection as they often become colonized with *C. difficile* spores on admission to a facility. Treating CDI is also more of a challenge as we have seen the emergence of new hypervirulent strains and an increase in community associated infections. The rising severity and frequency of this disease requires a new approach beyond traditional treatments.

Vancomycin and metronidazole are currently the most commonly used antibiotics for treating CDI; however, recurrence rates are high. Fidaxomicin (Difficid) is the first new drug sanctioned for treating CDI in 25 years.

FMT appears to be the most promising treatment for CDI. It creates a new intestinal environment that doesn't allow the pathogenic *C. difficile* strains to grow. A sensible approach that uses microbes normally found in humans intestines, rather than antibiotics – which contributed to the CDI in the first place, to cure these infections.

The greatest obstacle in the advancement of FMT is poor regulatory policy. Health Canada currently regulates stool as a "new biologic drug", under the biologic and genetics therapies directorate. New biologic drug trials require a clinical trial application (CTA), which includes a risk benefit analysis. Once the CTA is approved, Health Canada provides a letter that permits investigators to proceed with the trial. This has proven to be a slow and tedious process and has led to very little forward movement. An efficient, standardized FMT protocol that minimizes associated risks and costs needs to be developed.

Sample screening and administration are the two main processes that need to be addressed. This could include using frozen, pre-screened samples from donors to facilitate more rapid, cost-effective administration. This approach could then evolve into establishing stool banks that monitor the collection, processing, storage, and dissemination of stool samples and national registries that track donors, patients, and adverse effects; much like the Canadian Blood Service and other human tissue banks.

Although standards are necessary with regard to any procedure, it is also important to avoid policy that could have harmful consequences for patients. It's time to get off the pot and move forward with making FMT available for the patients who need it.

AGM Notice

NOTICE IS HEREBY SERVED that the Annual General Meeting of Infection Prevention and Control Canada will be held on Wednesday, June 17, 2015 at the Fairmont Empress Hotel, Victoria, British Columbia (Crystal Ballroom). Breakfast will be served in the Palm Court. (Breakfast 0630 hrs; AGM 0700 hrs). IPAC Canada members must register and pick up voting card before entering the AGM.

Members may vote on business arising at the AGM by proxy using Form #15 2015 which must be submitted to the IPAC Canada Secretary at the IPAC Canada office no later than Thursday, June 4, 2015. The AGM Agenda, Rules of Order and Proxy Form #15 have been posted to the website.

Marilyn Weinmaster, Secretary
IPAC Canada
PO Box 46125 RPO Westdale
Winnipeg MB R3R 3S3
Fax: 1-204-895-9595
Email: *executivedirector@ipac-canada.org*

Transplantation fécale : cessons de tourner autour du pot!

Bruce Gamage, RN, BSN, CIC
Président, IPAC Canada

La transplantation fécale ou bactériothérapie fécale gagne rapidement des points comme traitement viable des infections à *Clostridium difficile* récurrentes. Selon les résultats du premier essai clinique aléatoire, publiés en 2013, elle est beaucoup plus efficace que les seuls antibiotiques contre les infections à *Clostridium difficile* (ICD) persistantes.

Cette reconnaissance arrive à point nommé, puisque les ICD sont actuellement la principale cause des diarrhées et colites nosocomiales secondaires à un traitement antibiotique. Les patients hospitalisés sont particulièrement vulnérables : beaucoup, en effet, sont colonisés par les spores de *C. difficile* dès leur arrivée dans l'établissement de soins. Par ailleurs, le traitement des ICD est d'autant plus difficile qu'il apparaît de nouvelles souches hypervirulentes et que l'incidence des infections acquises dans la communauté augmente. La gravité et la fréquence accrues de la maladie appellent une thérapie différente des méthodes traditionnelles.

La vancomycine et le métronidazole sont les antibiotiques les plus employés dans le traitement des ICD, mais les taux de récidive sont élevés, et la fidaxomicine (Dificid) est le premier médicament nouveau dont l'usage ait été approuvé pour le traitement des ICD depuis 25 ans.

La transplantation fécale semble le traitement le plus prometteur. Elle crée un nouveau milieu intestinal, qui empêche la croissance des souches pathogènes de *C. difficile*. C'est une méthode pratique, qui guérit ce genre d'infection en tirant parti des microbes qui se trouvent normalement dans l'intestin humain, en remplacement des antibiotiques qui ont d'ailleurs contribué aux ICD en premier lieu.

