

ORAL PRESENTATIONS

WEDNESDAY, JUNE 4, 2008

YEARLY DIDACTIC INFECTION CONTROL EDUCATION OF MEDICAL STUDENTS AT QUEEN'S UNIVERSITY

Jim Gauthier¹, Kathleen Poole¹, Dick Zoutman³, Susan Moffatt², Janet Allen⁴, Susan Cooper⁴, Amanda Knapp⁵, Allyson Davis³, Darlene Campbell¹

¹Providence Care, Kingston Ontario, Canada, ²Queen's University, Kingston Ontario, Canada, ³Kingston General Hospital, Kingston Ontario, Canada, ⁴Southeastern Ontario Regional Infection Control Network, Kingston Ontario, Canada, ⁵KFL&A Public Health, Kingston Ontario, Canada

Issue: To build routine practices into medical students' clinical habits as they learn physical diagnosis to help embed the practices in their clinical behaviours.

Project: As a collaboration between the Clinical Skills Program, School of Medicine, Queen's University, and the Kingston Hospital's Infection Control team, methods were discussed to increase education to medical students in each year of their didactic training. First year students would receive 45 minutes on Routine Practices, hand hygiene and glove use within the first month of classes; second year students would receive a 40 minute review of Routine Practices and new information on gown and mask use for Additional Precautions (3rd year students received this training also, as they had not received it last year); 3rd year students would be tested on gown donning and doffing during their Observed Standardized Clinical Exams (OSCE), also known as a bell ringer clinical examination.

Results: For 1st year students, a preliminary 10-minute overview was presented by one IPCP, followed by the students breaking into groups of 10 students, who met with an IPCP for more information on hand hygiene, with a practical application of gloves, and a test of hand washing effectiveness using red paint to simulate soap. Second year students received a similar 10 minute introduction in a group, then broke into smaller groups of 10 students to meet with an IPCP for a practical demonstration of gown donning and doffing. The OSCE for 3rd year students required 4 IPCP to observe and grade the students. Of 104 students, only 1 failed and required a make up lesson and demonstration.

Lessons Learned: Annual education for medical students by IPCP was well received, with very positive feedback from all 3 classes. Examination to test for the basic skill of PPE use provided evidence of theoretical learning with the ability to put this learning into practice. Having an IPCP teach Routine Practices and proper Infection Control measures at the beginning of a medical student's career with reinforcement through their didactic training will hopefully ensure these psychomotor behaviours become automatically applied in daily practice. Effective collaboration between medical school undergraduate curriculum and teaching hospitals achieved a shared professional mandate.

training will hopefully ensure these psychomotor behaviours become automatically applied in daily practice. Effective collaboration between medical school undergraduate curriculum and teaching hospitals achieved a shared professional mandate.

A PROGRAM EVALUATION: “DO CURRENT INFECTION PREVENTION AND CONTROL ORIENTATION PROGRAMS FACILITATE HEALTHCARE WORKERS’ ATTAINMENT OF THE CORE COMPETENCIES?”

Jennette Coates¹, Donna Moralejo¹, June Pollett²

¹*Memorial University of Newfoundland, St. John's, Newfoundland, Canada,* ²*Eastern Region Health Authority, St. John's, Newfoundland, Canada*

Background/Objectives: CHICA-Canada has articulated core competencies for the knowledge and skills required by all healthcare workers (HCWs). This project assessed one health region’s orientation program, consisting of regional, nursing and environmental services sessions, to see if it contained the necessary core content.

Methods: Data collection, in Fall 2007, consisted of: 1) content analysis; 2) observation of delivery; 3) interviews with leaders; and 4) administration of a questionnaire to 103 current/ recent attendees to assess their knowledge and confidence levels, and to obtain feedback.

