2103. Clinical Profile of Patients with Burkholderia cepacia complex Bacteremia and Contaminated Ultrasound Gel as Possible Source of Infection

Rajalakshmi Ananthanarayan, MBBS, DNB1; Aswathy Sasidharan, BSc2; and Sujad Saju, BSc2; Infectious Diseases, Kerala Institute of Medical Sciences, Trivandrum, India, Infectious Diseases, Kerala Institute of Medical Sciences, Trivandrum, India, Infectious Diseases, Kerala Institute of Medical Sciences, Trivandrum, India

Session: 234. Healthcare Epidemiology: Device-associated HAIs Saturday, October 6, 2018: 12:30 PM

Background. Burkholderia cepacia complex (Bcc) is Gram-negative bacteria commonly affecting those with cystic fibrosis, causing pneumonia and also a nosocomial pathogen. We looked at the clinical profile and possible source of Bcc bacteremia in patients without cystic fibrosis, admitted to a tertiary care hospital in South India.

Methods. Retrospective chart review was done of patients with Bcc bacteremia over the period 2012–2017. Patient risk factors, outcome, sensitivity profile were looked into. Possible sources for Bcc were analysed.

Results. Twenty-two patients with Bcc bacteremia were identified during this period. Age of patients ranged from 16 months to 83 years, averaging 47 years. 89.5% were nosocomial; 77.3% had indwelling vascular catheter, either CVC, dialysis catheter or permacath. When 30 days mortality was looked at, 17 patients survived and five patients expired. Those who expired had high Pitt’s bacteremic score (scoring done either prior to or within 48 hours of positive culture). Four patients had underlying pneumonia, among whom two patient’s respiratory sample grew Bcc; three also had under-lying vascular catheters. Sensitivity pattern of Bcc was noted as follows: trimethoprim-sulfamethoxazole was uniformly sensitive (100%), ceftazidime was sensitive in 86.5%, minocycline in 73% of isolates. Meropenem was tested in 19 and was found sensitive in 15 isolates (79%), fluoroquinolone was tested only in eight isolates and was sensitive in 7.

As majority was CLABSI, the bundle compliance and common products used for cVC were audited. Feedback and training for bundle compliance were given. The ultrasound gel, even the unopened bottle used for cVC insertion grew Bcc. Despite sterile cover around the probe after the application of contaminated gel, an associated risk was considered and was replaced with sterile gel sachet. At 3 months follow-up there is no further incidence of Bcc bacteremia, though longer follow-up is needed.

Conclusion. Bcc bacteremia is found to be an important nosocomial pathogen, commonly associated with intravascular catheters with 22.7% mortality in this study. Cotrimoxazole was 100% sensitive. Good infection control practices, including early removal of unnecessary catheters are important to prevent Bcc CLABSI. Ultra sound gels can harbour Bcc and poses a serious risk of infection.

Disclosures. All authors: No reported disclosures.

2104. Impact of a Supervision and Education Directed Bundle in Ventilator-Associated Pneumonia (VAP) on a Pediatric Critical Care Unit of a Teaching Hospital

Iris Canali, MD; Karin Roldan, L.P.N; Diego Ermendger, MD and Andrea Perez, L.P.N; Department of Nosocomial Diseases, Hospital Roosevelt, Guatemala, Guatemala

Session: 234. Healthcare Epidemiology: Device-associated HAIs Saturday, October 6, 2018: 12:30 PM

Background. Proven measures to prevent VAP include 35–45; inclination of the head, prompt extubation, hand hygiene prior to intubation, oral hygiene with chlorhexidine, minimize secretion pooling above the endotracheal tube cuff. Adherence to these interventions is a key point in reducing risk of VAP’s. Increasing prevalence of VAP in the pediatric critical care unit (PICU) of a reference teaching hospital in Guatemala, led the Hospital Infection Prevention and Control (HIPC) team to implement a bundle to control VAP’s.

