

organisms and executing complete and coherent infection prevention measures.

Methods: Using the "front warning" system for MDRO in the hospital include inspection paging system, patient care real-time SOS warning and disposal systems, electronic medical order system (including outpatient, emergency, hospitalization and nursing) for rendering prompt isolation, the colors of wrist strap, medical record charts, and bed head label. Meanwhile, the "back-end monitoring" system includes timely summary of MDRO patient checklists, MDRO detection integration from all departments and etc. Through complete and coherent monitoring, hospitals can detect, reduce and prevent the MDRO proliferation within hospitals.

Results: For example with VRE, its new detection and causing healthcare-associated infection trends.

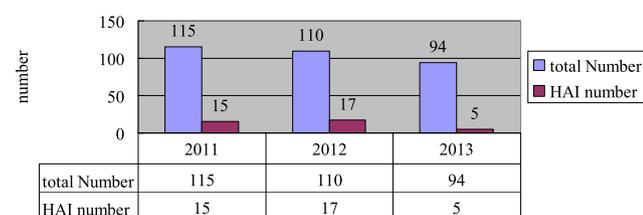


Figure. Detection of new trends in VRE from 2010 to 2013.

Conclusions: The paper shows that through complete and coherent prevention measures and supplement of technology system, we can detect and control the spread of MDROs within hospital timely and ensure the infection prevention measures execute efficiently.

PS 2-493

EXPLORE THE IMPLEMENTATION OF CONTACT PRECAUTIONS WITH ENVIRONMENTAL SAMPLING OF VANCOMYCIN-RESISTANT ENTEROCOCCI (VRE) IN A NEPHROLOGY WARD: A PRE-AND-POST STUDY

Chun-Sui Lin^a, Ting-Ying Chung^a, Ting-Shu Wu^{a,b}, Hsieh-Shong Leu^{a,b}.
^aInfection Control Committee; ^bDivision of Infection Diseases, Department of Internal Medicine, Chang Gung Memorial Hospital, Linkou, Taiwan

Purpose: Vancomycin-resistant enterococci (VRE) were important pathogen pathogen of nosocomial infections and accounted for 9.5% of Enterococcus species isolated in a medical center in 2012. The nephrology ward had many VRE colonization/infection cases in the past. We implemented a program with active surveillance and feedback after the ward renovation. To evaluate the effectiveness of the intervention procedures, VRE colonization, infection and environmental contamination were compared before and after the renovation.

Methods: Methods: In nephrology ward, VRE environmental contamination was evaluated by sampling 26 frequently-touched equipment 1 year before and after the renovation.

Results: Before the renovation and reconstruction of nephrology ward, VRE colonization rate was 15.3% (10/65) in August 2012. Mobile equipment had the highest rate of colonization (28%, 8/14), including the handles of nursing cart (100%, 2/2). Faucet and body weight scale were colonized with VRE too. The possible causes of VRE colonization were studied. Colonization in the handles of nursing cart may indicate inappropriate hand washing after leaving the isolation room. The effectiveness of contact isolation may be evaluated with environmental monitoring. Proper feedbacks can be provided in order to strengthen infection control measures: hand hygiene, cleansing and disinfection of the equipment, disinfection of faucets as well as the handles of sitting-type body weight scale. In August 2014, the VRE colonization rate was significantly decreased to 1.53% (1/65, P value = 0.0009)

Conclusions: It is important to strictly practice contact isolation policy and hand hygiene in a patient with VRE colonization. We can evaluate the implementation of these policies with monitoring of the colonization rate in relevant environment and provide point-of-care feedback to ensure quality of environmental cleansing as well as the safety of patients.

PS 2-494

SYSTEM REVIEW ON RESISTANCE MECHANISM OF VANCOMYCIN RESISTANT ENTEROCOCCUS IN CHINA

Xiang Yu, Dan li . Jiangxi Maternal and Child Health Hospital, China

Purpose: to analyze the resistance mechanism of Vancomycin resistant Enterococcus.

Methods: articles about resistance mechanism of Vancomycin resistant Enterococcus were searched and collected from CNKI, VIP database and wanfang database published until April 2014. The articles were screened according to the inclusion and exclusion criteria.

Results: Ten valid papers were included for our study, including 3 types (VanA, VanB and VanC) which included 65 resistance mechanism of Vancomycin resistant Enterococcus, in 8 provinces. The detecting rates of type VanA, VanB and VanC respective were 52.3%, 4.6% and 23.1%. The detecting rate of type VanA had ascending trend during study period ($\chi^2=35.389$, $p<0.001$).

Conclusions: type VanA was the most common type of Sugar peptide antibiotics resistance, followed by type VanC which was natural resistance. And VanB had the lowest detecting rate.

PS 2-495

ANTIMICROBIAL ACTIVITIES OF *SOPHORA FLAVESCENS*

Jyh-Feng Yang^a, Cheng-Hong Yang^b, Chi-Chun Wu^a, Li-Yeh Chuang^a.
^aDepartment of Chemical Engineering, I-Shou University, Kaohsiung, 840, Taiwan, ROC; ^bDepartment of Electronic Engineering, National Kaohsiung University of Applied Sciences, Kaohsiung, 807, Taiwan, ROC

Purpose: An indigenous herb, *Sophora flavescens*, has been widely used as a traditional medicine in Taiwan. The main goal of this study was to determine the antibacterial activities of various extracts, including 95% ethanol crude extracts, ethyl acetate fraction, and aqueous fraction, from *Sophora flavescens*.