Le principal obstacle au progrès de la bactériothérapie fécale est la politique de réglementation. En effet, Santé Canada considère actuellement les matières fécales comme un « médicament biologique » relevant, à ce titre, de la Direction des produits biologiques et des thérapies génétiques. Or, pour faire l'essai d'un médicament biologique, il faut présenter une demande d'essais cliniques (DEC), y compris une analyse risques-avantages. Si la DEC est approuvée, Santé Canada écrit aux chercheurs pour autoriser les essais. Le processus est lent et fastidieux et c'est pourquoi la situation n'a que peu évolué. Il faudrait créer un protocole standardisé de transplantation fécale, qui réduise au minimum les risques et les coûts inhérents.

Ce protocole comporte deux volets : le filtrage des échantillons et l'administration. On peut penser à l'emploi d'échantillons congelés, venant de donneurs soumis à un dépistage préalable, pour faciliter et accélérer le processus et en rendre l'administration plus efficace. De là, on pourrait passer à la création de banques de matières fécales, dont les autorités veilleraient à la collecte, au traitement, à l'entreposage et à la distribution des échantillons, ainsi qu'à la tenue de registres nationaux permettant de retracer donneurs et patients et de consigner les réactions négatives. C'est à peu près ce que font la Société canadienne du sang et d'autres banques de tissus humains.

Mais si la normalisation est nécessaire à toute procédure, il faut éviter par contre toute politique susceptible de répercussions négatives sur les patients. Cessons de tourner autour du pot et offrons la bactériothérapie fécale aux patients qui en ont besoin.

« Ce protocole comporte deux volets : le filtrage des échantillons et l'administration. On peut penser à l'emploi d'échantillons congelés, venant de donneurs soumis à un dépistage préalable, pour faciliter et accélérer le processus et en rendre l'administration plus efficace. »

THIS JUST IN!

CaviWipes1™ now kills Norovirus in 1 minute.

Only Metrex™ protects you and your patients across the entire Infection Prevention Circle of Care™.

Trust the company thousands of healthcare facilities use every day...Trust Metrex for all your surface disinfection needs.

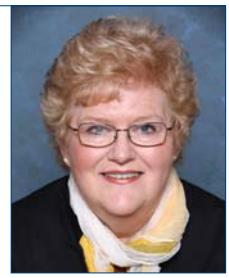
At Metrex, we strive to continuously improve our products. CaviWipes1 now kills Norovirus in just 1 minute and with only 1 step.

To learn more about CaviWipes1, scan the QR code or visit CaviWipes1.com/IPAC

Metrex has been Protecting People across healthcare for over 25 years.

Metrex™
Protecting People

AN-2015-03-0026



Voting for the future

Gerry Hansen, BA
Executive Director, IPAC Canada

As we prepare for IPAC Canada's Annual General Meeting (Wednesday, June 17, Victoria), we are also preparing for our annual elections. This year, we will see the inauguration of a new president and the election of a new president-elect, and two new directors. The skills and qualifications of those nominated to positions on the Board of Directors are exceptional. Any of the nominees will bring a new dynamism to the board and its deliberations.

IPAC Canada's nomination and election procedures are consistent with governance followed by not-for-profit associations. Many of our procedures have not been affected by the new *Canada Not-for-Profit Corporations Act*. Other procedures have been changed in order to comply with the Act.

Nominations Committee: Every association has a Nominations Committee whose mandate is to ensure the sustainability of the association through the nomination of candidates for Board positions coming vacant. The Nominations Committee does this through investigation of recommendations and its own compilation of prospective board members, i.e., IPAC Canada members from across Canada who have the skills and criteria to serve the association on the Board of Directors. The Nominations Committee has a mandate and must report on its mandate. Through announcement of a slate of candidates, it is transparent that the Nominations Committee has done its job, has recommended candidates, and the business of the board and the association will go on in a timely manner. At the same time, announcements of the Nominations Committee make it very clear that members have an opportunity to nominate their own preferred candidates for the positions. This process is not new and has been the case since the association was formed.

> "Members have two opportunities before the election meeting to either agree to the Nominations Committee slate or to nominate additional candidates."

Members have two responsibilities: 1) to recommend possible candidates to the Nominations Committee for consideration; 2) to review the slate of candidates proposed by the Nomination Committee to determine if they agree with the slate, or if they wish to nominate another candidate.