Results: The regional session covered 22 (61%) of the 36 detailed topics contained within the 7 core competencies. The nursing and environmental services sessions each covered an additional 2 topics, with considerable duplication of topics. All three sessions missed 10 topics, including first aid and accessing IP&C resources. Topics missed varied by session, e.g., nursing included correct removal of PPE but not application while the reverse was true for environmental services. Sessions provide no opportunity to practice techniques. Leaders stated they were not aware of the core competencies and all assumed HCWs came with prior IP&C knowledge. The questionnaire return rate was 18.4%. Confidence rating did not equal actual IP&C knowledge. For example: in 10 nursing staff, who reported a “very high” confidence level for glove application/ removal, only 3 could state when and how to do this correctly, 3 gave a partly correct answer and 4 gave an incorrect answer.

Conclusions: To ensure the orientation program helps HCWs attain the 7 core IP&C competencies, revisions are recommended with emphasis on practice of skills, assessment of knowledge, reduction of overlap of content, and inclusion of all 36 topics. The methods used provide a model for assessing other orientation programs.

“Survey Says...”- How Healthcare Workers Perceive Infection Control Issues.

Samantha Woolsey, Jilli Joffe, Nina Shumiatcher, Ariel Hendin, Shelley Winton, A. Mark Joffe

Royal Alexandra Hospital, Edmonton, Alberta, Canada

Issue: Provision of infection control (IC) education, service, and resources to a diverse group of healthcare workers can be a challenge for Infection Control programs. Our 750 bed tertiary care hospital has a staff of approximately 5600 with varying levels of education and experience. We felt it would be beneficial to determine the level of IC knowledge in our staff.

Project: Two summer students performed semi-structured interviews with 163 staff members in our facility's inpatient and outpatient care areas. The interviewees were asked a series of 19 questions that covered position type, healthcare experience, participation in IC specific education opportunities, IC service acquisition, and familiarity with the Infection Prevention Services department, IC issues most commonly encountered, and IC frustrations. Some interesting trends emerged.

Results: An IC education deficit was identified in all staff types, however the majority of staff felt their level of IC knowledge was adequate. Nurses with the most experience were the least likely to report having had formal MRSA education. 50% of nursing students stated they had not attended an IC orientation session. Very few staff could identify the IC staff by name although the majority stated they knew how to contact the IC department. Very few staff had accessed the IC website, and of greater concern almost half of staff would go to a co-worker for IC information rather than contacting the IC department.

Lessons Learned: We have identified several areas for improvement in our facility. The survey responses illuminated the need for continued promotion of the Infection Prevention Department including a website education blitz. This information is being shared with leaders in the facility to gain support for yearly IC education sessions for more of our healthcare workers.

YOUR 4 MOMENTS FOR HAND HYGIENE, CLARIFYING THE “WHEN”

Liz McCreight, Clare Barry

Ministry of Health and Long-Term Care, Toronto, Ontario, Canada

Issue:

Compliance rates for hand hygiene (HH) are frequently reported below 50%. In 2006 the Ministry of Health and Long-Term Care (MOHLTC) in Ontario held a 2-day workshop with provincial, national and international experts to discuss improving HH practices. Ontario then developed and tested a multifaceted HH program for hospitals. Ten hospitals across the province participated in the pilot. The pilot phase of the *Just Clean Your Hands (JCYH)* program found that health care providers (HCP) think they clean their hands appropriately. The observational audit results showed that there was a significant gap between perception and practice. Clarity in messages used to teach “when and how” to clean hands is a necessary component to improve HH practices. There are essential moments in hospitals where the risk of transmission is greatest and HH must be performed. This concept is what “*Your 4 Moments for Hand Hygiene*” is about.

Project:

The goal of the project was to provide a simplified method to teach “when and how” to clean hands at the right moment with the right technique. The *JCYH* tested six indications. Feedback and expert review confirmed the six indications and recommended they be represented as “4 Moments”. The 4 moments are: Before initial patient/patient environment contact; Before aseptic procedure; After Body Fluid Exposure Risk; After patient/patient environment contact. The “4 Moments” concept is one element of the multifaceted *JCYH* program.

