

PRÉSENTATIONS PAR AFFICHAGE

MARDI, 3 JUIN 2008

INFLUENZA CAMPAIGN 2006 and 2007: A residential care success story

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Objective: July 7, 2000, the BC Ministry of Health announced a comprehensive influenza campaign for British Columbia (BC). The Ministry's goals were: to reduce illness and death associated with influenza in the most vulnerable populations, to reduce predictable preventable additional pressures on the health care system that occur during influenza season, and to achieve an 80% immunization rate in health care workers. Since 2000, the staff influenza numbers continue to remain around 45% with a number of identified influenza outbreaks. Saanich Peninsula Hospital (SPH) 150 bed extended care unit challenged their staff to improve and sustain their immunization numbers to 80% for the protection of their residents.

Method: In response, SPH developed an integrated influenza management plan. The plan focused on an enhanced ability to prevent and control influenza. This would involve a targeted immunization campaign for high-risk groups, enhanced ability to quickly identify outbreaks, and to implement control measures. SPH along with the Vancouver Island Health Authority (VIHA) used a campaign that involved the development of staff policies around influenza immunization and outbreak management, an enhanced media campaign, incentive program for staff and refinement of protocols for quick access and testing of isolates during an outbreak.

Results: Increase in influenza awareness both among health care workers and the general public. Increased in immunization of SPH extended care staff with 115% increase in staff immunization rates over the 2005 campaign. A 90% immunization rate among residents in residential care facilities was seen. There were no reported outbreaks of influenza in residential care facility within the SPH during the 2006 and 2007 influenza season.

Discussion: Despite the increase in immunization rates among health care workers, in general, the overall rate within the health authority remains low. The success of the SPH extended care campaign may have been a result of the climate of the facility and the commitment of the manager and key staff to the initiative. Future campaigns will be directed to the entire facility, including acute care. It will be interesting to see if these immunization numbers can be sustained in other areas.

Conclusion: Influenza immunization campaigns in order to be successful must involve management and numerous departments. Early planning is important and must start as soon as the previous year's campaign concludes. A key component to any plan is communication, staff incentives and staff belief in the program. The success or failure of a plan is in the message about immunization that gets out to the 'at-risk' populations. This will continue to be a key component of the future influenza campaigns.

DEVELOPMENT OF AN EDUCATIONAL PROGRAM: HELPING LONG TERM CARE NURSES TO MAKE THE RIGHT INFECTION CONTROL DECISIONS

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Issues

Capital District Health Authority in Halifax, Nova Scotia is diverse and wide geographically. The district includes five Long Term Care Facilities (LTC). We knew there were varying degrees of nursing practices. There are many infection control challenges in health care and long term care is no exception.

Project

Infection Control Practitioners (ICP) recognize the importance of maintaining a balance between a home like environment while protecting the residents from infection related adverse events. We recognize that health care workers need the “right” information to make the “right” decision. While an established Infection Prevention and Control program existed within the district, it did not totally address the complexities of resident care.

A reference binder was developed for nursing staff which included supporting infection control education which is easily accessible, user friendly and is consistent across the district. Nurses use this to guide their Infection Control practice. This reference material has been integrated into the nursing units of all LTC areas of Capital Health. Project funded by District Nursing Advisory Council.

Results

This project has transformed the practice environment and the spin off has been the creation of a LTC/IC Quality Nursing Collaboration in which the goal is to optimize quality resident care within Capital Health.

Lessons

The ICP recognizes the integral role they play in guiding nursing/IC practices.

VAP: VENTILATOR ASSOCIATED PNEUMONIA OR VALUE ADDED PROGRAM?

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Issue: To reduce the rate of VAP in an adult medical / surgical Intensive Care Unit (ICU) through implementation of the Safer Healthcare Now (SHN) Ventilator Associated Pneumonia (VAP) surveillance and intervention bundle.

Project: A multidisciplinary team was convened to initiate the program. SHN VAP definition criteria were utilized to identify VAP in the ICU. The intervention bundle elements were introduced concurrently. An oral care regimen every 12 hours was introduced 6 months later, increasing to every 6 hours after 9 months. Monthly VAP rates were calculated as the number of VAP per 1000 ventilator days. A baseline VAP rate was established with a goal of reducing the rate to 50% below baseline. Intervention bundle compliance was calculated as a percentage with a goal of achieving 95% compliance.

Results: 25% of VAP occurred 2-5 days post intubation. 75% of VAP occurred greater than 5 days post intubation. VAPs declined over time, reaching a sustained rate reduction of 50%. Intervention bundle compliance surpassed 95%. Implementation of an oral care regimen resulted in the largest subsequent decline in VAP rates.

Lessons Learned: A collaborative multi-pronged approach to identify a potential VAP, triggering VAP investigation, was essential to ensure all cases were captured. Reporting of VAP infection rates generated interest in implementation of other IP&C related quality improvement initiatives in ICU. VAP surveillance became the vehicle to an amplified collaborative relationship between IP&C and ICU. What began as ventilator associated pneumonia surveillance became a value added program.

The State of Pandemic Influenza Planning in Ontario Acute Care Hospitals

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Introduction: The purpose of this study was to determine the state of pandemic influenza planning in acute care hospitals in Ontario. The findings will aid in designing a program to help hospitals plan effectively for future pandemics of severe respiratory infections such as influenza.

Methods: A comprehensive survey was sent in early 2007 to all acute care hospitals in Ontario. The survey was completed by the person most responsible for the hospital's pandemic influenza plan.

Results: The response rate was 77%, 97 of 126 acute care hospitals participated. Three quarters (75%) of hospitals had pandemic influenza plans. There was a trend for larger hospitals to be more likely to have plans ($r = .20$, $p = .06$). Most urban hospitals (88%) had plans while only 67% of rural hospitals did. Only 16% (12 of 73) of hospitals with plans had formally tested their plans. Larger hospitals were more likely to have tested their plans ($r = .35$, $p = .003$) and more urban hospitals (29%) had tested their plans than rural hospitals (8%). 70% of respondents thought the planning process was not adequately funded. No respondents were completely satisfied with the completeness of their hospital's pandemic plan and only 18% were satisfied.

Conclusions: A quarter of Ontario's acute care hospitals did not have a pandemic influenza plan as of early 2007 and few hospitals had formally tested them. The majority of hospitals thought the pandemic planning process was underfunded and were not satisfied with the completeness of their plans. These results support the need for a comprehensive program to help hospitals, especially small and rural hospitals, develop pandemic influenza plans.