Elections: Previously, IPAC Canada held a fall online election. The *Not-for-Profit Corporations Act* is clear that elections must be held at a meeting of members. Generally, this is the annual general meeting. Our by-laws comply with this directive (Article 28, IPAC Canada By-laws). This has resulted in a change of nomination and election timelines. Members have two opportunities before the election meeting to either agree to the Nominations Committee slate or to nominate additional candidates.

Whether or not there is a proposed slate, and whether or not members have been nominated in writing in advance, members present at the annual meeting of members may nominate proposed directors from the floor of the meeting. Any person so nominated must, either in person or in writing, confirm their willingness to stand for election. A nominee may change their mind at the meeting before they have been elected by advising the meeting that they do not in fact wish to stand for election.

If more than one candidate is running for a position on the board of directors, the chair of the annual meeting of members must take all measures necessary to ensure that a secret-ballot vote takes place and that the results are announced immediately. The winner of the secret ballot shall immediately become a director. For greater certainty, a proxy form may authorize the proxy holder to exercise their own choice in voting in the event that more than one candidate is running for a position.

Proxies: Members not in attendance at a meeting of members may vote by appointing in writing a proxy holder, who is required to be a member, to attend and act at the meeting in the manner and to the extent authorized by the proxy form, and by the authority conferred by the form. A proxy holder has the same rights as the member by whom they were appointed, including the right to speak at a meeting of members in respect of any matter, and to vote by way of ballot at the meeting. It should be noted that, with the use of proxies since 2010, the percentage of members voting during elections has increased from the previous online voting system. The proxy is a very useful tool to give all members an opportunity to have their voice heard during the annual general meeting.

Sealed Air
Diversey Care

Accel®

Is Now Part of Sealed Air Diversey Care.

10 minute
contact time
sporicidal

5 minute
contact time

3-5 minute
contact time

1 minute
contact time

Fast. Effective. Safe. Responsible.

powered by AHP®

AHP® - Accelerated Hydrogen Peroxide delivers the cleaning and disinfection performance you need to combat today's pathogens. It works quickly and effectively, yet it's gentle on people, assets and the environment.

Oxivir®

5 minute
contact time

1 minute
contact time

Combining the leading disinfectant brands for excellence in infection prevention and support.

www.sealedair.com

61%

of **hospital-acquired pneumonia** happens to **non-ventilated patients**[1]

Address bacterial colonization of the oral cavity, dental plaque and aspiration[2]

Help protect your non-ventilated patients from pneumonia risk with **Q•Care® Continue Care™ Oral Care Cleansing and Suctioning Systems**. Our comprehensive approach incorporates innovative tools and solutions, effective compliance programs and proven clinical outcomes.

Continue your prevention success outside the ICU. Non-ventilator hospital-acquired pneumonia (NV-HAP) has the potential to affect more patients, be more costly, and be as lethal as ventilator-associated pneumonia (VAP).[3]

Proven results:
A published study found that an enhanced oral care protocol ***reduced the rate of hospital-acquired pneumonia by more than 75%.***[4]

For more information, or to schedule a FREE pneumonia prevention Lunch & Learn at your facility call 800.323.2220

REFERENCES: 1. Magill, SS. Multistate Point-Prevalence Survey of Health Care-Associated Infections, N Engl J Med 2014; 370:1198-208. **2.** Schleder B, et al., J Advocate Healthcare 2002 Spr/Sum, 4(1):27-30. **3.** Davis, J. The Breadth of Hospital-Acquired Pneumonia: Nonventilated versus Ventilated Patients in Pennsylvania, Pennsylvania Patient Safety Advisory 2012; 9(3):99-105. **4.** Robertson T, Carter D, Oral intensity: Reducing non-ventilator-associated hospital-acquired pneumonia in care-dependent, neurologically impaired patients. Canadian Journal of Neuroscience Nursing, 2013,35(2).

SAGE® PRODUCTS

Simple Interventions. Extraordinary Outcomes.

Memorandum to IPAC Canada members
re-elections to board of directors

The Nominating Committee of the Board of Directors of IPAC Canada is charged with the responsibility of ensuring continuity by nominating a slate of officers for positions open in 2015 (Policy 12.10). Additionally, nominations for board positions are welcomed from members of IPAC Canada. The deadline for receipt of additional nominations was February 13, 2015.