Results

Defining simply “when and how” to clean hands through an education program contributed to a clearer understanding that translated into improved practices. In the 6 month testing phase, there was a steady increase in compliance rates across sites from the baseline rate. Average increase across sites for “Before initial patient/patient contact” was 18%.

Lessons Learned:

HCP think they clean their hands, but do not know the indications of “when and how” to clean their hands. Using “Your 4 Moments for hand hygiene” improves compliance in HH practices.

***Chosen as one of the six best abstract submissions**

Learning's from Ontario *Just Clean Your Hands* Program Pilot Phase

Clare Barry, Liz McCreight

MOHLTC, Toronto, Canada

Issue:

A 2006 study of hospitals in Ontario found overall adherence to hand hygiene (HH) was 32%. The *Just Clean Your Hands (JCYH)* program for hospitals aims to obtain sustained improvement in HH compliance. *JCYH* was developed in collaboration with provincial, national and international experts.

Project:

The nine month pilot phase in ten hospitals assessed the effectiveness of a multifaceted program. Program components included: environmental modifications; senior/middle management support; education; champions and role models; observation and feedback; and a communications toolkit. The evaluation components included: health care provider (HCP) surveys, patient surveys, focus groups, key informant interviews, product measurements, and compliance data through direct observation. A third party evaluation was done at baseline, interim and in the final phase. Ministry staff made two visits per site to learn more about the enablers and barriers to develop a successful program.

Results:

Data included: 4,240 HCPs observed in 11,351 indications across all three evaluation periods; 27 focus groups at baseline and 20 interim focus groups; 2260 health care survey respondents (53% response rate); 5594 patient surveys (57% response rate). There was a steady increase in HH compliance across pilot sites. Key learning's included: HCPs do not have a clear understanding of when to clean hands; HH compliance varies by type of HCP and indication therefore an overall compliance rate may not be comparative over time; patient confidence increased knowing there is a HH program; patients do not want to be responsible for reminding HCPs to clean their hands; alcohol-based hand rub placed correctly at point of care increases compliance; timely feedback from observational audits can close the gap between perception and practice.

Lessons Learned:

A single intervention such as posters or education will not obtain a sustained improvement in HH. A multifaceted approach consisting of all the components listed above is essential.

Positive Impact of Alcohol Based Hand Rubs (ABHR) at Point-Of-Care on the Hand Hygiene Compliance of Front-line Health Care Workers

Olivia Yow, Sandra Callery, Mary Vearncombe

Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada

Background/Objectives:

Hand hygiene (HH) is recognized as the single most important factor to reduce healthcare acquired infections. Various strategies and interventions have been utilized in the hopes of improving compliance. Placement of alcohol based hand rubs (ABHR) at point of care is known to be good practice but can be a challenge in special settings such as units with cognitively impaired residents. In our long-term care (LTC) home the selection of tamper-resistant dispensers has allowed the safe installation of ABHR at point-of-care. This study describes the impact of ABHR at point-of-care on the HH compliance rate of front-line HCWs.

Method:

In the summer of 2007, the 575-bed LTC portion of this academic tertiary care facility completed the installation of dispensers for ABHR products at point-of-care (within the resident's bed space). From March 2007 until February 2008, trained auditors performed repeated HH audit sessions on 17 different resident units of the LTC home. The auditors used a standardized tool to audit HCWs' HH during their interaction with residents. Analysis of HH audit results pre and post installation was completed.

Results:

During the HH audit period, 794 HH opportunities were observed during 97 auditing sessions. Overall, HH compliance increased by 122% with the implementation of ABHR at point-of-care. The difference is statistically significant. Improvement in unit-specific HH compliance rates was observed in all 17 resident units.

Conclusions:

ABHR at point-of care can lead to improvement of hand hygiene compliance rates.