THE PREVALENCE OF EXTENDED-SPECTRUM BETA LACTAMASE-PRODUCING *ESCHERICHIA COLI* AND *KLEBSIELLA PNEUMONIAE* AMONG CLINICAL ISOLATES FROM A GENERAL HOSPITAL IN IRAN

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Objectives: Beta-lactamase production is the most important mechanism for bacterial resistance to beta-lactam antibiotics. *Escherichia coli* and *Klebsiella pneumoniae* are among the bacteria which produce extended-spectrum beta lactamase (ESBL). ESBL production causes resistant to multiple antimicrobial agents. The aim of this study was to determine the prevalence of ESBL producing *E. coli* and *K. pneumoniae* and antimicrobial pattern of the strains.

Methods: This study was conducted at Imam Reza Hospital, a 900 beds general teaching hospital affiliated to Mashhad University of Medical Sciences. From May to September 2007 all *E. coli* and *K. pneumoniae* strains isolated from clinical specimens were collected by microbiological laboratory. Bacterial susceptibility to antimicrobial agents was determined by disk diffusion method. The double disk synergy test was performed by standard disk diffusion assay for each isolate. Clavulanate enhancement of the diameter of the inhibition zone around either the antibiotic disk by at least 5 mm was regarded as presumptive evidence for the presence of ESBL.

Results: During the study period, the total of 206 isolates including 106 *E. coli* and 100 *K. pneumoniae* were collected of which 149 isolates (72.33) were ESBL positive. From ESBL positive samples, 77 isolates of *E. coli* (51.67%) and 72 isolates of *K. pneumoniae* (48.32%) were resistant at least to one of the antibiotics. In the *E. coli* isolate group 77 samples were ESBL positive, of which 28 isolates were resistant to cephalosporins, 16 to monobactam and 33 to both families of antibiotics. In the *K. pneumoniae* isolates, 72 samples were ESBL positive, of which 22 isolates were resistant to cephalosporins, 11 to monobactam and 39 to both families of antibiotics. Also there was significant difference between out or in-patients isolates in regard to ESBL production (p -value <0.0001).

Conclusion: In our study, the prevalence of ESBL producing isolates was high for a clinical setting. We recommend an antimicrobial policy and performance of double disk diffusion assay to ensure correct medication by physicians.

Glove Powder: A Health Hazard

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Issue:

Glove powder is made of adsorbed cornstarch. Powder lubricant is used in manufacturing process, on finished glove, as donning agent, as mold release agent and on finished glove to prevent blocking. It has influenced the eventual exposure of sensitive people to latex allergens and demonstrated health effects on patients as well. An estimated 50 % of all surgical gloves and an estimated 30 % of all examination gloves purchased in Canadian hospitals are powdered. Cost is the driving force behind these numbers. Many healthcare professionals think that there is insufficient evidence behind the hazard of glove powder to pursue a change in their practice.

Literature Review:

This review will describe available scientific evidences of cornstarch glove powder effects in healthcare. Powder issue has been published for many years. Glove powder is a vector in latex allergen issue, occupational asthma, skin breakdown, microorganisms and food contamination. Glove powder has been involved in granuloma formation, granulomatous peritonitis, adhesions, and wound infection. Maintaining a powdered environment has economic implications rarely accounted for. Despite overwhelming evidences in literature, hospitals, doctors, and other healthcare professionals continue to wear powdered gloves.

Conclusion

This review will provide participants with scientific and medical evidences in understanding the effect of cornstarch in healthcare. Finally, it is determined to provide material in a noncommercial format that satisfies the needs of CHICA.

:B.U.G.S. creative concepts for the bottom line in Basic Bug Business....

Basic *bug business* information to promote

Understanding of infection transmission concepts and

Generate improved compliance among

Staff, patients, and visitors regarding infection prevention and control practices in the paediatric setting

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Issue: Implementation of prevention practices in a multicultural paediatric facility is a challenge. Simple concepts are required for improved comprehension and compliance. XXXXX XXXXXXXX-Canada is a bilingual, short term, speciality acute care centre. It is a part of an international health care system of 22 hospitals. The patient population includes children and adolescents who come from Canada, the United States as well as from other foreign countries.

Project: Utilisation of pictograms and humorous Bug costumed presentations to promote improvement in compliance. B.U.G.S. is the general theme used for promotion of educational activities for Infection Control and comprises the basics of an infection prevention program. Known as the "Bug Lady", the infection control practitioner has used various creative ways to obtain the attention of both patients and staff in order to enhance their collaboration in implementing infection control measures in this specialized facility. This presentation presents in a simplified and humorous manner the basic concepts of infection transmission and prevention practices – creative concepts for the bottom line in **Basic Bug Business....**

Results: Improved compliance and comprehension of basic prevention practices. No transmission of MRSA or VRE and reduced Class I surgical site infection rates.

Lessons Learned: Creative concepts help promote compliance

Infection Prevention and Control: Developing an Endoscopy Program

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The reprocessing of flexible endoscopes is an exacting science in which the manufacturer outlines a clear concise protocol in order to achieve a consistent best practice. Careful attention must be given to the implementation of Infection Control standards and guidelines. At the Capital District Health Authority in Halifax, the Infection Prevention and Control management team established a position for an Infection Control Practitioner, with Endoscopy expertise, specifically assigned the project of developing an Endoscopy Program. The primary goal is to ensure the universal care of the endoscopes to all areas within the district, by applying scientifically based guidelines and routinely monitoring the performance-based compliance of these guidelines.