Because of changes to election laws as prescribed in the current by-laws, the procedure for election of Directors and Officers has changed. Please also note that, because of by-law changes to terms of office, the current President will hold office until the 2015 AGM and the current President-elect will become President at the 2015 AGM. The election for a President-elect will take place every two years, starting in 2015.

Timelines for Election of Officers and Directors:

- December 22, 2014: Announcement of the Nominating Committee slate of Directors
- February 13, 2015: Deadline for additional nominations from membership
- February 26, 2015: Announcement of final slate of candidates for election at 2015 AGM
- June 17, 2015: Elections to be held at the Annual General Membership Meeting, Victoria
- June 17, 2015: Newly elected Board Orientation, Victoria

The following candidates are nominated for positions open as of June 17, 2015. Additional nominations from the membership of IPAC Canada will be accepted at the Annual General Meeting (June 17, 2015). Position descriptions (Section 2 Board of Directors, Policy) may be obtained from the Membership Services Office (*info@ipac-canada.org*).

- President-elect (two-year term) followed by two-year term as President: Molly Blake, BN, MHS, GNC(C), CIC; Winnipeg, MB
- Treasurer (three-year term): Michael Rotstein, RN, BScN, MHSc, CIC, CHE; Richmond Hill, ON
- Director (MD) (three-year term) One candidate to be elected.: Camille Lemieux, BScPhm, MD, LLB, CIC; Toronto, ON
  Mary Vearncombe, MD, FRCPC; Toronto, ON

CANDIDATE PROFILES

MOLLY BLAKE, BN, MHS, GNC(C), CIC has been an Infection Control Professional for almost 15 years, and is currently the Program Director, Infection Prevention and Control, Winnipeg Regional Health Authority. In her professional position, Molly's responsibilities include lead planning, implementation and evaluation of the WRHA Regional infection prevention and control Program. She has served on many working and interest groups at the local, provincial, national, and international level. She has been an IPAC Canada member (local chapter – Manitoba) for as long as she has been an ICP, and has been involved for several years in IPAC Canada activities through the Conference Planning Committee and Interest Groups (e.g., Dialysis Interest Group). Molly undertook her undergraduate nursing training and received her Bachelor of Nursing at the University of Manitoba. She completed a Masters of Health Studies from Athabasca University. She received initial certification through the Certification Board of Infection Control and Epidemiology, Inc. in 2008 (and recertified in 2013).

Philosophy: *Since beginning as an ICP 14 years ago, I've strived to do all I can to influence a safer environment. In this role, I will endeavor to help IPAC Canada achieve its mission to promote IP&C best practice through education, standards, advocacy and consumer awareness by looking for opportunities to help IPAC Canada continue to grow as it realizes its vision as a major leader and the recognized resource in Canada for promotion of IP&C best practice. To accomplish this, we must continue efforts to expand IPAC Canada membership to encompass diverse professional specialties to elicit new ideas and varying perspectives that will benefit us. I believe a foundation of collaboration and support, within which members can utilize individual and group strengths/processes is fundamental. We must also continue to promote membership involvement at the chapter and committee levels, work collaboratively with key stakeholders, identify and mentor new leaders, and readily adapt to changes in healthcare. Ours is an exceptionally rewarding (and challenging) profession. I hope to instill an appreciation of IP&C in others outside our roles. My passion for infection prevention is founded on improving the patient experience for every healthcare encounter through application of evidence-based care. It just makes sense.I will continue working to increase the value of ICPs in practice settings and among stakeholders; and advance IP&C across the care continuum. I believe my previous experience on IPAC Canada committees and interest groups can help in contributing to IPAC Canada's*

efforts to support ICPs. Education and mentoring at all levels is fundamental to advance competency and patient safety. Supporting advanced ICPs facilitates their support and mentoring of the next generation of ICPs. Members would be empowered and engaged in ways that help set and meet personal professional goals as well as the strategic goals of IPAC Canada. Leadership is a discipline and an art; a responsibility and a privilege. It is the discipline and art of guiding and motivating others toward a common goal. It is the privilege of being able to grow both personally and professionally learning from the collective wisdom of others. Leadership requires flexibility to learn from others and adaptability to changing people and situations. It requires responsibility to assure alignment with the organization's mission, vision and values in our dynamic, complicated healthcare environment. I would be honored to be given the opportunity to represent IPAC Canada locally, nationally, and internationally.

