Mannitol is an osmotic diuretic, which is used clinically in osmotherapy to reduce acutely raised intracranial pressure, thus, this drug has very high usage in the neurosurgical ward. When room temperature is below 25 degree Celsius, crystals formed in the bottle and crystals also formed within the infusion control set.
In order to melt the crystals, health care workers heated both the Mannitol bottle and the infusion control set in a water bath,(by tying Mannitol bottle and the infusion control set together). So the water in the water bath penetrates into the infusion control set.
Results: After shifting to double boiler, this kind of contamination does not occur.
Conclusions: In medical area, even tiny or mindless inappropriate procedure can induce serious and fatal result just like Bacteremia can have several consequences. As Infection control practitioners, we should always keep alert when find unusual infections, and carry out investigations immediately.

OS 6-4

VALIDATION AND COMPARISON OF A CANDIDEMIA PREDICTION MODELS: A CASE-CONTROL STUDY

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Purpose: Inappropriate or delayed treatment of invasive candidiasis (IC) is associated with excess mortality and resource usage. However, patients with IC share similar clinical risk factors as those infected with multidrug resistant organisms which was common in critically ill patients. Implementing active microbial surveillance to determine heavy colonization of *Candida* at multiple body sites is not practical. Thus, this study aims to develop a candidemia prediction model to facilitate selection of empirical antimicrobial agents before microbiological confirmation of bloodstream infection (BSI) based on a case-control study.
Methods: To develop the model, electronic medical records (EMR) of hospitalized patients with candidemia (322 cases) and patients with BSI due to top 5 bacteria at a 2200-bed teaching hospital in Taiwan in 2011 (1018 controls) were systematically surveyed. A total of 27 features existing before the first blood cultures with positive results were collected: demographics, underlying conditions, and epidemiological and healthcare—associated factors. The System incorporates 3 data mining algorithms: support vector machine, decision tree, and inductive logic programming (ILP). Generalized linear model was used as a baseline algorithm. In addition, the effect of adopting clinical knowledge into ILP was also evaluated.
Results: Based on F1 score, the most parsimonious model was ILP with clinical knowledge, having performance with high accuracy (0.713) and specificity (0.792), and also with optimal F1 scores (0.437) and sensitivity (0.464). In the three methods with ILP, the F1 score in using background knowledge was significantly higher than others ($P = .015$).
Conclusion: This study demonstrated the performance of the prediction models using data mining algorithms to predict IC in patients from whom blood cultures are collected under the suspicion of BSI. Our data showed significantly improves the performance when incorporating clinical knowledge of IC.

OS 6-5

DEVELOPMENT AND EVALUATION OF A HOSPITAL-WIDE HEALTHCARE-ASSOCIATED SURGICAL SITE INFECTION DETECTION ALGORITHM

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Purpose: Healthcare-associated surgical site infections (HASSIs) are important adverse events associated with health care. Surveillance of healthcare-associated infections (HAI) is a cornerstone of infection prevention programs, but labor intensive and performance variable. Recent studies have identified inter-institutional variability of surveillance techniques and these inconsistencies affect the validity of publicly reported HAI data. This study aims to develop a reliable and objective HASSI detection system.
Methods: We developed five HASSI detection rules based on US Centers for Disease Control and Prevention National Healthcare Safety Network definition of healthcare—associated infection and modified according to local practice and the limitation of electronic medical records (EMR). We established a system systematically surveys EMR of patients receiving clean surgical procedures at a 2200-bed teaching hospital. The System uses discrete data, such as antibiotic prescriptions, microbiology results, and surgical site infections (SSI) related diagnosis, searching for SSI related texts in procedure notes and nurse EMR.
The performance of each detection rule was evaluated based on EMR during Sep. to Dec., 2013. Then, we developed the detection algorithm based on logistic regression analysis of the detection rules performance. We validate the performance of the detection algorithm based on EMR data during Jan. to Feb., 2014. The performance was determined based on the reference standard generated by retrospectively reviewed and verified by one of the authors.
Results: Among 12,032 in-patients receiving clean surgical procedures, there were 68 ICP-detected HASSIs. The area under ROC curve of detection algorithm is 0.957. When the sensitivity is 100%, the specificity of the model is 78.4%. The positive predictive value and negative predictive value are 1.4% and 100%, respectively.
Conclusions: We established a HASSI screening system with high sensitivity and reduced by 78.1% the number of possible HASSI candidates needed to be reviewed by ICP.

OS 6-6

FIVE-YEAR LONGITUDINAL FOLLOW-UP OF SEROLOGICAL RESPONSES TO PRIMARY VACCINATION WITH 1 DOSE VERSUS 2 DOSES OF 7-VALENT PNEUMOCOCCAL CONJUGATE VACCINE IN HIV-INFECTED PATIENTS IN THE ERA OF COMBINATION ANTIRETROVIRAL THERAPY

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Purpose: Longitudinal follow-up studies of serological responses to primary vaccination with 7-valent pneumococcal conjugate vaccine (PCV7) are scarce among the HIV-infected patients. We aimed to compare the serological responses annually for 5 consecutive years to primary vaccination with 1 versus 2 doses of 7-valent PCV among HIV-infected adults receiving combination antiretroviral therapy (cART).
Methods: Two hundred and twenty-one HIV-infected patients who had undergone primary vaccination with 1 ($n = 109$) or 2 doses ($n = 112$) of PCV7 between 2008 and 2010 were longitudinally followed for evaluation of significant serological responses that was defined as 2-fold or greater increase of antibody titers following vaccination to 2 or more of the 4 serotypes (serotypes 6B, 14, 19F, and 23F) studied. Sequentially collected blood samples were determined for anti-capsular antibody titers against the 4 serotypes at baseline and annually for 5 years using ELISA after absorption with 10 μg/ml cell-wall polysaccharide and 30 μg/ml 22F polysaccharide. The generalized estimating equations (GEE) to account for the interdependence among observations were used to compare mean response rate to different PCV doses, with adjustments made for other variables such as CD4 count or plasma HIV RNA load at vaccination.
Results: The two groups of HIV-infected patients were well matched for age (35.8 vs 36.1 years), sexual orientation (male homosexuals, 86.1 vs 80.6%), receipt of cART (70.6 vs 72.3%), CD4 count (437 vs 453 cells/mm^3) and plasma HIV RNA load (2.8 vs 2.6 $\log_{10}$ copies/ml), and the proportion of patients on