Development of Posters for Donning and Removal of Personal Protective Equipment

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Issue: A study conducted by the Infection Control Practitioners in Prince Edward Island revealed inconsistencies in the process for donning and removal of personal protective equipment (PPE). PPE is defined as “specialized clothing or equipment, worn by an employee for the protection against infective material.” The observational study concluded that the potential for health care workers to contaminate themselves and their surroundings when removing PPE was significant. The ICP’s conducted a needs assessment which identified that the development of a tool with instructions in combination with visual aids would assist the HCW’s and visitors in the proper procedures. **Project:** The project team consisted of four Infection Control Practitioners from across PEI and a fourth year nursing student. The ICP’s represented acute care, addictions, long term care, mental health and community hospitals. The goal of the team was to develop posters based on Health Canada Guidelines and best practice and to be used across the PEI health care continuum. The team created ten posters with instructions and photos directing staff and visitors when donning and removing PPE. The purpose is to ensure that PPE is donned and removed appropriately reducing the risk of personal contamination. The development of the posters was informed by the procedures outlined in the literature by the Ontario Ministry of Health and LTC, WHO, and best practices from Hong Kong, Australia and Italy. Research indicates that personal contamination can be avoided with effective removal of PPE and that using simple language and pictures to illustrate instructions will encourage compliance from staff and visitors. The team met over a period of six months to form and edit the posters. **Results:** The content was developed by the ICP’s based on the literature and feedback obtained by Occupational Health and Safety and an Infectious Disease Specialist. The poster colour and layout were designed based on recommendations from the Strategic Marketing Graphic Design Section of the Provincial Government. The posters are in the implementation phase. **Lessons Learned:** The project proved to be a major challenge in using plain language, designing pictures to accurately depict the donning and removal of the PPE while ensuring that the posters were appropriate for all health care agencies. The Graphic Design Section was accessed and their expertise was beneficial. Although the project was prolonged, the finished posters have been well received from the major stakeholders and the Provincial Infection Control Committee.

WHO WANTS TO BE AN INFECTION CONTROL MILLIONAIRE: THE SEQUEL

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Issue: Education for 3rd year medical students before their clinical rotation included a quiz using remote voting devices (resembling the audience participation in “Who Wants to be a Millionaire” program). This year, all students had received hands-on training in hand washing, glove donning and doffing, and appropriate mask use, 1 hour more Infection Control education time than previous 3rd year students.

Project: Compare the results of this year’s voting with the previous year to see if the added contact with an IPCP modified our results.

Results: The largest change was in the students who had the extra training thinking that all personal protective equipment (mask, gown and gloves) is required for Contact and Airborne Additional precautions.

Lessons Learned: When having the smaller group sessions with the students, more emphasis can be placed on the minimum required PPE for each scenario being discussed.

A MONTHLY SITE SPECIFIC CONSTRUCTION / RENOVATION / REPAIRS REVIEW MEETING: IMPROVING INTERDEPARTMENTAL COMMUNICATION

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Issue: All outside contractors are required to meet CSA Z317.13-03 for projects in our facilities and to attend Infection Prevention and Control education sessions. It was noted that our own maintenance/physical plant staff frequently did not meet the same standards for dust control for routine maintenance, painting, and repairs.

Project: Infection Prevention and Control, in March 2006, established a monthly meeting with maintenance/physical plant, housekeeping, and Occupational Health and Safety to discuss upcoming and ongoing internal projects.

Results: Terms of reference (TOR) were created which include:

- Discuss and review upcoming internal and external (contractor) projects for compliance with Canadian Standards Association (CSA) Standard Z317.13-03,
- Ensure input from each working group member where applicable,
- To ensure a Risk Assessment Analysis form has been completed for each project,
- To aid in the coordination and development of effective communication regarding projects among team members related to each stage of the projects.

Senior Management approved the TOR with copies of the minutes going to the site administrator and Joint Health and Safety Committee.

Lessons Learned:

1. Input from Occupational Health helped established any at-risk staff members in areas where maintenance or repairs were being conducted.
2. Input from housekeeping helped to ensure rapid and effective cleaning after projects that generated dust.
3. Infection Control was aware of issues coming up in advance, instead of working in a reactive mode. Maintenance/physical plant was able to plan barriers that were suitable for the degree of work being performed.

Overall, all staff receive better communication of possible disruptions in their area, not just in patient care areas

Vancomycin Resistant Enterococcus in a Neonatal Intensive Care Unit (NICU): An “Intensive” Challenge

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Background: The Sir Mortimer B. Davis-Jewish General Hospital (SMBD-JGH) is a 638-bed acute-care, tertiary hospital with a 34-bed NICU.

The NICU never had a neonate colonized/infected with vancomycin resistant enterococcus (VRE) until May 18, 2007 when a routine VRE surveillance culture of stool from a neonate (born in March) was incidentally found VRE positive (Van A).

Methods: A VRE cohort, full barrier precautions, extensive education, weekly stool specimens from the neonates and rigorous environmental cleaning followed by environmental screening were the prevailing IPCU strategies implemented immediately. Numerous multi-disciplinary meetings as well as meetings for parents and family members were held concurrently to elucidate the urgency and necessity for these measures. Numerous obstacles related to the above measures were encountered, and required resolution..

Results: The first stool screening resulted in finding an additional 2 positive babies. Subsequent weekly stool screening identified a total of 7 VRE-positive neonates by the end of May. Weekly screening continued for 1 month post-discharge of the last VRE positive neonate and demonstrated a total of 5 months with no further transmission. The protocol for all NICU admissions now includes VRE screening.

Conclusion: Lack of further nosocomial transmission and a speedy resolution of the outbreak validated the rigorous and stringent infection prevention and control measures, despite many obstacles and repeated protestation by some NICU staff.

Secular Trend of Nosocomial Fungal Infection at a Medical Center, 2000-2007

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Background/Objectives: The studies have documented geographic differences in rates and epidemiology, underscoring the need for surveillance to monitor the trend of the nosocomial fungal infection over a 10 years span.

Methods: In a retrospectively study, we reviewed medical charts from 1998 to 2007 at a medical center in north Taiwan. Patients admitted after 48hrs who developed nosocomial fungal infection were included in the study.

Results: The result reveals that there were 2,651 episodes of nosocomial fungal infection during 10 years, with an average incidence of 0.336 episodes/1,000 patient-days/year (range 0.215-0.648 episodes). Incidence of candiduria increased during the study period from 0.127 in 1998 to 0.425/1,000 patient-days/year in 2007, and candidemia increased from 0.065‰ to 0.155‰. Overall, 59.0% of the nosocomial fungal episodes (1,565/2,651) were due to yeast, followed by *C.albicans*(24.8%), *C.tropicalis* (5.5%) , *C.glabrata* (4.3%), *C. parapsilosis* (3.5%), and other *Candida* species (2.9%). By Chi-square test for trend, there were statistical differences among the annual infection rates ($p < 0.001$) . The most common organisms causing nosocomial fungemia were *C.albicans*(48.0%), there was significant increased ($p < 0.001$), but no difference in the annual infection rates between *C. albicans* candidemia with non-*C. albicans* candidemia ($p = 0.43$) .