*Best First Time Abstract Submission

Le triage informatisé : une approche proactive d'endiguement d'une éventuelle pandémie

Julie Carbonneau

Hôpital Ste-Anne, Ste-Anne de Bellevue, Qc, Canada

L'Hôpital Sainte-Anne, centre de soins de longue durée de 420 lits pour anciens combattants, a développé un programme de triage informatisé en cas de pandémie. Ce programme est le fruit de la collaboration entre des membres de l'équipe de prévention et de contrôle des infections, de l'équipe de gestion du plan de pandémie et du Service informatique de l'Hôpital.

En situation de pandémie, ce programme de triage informatisé permettra de procéder à l'évaluation initiale des signes et symptômes d'allure grippale que présentera un employé à son arrivée au travail. Au besoin, l'employé sera redirigé vers un professionnel de la santé pour que celui-ci procède à un triage avancé. Le triage informatisé facilitera le contrôle quotidien des absences des employés liées aux symptômes d'allure grippale, ce qui contribuera à prévenir ou à retarder l'introduction de l'influenza pandémique au sein de l'établissement. Le programme permettra également d'associer à chaque employé le masque N-95 approprié, tout en identifiant et en assurant le suivi de son état vaccinal et des antiviraux qu'il aura reçus.

Lors de la présentation, une démonstration concrète du logiciel sera effectuée. Les objectifs et l'utilité du programme de triage informatisé en cas de pandémie seront également passés en revue.

Il est indubitable que l'implantation d'un programme de triage informatisé facilitera la gestion des accès sur le site de l'Hôpital et constituera un outil essentiel pour assurer la sécurité et prévenir la propagation du virus en cas de pandémie.

Universal MRSA Admission Screening for Psychiatry In-Patients in a Large Urban Teaching Hospital.

Alexis Silverman, Michael Gardam

University Health Network, Toronto, Canada

Issue: The University Health Network (UHN), comprised of three major urban health care centres, has been screening all admitted patients considered at high risk for MRSA and VRE carriage for the past ten years. However in October of 2007, the decision was made to universally screen all newly-admitted patients. MRSA screening involves swabbing both nares, axillae, groin and perineum and any wounds or exit sites. VRE screening involves swabbing the rectum. Traditionally psychiatric patients have not been screened for MRSA and VRE as they did not meet the criteria for a high-risk patient and because of the invasiveness of the swabs for this patient population. **Project:** The purpose of this project was to implement MRSA and VRE screening in an acute care psychiatric population. **Results:** In order to implement admission screening, meetings were held with the nurse manager, nurses and psychiatric aids to see how best to approach this unique patient population. Opportunities were given for the health-care staff to voice questions and concerns. The unit staff identified that the majority of patients on the psychiatric ward were survivors of sexual abuse, a statement readily supported in the literature. Swabbing of intimate areas could potentially re-traumatize these patients, as well as severely impede the creation of a therapeutic nurse-client relationship. It was decided that patients would be swabbed for MRSA in the nares only. The nurse or psychiatric aid would ask to swab the patient's axillae, groin and perineum if the request would not re-traumatize the patient. The health care workers felt that VRE swabbing was inappropriate for this patient population. From November 1, 2007 to January 1, 2008, 62 patients were admitted to the ward. 50 patients were swabbed, only 6 refused and 6 patients were missed. The screening program identified one patient colonized with CA-MRSA, and this patient was moved to a private room and given education on MRSA and hand-hygiene. The in-patient psychiatric health-care staff were highly supportive of this initiative and the pilot has been adopted into daily practice. **Lessons Learned:** Universal admission screening is possible and practical on an in-patient psychiatric unit as long as: health-care workers are encouraged to participate in program development, the uniqueness of the patient population is respected and the risk of re-traumatization is avoided

TITLE: COMMUNITY ACQUIRED MRSA AND SOCIOECONOMIC STATUS (SES)

AUTHORS: Simmonds K*, Dover D, Sanderson M, Alberta Health and Wellness, Alberta

BACKGROUND: Community acquired methicillin resistant *Staphylococcus aureus* (CA-MRSA) is increasingly common. CMRSA 7 and CMRSA 10 are two strains known to be community acquired. Recent community outbreaks highlight the potential increased risk of infection for individuals of lower socio-economic status.