Methods. A daily active surveillance to identify cases of VAP according to the Center for Disease Control (CDC) definition was done for 10 months before the HIPIC intervention. The HA implemented a bundle defined as: (1) head elevation (35; degree inclination), (2) hand hygiene, (3) oral hygiene with chlorhexidine, (4) minimize secretion pooling, (5) daily evaluation of extubation, (6) daily surveillance, (7) continuous education of personnel, (8) adequate supplies distribution analysis. After the intervention rates and trends of VAP were analyzed for 30 months.

Results. In the pre-intervention observational period the rates of VAP increased from 18 (September 2014) to 28 cases per 1,000 ventilator-days (June 2015). The first month after the bundle implementation (July 2015) a 50% VAP rate decrease was evidenced. A constant decrease in VAP rates was reported in the 24 months after the implementation of the bundle, reaching the lowest rate in August 2017 (five cases per 1,000 ventilator-days). For administrative reasons adherence to oral hygiene with chlorhexidine was sub-optimal due to a lack of supplies from August 2017 to December 2017 which coincided with an increase in VAP rates from five to 14 per cases 1,000 ventilator-days.

Conclusion. A notable and constant reduction of VAP rates in the PICU was achieved after the implementation of the bundle. Even though many of the measures included in the bundle were already protocolled in the PICU, a probable lack of adherence could explain the high rates observed pre-intervention. By adding the continuous education and supervision of the personnel by a member of the HIPC team, to previously proven methods, the VAP rates decreased in almost 80%. This makes a strong case for the idea that protocols without continuous enforcement might not be enough to control infections.

Disclosures. All authors: No reported disclosures.

2105. Electronic Records of Daily Subglottic Suctioning Predict Infectious and Non-infectious Adverse Ventilator-Associated Events During Critical Care

Melanie F. Wengert, MSF1; Risa Vecker, MD1; Rebecca Fitzpatrick, DNP, RN, CN1; Fakih Alkandari, MPH1; Daniel Roldan, L.P.N; Diego Ermendger, MD1; Brendan J. Kelly, MD, MS4; and CDC Prevention Epicenters Program; Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania, Division of Infectious Diseases, Department of Medicine; Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania, 1Division of Infectious Diseases, Department of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania

Session: 234. Healthcare Epidemiology: Device-associated HAIs Saturday, October 6, 2018: 12:30 PM

Background. Mechanical ventilation is a life-sustaining therapy for critically ill patients, but is associated with increased hospital costs and risk for significant complications with poor outcomes. Adverse ventilator-associated events (VAEs) can be broadly divided into infectious (ventilator-associated complication (IVAC) or ventilator-associated pneumonia (VAP)) and non-infectious (ventilator-associated complication (VAC)) types. We sought to identify factors that predict both types, and factors that discriminate risk for infectious vs. non-infectious VAE, using electronic medical record (EMR) data available prior to index event.

Methods. We evaluated 90 consecutive adverse VAEs in the medical intensive care unit (MICU) in an academic medical center (January 1, 2013–June 30, 2016) to determine prior patient and care factors that discriminate risk for incident VAE. VAE were defined by surveillance criteria from the CDC. Patient and care data were extracted via the EMR.

Disclosures. All authors: No reported disclosures.

2106. What Metrics Should We Use to Evaluate CAUTI Performance for Inpatient Rehabilitation Units? An Evaluation of a Large, National Healthcare System

Mamta Sharma, MD, FIDSA1; Rebecca Battié, MPH1; Lisa Sturm, MPH1 and Mohammad Fathal, MD, MPH1; Infectious Diseases, SJHOP and Medical Events Department, Ascension, Grosse Pointe Woods, Michigan, 2St. John Hospital and Medical Center, Ascension, Grosse Pointe Woods, Michigan, 3Care Excellence, Ascension Healthcare, St. Louis, Missouri

Session: 234. Healthcare Epidemiology: Device-associated HAIs Saturday, October 6, 2018: 12:30 PM

Background. The National Healthcare Safety Network (NHSN)’s Targeted Assessment for Prevention (TAP) Strategy is a framework for quality improvement that offers a focused approach to infection prevention. The cumulative attributable difference (CAD) is used as a prioritization metric to identify areas with the highest burden of excess infections. The standardized utilization ratio (SUR) provides risk-adjusted urinary catheter metric beyond traditional device utilization ratios (DUR). We evaluated the TAP Report and SUR for all Inpatient Rehabilitation Facilities (IRF) within a large, national healthcare system.