Conclusions: These data suggest that, there was a steady increase in the frequency of isolation of nosocomial infection with fungus during the last decade, particular in urinary tract infection and blood stream infection. The incidence of candidemia was lower than those reported previously in North America and Europe, but the species distribution were similar to these studies .

Using GIS in Mapping, Analysis and Evaluation of HIV/AIDS occurrence Patterns in Thailand

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The occurrence spread patterns of HIV/AIDS varies from one geographic region to another and this has been attributed to the social, cultural and economic variations.

One of the most challenging is the ability to determine the spread patterns. The main objective of this paper is to introduce the technique of Geographic Information Systems (GIS) in mapping, analyzing and its spatial distribution patterns of HIV/AIDS occurrence Patterns in Thailand.

ACTIVE SURVEILLANCE FOR METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS* (MRSA) IN A TRAUMA INTENSIVE CARE UNIT (ICU): IT WORKS!

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BACKGROUND: MRSA is an important healthcare associated pathogen worldwide. In Canada, approximately 72% of the MRSA acquisitions occur in hospitals. ¹ MRSA infections in ICU settings are associated with higher morbidity and mortality rates, and healthcare costs. ² It is important to identify and contain transmission of MRSA, as soon as possible. Sunnybrook Health Sciences Centre (SHSC) is a large academic tertiary care centre. In 1999 an admission screening tool to capture patients at high risk for acquiring MRSA was instituted. ICU staff were instructed in the use of the MRSA screening tool and its application to all patients in their setting. **PURPOSE:** To determine compliance with the completion of the MRSA screening tool and to monitor the incidence of MRSA in an ICU setting. **METHOD:** Nose, perianal, wound and exit site swabs are obtained for MRSA from high risk patients, identified by the screening tool. MRSA positive patients and their contacts are placed on Contact Precautions. Cases were investigated to determine nosocomial acquisition that includes molecular typing. Periodic chart audits were performed for the completion of the MRSA screening tool. In 2005 staff education on the use of the screening tool was done and surveillance screening was incorporated into the physician orders upon admission. To determine overall prevalence of MRSA in the ICU the number of MRSA patient days was calculated for each year. **RESULTS:** Two chart audits were performed in 2004. Compliance with the completion of the screening tool was calculated at 22.2% and 38.2% respectively with 75% of the eligible patients not being screened. In 2005, compliance results increased to 83% and 5% of the eligible patients were not screened. The nosocomial rate of MRSA has continued on a downward trend from 1.54 /1000 patient days in 2005 to 0.15 per 1000 patient days in 2007. The total number of MRSA days in the ICU for 2007 was 454. **CONCLUSIONS:** MRSA control programs should include active targeted surveillance followed by the use of Contact Precautions for those identified as MRSA positive. Close monitoring of compliance with the screening tool is critical. Nosocomial acquisition for MRSA can be prevented during times of high prevalence of MRSA in the ICU setting by early identification and application of precautions.

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

THE USE OF CHLORHEXIDINE GLUCONATE DISPOSABLE CLOTHS TO REDUCE TRANSMISSION OF VANCOMYCIN RESISTANT ENTEROCOCCI ON TWO NEPHROLOGY UNITS

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Background: Transmission of antibiotic resistant organisms (AROs) is a growing global public health problem and is of particular concern for hospitalized patients. There had been an increase in new acquisition of Vancomycin resistant Enterococci (VRE) among patients in our nephrology units. Both nephrology units had VRE outbreaks in the previous two years which resulted in the units being closed to admissions for a period of time. Recent reports in the literature have described a reduction of environmental and healthcare worker contamination with VRE through the use of chlorhexidine gluconate (CHG) disposable washcloths to bathe patients. The reduction of VRE bio-burden achieved the goal of reducing transmission of VRE to other patients.

Objective: To determine whether bathing VRE positive patients with CHG disposable washcloths would decrease transmission of VRE to other patients on two nephrology units.

Method: In addition to our usual strategies used to prevent transmission of AROs (including active surveillance cultures) we instituted the use of 2% CHG disposable washcloths to bathe patients known to be colonized or infected with VRE. These VRE positive patients were bathed daily for one month or until discharge whichever was shorter with CHG disposable washcloths. Active surveillance culture studies of VRE negative patients for the presence of VRE were conducted before, during and after implementation of this practice.

Results: Data from the Infection Control database was analyzed for the two years prior to implementation of the CHG cloth bathing practice (January 1, 2005 to December 31, 2006) and one year after (January 1 to December 31, 2007), comparing the number of hospital acquired VRE cases per 10,000 patient days on the same units. The number of patients with hospital acquired VRE was 7/10,000 patient days in 2005 (9 cases), 8.5/10,000 patient days in 2006 (11 cases) and 2.9/10,000 patient days in 2007 (4 cases). A statistically significant decrease ($p=0.05$) in hospital acquired VRE was noted for cases in 2007 compared to 2006. The data from 2007 when compared to 2005 was not found to be significant.

Conclusions: The use of 2% chlorhexidine gluconate disposable washcloths appears to have been associated with a reduction in transmission of VRE on inpatient nephrology units.

Networking surveillance of CVC-RBSI in Croatian ICUs

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Background: Healthcare-associated infection control (HAI) in Croatia has started slowly three decades ago. After 1998 when first bylaw about HAI prevention and control was issued, this has become more organized and systematic. At the beginning of 2006, Reference Centre for infection control (RC) has performed a 6-month surveillance study of central venous catheter related bloodstream infections (CVC-RBSI) in intensive care units (ICU). **Method:** A form for data collection based on NNISS definitions was prepared; nurses/physicians filled it locally and sent to RC, where data were filled into an EpiInfo-based program. This study included 10 out of 34 acute care Croatian hospitals. **Results:** 1914 patients with 7315 CVC days and 8535 patient days were treated in these ICUs, with 21 CVC-RBSI recorded. Mean CVC utilization rate was 0.85 (range 0.44-0.94), and mean CVC-RBSI rate was 0.28 (range 0-9.25). **Conclusion:** Ten hospitals were not fully comparable, but the comparison of the same ICU in time was very useful for local action. ICPs became visible in ICUs - very important for overall infection prevention and control. As this was first such surveillance in most of these hospitals, data about infection were not always fully reliable. Very high utilization rate was not in accordance with mostly very low infection rates (an indication that data were not always good). Furthermore, this study led us to network development, and from January 2007 we have continued to survey infections in 10 Croatian ICUs, inside European Union project of ICU infection surveillance.

