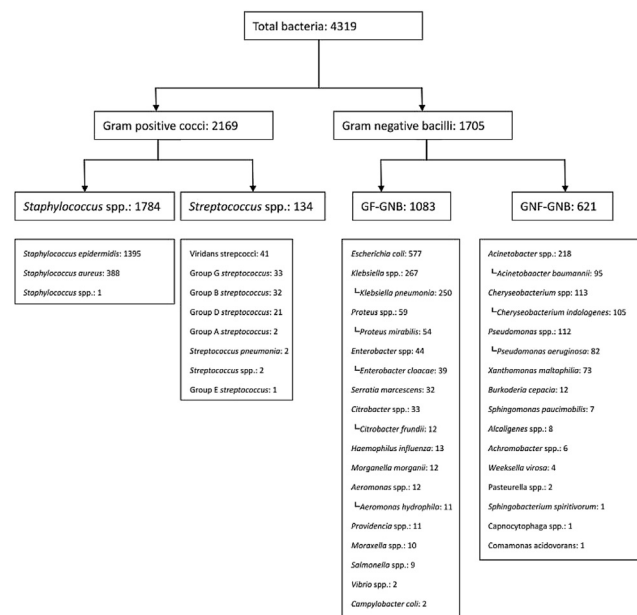


environmental sampling, including hand of doctor and nurse, bedside and disinfectants. However no *Chryseobacterium* spp. could be yielded from environmental samples. We traced the patients with *Chryseobacterium* yielded from blood culture but no obvious infection focus was noted.



Conclusion: Unusual number of *Chryseobacterium* from the blood culture result was found but negative in environmental sampling or infection focus survey.

PS 1-103

THE PRELIMINARY SURVEY FOR THE SURVEILLANCE OF *HAEMOPHILUS INFLUENZAE*(H. *INFLUENZAE*) IN A REGIONAL HOSPITAL FROM MAY TO AUGUST, 2014

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Purpose: The hospital isolated H. influenzae from sputum specimen from May to August, 2014 and the isolation rate grew exponentially when comparing with that(0.33%) in the same period of the past two years. For realizing the situation, patients' general conditions were collected to be as the reference of epidemic prevention measures.

Methods: The survey was carried out retrospectively, by collecting the data of the patients who were examined H. influenzae out of sputum specimen. The data included their origins, ages, the causes of disease, and antibiotic sensitivities.

Results: 23 patients infected H. influenzae which was cultured from sputum and the isolation rate was 1.52%(23/1512). The patients from long-term care centers accounted for 39.1%(9/23). Their average age was 65 and males were vast majority(78.3%). Clinically, lower respiratory tract infection was 69.6%(16/23). The minor one, Chronic obstructive pulmonary disease, was 13.0%(3/23). None of them belonged to the cases of healthcare-associated infection. The test of the antibiotic sensitivities showed the top three of drug resistance were Bactar(52.2%), Levofloxacin(43.5%), and Ampicillin(30.4%).

Conclusions: Although H. influenzae commonly appears in the respiratory tract and belongs to opportunistic infection, it can cause the disease when hypimmunity or it breeds numerously. Secondary respiratory tract infection may happen to the elderly people aged over 65. Its spreading way is droplet infection. Therefore, the chance to cause the disease will increase obviously if one lives in crowded environment.

The survey shows the cases belong to community-acquired infection or colonization. It is also discovered the uptrend of cases from May to August are different from what is recorded in documents mentioning H. influenzae occurs mostly in double peaks, February to April and October to November.

People are recommended the importance of adopting measures to protect respiratory tract, maintaining a clean environment, and hand hygiene in order to avoid the pathogen spreading.

PS 1-104

ELIZABETHKINGIA MENINGOSEPTICUM OUTBREAK AMONG PATIENTS USING MECHANICAL VENTILATOR IN A MEDICAL INTENSIVE CARE UNIT OF A HOSPITAL IN NORTHERN TAIWAN

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Purpose: *Elizabethkingia* spp. are opportunistic pathogens often found associated with ventilator-associated pneumonia and bacteremia. We aimed to investigate the source of outbreak in nine patients in a medical intensive care unit (MICU) with mechanical ventilator use.

Methods: From December 1st, 2010 to January 31, 2011, all infections caused by *Elizabethkingia meningosepticum* in the medical intensive care units were investigated. Patient data were collected from medical records. Environmental samples were obtained from various sites in MICU. Pulsed-field gel electrophoresis (PFGE) was performed to determine the clonal relationship between isolates and the potential route of transmission.