Methods. Using the NHSN database, we generated a catheter-associated urinary tract infection (CAUTI) TAP Report for all IRFs across the system for calendar year 2017. The standardized infection ratio (SIR) goal was set to 0.75, and the cumulative SUR (observed events divided by SIR goal) was calculated. A 12-month cumulative urinary catheter SUR was also computed in NHSN.

Disclosures. All authors: No reported disclosures.

OFID 2018:5 (Suppl 1) 5617
however, the SUR can be an additional metric to reduce device-associated risks. Areas with high CAD/low SUR could be evaluated for other potential causal factors, including device insertion, care/maintenance techniques and accuracy of NHSSN definition application.

Table. TAP Report, including SUR

| Facility | TAP Rank | CAUTI | DUR % | 12-Month SUR | CAD | SIR |
|----------|----------|-------|-------|--------------|-----|-----|
| 1        | 5        | 14    | 1.85  | 4.10         | 4.1 |     |
| 2        | 4        | 6     | 0.72  | 3.40         |     |     |
| 3        | 3        | 8     | 1.00  | 2.40         |     |     |
| 4        | 4        | 9     | 1.12  | 2.00         | 1.5 |     |
| 5        | 1        | 7     | 0.85  | 0.85         |     |     |
| 6        | 1        | 5     | 0.63  | 0.80         |     |     |
| 7        | 1        | 5     | 0.67  | 0.80         |     |     |
| 8        | 1        | 10    | 1.29  | 0.70         |     |     |
| 9        | 1        | 6     | 0.83  | 0.70         |     |     |
| 10       | 1        | 17    | 2.14  | 0.60         |     |     |
| 11       | 1        | 12    | 1.57  | 0.50         |     |     |
| 12       | 0        | 7     | 0.92  | 0.10         |     |     |
| 13       | 0        | 3     | 0.35  | 0.10         |     |     |
| 14       | 0        | 6     | 0.78  |             |     |     |
| 15       | 0        | 6     | 0.82  |             |     |     |
| 16       | 0        | 3     | 0.35  |             |     |     |
| 17       | 0        | 7     | 0.87  |             |     |     |
| 18       | 0        | 8     | 1.07  |             |     |     |
| 19       | 0        | 5     | 0.62  |             |     |     |
| 20       | 0        | 7     | 0.96  |             |     |     |
| 21       | 0        | 7     | 0.92  |             |     |     |
| 22       | 0        | 10    | 1.31  |             |     |     |
| 23       | 0        | 7     | 0.92  |             |     |     |
| 24       | 0        | 7     | 0.95  |             |     |     |
| 25       | 0        | 4     | 0.58  |             |     |     |
| 26       | 0        | 12    | 1.50  | 0.70         |     |     |

* Not calculated.

Disclosures. All authors: No reported disclosures.

2107. Decision Trees vs. Neural Networks for Supervised Machine Learning-Based Prediction of Healthcare-Associated Urinary Tract Infections
Philip Zachariah, MD, MS; Elioth Mirsha Sanabria Buenaventura, MSc; Jianfang Liu, PhD; Bevin Cohen, PhD; David Yao, PhD and Elaine Larson, RN PhD; Yagelos College of Physicians and Surgeons, Columbia University, New York, New York, Icahn School of Engineering, Columbia University, New York, New York, Fu School of Engineering, Columbia University, New York, New York, School of Nursing, Columbia University, New York, New York

Session: 234. Healthcare Epidemiology: Device-associated HAIs
Saturday, October 6, 2018: 12:30 PM

Background. Supervised machine learning (SML)-based methods could facilitate early prediction of healthcare-related adverse events. The role of SML in stratifying patient risk of nosocomial infections during hospitalization and their performance using limited subsets of standardized and widely available predictors is less known. Using a large cohort of adult inpatients, we use SML techniques to predict a diagnosis of urinary tract infection (UTI) during hospitalization.