Value of a Multi Discipline Approach to Controlling Hospital Acquired *Clostridium difficile*

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ISSUE: Investigation of a cluster of *Clostridium difficile* (C.diff) Patients in the fall of 2004 alerted infection prevention and control staff to the fact that there was a problem with the amount of non critical patient care equipment that there was no routine cleaning practice identified with assigned accountability.

The same patient cluster identified some high risk multiple antibiotic use in our medical and surgical patient population.

PROJECT:

A multidiscipline task team identified the patient care equipment being used and discovered that there was no routine consistent practice for cleaning between patients and therefore developed strategies to address problem.

Antibiotic prophylaxis was researched and education sessions were given to the physicians by the Clinical Coordinator, Department of Pharmacy Services.

There are multiple working groups that provided their expertise to different strategies

RESULTS:

Hospital Acquired rate per 1000 patients decreased from 4 in 2005/06 to 2.1 in 2006/07 and to 1.6 in 2007/08 to date.

LESSONS LEARNED:

- Multi strategies are important to decrease rates of *Clostridium difficile* infections.
- It is important to pilot some strategies before implementing hospital wide.
- Cleaning accountabilities are needed for non critical patient care equipment.
- Ward aide position added to patient care areas has been valuable in reducing hospital acquired infections.
- Pharmacy assistance with physician education on Antibiotic prophylaxis has made a difference in the right antibiotic being ordered for the correct amount of time. Antibiotic prophylaxis pre-op timing has also improved.
- Education on the importance of compliance with isolation procedures/processes needs to be reinforced annually.

OUTBREAK OF TOXIC ANTERIOR SEGMENT SYNDROME (TASS)

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Issue: An outbreak of toxic anterior segment syndrome (TASS) occurred at this hospital over a 6-month period in 2006-2007. TASS is a noninfectious complication following cataract and anterior segment surgery. This non-infectious outbreak clearly demonstrated the importance of having a multidisciplinary outbreak investigation team, including Infection Control, as many areas were impacted.

Project: A retrospective review was completed and the following interventions were implemented to help control the outbreak. All medications used in eye surgeries were assessed and a new sterile topical anesthetic containing preservative was identified and immediately discontinued. A review of the Central Sterilization and Reprocessing department (CSR) revealed that a new enzymatic cleaning solution had been trialed and intermittently used in the ultrasonic cleaner during the outbreak. The solution was immediately removed from CSR. A review of proper handling and decanting of chemicals into the sinks and ultrasonic cleaners in CSR was completed. It was identified that the amount of chemical being used was not always accurately measured and that chemicals were also being improperly combined. This was corrected with education of the CSR staff. In reviewing the cleaning processes, a new policy was created requiring that the ultrasonic machine be drained and filled specifically for ophthalmic instruments and that the final rinse of these instruments be done with distilled water. Also, it was identified that two different types of Phacoemulsification hand pieces were being used at our facility but that only one flushing procedure was being used for both types. This practice was revised to be consistent with the manufacturers cleaning instructions for each individual hand piece.

Results: To date, no further cases of TASS have been identified. All cases of TASS had good outcomes (no vision impairment). This investigation allowed for an extensive review of CSR, resulting in a new ultrasonic cleaner, washer-disinfector and reverse osmosis system being installed.

Lessons Learned: The complexity of our TASS outbreak revealed that no single factor was the source. Numerous changes were required in order to halt the outbreak.

ANALYSE DE BESOIN DE FORMATION DES INFIRMIERS(ÈRES) EN PRÉVENTION ET CONTRÔLE DES INFECTIONS EN SOINS DE LONGUE DURÉE

Mylène Laberge-Homsy

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Auteur : Mylène Laberge-Homsy*

Problématique : Il est reconnu que les infections nosocomiales (IN) représentent une menace à la santé des personnes qui séjournent en CHSLD. La réduction du risque passe par des programmes de PCI avec des infirmières formées. Présentement, aucun programme de formation n'est dispensé par des maisons d'enseignement au Québec.

Depuis 2005, l'Institut nationale de santé publique (INSPQ) offre une formation de base de 80 heures à toutes les infirmières qui travaillent en PCI au Québec. En raison, des problématiques spécifiques de la LD et des commentaires des participantes œuvrant en LD, l'INSPQ a décidé d'adapter une partie de la formation de base pour répondre à ce besoins. Ce projet vise à connaître les besoins spécifiques de formation des infirmières en PCI de LD.

Projet : Un questionnaire d'évaluation de besoin de formation a été développé à l'aide de la littérature et d'opinions d'experts. À l'aide du logiciel SurveyMonkey, le formulaire a été distribuée à toutes les infirmières du Québec ayant participées à la formation de l'INSPQ et travaillant en LD ou en courte et longue durée à la fois.

Résultats : Les infirmières en LD sont moins scolarisées que celles travaillant à la fois en CD et LD. Une importante proportion remplit d'autres fonctions que la PCI. Elles ne maîtrisent pas aussi bien toutes les habiletés requises pour travailler en PCI. La validation des résultats auprès d'infirmières en PCI de LD sera effectuée prochainement. La rédaction & diffusion des procédures, la surveillance, les mesures environnementales, l'éducation et la gestion des éclosions sont les domaines requérant plus de formation.

Leçons apprises : La formation devra se limiter à des notions de bases. Des situations pratiques pouvant se retrouver en LD sont essentielles. Des lignes directrices spécialisées au milieu de vie de la LD doivent être abordées.

CIC: A 350% INCREASE

Susan Cooper, Janet Allen

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Issue: In 2006 an informal survey, conducted by the South Eastern Ontario Infection Control Network (SEOICN), of infection control resources demonstrated that in southeastern Ontario there were only 4 certified (CIC) Infection Control Professionals (ICPs) practicing in our region. Although many non-certified ICPs were new to their current role, several met the qualifications required to write the exam.