Result: Fourteen *E. meningosepticum* (9 from patients and 5 from environmental samples) were isolated. The five positive environmental samples included two from the inner surface of a faucet, two from ventilator outlet tubing, and 1 from a humidifier bottle. Three related pulse-field gel electrophoresis patterns were identified in patient isolates, which were consistent with environmental isolates. The typing results confirmed rinsing respiratory circuit devices with tap water could be the source of an outbreak. After discontinuing the techniques and infection control interventions, no further clusters of *E. meningosepticum* infection were detected in the same unit.

Conclusion: This study emphasizes the need to insist on the use of sterile water in ICUs to rinse ventilator circuits. Routine water sampling is recommended in high-risk patient care areas.

PS 1-105

INVESTIGATION OF A CLUSTER OF *BULKHOLDERIA CEPACIA* COMPLEX INFECTION IN A PEDIATRIC INTENSIVE CARE UNIT

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Purpose: Background: *Bulkholderia cepacia* complex (Bcc) is a group of ubiquitous gram-negative aerobic bacilli found in plants, soil, and moist environments. Bcc is well described as a cause of respiratory infections in patients with cystic fibrosis and chronic granulomatous disease. Bcc bacteremia and nosocomial pneumonia have also been observed in intensive care patients as sporadic cases or during outbreaks, but rarely reported in pediatric ICU.

The outbreak: During September 15, 2012 and October 17, 2012, four pediatric cases of healthcare-associated *B. cepacia* complex infection, two with bacteremia and two with pneumonia, were identified in our PICU, in where none had this microorganism HA infection in previous six months. We conducted an investigation and intervention procedures.

Methods: Investigation and interventions: Prior to Bcc infection, three of these 4 cases ever received a bronchoscope examination. On October 23, we obtained 54 specimens from environmental objects and instruments, including 16 specimens from the bronchoscope examination room, 31 specimens from PICU and 7 specimens from respiratory therapy department, and sent them for detection of this organism. Hand hygiene, environmental cleaning and disinfection, and cleaning and disinfection procedures for bronchoscope were augmented.

Results: None of the 54 specimens yielded Bcc but glucose non-fermentous bacilli and Enterobacteriaceae were identified from 4 specimens, including inner surface of bronchoscope washing machine, post-filtration water, one

bronchoscope and one cube ice. After augmentation of cleaning and disinfection procedures for bronchoscope, we did not identify any bacteria from seven samplings obtained on October 30. Two Bcc blood isolates were available for molecular characterization and shared an identical pulso-type. No more Bcc infection cases occurred in this PICU until April 2013.

Conclusions: A cluster of *Bulkholderia cepacia* complex infection due to a specific clone occurred in a PICU and was temporarily controlled after the implementation of infectious control measures. However, no potential reservoir and transmission route was identified.

PS 1-106

AN INVESTIGATION OF NOROVIRUS OUTBREAK IN A MEDICAL CENTER-AFFILIATED NURSING HOME – TAIWAN TAOYUAN, 2014

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Purpose: The local health department was notified of a norovirus outbreak among residents and staffs of a medical center-affiliated nursing home on July 10, 2014. We investigated to determine the outbreak source and provided infection control recommendations.

Methods: Cases were defined as fever with diarrhea or vomiting, or only diarrhea or vomiting ≥ 3 times per day among nursing home residents or staffs during July 8–23, 2014. We interviewed the nursing home staffs, conducted the environment inspection, and collected stool specimens from cases and all staffs for laboratory-testing.

Results: Among 263 residents and 128 staffs, we identified 61 cases (attack rate 16.1%), including 58 residents and 5 healthcare givers, with median age of 83 years (range : 20–100), and none were cooks. The culture-positive rate was 73.2 % in sampled cases (41/56) and all yielded norovirus. In the seventh floor, the caregivers who cared the index case two days before his illness onset on July 8 were also the caregivers of the following cases in the same floor two days before their symptoms development. Similar correlation between the caregivers and cases were noted in other floors. Multidisciplinary infection control measurements were implemented, including promoting adherence of caregivers to hand hygiene, increasing the frequency of disinfection of patient care areas, suspension of group activities, and use of disposable apron during patient care, etc. The outbreak, peaking on July 12, subsided gradually after implementation of infection control measurements. There was no new case since July 19.

Conclusions: Our investigation did not identify the source of the outbreak. Transmission from person to person via caregivers was highly suspected. With intensified and collaborative infection control measurements, the outbreak was contained and eliminated adequately.