OBJECTIVE: To describe the relationship between socio-economic status and CA-MRSA cases in Alberta over time.

METHODS: Cases were defined as new clinical infections (no positive PFGE of the same strain during the previous six months) with PFGE identified as CMRSA 7 or CMRSA 10 in Alberta during 2006 and 2007 and less than 65 years of age at diagnosis. Patient data was linked to the Alberta Health Care Insurance Plan (AHCIP) at the quarter end closest to the infection date to create a proxy for socio-economic status. The groups were derived as follows: Group 1: Does not receive an AHCIP premium subsidy. Group 2: Receives an AHCIP premium subsidy. Group 3: Registered First Nations and AHCIP premiums are paid by the federal government. Group 4: Receives social assistance.

RESULTS: For the 351 cases of CMRSA 7, 175 cases are Group 3 with an age standardized rate of 70.7 cases per 100,000. The age standardized infection rates for CMRSA 7 is highest among Group 3 followed by Groups 4, 2 and 1. For the 2,951 cases of CMRSA 10 the age standardized infection rate is highest among Group 3 (249.1 cases per 100,000) and Group 4 (256.7 cases per 100,000). The age standardized infection rates for CMRSA 10 increased in all groups between 2006 and 2007.

CONCLUSION: Those on social assistance are over represented as CMRSA 10 cases in Alberta. Registered First Nations are over represented as cases for both CMRSA 7 and CMRSA 10 in Alberta. Socio-economic status is a changing factor in MRSA infection.

*Chosen as one of the six best abstract submissions

UTILITY OF ENVIRONMENTAL SAMPLING FOR THE PREVENTION OF VANCOMYCIN RESISTANT ENTEROCOCCI (VRE) TRANSMISSION

Victoria Williams, Sandra Callery, Andrew E Simor, Mary Vearncombe

Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada

Background: Patients with gastrointestinal colonization are the major reservoir for vancomycin resistant enterococci (VRE) and transient carriage on the hands of healthcare workers the most common mode of transmission in healthcare facilities. Although VRE has been shown to contaminate environmental surfaces in the room of a patient infected or colonized with VRE there is no clear evidence that links environmental contamination with acquisition. **Objectives:** To determine whether a policy of environmental sampling and keeping the room closed pending negative culture results, is more effective than visual inspection of the room without culturing, in preventing the transmission of VRE to the next admitted patient. **Methods:** All acute care inpatient units were eligible for inclusion excepting intensive care and psychiatric care. The rooms of consecutive patients with VRE who had been discharged or transferred were alternatively managed according to either Protocol I (terminal cleaning, inspection by Infection Prevention and Control and admission of new patient(s)) or Protocol II (terminal cleaning, environmental cultures and closing of the room pending negative results). The next admitted patient to all rooms had rectal swabs obtained for VRE within 24 hours of admission, 3-5 days after admission and upon discharge from the room and/or the facility. The proportion of patients who acquired the same strain of VRE after being admitted to rooms handled according to either Protocol I or Protocol II was compared. **Results:** The risk of acquisition of VRE by patients admitted to a room managed according to Protocol I (1/19) was not significantly different than for patients admitted to a room managed according to Protocol II (0/12) ($p=0.99$). The patient who acquired VRE after admission to a room managed according to Protocol I, was identified as positive for the organism through a prevalence screen on the unit 40 days after admission. At least 1 positive environmental culture was obtained in 8/14 (57.1%) rooms managed according to Protocol II. **Conclusions:** Although VRE may be detected in the hospital environment there is insufficient evidence to conclude that routinely obtaining negative environmental cultures from the room of a patient infected or colonized with the organism is more effective in preventing VRE transmission to subsequent patients, provided the room is adequately cleaned and disinfected.