Project: With successful certification as a shared goal, a study group, supported by SEOICN, and open to ICPs employed across the spectrum of care, was established to assist qualified candidates prepare for the certification exam. A group of 15, with diverse backgrounds and perspectives, met monthly from October 2006 through June 2007. Using the Certification Board of Infection Control (CBIC) handbook, the APIC study guide, and the expertise and experience of group members, sample questions were reviewed. Based on areas of study outlined in the CBIC test specifications, areas of weakness were identified and discussed

Results: Of 15 regular attendees, 10 attempted the exam within 6 months of study group completion. All 10 were successful and the number of certified ICPs in southeastern Ontario increased from 4 to 14, a 350% increase. Evaluations post study group showed attendees were motivated and benefited from working together. The study group provided encouragement and guidance, allowed networking and confidence development in a positive environment.

Lessons Learned: The establishment of a regional CIC study group is an effective model for creating a supportive atmosphere for reviewing and understanding key infection prevention and control knowledge required for certification

CENTRAL VENOUS CATHETERS IN A NEONATAL ICU – INFLUENCE OF TYPE OF CATHETER AND BIRTH WEIGHT

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Objective:

Primary blood stream infections (BSI) are the most common infections acquired in neonatal intensive care units (NICU). Most are associated with central vascular catheters (CVC). Our objective was to determine if BSI rates differed by type of CVC used.

Methods:

Prospective surveillance for CVC-associated BSI (C-BSI) and CVC use is routinely performed in our NICU. Data for the most recent 5 years were analysed. C-BSI rates were calculated per 1000 CVC-days and data stratified by birth weight group (BWG). Our NICU has no in-born neonates; most patients are referred in for surgery or other highly specialized care.

Results:

There were 63 primary BSI: 43 associated with CVC, 2 with umbilical catheters (UC), 17 with peripheral catheters and one with no catheter. Overall C-BSI rate was 4.67. Rates for non-tunnelled CVC (NTCVC), peripherally-inserted central catheters (PIC), tunnelled CVC (TCVC), and UC were 7.47, 3.88, 3.98 and 0.98 respectively. The rate for NTCVC was significantly higher than for TCVC and PIC (p 0.037, RR 1.89, 95% CI 1.04-3.46) and for UC was lower than with other catheters (p 0.015, RR 0.20, 95% CI 0.05-0.76). Patients had 2 CVC simultaneously for 13% of CVC-days but no BSI during these periods. Parenteral nutrition (PN) was administered during 72% of CVC-days and all but one C-BSI occurred during PN administration. C-BSI rates were 5.1, 5.7, 4.8, and 4.5 for infants of BWG <1000 g, 1000-1500g, 1500-2500g, and >2500g respectively and did not differ significantly by BWG.

Conclusions:

C-BSI rates were highest with NTCVC. Rates with PIC and TCVC did not differ. When need for long term vascular access is anticipated, especially for PN, PIC or TCVC should be considered. Stratification of C-BSI rate by BWG permits comparison with published benchmark data, but may not be the optimum marker of severity of illness in a referral NICU. Other markers of severity of illness may be needed.

HOSPITAL-ACQUIRED CLOSTRIDIUM DIFFICILE DIARRHEA: THE VIEW FROM PAEDIATRICS

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Objective:

Hospital-acquired *Clostridium difficile* diarrhoea (CDAD) has been of concern in recent years because of increasing infection rates and dissemination of a hypervirulent strain. We describe CDAD in a paediatric hospital in a region experiencing epidemic CDAD in hospitals caring for adults.

Methods:

Prospective surveillance for nosocomial infections is carried out in our paediatric tertiary care hospital using uniform case definitions and case finding strategies. *C. difficile* toxin is detected by cytotoxin assay. Data from the past 10 years were analysed.

Results:

Pathogens were identified in 398 of 486 cases of nosocomial diarrhoea (ND) and included rotavirus 247 (51%), CDAD 156 (32%), other bacteria 3, other viruses 9, with 2 pathogens found in 17 cases. As children < 6 months old were only sporadically tested for CDAD, these children were eliminated from further analysis, leaving 144 cases of CDAD and 200 of other ND. Annual rates of CDAD ranged from 0.27 to 0.41 per 1000 patient-days, with no significant trend over the 10 years. Most cases were sporadic. Children with CDAD were older than those with other ND (mean age 87 vs 47 months, $p < 0.0001$, t-test) and more likely to have underlying chronic illness (69% vs 41%; RR 1.93; 95% CI 1.47-2.53; $p < 0.0001$, Mantel-Haenszel chi-square). The most frequent underlying illnesses were cancer and stem cell or organ transplant (58/100). Most illnesses were mild. There was one death, in which CDAD was assessed as a contributing but not a direct cause of mortality. No child required surgery.

Conclusion:

We did not experience an increase in rate or virulence of CDAD. It is possible that children are less susceptible to CDAD toxin than adults, or that the hypervirulent strain has not spread in our hospital. The policy of placing all children with diarrhoea on contact precautions until an infectious cause has been ruled out may have contributed to a low rate of transmission.

The mark of Zoro: an innovative MRSA admission screening pilot in the Calgary Health Region.

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Background/Objectives: Incidence rates of healthcare (HA) and community-associated (CA) methicillin-resistant *Staphylococcus aureus* (MRSA) continue to climb within the Calgary Health Region (CHR). Since 2003, rates of newly detected MRSA positive patients have increased from 2.2 to 9.4/10,000 patient days, and with the widespread emergence of CA-MRSA this rate is predicted to continue climbing. Universal admission screening has been suggested as a strategy to control MRSA, however is extremely resource intensive. Recently released Alberta Health and Wellness (AHW) Provincial MRSA Infection Prevention and Control (IPC) standards recommend implementation of a screening program which targets individuals who have been institutionalized for 24-48 hours in the past 6 months. A pilot project was carried out to assess the system impact and feasibility of a universal admission screening and suppression protocol on select units which would exceed the AHW standard. **Methodology:** Two medical (one a mixed palliative/medical) and one surgical unit were selected at three sites. The pilot period was from August 1 to October 30, 2007. Admission screening cultures consisted of: a nasal culture, Z body culture of axilla and torso, and up to 3 wounds. All patients found to be MRSA positive were placed on Contact isolation and followed a suppression regime consisting of bathing/showering with chlorhexidine gluconate (CHG) sponge, or body wipes. **Results:** The percent of eligible patients screened was high (range: 83% to 98%). Out of 929 admissions/transfers, 41 (4.4%) new cases of MRSA were identified. The patient population appeared to influence the percent of positives identified: 9.2% (22) in the palliative/medical population, 4.5% (11) in general medicine, and 1.8% (8) in the orthopaedic population. Forty four percent (18) of newly detected cases were considered CA and 41.5% (17) were considered nosocomial. Of the strains that underwent pulse field electrophoresis 29% were CMRSA 10 or 7. The highest yield combination of swabs was nasal and Z swab which detected 95% (39) of previously unknown MRSA positive patients. Costs associated with the pilot were substantial: lab costs of \$19,872, CHG product costs of \$4414, as well as those less easily measurable such as nursing and housekeeping time associated with increased isolation. **Conclusion:** Given the current staffing shortages and capacity pressures in the CHR, implementing an admission screening program will be challenging. To maximize efficiency and foster sustainability, the process must be streamlined and screening efforts should be tailored to reflect the epidemiology of the population