MICHAEL ROTSTEIN, RN, BScN, MHSc, CIC, CHE completed his Nursing diploma and his post-RN degree at Ryerson and began his SickKids career of almost 14 years on a medicine unit as a staff nurse and Clinical Support Nurse. He also worked in the emergency department, ambulatory diabetes program, and as a clinical response nurse. He was then elected to the position of Chair of the Registered Nurses' Council. In that role he was an active representative on many committees and task forces, while developing and leading many program initiatives. During his tenure in this role, he implemented the "80/20" model of nursing governance, facilitated the roll-out of a large benefit program change, developed a two-day leadership workshop for frontline nurses, and implemented the Nursing Wear program within the hospital. In 2009 he became an Infection Control Practitioner (ICP) with primary responsibility for the Emergency Department, the Paediatric Intensive Care Unit, the Heart Centre, as well as several ambulatory and patient support areas. He was also responsible for consulting on all construction and renovation projects in the hospital. Michael completed his Master of Health Science, Administration Program at the University of Toronto in June 2013 and at the same time became a Certified Health Executive with the Canadian College of Health Leaders. Michael took on a challenging new role as manager of the IPAC program at Mackenzie Health in May 2013. While still new to the role, he is always looking for new opportunities to link and network with colleagues across the city and country.

Philosophy: *My continued involvement in local, provincial and national infection prevention opportunities continues to broaden my perspective on IPAC practices and leadership at a local and system level. I feel assured that my wide variety of roles, my past experiences, and my formal education have provided me with the necessary skills to take on this responsibility. I believe that the vision and mission of IPAC Canada are well aligned with my own. The principles of support, standardization, and promotion provide an important framework for development and dissemination of key infection resources that assist members nationally and internationally. I believe a clear vision – not only for the organization, but for the individual chapter that each member is able to identify with – is integral to maintaining quality decision-making that is consistent and transparent. I am confident that I can be part of the leadership team to help the organization and each individual chapter succeed.*

CAMILLE LEMIEUX, BScPhm, MD, LLB has been with the University Health Network Infection Prevention and Control team since 2006. She completed her pharmacy training at the University of Toronto, law school at the University of Ottawa, medical school at Queen's University, and most recently her Master of Public Health at the Dalla Lana School of Public Health. In addition to practicing both medicine and law, she worked at the Ministry of Health and Long-Term Care in the aftermath of SARS. Currently she works as associate director of infection prevention and control at UHN and is a partner at the Toronto Western Hospital Family Health Team. Camille chaired the Public Health Ontario Provincial Antimicrobial Stewardship Advisory Committee from 2010 to 2013. She has carried out infection control programmatic reviews for various hospitals across Canada. She has also been a consultant to hospitals on *C. difficile* and MRSA outbreaks. Currently, she is physician consultant to three Ontario hospitals in addition to the University Health Network.

Philosophy: *I have not landed in the world of an IPAC MD by the usual route. I am not an infectious disease physician or a medical microbiologist. I am a family physician and a MPH epidemiologist. I believe in infection control and I love my job. I have been the associate director of IPAC at the University Health Network in Toronto for almost nine years, and I am pretty good at what I do. But I have lots more to learn, and enjoy the challenges that learning brings. I recently wrote my CIC (and passed!). In addition to being a physician/MPH, I am also a pharmacist and lawyer. I hold leadership positions within my hospital. I can deliver a forward thinking perspective to IPAC-Canada, bringing all of my skills to the table. Being on the Board of IPAC-Canada does not require ID-medical microbiology expertise. It requires a great knowledge of infection control, an ability to think critically, and the ability to tackle policy issues. I feel I have these attributes.*

Infection control is one of the pillars of patient safety. Although IPAC has gained more visibility over the past decade, the impact of communicable disease in our healthcare facilities and long-term care/residential institutions still does not receive the same prominence and attention as other patient safety imperatives, such

as medication errors. I see progress in infection control involving all stakeholders in collaborative decision making, including frontline providers, administrators, physicians and environmental services staff. Change in infection control is very linked to culture change at the front line, and I see IPAC as a partner in supporting that change. I feel the future of infection control is rooted in pragmatism, where we take a big picture view of the patient and ensure that what we do is advancing patient safety and care. Our role should not be solely tied to enforcing rules and guidelines.

