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The Canadian Journal of INFECTION CONTROL

Revue canadienne de PRÉVENTION DES INFECTIONS

The official journal of the Community and Hospital Infection Control Association – Canada • Association pour la prévention des infections à l'hôpital et dans la communauté – Canada

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Patricia Piaskowski, RN, HBScN, CIC, Network Coordinator
Public Health Ontario
Northwestern Ontario Infection Control Network
289 Munro Street, Thunder Bay, ON P7A 2N3
Tel: 807-333-0137 Fax: (807) 683-1745
Toll-Free: 888-378-4916
E-mail: pat.piaskowski@oahpp.ca

WEB COMMUNICATION MANAGER
Shirley McDonald, ART, CIC chicawebmaster@mts.net

CHICA CHAT - WEB DISCUSSION BOARD
Jim Gauthier, MLT, CIC chicaconnections@mts.net

POSTING EMPLOYMENT OPPORTUNITIES/OTHER INFORMATION
CHICA-Canada Membership Services Office
chicacanada@mts.net

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 - Vadim Brodsky
MARKETING MANAGER - Aran Lindsay
ADVERTISING COORDINATOR - Lauren Campbell

Send change of address to:
CHICA Canada
P.O. Box 46125, RPO Westdale,
Winnipeg, MB R3R 3S3
chicacanada@mts.net

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

MISSION
CHICA-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.

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DEPARTMENTS

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donna.wiens@saskatoonhealthregion.ca

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Fax: 306-359-1402
marilyn.weinmaster@rqhealth.ca

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180 Centennaire Drive
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Public Health Ontario – Northwestern Ontario IC Network
Karen Clinker, MEd, BScN, CCOHN, CIC
Infection Control Consultant
Public Health of Ontario
Northwestern Ontario IC Network
100 Casimir Ave, Suite 217, Box 116
Dryden ON P8N 3L4
Tel: 807-333-0138 Toll-Free: 888-378-4916
Fax: 807-223-4139/683-1745
karen.clinker@oahpp.ca

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Clinical Assistant Professor/Lab Medicine
Vancouver Hospital/HSC
JPN 1110-855 West 12th Ave, Vancouver, BC V5Z 1M9
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jennifer.grant@vch.ca

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Michael Gardam, MSc, MD, CM, FRCPC
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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

Archivist
Mary LeBlanc, RN, BN, CIC
RR#2, Civic #11763
Tyne Valley, PE C0B 2C0
nanaandpapa@route2.pe.ca

Clinical Editor – Canadian Journal of Infection Control
Pat Piaskowski, RN, HBScN, CIC
Network Coordinator
Public Health Ontario –
Northwestern Ontario IC Network
289 Munro Street
Thunder Bay ON P7A 2N3
Tel: 807-333-0137 Toll-Free: 888-378-4916
Fax: 807-683-1745
pat.piaskowski@oahpp.ca

Web Master
Shirley McDonald, ART, CIC
RR 3, 4759 Taylor-Kidd Blvd
Bath ON K0H 1G0
Tel: 613-389-9810
Fax: 613-389-8468
chicawebmaster@mts.net

Online Novice IP&C Course Coordinators
Heather Candon, BSc, MSc, CIC
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chicabasicde@mymts.net

Professional Agents

Legal Counsel
Elliot Leven, LLB
Elliot Leven Law Corporation
204-100 Osborne Street
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Tel: (204) 944-8720
Fax: (204) 944-8721
leven@levenlegal.com

Auditor
Philip Romaniuk, CA
Stefanson Lee Romaniuk
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Tel: (204) 775-8975
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Membership Services Office

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PO Box 46125 RPO Westdale,
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Fax: 204-895-9595
chicacanada@mts.net

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
chicaadmin@mymts.net

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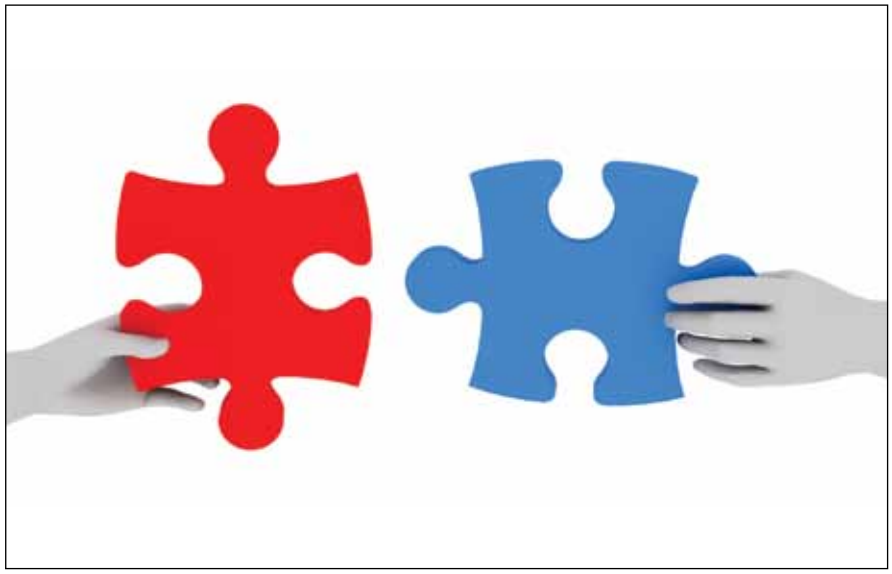
IPAC and the Environmental Services Department working together for a common goal: **infection prevention and control**

Pat Piaskowski, RN, HBScN, CIC
Clinical Editor, *Canadian Journal of Infection Control*

Recent media attention has focused on the state of environmental cleanliness in healthcare facilities and especially in acute care facilities. Recent outbreaks of *C. difficile* and other organisms in healthcare have inevitably been attributed, in part, to healthcare cleaning processes and practices. The public is increasingly aware of the infection risks presented when healthcare environments are not adequately cleaned and/or disinfected. The perception may even be that healthcare is not a safe place with emerging bacterial and viral threats and facility-based outbreaks becoming common news.

The lessons of SARS, pandemic H1N1 and *C. difficile* have led to increased focus on infection prevention and control (IPAC) programs and infection control professional (ICP) staffing levels in many provinces. These improvements for IPAC programs and ICP staffing levels were certainly long overdue and continue to be important to patient safety. However, these improvements may not have been adequately focused on the important role that environmental services (ES) play in patient safety. Coupled with this lack of focus on the importance of ES, there is now increased recognition of the healthcare environment as a reservoir for many organisms such as *C. difficile* and VRE and potential source for transmission of infection. ES processes, practices and resources are critical in breaking the chain of infection. Increased recognition is required for the vital role played by ES in providing a safe and clean environment in all healthcare settings.

In Canada organizations such as the Canadian Association of Environmental Management (CAEM) and other provincial ES organizations share one common goal with CHICA: infection prevention and control. ICPs and ES in facilities and agencies also share this goal. ICPs are encouraged to take the lead towards enhancing collaboration between IPAC and the ES team. Some examples to assist in developing collaborative partnerships include:



- Working with the ES department to clearly define and communicate environmental infection risks in their facility or agency to key decision makers and leaders. In addition, ICPs are in a unique position to outline the risks posed to patients, residents, clients, and visitors from infections which are transmitted from the environment.
- Using tools such as the audits which are available to all CHICA members through the CHICA audit toolkit, ICPs can work collaboratively with their ES department to ensure that ES processes are audited.
- Participating in and supporting ES frontline training such as hand hygiene, routine practices, best practices for environmental cleaning other important infection prevention practices.
- Encouraging ES participation in infection prevention week and other special activities related to infection prevention.
- Ensuring that ES is actively part of the outbreak management team.
- Advocating, where necessary for ES involvement in important decision making related to many facility processes such as product or equipment selection, construction or renovation planning, IPAC policy development and outbreak management.
- Sharing of facility or unit/ward infection rates with ES is another way that ICPs can inform and engage ES. When rates increase or decrease ES input can be critical in identifying the potential impacts of cleaning practices in that area and identify any needed changes.

"ICPs can look for more ways to celebrate and promote the role of ES as a valuable member of the patient safety and healthcare clean team."

- Inviting ES managers or supervisors on IPAC rounds is another way to visibly show the partnership and allow for a collaborative approach to problem-solving. Talking to both ES and clinical ward staff and observing practices all help to create of culture of safety where all feel that they have input into and can influence a safe clean environment.
- Job shadowing an ES staff to see practices and processes real time to develop an appreciation for the complexity and intensity of the ES role.
- Reviewing the many abstracts on key topics related to environmental cleaning which will be presented a CHICA 2012 in Saskatoon. Topics include: bedpan reprocessing, impact of cleaning on VRE and CDI, terminal cleaning processes and risk assessment as well as information on the Ontario Environmental Cleaning Toolkit.

Lastly, ICPs can look for more ways to celebrate and promote the role of ES as a valuable member of the patient safety and healthcare clean team. ICP and ES managers who participated in the Canadian Hospital Environmental Services Study (CHESS) contributed to the Canadian picture on environmental cleaning in healthcare. Preliminary results related to the working relationships between ICP and ES in this CHESS study are included in an abstract for the upcoming CHICA 2012 national conference.

The final results of this important study will also be profiled at the CAEM conference and trade show in September 2012 (see the CHICA education schedule and or CAEM website for details).

If you have not completed your CHESS survey to date, please do so, as this is another opportunity demonstrate collaboration between ICP and ES and create a working environment of working together toward one common goal – infection prevention and control. (Special thanks to Keith Sopha, President of CAEM, for his contributions to this editorial.)

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Risk factors associated with a nosocomial hepatitis B outbreak in a long-term care facility in Toronto, Canada

Authors:
Herveen Sachdeva, MD, FRCPC
Associate Medical Officer of Health
Toronto Public Health

Corey I. Green, RN, BScN
MHSc candidate (Community Health & Epidemiology)
Department of Public Health Sciences
University of Toronto

Anne Arthur, MSc
Epidemiologist
Communicable Disease Surveillance Unit
Toronto Public Health

Anton P. Andonov, Ph.D.
Head, Molecular and Immunodiagnostics
Bloodborne Pathogens & Hepatitis
National Microbiology Laboratories
Public Health Agency of Canada

Correspondence & reprint requests:
Address all correspondence, proofs and reprint requests regarding this article to:
Dr. Herveen Sachdeva
Associate Medical Officer of Health
Toronto Public Health
277 Victoria Street, 10th Floor
Toronto, ON M5B 1W2
Tel: 416-338-1607
Fax: 416-392-0047
hsachde@toronto.ca

ABSTRACT

Background
The hepatitis B virus (HBV) is a bloodborne infectious agent. In Canada in 2007, there were 1077 reported cases of acute hepatitis B infection. In late 2006, five residents living in the same unit of a long-term care home (LTCH) in Toronto, Canada became infected with HBV. This report describes the outbreak investigation and epidemiological analyses of this outbreak of acute HBV infection.

Methods
All residents in the LTCH were serologically screened for hepatitis B markers. The infection control practices of the LTCH and of high-risk services provided to residents were reviewed. The risk factors for HBV transmission were investigated among residents and a case-control analysis was conducted to identify associations with acute HBV infection.

Results
In total, five cases of acute HBV infection were identified in the same unit of the LTCH. The attack rate was 20.8% and the case-fatality rate was 60%. All five cases had diabetes mellitus, and HBV transmission was significantly associated with blood glucose monitoring (P=0.0010).

Conclusions
Results of this outbreak investigation and analysis demonstrated that hepatitis B transmission was associated with shared blood glucose monitoring equipment. To prevent hepatitis B transmission, it was recommended that a glucometer and finger-stick device be assigned to each diabetic resident requiring blood glucose monitoring in addition to following routine infection control practices.

KEY WORDS:
hepatitis B, hepatitis B virus, outbreak, long-term care, nursing home, diabetes

INTRODUCTION

Hepatitis B virus (HBV) is a bloodborne infectious agent with an estimated prevalence between 0.7% and 0.9% among Canadians (1). The incidence of reported acute HBV infection has declined significantly in Canada, from 10.8 per 100,000 (95% CI 6.0-18.1) in 1990, to 3.3 per 100,000 (95% CI 1.6-4.8) in 2007 (2). This decline coincides with increased use of the hepatitis B vaccine, particularly among children 10-19 years of age who have been targeted for routine vaccination (3).

Acute HBV infection can result in sub-clinical or asymptomatic infection, acute self-limited hepatitis or, rarely, fulminant hepatic failure. Those who become chronic carriers of HBV are at risk for cirrhosis and hepatocellular cancer (4).

HBV is transmitted by percutaneous or permucosal exposure to infected blood or body fluids, either directly or indirectly, through contact with contaminated surfaces that may remain infective for more than seven days (5). Groups considered at high or moderate risk for HBV infection in Canada include injection drug users, individuals with multiple sex partners, men who have sex with men, and immigrants from countries with a high prevalence of HBV (1).

Residents of long-term care homes (LTCHs) may also be at higher risk of exposure to HBV and other bloodborne viruses. There is an estimated hepatitis B surface antigen (HBsAg) prevalence of 0.6% in this population (6). Transmission of HBV among residents in LTCHs has been documented since the 1980s (7-13). Transmission events in LTCHs have largely been attributed to breaches

in standard infection control practices by health care workers and the sharing of blood glucose (BG) monitoring equipment among diabetic residents (11-13). Residents in LTCHs may also be susceptible to HBV and other blood-borne infections as a result of frequent phlebotomy, as well as other invasive procedures, associated with age-related illnesses. Only one occurrence of HBV transmission among residents in a LTCH has previously been reported in Canada; a single case of acute HBV was identified and no staff members were infected (14).

This report describes the control measures, investigation, and epidemiological analyses that were implemented during an outbreak of acute hepatitis B in a LTCH in Toronto, Canada that was initially reported to Toronto Public Health in October 2006.

METHODS

Setting

The outbreak setting was a LTCH with approximately 150 staff. Two floors in the facility provided 24-hour nursing care. Both of these floors were comprised of two units, each with its own nursing station. All five acute cases of hepatitis B identified during this outbreak lived in one nursing care unit.

Infection control measures

Outbreak control recommendations issued to the LTCH included ensuring routine infection control practices were being followed; increasing cleaning and disinfection of environmental surfaces, ensuring personal items were not being shared among residents, and cessation of all non-essential personal care services, including chiropody and hairdressing services.

The LTCH was also advised to continue active surveillance of residents for hepatitis-like symptoms. Equipment use and general nursing care in the facility, as well as the chiropodist and phlebotomist, were audited to identify possible breaches in infection control practices. All residents who were susceptible to HBV infection and living in the same unit as the five acute cases of HBV were offered post-exposure prophylaxis, including hepatitis B vaccine and immune globulin.

Laboratory investigation

Initially, serological screening for HBV markers focused on residents and staff who lived or worked within the affected unit. After initial results identified two additional cases, serological screening was expanded to include residents and staff who had lived or worked within any area of the LTCH since April 1, 2006 (as the incubation period for hepatitis B is 45 to 180 days).

Serum samples collected from residents and staff members were sent to Ontario Public Health Laboratory's central laboratory in Toronto for analysis. A stepwise procedure was used for the identification of serological markers for HBV. Samples were first analyzed for the presence of hepatitis B surface antigen (HBsAg), antibodies to HBsAg (anti-HBs), and total antibodies to hepatitis B core antigen (total anti-HBc). Samples that were reactive for HBsAg and total anti-HBc were then tested for IgM antibodies to hepatitis B core antigen (anti-HBc IgM), hepatitis B e antigen (HBeAg) and antibodies to HBeAg (anti-HBe). HBsAg was identified using microparticle enzyme immunoassay (*Abbott* AxSYM® *System*, Abbott Diagnostics, Mississauga, ON), or chemiluminescent microparticle immunoassay (*Abbott* ARCHITECT® *i System*, Abbott Diagnostics, Mississauga, ON). All other hepatitis B markers were identified using microparticle enzyme immunoassay (*Abbott* AxSYM® *System* Abbott Diagnostics, Mississauga, ON).

Samples with serological evidence of acute HBV infection or chronic carrier status, as well as those that were only reactive for total anti-HBc, were sent to the National Microbiological Laboratory (NML) in Winnipeg, Canada for further HBV genomic analysis. HBV genotyping (i.e. DNA fingerprinting) was performed by amplifying and sequencing the HBV S-gene.

Epidemiological investigation

A questionnaire was administered to each of the acute cases of HBV in the LTCH, as well as contacts, to collect demographic, occupancy (e.g. room number, date of admission to facility, etc.), health status (e.g. diabetes, wounds, etc.), and risk factor data dating back to April 1, 2006. Data were collected for a wide range of potential risk factors in this population, including hospitalizations; invasive procedures, monitoring such as BG and phlebotomy; personal services such as chiropody and hairdressing; as well as sexual contact, receipt of blood products, or receipt of an organ transplant.

Data were predominantly collected from resident health records, LTCH administrative records and, when possible, interviews with residents, family members and staff. Dates on which residents had phlebotomy and chiropody were identified from laboratory reports and the provider's billing records, respectively. Receipts were used to determine if residents had received any hairdressing services within the facility during the exposure period. Microsoft Office Excel® (Microsoft Canada Co., Mississauga, ON) and EpiData version 3.1® (EpiData Association, Odense, Denmark) were used for data entry and management.

A case-control analysis was conducted to identify associations between potential risk factors and HBV infection among residents of the affected unit. The blood sample of the final case identified was collected on November 15, 2006, and therefore the exposure period used to identify the at-risk population for this outbreak was April 1, 2006 to November 15, 2006.

A confirmed case was defined as any resident or staff who worked or lived within the LTCH during the exposure period with serological findings consistent with acute HBV infection. Specifically, confirmed cases were positive for HBsAg and anti-HBc IgM, or had a documented HBsAg seroconversion from negative to positive during the exposure period.

Controls were selected from residents who had lived within the affected unit of the LTCH at any time during the exposure period with serologic evidence of susceptibility to HBV infection. Susceptibility was defined as a negative result for HBsAg, anti-HBs and total anti-HBc, indicating that the resident was not acutely infected with HBV, was not a chronic carrier of HBV, and was not immune as a result of prior HBV vaccination. Only residents who lived within the affected unit of the LTCH were considered at-

risk, as all of the cases identified in the outbreak occurred in this unit, and it was physically distinct from other areas in the facility. All susceptible residents in the affected unit were included as controls in the analysis.

Statistical analysis: Descriptive statistics were produced for demographic variables, including age, sex, and country of birth. Risk factor frequencies among cases and controls were determined. A number of hypotheses were tested to identify a common route of transmission among the cases. Univariate analyses were used to identify associations between each risk factor and HBV infection. Exact conditional logistic regression was used to compute odds ratios (ORs), 95% confidence intervals (95% CIs), and probabilities. Data were analyzed with *SAS 9.1® for Windows* (SAS Canada, Toronto, ON) and all statistical tests were carried out at the $\alpha = 0.05$ significance level.

RESULTS

Demographics

A summary of demographic data for all residents in the affected unit of the long-term care home (LTCH) is provided in Table 1. A large proportion of residents in the affected unit were female (67.2%), including all five cases and the majority (68.4%) of controls. The median age of residents in the affected unit was 85.5 years (Range: 49-98 years). Many of the residents in the LTCH were born outside of Canada. Of the 58 residents in the affected unit, 48 (82.8%) were non-Canadian born and the majority (55.2%) originated from East Asia.

Clinical outcomes

Of the 24 susceptible residents living on the affected unit, five (20.8%) acquired acute HBV infection. Four of the cases became jaundiced and developed a variety of symptoms associated with viral hepatitis, such as dark urine, clay-coloured stool, fatigue, and muscle weakness. Acute hepatitis was documented as the primary cause of death in three of the five cases and, among these, death occurred within 15-26 days (Median: 21 days) after onset of jaundice. Of the two remaining cases, one died 11 days after symptom onset, with coronary atherosclerosis and obstructive jaundice documented as the primary cause of death. The final case remained asymptomatic. While the first three cases in this outbreak were identified because they developed symptoms of acute HBV infection, the remaining two cases were identified during serological screening.

> "Improvements in routine infection control procedures in the LTCH were observed in follow-up audits of both the facility and personal support services."

Infection control measures

Infection control audits of the LTCH revealed that nursing staff were occasionally using the same glucometer and finger-stick device among residents during blood glucose (BG) monitoring, and that nursing staff often failed to perform hand-hygiene after BG monitoring for each resident.

In response to this outbreak, each resident who required BG monitoring was assigned an individual glucometer and finger-stick device. Facility staff received additional training. Improvements in routine infection control procedures in the LTCH were observed in follow-up audits of both the facility and personal support services.

Laboratory investigation

Serological results were obtained from all 58 residents and 79 staff who had lived or worked, respectively, on the affected unit during the exposure period. Of the 58 residents, five (8.6%) confirmed cases of acute HBV infection were detected, 19 (32.8%) were identified as susceptible controls, and 34 (58.6%) were not susceptible to HBV infection. Among the non-susceptible residents, 31 (91.2%) were immune as a result of previously resolved HBV infection, two (5.9%) were chronic carriers, and one (2.9%) was immune due to prior hepatitis B vaccination. Overall, 7 HBV carriers were identified among residents in the LTCH, and no other acute cases were detected. Among the staff, no cases of acute HBV infection were detected and 3 hepatitis B carriers were identified.

DNA sequencing confirmed the presence of HBV genotype B in all five cases of acute HBV infection that were identified during this outbreak, and the phylogenetic analysis showed that all of these cases had identical S gene sequen-

Table 1: Gender, age, and birth region distribution of cases, controls, and non-susceptible residents living on the affected unit of a long-term care facility during a hepatitis B outbreak investigation (Toronto, 2006).

		Cases (%)	Controls (%)	Non-susceptible (%)	Total
		N=5	N=19	N=34	N=58
Gender	Female	5 (100.0)	13 (68.4)	21 (61.8)	39 (67.2)
	Male	0 (0.0)	6 (31.6)	13 (38.2)	19 (32.8)
Age (years)*	Mean	85.2	81.3	82.0	82.0
	Median	88.0	86.0	84.5	85.5
	Range	75 - 93	51 - 98	49 - 95	49 - 98
Birth region†	East Asia	1 (20.0)	8 (42.1)	23 (67.6)	32 (55.2)
	Europe	2 (40.0)	6 (31.6)	2 (5.9)	10 (17.2)
	Southeast Asia	0 (0.0)	1 (5.3)	3 (8.8)	4 (6.9)
	Canada	1 (20.0)	3 (15.8)	0 (0.0)	4 (6.9)
	Other	1 (20.0)	0 (0.0)	1 (2.9)	2 (3.4)
	Unknown	0 (0.0)	1 (5.3)	5 (14.7)	6 (10.3)

* Age calculated based on resident's age at October 1, 2006.
† East Asia: China, Hong Kong; Europe: Italy, England, Germany, Ukraine; Other: India, Trinidad

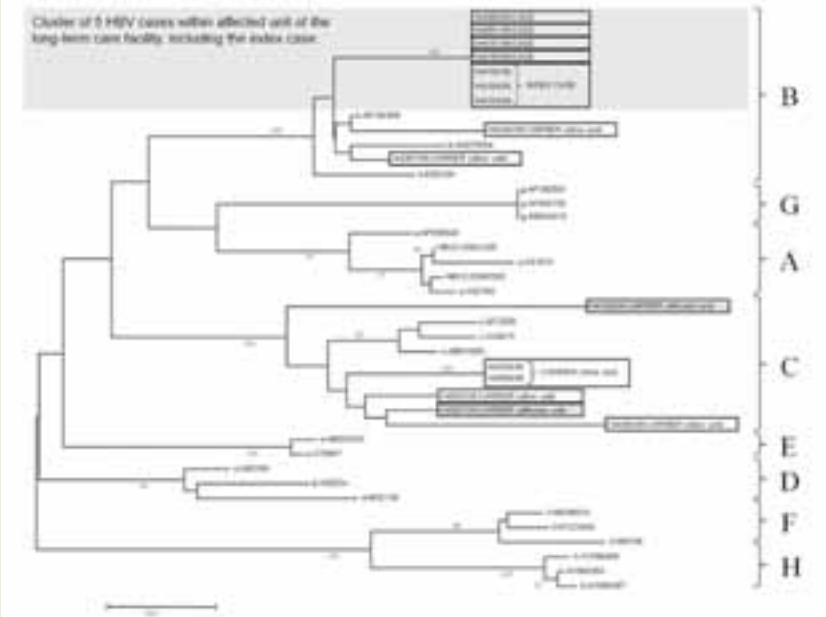

Figure 1: Genetic relatedness of hepatitis B virus isolates identified among residents (acute cases and carriers) during an outbreak investigation in a long-term care facility (Toronto, 2006).*

*Phylogenetic tree is based on the complete S-gene using Neighbour-Joining program from MEGA 4 package. HBV DNA sequences belong to outbreak cases; sequences for other genotypes were derived from HBV carriers and GenBank samples. Numbers shown on branches are the relevant bootstrap values based on 500 replicates.

ces (Figure 1). All HBV carriers identified among residents and staff in the affected unit had genotypes that differed from the outbreak strain. Although HBV genotype B was identified in two carriers, the S gene sequence was significantly different than the outbreak strain, and both of these residents lived in other unaffected units of the LTCH.

Epidemiological investigation

Based on the distribution of risk factors in the cases, risk factors further investigated in this outbreak included BG monitoring, insulin injections, phlebotomy, use of chiropody services, and the use of hairdressing services.

All five cases, and two (10.5%) of the 19 controls, had diabetes mellitus and required regular BG monitoring (Table 2). The odds of exposure to BG monitoring were approximately 35 times greater among cases than controls (OR 35.3, 95% CI 3.8->50, p=0.0010). On average, BG monitoring was completed 10.2 times per week (Range: 3-21) among the cases and 0.9 times per week (Range: 0-14) among the controls. The odds of becoming infected with HBV increased 25% for each additional BG monitoring exposure per week (OR 1.25, 95% CI 1.01-1.55, p=0.04).

To test the hypothesis that sharing multi-dose insulin vials was associated with HBV infection, residents with insulin-dependent diabetes were compared with those who did not receive insulin injections (Table 2). No association was identified between insulin injections and risk of HBV infection (p=0.20). Similarly, exposure to chiropody (p=0.20) or hairdressing (p=0.73) services during the exposure period were not found to increase the risk for acute HBV infection during this outbreak (Table 2).

All five cases and 15 (78.9%) of the 19 controls received phlebotomy (Table 2). While cases were not more likely to be exposed to phlebotomy than controls, the association between acute HBV infection and number of phlebotomy episodes during the exposure period approached statistical significance (OR 1.14, 95% CI 0.98-1.32, p=0.10). Cases were exposed to more phlebotomy days on average (11 days, Range: 3-15) than controls (five days, Range: 0-22) during the exposure period (p=0.05); however, there was also an association between BG monitoring and exposure to phlebotomy among susceptible residents (p=0.04). The relationship between number of phlebotomy days and HBV infection was not significant when adjusted for exposure to BG monitoring (adjusted OR 0.97, 95% CI 0.72-1.30, p=0.83).

DISCUSSION

An outbreak investigation was initiated to prevent further transmission and identify risk factors associated with acute HBV infection among residents in a long-term care home (LTCH). Based on relevant literature and the distribution of risk factors in this population, the two main transmission hypotheses considered included the sharing of blood glucose (BG) monitoring equipment and exposure to phlebotomy services.

The results suggest that shared BG monitoring equipment was the most likely source of acute HBV infection among residents living in a single unit of a LTCH, and that transmission was non-propagated. Typically, residents with diabetes in the LTCH were provided with individually assigned glucometers and finger-stick devices. Several months prior to the outbreak, a supplier stopped providing the facility with BG monitoring equipment. As individually assigned glucometers and finger-stick devices stopped working or were misplaced, BG monitoring equipment was increasingly shared among diabetic residents. It was also determined that glucometers and finger-stick devices were not routinely cleaned between residents.

Several hypotheses may explain how transmission during BG monitoring occurred during this outbreak. Blood contamination of the finger-stick device or of the hands of the nursing staff may have occurred during deployment of the lancet. Also, the glucometer may have

Table 2: Results of a case-control analysis of risk factors in a hepatitis B outbreak in a long-term care facility, confirmed HBV cases vs. susceptible controls (Toronto, 2006).

