

Results: Four samples were taken to culture from inner tube and outer tube of an endoscope. Two samples did not meet the standards of high-level disinfection procedures. After the infection control team involving in investigation and analyzing these results, we improved the clean procedure and added a drying equipment in endoscopic cabinet. The incident was terminated.

Conclusions: The incident unveiled the clean and disinfection procedure should be implemented for the safety and quality of endoscopy. The concentration of detergents should be detected. We also considered the training for new staff. It should include endoscopic clean and disinfection, storage location, and space clean level maintenance.

PS 2-500

SURVEILLANCE OF CENTRAL VENOUS CATHETER (CVC) INFECTION IN NICU IN SWACH

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Introduction: Nosocomial infections are a major problem among neonates and are responsible for significant morbidity and mortality in the NICU.

Central venous catheters are one of the more commonly used devices in NICU, usually for the purposes of total parenteral nutrition and medication. Currently, in Malaysia, we do not have any surveillance data on central venous catheter infections in the NICUs.

Objective: The objectives of this study are to determine the incidence and outcome of central venous catheter (CVC) infection in NICU with the implementation of CVC bundle.

Methods: This is a prospective cohort study. All neonates in NICU who had central venous catheter such as umbilical venous catheters and peripherally inserted central catheters inserted during the hospitalization from February 2014 to August 2014 were included in the study. All positive blood cultures occurring during this period were defined as CVC related blood stream infection.

Results: There were a total of 278 out of 1327 babies who had CVC inserted during the study period. There were a total of five positive blood cultures with an incidence of 1.79%. The incidence of blood stream infection per 1000 catheter days was 0.38. The three most common microorganisms associated with CVC were *Methicillin resistant coagulase negative Staphylococcus* followed by *Klebsiella pneumoniae* and *Candida Albicans*. Two of the babies with CVC infections expired giving rise to a case fatality rate of 0.71%.

Conclusion: The CVC infection rate is relatively low in NICU. However, despite the low rate CVC infection, it is important to note that CVC infection may directly or indirectly contribute to the mortality and outcome of the babies. Hence it is crucial to constantly educate health-care worker on the compliance of CVC bundle and the need to monitor CVC infection through surveillance.

PS 2-501

POINT PREVALENCE SURVEY (PPS) OF CATHETER-RELATED INFECTION RATE ANALYSIS

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Purpose: Use of PPS methods, analysis of four medical institutions in the ICU catheter-related infections.

Methods: The use of point prevalence survey means, the four medical institutions in ICUs HAI investigation, infection control practitioner in daily from 10:00 to ward before the completion of the investigation confirmed invasive

pipeline, completed in two weeks, the patient's medical care associated infections, etc. data collection.

Results: Of 429 surveyed patients in 4 hospitals, 8.4% had an HAI (36/429), bloodstream infection represented the most common type of HAI (3.3%), followed by Pneumonia and other lower respiratory tract infections 2.1% (9/429), urinary tract infection 1.4% (6/429), surgical site infection 0.9% (4/429). Total catheter rate was 81.4% (349/429), central venous catheter 60.8% (261/429), urine retention catheter 46.6% (200/429), Endotracheal tube 40.3% (173/429). By chi-square test using a catheter patient ratios have significantly related to the occurrence of HAI (CVC catheter $P < .005$, catheter $P < .05$, respirators $P = 0.013$). Central venous catheters cause of nosocomial bloodstream infection risk factors odds ratio 13.3, the patient's urinary tract infection catheter odds ratio was 0.63, the patient's ventilator pneumonia odds ratio of 0.04.

Conclusions: Invasive catheter-related infection is caused by health care risk factors. Thus the combined infection control measures are required to be removed as soon as invasive ductal to reduce healthcare-associated infections.

PS 2-502

SECULAR TRENDS OF HEALTHCARE-ASSOCIATED INFECTION IN A MEDICAL CENTER

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Purpose: The aim of this retrospective study was to investigate the epidemiology of healthcare-associated infections in a medical center. To reveal the secular trend of bacteria pathogens of healthcare-associated infections.

