patient-level integrated dataset extracted from both a patient-billing and EHR data warehouse maintained by Premier. The data set, joined by patient admission-date, medical record number, date of birth, and hospital entity code, allows the presence of both the coded clinical cohort (derived from the MS-DRG) and the explanatory features in the EHR to exist within a single patient encounter record. The resulting model produced F1 performance scores of .65 for the sepsis population and .61 for the pneumonia population.

Funding: None
Disclosures: None
Doi:10.1017/ice.2020.993

Presentation Type:
Poster Presentation

Reduced Length of Stay Using Clinical Decision Support Tool (ASAP) for Empiric Antibiotic Selection

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Background: Empiric antibiotic selection is challenging and requires knowledge of the local antibiogram, national guidelines and patient-specific factors, such as drug allergy and recent antibiotic exposure. Clinical decision support for empiric antibiotic selection has the potential to improve adherence to guidelines and improve patient outcomes. **Methods:** At NorthShore University HealthSystem, a 4-hospital, 789 bed system, an automated point-of-care decision support tool referred to as Antimicrobial Stewardship Assistance Program (ASAP) was created for empiric antibiotic selection for 4 infectious syndromes: pneumonia, skin and soft-tissue infections, urinary tract infection, and intra-abdominal infection. The tool input data from the electronic health record, which can be modified by any user. Using an algorithm created with electronic health record data, antibiogram data, and national guidelines, the tool produces an antibiotic recommendation that can be ordered via a link to order entry. If the tool identifies a patient with a high likelihood for a multidrug-resistant infection, a consultation by an infectious diseases specialist is recommended. Utilization of the tool and associated outcomes were evaluated from July 2018 to May 2019. **Results:** The ASAP tool was executed by 140 unique, noninfectious diseases providers 790 times. The tool was utilized most often for pneumonia (194 tool uses), followed by urinary tract infection (166 tool uses). The most common provider type to use the tool was an internal medicine hospitalist. The tool increased adherence to the recommended antibiotic regimen for each condition. Antibiotic appropriateness was assessed by an infectious diseases physician. Antibiotics were considered appropriate when they were similar to the antibiotic regimen recommended by the ASAP. Inappropriate antibiotics were classified as broad or narrow. When antibiotic coverage was appropriate, hospital length of stay was statistically significantly shorter (4.8 days vs 6.8 days for broad antibiotics vs 7.4 days for narrow antibiotics; $P < .01$). No significant differences were identified in mortality or readmission. **Conclusions:** A clinical decision support tool in the electronic health record can improve adherence to recommended empiric antibiotic therapy. Use of appropriate antibiotics recommended by such a tool can reduce hospital length of stay.

Funding: None
Disclosures: None
Doi:10.1017/ice.2020.994

Presentation Type:
Poster Presentation

Reducing Blood Culture Contamination; a Quality Improvement Project in Emergency Department

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Background: Blood culture is an important investigation in diagnosing sepsis. Positive culture helps to tailor therapy and is crucial in antimicrobial stewardship (AMS). However, positive blood culture does not always denote a bloodstream infection. Sometimes, false-positive results occur because of contamination from organisms outside the bloodstream, leading to significant negative consequences to patient treatment decisions and financial implications. Rates of blood culture contamination vary widely (0.6%–6%) between organizations, and although it is very difficult to eliminate contamination, it can be minimized. Our hospital group has multiple sites including emergency departments (EDs). We have been intermittently monitoring blood culture contamination rates since 2008, which decreased from 6.8% to 4.8% in 2009 but remained static when audited in 2010, 2012, and 2015. Objectives: To reduce our blood culture contamination rate further by targeting 2 busy EDs and by introducing continuous surveillance of blood culture contamination across 3 hospitals beginning in April 2016. Methods: In 2015, for the first time, blood culture contamination rates for both EDs, based in 2 different hospitals, were calculated. The ED results were communicated to the healthcare workers (HCWs), who agreed to establish a continuous surveillance of blood culture contamination and to participate in a reduction plan. Competency training was conducted according to training needs analysis. For example, phlebotomists were trained to ensure the use of the appropriate blood culture kit and educational sessions were tailored to staff groups. The blood culture contamination rate was monitored from April 2016 to March 2019 for 3 hospitals and both EDs to determine the impact of various measures introduced during this time. Results: In 2015, contamination rate of the 3 hospitals was 4.07%, and 10.2% of total blood cultures flagged positive. Also, 25% of blood cultures were requested from Eds, but these samples comprised 54% of the total contamination. The contamination rates for EDs A and B were 7.4% and 10.6%, respectively, which were significantly higher than the overall rate. From April 16 to March 19, there was 22% increase in total blood cultures performed. Results were analyzed quarterly. In total, 8,525 blood culture sets were received in January–March 2019; of these, the EDs contributed 2,799 sets (32.8%). The total blood culture contamination rate in January–March 2019 decreased to 3.1%. Both EDs A and B showed decreases in their contamination rates