	Total	Cases (%)	Controls (%)	Crude OR*	95% CI (LCL, UCL)	P-value
Any blood glucose monitoring						
Yes	7	5 (100.0)	2 (10.5)	35.3	(3.83, >50)	0.0010
No	17	0 (0.0)	17 (89.5)			
Blood glucose monitoring frequency						
≥4/week	3	2 (40.0)	1 (5.3)	19.3	(1.32, >50)	0.0316
1-3/week	4	3 (60.0)	1 (5.3)	30.2	(2.62, >50)	0.0060
Reference (none)	17	0 (0.0)	17 (89.5)	1.0		
Any insulin injections						
Yes	3	2 (40.0)	1 (5.3)	10.2	(0.42, >50)	0.1976
No	21	3 (60.0)	18 (94.7)			
Any chiropody services during exposure period						
Yes	16	5 (100.0)	11 (57.9)	4.3	(0.49, >50)	0.2055
No	8	0 (0.0)	8 (42.1)			
Any haircare services during exposure period						
Yes	6	2 (40.0)	4 (21.1)	2.4	(0.15, 30.13)	0.7329
No	18	3 (60.0)	15 (79.0)			
Any phlebotomy during exposure period						
Yes	20	5 (100.0)	15 (78.9)	1.6	(0.16, >50)	0.7295
No	4	0 (0.0)	4 (21.1)			

HBV: hepatitis B vius, 95% CI: 95% confidence interval, LCL: lower confidence limit, UCL: upper confidence limit

* Calculated by exact conditional logistic regression.

"The results suggest that shared BG monitoring equipment was the most likely source of acute HBV infection among residents living in a single unit of a LTCH, and that transmission was non-propagated."

become contaminated during uptake of the blood drop for glucose readings.

Associations between sharing spring-loaded finger-stick devices among diabetic patients and HBV transmission have been previously reported. Two outbreaks were reported in 1990, one in an endocrinology unit in France (15), and another in a general medical ward in the US (16). Shared BG monitoring equipment among diabetic patients in long-term care homes has been implicated in a considerable number of reported HBV outbreaks (7-9, 11-17). While it was not possible to determine whether hepatitis B transmission occurred via the glucometer or finger-stick device in this outbreak, a multi-centre trial found that overall 30% of glucometers sampled in hospitals were contaminated with blood, and nearly 50% in critical care settings (18).

In response to a growing number of HBV outbreaks among diabetic residents in LTCHs in the US, the Centres for Disease Control (CDC) has recommended since the 1990s that glucometers and spring-loaded finger-stick devices be restricted to individual use (19). The CDC also reinforced the importance of maintaining standard infection control practices, including the appropriate use of gloves, hand washing, and proper cleaning and disinfection of environmental surfaces.

Based on the information available, it is likely that all five cases became infected by a single HBV-infected source within the LTCH, and that transmission likely occurred within a short time period. This is supported by two observations. First, onset of jaundice among the symptomatic cases (n=4) was tightly clustered in time, occurring over a period of six weeks. As the incubation period for HBV is up to six months, this temporal cluster would not be expected if transmission was serially propagated and/or resulted from multiple exposures. Second, genetic analyses revealed identical S-gene sequences among all five of the outbreak cases. This sequence homology suggests a single source of infection rather than multiple episodes of propagated transmission.

The suspected source for the outbreak was a known HBV carrier with insulin-dependent diabetes who lived in the affected unit of the LTCH prior to the outbreak; however, this resident died in May 2006 and, as a result, a sample was not available for genotyping. It is also possible that one of the acute cases was actually a carrier with reactivated infection. With the exception of one acute case with documented seroconversion, the remaining cases were classified as acute due to the presence of the anti-HBc IgM marker. However, none of the acute cases had any predisposing factors for reactivation at the time of the outbreak. Although two HBV carriers lived on the affected unit, both had HBV genotypes that differed from the outbreak strain.

Limitations

Limitations in the case-control analysis include: (i) the small number of cases associated with this outbreak, (ii) the high proportion of residents with natural immunity to HBV in the affected unit of the LTCH, and (iii) data quality and availability.

Despite using conditional logistic regression methods, the small number of cases in this outbreak limits the reliability of the findings from the case-control analysis. This instability is reflected in the wide confidence intervals observed for the exposure odds. Serological results revealed that over half of the residents on the affected unit had immunity to HBV. While the ratio of controls to cases in this investigation was almost 4:1, control selection was limited by the large number of non-susceptible

residents with natural immunity to HBV. In terms of data quality, phlebotomy and chiropody service dates were questionable due to conflicting and unreliable data sources. While several hypotheses were considered concerning the primary source of HBV infection in this outbreak, none of them could be verified due to the lack of baseline serological data.

Public health implications

The most likely explanation for transmission of HBV in this LTCH was the sharing of BG monitoring equipment among residents with diabetes. The results of this hepatitis B outbreak investigation reinforce the need for adherence to routine infection control practices and continuing education in settings with vulnerable populations, including older adults living in LTCHs. The risk of HBV transmission may have been reduced by restricting BG monitoring equipment to individual use among diabetic residents as well as the appropriate use of gloves and hand hygiene.

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Evaluating the impact of *Clostridium difficile* infection treatment guidelines on clinical practice

Authors
Giulio DiDiodato MSc, MD, FRCPC, MPH
North Simcoe Muskoka Infection Control Network
80 Victoria Street, Unit #7
Orillia, ON L3V 7E4
705-325-2201
Fax 705-326-5434
didiodatog@rvh.on.ca

ABSTRACT

Background

Clostridium difficile is the most common hospital-acquired infection, and is associated with increased patient morbidity, mortality and health care costs. The Regional Antimicrobial Utilization Review (RAUR) study examined the temporal association between the publication of *Clostridium difficile* infection treatment guidelines and subsequent clinical practice.

Methods

The RAUR study is a retrospective medical record review of patients with a diagnosis of either community-acquired pneumonia or *Clostridium difficile* infection. The study included inpatients in any one of five acute care hospitals in the North Simcoe Muskoka Local Health Integration Network from January 1, 2006 to December 31, 2008. Compliance with evidence-based guidelines (i) for both empiric therapy and the duration of antimicrobial treatment of *Clostridium difficile* infection was reviewed for each patient, hospital site and region. The pneumonia population was used as a contemporaneous control group to determine if any attributable benefits of the guidelines were due to independent changes in physician adherence to recommended practice or whether other external factors contributed to improved outcomes.

Results

Over the entire study period, the mean duration of treatment ranged from 8.3 to 10.9 days, with no significant differences observed between hospitals ($p=0.7$). Compared to 2006, the mean duration of treatment increased by 1.7 days (95% CI 0.2, 3.1) to 11.5 days in 2007 and by 2.0 days (95% CI 0.5, 3.5) to 11.8 days in 2008. The proportion of patients with *Clostridium difficile* infection treated for a minimum of 10 days as recommended by the guidelines increased from 46% (2006) to 57% ($p=0.07$) in 2007 to 64% ($p<0.04$) in 2008. During the same period, patients admitted with pneumonia did not experience any improvement in compliance with recommended practice in either the choice of empiric therapy or the duration of treatment.

Conclusion

This study suggests a temporal association exists between improved compliance for treatment of *Clostridium difficile* infection and the publication of evidence-based guidelines. However, it does not appear that improved compliance with recommended practice was necessarily due to independent changes in physician behaviour. Rather, improved outcomes were more likely due to other external factors using the guidelines to nudge changes in prescribing patterns.

INTRODUCTION

Clostridium difficile infection (CDI) is the most common hospital-acquired infection in Ontario with reported incidence rates between 0.25 to 0.44 per 1,000 patient days (*http://www.health.gov.on.ca/patient_safety/public/ps_pub.html*). Several evidence-based CDI treatment guidelines have been published as a response to this emerging healthcare crisis (1, 2). Unwarranted variation from effective medical care as defined in evidence-based guidelines has been well documented in the literature (3). The objectives of this study were to investigate the temporal relationship between the publication of best-practice guidelines on the clinical management of CDI in hospitalized patients, and explore the mechanism by which these guidelines affect changes in clinical practice.

METHODS

The North Simcoe Muskoka Local Health Integration Network (NSM LHIN) is located in the province of Ontario, Canada. It comprises one of 14 provincial regional health authorities responsible for the fiscal management of Ontario's publicly funded healthcare system. Within the NSM LHIN there are five acute care hospitals that serve a population of approximately 450,000, or 3.45% of Ontario's population (4). All the five hospitals in the NSM LHIN are community-based hospitals, ranging from 72 beds to 279 beds (average 160 beds, sd 71 beds). In the period reviewed, all the hospitals had an infection prevention and control (IPAC) consultant, along with a surveillance program for CDI. The study protocol was approved by each hospital's research ethics committee. All the data at both the patient and hospital-level is non-nominal. We retrospectively reviewed medical records for hospitalized patients (≥ 18 years old) in all five hospitals from January 1, 2006 to December 31, 2008 with a discharge diagnosis of CDI (i). A random sample of each hospital's CDI patients was subsequently included for review. Random samples were generated using STATA statistical analysis package (6). The random sample sizes were sufficient to ensure a 95% confidence level of being representative of the hospital population with a confidence interval of ± 5%.

Standardized data collection sheets were used to collect data related to the following: patient demographics, CDI risk factors, severity of illness, and antimicrobial treatment (Supplemental material available from author). The data collection sheet's face validity was verified by two infectious diseases practitioners, and inter-observer reliability was verified by two independent data collectors after reviewing 100 medical records from a single hospital site ($k \geq 0.7$ for non-binomial variables). Collected data was collated and checked for accuracy by double-data entry methodology.

Compliance with contemporary evidence-based guidelines was examined for each of the following: duration and choice of empiric antimicrobial treatment for CDI, and treatment of severe CDI (ii).

TABLE 1. Characteristics of the study patients by hospital

Variable	Value
Gender – M (%)	39.6
95% CI	(32.4, 46.9)
Age – year	
Mean	73.7
95% CI	(72.4, 75.0)
CDI Risk Factors – range (%)	
Recent hospitalization (<6 months)	53-781
Residence in LTCF	3-311
Recent surgery (< 6 months)	16-391
Recent GI surgery (< 6 months)	0-7
Recent chemotherapy (< 6 months)	0-111
Recent antibiotic prescription (< 6 Months)	76-95
Enteral feeds	1-13
Proton pump inhibitor use	37-48
Severe CDI	
%	39.4
95% CI	(34.9, 43.8)
Mortality Rate – range (%)	10-34[1]

1 $p<0.01$

Changes in compliance between the baseline year (2006) and the subsequent calendar years were reported for each hospital and the region.

Changes in compliance for the treatment of CDI were compared against the observed changes in compliance with contemporaneous evidence-based guidelines for the management of patients hospitalized with a diagnosis of CAP during the same study period (8). By monitoring the changes in compliance over time for both groups and then comparing these changes between the groups is useful for identifying the effects of events other than independent physician adherence to the guidelines that may have contributed to the difference in outcomes; this approach is referred to as the "difference in difference" method (9, 10). The pneumonia patients thus served as an internal control group to isolate the effect of independent physician behaviour change directly attributable to the guidelines from changes due to other external factors nudging this change.

Data analysis was conducted using STATA statistical software (6). All distributions (after logarithmic transformations when indicated) were assessed for normality utilizing visual inspection of histograms and standardized normality probability plots. All continuous data was compared using analysis of variance (ANOVA) or t-test. All categorical data was compared using chi^2 or Z-test. The association of multiple variables with either a dependent continuous outcome or binomial outcome was analyzed by weighted-multiple regression analysis or logistic regression analysis, respectively.

(i) Diarrhea with laboratory confirmation of a positive toxin assay (A/B) for *Clostridium difficile*; OR visualization of pseudomembranes on sigmoidoscopy OR colonoscopy; OR histological/pathological diagnosis of pseudomembranous colitis (5).

(ii) Severe CDI defined as follows: ICU admission; OR presence of any two of the following; age ≥ 60, elevated creatinine ≥ 150 uM, WBC ≥ 30,000 cells/microL albumin<20 g/L) (7).

RESULTS

Study patients

The total number of patients meeting the case definition for CDI was 909. The random sampling methodology generated 470 medical records for review. Admission characteristics of the study patients are listed in Table 1. Over 90% of all CDI were hospital-acquired (iii). The incidence rate of CDI for the region's hospitals ranged from 0.5-2.0 cases/1,000 patient days (incidence rate ratio range from 1.18 (95% CI 0.91, 1.53) to 4.0 (95% CI 3.0, 5.3) (iv).

Duration of treatment for CDI

The duration of antimicrobial treatment for CDI for each hospital and the region is shown in Figure 1. The duration of treatment ranged from 8.3 days to 10.9 days with no significant differences observed between hospitals. Compared to 2006, the mean treatment duration increased by 1.7 days (95% CI 0.2, 3.1) to 11.5 days in 2007, and by 2.0 days (95% CI 0.5, 3.5) to 11.8 days in 2008. Compared to 2006 (46%), compliance with the CDI treatment guidelines (v) increased to 57% (p=0.07) in 2007, and to 64% (p<0.04) in 2008 (Figure 2). Compliance with the recommended duration of treatment was not associated with age, duration of diarrhea or severity of CDI.

Empiric treatment for CDI

Compliance with guidelines for empiric treatment of CDI did not significantly change over the course of the study (Figure 3) (vi). The proportion of patients receiving intravenous metronidazole monotherapy ranged from 1.6-10.9% (p=0.105) between hospitals. There was a non-significant trend toward greater vancomycin use over time that coincided with emerging evidence for this regimen conferring a mortality benefit in patients with severe CDI (Figure 4).

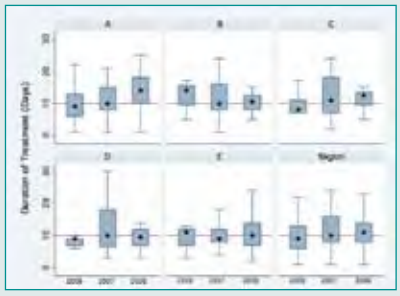

FIGURE 1. Duration of treatment for CDI by year, hospital and region

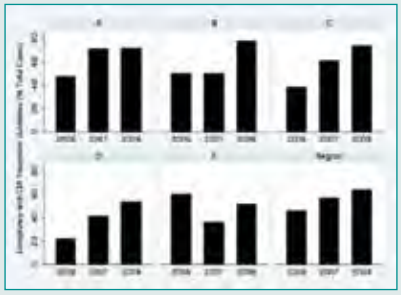

FIGURE 2. Compliance with guidelines for duration of treatment for CDI by year, hospital and region

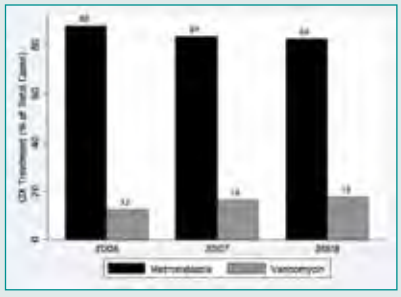

FIGURE 3. Empiric treatment regimens for CDI by year, hospital and region

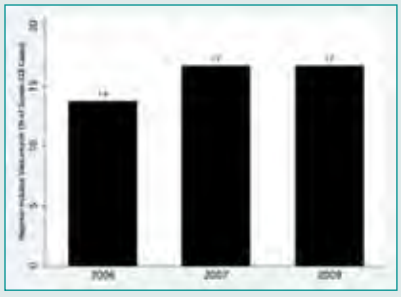

FIGURE 4. Compliance with treatment recommendations for severe CDI by year for the region

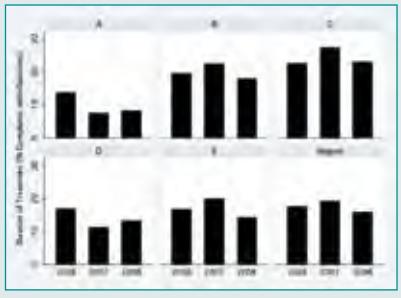

FIGURE 5. Compliance with IDSA guidelines for the duration of antimicrobial treatment for pneumonia by year, hospital and region

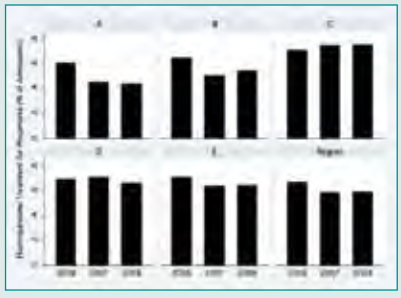

FIGURE 6. Proportion of patients hospitalized with pneumonia receiving an FQ-based antimicrobial treatment region by year, hospital and region

Comparison to pneumonia patients

To determine if the changes seen with CDI treatment compliance were simply an epiphenomenon of an overall trend in guideline compliance across the region, compliance with the recommended duration of antimicrobial therapy for patients admitted to hospital with a diagnosis of pneumonia was compared to the Infectious Diseases Society of America (IDSA) guidelines that were published around the same time (8). Over the study period, 2,982 patients were admitted with pneumonia, and 1,194 medical records were reviewed. Compliance with the IDSA guidelines did not improve (Figure 5). In addition, the proportion of patients with pneumonia who received a quinolone-based empiric regimen demonstrated a significant decrease over the study period (Figure 6) (p<0.01).

(iii) Hospital-acquired CDI defined as date of onset of disease ≥ 72 hours after admission, OR date of onset of disease ≤ 72 hours of admission in a patient with a recent hospital admission (< 6 months) (1).

(iv) CDI incidence rates calculated from total number of CDI cases/total number of inpatient days over 3 year study period (source: *http://www.mohltcim.com/hit/*)

(v) CDI treatment guidelines recommend a minimum of 10 days of antimicrobial treatment (1, 2)

(vi) CDI treatment guidelines recommend an empiric regimen with metronidazole unless there is a contraindication to its use (1,2).

DISCUSSION

There is only one report in the literature that evaluates compliance with CDI guidelines among primary care physicians (11). This study is a self-reported survey on clinical practices. Of the 122 study participants who completed the survey, only 59% were aware of the guidelines, and 31% had actually read them. This study demonstrated that the improvement with compliance in the treatment of patients with CDI was not matched by a similar trend in patients admitted with CAP. By using the "difference in difference" approach, the improvement in compliance demonstrated with the CDI guidelines but absent with the CAP guidelines suggests that the improvement was unlikely to be due to a general trend of improved guideline compliance among physicians. Given that physicians' exposure to patients with CAP far exceeds their exposure to CDI patients (vii), this would suggest that physicians would be more aware of the treatment guidelines for CAP than for CDI and thus demonstrate better compliance with the treatment recommendations. In addition, it has been demonstrated that outcomes generally improve over time so the inclusion of a contemporaneous control group was useful to demonstrate that the improvement in compliance was unlikely due to this general phenomenon (12).

CONCLUSION

The RAUR study results suggests that a temporal association exists between improved compliance for CDI treatment and the publication of best-practice guidelines whose positive effects were most likely mediated by external forces acting on and driving changes in physician prescribing behaviour. These driving forces likely included but were not limited to the following (Table 2):

1) Dedicated IPAC consultant to promote CDI guideline implementation
2) CDI surveillance and reporting
3) Repeated CDI outbreaks that occurred in the region during the study period, thus raising awareness among the public and medical staff about the importance of CDI
4) CDI order sets were implemented in several centres to facilitate clinical practice change

All of these factors together likely resulted in a sufficient nudge to promote and sustain clinical behaviour change (13).

IPAC personnel and activities are important and, perhaps, necessary agents for the translation of best-practice recommendations into clinical practice for CDI, as the same effect on compliance with best-practice was not observed for the treatment of pneumonia despite the availability of published guidelines.

The RAUR study also demonstrates the value of prospectively monitoring clinical practice to identify important areas of unwarranted variation from effective care, thus leading to opportunities for focused quality improvement. The IPAC programs established in the NSM LHIN hospitals provides a successful model for achieving this goal.

TABLE 2. Comparison of potential variables contributing to improved CDI treatment compliance

Hospital	IPAC Consultant	CDI Order Set	CDI Outbreak	CAP[1] Order Set
A	n	n (2007)	n	n (2005)
B	n			
C	n		n	
D	n	n (2007)	n	
E	n	n (2007)		

[1] Community-acquired pneumonia

(vii) During the study period, there were 2984 cases of CAP and 909 cases of CDI.

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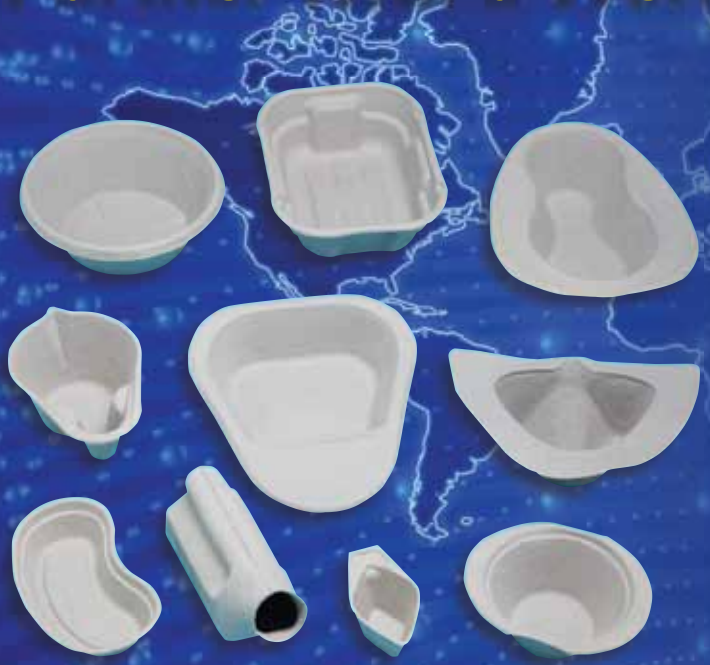

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A retrospective study on community infections in Dschang, West Region, Cameroon

Authors:
FusiNgwa Catherine Kesah, Ph.D*,
Payne Vincent Khan, Ph.D,
Nchang Chrysanthus, M.Sc.

Department of Animal Biology,
Faculty of Science
University of Dschang
P.O. Box 67
Dschang, West Region, Cameroon
Tel: 00447780211246
fncathkesah@yahoo.com

Correspondence to:
FusiNgwa Catherine Kesah

ABSTRACT

Background

The magnitude of communicable diseases in the West Region of Cameroon, including their impact on mortality is not known. This study was conducted in Dschang, Cameroon to identify paramount community diseases to enable policy makers to develop appropriate intervention strategies for healthcare delivery.

Methods

For eight months, admission records of patients at the Dschang District Hospital, the Adlucem Medical Foundation and the Hôpital Saint Vincent de Paul were reviewed. Of 22,841 admissions from 1990-2006, 21,780 patient records were retrieved, 2,664 records from 1990-2000 had no daily observations and 511 records were destroyed by water, rodents and insects. There were 737 (3%) deaths, but mortality from diseases could not be ascertained. Thus, due to non-documentation of clinical data and poor records keeping, of 19,116 records from 2001-2006, only 12,917 (68%) records of patients who survived longer than 72 hours and were not transferred to other hospitals, were reviewed, and data analysed using the Statistical Package for Social Sciences (SPSS).

Results

In the medical units, most patients were hospitalised for infectious diseases (79%), with no recorded epidemics during the study period. Malaria (54%) was significantly ($p<0.01$) related to morbidity, followed by gastroenteritis (23%), respiratory infections (9%) and HIV/AIDS (7%). For non-infectious conditions, diabetes (25%) and hypertension (17%) were predominant in adults, so were anaemia (31%) and malnutrition (21%) in children. Many adult females (22%) also suffered from heart disease. Accidents, herniorrhaphy, caesarean section, exploratory laparotomy, appendectomy, hysterectomy, fractures and cystostomy accounted for >85% operative procedures.

Conclusion

Based on the findings of this review various strategies have been implemented in Dashang. These include eradication and control measures for highly endemic disease conditions identified herein, and suitable diagnostic procedures including culture/antimicrobial testing which have been accorded priority consideration in the study region.

KEY WORDS:
Patient records, infectious/non-infectious community diseases

INTRODUCTION

Throughout the world, healthcare practitioners (HCPs) treat and take care of the physically and mentally ill through services provided either by able individuals, organizations or country. Some developing countries have been plagued by squalid poverty orchestrated by global economic decline, war, famine, malnutrition and a general breakdown in the healthcare system leading to disease propagation. In Cameroon, health posts are lacking in some localities and, when present, many are understaffed and deficient in infrastructure and basic healthcare materials. In some hospitals, laboratories are poorly equipped and at times have insufficient staff. These factors, coupled with low wages have created apathy among HCPs and have led to under- or non-reporting of diseases, thereby compromising epidemiologic investigations which are

indispensable in the prevention and control of diseases both in hospitals and in the community (1).

In Cameroon, there are traditional factors or practices which favour disease transmission. These factors or practices include: primitivism, ignorance, poor hygiene, no education, inadequate preventive medical services, permanent unprotected contact with cattle, habitation in remote areas with no access to modern medical services, and dependence on traditional doctors who prepare herbs under poor hygienic conditions and use one blade on several people, leading to the dissemination of bloodstream infections. Other practices that result in cross-infections include lack of potable water and toilets, leading to defecation in bushes and the contaminated faeces washing into streams carried by rain water which can result in mass infections. In the entire West Region, the drying of cassava fruit on the highways can support the transmission of geohelminths. In the grassland regions, during death celebrations, food is usually served with bare and often unwashed hands. Meat (pork) for traditional purposes and chicken for consumption during burial ceremonies are often undercooked. Hands involved in food preparation may be washed in the same dish repeatedly. Plantain leaves are used for cooking and eating without proper cleaning. All of these practices promote disease transmission. Local autopsies conducted on corpses by many tribes to ascertain the cause of deaths can possibly lead to cross-infections especially if the death was as a result of an infectious disease. Studies by Vondou et al. (2) found a high prevalence (35%) of taeniasis in butchers in the Dschang abattoir from the consumption of fatty raw meat.

Female circumcision in the South and North Regions results in pathogen transfer during stitching after the mutilation exercise, which involves the use of knives which are reused without undergoing any form of sterilization. According to the World Health Organization WHO (3), such practices have affected 20% of Cameroonian girls.

Without an adequate knowledge of disease trends, suitable preventive and curative measures cannot be put to practice, and there is no yardstick by which to measure future improvement or deterioration of the health situation. This review of patient records was intended to serve the populations of Dschang and its environs on the one hand, HCPs and hospital administrators on the other hand, and also to contribute to the realisation of the WHO millennium goal of healthcare for all by the year 2015 through identification of key need areas.

MATERIALS AND METHODS

Setting

The Dschang District Hospital (DDH), the Adlucem Medical Foundation Hospital (AH) and the Hôpital Saint Vincent de Paul (HSVP) in Dschang, West Region, Cameroon. These facilities were chosen on the basis of status in terms of age or longevity of service, relatively high clientele and level of care offered including out- patient services.

Ethical clearance

Authorization to carry out this study was obtained from the Chief Medical Officers of the various hospitals.

General description of the study hospitals

The DDH went operational in 1957. It is located above the bilingual primary school, opposite the Dschang University entrance and lies on latitude 10°03'724", longitude 5°26'843" and an altitude of 1391m (4). It has a capacity of 200 beds with a team of five doctors, 45 nurses and six laboratory workers.
The hospital is divided into six units: surgical, paediatric, general men and women, maternity, family planning, social affairs including a laboratory, pharmacy and a mortuary. A general supervisor coordinates the activities of this hospital.

The AH was created in 2003 and is located at Ngui quarter in Dschang. It lies on latitude 10o26'251", at an altitude of 1343m (4). It has a capacity of 37 beds, with a staff of 18 (one doctor, two laboratory workers and 15 nurses). The hospital has the following units: surgical, paediatric, general men's and women's, maternity with a laboratory inclusive. The general supervisor apart from coordinating hospital activities controls all hospital records.

The HSVP transformed from a dispensary to a full hospital in 2003. It is situated at Grande Mission quarter off the road to Fongo Tongo. It lies on latitude 10o02'814", longitude 5o27'475" and an altitude of 1422m (4). It has a capacity of 110 beds, with a staff of 53 (four medical doctors, 40 nurses, seven laboratory workers, one administrator and one assistant administrator). The hospital has a resident ophthalmologist and at times visiting doctors who perform complex procedures such as transplantation. The laboratory is the most equipped among the hospitals studied. The following units exist in the hospital: surgical, paediatric, general men's and women's, ophthalmology, maternity, a special section for isolating patients with highly contagious diseases, and a laboratory.