Methods: We retrospectively collected and analyzed the microbiological data of patients in a medical center in southern Taiwan from 2002 to 2013. Results between two 6-year periods, 2002-2007 and 2008-2013, were compared.

Results: The overall incidence density of healthcare-associated infection decreased from 3.9‰ (episode/1,000 patient-days) to 3.0‰. Aerobic gram-negative bacteria were the most common pathogens in both study periods. *E. coli* remained as the most common gram-negative bacteria, increased 10.4 to 11.2% (decreased from 0.51 to 0.43‰). The frequency of healthcare-associated infections caused by *Enterococcus* spp. and *Klebsiella pneumoniae* increased markedly in the past decade, from 0.40 to 0.52‰, and 0.40 to 0.43‰, respectively. The frequency of the healthcare-associated infections caused by *Pseudomonas aeruginosa*, *Enterobacter cloacae*, *Acinetobacter* spp. and *Staphylococcus aureus* decreased and that caused by *Enterococcus* spp., *Klebsiella pneumoniae* increased.

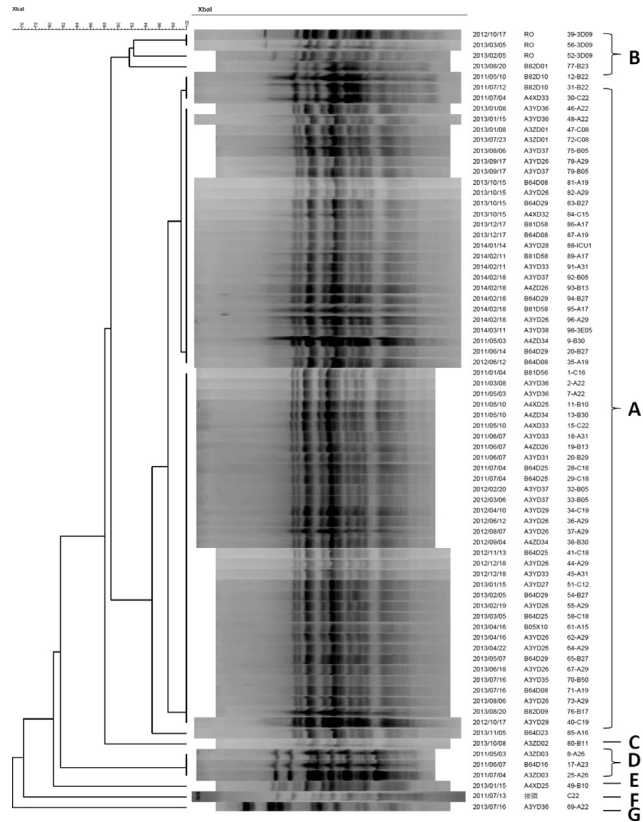
PS 2-503

COLONIZATION AND CONTAMINATION OF ONE MAJOR STRAIN OF PSEUDOMONAS AERUGINOSA IDENTIFIED BY ENVIRONMENT SAMPLING OF HEMODIALYSIS UNITS

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Purpose: The aim of this study is to investigate the *Pseudomonas aeruginosa* isolates obtained from environment sampling of hemodialysis (HD) units.

Methods: Environment sampling included inlet and outlet of dialysis machine in HD units (zone A, B, and C) and intensive care units (ICUs), and water of reverse osmosis (RO) system. Genotype analysis of *P. aeruginosa* was performed by pulsed-field gel electrophoresis (PFGE).



Results: From January 2011 to March 2014, a total of 75 (2.5%) isolates of *P. aeruginosa* were obtained from 3059 samples. Thirty-one isolates were in zone A, 25 in zone B, 14 in zone C, and 5 in ICUs. PFGE analysis revealed 7 genotypes (GTs) including 64 isolates of GT-A, 4 of GT-B, 1 of GT-C, 3 of GT-D, 1 of GT-E, 1 of GT-F, and 1 of GT-G (Figure). None had the same GT with those obtained from clinical *P. aeruginosa* bacteremia by PFGE analysis. No common source of the major strain of *P. aeruginosa* was identified by risk factor analysis.