Methods. We used previously validated data from adults (≥18 years old) hospitalized between 2009 and 2016 in a healthcare system as part of a federally funded study. The outcome was a UTI detected >2 days after admission. Predictors measured clinical, demographic, and device-associated factors. The optimal DT was provided from the data set during the study period. Applying NN and DT to the raw dataset, AUC's of 0.55 and 0.69 were achieved respectively with the test set. Model performance for DNN and DT improved with oversampling to 0.77 and 0.78, outperforming traditional logistic regression (Figure 1). The optimal DT is presented (Figure 2).

Conclusion. Reasonable prediction performance for an infectious event during hospitalization was achieved using a limited set of routinely available and standardized variables. While both SML methods had comparable performance, the DT was more interpretable. Further work will extend these methods to other infectious events, use more specific EHR data and link these predictions to interventions in real time.

Disclosures. All authors: No reported disclosures.

2108. Perfluorocarbon Omniphobic Treatment Prevents Bacterial Colonization of Urinary Catheter in a Rat Model
Maryam Badv, MSc; Faten El Sayed, PharmD; Julie Foucheroux, PhD; Delphine BEHR-ROUSSEL, PharmD; PhD; Martin Rottman, MD; PhD and Tobiah Didar, PhD; School of Biomedical Engineering, McMaster University, Hamilton, ON, Canada, Laboratoire De Microbiologie, Hopital Ambroise Pare, HUPFI, APHP, Boulogne Billancourt, France, Umr Inserm U1173, Universite De Versailles St Quentin, Montigny Le Bretonneux, France, Polypharm, Montigny Le Bretonneux, France, Laboratoire De Microbiologie, Hospital Raymond Poincare, HUPFI, APHP, Garches, France

Session: 234. Healthcare Epidemiology: Device-associated HAIs
Saturday, October 6, 2018: 12:30 PM

Background. The bacterial colonization of urinary catheters is a major source of hospital-acquired urinary tract infections (HAUTI). Bacteria repellent coatings could lower HAUTI prevalence and minimize antimicrobial usage. We report a model of spontaneous bacterial colonization of an intravesical catheter in a spinalized rat model, and the first in vivo proof of the efficacy of lubricant-infused catheters (LICs) in preventing bacterial colonization.

Methods. LICs preparation: Oxygen plasma treated polyethylene catheters were immediately placed in a vacuum desiccator and 280 µL of trichloro (1 hour, H2, H2, H-perfluorooctyl) silane was placed beside the catheter segment. The vacuum pump connected to the desiccator was turned on with the exit valve closed once a pressure of ~0.08 MPa was achieved. The chemical vapour deposition process was initiated for 4 hours. Catheters were removed from the desiccator and placed in an oven at 60°C for a minimum of 12 hours in order to complete the modification process. Catheters were saturated with a biocompatible perfluorocarbon-based lubricant (perfluorocarbon) prior to implantation.

Thirty centimeters long native catheters and LICs were surgically implanted in the bladder of rats spinalized 19 days prior and programmed to undergo cystometry experiments 48 hours later. Each rat was maintained individually in a cage with food and water ad libitum until bladder functional evaluation, and benefited from a of trimethoprim sulfadiazine and fluoroquinolone prophylaxis. At the end of the cystometry experiments, the animals were euthanized and the bladder catheter was removed. A 1 cm section from the intravesical end of the catheter was cut and placed...