Pre-study contact

The authorities of the hospitals where this study was conducted were contacted, and the aim of the study explained to them. Letters seeking the authorization of the hospital directors to grant permission for the study and for permission to review patient records were presented and were duly accepted and signed by them. Subsequent visits for the study of hospitalized patient records were arranged with the general supervisors and/or nurse heads of the various specialities.

Study of patient records

From September 2006 to April 2007, the researchers set out to study in-patient records from 1990-2006 in the three hospitals. This was not possible due to the different times in which these hospitals were created. Only the DDH (surgical unit) had records available from 1990-2006 for study. The other two hospitals became operational in 2003, thus patient records under consideration for these institutions were available only from 2003 to 2006.

Patient records were categorised into two broad groups: complete and incomplete records. Complete records had details about demographic characteristics of patients and the ailments which brought them to the hospital including the name, age and sex of each patient, date of admission, clinical history, laboratory tests done, drugs prescribed, daily

observations, discharge status and date. Incomplete records were those lacking in one or more of the above mentioned features. From registers, the total number of admissions and missing records could be determined in each unit of the hospital. The number of patient records destroyed and thus unavailable for study in each unit was also noted.

Records in the three hospitals

The records of each unit in the DDH were not kept under the best conditions as some were destroyed by water, rats and insects. The surgical unit had the most available and complete records as day to day observations were seen in most records and this was the only unit with records from 1990 and beyond. The records between 1990 and 2000 had no daily observations. Note taking and the use of booklets only began in 2001. The paediatric unit, comprising the newborn and older children's ward had no daily observations in the records.

The records of all the units in AH were kept in a statistics room; however, some (9) were partly destroyed by water. Here, records were much more complete than those of the DDH.

In the HSVP, a central statistics section was present where records of both inpatients and outpatients were filed in drawers. However, good records keeping was not synonymous with good notes taking because some booklets were still incomplete, but were kept under good conditions. In summary, in the three hospitals, there were a total of 22,841 admissions during the period 1990 to 2006 representing the expected number of records to be accessed, but only 21,780 records (95.4%) were found with a total of 108.691 hospital days; 1,061 (4.7%) records were destroyed (511) by water, rats and insects (cockroaches and woodlice) or missing (550). A total of 737 (3.2%) deaths were recorded from available statistics (including 110 during 1990-2000 in the surgical unit of the DDH, 247 in men's units, 224 in women's units, 92 in the paediatric units and 64 in the surgical units). However, causes of deaths could not be ascertained from case notes as they were not documented. There were 2,664 records from 1990 to 2000 without daily observations. From 1990 to 2006 out of 19,116 records, there was an alarming number, 6,199 (32.4%) which were incomplete, i.e., lacked vital data for this work (Table 1). Thus, 12,917 (67.6%) complete records of patients (7,429 or 57.5% females, 5,488 or 42.5% males) admitted and discharged for six years in the three study hospitals were critically reviewed for morbidity and mortality. These patients survived longer than 72 hours in hospital, with an average stay of 5.4 days (Table 2).

In the surgical units, there were 1650 patients (765 [46.4%] males, 885 [53.6] females), and in the paediatric units there were 2811 patients (1149 [40.9%] males and 1662 [59.1%] females). In total, 2,143 (16.6%) patients left the hospital against medical advice, while 59 (0.5%) text missing here

Table 1: Characteristics of patient records in the three hospitals

Parameter	Totals in 3 Hospitals	DDH 1990-2006	AH 2003-2006	HSVP 2003-2006
Admissions	22,841	11,903	3,021	7,917
Hospital patient days	108,691	62,897	20,940	24,854
Average length of stay (days)	4.76	5.28	6.93	3.14
Complete records	12,917	4,215	2,718	5,984
Incomplete records	8,863	6,697	233	1,933
Destroyed records	511	502	9	-
Missing records	550	489	61	-
Died within 72 hours	273	202	33	38
Died after 72 hours	464	324	33	107
Transferred within 72 hours	134	74	18	42
Discharged against medical Advice	6,322	3,221	1,426	1,675
Discharged	12,774	4,957	1,595	6,242

DDH: Dschang District Hospital
AH: Adlucem Medical Foundation
HSVP: Hôpital Saint Vincent de Paul

Table 2: Characteristics of the study population (2001-2006)

Hospital units	Total N	Deaths N (%)	Patient days N	Average stay (days)
Surgical unit	1,650	26 (1.58)	17,943	10.87
Paediatric unit	2,811	8 (0.28)	12,474	4.44
Women's unit	4,882	12 (0.25)	21,939	4.49
Men's unit	3,574	11 (0.31)	17,332	4.85
Total	12,917	57 (0.44)	69,688	5.40

FINDINGS

From the complete records considered for this study, 57 (0.44%) patients died (Table 2), and morbidity/mortality was slightly higher ($p>0.05$) in females than males.

Generally, the hospitals in the review admitted patients with various forms of complications and unstable conditions that needed optimum care. The majority 10,192 (78.9%) of patients were hospitalized for infectious diseases and the remainder 2,725 or 21.1% for non-infectious diseases. No epidemics were

Table 3: Infectious diseases which caused hospitalization in paediatric and general wards in Dschang annual totals 2001-2006

Infectious conditions	Hospital units			Totals	%
	Men	Women	Paediatrics	2001-2006	Distribution
Malaria	1777	2667	2782	7226	54.16
Gastrointestinal infections	758	1045	1294	3097	23.21
Respiratory tract infections	425	313	469	1207	9.05
HIV/AIDS	420	478	10	908	6.81
Food poisoning	64	100	78	242	1.81
Urinary tract infections	36	188	17	241	1.81
Skin infections	65	69	46	180	1.35
Meningitis	39	21	69	129	0.97
Eye infections	7	5	28	40	0.30
Ear infections	11	13	7	31	0.23
Tuberculosis	6	2	-	8	0.06
Tetanus	4	1	2	7	0.05
Measles	2	1	4	7	0.05
Puerperal sepsis	-	6	-	6	0.04
Onchocerciasis	3	2	-	5	0.04
Filariasis	-	4	-	4	0.03
Encephalitis	1	1	-	2	0.01
Rabies	-	-	2	2	0.01
Mumps	-	-	1	1	0.007
Total	3,618	4,916	4,809	13,343	100
%	27.12	36.84	36.04		100

Table 4: Non-infectious diseases which caused hospitalization in paediatric and general wards in Dschang annual totals 2001-2006

Disease or condition	Hospital units			Totals	%
	Men	Women	Paediatrics	2001-2006	Distribution
Diabetes	231	186	3	420	18.74
Hypertension	165	127	-	292	13.03
Trauma	120	72	73	265	11.83
Anaemia	46	40	171	257	11.47
Cardiac disease	9	203	43	255	11.38
Comma	87	122	14	223	9.95
Intoxications	21	99	57	177	7.90
Malnutrition	3	1	116	120	5.35
Sickle cell anaemia	4	12	57	73	3.26
Cancer	35	17	-	52	2.32
Mental disorder	17	19	4	40	1.78
Kidney disease	14	6	14	34	1.52
Liver disease	9	3	4	16	0.71
Epilepsy	4	6	4	14	0.62
Parkinson's disease	2	1	-	3	0.13
Total	767	914	560	2,241	100
%	34.23	40.79	24.99	-	100

reported during the study period.

Infectious and non-infectious diseases or complications that caused hospitalization in paediatric and general wards are indicated in Tables 3 and 4. Malaria, gastrointestinal and respiratory infections, and HIV/AIDS accounted for approximately 93.23% of infectious disease hospitalizations. For non-infectious conditions, diabetes (18.74%) and hypertension (13.03%) were more common in adults, as were anaemia (11.47%) and malnutrition (5.35%) in children; cardiac problems were preponderant in female adults (203 females and nine men). Of the surgical cases, Apart from operative cases and accident victims (Table 5), other diagnosed diseases or conditions in the surgical wards were attempted abortions, miscarriages, testicular torsion and gastric ulcers.

DISCUSSION

Missing, destroyed, or incomplete clinical data pose a hindrance to retrospective analysis of any nature. Complete patient records are very crucial in the determination of nosocomial infections and for infection control programs in hospitals. Diseases documented in this study could not be related to mortality. This information cannot be used in efforts to curb deaths from diseases in this environment as impacts of various diseases on fatality are not known. Many patients, 6,322 (27.68%) left the hospital against medical advice at their own risks (Table 1).

Infectious diseases dominated non-infectious diseases probably due to exposures to risks facilitating the acquisition of these infections.

The following is a description of some of the infectious issues found through record review along with recommendations for follow-up actions that could address these issues.

Malaria

Inadequate health systems, poverty, poor drainage, lack of mosquito nets or insecticides, bushy/grassy surroundings, swamps, pools of water, streams and lakes lead to the acquisition of, relapses or re-infections with malaria, which represented about 54% of the total number of hospitalizations. These

findings are similar to those published by Same-Ekobo (5), which revealed that more than 50% of hospitalizations are caused by malaria in children aged two to nine years in Cameroon. According to WHO (3), 30 out of every 300 people hospitalized in sub-Saharan Africa die of malaria. In Cameroon, 10% mortality in children is attributed to malaria. Dschang is not left out as studies by Cot and Coll (6), revealed mesoendemicity. To better control malaria, there is a need for the government and its partners to intensify efforts in the free distribution of mosquito nets in the hinterlands, especially to high risk populations such as pregnant women and children, and organise forums for re-impregnation of the nets. Also, populations living in mesoendemic and hyperendemic zones need to consider prophylaxis as one of the measures among the several control measures such as the use of insecticides, clearing bushes around compounds, reducing leaves of vegetables and trees around human habitations, draining marshes and pools of water. Despite the fact that no up to date statistics exist on the prevalence of epidemics in Cameroon, Martyn *et al.* (1) reported that the number of cases of malaria have increased significantly because preventive medical services are inadequate.

Table 5: Types of surgical procedures: annual totals 2001-2006

Procedure	2001 n	2002 n	2003 n	2004 n	2005 n	2006 n	Total
Accidents (trauma)	15	97	303	141	132	72	760
Herniorrhaphy	5	58	87	33	125	98	406
Caesarean section	18	66	38	55	85	71	333
Exploratory laparotomy	4	34	41	34	58	46	217
Appendicectomy	44	33	30	12	32	41	192
Hysterectomy	20	15	8	8	19	90	160
Fractures	-	38	15	34	15	24	126
Cystostomy	2	19	8	12	25	30	96
Testicular surgery	2	3	8	9	10	6	38
Haemorrhoid surgery	-	10	3	7	7	2	29
Lipomectomy	-	3	1	3	10	12	29
Myomectomy	1	3	-	5	6	11	26
Prostatectomy	-	-	13	7	-	-	20
Episiotomy	-	-	11	1	1	9	22
Thyroidectomy	-	-	-	-	-	20	20
Breast surgery	-	1	11	4	1	2	19
Burns	1	6	4	2	2	2	17
Others	3	28	31	20	45	37	164
Total	115	414	612	387	573	573	2674

HIV/AIDS

HIV/AIDS ranked highly in all the hospitals (12% in the male wards and 10% in the female wards). Dschang is a university town with promiscuity, especially among students. Inadequate practices such as absent or poor disinfection of equipment in hairdressing and barbering salons, and the use of one razorblade for more than one patient in herbal homes can lead to the repeated transmission of bloodstream infections. Seminars on preventing infection have been conducted but have been confined to the urban areas, leaving out the rural areas where large populations depend on herbalists. There is a lack of knowledge among some of the dangers involved in practices for the prevention of the transmission of AIDS, such as use of condoms, abstinence and fidelity. By 1991, the seroprevalence of AIDS was 0.9%, but by 1997, rates had escalated to 10%, with rates much higher in some major towns and cities in Cameroon (3).

Gastrointestinal (GI) infections

GIs were much more prevalent, second only to malaria (21% in the male and female wards and 27% in the paediatric wards). Poor hygiene and sanitation, contaminated food and water, can all lead to GI infection. Therefore communities in general, and particularly hospitalized patients, need to adopt more hygienic practices. It is necessary for HCPs to monitor the food and water, and the manner in which these are given to patients. Caretakers should also be educated on clean habits for patient care. It is common place in Dschang to eat in public without washing hands. Limiting the number of visitors and preventing them from eating or sleeping with patients may be a practical solution.

In most rural areas of Cameroon, water supplies are unprotected and unclean. Latrines and other facilities for excreta disposal are inadequate, if they exist at all, so that defecation is often performed in the bushes. Household rubbish is frequently dumped near the dwelling place or in the compound. The breeding of flies and contamination of water supplies produce a high incidence of gastrointestinal tract infections, especially in children, including diarrhoea, dysentery and typhoid. At the same time, intestinal parasitism is often widespread. Housing, while varying greatly, is often overcrowded, dark, leaky and poorly ventilated. In some areas, it is customary for all windows and doors to be tightly shut against thieves, wild animals and evil spirits. Thus, a family may often sleep together in one tightly sealed room and respiratory tract infections develop easily; while skin sepsis is common as a result of hot, dirty housing, insect bites and scabies. Also, with dirty and dusty environments, respiratory tract infections are inevitable. Thus, the proper application of proper hygienic techniques as well as cleaning of hospital environments and renovation of lavatories could be practical measures.

Malnutrition

Malnutrition was a serious problem especially in the paediatric wards (21%). Despite the fact that villages around Dschang town cultivate great varieties of food, children are still malnourished, thus, massive education on the import-

ance and constitution of balanced diets may be useful. Malnutrition predisposes to infection.

Laboratory testing

Culture and antimicrobial susceptibility testing are not done in these hospitals because patients cannot afford them, thus pathogens were not documented. This is important, however, as such testing can make diagnosis more specific and treatment more effective and assist in identifying and tracking resistance. Over-the-counter drugs are not controlled. An ideal solution would be to eliminate unlicensed practitioners from healthcare and dismantle illegal institutions. Another way to improve antibiotic usage is HCPs ensuring that patients' anti-infectives are taken at regular intervals.

Hand hygiene

The importance of hand hygiene in reducing the incidence of cross-infections cannot be overemphasized (7-11). Understaffing or overcrowding is problematic as low patient-to-nurse ratio facilitates the spread of pathogens through relaxed attention to hand asepsis. Education on hand hygiene and other hygienic practices such as limiting public visits and discouraging visitors from sleeping in same bed with patient or eating from their plates. HCPS should be educated and prepared to provide health education to the pateints and families.

CONCLUSIONS

Good hospital policies and data management will yield accurate information, providing useful data representing the true nature of the problem. As this was a retrospective study, it was contingent on patient records and notes taking by HCPs. However, many records were incomplete; thus, infection rates were based on complete records. These very difficulties were encountered by Jeong *et al*, (12), and Inan *et al* (13), when conducting retrospective studies in intensive care units in the central hospital in Seoul, South Korea and Akdeniz University hospital in Antalya, Turkey respectively. Lack of adequate space for patient records, computers and personnel to input records and carelessness exhibited by HCPs have contributed to poor record management in the hospitals. Thus, authorities should endeavour to create appropriate space for records, input data from hospital units in computers, made available to all HCPs. The importance of vital statistics cannot be overemphasized in tropical countries and what Jelliffe and Stanfied (14) said of Africa still applies today: "The most important public health step would be the institution of proper statistical systems." HCPs need to realize the importance of good notes taking including all day to day details or observations in the wards, and general collaboration with researchers, as only then will meaningful pictures of healthcare problems be painted for proper intervention. Consequently, the development of any nation relies on the health of its citizens. Therefore information supplied by HCPs and the proper implementation of practical control measures will only help to better the health situation of the country.

Most of the identified issues have been addressed and through our study we have moved towards solving the numerous healthcare lapses observed in Dschang.

ACKNOWLEDGEMENT

The authors are very grateful to the medical heads, administrators, general supervisors, nurse heads and the entire staff of the three hospitals who cooperated to make this work possible. Special thanks to Dr Oben Fritz for the statistical analysis.

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CHICA-CANADA NEWS

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7th Annual Run for IFIC

Monday, June 18, 2012 – 6:30 am

BREAKFAST FOR RUN/WALK PARTICIPANTS ONLY
Delta Bessborough (William Pascoe Room)
Monday, June 18, 7:15 am – 8:30 am

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Monday, June 18, 2012 – 6:30 am
Check-in will open at 5:00 am
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TUESDAY, JUNE 19

ROOM #1 (TBA): CLEANING, DISINFECTION AND STERILIZATION

2:00-2:15 p.m.

ICP IN FIRST NATION COMMUNITIES IN ALBERTA

Ruth Richardson, *First Nations and Inuit Health, Alberta, Canada*

Issue: While basic infection prevention and control (ICP) principles have been part of new staff orientation, policy development and decisions relating to equipment choices, the level of knowledge and implementation of these principles and practices at the community level in Alberta First Nations was unknown.

Project: 4 projects were undertaken between 2008 and 2011 in order to assess Infection Prevention and Control knowledge and practices, review policy and procedures, evaluate practices in the Health Centres and develop and implement policies and protocols relating to Reprocessing Reusable Medical and Dental Equipment.

Results:

- FNIH Alberta region has incorporated the following actions to ensure front line staff have appropriate knowledge re: ICP practices relating:
- Infection prevention and control principles/practices are incorporated into all policies and procedures as appropriate.
- Infection Prevention and Control is part of the Regional Orientation.
- There is a protocol in place for Reprocessing Reusable Medical and Dental equipment.
- Training for reprocessing is now a mandatory training requirement for staff involved in use of reusable equipment.

Lessons Learned: A commitment to ICP requires time and targeted strategies. Knowledge cannot be assumed and processes must be in place to ensure staff have the appropriate knowledge and resources in order to implement ICP within service delivery activities.

2:15-2:30 p.m.

INITIAL VALIDATION REPORT FOR OPPORTUNISTIC FUNGAL PATHOGEN SCREEN - A RAPID CLEARANCE TEST FOR HEALTHCARE FACILITIES

James Scott[1,2], Richard Summerbell[1,2]
[1]*University of Toronto, Ontario, Canada,* [2]*Sporometrics, Ontario, Canada*

Background/Objectives: Medical facilities may experience significant moisture problems. Indoor mould species growing in affected sites may be opportunistic pathogens affecting immunocompromised patients. Circa 40 well-documented opportunistic pathogen species may grow in such sites. After affected rooms have been remediated, they must be formally cleared as being free of airborne propagules of opportunistic fungi. Room availability for patients is limited, and prompt clearance is desirable. Culturing for opportunists traditionally requires 5-10d.

Methods: Preliminary studies suggested that all significant opportunistic fungi are detectable, and almost all are identifiable, after 48-hr growth at 37C on Sabouraud glucose agar (SAB). This observation was supported by stock culture trials for 8 different opportunist species. Subsequently, 248 field-collected samples were tested; SAB plates exposed 7-min in a 1-stage Anderson air sampler in a wide range of pre-or post-remediation water-damaged rooms in medical facilities. Plates were examined after 48 hr at 37C and cultures were identified; plates were then further incubated 5d to ensure complete outgrowth and cultures were again identified.

Results: The field samples yielded 47 plates rated true-positive (opportunistic fungi present and correctly identified at 48-hr), 197 rated true-negative (no growth) and 4 rated false-negative (opportunists present, not identified at 48-hr). The false-negative tests involved slow-growing *Paecilomyces* colonies. Sensitivity of the test was 92%; specificity 100%; positive predictive value 91%. No negative plates later grew an opportunist.

Conclusions: All negatives and over 90% of positives are definitively declared by the 48-hr opportunistic fungal pathogen screen. The rapid test greatly facilitates prompt room clearance decisions.

2:30-2:45 pm.

BEST FIRST-TIME ABSTRACT
ASSESSING THE IMPACT OF BEDPAN PROCESSING MODIFICATIONS AND ENVIRONMENTAL CLEANING EDUCATION ON HOSPITAL HYGIENE

Rosemarie Howie, Michael John, Jamie Clark
London Health Sciences Centre, University Hospital, Ontario, Canada

Objective: To evaluate whether a change in bedpan (BP) processing, from a conventional manual method to a waste containment system using hygienic BP bags, with concurrent enhanced training of cleaning staff, would improve hospital hygiene and result in a significant, measurable reduction of organic matter on hospital surfaces.

Methods: Six high contact surfaces (bedrail, BP or commode (BP/C), sink, sink handle, toilet seat and toilet handle) were assessed in 52 patient rooms before and a minimum of 3 months after intervention. Testing, at a time unrelated to room cleaning, included standardized visual assessment and measurement of adenosine triphosphate (ATP) bioluminescence, with a 250 relative light units (RLU) breakpoint defining failure for cleanliness.

Results: ATP values varied extensively for all sites. After intervention, median ATP levels and failure rates for all sites decreased significantly ($P<0.05$), with greatest reduction on BP/Cs. Most failures were in the 250 - 499 RLU range. The BP/C, sink, and toilet seat had the highest ATP levels, particularly before intervention. Post intervention ATP values were significantly reduced 95% of the time, but often above 250 RLU, and highest for sinks. Failures for handles of the sink and toilet were <10%. The majority of surfaces were visually clean and dry. Reliable visual and ATP correlation occurred only when surfaces were visibly dirty.

Conclusion: Relative levels of cleanliness, measured by ATP analysis of high contact surfaces, significantly improved with the waste containment system using hygienic BP bags and enhanced training of cleaning staff. Visual evaluation was an unreliable indicator of hospital hygiene.

2:45-3:00 p.m.

RISK FOR HEALTHCARE ASSOCIATED INFECTIONS (3-21%) IN CASE OF NEGLIGENT BEDPANMANAGEMENT

Gertie van Knippenberg-Gordebeke
KNIP Consultancy Infection Prevention, Limburg, Netherlands

Background: Every day patients suffer from a lack of access to proper bedpan management which put them at risk for Healthcare Associated Infections (HAIs). It is estimated that 10% of patients are carriers of multidrug-resistant microorganisms (MDRO), leaving the body in the faeces. Bedpans and urine bottles are often not clean and can be a reservoir and transmission route of MDRO. Bedpan management touches on all the links in the chain of infection what which makes it necessary that handling bedpans and urine bottles must be done under strict conditions. Since International Organization for Standardization (ISO)- nr.15883 Washer-disinfectors (WD) is published, not much attention is paid for part 3, what specifies requirements for WD intended to be used for emptying, cleaning and thermal disinfection. In 1990, a Dutch study showed that the validation and maintenance of WD was not executed correctly, the items were not clean, and responsibilities were vague. Rules governing bedpan management is frequent "a missing link" in infection prevention. In 2010, the study was repeated in Dutch and foreign hospitals.

Methods: To identify emptying and decontamination methods a questionnaire was sent by e-mail to colleagues in 1176 hospitals in 116 countries. Questions covered the type of bedpans, emptying of the content and methods of cleaning and disinfection. Furthermore the use of specific guidelines is case of *Clostridium difficile* and awareness of ISO-15883. Final question was if bedpans or WD has played a role in HAIs.

Results:

These results are based on the questionnaire and interviews and international observations of the author.

- The response from the Netherlands was 77 hospitals.
- The response from other countries was 53 hospitals.
- The Netherlands and Belgium are using 100% WD and in 97% West –Europe.
- The rest of the world has 64% WD in hospitals.
- Macerators are in place for 14%.
- Bedpan and urine bottle are frequently (65%) emptied in toilet or slobhopper.
- Knowledge of ISO15883 in Western Europe (76%) and in the rest of the world 37% or less).
- Validation and maintenance of bedpan washers is yet not a regular procedure.
- 13 hospitals never use bedpans and urinals, but give bedridden patients. a daurkatheter and pamper for faeces.
- 4 -21% reported bedpan washers and/or bedpans and urine bottles as a source of HAIs. Nobody wanted to make these findings public.
- The majority of the responders never searched for this source.

Conclusion: There seems to be an unprecedentedly high risk for infections caused by negligent bedpan management. With the current increase of MDRO, bedpan management must be integrated into quality assurance and patient safety. Manually emptying, cleaning and disinfecting of bedpan and urine bottles are risky procedures that must be avoided wherever possible.

Only validated and well maintained WD provides a safe product. Raising awareness and advocate standardized quality and comparable data for bedpan management should be happen widely, nationally and internationally. Further research is needed into the risks for HAIs associated with careless bedpan management.

ROOM 2 (TBA): OUTBREAK MANAGEMENT

2:00-2:15 p.m.

OUTBREAK SUPPORT FOR ONTARIO HOSPITALS THROUGH INFECTION CONTROL RESOURCE TEAMS (ICRTS)

Freda Lam, Liz Van Horne, Anne-Luise Winter, Doug Sider
Public Health Ontario, Ontario, Canada

Issue: ICRTs were committed by the Ontario government in 2008 to provide hospitals assistance with *Clostridium difficile* (CDI) outbreak investigations and management. ICRTs have transitioned to Public Health Ontario where it developed on-site consultation support for CDI and non-reportable organism outbreaks.

ORAL PRESENTATIONS

Project: ICRTs are contracted healthcare professionals with infection prevention and control (IPAC) expertise, and work with hospitals and local public health in outbreak management and investigating high endemic rates. Prior to an ICRT visit, the hospital provides information on: current issue(s), IPAC policies, and environmental cleaning policies. During the visit, ICRTs meet and interview key staff informants, tour the hospital to understand the facility's challenges, and interact with staff. At the end of the visit, ICRTs provide preliminary recommendations, followed by a report that summarizes observations and recommendations.
Results: In 2010, there were nine visits in which 89% were involved with CDI or CDI with a combination of multiple resistant organisms. At time of ICRT visit, hospitals were either coping with endemic rates (11%), an outbreak (56%), or wanted to identify improvement areas after an outbreak was over (33%). Recommendations varied between 12 and 38 per visit; the most common recommendations related to environmental cleaning.
Lessons Learned: Follow-up with hospitals after the ICRT visit found that most felt it was useful to receive objective expert opinion. Suggested improvements to ICRTs included more timely reports prioritizing recommendations, and more senior IPAC professionals as part of each team. PHO incorporated this feedback as part of ongoing evaluation and re-design of ICRTs.

2:15-2:30 p.m.

A CURIOUS CASE OF A FRUIT FLY OUTBREAK IN AN ACUTE CARE HOSPITAL

Debbie Lam-Li[1], John Conly[1,2]
[1]*Foothills Medical Centre, Alberta Health Services-Calgary and Area, Alberta, Canada,* [2]*University of Calgary, Alberta, Canada*

Issue: A fruit fly infestation occurred in the summer of 2011, first reported inside the surgical suites.
Project: IPC visited each floor and interviewed staff.
- Basement (Stores): Flies were seen hovering around a floor drain used for disposing expired IV solutions and a staff room garbage bin. Housekeeping was unsuccessful in controlling the flies despite frequent garbage removal.
- Ground floor (Kitchen): Staff reported that flies were leaving from underneath the meal tray conveyor belt.
- Main floor (OR): Flies were noted in wastebaskets with empty coffee cups.
- 6th floor (Lab): Numerous potted plants had been placed on the window ledge adjacent to the elevator opening.
- 7th floor and 9th floor ORs and 11th floor (Pathology): Staff reported no fly sightings.

Results: Corrective measures instituted, as follows:
- Dietary: Redesigned the kitchen including replacing the conveyor belt.
- Housekeeping: An exterminator installed fly traps next to the elevator opening on each floor. Floor drains in Stores had bleach installed regularly.
- Maintenance: The floor drain was sealed with a metal cover plate.
- Stores: Expired IV solutions were disposed only in a designated sink and thoroughly rinsed. Food and beverage waste was not permitted in the staff room garbage bins.
- ORs: The policy of no food and beverage permitted inside the OR was reinforced.
- Lab: All potted plants were removed.

Lessons learned: The root cause in this case was the lack of correct knowledge and practice on food and beverage waste disposal, including disposal of IV solutions.

2:30-2:45 p.m.