Hand Hygiene Campaigns: Here's a Helping Hand to Get Started

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Issue: Hand hygiene campaigns have become an essential component of an infection control program. The implementation of a campaign can be a challenge to an infection control practitioner (ICP) in a solitary practice.

Project: Three of Newfoundland Labrador's four health regions independently initiated a hand hygiene campaign during the past year. While many of the educational initiatives were similar, development and implementation approaches, resources, issues and solutions varied. ICPs reviewed the processes and successes of the campaigns to identify conditions and strategies that were beneficial or detrimental to a campaign.

Results: The ICPs found that a successful campaign required a substantial time commitment from the ICP staff. A proposal that outlined the rationale, objectives and methods of the campaign facilitated implementation of the campaign in a timely manner, whereas the lack of a budget that clearly articulated the requirement for additional human resources was an impediment. All regions used a resource committee, with success highest when members were carefully chosen in order to provide administrative, communications and regional support. Audits provided value to the campaigns by having the presence and commitment of the ICP recognized in the patient care areas. Additionally they generated "numbers" to show that the hand hygiene program had been beneficial in terms of increased compliance amongst staff. Canada's Hand Hygiene Campaign provided useful tools; the use of "pictures of hand hygiene champions" especially stimulated interest and participation amongst staff.

Lesson Learned: A successful hand hygiene campaign involves more than having the right education tools. Careful planning, sufficient resources, and appropriate involvement of key players are "behind the scenes" factors that ICPs must take into account when planning their own campaign.

L'art en gestion d'éclosion

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Institut de Cardiologie de Montréal, Montréal, Québec, Canada

L'Institut de Cardiologie de Montréal (ICM), un centre hospitalier ultraspécialisé de 153 lits, est un chef de file au Canada et un partenaire respecté à travers le monde. Aussi, nombreux sont les échanges et les collaborations avec des centres universitaires américains et européens. Sa mission est d'offrir les soins tertiaires à la fine pointe de la médecine cardiovasculaire. Les soins, la recherche et l'enseignement constituent ses principales activités.

Les infections nosocomiales, ou infections acquises à l'hôpital, constituent une cause majeure de complications des soins en santé, d'où l'importance de la mise en place d'un programme structuré de prévention et contrôle de ces infections incluant la gestion des éclosions. En mai 2007, l'ICM fait face à une éclosion d'entérocoque résistant à la vancomycine (ERV) sur l'unité de chirurgie de 53 lits dont 24 de soins intensifs.

L'objectif de cette présentation sera de vous faire partager notre expérience lors de l'éclosion d'ERV. Nous vous présenterons, entre autre, nos mesures extraordinaires soit : notre système d'identification de la clientèle, la clef de notre réussite. Il sera aussi question des mesures de précautions additionnelles, du dépistage, des difficultés rencontrées et du rôle de l'infirmière en prévention des infections.

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

EVALUATION OF MICROBIAL CONTAMINATION OF BONE MARROW HARVEST AT A PAEDIATRIC HOSPITAL

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The Hospital for Sick Children, Toronto, Ontario, Canada

Issue: SickKids performs approximately 12 bone marrow (BM) harvests a year in our Operating Room (OR). 41 harvests were performed from 2004-2007. An increase in the number of culture positive BM samples was noted over the 2006-07 fiscal year. From 2004-2007 the number of culture positive cases was 1/18 (6%) for 2004-05, 1/13 (8%) for 2005-06, and 5/10 (50%) for 2006-07. Of the 7 total positive samples, 6 yielded *Coagulase negative staphylococcus* and 1 *Corynebacterium*.

Project: Infection Prevention and Control (IPC) was contacted and invited to observe a BM harvest in the OR, focusing on any breaks in infection control practices that could lead to contamination of the product. Postoperatively, a collaborative meeting was held to review recommendations arising from our audit. These included: 1) Changing skin preparation from Betadine to Chlorhexidine 2%; ensuring that the skin prep is allowed to air dry for the appropriate time. 2) A preoperative bath with Chlorhexidine 4%. 3) Double gloving for the surgeons and the scrub nurses. 4) Wiping the top of the blood culture bottle with an alcohol wipe, and allowing it to dry, before injected the blood. 5) Limiting traffic to essential personnel only in the OR suite during set-up, as well as throughout the procedure. 6) Ensuring the bone marrow collection bag stays closed until the procedure begins, and that it is closed immediately after.

Results: Since the time these changes were implemented (May 2007), there has been no microbial contamination of BM in the 5 cases performed thus far in the 2007-08 fiscal year.

Lessons Learned: The main lesson learned was the value of firsthand audit of practice in order to detect subtle breaches that might contribute to microbial contamination. Another important lesson was involving all key stakeholders and working together as a collaborative group. We have used this multidisciplinary approach to create, implement, and sustain the interventions and practice changes. Our recommendations have been incorporated in the OR reference manual and all nurses who will be involved in BM harvesting must review the Policy and Procedure prior to participating in a case.

Development and implementation of a post-c-section surgical site infection surveillance system with excellent stakeholder engagement

Doreen Alexander, Andrea Currie, Man Fan Ho, Michelle Cuda, David Eisen, Bonnie Kerr, Lois MacInnis, Diane White, Kevin Katz

North York General Hospital, Toronto, Ontario, Canada

Issue: Our 430-bed community teaching hospital delivers 5, 500 babies annually, of which 30% are delivered by caesarean section. Surgical site infections (SSI) following c-sections increase healthcare costs, cause morbidity and are often preventable. We describe the development and implementation of post-c-section SSI surveillance to determine the incidence of infections and direct prevention strategies with emphasis on stakeholder engagement to achieve success.

