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.
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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.
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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

to 5.5% and 7.4%, respectively, in 2018–2019. The quarterly decreases were 5.2% and 4.9% in January–March 2019. Conclusions: The emphasis on the sepsis pathway probably led to year-on-year increases in total blood culture sets. Both ED blood culture contamination rates decreased. Consistent efforts in education, training, ensuring competency to various HCW groups, and provision of adequate blood culture kits are important for sustaining these improvements.
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Poster Presentation
Reducing Sternal Site Surgical Site Infections by Postdischarge Follow-Up Using WhatsApp
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Background: We conduct ~180–200 CABG surgeries a year, and >70% of these patients are diabetic. Our SSI rate for sternal site was 4.4%, above the global benchmarks, and on review of the risk factors, poor glycemic control was identified as a major risk factor. Despite focusing on and achieving excellent glycemic control in the perioperative period, the SSI rates did not decrease significantly. We identified that the predischarge insulin regimens were inadequate for the patient once they returned to meals at home. Hence, we extended the interventions to the postdischarge phase and observed the impact of this change on SSIs. **Methods:** We developed a multidisciplinary and cross-functional team of cardiac surgeons, endocrinologists, physician assistants, infection control nurses and quality professionals. The CABG admissions information was obtained when financial clearance was sought for the procedure; the quality improvement professionals tracked these patients to ensure involvement of the endocrinology team. The physician assistant conducted the education to the patient and family regarding sugar management and use of a glucometer at home. The quality improvement team took a weekly report from the physician assistant and from the patient regarding the frequency of interactions and achievement of glycemic control. At the time of discharge, each of the diabetic patients who underwent CABG were educated by the physician assistant in the use of a glucometer, were provided with a sugar monitoring and insulin dosing chart as well as a WhatsApp number. The patient's were instructed to monitor the sugars at specified intervals, to input the data into the personalized chart, and to send it to the PA through WhatsApp. The physician assistant then provided instructions on the insulin dosages using a standing order (dynamic insulin prescription regimen) developed by the endocrinologist. **Results:** The sternal site infection rate among the CABG patients dropped from 4.44% (4 cases of 90 surgeries) to 1.78% (2 cases of 112 patients), a 60% improvement. Readmissions among the CABG patients dropped from 3 cases in the study period to zero during the project phase. **Conclusion:** We have achieved significant reduction in sternal site SSI by (1) implementing a novel strategy of focusing on the postdischarge period and home management of blood sugar; (2) using freely available technology, WhatsApp; and (3) effectively using physician assistants by training and developing standing order sets for insulin.
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Poster Presentation
Reduction in Methicillin-Resistant *Staphylococcus aureus* (MRSA) Surveillance in a Low-Prevalence Neonatal Intensive Care Unit Does Not Lead to Increase in Vancomycin Utilization
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Background: Methicillin-resistant *Staphylococcus aureus* (MRSA) infection in neonates is associated with significant morbidity, mortality, and hospital cost. Multiple studies have shown that these infections are often preceded by colonization, but no consensus has been established for MRSA surveillance. The impact of changing the surveillance strategy on vancomycin utilization has not been evaluated previously. **Methods:** Retrospective chart review of infants who underwent MRSA screening in a level IV NICU with all outborn neonates. A weekly surveillance PCR was obtained from the nares between July 2016 and June 2017 (phase 1) and only on admission and discharge between July 2017 and June 2018 (phase 2). Patients with a positive PCR were placed on contact precautions without decolonization. The χ^2 test was performed to compare the 2 phases of screening, and the Student *t* test and the Fisher exact test were used to compare the characteristics of MRSA colonized infants. Vancomycin utilization was measured in days of therapy (DOT) per 1,000 NICU patient days. **Results:** In total, 689 infants underwent MRSA screening during the study period; 324 infants had weekly MRSA surveillance and 365 infants had screening at admission and discharge. There was no statistically significant difference in MRSA colonization rates (4.3% vs 3.0%) or MRSA colonization acquisition (negative to positive, 1.8% vs 1.0%) between the phases. Among MRSA-colonized patients, nearly 60% were colonized on admission. Nearly 40% of the infants became colonized with MRSA during their hospitalization, none of whom developed MRSA infections prior to discharge. Mean vancomycin utilization decreased from 38.55 to 30.16 DOT per 1,000 NICU patient days between the 2 study periods. **Conclusions:** In a level IV NICU with relatively low MRSA prevalence, the change in MRSA screening practice from weekly surveillance to surveillance upon admission and discharge demonstrated no difference in MRSA acquisition or infection. Overall vancomycin utilization also decreased during this period, suggesting a culture shift around antibiotic utilization. Further study is needed to evaluate the utility of MRSA screening, decolonization, and isolation practices in low-prevalence NICUs and to identify additional drivers of vancomycin utilization.
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