COMPARISON OF OUTBREAK MEASURES TO CONTROL VANCOMYCIN-RESISTANT ENTEROCOCCUS (VRE) ON TWO ACUTE MEDICAL UNITS AT THE OTTAWA HOSPITAL, OTTAWA, ONTARIO

Katie Rutledge-Taylor[1,2], Natalie Bruce[2], Kathryn Suh[2], Virginia Roth[2], Sam MacFarlane[2]
[1]*Canadian Field Epidemiology Program, Public Health Agency of Canada, Ontario, Canada,* [2]*Infection Prevention and Control, The Ottawa Hospital, Ontario, Canada*

Background/Objectives: Acute medical units A and B declared VRE outbreaks in November 2010; Unit B's resolved in June 2011 while Unit A's continued. On Unit A, interventions, added cumulatively, included enhanced environmental cleaning, a "no movement within unit" policy, and cleaning with bleach. Unit B had the same plus absorbent bedpan liners and chlorhexidine gluconate (CHG) patient baths. We attempted to determine retrospectively which interventions contributed to the resolution of Unit B's outbreak.
Methods: Cases were patients identified with VRE on either unit between October 1, 2010 and June 30, 2011. Case rates per 1000 patient-days by month (CRM) and by intervention period (CRI) for each unit were calculated. Each "intervention period" commenced when an intervention was added.
Results: Unit A had 66 cases; Unit B had 95.
Case rates on Unit A declined after the introduction of the "no movement" policy and enhanced cleaning with bleach (CRM: 13.4 to 10.7, CRI: 11.1 to 7.7), but cases continued.
Case rates on Unit B declined after initiation of CHG baths (CRM: 24.6 to 14.7, CRI: 23.6 to 17.6) and the "no movement" policy and enhanced cleaning with bleach (CRM: 14.7 to 7.8, CRI: 17.6 to 6.7). There were no cases after May 9.
Conclusions: Interventions were implemented cumulatively and for variable durations, making their individual impact difficult to assess. However, a "no movement" policy, enhanced cleaning with bleach, and CHG baths appeared to help resolve Unit B's outbreak. A prospective study to test this hypothesis would be useful.

2:45-3:00 p.m.

TOXIC ANTERIOR SEGMENT SYNDROME (TASS) INVESTIGATION IN AN EYE-CARE CENTER

Timothy Doyle, Natalie Bruce, Michele Larocque-Levac, Kathryn Suh, Virginia Roth
The Ottawa Hospital, Ontario, Canada

Background: Toxic anterior segment syndrome (TASS) is an acute, non-infectious postoperative inflammatory reaction of the eye which occurs following cataract surgery. TASS can be difficult to distinguish from an infectious postoperative endophthalmitis. On June 23, 2011, the Infection Control program (IC) was notified by an Eye Care Center (ECC) of 3 postoperative cataract implant surgery patients who developed an unusual degree of postoperative inflammation 24 hours after surgery. A subsequent case was identified on June 27. A TASS outbreak had occurred in this ECC previously. A corneal edema reporting protocol was already in place.
Method: This investigation occurred in an outpatient ECC affiliated with a large teaching institution. A retrospective chart review was completed on suspected cases. A review of preoperative, intra-operative and post-operative practices was completed. All recommendations from previous outbreak were reviewed, and all staff were made aware of the cluster. **Results**: No common source was identified. The three initial cases responded to steroid therapy. The fourth case had coagulase-negative *Staphylococcus* in his vitreous culture, and was successfully treated. There were no lapses identified in reprocessing practices. The sterile water supplier was exchanged temporarily in June. No evidence this was significant. Recommendations were made by IC related to routine practice. The surveillance process was refined with the input from IC and the ECC staff.
Conclusion: TASS outbreaks are difficult to differentiate from endophthalmitis outbreaks. Existing surveillance processes should be reviewed and may need to be refined regularly. This review is most successful when IC and the department collaborate.

ROOM 3 (TBA): SURVEILLANCE

2:00-2:15 p.m.

ANTIBIOTIC RESISTANT ORGANISM SCREENING IN A TERTIARY CARE HOSPITAL EMERGENCY DEPARTMENT: ASSESSMENT OF COMPLIANCE AND RISK FACTORS ASSOCIATED WITH SCREENING

Nermin Gergis, Bronwen Edgar, Sandra Callery, Mary Vearncombe
Sunnybrook Health Science Centre, Toronto, Ontario, Canada

Background: Infections with antibiotic resistant organisms (AROs) result in higher mortality rates, prolonged hospital stay and higher costs. Unidentified ARO carriers pose a 12-fold higher risk of transmission compared with patients on Additional Precautions. We report the compliance and analysis of screening criteria with an infection control screening tool (ICST) used for patients awaiting an in-patient bed in the emergency department (ED) of our 1200-bed tertiary care hospital.
Methods: The ICST was audited, Monday to Friday, July to December, 2011. Laboratory data was obtained through electronic patient records.
Results: A total of 155 charts were audited. The ARO screening portion was completed for 69% (107/155) of the ICSTs audited. Screening swabs were indicated (met risk criteria) and sent on 111/155 (72%) patients: 30/111 (26%) previously admitted to our hospital within the last year, 25/111(22.5%) from other facilities, 23/111(20%) from nursing homes,15/111(14%) previously known ARO contacts, 5/111(5%) receiving home care, 4/111(4%) on hemodialysis, 4/111(4%) previously known positive AROs and 5/111(4.5%) screened as risk information not attainable. A total of 14/111 (13%) were identified as new ARO carriers and placed on Contact Precautions within 24 hours of being in the ED thus minimizing the potential risk of ARO transmission. Patients who were known ARO contacts were cleared from precautions within 24-48 hours.
Conclusions: The ICST appears to adequately capture patients at high risk for AROs. We found reasonable compliance with the targeted ICST; however, we continue to work with ED staff to improve overall compliance with screening.

2:15-2:30 p.m.

PREVENTING METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) TRANSMISSION IN PEDIATRIC HEALTH CARE FACILITIES – A CANADA-WIDE SURVEY OF INFECTION CONTROL PRACTICES AMONG HOSPITALS THAT PROVIDE CARE TO CHILDREN

Joanne Langley[1], Joan Durand[2], Joanne Embree[3], Sarah Forgie[2], Allana Ivany[1], Nicole Le Saux[4], Anne Matlow[5], Dorothy Moore[6], Michael Mulvey[7], Aboubakar Mounchili[8], Karen Olekson[9], Linda Pelude[8], Eva Thomas[10], Joseph Vayalumkal[11], Jennifer Zhang[8], Canadian Nosocomial Infection Surveillance Program (CNISP)[8]

[1]IWK Health Centre, Nova Scotia, Canada, [2]Stollery Children's Hospital, Alberta, Canada, [3]University of Manitoba, Manitoba, Canada, [4]Children's Hospital of Eastern Ontario, Ontario, Canada, [5]Hospital for Sick Children, Ontario, Canada, [6]Montreal Children's Hospital, Quebec, Canada, [7]National Microbiology Laboratory, Public Health Agency of Canada, Manitoba, Canada, [8]Public Health Agency of Canada, Ontario, Canada, [9]Health Sciences Centre, Manitoba, Canada, [10]Children's and Women's Health Centre, British columbia, Canada, [11]Alberta children's hospital, Alberta, Canada

Background/Objectives: MRSA infections have increased among Canadian children. The Canadian Nosocomial Infection Surveillance Program (CNISP) reported pediatric healthcare associated MRSA rates increased from 0.06 per 10,000 patient days (2000) to 2.74 (2010). Rates varied by region and number of hospital beds. The purpose of this CNISP survey was to determine infection control practices in Canadian pediatric healthcare settings.
Methods: Canadian hospitals providing care to children in 2010 were eligible to participate. The web-based survey was posted on the Community and Hospital Infection Control Association and Association des infirmières en prévention des infections websites.
Results: Fifty hospitals responded; 88% were acute care and 96% conducted some inpatient admission screening. Of these, 15% screened all patients, 75% if previously admitted, 65% if known MRSA and 56% if history of MRSA contact. All hospitals applied additional precautions (APs) to confirmed MRSA patients and 46% applied APs to those screened while awaiting results. APs varied from dedicated equipment to single room to gowns and/or gloves on room entry. Twenty-two percent reported routinely decolonizing MRSA patients to facilitate removal of precautions in long-stay patients and those with repeated MRSA infections. Most hospitals flagged health records of MRSA patients but removal criteria varied.
Conclusions: Variation in MRSA screening and infection control practices in pediatric healthcare settings was observed across Canada. Results may help to inform the adoption of uniform evidence-based MRSA screening and infection control practices in Canadian healthcare facilities. It is not known if an association exists between specific practices and risk of MRSA acquisition.

2:30-3:00 p.m. BY INVITATION

PREVALENCE OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA), VANCOMYCIN-RESISTANT ENTEROCOCCUS (VRE), AND CLOSTRIDIUM DIFFICILE INFECTION (CDI) IN CANADIAN HOSPITALS

Andrew Simor, Victoria Williams, Denise Gravel, Zahir Hirji, Felicia Laing, Oscar Larios, Allison McGeer, Karl Weiss, and the Community and Hospital Infection Control Association (CHICA)-Canada.

Background: Antibiotic-resistant organisms add to the burden of disease in hospitalized patients. The primary objective of this study was to determine the prevalence of MRSA, VRE, and CDI among adults hospitalized in Canadian hospitals.
Methods: A one-day national point-prevalence survey of MRSA, VRE, and CDI in adult inpatients in acute-care hospitals in Canada with at least 50 beds was done in Nov. 2010. Data describing the hospitals and the prevalent cases were obtained by experienced infection control practitioners at each participating site using standard criteria and surveillance definitions. Data regarding hospital infection prevention and control policies were also obtained and correlated with prevalence rates.
Results: 176 hospitals (representing 65% of those eligible), participated in the survey, with representation from every province. 92 (52%) hospitals had 50-200 beds, 74 (42%) had 201-500 beds, and 10 (6%) had > 500 beds. The mean national prevalence rates of MRSA, VRE, and CDI are summarized in the Table. MRSA prevalence rates did not vary by region of the country, but VRE rates were lower in Atlantic provinces than in other regions of the country; mean CDI rates were higher in British Columbia, Ontario, and Quebec. MRSA, VRE, and CDI rates did not vary by hospital size, or whether it was a teaching hospital or not. MRSA, VRE, and CDI were healthcare-associated in 79%, 96%, and 84% respectively.

ORGANISM	NO. PATIENTS	MEAN PREVALENCE PER 100 INPATIENTS (95% CI)
MRSA		
Overall	1,930	5.0 (4.3)
Infection	246	0.6 (0.9)
VRE		
Overall	782	2.0 (2.7)
Infection	24	0.06 (0.3)
CDI	485	1.3 (1.3)

Conclusions: These data provide the first national prevalence rates for MRSA, VRE, and CDI in Canadian adult acute-care hospitals. In most cases the organisms were nosocomial or healthcare-associated. MRSA and VRE most often obtained from colonized patients identified during hospital screening.

WEDNESDAY, JUNE 20

ROOM 1 (TBA): PROGRAM EVALUATION

2:00-2:15 p.m.

INFECTION PREVENTION AND CONTROL WITHOUT BORDERS: EXPERIENCE OF A CANADIAN INFECTION CONTROL PRACTITIONER

Yasmine Chagla, *London Health Sciences Center, Ontario, Canada*

Issue: Infection prevention and control (IPAC) is a challenge in the developing world. The lacks of resources including availability of qualified staff, ineffective policies, and inadequate lab and administrative support are the key impediments.
Project: A 96 bed acute care facility in Mombasa, Kenya, received assistance in upgrading their IPAC program. It included: conducting gap analysis and audit, reviewing practices and procedures, providing resources and training, conducting evidence based improvements and networking with international Infection Control Organizations.
Results: Based on a pre-visit questionnaire, gap analysis was conducted using Community and Hospital Infection Control Association's (CHICA) auditing tools. 18 deficiencies were recorded. Coaching of local team resulted in creation of IPAC policies tailored to the local setting. Numerous IPAC related educational sessions were delivered that resulted in heightened awareness on hand hygiene, surveillance and monitoring of hospital acquired infections, cleaning and disinfection. A multidisciplinary Infection Control Team was appointed in partnership with microbiology laboratory. Networking with international bodies such as International Federation of Infection Control (IFIC), CHICA and Regional Infection Control Network (RICN) resulted in staff engagement with international IPAC forum.
Lessons Learned: In resource-deprived settings, infection prevention and control is neglected but serves as an essential component of local health care systems. Using a standardized approach with CHICA auditing tools, local input, education, and interventions may offer a significant benefit. Knowledge and resources from infection control professionals in the developed world may be essential to the growth of IPAC programs in resource poor settings.

2:15-2:30 p.m.

MAINTAINING DATA QUALITY IN ALBERTA HEALTH SERVICES' PROVINCIAL INFECTION PREVENTION AND CONTROL SURVEILLANCE PROGRAM

Jenine Leal[1], Kathryn Bush[1], Kimberley Simmonds[1], Nancy Alfieri[1], Elizabeth Henderson[1,2]
[1]*Alberta Health Services, Alberta, Canada,* [2]*University of Calgary, Alberta, Canada*

Issue: In 2011 Alberta Health Services' Infection Prevention and Control Program implemented a province-wide acute care surveillance initiative for Methicillin-resistant *Staphylococcus aureus,* Vancomycin-resistant Enterococcus, and *Clostridium difficile.* In accordance with standardized data quality frameworks, there are several dimensions that should apply to all surveillance systems. Current and future strategies for evaluating the surveillance data quality submitted by ICPs are described within the context of these frameworks.
Project: The data quality framework's main dimensions include accuracy, timeliness, comparability, usability, documentation, and relevance. The IPC surveillance team evaluated different strategies for data quality to determine which dimensions are currently incorporated and to identify dimensions requiring further development.
Results: The "accuracy" dimension is currently well evaluated. To assess accuracy, the database consists of over 200 logical/syntactic rules based on protocol definitions to validate data at the time of entry. Data are abstracted biweekly to run up to 21 algorithms to identify inconsistencies between data entry and protocol definitions and up to 46 algorithms to correct common data entry errors. There are also data quality checks for timeliness, completeness, comparability and resolution.
Lessons Learned: To ensure the data that are being collected, recorded, and distributed are accurate; data quality algorithms are employed by the surveillance team to evaluate and improve the quality and efficiency of the system. The system data quality checks require further evaluation using all dimensions of the data quality frameworks. Future data quality development will focus on prioritizing algorithms used for "accuracy" and creating new algorithms that target remaining dimensions.

2:30-2:45 p.m.

ENVIRONMENTAL CLEANING TOOLKIT: STANDARDIZING TRAINING TO ENHANCE CAPACITY FOR CLEANING

Grace Volkening, Brenda Smith, Nora Boyd
Public Health Ontario - Regional INfection Control Network, Ontario, Canada

Issue: When the Best Practice document on Environmental Cleaning by Ontario's Provincial Infectious Diseases Advisory Committee (PIDAC) was first released in Dec 2009, Ontario's Regional Infection Control Networks (RICNs) collaborated with Environmental Services partners (CAEM and OHHA) to create an educational toolkit to help "translate" the best practices document into practice changes in environmental cleaning.
Project: The Environmental Cleaning Toolkit was widely distributed to all healthcare facilities and public health units and the toolkit components were posted to the RICN website at www.ricn.on.ca in October 2010. One year later, the Regional Infection Control Networks evaluated the use of the toolkit components in standard-

izing and improving cleaning practices in health care facilities across the province.
Results: The Environmental Cleaning Toolkit was extensively used to train front line environmental services staff in a variety of healthcare settings. The Toolkit was found to be both user-friendly and useful by the majority of respondents. Other favourable comments and success stories were obtained through interviews and focus groups. Some suggestions for enhancements and additional supports were received. As well, there is international interest in the toolkit components.
Lessons Learned: Collaboration with stakeholders resulted in a sound product that met their needs. The process used will impact on the roll out of future Best Practice documents. The toolkit is recognized as a good start to standardizing and elevating cleaning best practices in the province.

2:45-3:00 p.m.

MEASURING THE EFFECTIVENESS OF TERMINAL CLEANING AT THE FOOTHILLS MEDICAL CENTER, A 1000 BED TERTIARY ACUTE CARE CENTER

Craig Pearce[1,2], Brenda Hannah[3], Theresa Kline[2], Thomas Louie[1,2], Frank Galetta[1], Nancy Alfieri[1], Elizabeth Henderson[1,2]
[1]Alberta Health Services, Alberta, Canada, [2]University of Calgary, Alberta, Canada, [3]Clifton Manor, Alberta, Canada

Background/Objectives: The primary objective was to quantify and map the biological contamination within private hospital rooms at Foothills Medical Center in Calgary Alberta. A secondary objective was to assess the ability of two common cleaning products (quaternary ammonium chloride and stabilized sodium hypochlorite) to remove biological contamination from hospital surfaces. The final objective was to compare two methods of measuring housekeeping efficacy (UV gel and microbiological sampling techniques).
Methods: Researchers covertly observed 9 housekeepers terminally clean 31 private rooms. Before entry to the room, researchers placed a UV fluorescent gel and swabbed 10 high touch surfaces. When the terminal cleaning was complete, the researcher re-entered the room to determine whether the UV spots were removed and take an additional 10 post cleaning swabs.
Results: Using the microbiological measuring technique, housekeepers were able to clean 50.9% of surfaces tested. Using the UV light technique, 81.8% of the surfaces were considered clean. These measures are statistically different ($p<0.001$), they also had a very poor inter-rate reliability ($k= 0.0365$). Neither cleaning product resulted in a higher proportion of "clean" surfaces, regardless of the measurement use (UV or micro sampling) ($p=0.7240$).
Conclusion: This study demonstrates that all high touch surfaces within the room require adequate cleaning. Results suggest that the type of cleaning product does not make an impact, and that cleaning technique may be of higher importance. Lastly, the use of UV gel is not a suitable substitute for measuring a reduction of biological contamination.

ROOM 2 (TBA): QUALITY AND PROCESS IMPROVEMENT

2:00-2:15 p.m.

C-DIFFICILE OUTBREAK DECLARED OVER- NOW YOUR WORK HAS BEGUN

Dawn Major, *Muskoka Algonquin Healthcare, Ontario, Canada*

Issue: MAHC is a large community, two sites, acute care facility located in Muskoka, Ontario. We experienced our first CDI (c-difficile infection) outbreak May 2010. We identified a number of things that needed to change to prevent future CDI issues at the organization and initiated a journey post outbreak for quality/process improvement.
Project: Post outbreak the team identified three factors contributing to the outbreak. They included condition of the furniture in the inpatient areas, disposal of human waste, and cleaning products/tools/ frequency. The result was five recommendations to prevent future outbreaks at the organization and they included the following:
1. Replace all worn and damaged furniture in the inpatient areas
2. Purchase stool systems that use single use disposable products
3. Purchase portable washers
4. Increase Environmental Services staffing levels
5. Increase Infection Prevention and Control staffing levels

A formalized proposal was written and funding sourced for the project. Once funding was secured, the proposal was rolled out across the organization by a project group utilizing a project management structure with monthly executive dashboard reports and meetings.
Results: MAHC had a CDI rate above the provincial average rate for 2010 but for 2011 has a rate that is below the provincial average rate.
Lessons Learned: Recommendations moving forward for Infection Prevention and Control Professionals are:
1. Formalize and share your recommendations that result from outbreaks
2. Seek senior team/board level support
3. Task your organization to seek funding for your recommendations
4. Utilize venues like the QIP (Quality Improvement Plan) to drive quality improvement initiatives
5. Celebrate your successes

2:15-2:30 p.m.

PATIENT WASH BASINS: A CLOSER OBSERVATION

Suzanne Plourde, Sandra Callery
Sunnybrook Health Science Centre, Ontario, Canada

Background: The hospital environment plays a role in the spread of microorganisms and efforts to reduce transmission are challenging. Although single use wash basins were introduced into our critical care areas, reusable wash basins continue to be found at point of care and often store personal patient items or clean equipment when not in use.
Investigations: An investigation was carried out in the cardiovascular intensive care unit (CVIC) and critical care unit (CRCU) of a large tertiary centre, to assess the environmental bioburden of reusable basins found at the bedside. On two separate days the reusable patient basins housed at the bedside were swabbed and specimens were sent to Advance Testing Laboratory Inc. for culture.
Results:
July 10, 2011 (n=10 basins in CRCU)
Gram-negatives were isolated from 60% of samples.
Enterococcus spp. was isolated from 30% of samples.
Vancomycin-resistant *Enterococcus* was isolated from 30% of samples.
S. aureus was not isolated from any samples.
August 13, 2011 (n=14 CrCU & n=7 CVIC)
Gram-negatives were isolated from 90% of samples.
Enterococcus spp. was isolated from 33% of samples.
Vancomycin-resistant *Enterococcus* was isolated from 33% of samples.
S. aureus was not isolated from any samples.
Conclusion: The patient's bacteria flora can be found in their environment and on equipment within their bedspace. To reduce contamination, storage of clean supplies and equipment within this space should be kept to a minimum. Considerations should be given to single use items that are either reprocessed or disposed of after each use.

2:30-2:45 p.m.

ADAPTATION OF PIDAC BEST PRACTICES TO IMPLEMENT IPAC MEASURES IN DAY NURSERY SETTINGS

Deborah Wharton, Debra Hayden
Toronto Public Health, Ontario, Canada

With the introduction of the Ontario Public Health Standards (OPHS) *Infection Prevention and Control in Licensed Day Nurseries Protocol*, Toronto Public Health engaged in a program, policy and procedural review to ensure the inspection process, educational materials and recommendations for day nurseries were current with IPAC best practices and the OPHS protocol. This involved a three-step process that included updating documents, training TPH staff and providing education to day nursery operators.
There are 878 licensed day nurseries in the City of Toronto. Day nurseries are considered high risk settings for the transmission of disease-causing microorganisms. There is a higher rate of respiratory and enteric illness amongst children attending day nurseries than amongst children cared for at home. IPAC measures applied in health care settings can serve as a model for day nursery settings. TPH felt it was prudent to utilize PIDAC best practice documents to develop its day nursery IPAC inspection program.

2:45-3:00 p.m.

PRETTY LITTLE LIARS VERSUS SHOWGIRLS: A COMPARISON BETWEEN COVERT AND OVERT HAND HYGIENE AUDITS

Melody Cordoviz[1], Janet Barclay[1], Uma Chandran[1], Matthew Feldman[1], Ariel Hendin[1], Jenna Horwitz[1], Sharla Manca[1], Sharon Pelletier[1], Kaitlin Trimble[1], Winnie Winter[1], Shelley Winton[2], Amber-Leah Wolfe[1], Adrianna Woolsey[1], Samantha Woolsey[1], Ian Albert[1], Mark Joffe[1]
[1]Royal Alexandra Hospital, AHS, Alberta, Canada, [2]Glenrose Rehabilitation Hospital, AHS, Alberta, Canada

Issues: At the Royal Alexandra Hospital (RAH), in Edmonton, Alberta, hand hygiene (HH) audits were conducted covertly, from the years 1999-2010. In 2011, Alberta Health Services (AHS) conducted a, province wide, overt HH audit.
Project: AHS provided the RAH with an iPad to conduct the audits. Staff were observed for the four moments of HH. Auditors could interact with staff by discussing which moment of HH was omitted or by showing a hand hygiene video, on the iPad. HH rates were provided to the unit in real time, daily.
Results: Historical covert HH data, when compared to the 2011 overt data, showed little difference. However, audits conducted covertly did not allow the auditor to engage with staff. In the overt audit, staff were interested in the iPad, the auditor's purpose on the unit and their HH rates. Being a physical presence on the unit opened up communication between staff and infection prevention and control (IPC).
Lessons learned: Staff did not know the four moments of hygiene. However, staff were more engaged when final HH results were released. The province-wide HH audit allowed sites to compare their rates with each other. Poor HH rates were no

longer only the RAH's dirty little secret. Individual sites across the province are now responsible for their HH rates. The province wide overt HH audit has launched HH initiatives from frontline staff all the way to AHS administration. Finally, the RAH IPC program may have to admit that honesty really is the best policy.

ROOM 3 (TBA): PRACTICE STANDARDS AND GUIDELINES

2:00-2:15 p.m.

HEALTHCARE PERSONNEL INFLUENZA IMMUNIZATION PROGRAMS – A BOLD NEW STEP FORWARD

Lois Crowe[1,2], Allison McGeer[3,4], Susan Quach[5,6], Larry Chambers[1,15], Po-Po Lam[4,1], Donna MacDougall[7,8], Shelly McNeil[10,8], Bonnie Henry[10,13], Julie Bettinger[14,13], Jeffrey Kwong[4,6], Anne McCarthy[2,12]
[1]Bruyère Research Institute, Ontario, Canada, [2]Ottawa Hospital Research Institute, Ontario, Canada, [3]Mt. Sinai Hosptial, Ontario, Canada, [4]University of Toronto, Ontario, Canada, [5]Public Health Agency of Canada/Canadian Institutes of Health Research Influenza Research Network Vaccine Coverage Group, Canada, Canada, [6]Public Health Ontario, Ontario, Canada, [7]St. Francis Xavier University, Nova Scotia, Canada, [8]Capital Health, Nova Scotia, Canada, [9]Canadian Center for Vaccinology, Nova Scotia, Canada, [10]BC Centre for Disease Control, British Columbia, Canada, [11]Canadian Coalition for Immunization Awareness and Promotion, Canada, Canada, [12]The Ottawa Hospital, Ontario, Canada, [13]University of British Columbia, Ontario, Canada, [14]Vaccine Evaluation Center, British Columbia, Canada, [15]University of Ottawa, Ontario, Canada

Issue: Convincing evidence shows healthcare personnel influenza immunization saves patient lives. Further evidence shows immunizing healthcare personnel reduces consequences of influenza infection, such as hospitalization or worsening of underlying illnesses in vulnerable populations; reduces the transmission of influenza to vulnerable persons; and can reduce work-time lost. To do no harm, ethically, all healthcare personnel are obliged to be immunized for influenza. Currently healthcare organizations spend considerable time and effort each year running comprehensive influenza immunization programs. Despite best efforts, Canadian healthcare personnel influenza immunization rates continue to stagnate or worsen.
Project: Over four years of a program of research involving a variety of projects, the Canadian Healthcare Influenza Immunization Network (www.chiin.ca) has concluded the evidence is clear. In a national survey of 1,127 healthcare organizations, a question was asked if organizations had program requiring influenza immunization for their personnel.
Results: In the survey, 134 of 721 respondents indicated they had a policy requiring healthcare personnel to be immunized for influenza.
Lessons Learned: Results of similar programs in the United States demonstrate consistent results with over 90% annual immunization rates. Voluntary healthcare personnel influenza immunization programs are problematic as they do not result in 90% or more of healthcare personnel taking influenza immunization. The next step indicated is to move to provincial, regional and healthcare organizations introducing policies that require influenza immunization as a condition of employment or appointment for healthcare personnel.

2:15-2:30 p.m.

PREVALENCE SURVEY OF CARE AND MAINTENANCE OF PERIPHEAL VENOUS CATHETERS (PVC) IN A TORONTO TEACHING HOSPITAL

Carla Corpus, Victoria Williams, Barbara Catt, Sandra Callery
Sunnybrook Health Sciences Centre, Ontario, Canada

Background: CDC-HICPAC guidelines state that the insertion and maintenance of intravascular catheters by inexperienced staff might increase the risk for catheter colonization and Catheter Related Blood Stream Infections (CRBSI). Specialized Intravenous teams (IV team) have shown unequivocal effectiveness in reducing the incidence of CRBSI, associated complications, and costs. As a cost saving measure, our hospital "IV team" was reduced and primary responsibility of PVCs given to the unit nurse. Hospital policy incorporates Best Practices including documentation of the insertion date at the PVC site.
Objective: To describe compliance with current guidelines on care and maintenance of PVCs in a teaching hospital
Methods: Prevalence survey was conducted in 18 inpatient units from September to November 2011. An audit tool was developed. Chart review and visual inspections were conducted to determine the date of PVC insertion, labeling, and documentation of the site condition.
Results: 206 PVCs were audited. 62 (30%) had continuous infusion and 144 (70%) had saline lock. 179 (86%) were found with some documentation. 112 PVCs (54%) were labeled on the insertion site. 49 (27%) were in situ >72 hours. PVCs were in situ an average of 2.37 days (range from 0 to 9 days). 3 phlebitis (1.3%) and 3 local site infections (1.3%) were identified.
Conclusion: Only 54% of PVCs were in compliance with hospital policy. Incomplete or missing documentation was the most common finding. In the absence of a dedicated IV team documentation is critical for the measurement of compliance with best practices and evaluation of practice changes.

2:30-2:45 p.m.