Project: Infection Prevention and Control provided strong support to clinical leaders from the Maternal Newborn Program (MNP) to develop and implement surveillance. We achieved consensus on the need for surveillance through retrospective review of Health Records data. We developed a surveillance plan through an iterative consultative process. We built data flow upon existing infrastructure to keep surveillance simple and acceptable to stakeholders. MNP champions introduced surveillance to their colleagues, encouraged in-hospital case reporting and six-week follow-up reporting by physicians and midwives, and provided feedback to improve surveillance.

Results: Physicians and midwives completed surveillance forms for 745 (85%) of 872 c-section patients who delivered between July and December 2007. The incidence of infection was 8.1 cases per 100 c-sections. Excluding cases identified through outpatient surveillance, there were 2.7 cases per 100 c-sections. Surveillance findings were discussed at quarterly MNP Quality Council meetings.

Lessons learned: Engaging clinical leaders to take ownership of surveillance beginning in the planning phase led to 85% complete patient follow-up, ongoing collaborative discussions of findings and problem-solving to prevent infections. Most infections were identified through outpatient surveillance. The intensity of case-finding must be reported with infection rates to allow for valid inter-hospital comparisons and benchmarking.

Surviving the Storm: Flood Remediation in an Rural Hemodialysis Unit

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Our chronic Hemodialysis Unit is part of a regional dialysis program in a rural setting consisting of one main unit and two satellite units. The program includes hemodialysis, outpatient peritoneal dialysis, and a pre renal insufficiency clinic. The total number of patients undergoing hemodialysis is roughly one hundred although this number fluctuates. Stable patients can be dialyzed at the satellite units while those requiring closer monitoring are accommodated at the main site where two nephrologists are readily available.

In the fall of 2007 the hemodialysis unit at the main site sustained major damage after freak weather conditions. While we were hopeful for a quick remediation and reconstruction turnaround time, the down time resulted in relocation of the unit from September 2007 until February 2008. Many challenges were encountered including the reorganization of patient and staff schedules and communication with personnel regarding project status. In addition the infection control issues related to mould remediation, the physical relocation of the unit and the reconstruction phase involved discussion and communication at several levels within the organization.

Our discussion will cover the impact on both personnel and patients, the process followed to resolve the flood damage, the reconstruction opportunities, and the educational hurdles. We anticipate lessons learned from this endeavour can be utilized in pandemic planning for this patient population.

APPLICATION OF A RAPID QUALITY IMPROVEMENT STRATEGY (KAIZEN) TO IMPROVE CLEANING OF INTRA-HOSPITAL TRANSPORT EQUIPMENT

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Issue: Regular cleaning of intra-hospital transport equipment (IHTE) is important in preventing nosocomial transmission of organisms. We identified this as a problem area at our 430-bed community teaching hospital.

Project: A multidisciplinary team was formed for a 5-day Kaizen event that was facilitated by a Lean Sensei. This involved mapping the “current state” process of IHTE cleaning. We identified inefficiencies through team observations and gap analysis, and subsequently designed a new “future state”. We developed protocols for cleaning, designated areas for clean IHTE and made cleaning products more easily accessible. Education was provided to porters and volunteers to ensure clear understanding of the cleaning protocols.

Results: On baseline observation, IHTE was cleaned 0 out of 8 times following patient use. Porters self-reported cleaning 100% of IHTE after use for patients who were on isolation. There were no standard expectations or protocols for IHTE cleaning and the porters were not aware that they had to clean IHTE after every patient use. Target compliance rate was set at 100% with at least 80% within two months of implementation of new cleaning protocols. Based on porter self-reporting and casual observations, this target was achieved within the first week and an audit at two months indicated 100% compliance (8 observations). Educational sessions and random compliance audits will be ongoing.

Lessons Learned: This Kaizen event produced positive solutions quickly and effectively. Standard protocols and clarifying expectations for cleaning IHTE through education can lead to dramatically improved results.

METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS ADMISSION SCREENING AT BC CHILDREN'S HOSPITAL

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Background:

The increase of Methicillin-resistant Staphylococcus aureus (MRSA) (both community and hospital acquired) has been widely reported worldwide. Due to this increased awareness of MRSA colonization and infection, admission screening of high risk patients for MRSA becomes an appealing strategy to isolate patients in order to prevent subsequent nosocomial spread.

Objectives:

This study is aimed to show the percentage of positive MRSA admission screening cultures among high risk patients admitted to BC Children's hospital over 2006/2007 and 2007/2008 periods.

Method:

Data mining technique-crystal report (version Enterprise 11) was used for extracting all MRSA screening culture results from hospital lab system (MISYS). Information was obtained for two periods: 2006/2007 (May 19th 2006-March 31st 2007) and 2007/2008 (April 1st 2007-January 10th 2008). BC Children's Hospital MRSA screening policy applies to those admitted patients who meet the following two conditions: a) admitted to any hospital other than Children's hospital, longer than 24 hours within the last 3 months; b) diagnosed with a multi-resistant organism, or so called "super bugs", MRSA or VRE. Two ratios and their associated 95% confidence interval (95% CI) were generated for each period: MRSA screening rate (the number of MRSA screening/total number of admissions) and MRSA screening positive rate (positive MRSA/positive MRSA + negative MRSA). Statistical software SPSS (version 15.0) was employed in this study for data management and data analysis.

Results:

For period 2006/2007: 605 MRSA screening exams were done among 7727 inpatient admitted. The MRSA screening rate was 7.8% (605/7727; 95% CI: 7.2-8.5). The MRSA screening positive rate was 5.5% (33/605; 95% CI: 3.6-7.3). For period 2007/2008: 514 MRSA screening tests were performed among 6823 inpatient admitted. The MRSA screening rate was 7.5% (514/6823; 95% CI: 6.9-8.2). The MRSA screening positive rate was 4.3% (22/514, 95% CI: 2.5-6.1).

Interpretation/Conclusion:

The MRSA screening results among high risk patients at BC Children's Hospital are stable over two consecutive periods, the slight decrease in MRSA positive screens in 2007/2008 was not statistically significant. These results may be affected by the compliance with the screening policy at the hospital.