Methods: Antibacterial activity was performed by disk diffusion method, minimum inhibition concentration (MIC), minimum bactericidal concentration (MBC), time-killing curve and synergy effect. The clinical antibiotic isolates including gram-positive and gram-negative pathogens were used for antimicrobial activity assay.

Results: Experimental results showed that the extracts of ethyl acetate exhibited a higher antioxidant activity among all the extracts. *In vitro*, the ethyl acetate extracts presented a significant antibacterial activity against oxacillin-resistant *S. aureus* with MIC value of 0.025 mg/mL and MBC of 0.04 mg/mL. A higher content of both total phenolics and flavonoids were found in the ethyl acetate extracts which correlated with a better biological activities compared with other extracts.

Conclusions: These results reveal that the extracts of ethyl acetate from *Sophora flavescens* could be developed as a potential natural antibacterial agent.

Keywords: *Sophora flavescens*, Antibiotic-resistant pathogens, Antibacterial activity

PS 2-496

ANTIMICROBIAL SUSCEPTIBILITY AND VIRULENT GENES IN *STAPHYLOCOCCUS AUREUS* ISOLATED FROM PATIENTS WITH PUERPERAL MASTITIS IN SOUTHERN TAIWAN

Shih-Wen Pu^a, Chia-Ming Chang^{a,b}, Hsin-I. Shih^c, I. W.n Lee^d.
^aDivision of Infectious Diseases, Department of Internal Medicine, School of Medicine and Hospital, National Cheng Kung University, Tainan, Taiwan; ^bDivision of Geriatrics and Gerontology, Department of Internal Medicine, School of Medicine and Hospital, National Cheng Kung University, Tainan, Taiwan; ^cDepartment of Emergency Medicine, School of Medicine and Hospital, National Cheng Kung University, Tainan, Taiwan; ^dDepartment of Obstetrics and Gynecology, School of Medicine and Hospital, National Cheng Kung University, Tainan, Taiwan

Purpose: *Staphylococcus aureus* (SA) is the main pathogen isolated from patients with puerperal mastitis that frequently occurs among breastfeeding

women. This study aimed to screen the antimicrobial susceptibility and the virulent factors of SA strains isolated from patients with puerperal mastitis.

Methods: All SA isolated from the clinical specimens obtained from patients with puerperal mastitis were tested. Susceptibility to common antimicrobial agents was determined using the disk diffusion method. The genes encoding antimicrobial resistance (*mecA*) and virulent factors encoding the exotoxins (*pvl*, *eta*, *etb*, and *tsst*) and classic staphylococcal enterotoxins (SEs) (*sea*, *seb*, *sec*, *sed*, and *see*) were tested by specific PCR. Some strains were selected for multilocus sequence typing (MLST).

Results: A total of 76 SA isolates were obtained from 48 women, 51 (67.1%) isolates were oxacillin resistant (ORSA). Most ORSAs were susceptible to the antimicrobial agents [Susceptible rates: gentamicin (67.3%), TMP/SMX (98.0%), 100% to teicoplanin, rifampin, fusidic acid, linezolid, levofloxacin, doxycycline], but resistant to clindamycin (6.1%) and erythromycin (6.1%); while most of the OSSA isolates were susceptible to clindamycin (74.1%) and erythromycin (74.1%). All but one ORSA carried *mecA* gene. Of the 76 SA strains, 42.1% (32/76) were positive for *pvl*, 68.4% (52/76) were positive for at least one enterotoxin genes. Few isolates carried *eta* 8/76 (10.5%), *etb* 0/76, and *tsst* 3/76 (3.9%). Sequence type 59 (ST 59) was the most common (26 strains) type among the 29 SA with MLST performed.

Conclusions: Oxacillin resistance was common among SA isolated from puerperal mastitis, but some other common antimicrobial agents remained susceptible, e.g., fusidic acid and TMP/SMX. The association with abscess formation and *pvl* positive SA infection is not significant.

PS 2-497

COMPARISON OF NOSOCOMIAL INFECTION RATES IN A NEONATAL INTENSIVE CARE UNIT BEFORE AND AFTER MOVING INTO A NEW LOCATION

Fang-Liang Huang^a, Po-Yen Chen^a, Yong-Chuan Chen^b, Yun-Jiau Fuh Rehn^b. ^aDepartment of Pediatrics, Section of Infection, Taichung Veterans General Hospital, Taichung, Taiwan; ^bDepartment of Nursing, Taichung Veterans General Hospital, Taichung, Taiwan

Purpose: Hospital-acquired infections are a leading cause of morbidity and mortality in neonatal intensive care units (NICUs). For several decades, there has been controversy over whether or not the inanimate environment increases the risk of nosocomial infection, but there have only been a few studies on the impact of the building environment on nosocomial infection.