MIND MAPPING FOR HAND HYGIENE IMPROVEMENT: A TOOL SUPPORTING THEMATIC ANALYSIS AND COMMUNICATING FOCUS GROUP DATA WHILE CONTINUING THE DIALOGUE

Laurie Boyer, Kim Carter, Anne Sevigny, Linda Geisler, Kathy Walsh
North Bay Regional Health Centre, Ontario, Canada

Issues*:* Drawing themes from hundreds of comments collected in the course of carrying out focus group sessions regarding hand hygiene practices with multidisciplinary teams is a daunting task, whether one has access to qualitative data analysis software or not! A mind map is a diagram used to represent words, ideas, tasks, or other item linked to and arranged around a central key word or idea. Mind maps are used to generate, visualize, structure, and classify ideas, and as an aid to studying and organizing information, solving problems, making decisions, and writing.
Project: Data collected from focus groups held with participants from the multidisciplinary team providing services on an acute surgical service was arranged thematically in the form of a mind map. The formal focus group report structure emerged organically from this treatment. The map itself was then be printed in large format and easily posted for review by participants, as well as non-participants. This provided a point of reference inciting continued discussion on the subject of hand hygiene on this unit, engaged more staff in the initiative and moving the discussion ahead.
Results: Allowing people to literally draw their own linkages on the map and consider how the various concepts affecting the multifactoral challenges to hand hygiene compliance has enabled the consideration of previously unconsidered perspectives and solutions. Both those who participated in the original focus groups sessions and those who did not were able to benefit from the format used in returning the data to those who could act upon it.
Lessons Learned:

- Providing a visual reference of previous discussion and themes previously covered regarding hand hygiene allowed more participants to become engaged in improving hand hygiene than originally permitted by way of the initial focus group venue.
- Data presented as a mind map appeals to visual, spatial and interpersonal and intrapersonal learning styles.
- The lack of widespread familiarity with the concept of mind mapping provided a point of initial interest that allowed the facilitators to engage a broad group of additional participants in improving hand hygiene.
- The mind map was able to be expanded to include interventions that had been undertaken in response to issues identified as barriers to hand hygiene compliance such as lack of alternative delivery options for products, skin care program, tabs installed to indicate when sanitizer dispensers were empty, and may other points that were added to the map.

Markers were provided and the map left in the work area. Staff and multidisciplinary team members were encouraged to add their ideas to the map, draw lines between concepts that they felt were related, or otherwise leave messaging about hand hygiene successes, challenges, recognition for each other. Many became engaged in adding to the mind map and describing the concepts to others.

2:45-3:00 p.m.

IPAC CONSTRUCTION-RENOVATION: AN UNTAPPED RESOURCE

Marion Yetman[1], Joshua Abeling[2]
[1]Department of Health & Community Services, Newfoundland Labrador, Canada, [2]Memorial University (MUN) School of Engineering, Newfoundland Labrador, Canada

Issue: IPAC has been defined as "vital as the bricks" during new construction and renovation of healthcare facilities. This additional responsibility can be onerous given the already overwhelming daily workload of the ICP. The purpose of this presentation is to introduce a new member to the IPAC construction/renovation team.
Project: The PIC-NL group identified a need to have a subcommittee to address provincial infection control issues relating to construction/renovation. The subcommittee has representatives from the province and from each regional health authority representing IPAC and construction. During the period January-April 2012 an engineering student from MUN School of Engineering did a Work Term placement with the Department of Health & Community Services. He agreed to work with the subcommittee and focus his Work Term project on IPAC and his particular topic was entitled "Sinks in Healthcare Facilities".
Results: Under the direction of the subcommittee the student did a literature review of the topic, interviewed key stakeholders, contacted manufacturers, presented his findings to the committee and submitted recommendations of hand hygiene sinks for healthcare facilities. Additionally his project will be written up for his professor which will highlight the importance of including IPAC in the curriculum for engineers.
Lesson Learned: The student was an asset in terms of research ability, knowledge of construction, interest in prevention of infections during construction/renovations and availability of time to devote to the project. It was an opportunity to provide engineering students with knowledge of the important role of IPAC in facility construction/renovation.

POSTER PRESENTATIONS

Posters available for viewing in Centennial Hall from Monday, June 18 (Opening Reception), Tuesday, June 19 and Wednesday, June 20 (during exhibit hours). Posters tear down Wednesday at 3:30 p.m. Poster Presentations will be held Tuesday or Wednesday 12:30-1:30 p.m.

TUESDAY, JUNE 19

POSTER BOARD #1

INFECTION CONTROL RELATED DESIGN FEATURES OF NEEDLELESS CONNECTORS

Gillian Strudwick[1], Renee Logan[2]
[1]Baxter Healthcare, Ontario, Canada, [2]University Hospital of Northern British Columbia, British Columbia, Canada

Issue: Needleless connectors are a known source of bacterial contamination to the intravenous therapy delivery system. Consequently, several connector design features play an important role in minimizing the risk of infection to the patient. Of these design features there are certain features that specifically aid clinicians in minimizing and preventing the entry of bacteria into the vascular system.
Project: A review of needleless connector design features important to infection control was completed.
Results: This oral presentation will talk about the results of the review in looking at important design features of a needleless connector from an infection control perspective. It will also outline some of the criteria that could be used at a product evaluation committee level to evaluate the infection control principles of a needleless connector.
Lessons Learned: Some of the important infection control design features of needleless connectors have become incorporated into many of the designs of needleless connectors currently on the market; however, there are still several features that have yet to be incorporated into all designs.

POSTER BOARD #2

FROM POSITIVE TO NEUTRAL: EVALUATING THE IMPACT ON CATHETER OCCLUSIONS AND BLOOD STREAM INFECTIONS

Renee Logan, *University Hospital of Northern British Columbia, British Columbia, Canada*

Issue: Literature has suggested that IV catheter related occlusions may lead to an increased risk of IV catheter related infections. Furthermore, there are a number of designs of needleless connectors that may also have an impact on catheter occlusions. These designs are referred to as either positive, negative or neutral displacement.
Project: This poster will review a quality improvement project where occlusion and blood stream infections were tracked for six months before and six months after the implementation of a neutral displacement needleless connector. The previous connector used was positive displacement.
Results: The poster will describe the methodology used for tracking occlusions and blood stream infections, as well as the results of the tracking initiate.
Lessons Learned: Lessons learned will be collected at the end of the data collection period and made available.

POSTER BOARD #4

HOW WELL CAN HEALTHCARE ORGANIZATIONS MEASURE INFLUENZA IMMUNIZATION COVERAGE IN THEIR HEALTHCARE WORKERS?

Susan Quach[1], Jennifer Pereira[1], Christine Heidebrecht[1], Natasha Crowcroft[1,9], Jeff Kwong[1,6], Sherman Quan[1,12], Jemila Hamid[3], Lois Crowe[5], Maryse Guay[6,7], Allison McGeer[10,9], Larry Chambers[5,11], Julie Bettinger[2]
[1]Public Health Ontario, ON, Canada, [2]Vaccine Evaluation Center, University of British Columbia, BC, Canada, [3]McMaster University, ON, Canada, [4]University of Toronto, ON, Canada, [5]Élisabeth Bruyère Research Institute, ON, Canada, [6]Institute for Clinical Evaluative Sciences, ON, Canada, [7]Département des sciences de la santé communautaire, Université de Sherbrooke, Longueuil, ON, Canada, [8]Institut national de santé publique du Québec, QC, Canada, [9]Laboratory Medicine and Pathobiology, University of Toronto, ON, Canada, [10]Mount Sinai Hospital, ON, Canada, [11]Department of Epidemiology and Community Medicine, University of Ottawa, ON, Canada, [12]Centre for Innovation in Complex Care, University Health Network, ON, Canada

Objectives: To describe the ability of organizations to measure influenza immunization coverage in their healthcare workers (HCWs) and identify factors associated with comprehensive measurement.
Methods: An online survey was sent to influenza immunization campaign planners who were responsible for delivering the 2010/11 influenza immunization to HCWs working in Canadian acute care hospitals or continuing care organizations. We collected data on influenza immunization coverage measurement, and practices and policies related to tracking influenza immunizations in HCWs. The primary outcome was having comprehensive measurement of immunization coverage across all applicable seven personnel groups in the numerator and denominator (payroll, non-payroll physicians, non-payroll personnel, volunteers, personnel on extended leave, students/trainees, casual).
Results: Of the 1127 healthcare organizations approached, 721 (64%) responded.Most organizations measured coverage for personnel on payroll (92%) and casual personnel (75%), while less than half measured coverage for other groups. After controlling for the type and size of health care organization, organizations that had a written implementation plan (OR= 2.0 [95% CI: 1.1, 3.5]) or a policy describing how to calculate or report immunization rates (OR= 2.1 [95% CI: 1.2, 3.9]) were more likely to have comprehensive measurement of coverage than organizations without these characteristics.
Conclusion: Most organizations had incomplete measurement of influenza immunization in their HCWs. Therefore, improvements need to be made on how this is tracked and measured to effectively prevent and control the transmission of influenza in the healthcare setting.

POSTER BOARD #6

0013 IMPROVING THE RATES OF TB SCREENING, PNEUMOCOCCAL AND TD IMMUNIZATION ON ADMISSION - ONE FACILITY'S EXPERIENCE

Jane Van Toen, Heather Candon, Latha Jacob, Chinqiz Amirov
Baycrest, Ontario, Canada

Issue: The *Ontario Long Term Care Act* stipulates admissions to Long Term Care must be screened for tuberculosis and offered pneumococcus and tetanus/diphtheria immunization. The rate of compliance with this requirement was unknown at our facility.
Project: Chart reviews indicated low compliance. Infection Prevention and Control (IP&C) spearheaded a project to identify barriers and develop plans to address the issues. The project targeted only new admissions with the goal to improve the overall facility rate over time. Educational material was developed and small group and one-on-one meetings were held. IP&C performed ongoing audits and feedback reports. A complete chart audit was performed after one year.
Results: Pre-intervention, evidence of tuberculosis screening was 73%, pneumococcus and tetanus/diphtheria vaccination was < 1%. A one-year post-intervention review of new admissions showed compliance at 98% for tuberculosis screening and 96% for both pneumococcus and tetanus/diphtheria vaccination. Facility-wide this increased the percentage of TB-screened residents to 85%, pneumococcus-immunized to 40% and tetanus/diphtheria-immunized to 24%.
Lessons Learned: Prior to the project, staff was unaware of the requirement. Extensive education was required. Documentation was an area for improvement. Due to different unit operations, a flexible approach was required to manage reporting and follow up. Auditing and follow up, particularly in the initial stages, was very time consuming. Based on the current rate of admission and discharge, it is estimated it will take three to four years, to increase the overall facility-wide percentage of screened and immunized residents to 100%.

POSTER BOARD #8

PATIENT EMPOWERMENT: THE MISSING LINK TO HAND HYGIENE

Juliana Barry, Debbie Steele, Gail Barwise, Gloria Smith (student nurse) *Queen Elizabeth Hospital, PE, Canada*

Issue: During the summer of 2011 more than 900 hand hygiene audits were completed throughout a 274 bed acute care hospital. Results indicated good compliance rates for health care providers. However, at the same time, a cluster outbreak of MRSA occurred on the Rehabilitation Unit. Strain typing determined that all cases were linked. After investigation, it was determined that the MRSA was more likely spread by the patients themselves, as they were seen sharing items and

helping each other, rather than by health care provider's hands. Yet current hand hygiene audits focus on the health care providers and omit the fact that patients themselves are an integral part of breaking the chain of infection.
Project: Callan (2011) describes the concept of empowering patients to complete hand hygiene. Through empowerment, patients are given the opportunity, knowledge and skills by their health care provider and other educational sources to perform a task. Using the concept of patient empowerment, a pamphlet was developed for patient and family hand hygiene. Nursing staff will use this to provide education to all admissions, including family members. Also, each inpatient will receive a personal bottle of alcohol based hand sanitizer to keep at their bedside. To enhance compliance, nursing staff will be expected to document that education was done.
Results: This initiative will be launched in 2012.
Lessons Learned: As learned from the summer 2011 cluster outbreak of MRSA, patients can be the source of transmitting germs and should not be excluded from hand hygiene initiatives.

POSTER BOARD #9

EXPLORING THE ADAPTATION OF A THEOLOGICAL DECISION-MAKING MODEL IN A HEALTHCARE MANAGEMENT SETTING

Stefanie Ralph, *McMaster University, Ontario, Canada*

Issue: Kissoon, Campbell, & Syed (2009) studied healthcare organization decision-making processes in organizations across Canada and the world. They found «operating models and decision-making frameworks are often ad hoc and informal» leading to «confusion, conflict, frustration and unsatisfactory decisions»(p.30). In order for Infection Prevention and Control (IPAC) leaders/teams to make effective decisions a decision-making model should be used.
Project: The concepts described by Morris & Olsen (1997) have been adapted to healthcare settings in the form of a team decision-making model. Although the model is foundationally rooted in the church, the concept of working together as a community to make decisions (laying aside biases, egos, and preconceived notions) can be beneficial when applied to Infection Prevention and Control management decisions.
Results: The components of the adapted model include: Defining; the group must define the problem, Detaching; identify and lay aside preconceived notions, Grounding; examine the literature and evidence, Exploring; explore possible solutions, Improving; improve all potential solutions, Contemplating; contemplate the result each would achieve, Resolving; make a final decision in principle, Resting/Reviewing; meeting on a separate day to finalize the decision allowing time for individual review and reflection. All stages are influenced by listening to the members of the decision making team and the community affected by the decision.
Lessons Learned: Concepts developed outside of a healthcare setting can be adapted and applied to the effective management of IPAC departments and programs. This project is an example of how a theological concept was adapted into a healthcare management decision-making model.

POSTER BOARD #10

SUCCESSFUL IMPLEMENTATION OF A PROGRAM TO INCREASE STAFF INFLUENZA VACCINATION RATES IN LONG TERM CARE HOMES

Amanda Knapp, Julia Hodgson, Mary Peterson, Natalie Lalonde, Robyn Garrison
Kingston, Frontenac, and Lennox & Addington Public Health, Ontario, Canada

In the spring of 2011, it was identified that the annual staff influenza immunization rates had been declining over the past number of years in the long term care homes (LTCHs) in the Kingston, Frontenac, and Lennox & Addington Public Health area. Staff immunization rates varied from a low of 13% to a high of 97% during the time period of 2005 - 2009. In 2010 the rates were between 51 - 91% (average 69.3%), with most of the LTCHs having staff vaccination rates under 80% (7 of 10 LTCHs). We collaborated with our community partners who work in infection prevention and control in the long term care homes to develop a campaign to increase influenza vaccination of staff. Educational items included a presentation and short messages to be used with staff to dispel some of the common myths about the vaccine. Incentives included challenges, and rewards for LTCHs with high rates. Staff influenza immunization rates for the 2011-2012 influenza season was 66-97% (average 89.1%) with all but one LTCH achieving a rate >85%. Education and incentives together were most effective in engaging staff.

POSTER BOARD #12

TACKLING VRE IN A COMMUNITY HOSPITAL WITH TEAMWORK AND TENACITY: LESSONS LEARNED

Sumana Vinod, Paula Raggiunti
Rouge Valley Health System, Ontario, Canada

Issue: A VRE Outbreak was declared November 2010 in a large community hospital impacting two acute care and two complex continuing care units. A number of infection control measures were immediately put into action with an ongoing focus on environmental controls, adherence to hand hygiene and isolation protocols. Despite concerted efforts to resolve the VRE outbreak in a timely fashion, ongoing transmission of VRE continued with three distinct peaks identified throughout the one-year period. A total of 110 patients became colonized with VRE.
Project: An outbreak management team was established. Control measures focused on: hand hygiene, contact precautions, personal protective equipment, dedicated equipment, active surveillance, patient, staff and visitor control measures, assessment of furniture and equipment, education, audits, enhanced laboratory testing, cleaning and disinfection etc.
Results: A cause and effect review was conducted within the first two months of the outbreak which identified potential infection control breaches and opportunities to strengthen and/or reinforce infection control practices. Among the infection control measures implemented, the removal of furniture and equipment with hard to clean surfaces proved instrumental in halting further VRE transmissions.
Lessons Learned:

- A multi-faceted approach to outbreak management is fundamental, engaging key stakeholders and departments including senior management support.
- Ongoing communication and daily/weekly briefings
- Maintaining staff morale and team cohesiveness throughout the outbreak
- Implementing rapid testing by PCR for VRE
- Replacement of furniture and equipment with hard to clean surfaces
- Baseline swabs for all patients admitted to the affected units
- Application of Lean principles to outbreak management

POSTER BOARD #14

HAND HYGIENE SINKS: MEETING CSA Z8000 SPECIFICATIONS

Marion Yetman[1], Joshua Abeling[2], Merlee Steele-Rodway[3]
[1]Department of Health & Community Services, Newfoundland Labrador, Canada, [2]Memorial University of Newfoundland, Newfoundland Labrador, Canada, [3]Eastern Health, Newfoundland Labrador, Canada

Issue: Hand hygiene is seen by many health care professionals as the most important factor in preventing hospital acquired infections. Key to promoting hand washing is availability of hand hygiene sink. The CSA Z8000 Standards for Health Care Facilities released September 2011 has given clear guidelines as to the design, placement and use of these sinks. The standard has raised concerns over practicality and availability of these new sinks.
Project: A MUN Engineering student worked with the IPAC Construction/renovation subcommittee from January - April 2012. He focused his Work Term assignment on "Sinks in Healthcare Facilities". The project entails a comprehensive summary of information relating to all aspects of hand hygiene sinks with recommendations for improvements.
Results: A literature review revealed that sink design can led to significant morbidity and mortality for patients. Key stakeholder interviews identified problems encountered with present sinks. Sink manufacturers showed interest in developing prototypes to meet the Z8000 specifications.
Lesson Learned: The Z8000 sink design specifications have not been validated as meeting the needs of all healthcare facilities. This has lead to challenges in procuring the sinks and reassuring contractors that this is the best sink design for healthcare facilities. Research is needed to evaluate the recommended sink design in various healthcare settings to confirm the merit that this design will contribute to patient safety. The information gathered for this Work Term assignment will be valuable to the healthcare community as they make decisions in adopting the new Z8000 hand hygiene standards.

POSTER BOARD #16

IMPLEMENTATION OF AN ARO OUTPATIENT CLEANING PROTOCOL BASED ON A PATIENT CENTERED ENVIRONMENTAL CONTAMINATION RISK ASSESSMENT

Laurel Nicholson[1], Kimberly Peel[1], Alison Chant[1], Judy Oliver[1], Judy Tearoe[1], Robyn Hunter[1], Eva Thomas[2], Ghada Al-Rawahi[1,2]
[1]BC Cancer Agency, British Columbia, Canada, [2]Children's and Women's Health Centre of British Columbia, British Columbia, Canada

Issue: The increasing prevalence of Antibiotic Resistant Organisms (ARO) challenges health care professionals worldwide. This is particularly important in immunocompromised patients who are at increased risk for complications from ARO infections. Managing these patients with contact precautions, including environmental cleaning after each encounter, has a significant burden on the day-to-day operation in an outpatient setting.
Project: An ARO Outpatient Cleaning Protocol was developed to reduce the burden of environmental cleaning on clinic schedules. The protocol is dependent on a risk assessment performed at each visit to determine whether the patient is colonized or infected. The Infection Control Practitioner (ICP)'s role includes supporting staff to understand the potential risks for environmental contamination and providing education on recognizing colonization versus infection.

POSTER PRESENTATIONS

Results: Implementation of the protocol was smooth. Initial requests for reinforcement of staff education have now tapered; staff report feeling comfortable with independent risk assessment. The success of implementation has encouraged another cancer center in the organization to begin to adopt the protocol.
Lessons Learned: Initially, staff was apprehensive about making decisions that were perceived to be under the role of the ICP; leadership support was instrumental in changing this perception. A need to update patient education materials was identified through the process.

POSTER BOARD #18

PITFALLS IN IMPLEMENTING A PATIENT EMPOWERMENT INITIATIVE AS PART OF THE HAND HYGIENE PROGRAM IN A GERIATRIC FACILITY.

LATHA JACOB, JANE E VAN TOEN, HEATHER CANDON, CHINGIZ AMIROV
BAYCREST, ONTARIO, Canada

Issue: Baycrest is a large geriatric facility, where a multi-faceted hand hygiene (HH) program has been in place for several years. It was felt that introducing a patient empowerment initiative would increase residents, family members and staff awareness of the importance of HH and enhance the current program. The initiative focused on increasing the comfort level of patients and their families in reminding and requesting HH from healthcare providers and staff in receiving such reminders.
Project:

- Educational material was prepared and distributed to residents, family members and staff.
- The project was branded as "I know it's OK...to ask you to wash your hands".
- A pre- and post-assessment questionnaire was developed.
- Comment cards were made available to solicit feedback.
- The initiative was piloted on one specific unit.

Results: Difficulties were encountered in communicating the initiative. In the resident population, this was due to cognitive and physical impairments; whereas, with family members, it was due to lack of availability. These communication issues forced us to abandon the pre- and post-assessments. Some comments cards were submitted and indicated that education and reminders on hand hygiene need to continue.
Lessons Learned: Even though patient empowerment has been implemented in other patient population with some success, our experience warrants additional awareness towards potential pitfalls of implementing and evaluating similar initiatives in geriatric facilities.

POSTER BOARD #20

SURVEY OF PRACTICES USED FOR MEASURING HAND HYGIENE ADHERENCE AMONG CANADIAN ACUTE CARE FACILITIES

Robyn Mitchell[1], Kim Allain[2], Jun Chen Collet[3], Cindy O'Neill[4], Laurie O'Neil[1]
[1]Public Health Agency of Canada, Ontario, Canada, [2]IWK Health Centre, Nova Scotia, Canada, [3]B.C Children and Women's Hospital, British Columbia, Canada, [4]Hamilton Health Sciences, Ontario, Canada

Background: Hospitals across Canada have been directed to measure hand hygiene (HH) adherence with limited guidance provided on how to develop and conduct hand hygiene audits. The objectives of this survey were to describe current practices, methodologies and tools used for measuring HH adherence and for providing feedback among Canadian acute care facilities.
Methods: An online survey was developed and distributed through CHICA-Canada and AIPI-Québec from September 19 to October 14, 2011. One survey per acute care facility was completed.
Results: A total of 125 surveys were completed across 10 provinces, with a response rate of 42%. The majority of facilities (94%, n=117) reported conducting observational HH audits, 17% (n=20) use consumption of products and 4% (n=5) use self-report to measure HH adherence. Ninety-two percent use paper-based forms and 14% use personal digital assistants to collect HH data. Twenty-five percent of facilities collect HH data quarterly. Fifty-eight percent of facilities reported using tools from Ontario's "Just Clean Your Hands" program and 47% use tools from the Canadian Patient Safety Institute's "Stop! Clean Your Hands" program. Thirty-one percent of facilities correlate HH adherence rates to infection rates and only Ontario facilities publicly post their HH adherence results on their facility website.
Conclusions: This survey describes a variety of methodologies used to measure HH adherence in Canadian acute care facilities and informs infection prevention and control professionals on practices used for measuring HH adherence.

POSTER BOARD #22

PREVENTING CATHETER-ASSOCIATED URINARY TRACT INFECTIONS (CAUTI) IN A REHABILITATION FACILITY, MEETING THE STANDARDS

Lisa Harris, Jennifer Grant, Leslie Forrester
Vancouver Coastal Health, British Columbia, Canada

Issue: GF Strong Rehabilitation Center provides 78 in-patient beds to clients with spinal cord injury, acute brain injury, arthritis and neuromuscular disease. Comparison of HICPAC Prevention of Catheter-Associated Urinary Tract Infection guidelines to current practices revealed that staff were using clean technique to insert all urinary catheters, reusing urinals to empty drainage bags, disconnecting drainage bags from indwelling catheters twice a day and that non-sterile drainage bags were connected directly to indwelling catheters.
Project: Sterile technique was taught and reviewed with all staff, catheters were inserted using sterile technique and attached to sterile drainage bags, non-sterile bags were piggy-backed to a sterile leg bag overnight, clean, client-specific containers were used to empty urine. Surveillance began with a Point Prevalence study and continued monthly, UTI events were reported to staff, and multiple education sessions were provided.
Results: Practice for catheter insertion and management has improved. Monthly UTI events are unchanged during the first 6 months of follow up surveillance.
Lessons Learned: Practices often deviate from guidelines. Regular review of guidelines supports best practice. Appropriate, timely treatment may improve care further.

POSTER BOARD #24

GIVING BACK: THE CAMEROON TWINNING PROJECT

Shirley McDonald, Paul Webber, Lesli Anawati, Dana Anderson, Bonnie Carter, Sue Cooper, Amanda Knapp, Sally MacInnis, Jacob nkwan, Elizabeth Palmateer
CHICA Eastern Ontario's Cameroon Twinning Project Subcommittee, Ontario, Canada

Issue: In 2010, CHICA-Eastern Ontario (CHICA-EO) twinned with Infection Control Professionals (ICPs) in Cameroon, West Africa to provide knowledge exchange and support.
Project: A needs assessment provided by the Cameroon Health Board (CHB), set short- and long-term program goals. Interested chapter members formed a subcommittee. In 2011 following fundraising efforts, donated medical supplies were shipped. In early 2012, two chapter members visited Cameroon to assist with auditing and rollout of a facility-wide hand hygiene program.
Results: CHICA-EO successfully twinned with ICPs in Cameroon. Benefits to Cameroonian ICPs included membership in CHICA-Canada for one ICP, receipt of medical supplies and mentorship by Canadian ICPs. Benefits to Canadian ICPs included better understanding of infection prevention and control (IP&C) in developing countries and the opportunity to provide meaningful assistance. A visit by chapter members enhanced the relationship, allowing them to gain first-hand IP&C experience in a developing country and share knowledge and skills with Cameroonian ICPs.
Lessons Learned: Twinning is expensive! Early expectations from the CHB were high and exceeded initial resources. Funds were best utilized by selecting one or two projects to focus on for the year, rather than trying to meet multiple needs. The cost of shipping to Cameroon was also excessive, making fundraising the priority of our first year. Communications with Cameroonian ICPs was sporadic due to scarcity of electronic equipment and unreliable internet connections. Finally, travel to Cameroon became inevitable, to familiarize ourselves with needs and assist in bringing educational materials to the CHB, avoiding shipping expenses.

POSTER BOARD #26

INFECTION PREVENTION AND CONTROL PROGRAMS INPUTS TO ENVIRONMENTAL SERVICES IN CANADIAN ACUTE CARE HOSPITALS: PRELIMINARY FINDINGS FROM THE CANADIAN HOSPITALS ENVIRONMENTAL SERVICES STUDIES (CHESS)

Dick Zoutman[1,2], B. Douglas Ford[1], Keith Sopha[3]
[1]Queen's University, ON, Canada, [2]Quinte Health Care, ON, Canada, [3]Homewood Health Centre, ON, Canada

Background: The purpose of the Canadian Hospitals Environmental Services Studies is to assess Environmental Services (ES) resources and activities and the inputs of Infection Prevention and Control (IPC) to ES and to examine the relationships with healthcare-associated infections. This presentation focuses on IPC inputs to ES.
Methods: ES managers in 245 Canadian hospitals with 80 or more acute care beds completed an online survey about ES in their hospital. IPC managers in the same hospitals completed a second online survey about IPC inputs to ES. Both surveys were developed in conjunction with an expert steering committee and were in French and English.
Results: These preliminary results are from 31ES and 48 IPC programs. 77% of IPC programs have a designate to liaison with ES. 94% of IPC programs provided educational services to ES. 73% of IPC managers reported education provided to ES was well received. 79% of IPC and 90% of ES managers reported IPC was consulted regarding cleaning product choices often or always. 73% of IPC and 93% of ES managers reported IPC was consulted often or always before changes were made to cleaning procedures. 88% of IPC and 100% of ES managers reported cooperation between the services was good to excellent. 64% of IPC managers thought ES staff were adequately trained. Only 57% of IPC managers thought their hospital was sufficiently clean for IPC purposes.

Conclusions: The positive relationship and good cooperation between ICP and ES services could be utilized to improve ES staff training and hospital cleanliness.

POSTER BOARD #30

TERMINAL CLEANING: DOES TIME OF DAY MATTER?

Craig Pearce[1,2], John Conly[1,2]
[1]*Alberta Health Services, Alberta, Canada,* [2]*University of Calgary, Alberta, Canada*

Background/Objectives: The Infection Prevention and Control team at Foothills Medical Center, a 1000 bed tertiary acute care centre in Calgary, Alberta, questioned whether there was a significant difference in terminal cleaning duration depending on the time of day. The authors hypothesized that terminal cleans occurring during night shifts may be different than during the day shifts (day and evening).
Methods: Environmental Services uses BedTracking (Teletracking V 3.06) software to track all housekeeping tasks. Terminal cleaning information was extracted from 5 separate medical nursing units over 3 years (2008, 2009, 2010). Data was stratified by shift (day, evening, night), year, and by unit. A Yates corrected Chi-squared test and odds ratios with 95% confidence intervals was employed to analyse the data.
Results: After reviewing 37, 380 terminal cleanings, findings indicated that the average length to terminally clean a room differed significantly between the night and daytime shifts. The average cleaning time for day and evening shifts was approximately 38 minutes versus an average of 25 minutes for night shifts. These averages are significantly different ($p<0.001$).
Conclusions: It has been shown previously that patients are at an increased risk of acquiring an antibiotic resistant organism if the prior occupant of their room was infected or colonized. If rooms are not being cleaned adequately during the night shift, the potential risk of environmental transmission to the next admitted patient may be increased. Equivalent cleaning at all times of the day should be emphasized.