Conclusions: Colonization of *P. aeruginosa* was identified. Complying with the guideline of disinfection of HD machine and regular sampling of HD are important.

PS 2-504

IMPACT OF SURGICAL SITE INFECTIONS ON COST OF ILLNESS AND LENGTH OF STAY IN A TEACHING HOSPITAL

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Purpose: Economic evaluation has become increasingly important in healthcare and infection control. This study evaluate the impact of surgical site infections on cost of illness and length of stay (LOS) in a teaching hospital.

Methods: A retrospective study was conducted among the patients discharged from hospital from April 1st, 2014 to June 30th, 2014. The main outcomes were the total length of stay, postoperative length of stay, total cost and the antibiotics cost during hospitalization.

Results: 69 patients were developed an SSI after operation surgery among the patients discharged from April 1st, 2014 to June 30th, 2014, and a total of 4080 patients were performed surgical procedures at the units that developed SSI. The median total LOS of patients with episodes SSI was 30 days [95% confidence interval (CI): 24-34days] and the median total cost of

patients episodes with SSI was 75967 RMB [95%confidence interval (CI): 51006-88330 RMB].

Table The LOS and Cost During Hospitalization

	Non-SSI (n=4011) (95% CI)	SSI(n=69) (95% CI)	p
Total LOS (days)	8 (8–9)	30 (24–34)	<0.01
Postoperative LOS (days)	5 (5–5)	25 (17–31)	<0.01
Total cost (RMB)	17398 (16557–18432)	75967 (51006–88330)	<0.01
Antibiotics cost (RMB)	31 (29–35)	4073 (1440–9896)	<0.01

Conclusions: SSI causes the increased LOS and economic burden. Effective infection control measures could improve both clinical outcomes and save healthcare resources.

PS 2-505

MOLECULAR EPIDEMIOLOGY OF HYPERVIRULENT *CLOSTRIDIUM DIFFICILE* STRAINS IN SOUTHERN TAIWAN

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Purpose: Hypervirulent *Clostridium difficile* strains, such as polymerase chain reaction (PCR)-ribotypes 027, 078, and 106, were noted in North American and European. However, the clinical epidemiology of hypervirulent *C. difficile* in Taiwan remains unclear.

Methods: We conducted a 2-year prospective study in medical wards in a district hospital in southern Taiwan. Stool sample within 48 hours of admission, weekly, and at the onset of diarrhea from hospitalized patients were obtained to detect fecal *C. difficile*. Multiplex PCR and *tcdC* sequencing were performed to identify hypervirulent strains. 16S-23S ribotype and *gyrA* and *gyrB* sequencing were done.

Results: Total 251 clinical *C. difficile* isolates were eligible for the study, and of them, 18 were possible hypervirulent strains, which were defined as *tcdC* deletion, existence of binary toxins or fluoroquinolone resistance. Analysis of these strains, PCR ribotypes 034 (3/18), 078 (1/18), 126 (4/18), 127 (6/18), and 328 (1/18) were present. The remaining 3 isolates comprised undefined ribotypes. Of these 18 hypervirulent strains, 15 showed *gyr* mutation. Two-thirds of those strains showed the substitution Thr82-to-Ile in *gyrA*, and most of them were PCR-126 or 127.

Conclusions: The majority of the hypervirulent strains in southern Taiwan belonged to PCR-ribotype 126 or 127, not PCR-ribotype 027. The presence of mutation in codon 82 of *gyrA* was the most frequently found in fluoroquinolone resistance.

PS 2-506

INVESTIGATION OF HEALTHCARE-ASSOCIATED RESISTANT STRAINS IN A REGIONAL TEACHING HOSPITAL FROM 2004 TO 2013

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Purpose: In order to effectively control nosocomial infections a 1038 bedded regional teaching hospital, data of infected cases and associated resistant strains were collected from the informatics system of the hospital and multi-drug resistant strains were routinely monitored.