Methods: We investigated the changes in nosocomial infection rates, infection sites, and microorganism species in a neonatal intensive care unit (NICU) before and after the unit was moved into a new location at a tertiary hospital in central Taiwan from November 2008 to October 2012. The new facility was opened on November 1, 2010 and the old NICU was closed on the same day. Three bundles care were implemented in the new NICU; the central line bundle, the ventilator bundle and the urinary tract bundle. These bundles were focused on the prevention of central line-associated blood stream infection, ventilator-associated pneumonia and Foley-associated urinary tract infection. Data collection was performed by independent, experienced infection control nurses for 24 months, respectively, before and after the NICU moved into the new unit.

Results: There were the total of 242 premature infants who were admitted to the old NICU and 270 infants who spent time in the new facility during the study period since November 2008 to October 2012.

There were no significant differences between the two groups in demography, birth body weight, gestational age, and length of hospital stay. In the new NICU, catheters bundle strategies for patients with invasive catheters were also introduced. The average rate of nosocomial infection decreased from 6.264 cases per 1000 patient-days in the old NICU to 4.094 cases per 1000 patient-days in the new NICU (statistically significant difference, $p = .031$). Catheter related infection rates of blood stream, lower respiratory tract, and urinary tract were decreased in the new unit. *Klebsiella pneumoniae*, *E. coli*, Methicillin-resistant *Staphylococcus aureus* (MRSA) and Coagulase-negative Staphylococci (CoNS) were

the more frequent pathogens in the old NICU, whereas MRSA, CoNS, *E. faecalis* and *A. baumannii* were the most frequent pathogens in the new NICU.

Conclusions: We observed the change in unit environment and implementation device bundles care might reduce the nosocomial infection rate.

PS 2-498

IMPACT OF CHOICE OF ANTIBIOTIC PROPHYLAXIS ON COLORECTAL SURGICAL SITE INFECTION IN BANGKOK HOSPITAL

Arisara Suwanarit, Kanchana Pooprasertwong. Bangkok Hospital Medical Center, Thailand

Purpose: Surgical site infection (SSI) associates with serious morbidity, mortality, and increase cost of treatment. Surveillance of SSI in operative procedure of colon surgery was identified in increasing SSI rate from 10% in Q2/2012 to 24.24% in Q3/2012. To reduce the burden of these infections, Infection Control Team is created the Surgical Care Improvement Project and developed bundle of prevention measures. Of these, two measurements are recommended, regarding selection of prophylaxis antibiotic and timing of administration.

Methods: For most patients undergoing colorectal surgery, a cephalosporin combines metronidazole has recommended prophylactic antibiotic. In 2012, SSI surveillance data shown that the SSI rate has increased from 10 to 24.24 percent, mostly *E. coli* ESBL positive. By conducting risk assessment, action plan was being developed. Infection control team reviewed of international literature and local antibiogram for revising antibiotic prophylaxis recommendations. From annual local antibiogram review, it was recommended to use antibiotic prophylaxis; Cefoxitin, Ceftriaxone plus metronidazole. However, it's no longer appropriate for colorectal surgery since percent-susceptible of *E. coli* was lower than 60 percent. Considering timing of antibiotic administration within one hour of cephalosporin and 120 minutes of metronidazole, the result was lower than 66 percent. A review of Clinical practice guideline for antimicrobial prophylaxis in surgery: American Society of Health-System Pharmacists Report, 2013 was undertaken to establish a new antibiotic prophylaxis recommendation that given Ertapenem 1 Gram intravenous within one hour before surgical incision. The bundle of compliance was monitored and the compliance rate; the result of antibiotic selection at 100 percent and antibiotic prophylaxis administration time within one hour at 80 percent. This program achieved colorectal surgical site infection rate that decreased from 24.24 to less than 2 percent in 2013.

Conclusion: The appropriate choice of antibiotic prophylaxis is essential. It is necessary to deal with pathogens by using the local antibiogram, strategies of infection control and antibiotic management.

PS 2-499

ENDOSCOPIC FINDINGS OF THE INVESTIGATION REPORT OF ABNORMAL MICROBIAL CULTURE AT LOCAL HOSPITAL IN SOUTHERN TAIWAN

Hsiu-O. Kuo^{a,b}, Tepei Tang^{a,c}, Hung Miao Liu^b, Shu Feng Chang^{a,c}. ^aInfection Control Committee, Minjon Hospital, Taiwan; ^bNurse Department, Minjon Hospital, Taiwan; ^cMedical Department, Minjon Hospital, Taiwan

Purposes: Hospitals have the responsibilities to provide safe medical equipment for patient services and to protect patient right to access medical care. However, medical malpractices often revealed that bad infection control measures resulting in people harm, deriving legal responsibility and rising of social cost. The article analyzed the survey results of routine cultured microorganism from endoscopes. It provides recommendations for infection control measures about disinfection of operation procedures and learning of proper sterilization methods. It conducts to block the infection opportunity and improve medical quality.

Methods: Conducting microbial cultures from endoscopes was done every three months in whole year of 2003 at local hospital. The microbial culture methods were adopted to "tube flushing" and "surface smear".