POSTER BOARD #32

CONTACT PRECAUTIONS: BY THE RULES OR WHATEVER WORKS!

Darlene Fawcett, Linda Fletcher
Ontario Shores, Ontario, United States

In a hospital setting, a positive ARO (Antibiotic Resistant Organism) result requires implementing contact isolation. Studies show contact isolation can foster feelings of anxiety and depression, result in poorer communication between staff and patient and increase risk for adverse events. Implementing contact precautions can be a challenge in a mental health setting as isolating a patient to a room can also exacerbate an already poor mental health state.
At Ontario Shores, modified contact isolation has been implemented to accommodate patient treatment in a communal therapeutic setting, reduce transmission risk and promote a healthy mental status.
Following a positive ARO result, the ICP meets with the treatment team to assess the patient for the following criteria:
- 1) Can the patient understand instruction?
- 2) Will the patient cooperate?
- 3) Does the patient practice good personal hygiene?
- 4) Is the patient continent?
- 5) Can excretions be contained?

When the above criteria are met, contact isolation is modified and patients are not restricted to their bedroom.
Patients are assigned a dedicated bedroom and bathroom.
Signage is posted.
Staff is required to monitor the patient ensuring ongoing compliance with criteria.
Prevalence testing measures the effectiveness of the modified contact isolation.
Lessons Learned:
1. Involve the treatment team.
2. Assess each patient using the criteria.
3. Modify contact isolation based on the criteria.
4. Staff agrees to monitor patient for compliance.

Providing the above criteria are met, modified contact isolation will minimize risk of transmission and promote good patient outcomes.

POSTER BOARD #34

BLOOD CULTURE SURVEILLANCE FOR A CARDIAC SURGERY PATIENT UNIT AND A CARDIAC INTENSIVE CARE UNIT

Melissa Zambrano, Pam Siddall
Trillium Health Centre, Ontario, Canada

Objective: Data on positive blood cultures from April 1 2009 to December 31 2011 for cardiovascular patients were analyzed to determine the rate of hospital acquired sepsis.
Method: The Infection Control Practitioner (ICP) uses MEDITECH to collect blood culture data over a 33 month period from April 1 2009 to December 31 2011. The data collected included patient name, unit number, collection data, unit, physician, number of patient days and results. Definitions from Safer Health Care Now! were followed to determine true positive blood cultures and contaminated blood cultures. The ICP also reviewed admission dates and length of stay for each patient that had a true positive blood culture to determine hospital acquired septicaemia and present on admission sepsis. Rates for hospital acquired positive blood cultures were calculated as:
Number of patients with true positive blood cultures per month X 1000 Number of patient days per month
Results: A total of 385 cardiovascular patients had blood cultures taken over the 33-month period. Of the 385 patients, 306 (79.4%) patients were identified as having negative blood cultures. It was also determined that 23 (6.0%) patients had contaminated blood cultures and 56 (14.5%) patients had true positive blood cultures. Of the 56 true positive blood cultures, 54 (14.0%) were acquired in hospital. The average rate of hospital acquired positive blood cultures for April 1 2009 to December 31 2011 is 1.57/1000 patient days. The year 2011 had the highest rate of hospital acquired positive blood cultures with a rate of 2.02/1000 patient days.
Conclusions: After analyzing the results, a decision was made to focus on central line associated blood stream infections as a quality improvement indicator. This includes a review of best practice, education, and audits of practices. Quality improvement outcomes will be evaluated through continuous surveillance of central line blood stream infections.

POSTER BOARD #36

HAS INCREASED HAND HYGIENE COMPLIANCE CONTRIBUTED TO IMPROVED PATIENT SAFETY: ANALYSIS OF ONTARIO'S PATIENT SAFETY INDICATOR DATA FROM 2008-2010

Mandy Deeves, Giulio DiDiodato
North Simcoe Muskoka Infection Control Network, ON, Canada

Background/Objectives: Hospital-acquired infections (HAI) have been estimated to affect 1 in 9 Canadian patients. Hand hygiene is considered the most important and effective intervention for the prevention of HAI. Since 2009, all hospitals in Ontario have been mandated to publicly report healthcare provider compliance with hand hygiene best practices, as well as 8 other Patient Safety Indicators (PSI). This study characterizes the temporal trend in hand hygiene compliance (HHC) across all Ontario hospitals and analyzes the association between HHC rates and the incidence rates of MRSA bacteremias and CDI.
Methods: PSI data from fiscal 2008 to 2010 was obtained from the MOHLTC (http://www.health.gov.on.ca/patient_safety/public/ps_pub.html). Monthly CDI and quarterly MRSA rates were compressed into yearly rates to coincide with the reporting interval of HHC rates. Continuous data was analysed using ordinary least squares regression. Count data was analysed by zero-inflated poisson regression. Both analyses employed robust variance estimates to adjust for within-cluster (hospital) correlation. All data were analysed using STATA/IC 10.1 Macintosh statistical software.
Results: Data was available for N=166 hospitals. HHC rates (before- and after-) improved equivalently over time and hospital types. By 2010, HHC-Before had increased by 18.5% (95% CI 14.6, 22.4) and HHC-After had increased by 14.5% (95% CI 10.8, 18.1). The only significant association between HHC rates and CDI and MRSA bacteremias was a decreased CDI incidence rate ratio (IRR 0.970, 95% CI 0.946, 0.995) due to higher HHC-Before.
Conclusions: Despite improved HHC rates, no consistent improvement in other related PSI could be demonstrated.

WEDNESDAY, JUNE 20

POSTER BOARD #3

INFECTION CONTROL...TIMELESS

Maureen Cividino, Stefanie Ralph, Virginia Tirilis, Oksana Zaporzan
Public Health Ontario – Central South, Ontario, Canada

Looking to the past, we gain a better understanding of infectious diseases and the importance of immunization.
Objectives:
- Plan and distribute an education campaign for Infection Prevention and Control (IPAC) Week
- Develop a resource that stakeholders could use within their own facilities to promote IPAC week
- Use a storytelling format to convey information and add interest
- Demonstrate the ongoing impact of historically significant infectious diseases today.

Phase 1: Each day during IPAC week a special edition newsletter was distributed to all stakeholders featuring a different vaccine preventable disease of significance (pertussis, polio, mumps, measles, and smallpox). Newsletter segments included historical significance, stories, pictures, clinical presentation, current epidemiology and recent research.
Phase 2: To engage stakeholders early on, a contest was held to name the special

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edition newsletters. The winning slogan, Infection Control...Timeless, was made into buttons which were handed out at the Open House.
Phase 3: An open house was held October 31, 2011. Historical "guests" attended this open house to represent different human stories related to the five diseases (e.g. Eleanor Roosevelt - polio, Dr. Leone Farrell - pertussis, Hippocrates - mumps). Attendees had the opportunity to interview these guests and hear their stories. Dr. Christoper Rutty, a medical historian, was invited to share his expertise. Other activities included: an interactive iron lung, virtual plague activity, poster boards, and refreshments. A sixth newsletter shared the open house stories with those who could not attend.
Evaluation: Electronic evaluations were completed for this project with positive results. This confirms storytelling is an effective and engaging technique for adult learning.

POSTER BOARD #5

CLINICAL PROGRAM-SPECIFIC HEALTHCARE SURVEILLANCE REPORTS

Tara Donovan, Petra Welsh
Fraser Health Authority, British Columbia, Canada

Issue: In 2010, Fraser Health Authority in British Columbia was re-structured to a clinical program management model. Traditionally, healthcare-associated events were addressed by site, but now clinical programs (e.g. medicine) are responsible for healthcare-associated events that occur in their acute care units across multiple facilities and leadership is required to take action to reduce transmission rates. The Infection Prevention and Control Program (IPAC) is responsible for the generation and dissemination of infection prevention and control surveillance reports. Site-specific reports are presented to site leadership and staff to ensure monitoring and awareness of healthcare-associated infections and colonizations and to motivate accountability and response when necessary.
Project: IPAC responded to the clinical management structure by providing clinical program-specific surveillance reports with multiple permutations of data including unit, site and clinical program, in addition to traditional site reports.
Results: A bed map was created to document which acute care units belonged to which site and the responsible clinical program assigned to the unit. To accomplish this task a computer generated Meditech extract with unit mnemonics and sites was used in combination with finance reports with clinical program assignment.
Lessons Learned: Review, accountability and response to surveillance reports by clinical program and site directors, managers and front-line staff are varied. The transition from site to program remains a challenge. Clinical program accountability requirements must be clarified and supported by Fraser Health Authority executives. To our knowledge these reports are novel and there are minimal opportunities to benchmark this type of program-specific surveillance data.

POSTER BOARD #7

GETTING READY: INFECTION PREVENTION AND CONTROL WITH ACCREDITATION CANADA TRACER METHODOLOGY

Chingiz Amirov, Heather Candon, Jane Van Toen
Baycrest Geriatric Healthcare System, ON, Canada

Issue: Accreditation Canada's (AC) Tracer Methodology is relatively new, and the experiences of organizations accredited using this format are only beginning to emerge. Tracer-based surveys collect evidence both from the original data custodians and from the frontline staff. Here we share our facility's Infection Prevention and Control (IPAC) experience in preparation for accreditation.
Project: Preparation for accreditation was two-fold. First, to demonstrate compliance with AC IPAC standard (Qmentum IPAC module), and secondly to ensure frontline staff could effectively convey understanding of and adherence to these standards. This presentation deals specifically with the latter.
To ensure staff were sufficiently aware of IPAC initiatives and improvement and were able to provide an informed response the following activities were organized: mock tracers on the units, briefings during rounds, Intranet resources to communicate IPAC messages, "cheat sheets" prepared on Required Organizational Practices (ROPs), and unit-specific IPAC reports. In addition, an IPAC quality improvement project was submitted, in collaboration with the unit staff, for consideration as a Leading Practice.
Results: IPAC met 100% of the applicable accreditation standards. The Leading Practice submission was accepted. Our facility was granted full accreditation status.
Lessons Learned: With tracer methodology, demonstration of compliance alone is not sufficient. Particular emphasis should be made on developing staff's ability to understand and operationalize the tracer methodology.

POSTER BOARD #11

COMPARISON OF THE MIC AND MBEC METHODS FOR ASSESSING EFFECTIVENESS OF DISINFECTANTS ON CLINICALLY RELEVANT BACTERIA

Christopher Ikeno[1], Ruchi Dhyani[2,3], Deanna Del Re[2], Richard Mair[1,2], Milos Legner[3], Dennis Cvitkovitch[3], Dean Swift[2]
[1]Micrylium Laboratories, Ontario, Canada, [2]Biolennia Laboratories, Ontario, Canada, [3]University of Toronto, Ontario, Canada

Background/Objective: Current research has shown that biofilms are more difficult to eradicate than their planktonic counterparts; however, the majority of standardized methods used to test the efficacy of disinfectants rely on the use of planktonic bacterial cultures. The minimum biofilm-eliminating concentration (MBEC) assay has been developed for rapid, high-throughput assessment of the antibiofilm activity of antibiotics, disinfectants, biocides and metals at varying concentrations. The main objectives of this study are to compare effectiveness of various disinfectants on bacteria grown planktonically and in biofilms, and to compare minimum inhibitory concentration (MIC) and MBEC methods for testing the efficacy of disinfectants.
Methods: *Pseudomonas aeruginosa* MPAO1, *Bacillus subtilis* JH642 and clinical isolates of *Escherichia coli* and *Staphylococcus aureus* were used. MIC and MBEC assays were performed using several disinfectants and commercial products. Both assays were performed in triplicate. MIC and MBEC values were determined as the lowest concentration of disinfectant that inhibited growth of the bacteria.
Results: Each strain exhibited unique susceptibility profiles to the disinfectants tested. *B. subtilis* was the most resistant, while clinical isolates were most susceptible overall. Biofilms were also more resistant to the disinfectants compared to planktonic cultures.
Conclusions: The results of this study support using the MBEC method to test efficacy of disinfectants, as it presents the most relevant results of antimicrobial activity. This will allow for further development of standardized test methods that more accurately reflect conditions found in the field, thus leading to more effective strategies for controlling the spread of infection.

POSTER BOARD #13

IMPLEMENTATION OF ARO SCREENING

Status: Pending
Category: Development/Implementation of Practice Standards/Guidelines
Author's preference: Poster

Lisa Mitchell, Karen Gauthier, Susan Blakeney
Pembroke Regional Hospital, Ontario, Canada

Issue: In July, 2011, Ontario's Provincial Infectious Diseases Advisory Committee (PIDAC) issued a second revision to their March, 2007 guidelines titled "Screening, Testing and Surveillance for Antibiotic Resistant Organisms (ARO's)". Included in this document were new provisions for screening patients for Carbapenem-Resistant Enterobacteriaceae (CRE). In order to align with these new recommendations, it was essential that our organization amended our facility's policy regarding screening of ARO's.
Project: In light of these policy changes, and the need to communicate clearly to nursing staff, a quick reference/screening tool and teaching strategy for easy implementation was created.
Results: An algorithm was designed outlining criteria for: who, when, and what to swab. Managers were stakeholders who reviewed the information. Teaching and implementation were slated to be completed over a 1 week period, using a "train the trainer" approach with weekly follow-up. ICP's continue to be available to staff for support.
Lessons Learned: Using the clear guidelines outlined by PIDAC, setting a reasonable implementation schedule, and simplifying information allows for straightforward transfer of knowledge, practice change, and compliance.

POSTER BOARD #15

HAND RUB FORMULATION: A CRITICAL COMPONENT FOR MEETING HEALTH CANADA BACTERICIDAL EFFICACY STANDARDS

Sarah Edmonds[1], David Macinga[1], Collette Duley[2], James Arbogast[1]
[1]GOJO Industries, OH, United States, [2]BioScience Laboratories, MT, United States

Background/Objectives: Alcohol based hand rubs (ABHR) are the primary form of hand hygiene in healthcare settings, and are recommended for preventing the spread of infection. The objective of this study was to compare the efficacy of commercially available ABHR, and determine whether each meets Health Canada bactericidal efficacy requirements.
Methods: Eight commercially available alcohol-based hand rubs (gels and foams) containing between 62-72% (v/v) ethanol were evaluated using the Healthcare Personnel Handwash (ASTM E1174-94) method with *Serratia marcescens* at 2-ml application volumes. Log10 reductions from baseline were calculated after a single use and after 10 consecutive uses. Test product efficacy was compared using a two-factor analysis of variance (=0.05).
Results: Only products with ≥70% ethanol achieved a 3 log10 reduction after one application. However, only two test products, a well-formulated 70% ethanol gel and well-formulated 70% ethanol foam, produced a 3-log10 reduction following the tenth application, and were therefore the only products to meet Health Canada bactericidal efficacy requirements. Additionally, these two test products were statistically superior to all other test products after 10 applications ($P<0.05$).
Conclusions: Product formulation was found to have a greater influence on

efficacy than alcohol concentration, as products with identical or lesser amounts of active ingredient had superior efficacy. These results demonstrate that simply having an alcohol concentration of 70% is not sufficient to meet Health Canada bactericidal efficacy standards.

POSTER BOARD #17

HANDS UP! IMPROVING HAND HYGIENE COMPLIANCE AS A KEY PATIENT SAFETY AND QUALITY INITIATIVE

Jayshree Somani, Paula Raggiunti
Rouge Valley Health System, ON, Canada

Issue: Rouge Valley Health System's (RVHS) hand hygiene compliance rates were below the provincial average in 2008/09 (55% and 80% for the first and fourth moments respectively). RVHS responded by making hand hygiene compliance a corporate priority, with the goal of attaining sustained hospital compliance rates of >90% for the first and fourth moments.

Project: To achieve this, RVHS put into action its Hands Up strategy, aimed at fostering change throughout the hospital. The strategy has a three-pronged focus on: 1) strengthening education; 2) establishing accountability; and 3) creating a cultural shift.

Highlights of Rouge Valley's hand hygiene education program include staff education at orientation sessions and Road Shows led by members of the senior management team.

Putting education into action requires staff accountability. This has been fostered through an ongoing audit program supported by:

- Unit-based Hand Hygiene Champions
- Universal hand hygiene daily audits applying Lean methodology
- Monthly and ongoing feedback through data transparency
- Recognition of top-performing units

Education and accountability were reinforced by cultivating a culture that values proper hand hygiene. This was achieved through a widespread "Hands Up" communications campaign, which included a series of posters, screen savers, hospital video and bookmarks. A hand hygiene film festival (HUFF) was also launched summer 2011.

Results: Hand hygiene rates now soar above the provincial average at 90% (first moment) and 94% (fourth moment).

Lessons Learned:

- A multi-faceted approach is fundamental
- Establish Hand Hygiene as a corporate priority
- Ongoing and timely feedback on performance
- Engage all staff

POSTER BOARD #19

WITHRAWN

INFECTION CONTROL COMPLIANT HOME VISIT BAG

Faridat Etoroma, Linda Lovatt
Allberta Health Service, Alberta, Canada

A small committee of the Public Health Division Operations Managers were charged with finding a bag that would meet three criteria:

1. Be cleanable between home visits with an accelerated hydrogen peroxide product.
2. Meet workplace health and safety standards.
3. Be made of smooth, light colored durable fabric that would prevent bedbugs from hitchhiking on the bags and transported from one location to another.

To dry clean the cloth bag being used quarterly it would take up to $10,000 (ten thousand dollars) and we needed to clean the bags between each home visit. The manufacturer of our current cloth bags was invited to partner with us to develop a new bag that would meet our changing needs. The result was a quality bag that had interchangeable inserts that would meet the needs of each speciality group and meet our infection control standards.

POSTER BOARD #21

CENTRAL VENOUS CATHETER RELATED INFECTIONS: THE IMPACT OF AN EDUCATIONAL PROGRAM ON NURSES' KNOWLEDGE AND INFECTION RATES IN AN ICU.

Jill Friedt[1] ,2, Karen Semchuk[1]
[1]*University of Saskatchewan, Saskatchewan, Canada,* [2]*Saskatoon Health Region, Saskatchewan, Canada*

Background: Decreasing infection rates saves lives, improves quality of care, and leads to better patient outcomes. For improved outcomes, nurses must be able to synthesize information from research and implement this information to decrease infection rates.

Methods: Using a quasi-experimental pre-test and post-test interrupted time series design, infection rates and registered nurses' knowledge of the evidence based guidelines for preventing central line infections were assessed, before and after implementation of a checklist and an educational program. Data collection was conducted by self report in April-June 2010 on two medical-surgical ICUs in the province of Saskatchewan.

Results: Guideline knowledge and demographic characteristics revealed no statistically significant differences at pre-test between the intervention and comparison groups. For the intervention group there was a statistically significant increase in the mean knowledge test score from pre-test to post-test [paired t-test, $t(46) = 6.014$, $p = < 0.001$ (two-tailed)]. During the study period no differences were found in the infection rates. In the 19 months following the intervention, no primary bloodstream infections were reported at the intervention site.

Conclusions: The results indicate that implementation of a checklist with educational reinforcement can increase nurses' knowledge and may contribute to decreasing central venous catheter blood stream infection rates. An understanding of the nurses' current knowledge level allows adaptation of beneficial strategies to increase research utilization and synthesize information toward better client outcomes.

POSTER BOARD #23

NOSOCOMIAL METHICILLIN-RESISTANT STAPH AUREUS (MRSA) RATE REDUCTION WITH CHG BATH PRODUCT

Kelly Finlayson, Loraine Warnock, Jackie Brindle
London Health Sciences Centre, Ontario, Canada

Our Acute Medicine unit had tried various strategies to reduce the methicillin-resistant staph aureus (MRSA) rates without achieving the desired outcome. The unit was averaging approximately 7.5 confirmed nosocomial MRSA cases each month. Many strategies had already been implemented without meeting the target outcome of transmission rate reduction. The unit's Hand Hygiene compliance rate was 83%. We became aware of and implemented a bath-in-a-bag product that contained CHG. The product was kept warm, was used once per day on every patient and was very convenient for nurses to use. It replaced a traditional bed bath that used a basin and linen supplies as well as a gel CHG product that was to be added to the bath water. The bath-in-a-bag product was implemented in May 2011 and our MRSA rate per 1000 patient days was 6.24. By July 2011 our MRSA rate dropped to 1.09 per 1000 patient days. The rate reduction has been below 2.0 and has been sustained since July 2011.

POSTER BOARD #25

CORRECT GLOVE USE – GIVE THEM WHAT THEY WANT

Kathleen Cullen, Kathryn Suh, Natalie Bruce, Jo Anne Janigan, Colleen Weir, Andrea Fisher, Jenn Johnson, Michele Larocque-Levac, Sam MacFarlane, Angela Wigmore, Virginia Roth
The Ottawa Hospital, Ontario, Canada

Issue: In 2010, The Ottawa Hospital (TOH) experienced an increase in the incidence of nosocomial resistant organisms which prompted TOH Infection Prevention and Control Program (IPAC) to review all routine practices. Improper glove use was frequently observed and is a well-known source of environmental contamination and potential cause for transmission of these organisms.

Project: An educational intervention was created to identify current glove practice and the preferred mode of education delivery. A timeline was developed and regulated healthcare professionals (HCP) were defined as the target audience. Criteria for proper and improper glove use were established. A knowledge and attitudes survey was developed, piloted and refined.

Results: 380 HCP were surveyed from 26 inpatient units. 100% of HCP surveyed were able to identify appropriate indications for glove use. 93.7% reported performing hand hygiene immediately after glove removal. 175 HCP reported wearing double gloves. Nurses (86.6%) were more likely to wear double gloves than all other HCP combined ($p=0.001$). 15 HCP reported cleaning their gloves between use. Eleven (73%) were nurses ($p=0.50$). HCP reported posters, printed material and group sessions to be the preferred educational modality.

Lessons Learned: Although all HCP surveyed were able to identify proper glove practices, several improper uses were also identified that could contribute to the transmission of resistant organisms. HCP prefer to receive new information from various modalities including printed material and group sessions. The educational program was tailored to accommodate these preferences.

POSTER BOARD #27

CIC EXAMINATION PREARATION SERIES: ARE YOU READY TO WRITE?

Laura Fraser, Nora Boyd, Brenda Smith, Risa Cashmore
Public Health Ontario, Ontario, Canada

Issue: Certification in Infection Control and Epidemiology (CIC) is an internationally recognized designation. Certification measures knowledge mastery of infection prevention, infection control and epidemiology. Writing this exam is anxiety provoking for ICPs. Competencies were recently updated which heightened concerns. The CIC Exam Prep Series was to assist ICPs with their CIC exam preparation, to provide fair and equitable access to resources and be cost effective.

POSTER PRESENTATIONS

Project: Two Regional Infection Control Networks of Public Health Ontario (PHO) developed and delivered a pilot series consisting of 8 weekly, one-hour sessions targeted to those candidates who planned to write within the next six months. Content was based on the competencies outlined in the Certification Board in Infection Control (CBIC) handbook. Participants were guided to pertinent resources and areas of study reflecting the new competencies and examination study strategies were recommended. Sessions were offered by videoconference, webcast and/or archived webcast.
Results: Two hundred fifty-five people participated. Evaluations were positive: 83% indicated the series helped in their preparation to write the CIC examination and 92% rated the series as very good or excellent. Staff of PHO: 67% indicated the series replaced their usual CIC study support and 100% indicated the series was a good way to support their stakeholders.
Lessons Learned: This was an effective and efficient way to offer a CIC examination preparation series with equal access across Ontario.

POSTER BOARD #29

A LARGE *MYCOBACTERIUM TUBERCULOSIS* POST-EXPOSURE INVESTIGATION IN AN ACUTE CARE HOSPITAL

Andrea Fisher, Jo Anne Janigan, Michele Larocque-Levac, Natalie Bruce, Teresa Seguin, Kathryn Suh, Virginia Roth
The Ottawa Hospital, Ontario, Canada

Background: Tuberculosis (TB) can go undiagnosed when a patient has other lung pathology. Undiagnosed TB can be a serious occupational risk to healthcare workers (HCW) and a risk to exposed patients. TB exposure investigations can be resource intensive and costly to the healthcare system. In September 2011 a patient was admitted to our acute care hospital with pulmonary fibrosis. Subsequent testing revealed this patient had pulmonary TB.
Methods: A retrospective chart review was conducted to identify the period of infectivity and exposure group. A concentric circle approach was used to identify exposed individuals requiring tuberculin skin testing (TST). To ensure investigation strategies were consistent and well communicated, a multi-departmental team was created with members from Infection Control, Nursing, Occupational Health, Communications and the local Public Health Department. The team met bi-weekly over a four-month period.
Results: Our patient was considered infectious between December 2010 and October 2011and had two admissions to our hospital, resulting in 427 HCW, 200 students, 46 physicians, 13 patients, and 2 translators being exposed. One patient could not be contacted (no fixed address). The investigation is ongoing with ~67% TST completed, and 6 conversions. Notification of students months after a rotation was challenging. A TB program was developed to act as a framework for future investigations. **Conclusion**: TB investigations are resource intensive. Collaboration with affiliates facilitated communication. An investigation can be made easier with the use of a framework.

POSTER BOARD #31

IMPLEMENTING A MANDATED PROVINCIAL HAND HYGIENE PROGRAM: LESSONS LEARNED AFTER 18 MONTHS

Elizabeth Bryce[1,2], Robin Wilson[2]
[1]Vancouver Coastal Health, British Columbia, Canada, [2]University of British Columbia, British Columbia, Canada

Issue: In 2010, the Office of the Auditor General of BC released a review of the hand hygiene (HH) programs in each of the five regional health authorities (HA). Gaps identified among the regions with respect to HH compliance auditing, reporting, and education, prompted the creation of the Provincial Hand Hygiene Working Group (PHHWG) and the development of a provincial HH program (PHHP).
Project: The PHHP aims to increase the consistency of the HA programs by providing standardized HH auditing tools, policies, guidelines, and reporting methods, as well as a toolkit of common HH communication messages. The PHHWG won a two-year grant from WorkSafeBC to evaluate both worker perceptions of HH and the change management process of implementing this program.
Results: In the first 18 months, a standardized audit tool was developed and HAs collected data for three fiscal quarters; the PHHWG created a provincial HH policy and by summer 2012 will have a standard online educational module and HH guidelines. 30 HH program implementers representing each HA were interviewed and a provincial HH perception survey garnered 14,000 responses from healthcare workers throughout BC. The summarized results from the interviews and surveys will be presented.
Lessons Learned: Standardizing a HH program across the various HAs is a challenging process. It is imperative that feedback and representation from multiple levels within each HA to ensure uptake. Additionally continuous dialogue, evaluation, and learning are necessary to develop a program which works for all healthcare settings.

POSTER BOARD #33

A LITERATURE REVIEW OF HAND HYGIENE BASELINES IN THE NON-HEALTHCARE WORKPLACE

Michele Mitchell, *Alberta Health and Wellness, Alberta, Canada*

Background: Hand hygiene (HH) is the foundation of infection prevention. Although most research on HH focuses on compliance within a health care (HC) workplace, it is evident that HH is also important in the community setting. It has been shown to be important in the prevention of gastrointestinal, respiratory, food borne and absenteeism related illness rates. A baseline for HH in a non-HC workplace is necessary for the development and evaluation of public HH interventions.
Objective: To determine the baseline of HH within the community, specifically within a non-HC workplace.
Methods: A literature search was conducted using Pub Med. Key words and terms that were used included "hand hygiene Canada" and "hand hygiene workplace," yielding 82 and 53 results respectively. Based on the criteria of being within a non-HC workplace, some studies were excluded.
Results: From the search, only two relevant studies were found and both were related to the food industry. One study showed an HH increase from 23.5% to 65.4% and another, a 6.7% increase from 21.09 HW attempts. There was variability in when HH was measured (i.e. before eating, after using the restroom), and the types of program interventions.
Conclusions: Based on the key word search, it is evident that there is a lack of research in the area of community HH in workplaces. Therefore baselines may not be established. Consequently, further research that examines baselines (i.e. when to perform HH and ways to measure it) as well as the effectiveness of HH interventions is required.