PS 1-107

USE OF VENTILATOR BUNDLE TO PREVENT VENTILATOR-ASSOCIATED PNEUMONIA IN THE SURGICAL INTENSIVE CARE UNIT OF A MEDICAL CENTER

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Purpose: To evaluate the effect of ventilator bundle in preventing ventilator-associated pneumonia (VAP) in a surgical intensive care unit.

Methods: This study was conducted in a surgical intensive care unit of a medical center, Taipei, Taiwan, from March, 2011 to December, 2012. A multidisciplinary team of ventilator bundle was established during the study period. The checklist included daily sedation vacation and assessment of readiness to extubate, peptic ulcer prophylaxis, oral hygiene care, suction of oral secretions before changing position, elevation the head of the bed to between 30 degrees and 45 degrees and maintaining appropriate endotracheal tube cuff pressure.

Results: The results showed that implementation rate of daily goal checklist increased from 50% to 74% during the period of study. Meanwhile, compliance rate of ventilator bundle by external audit also increased from 79% to 93%. Checklist implementation rate had once decreased to below 50% between July and August 2012 due to the shortage of manpower. However,

through repeated staff education and regular feedback of the external audit data had gradually increased the implementation rate. Besides, lengthening respiratory tubing and using a thick red tape mark also can improve the compliance rate of maintaining head-up position to 95%. After 22 months of intervention, incidence of VAP had decreased from 5.1 to 2.8 per 1000 ventilator days ($P = 0.01$).

Conclusions: Our results show that the implementation of ventilator bundle can be effectively reducing the incidence of VAP.

PS 1-108

IMPROVEMENT OF BLOODSTREAM INFECTIONS IN INTENSIVE CARE UNITS BY APPLICATION OF INTERDISCIPLINARY COLLABORATION

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Purpose: The data from 2013 shows the bloodstream infection density of medical intensive care unit is 0.92‰, which is higher than that of the entire hospital by 0.55‰. This research is carried out for the purpose of controlling occurrences of bloodstream infections.

Methods: By applying interdisciplinary collaboration, the following measures are implemented from January to September in 2014: (1) establishment of catheter insertion standards and revision of daily care criteria; (2) use of maximal sterile precautions, 2% Chlorhexidine and air permeable dressing; (3) set up of special work carts; (4) making of daily care flow charts; and (5) educational training.

Results: 3 doctors and 36 registered nurses participated in the educational training, resulting in an achieving rate of 100%. The compliance rate of bundle interventions for central catheter insertion increased from 29% in April to 80% in August; the compliance rate of bundle interventions for central catheter care increased from 65% in April to 85% in August; the hand hygiene compliance rate is 100% for both Q1 and Q2; the percentage of hand hygiene correctness increased from 88% to 96%. The unit bloodstream infection density of Q1 and Q2 decreased 0‰ and 0.74‰, respectively. The bloodstream infection density of the entire hospital also decreased to 0.48‰.

Conclusion: Application of interdisciplinary collaboration, addition of software and hardware, educational training, and regular monitoring contribute to enhancing the quality of intensive care units.

PS 1-109

REDUCING VENTILATOR-ASSOCIATED PNEUMONIA IN INTENSIVE CARE UNIT OF A COMMUNITY HOSPITAL: IMPACT OF IMPLEMENTING VAP BUNDLE

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Purpose: Many critically ill patients need to rely on ventilator for survived, but associated with ventilator-associated pneumonia (VAP) is a common and important nosocomial infection issue. Apply combined infection control measures (the bundle care) to reduce infection rates had achieved in many hospitals in the United States in recent years. The concept of bundle care began an important issue of Healthcare-related Infection Control Audit in Taiwan since in recent 2 years also.

Methods: VAP bundle care was implemented in a medical intensive care unit of our hospital since 2007. The contents of VAP bundle including: 1 readiness-to-wean assessment daily, 2. check endotracheal cuff pressure daily, 3, diary "sedation vacation" 4 hand hygiene, 5. oral care every 8 hours, 6. head-of-bed elevation above 30 degrees, 7. suctioning of both the oropharynx and the endotracheal tube.

Results: The compliance rate of VAP bundle was 16.7% in the trial period increasing to 80.0% after the implementation of first year. The ventilator usage rate decreased 10.3% after implanted VAP bundle, and ICU stay day decreased 1.96 days of each patient. The VAP cases decreased from annual average of 8 cases before VAP bundle implementing to an average of 1.33 cases a year after VAP bundle implementing (decrease of 83.3%). The implementation of the VAP bundle during three years got a total reduction of 20