MARY VEARNCOMBE, MD, FRCPC is Medical Director, Infection Prevention and Control, at Sunnybrook Health Sciences Centre, Toronto. In addition, she is Associate Professor, Department of Laboratory Medicine and Pathobiology, Faculty of Medicine, University of Toronto. Prominent committee appointments include Chair, Infection Prevention and Control Sub-Committee (PIDAC); Chair, Infection Prevention and Control Guidelines for Pandemic Influenza (Health Canada); and the Expert Advisory Group for Infection Prevention and Control for Pandemic H1N1 Influenza (Public Health Agency of Canada). She has been honoured with many awards of distinction, including being the first recipient of the IPAC Canada (former CHICA Canada) Champion of Infection Prevention and Control (2010) and an Award of Merit in both 2006 and 2011.

Philosophy: *It is an honour to have been nominated for Director (MD) IPAC Canada. Infection Prevention and Control is the best established and one of the most important patient and occupational safety disciplines. IPAC Canada has long been a national and international leader in IPAC practice, through education, standards development and promotion of excellence and professionalism in its members. Our great strength comes from IPAC Canada's tradition of open communication and generous sharing of experience and expertise. I share many of IPAC Canada's values and goals, as evidenced by my work: multidisciplinary and diverse team approach; development of user-friendly best-practices and tools through the Ontario Provincial Infectious Diseases Advisory Committee; promotion of education of infection control professionals, health care trainees, health care workers across the continuum and the public; accessibility to my team and colleagues; and, most importantly, evidence-based practice.*

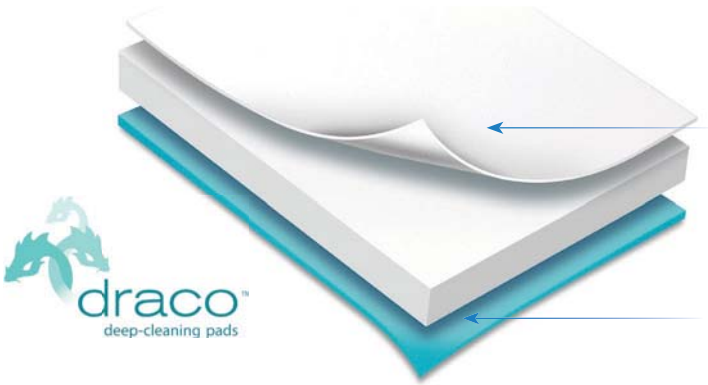
My passion is my work and the fact that, in our work, we learn something new every day is energizing. That same passion and energy in the members of IPAC Canada is its strength.

PriMed Canada, Inc.

15 % Product Evaluation Discount code: **SP2015IPAC**
Contact for details

Attack Biofilm

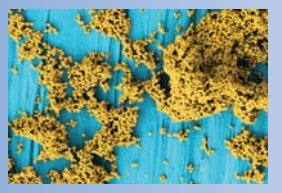
Detach → Capture → Remove



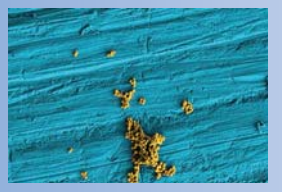
Scrubbing Foam Layer: Non-abrasive scrubbing at a microscopic level, proven to detach Biofilm which detergent alone cannot.

Microfiber Layer: Split microfiber layer captures microscopic particles as small as 4 microns.

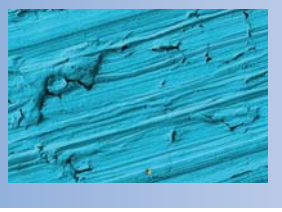
COMPARATIVE TEST STUDY –
Center for Biofilm Engineering, Montana State University – study done using Biofilm kill claim detergent.



Control
6000 x Magnification



Traditional Urethane Pad
Wiped Twice
6000 x Magnification



Draco Deep Cleaning Pad
Wiped Twice
1 x Scrubbing Foam Side
1 x Microfiber Side
6000 x Magnification

Draco hand pad is compatible with any detergent or disinfectant • now available in our bestselling flexible endoscope First Step Bedside Pre-Clean Kit!

Capture → Remove → Dispose

- Single-use: prevents cross contamination.
- Split microfiber technology captures spores & pathogens at a microscopic level (C.Diff, VRE, CRE, & Norovirus).
- Compatible with any detergent and disinfectant.
- Available sterile for use in the OR.