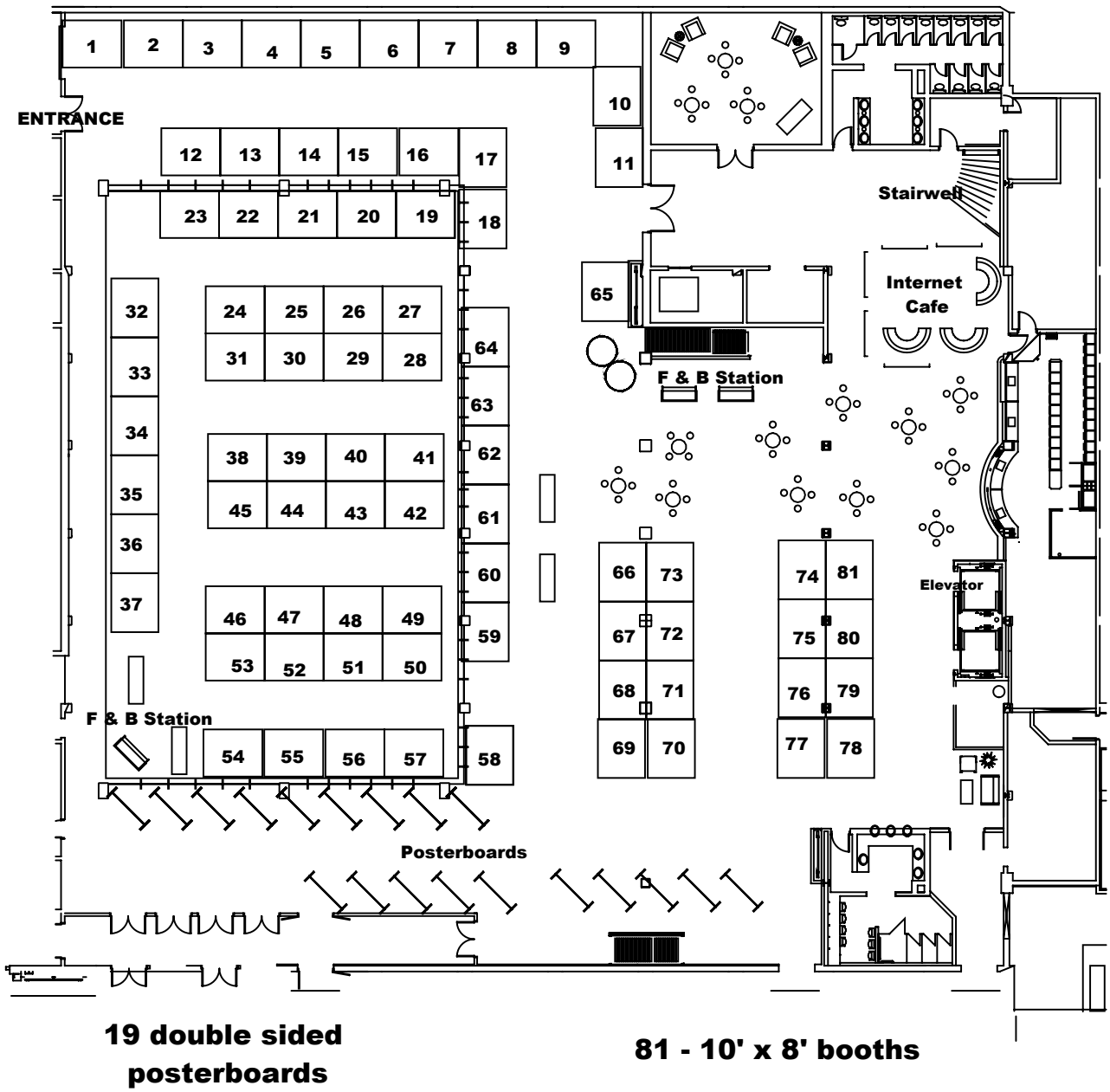
POSTER BOARD #35

MEASLES: A FALSE ALARM IN AN IMMUNOCOMPROMISED PATIENT POPULATION

Natalie Bruce, Michele Larocque-Levac, Suzanne Madore, Rochelle Fowler, Mario Daponte, Kathryn Suh, Virginia Roth
The Ottawa Hospital, Ontario, Canada

Background: On December 14, 2010, a patient was transferred to our hematology unit with newly diagnosed lymphoma for chemotherapy. He was subsequently identified as a contact of a patient with confirmed measles at a referring hospital. On December 29, he developed coryza, dry cough and a papular rash. Measles was a considered diagnosis.
Method Results: 6 patients were identified as high-risk for complications and requiring IVIG injections. On December 31, the index was found to be IgM negative and IgG positive for measles, indicating past immunity. PCR urine and NP swab were negative. Control measures were discontinued.
Conclusion: Exposure to measles in this population can be life-threatening, and control measures require a great deal of resources. IVIG administration was complicated by limited supply and required IM injections, placing patients with thrombocytopenia at risk for bleeding. Establishing a diagnosis of measles is very difficult in patients with hematologic malignancies as respiratory symptoms and rash are common. More rapid serology/PCR results would have expedited the completion of this investigation.

EXHIBITOR FLOOR PLAN



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[1]CDC. Guidelines for Environmental Infection Control in Healthcare Facilities, June 6, 2003/52 (RR 10): 1-42 II. Cleaning spills of blood and body substances

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2012 CHICA-Canada Annual General Meeting

NOTICE IS HEREBY SERVED that the Annual General Meeting of the Community and Hospital Infection Control Association – Canada will be held on Thursday, June 21, 2012 at TCU Place (Room TBA), Saskatoon, Saskatchewan, 0700 hrs. CHICA-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 which must be submitted to the Secretary/Membership Director at the CHICA-Canada office no later than 30 days before the AGM, i.e., Thursday, May 24, 2012. Agenda notification will be forwarded by email in May.

Secretary/Membership Director

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Thursday, June 21, 2012 at TCU Place (Room TBA), Saskatoon, Saskatchewan, 0700 hrs

VIROX TECHNOLOGIES SCHOLARSHIP WINNERS

Through the financial support of the Virox Technologies Partnership, 19 CHICA-Canada members have been awarded scholarships to attend the 2012 National Education Conference in Saskatoon. CHICA-Canada and its members thank Virox Technologies for their initiative to make the education conference accessible to those whose accomplishments should be recognized and who may not have otherwise been able to attend. In this the 10th Anniversary of the Virox Scholarship, we are pleased to announce the 2012 scholarship winners:

VIROX™ TECHNOLOGIES INC.

CHICA-CANADA

- Linda Adam, Richmond, BC
- Tammy Barre, Dauphin, MB
- Rishi Bhardwaj, Calgary, AB
- Rosalie Byers, Waterville, NS
- Alisa Cuff, Lewisporte, NL
- Mandy Deeves, Barrie, ON
- Tara Donovan, New Westminster, BC
- Dea Graessli, Regina, SK
- Amanda Knapp, Kingston, ON
- Mary Anne Lupenette, Belleville, ON
- Tammy Anne MacDonald, Halifax, NS
- Dana Male, Winnipeg, MB
- Bridget Maxwell, Halifax, NS
- Daphne Murray, Lower Sackville, NS
- Diane Quinn, Saint John, NB
- Joanne Tench, Trail, BC
- Nancy Todd-Giordano, Ottawa, ON
- Ivy Turner, Deloraine, MB
- Nina Williams, Winnipeg, MB

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CHICA 2012: Visit the GOJO booth and see what's new!

A patient's **perspective**

Jim Gauthier, MLT, CIC
President, CHICA-Canada

As an infection prevention and control professional, I have the opportunity to speak to patients, usually about the antibiotic-resistant organism they are colonized with on arrival to our facility. I explain the use of gowns and gloves for contact precautions, the follow-up testing to determine if the organism is pushed out by normal flora, and the patient's movement within the facility.

The letter below was received from a patient, addressed to infection control. This patient was older, and as you will see, had some insight to our profession. The patient, to my knowledge, did not have a medical background.

"After our recent conversation about VRE and Infection Control, I have been thinking about possible preventative measures from the patient's perspective. I am well aware that these are unlikely to be original.

1. *Make sure that the hand cleaner is accessible to the patient. Ideally it should be set near any meal trays at least.*
2. *Assure that the patient understands what it is, and that it is theirs: there are many things in the rooms which are for staff use.*
3. *Make sure that the patient has enough strength to operate the plunger, or provide alternative cleaning.*
4. *Many patients arrive on the ward in pain, or as in my case, still cleaning the 'brain fog' from ICU. They may need a further explanation when they become more aware and independent in their actions.*
5. *Posters in the rooms involving the patients in the hospital's efforts to control hospital-sourced infections may help to reinforce the message.*
6. *On every food tray, place a small eye-catching package containing a hand wipe to be used before eating the food there. Once again, a slogan on the package could promote the involvement of patient in Infection Control.*

I hope that you will not think me presumptuous to have outlined these ideas, but if it could prevent infections such as mine, it would greatly cut the costs of barrier precautions and the time these measures take for staff."

> "Evaluate each patient at admission to determine if they can perform hand hygiene on their own"

Presumptuous? I would say brilliant, insightful, and some very good common sense.

How much of our daily focus is around hand hygiene of staff? In 2005 Banfield and Kerr published "Could hospital patients' hands constitute a missing link," discussing more research is needed looking at outcomes of keeping patients' hands clean.

At my facility, we are currently working on a site-wide initiative to evaluate each patient at admission to determine if they can perform hand hygiene on their own, or if the patient requires assistance. We will be developing a way of sharing this information with all staff, probably a sticker outside the patient's room. We are making a move to have hand sanitizer on each overbed table, but as stated above, we will need to make sure the patient knows it is for them.

I hope to spend more time with the patients, hearing their issues and concerns, and perhaps picking up some more "presumptuous" ideas. We all need to take the time to see our facilities or clinics through the patient's eyes.

Le point de vue du président

Jim Gauthier, MLT, CIC
Président, CHICA-Canada

À titre de spécialiste en prévention et contrôle des infections, je m'entretiens à l'occasion avec des patients, la plupart du temps relativement à des cas de colonisation par des organismes résistants aux antibiotiques à l'arrivée de ces patients dans notre établissement. J'explique l'emploi de la chemise d'hôpital et des gants par précaution contre la transmission par contact, le test de suivi pour déterminer si les organismes sont expulsés par la flore normale et les déplacements du patient dans l'établissement.

La lettre ci-dessous a été envoyée par un patient au service de prévention des infections. Ce patient est âgé et, comme vous pouvez le constater, il est un observateur perspicace de notre profession. À ma connaissance, ce patient n'a aucune formation médicale.

« Après notre récente conversation au sujet de la surveillance des ERV (entérocoques résistants à la vancomycine) et de la prévention des infections, j'ai pensé à d'éventuelles mesures de précaution du point de vue du patient. Je sais bien que ce que je propose n'a probablement rien d'original.

1. *Rendre accessible au patient le nettoyant pour les mains. Il devrait idéalement être placé à proximité du plateau-repas tout au moins.*
2. *Faire comprendre au patient en quoi ça consiste et que c'est pour son propre usage. En effet, beaucoup d'objets dans les chambres sont réservés à l'usage du personnel.*
3. *Vérifier si le patient a suffisamment de force pour actionner le piston de la pompe; si ce n'est pas le cas, fournir une autre méthode.*
4. *De nombreux patients arrivent souffrants ou, comme c'était mon cas, encore sonnés de leur séjour au service de soins intensifs. Ils pourraient avoir besoin d'explications supplémentaires après avoir récupéré et retrouvé leur autonomie.*
5. *Des affiches placées dans les chambres pour inciter les patients à soutenir les efforts de l'hôpital dans la lutte contre les infections hospitalières pourraient aider à renforcer le message.*
6. *Placer sur chaque plateau-repas un petit paquet à l'emballage accrocheur contenant une lingette pour se nettoyer les mains avant de manger. Encore une fois, un slogan sur l'emballage pourrait promouvoir la participation du patient à la prévention des infections.*

J'espère que vous ne trouverez pas présomptueux de ma part de vous proposer ces idées, mais si cela pouvait aider à prévenir les infections comme la mienne, le coût des précautions contre la résistance aux antibiotiques serait considérablement réduit ainsi que le temps que doit y consacrer le personnel. »

Présomptueux? Je dirais plutôt que c'est faire preuve d'intelligence, de perspicacité et de gros bon sens. Quelle somme d'énergie consacrons-nous chaque jour à l'hygiène des mains du personnel? En 2005, Banfield et Kerr ont publié un article intitulé « Could hospital patients' hands constitute a missing link? », dans lequel les auteurs faisaient valoir la nécessité de poursuivre la recherche sur les résultats que l'on obtient en veillant à l'hygiène des mains du patient.

Nous chercherons un moyen de partager cette information avec tout le personnel, probablement en affichant une vignette autocollante à l'extérieur de

« Dans notre établissement, nous élaborons actuellement une initiative globale visant à évaluer si chacun des patients à l'admission est en mesure de s'occuper lui-même de son hygiène des mains ou s'il a besoin d'aide. »

la chambre du patient. Nous prenons des mesures afin qu'il y ait un désinfectant pour les mains sur chaque table de lit, mais comme il est mentionné ci-dessus, nous devrons nous assurer de faire savoir au patient que c'est pour son usage.

J'espère pouvoir passer plus de temps avec les patients, écouter leurs questions et leurs inquiétudes et peut-être recueillir d'autres idées « présomptueuses » comme celle-ci. Nous devons tous prendre le temps de voir nos établissements ou nos cliniques du point de vue du patient.

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VOLUNTEERS: Bridging the gap

Gerry Hansen, BA
Executive Director, CHICA-Canada

You have heard us many times as we excuse ourselves because of our small infrastructure. It is true that we cannot accomplish the same volume of work as larger associations because we do have limited staff and smaller resources. However, when examining all that we are able to do, and taking our size into consideration, we are actually far ahead of others in the development and facilitation of projects and initiatives. We cannot thank our hardworking, dedicated staff enough – Kelli Wagner, Administrative Assistant; Shirley McDonald, Web Communications; Pat Piaskowski, Clinical Editor; Heather Candon and Jane Van Toen, Course Coordinators, and the facilitators, instructors and coordinators who have made the Online Novice IP&C Course run so smoothly and successfully.

There is another group of people without whom the projects and initiatives that we undertake and the professional relationships that we wish to enhance would not be possible. Our volunteers are our lifeblood. They bridge the gap between the association and the real world. We look to our members to help us actualize what we envision. Over and over again, our members come forward to make reality out of our concepts. Over and over again, our members come forward to promote IP&C and CHICA-Canada to others in our healthcare community. They give their professional and personal time; they give their expertise; and they represent their peers at many discussion tables.

I wish there was enough space to personally thank each of our volunteers. I can only select a few to highlight. They are representative of the quality and dedication of our membership. First, of course, I must acknowledge your extremely hard working Board.

"Our volunteers are our lifeblood."

This is indeed the definition of a "working board." Individually and as a group they contemplate the actions that will make this association stronger, and build the profession.

Our project leaders have produced some of the finest work in IP&C practice. Among them, are the Audit Tool Working Group comprised of Anne Bialachowski, Karen Clinker, Mary LeBlanc, Shirley McDonald, and (formerly) Mary Kristel. Included the group of experts for all projects is the Standards & Guidelines Committee, who review all practice documents and usually with a ridiculously narrow timeframe.

It is a joke amongst the Routine Practices E-Learning Tool Working Group that we promised the project would be completed in six weeks. Two years later, the excellent e-learning tool has launched and is already being lauded for its excellence in education for all healthcare workers. Thank you so much to Donna Moralejo, Marion Yetman, Marilyn Weinmaster, Nina Williams, Faith Stoll, Isabelle Langman and Silvana Perna.

Finally, I would like to take a moment to share my gratification at how the Scientific Program Committees so quickly become cohesive teams with an instant grasp of the unique requirements of each of the national education conferences. Their commitment as a Scientific Program Committee member is "two conferences" which is in fact four years of planning. The same two years of planning is in the lap of the local chapter whose members volunteer for specific conference roles and chapter fundraising. They do this with eagerness and good humour. Thank you so much everyone.

Thank you to all of CHICA's volunteers. It is not just a cliché to say, "We really couldn't do it without you!"

Following this message is a list of external committees and the members who represent CHICA-Canada.

CHICA–CANADA

External and Internal Committees Resource List – Last updated April 2012

The following CHICA-Canada members represent the association on the following internal/external committees/organizations. Please consult the alphabetical listings in the *CHICA Member and Source Guide* for contact numbers/addresses.

Committee/Position	Representative or Chair
Accreditation Canada	Michael Gardam, MD, CM, FRCPC, CIC
AMR Consultations	Cathy Munford, RN, CIC
Archivist	Mary LeBlanc, RN, BN, CIC
APIC Text Revisions	Linda Adam, RN, BScN, CIC
APIC Infection Control Competencies Writing Group	Anne Bialachowski, RN, BN, MSc, CIC
ARO Point Prevalence Study Team	Zahir Hirji, RN, BScN, MHSc, CIC Guanghong Han PhD
Audit Tool Kit	Anne Bialachowski, RN, BN, MSc, CIC Karen Clinker, Med, BScN, CCOHN, CIC Mary LeBlanc, RN, BN, CIC Shirley McDonald, ART, CIC
Canadian Coalition for Immunization Awareness and Promotion (CCIAP) (formerly Canadian Immunization Awareness Program) – Cdn Public Health Assoc.	Marion Yetman, RN, BN, MN, CIC
Canadian Coalition on Public Health in the 21st Century	Colleen Nisbet, RN, MSc, CIC
Canadian Foundation for Infectious Diseases	Gerry Hansen, BA
Canadian Nurses Association	Madeleine Ashcroft, RN, BScN, CIC
Canadian Nosocomial Infection Surveillance Program (CNISP)	Virginia Tirilis, MLT, CIC
Canadian Patient Safety Institute	President, CHICA-Canada
Canadian Patient Safety Institute Hand Hygiene Faculty	Michael Gardam, MD, CM, FRCPC Gerry Hansen, BA
Certification Board of Infection Control and Epidemiology (CBIC)	President, CHICA-Canada Canadian Reps: Kathy McGhie, RN, CIC Kathy Suh, MD, CIC
Canadian Standards Association – Strategic Steering Committee on Healthcare	Jennifer Grant, MD, CM, FRCP(S) Monica DiFonzo, RN, CIC
Canadian Standards Association, The Healthcare Engineering and Physical Plant Technical Committee	Sharon Wilson, RN, BScN, CIC
CHICA-Canada Distance Education Advisory Group (Chair)	Donna Moralejo, PhD
CHICA-Canada Distance Education Course Coordinators	Heather Candon, BSC, MSc, CIC Jane Van Toen, MLT, BSc, CIC

Committee/Position	Representative or Chair
Community Healthcare Interest Group	Shelley Sing, RN, BSN(C), CIC Co-Chair: VACANT
Dialysis Interest Group	Victoria Williams, BSc, BASc Co-Chair: VACANT
Education Endorsement Review Committee (Chair)	Donna Moralejo, PhD
Gram Negative Resistance Toolkit	Barbara Smith, RN, BSN, MPA, CIC, (APIC) Candace Friedman, MPH, CIC Isabelle Langman, RN, CIC Joanne Archer, RN, BTech, MA, CIC Pat Piaskowski, RN, HBScN, CIC Sandra Callery, RN, MHSc
Healthcare Facility and Design and Construction Interest Group	Barb Shea, MLT, ART, CIC Maja McGuire, BSc, MLT, CIC
International Federation of Infection Control (IFIC)	(Board) Carol Goldman, RN, BScN, CIC and President, CHICA-Canada
Long Term Care Interest Group	Darlene Fawcett, RN Marilyn Weinmaster, RN, BScN, CIC
Mental Health Interest Group	Sally MacInnis, RN, BScN, CIC Linda Fletcher, RN, BScN, CIC
National Advisory Committee on Immunization (NACI)	To be announced
National Patient Safety Roundtable	Jim Gauthier, MLT, CIC
Network of Networks	Patsy Rawding, RN, BScN, CIC and Joanne Archer, RN, BTech, MA, CIC
Oncology Interest Group	Jennifer Blue, BSc, RRT, CIC Cindy O'Neill, ART
Paediatrics Interest Group	Louise Holmes, RN, BSN, CIC Laurie Streitenberger, RN, BSc, CIC
PreHospital/First Responders Interest Group	Greg Bruce, A-EMCA Alexis Silverman, RN, BA, BScN
Registered Nurses Foundation of Ontario, SARS Scholarship (RNFOO)	Seema Boodoosingh, BSc, MLT, ART CIC Vydia Nankoosingh, MLT, CIC Sandra Callery, RN, MHSc Joanne Habib, MLT, CIC Ruth Schertzberg, MLT, ART, CIC
Surveillance & Applied Epidemiology Interest Group	Tara Donovan, CIC Myrna Dyck, BSc, BN, MSc
Website	Shirley McDonald, ART, CIC Jim Gauthier, MLT, CIC

2013 CHICA-Canada
Board positions available for nomination

The Nominating Committee of the Board of Directors of CHICA-Canada is charged with the responsibility of ensuring continuity by nominating a slate of officers for positions open in 2013. Additionally, nominations for board positions are welcomed from members of CHICA-Canada. Serving on the board of CHICA-Canada is an excellent way to participate at the national level. This offers the opportunity to meet a wide range of CHICA-Canada members, network with allied professional groups, and work with other motivated and experienced board members.

Nominations are invited for the following positions:

President-elect (one-year term)
Director, Programs & Projects (three-year term)
Director, Standards & Guidelines (three-year term)

These terms commence January 1, 2013. Position descriptions and nomination forms are found in the CHICA-Canada Policy and Procedure Manual (Forms 3 and 4), or may be obtained from the Membership Services Office or downloaded from www.chica.org (Members area).

Signatures of two active members are required for each nomination. If you know someone who would be qualified and interested in one of the above positions, send a completed nomination form to:

Marilyn Weinmaster, RN, BScN, CIC
CHICA-Canada Secretary/Membership Director
c/o Membership Services Office
PO Box 46125 RPO Westdale
Winnipeg MB, R3R 3S3

Or by fax to:
1-204-895-9595

Or by email to
chicacanada@mts.net

Deadline for nominations: August 15, 2012.

hygie® A SIMPLE IDEA TO FIGHT HOSPITAL-ACQUIRED INFECTIONS

Since the *Clostridium difficile* outbreak began in Quebec hospitals in 2004, infections continue to make headlines and remain a constant concern for patients and healthcare facilities. Hospital-acquired infections have ramifications at all levels—they compromise patient health, monopolize vast amounts of resources, and generate astronomical costs. Prevention practices are the priority of Hygie Canada, a Canadian company founded in 2006 and the manufacturer of the hy21® line of specialty products that limit the spread of germs and reduce the risk of hospital-acquired infections.

INNOVATIVE DESIGN

Hygie's super absorbent pad insert in the hygienic bags, transforms body fluids into a gel, providing a simple and innovative solution to manage human waste(urine, stool and emesis) in both hospital and home-care settings.

The ergonomically designed supports for the bags are manufactured in Québec and are 100% recyclable.

The Hygie method consists in management and containment of all biological fluids around the patient's bedside. The hy21® hygienic oxo biodegradable bags and pads, which can absorb up to 500-600 ml of fluid, may be discarded in the patient's room trash can. The sealed bag and insert impede odor and save valuable healthcare worker time by eliminating transportation outside of the patient care area for processing.

A QUESTION OF PATIENT SAFETY

Of all the steps involved in handling potentially infectious bodily fluids, the transportation of these fluids and soiled supplies from the patient source for processing, represents one of the highest risks for spreading germs.

Discarding bodily fluids into the toilet increases the risk of contamination, as does the flushing the contents in the commode. The transportation of bedpans, urinals, and emesis basins out of the patient room for processing to a soiled utility area is another concern. As potentially infected supplies need to be moved through the hospital corridors to arrive at their destination, environmental contamination may occur during this process.

The goal of the hy21® product line is to improve patient safety practices by reducing the risk of contamination and infection transmission. We stand by the quality of our products, and are convinced they will reduce the risk of contamination, reduce time needed for patient care services and improve patient and staff satisfaction.

Our hy21® product line can also be used in emergency situations, such as overcrowded ERs and water shutdowns. They can also be used during patient transport and in home care.

Hygie Classic® commode chair with Hygie's Hygienic Cover®.

A QUESTION OF SAVINGS

The Ministère de la santé et des Services sociaux is categoric: "Hospital-acquired infections are a heavy burden on healthcare systems, both in Canada and internationally. Their repercussions are far-reaching, not only for patients and their families, but for hospitals and society as a whole. Based on projections made by the Comité sur les infections nosocomiales au Québec (CINQ) in 2004, the Aucoin report states that the extended hospital stays and additional care required to treat hospital acquired infections amount to approximately $180 million per year. Therefore, a 30% reduction in hospital-acquired infections would represent an annual savings of more than $40 million for the Québec healthcare network and free up the equivalent of 360 beds each year, thus helping to relieve emergency room overcrowding, shorten waiting lists and increase hospital efficiency [TRANSLATION]."[1]

[1] Prévention et contrôle nosocomiales-Plan d'action 2010-2015, Ministère de la Santé et des services sociaux du Québec.

hygie® A SIMPLE IDEA TO FIGHT HOSPITAL-ACQUIRED INFECTIONS

Eliminating the risk potential transmission of infections by reducing the potential contamination at the source during patient care with the implementation of the Hygie process is simple. If there are fewer infections, there will be fewer long term hospital stays and fewer costly resources required for these patients. The emotional cost of infections to patients and their families is also traumatic in many cases. Prevention at the source is our priority.

A QUESTION OF DESIGN

Hygie markets and sells a commode chair specially designed to work with its hygienic products. It was designed to meet the highest infection prevention standards, and the materials were selected for their tolerance to harsh disinfectants and ease of cleaning. This is one of the main reasons why many have purchased Hygie's commode chair. It is available in various sizes for different patient needs.

The hy21® product line includes three sets of supports and bags:

- bedpan kit
- urinal kit
- emesis kit

All three kits include a bag containing a super absorbent pad that transforms body fluids into gel.

A QUESTION OF CREATIVITY

Éric Tanguay, President and founder of Hygie, has been working in the medical equipment sector for over 20 years.

After witnessing the devastation caused by the *C. difficile* outbreak in 2004, he began brainstorming about hygienic products that could contain and control the primary source of organic waste contamination at the source- the patient room.

ABOUT HYGIE

Our market presence and mission

Over 500 hospitals across Canada currently use our products. Internationally, we have filed for patents in 38 countries. We hope that these products will assist in advancement of infection prevention practices worldwide.

Our mission

To provide patients and healthcare professionals with a clean, sustainable and innovative process to manage human wastes in simplicity and with dignity, and to promote maximum patient safety and efficiency for best practice at a reasonnable cost.

The hy21® technology is now available for home care. Visit our website to find our retailers and specialized stores.

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CHICA 2012-National Conference (BOOTH #65)

FIS/HIS 2012
BT Convention Centre, Liverpool
19-21 November 2012

The 8th International Healthcare Infection Society (HIS) Conference and Federation of Infection Societies (FIS) annual conference

All FIS Members Societies and CHICA members qualify for the special members' rate.
The HIS conference takes place every two years and is the major international conference focusing on infection control attracting leading world experts in healthcare associated infections as speakers and delegates. As well as attracting accreditation from both the ACCME and the Royal College of Pathologists, it will provide a unique opportunity for everyone involved to learn the latest developments in this rapidly expanding and changing field.

The meeting is driven by an excellent scientific programme covering topics such as infection prevention and control, epidemiology and surveillance, decontamination, new technologies, infectious diseases, laboratory microbiology and antimicrobial agents, to name a few. There will also be an opportunity for delegates to exchange views and ideas about the latest developments in nosocomial and hospital-acquired/ healthcare-associated infections.

HIS is returning to Liverpool, one of Britain's most vibrant and cosmopolitan cities, after the very successful 2010 HIS International Conference. The 2012 event will again be located in the BT Convention Centre, a purpose-built, state-of-the-art facility situated in the heart of Liverpool along the historic, world heritage waterfront.