Surface Disinfectants and label claims: Realistically can contact times be met to achieve antimicrobial efficacy?

Navid Omidbakhsh

Virox Technologies, Oakville, On, Canada

The number of infections continues to rise in North American and around the world. The use of disinfectants is an important part of all healthcare facilities infection control practices. Most disinfectants are applied to surfaces, and allowed to air dry. For disinfection to occur, it is important for a product to keep the surface wet for the entire disinfection contact time as noted on the label in order to achieve the claimed disinfection activity. The objective of this study was to determine the efficacy of several different disinfectant chemistries against common pathogens using a realistic contact time for each chemistry based on its evaporation rate and compare the results to the efficacy claims listed on the product labels. In this study, several disinfecting chemistries including Accelerated Hydrogen Peroxide (AHP) 0.5%, bleach 500 PPM, a quat, 600 PPM, a quat-alcohol (0.2% quat & 21% alcohol), and a phenol, 700 PPM were tested for their drying time on a surface, and then tested for their antimicrobial activity at their drying time against *S. aureus*, *P. aeruginosa*, and *MRSA*, as representative bacteria using a quantitative carrier test method with the criteria of at least 6 log reduction to pass. All tested products dried in less than 5 min contact time with alcohol-based products drying significantly faster than any other chemistry (p-value of 0.000). Quat and phenol carried a label claim of 10 min, but dried at less than 2-3 min, and those contact times, they were found ineffective. AHP dried at 3-4 min, regardless it was still efficacious. Bleach dried at less than 2 min, and it was not efficacious. Quat/alcohol dried at less than 30 seconds, and was not effective. The results showed that it is not possible in practice to meet the required contact time for slow acting disinfecting products, and the products with no gap or less gap between their claimed contact time, and drying time have a significantly better chance of achieving their required level of decontamination.

Seek and Ye Shall Find: Results of a Medical Device Reprocessing Audit in a large Canadian multi-site Health Region

Shelley Winton, Sue Lafferty, Olivia Marcotte, Karin Fluet, Marsha Johnson

Capital Health Edmonton Area, Edmonton, AB, Canada

Issue A medical device reprocessing (MDR) audit was completed in April 2007 by 37 auditors who assessed reprocessing of **critical** and **semi-critical** medical devices used for patient care. Within 56 facilities, 118 areas in the Health Region were identified to be performing MDR. Compliance with current infection prevention and control guidelines and MDR standards was measured.

Project Participating auditors were regional staff with expertise in MDR or Infection Prevention and Control. An audit tool was divided into sections which represented distinct reprocessing functions (e.g. cleaning, disinfection, sterilization). Auditors assessed reprocessing activities by indicating “yes”, “no”, or “not applicable”. Compliance percentage scores for each section of the audit were assigned using an established formula. “No” responses were recorded as a “variation”, meaning that the item required corrective action to meet criteria specified in the audit.

Results Audit data revealed “compliance percentages”: **>90% or above** in 4/17 sections; **60% - 80%** in 9/17 sections; and, **<60%** in 4/17 sections. Three general recommendations were made to: (1) centralize MDR whenever possible; (2) increase inventory of surgical instruments and centralized reprocessing capacity to minimize flash sterilization; and, (3) educate and monitor competency of staff responsible for MDR. Detailed reports with scores, variations and necessary corrective action were provided to each area audited.

Lessons Learned

1. Provide detailed reports to all levels of the organization. Detailed audit reports were provided to managers of MDR areas and shorter summary reports went to executive and operational leadership. In the final analysis, detailed reports were required at all levels.
2. Coordinate follow-up to facilitate action. Follow-up of the recommendations was intended to be coordinated by site and sector Infection Control personnel. In retrospect, a formal follow-up procedure for all sites would have assisted with provision of progress reports to executive and standardization of practice.
3. Reprocessing is a complex issue that requires ongoing monitoring. Repeat annual audits are scheduled.