Scope Transport

NEW! Single-Use Rigid Containment

- Oasis Scope Transport Trays: comply with CSA transport standards.
- Built-in reservoir for bed-side pre-clean.
- A reversible lid identifing clean & soiled scope.
- Stackable for storage, a variety of carts for storage also available.
- Eco-friendly: made with renewable resources & 100% biodegradable.

Flexible Endoscopy Accessories • Instrument Cleaning & Care

Call 1-800-267-0844 service@primedcanada.com 1-888-267-0846 (Français)

CIC **Graduates**

New and recertified CICs from a variety of healthcare settings have spent hours studying, digesting facts, and reading current literature. This information and life experience, along with a successful completion of the CIC® examination, ensure the infection prevention and control professional deserves to place a CIC® after their name. Congratulations to the following July-October 2014 graduates.

First Time Certificants

Christine Drummond, RN, BN, CI ..... Charlottetown, PE
Brenda. Earles, RN, BN, CIC ..... St. John's, NL
Samantha Erskine, CIC ..... Woodstock, ON
Jeffrey Eruvwetaghware, MPH, CIC ..... Swift Current, SK
Kasey Gambeta, BScN, MN, CIC ..... Toronto, ON
Lindsay Gembicki, CPHI(C), CIC ..... Mississauga, ON
Kate Hoogenboom, BScN, RN, CIC ..... Hamilton, ON
Danielle Huston, MLT, BSc, CIC ..... Sarnia, ON
Donna Lahey, RN, BScN, CIC ..... Sydney, NS
Grace Lamarche, RN, BScN, CIC ..... Cornwall, ON
Camille Lemieux, BScPhm, MD, LLB, CIC ..... Toronto, ON
Ronny Leung, RN, BSc, CIC ..... Scarborough, ON
Janie Nichols, BSc(Hons), RN, CIC ..... Surrey, BC
Natalie Smith, RN, BN, CIC ..... St. John's, NL
Teri Murduff, RN, BScN, CIC ..... Oshawa, ON
Vydia Nankoosingh, MLT, CIC ..... Scarborough, ON
Karen Olekson, RN, BN, CIC ..... Winnipeg, MB
Mary-Catharine Orvidas, MLT, CIC ..... Hamilton, ON
Helen Purnell, RN, MN, CIC ..... Onoway, AB
Kathleen Ross, RN, BScN, CIC ..... Toronto, ON
Esther Rupnarain, RN, BA, CIC ..... Toronto, ON
David Ryding, BHSc, BASc, CPHI(C), CIC, MPH ..... Kingston, ON
Cara Sudoma, RN, CIC ..... Toronto, ON
Brenda Temple, BRS, MSc, CIC ..... Saskatoon, SK
Monali Varia, BSc, MHSc, CIC ..... Mississauga, ON
Erika Vitale, BSc, MLT, CIC ..... Windsor, ON
Diane Wallace, MLT, BSc, MSc, CIC ..... Fergus, ON

Renewed

Chingiz Amirov, MPH, MSc, CIC ..... Toronto, ON
Joanne Archer, RN, BTech, MA, CIC ..... Prince George, BC
Clare E. Barry, BN, MSc, CIC ..... Toronto, ON
Noel Belcourt, BN, CIC ..... Kitchener, ON
Anne Bialachowski, RN, BN, MS, CIC ..... Hamilton, ON
Seema Boodoosingh, MHA, BSc, MLT, CIC ..... Burlington, ON
Pamela Burns, MLT, CIC ..... Smiths Falls, ON
Vi Burton, RN, MN, CIC ..... Nipawin, SK
Risa Cashmore, RN, BSc, CIC, CCHN(C) ..... Orillia, ON
Sherri Cleaves,
CPHI(C), BASc(EH), CIC, OHS(C) ..... Sault Ste. Marie, ON
Rita DeKleer, RN, CIC ..... Vancouver, BC
Tim Doyle, RN, BScN, CIC ..... Ottawa, ON
Bronwen Edgar, BSc, MHSc, CIC ..... oronto, ON
Melanee Eng-Chong, MLT, BCom, CIC ..... Toronto, ON
Laura E. Farrell, BSc, BEd, CPHI(C), CIC ..... St. Marys, ON
Bruce Gamage, RN, BSN, CIC ..... Vancouver, BC
Morgan Harnest, BScN, RN, CIC ..... Belleville, ON
Zahir Hirji, RN, BScN, MHSc, CIC ..... Toronto, ON
Betty-Ann Jolley, RN, CIC, ... Mississauga, ON
Rhodora B. Laylo, BSc, CIC ..... London, ON
Jaklin Mehrabian, BSc, MLT, CIC ..... Newmarket, ON
Dianne Merkley, RN, CIC ..... London, ON

This journal would not be possible without the advertising support of the following companies and organizations. Please think of them when you require a product or service. You can also access the electronic version at *www.ipac-canada.org*.