Early bird registration rate closes after 10th September 2012
Abstract submission closes 21st September 2012

For more information and to register visit
www.hisconference.org.uk
email: *HISconference@fitwise.co.uk* | Phone: 01506 811077

Member rate for CHICA members

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CHICA-HANDIC interviews
Dr. Christine Lee, a CDI researcher

Dr. Christine Lee, CDI Research,
McMaster University, Hamilton, Ontario

CHICA–HANDIC conducted a roving reporter interview with Dr. Christine Lee, one of our local CHICA-HANDIC members. She is also the Medical Director of Infection Prevention and Control and Infectious Diseases physician and member of the Infections Research Group at St. Joseph's Healthcare, Medical Director of Microbiology for Hamilton Regional Laboratory Medicine Program (HRLMP), and associate professor of the Department of Pathology and Molecular medicine at McMaster University in Hamilton, Ontario. Her e-mail address is: *clee@mcmaster.ca*

How long have you been involved in research related to *Clostridum difficile*?
I have been doing research related to *C. difficile* infection (CDI) since 2003.

Why have you chosen to focus your research on *C. difficile*?
I have managed a significant number of patients, especially the elderly who became quite debilitated both physically and mentally with ongoing diarrhea due to CDI. I embarked on identifying improved treatment options particularly for relapsing and recurrent CDI.

> "I have been involved in four large randomized controlled trials evaluating novel agents versus oral vancomycin for CDI."

What successes have you had?
I have been involved in four large randomized controlled trials evaluating novel agents versus oral vancomycin for CDI. These agents are effective in treating CDI and appear to be very promising in terms of reducing the risk of recurrent CDI. I have also performed fecal biotherapy in 90 patients with refractory/recurrent CDI since November 2008. The cure rate is 92%, and the procedure is very well tolerated. To date, we have not witnessed any associated adverse events related to this treatment. Health Canada has given approval for St. Joseph's Healthcare in Hamilton, Ontario to conduct research using fecal biotherapy.

What has been the most rewarding aspect of your work?
The greatest aspect of my work has been to assist patients in full recovery of their prolonged illness and their ability to resume daily activities with their family and friends.

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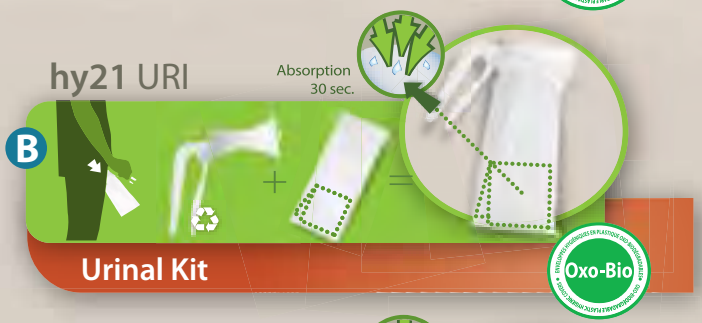

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ARO Point-Prevalence Survey

CHICA-Canada and the ARO Point-Prevalence Study Team (D. Gravel, Z. Hirji, F. Laing, O. Larios, A. McGeer, A. Simor, and K. Weiss) would like to thank all of those who participated in the cross-Canada Point-Prevalence Survey of Antibiotic-Resistant Organisms (AROs: MRSA, VRE, and *C. difficile*) that took place in November 2010. This survey for AROs could not have been done without you! The survey was remarkably successful, providing the first national prevalence information for these AROs in Canadian hospitals. A total of 176 acute-care facilities across the country, representing 65% of all those that were eligible, participated voluntarily and provided data. This unique survey also provided valuable information about infection prevention and control policies across the country, and correlated these with prevalence rates. Preliminary results were provided to all study participants, and have been presented at national and international scientific meetings, including the annual CHICA-Canada conference last year. A manuscript is currently being prepared for publication, and a report will also appear in the *Canadian Journal of Infection Control* later this year.

> "A manuscript is currently being prepared for publication, and a report will also appear in the *Canadian Journal of Infection Control* later this year."

In order to monitor changes and trends in ARO rates, a follow-up prevalence study is being planned for November of this year, and once again, this project is fully supported and endorsed by CHICA-Canada. Infection prevention and control professionals in acute-care facilities will be approached and offered an opportunity to participate in this important initiative. In the meantime, any questions regarding this survey may be addressed to Dr. Andrew Simor (*andrew.simor@sunnybrook.ca*). The ARO Point-Prevalence Study Team looks forward to working closely again with CHICA-Canada and its members.

Dan Costello

Dan Costello was a registered nurse from 1977 until his passing on October 18, 2011, after a year-long fight with cancer.

He worked one year as a general duty nurse in North Bay, Ontario, after obtaining his nursing diploma.

He moved to B.C. with his wife, Anna, in 1978, where he worked for two years in the ICU at the Penticton Regional Hospital.

After the death of his father, Dan took three months off work and he and his wife cycled across Canada.

Dan then returned to nursing at Penticton Regional Hospital to work in the Emergency Room for 17 years. He left the department after obtaining his Bachelor of Science in Nursing, while raising three young children, to pursue a position as a staff health nurse for approximately one year. He then held a position of part-time manager of the central supply department and part-time in infection control.

Dan was involved in organizing and assisting in the medical tent for the Ironman Triathlon in Penticton from 1983 to 2002.

Dan and his family moved to Nanaimo in 2003 to take a full-time position in infection control at the Nanaimo Regional General Hospital, where he worked alongside a very caring and professional group of people.

Dan became involved in coaching baseball and then became a coach in football for four years for the Nanaimo Redman, so that he could spend more quality time with his son. Dan learned a lot about coaching from endlessly watching football videos, but in the end, his passion for coaching came from the enjoyment of being part of a family within the Redman Team.

He will be remembered for his caring personality and his passion for fighting for what he believed in. He will be missed by many.

Remembering Pauline Fallis, RN, BAdmin (HS), CIC

November 25, 2011 was a sad and shocking day for me and my fellow infection prevention and control colleagues when we heard of the untimely passing of Pauline.

I first met Pauline more than a decade ago when she greeted me cheerily at a Toronto and area Professionals in Infection Control (TPIC) meeting and welcomed me to the group and this exciting field of healthcare practice. At the time, Pauline was the sole ICP at Toronto East General Hospital. A seasoned ICP, Pauline had worked at many hospitals in the Greater Toronto Area, while running her own consulting business, NOSO Healthcare Inc., since 1991, and being involved in numerous local, provincial, and national committees and initiatives. She wrote a series of IPAC articles for the Canadian Organization of Professional Electrologists (COPE) over seven years, and a *Handbook on Infection Control in Office-based Health Care and Allied Services* published by Canadian Standards Association (CSA). She was a respected member of the Canadian Standards Technical Sub-Committee for 10 years, and co-chair of the Toronto Central Infection Control Network Steering Committee from 2008 to 2010. Despite her wealth of experience and involvement, Pauline was invariably humble and kind.

"Despite her wealth of experience and involvement, Pauline was invariably humble and kind."

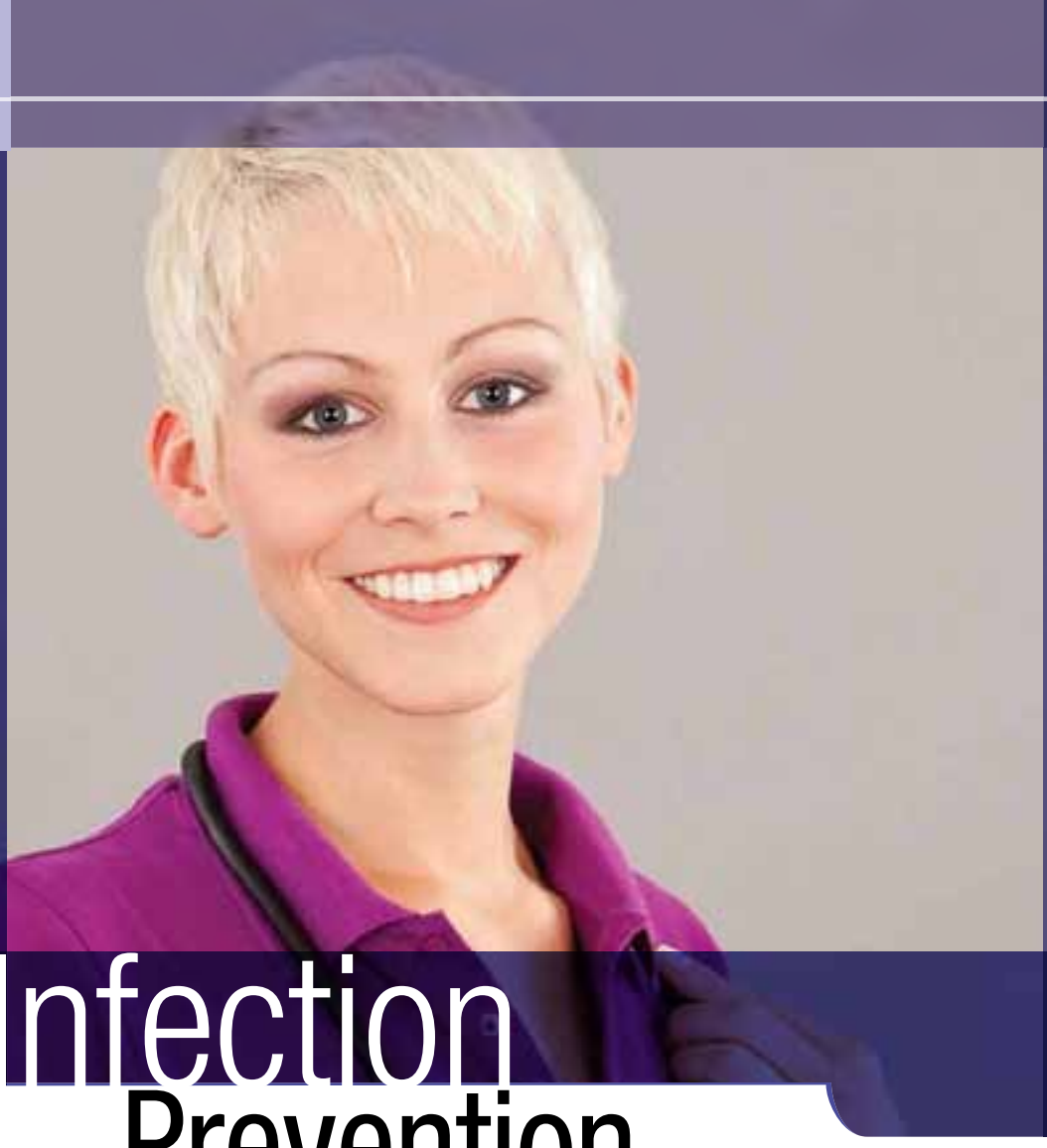
She was quick to smile, laugh, and provide support to new ICPs, friends, and established colleagues, and she was always ready to try something new, including technologies for IPAC such as a novel computerized surveillance program (Epiquest).

Pauline entered the field of IPAC almost 30 years ago at York Central Hospital, after managing the Supply, Processing, and Distribution Department. Eventually, Pauline and I worked together at Humber River Regional Hospital during the challenging later days of the SARS outbreak in Toronto. Her organization skills and cheerful optimism helped us through some heavy days and nights, to implement changes to help prevent such emergencies in the future. Later, Pauline moved on to West Park Healthcare Centre, where she was the Infection Control Practice leader for five years before retiring in 2009 to focus on her new adventure as a parish nurse through Richmond Hill United Church, a role she had begun in 2008.

Adored and sorely missed by her family: husband Ron, sons Stephen and John and their wives, Rhonda and Tanya, and grandchildren Victoria, Jared, Kaitlyn, Jake, and Jeff, Pauline also leaves behind many friends and colleagues who will remember her fondly as a gentle soul with a mischievous twinkle in her eye, who achieved something we all hope to accomplish, to make a difference in her chosen field of infection prevention and control and in the lives of those who knew and loved her.

Thank you, Pauline.

– Madeleine Ashcroft



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Moira Walker Memorial Award for International Service

The inaugural Moira Walker Memorial Award for International Services is to be presented to Yasmine Chagla, CHICA-Canada member at London Health Sciences Centre.

This award honours an individual or group that has demonstrated extra-ordinary efforts to bring about change or improvement related to infection prevention and control in parts of the world that are under developed or under resourced. The annual award is in honour of Moira Walker, RN, CIC, a past president of CHICA-Canada and past honourary secretary of the International Federation of Infection Control. Moira's life was dedicated to enhancing the physical and spiritual health of her many friends and colleagues.

Yasmine outreached to the Aga Khan Hospital Mombasa (AKHM) Kenya, a 96-bed acute care facility in Kenya at their request for voluntary assistance to assess the existing Infection Prevention and Control (IPAC) program and suggest modifications; train staff on the importance of IPAC and staff immunization; assist in building local resources in surveillance, epidemiology and outbreak management; assist in connecting local staff to the international IPAC network; and maintain a sustainable and long term relationship of support and assistance for the future.

Yasmine's report included at least 18 major observations. With this she raised the bar at AKHM and motivated staff. With their engagement, staff was eager to take the necessary steps to lower the rates of HAI, introduce regular audits, and had a long-term vision for increased IPAC awareness.

Yasmine began her career some 30 years ago, initially as a medical laboratory technologist and in 2002 shifted her interest in pursuing Infection Prevention & Control. Her IPAC work experience includes both in acute and non-acute care setting. She has been an active member of her local chapter, CHICA Southwestern Ontario, and has served as co-chair on the education committee. She has done research work in infection control and has presented posters and presentations at various professional meetings.

Yasmine Chagla

Yasmine is encouraging others to become involved in international work. Her future plans include visiting AKHM and other IPAC programs in developing countries as part of her initiative of creating "IPAC without borders."

The award will be presented at the Opening Ceremonies of the 2012 National Education Conference, Saskatoon, Monday, June 18. During the Breakfast of Champions on Tuesday, June 19, Yasmine will present on the initiatives that have resulted in her award.

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2012 Champion of Infection Prevention and Control

The 2012 Champion of Infection Prevention and Control Award is to be presented to Allan Ronald, OC, MD, BSc(Med), FRCPC, MACP, DSc(Hon), Winnipeg. The award recognizes CHICA-Canada members who have demonstrated extraordinary effort above and beyond normal work responsibilities to prevent infection, raise awareness, and improve the health of Canadians and other citizens of the world. Dr. Ronald is acknowledged as a pioneer of CHICA-Canada and an international ambassador for infection prevention and control.

Allan Ronald graduated from the University of Manitoba in 1961 with an MD. Following post-graduate training at the University of Maryland and the University of Washington, he returned to Winnipeg in 1968 and established an infectious disease training and research program which has had a major impact on Canada and internationally. Over 80 individuals have been trained in infectious and/or medical microbiology since its inception. This program continues to be highly sought after for clinical and scientific training in infectious diseases.

Dr. Ronald is a charter member of CHICA-Canada and maintains his membership today. He served on the first Board of CHICA-Canada in 1976-1977. He was instrumental in the development of the infection prevention and control program in Manitoba and continues to support infection prevention and control professionals (ICPs) through education and mentoring.

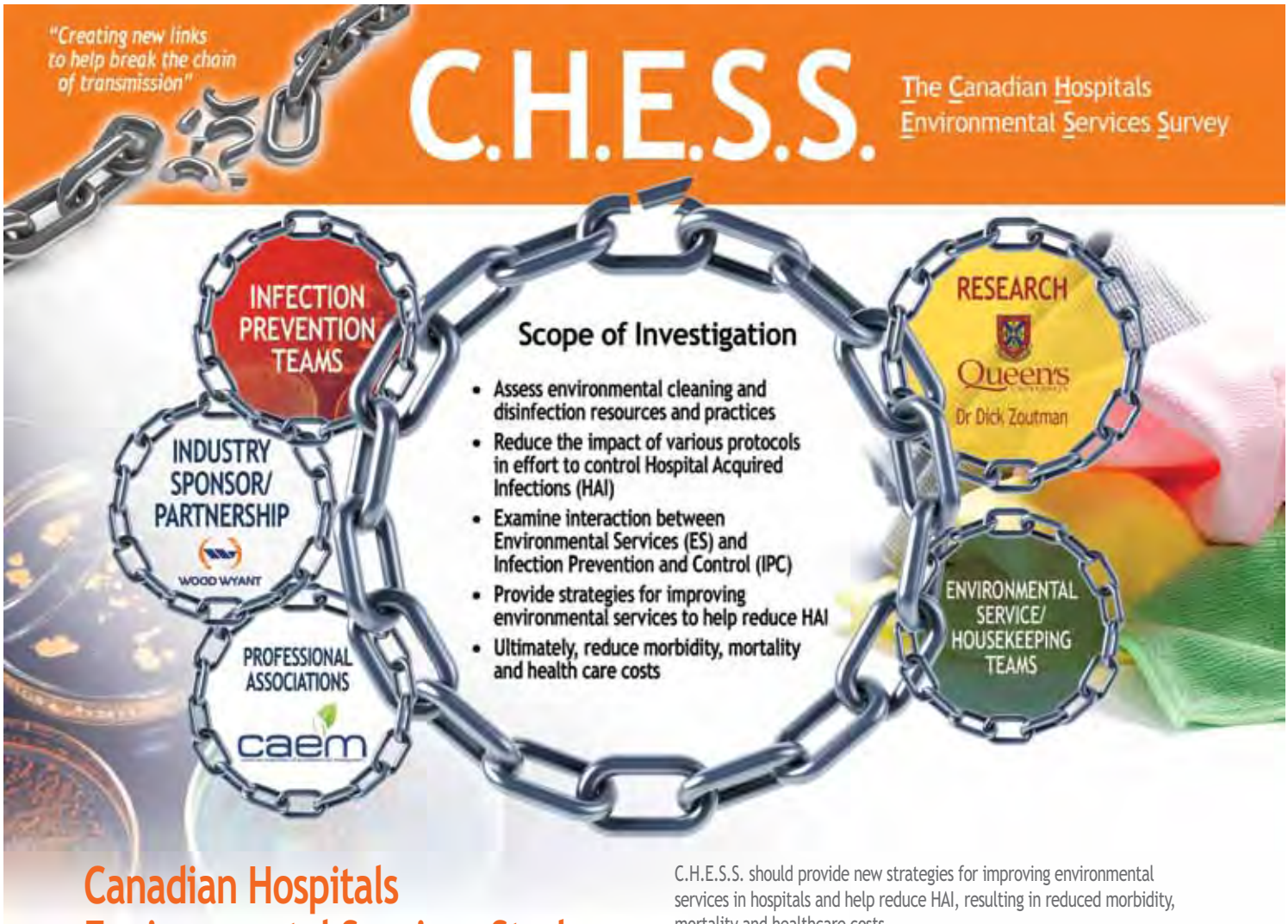
In 1978 Dr. Ronald was invited to initiate a collaborative STD research program in Kenya. This program has grown and is currently a very successful multinational collaborative program still led by the University of Manitoba but with partners from the University of Washington, the University of Ghent, Oxford University, the University of Toronto, and McMaster University.

He currently is the president of the International Society for Infectious Diseases and serves on numerous boards and organizations. He has been involved in significant administrative responsibilities at the University of Manitoba including Chair of the Medical Microbiology from 1976 through 1985, Chair of Internal Medicine from 1985 through 1990, and Associate Dean (Research) from 1993-1997. His accomplishments have been recognized in many ways including the Hugh Saunderson Award for Excellence in Teaching, the Alumni Jubilee Award and in 1994 he was made an Officer of the Order of Canada.

Dr. Allan Ronald receives the John Embil Award for Mentorship in Infectious Diseases. (L-R) Ann LeBlanc (CFID Board), Dr. John Embil, Dr. Allan Ronald, Gerry Hansen (CHICA-Canada/ CFID Board).

In 2011, Dr. Ronald was presented with the John Embil Award for Mentorship in Infectious Diseases by the Canadian Foundation for Infectious Diseases. The CHICA-Canada Champion of Infection Prevention and Control Award will be presented at the Opening Ceremonies of the 2012 National Education Conference, Monday, June 18. On Tuesday, June19, at the Breakfast of Champions, Dr. Ronald will present on some of his lifetime achievements.

The Champion of Infection Prevention and Control Award is a collaboration of CHICA-Canada and 3M Canada.



Canadian Hospitals Environmental Services Study (C.H.E.S.S.)

We are ready for your input...

More than 240 health care facilities in Canada have been invited to participate in the Canadian Hospitals Environmental Services Study (C.H.E.S.S.). Environmental managers and infection prevention professionals representing Canadian acute care facilities of 80 beds or more should have received an invitation to complete a survey developed by our C.H.E.S.S. steering committee.

This is an extremely important research project, which we anticipate, will have a huge impact on the future of health care environmental cleaning.

Please take the time to complete the survey to its fullest potential.

The C.H.E.S.S. study will assess environmental cleaning and disinfection in hospitals across Canada and the inputs that infection control programs have on environmental services. The association of these factors with healthcare-associated infections (HAI) will be examined. C.H.E.S.S. is a unique and valuable project and these associations have not been rigorously investigated over a large jurisdiction such as Canada.

C.H.E.S.S. should provide new strategies for improving environmental services in hospitals and help reduce HAI, resulting in reduced morbidity, mortality and healthcare costs.

For more information or assistance, contact Dick. E. Zoutman, MD, FRCPC, Principal Investor, C.H.E.S.S., at **zoutman@queensu.ca** *or call* ***(613) 969-7400 ext. 2371*** *or Keith Sopha, C.E.M., P.H.H., President, CAEM at* ***sophkeit@homewood.org*** *or* ***(519) 824-1010 ext. 2380****.*

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CHICA-Canada audit tools are designed to support you to measure your success at moving best evidence into best practices in your organizations. The audit tools are available to CHICA-Canada members to download AT NO CHARGE in the Members Area of the website (www.chica.org). CD with or without links to online tools now available. A printed copy of the toolkit is available from CHICA-Canada for $300 plus shipping and handling plus GST (new tools will be sent as developed for an administration fee of $20 per audit tool). For a detailed list of audit tools available, see *www.chica.org* (Members Area).

AROs: Across the Spectrum of Care/le MRA: Dans tout le spectre des soins

A 15 minute educational video covering topics related to AROs (epidemiology, surveillance and control). Produced in cooperation with Wyeth, with assistance from CHICA-Canada members. CHICA-Canada members may download the video from *www.chica.org* at no cost. Additional cost to purchase VHS or DVD.

"Just Wash 'Em" / "Lavez les"

A 7 minute video directed to Elementary School aged children. Reaching today's kids with our all-important handwashing message is a major step in preventing the spread of infection. CHICA-Canada's very own Sudsy makes his debut in a creative, fun-to-watch handwashing video aimed at school-aged children. Great for school projects, seminars and demonstrations. CHICA-Canada members may download the video and workbook from *www.chica.org* at no cost. Additional cost to purchase VHS or DVD.

ESBL TOOLKIT (under revision)

Infection Control for Families and Visitors

Developed by the South Western Ontario Infection Control Network, London Health Sciences Centre and St. Joseph's Health Centre, this 8-minute DVD resource has been designed to assist staff to help educate family members and other visitors about the importance of their role in infection control. Proper use of personal protective equipment (PPE) and effective hand hygiene techniques are demonstrated in an easy-to-understand format while emphasizing the role of the visitor in preventing the spread of infection. Available in English only.

The Infection Control Toolkit: Infection Control in Emergencies and Disasters

revised 2007 (formerly: Infection Control Toolkit: Strategies for Pandemics and Disasters)

Toolkit cover may not be exactly as shown

The only disaster planning document that presents information specific to the key issues of infection control. Includes all the tools and materials necessary for surveillance, education, communication, laboratory, and management of personnel and patients are included. Handy forms, references, fact sheets, flowcharts, checklists, and samples provide the framework to interface with healthcare facilities and local public health preparedness plans. No other disaster planning document presents information specific to the key issues of infection control

The Grand Prix of PPE for Long Term Care

A new DVD resource created by Regional Infection Control Networks in Ontario, this teaching tool focuses on the essentials of personal protective equipment. Although targeted to the long term care setting, the messages are equally engaging for acute care as well. The DVD employs a humorous approach that makes it a great teaching tool for new and existing staff alike. English and French versions included!

Superbugs – A Nightmare on Your Hands

Developed by the Erie St. Clair Infection Control Network, this 12 minute DVD provides a resource for Long Term Care to clearly promote the use of hand hygiene and alcohol hand rub as the gold standard for cleaning hands that are not visibly soiled. The DVD explains simple yet important hand hygiene tasks we all need to practice as health care personnel. *Superbugs – A Nightmare on Your Hands!* is perfect for in-house education sessions. The video has uses a humorous approach to keep front line staff interested in the education and health value of the information. The superbugs C-Diff and MRSA (played by two actors) look for someone loaded with antibiotics, get into their system and cause as much mayhem as they can! The two superbugs believe this is possible because health care providers do not always practice safe hand hygiene, sometimes ignoring the alcohol hand rub and not wearing gloves. What are the safe practices to kill off these nasty Superbugs?

The DVD will encourage use of the effective slogan "*Squirt, swirl, switch, swirl, and scrub until dry*" before and after contact, after exposure to bodily fluids and before aseptic procedures. Both English and French DVD and Education Tool included!

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ARO Video© – Across the Spectrum of Care		N/C - 5.00	10.00	
Le MRA© – Dans tout le spectre des soins		N/C - 5.00	10.00	
Infection Control Audit Toolkit - CD with website links		30.00	N/A	
Infection Control Audit Toolkit - CD without links		N/C	50.00	
Infection Control in Emergencies and Disasters Toolkit		50.00	75.00	
Grand Prix PPE DVD		24.00	24.00	
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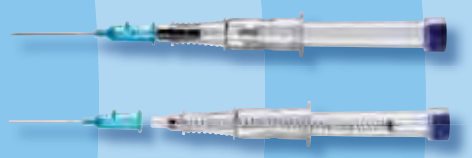

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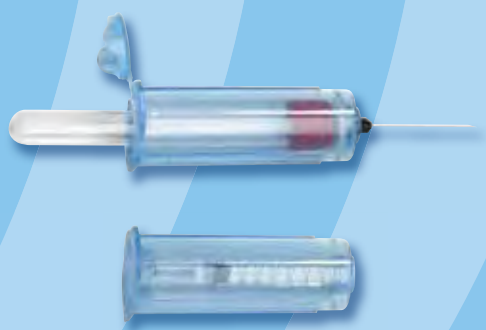

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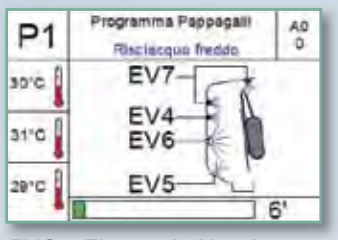

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Sage® Antiseptic Body Cleanser

SAGE PRODUCTS INC

Simple Interventions. Extraordinary Outcomes.

REFERENCES: 1. Stone S, et al., Removal of bath basins to reduce catheter-associated urinary tract infections. Poster presented at APIC 2010; New Orleans, LA; July 2010.

Environmental Services:
Your Strategic Partner in the war on Hospital Acquired Infection

According to the Canadian Institute for Health Information (CIHI), there are over 220,000 cases of Hospital Acquired Infection (HAI) reported each year in Canada.

Reductions in hospital funding and increased incidence of community-based infections are putting more pressure on hospital ICP teams. Hospital Boards are now accountable for publicly reported goals for HAI prevention as part of their quality commitments.

A strong and collaborative partnership between Environmental Services and the other professionals on the ICP team is mission critical to winning the war on HAIs. Your EVS partner must also be on the leading edge of technical innovation in their field.

For over 50 years in Canada, ARAMARK Healthcare has built a reputation for leading edge EVS practices in delivering some of the critical building blocks of a successful ICP program. These include rigorous hiring and training programs, disciplined design and auditing of cleaning protocols, and application of innovative technologies such as ATP Illuminometers, Fluorescent Marker Testing, and Microbial Simulation Audits.

Make ARAMARK Healthcare part of your ICP Team's war on HAI

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Best Care, Best Environments.®

DAZO® delivers objective evaluation of cleaning outcomes

With growing evidence that the environment plays a role in the transmission of pathogens, it's critical to verify and monitor cleaning outcomes. Ecolab's DAZO® Fluorescent Marking Gel helps you objectively evaluate cleaning outcomes and drive continuous improvement.

Backed by the personal service and support you've come to expect, Ecolab delivers a program that helps you comply with PIDAC's *Best Practices for Enviornmental Cleaning*.

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Methods of using the DAZO fluorescent marking gel may be covered by one or more of US Patent Nos. 7,718,395; 7,780,453; and 7,785,109.

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