Company	Page	Phone	Website
Aereus Technologies	45	888-633-8460	www.aereustech.com
AMG Medical Inc.	IBC	800-363-2381	www.nocospray.ca
Ansell Healthcare Canada	47	800-363-8340	www.ansellhealthcare.com
Chem-Aqua Environmental & Healthcare Services	40	800-268-0838 x214	www.chemaqua.com
Class 1 Inc.	23,68	800-242 9723	www.class1inc.com
Clorox Healthcare	6,54	866-789-4973	www.cloroxhealthcare.ca
CSA Group	41	877-223-8480	www.Shop.csa.ca
DebMed	11	866-783-0422	www.DebMed.com
ECOLAB Healthcare	OBC	800-352-5326	www.ecolab.com/healthcare
Emerald Health Information Systems Ltd.	67	613-599-8178	www.emeraldhis.com
Fraser Health	65	866-837-7099	www.careers.fraserhealth.ca
GOJO Canada, Inc.	18	800-321-9647	www.GOJOCanada.ca
Hill-Rom Canada	24	800-267-2337	www.hill-rom.ca
Hygiene Performance Solutions	56	905-361-8749	www.hygieneperformancesolutions.com
Imperial Surgical Ltd.	46	800-661-5432	www.surgmed.com
Kimberly-Clark Professional	42	800-437-8979	www.kcprofessional.ca
Medco Equipment	31	800-717-3626	www.medcoequipment.com
Medline Canada Corporation	53	800-396-6996	www.medline.ca
Metrex Corp.	59	800-841-1428	www.metrex.com
MIP Inc.	48	800-361-4964	www.mip.ca
Olympus Canada	4	800-387-0437	www.olympuscanada.com
Primed Canada, Inc.	66	800-267-0844	www.primedcanada.com
Process Cleaning Solutions	32	877-745-7277	www.processcleaningsolutions.com
Retractable Technologies, Inc.	2	888-703-1010	www.vanishpoint.com
Rubbermaid Commercial Products	50	800-998-7004	www.rubbermaidhygen.com
Sage Products, LLC	62	800-323-2220	www.sageproducts.com/preventinfection
SciCan Ltd.	38	800-667-7733	www.scican.ca
Sealed Air Diversey Care	37,61	800-558-2332	www.sealedair.com
STERIS Canada Inc.	49	800-661-3937	www.steris.com
The Stevens Company Limited	39	800-268-0184	www.stevens.ca
Vernacare Canada Inc.	12	800-268-2422	www.vernacare.com
Virox Technologies Inc.	IFC,1	800-387-7578	www.virox.com

IMAGINE IF DISINFECTING AN ENTIRE ROOM WAS JUST THIS EASY.

Introducing the nocospray system

enhanced disinfection: simplified

Imagine disinfecting a room with just the push of a button. Now imagine achieving a 99.9999% reduction in a room that previously housed *C.difficile*. Nocospray can do both.

Developed in Europe and now available in Canada, the Nocospray System, when used in conjunction with mechanical cleaning, empowers you to enhance your disinfection at the push of a button.

Visit us on the web:

www.nocospray.ca

or call us at **1.800.363.2381**

Innovation from:

MedPro DEFENSE®

Hand Hygiene Dispensing Technology for the Modern Hospital

Ecolab's newest hand hygiene dispensing platform delivers everything you've asked for in a hand hygiene dispenser – improved efficiency, safety, simplicity and sustainability.

The Nexa platform can dispense an array of Ecolab hand hygiene products, including liquid and foam hand soaps, lotions, hand sanitizers and body shampoos, all from the same unit, making product change-outs easy.

Nexa's simple design supports easy product identification with color-coded badges and language-free icons and better inventory management through the ability to hold both large and small product bottles, which fit into both the manual and touch-free units.

For more information: 800 352 5326 or www.ecolab.com/healthcare

ECOLAB®
Everywhere It Matters.™