Figure 2. 2a. Pre-defined sources of HOB and associated ability of expert panel to achieve consensus on preventability rating.
2b. Distribution of preventability rating categories for cases that reached consensus among the expert panel (n=52) compared to cases with reviewer agreement (n=69).
Abbreviations: HOB, Hospital-onset bacteremia and fungemia. CLABSI, Central line-associated bloodstream infection. PIV, peripheral intravenous

Fig. 2.

Conclusions: Healthcare epidemiology experts hold varying perspectives on HOB preventability. Structured tool-based preventability rating had high interreviewer reliability, matched expert consensus in most cases, and rated fewer cases with uncertain preventability compared to expert consensus. This tool is a step toward standardized assessment of preventability in future HOB evaluations.
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Presentation Type:
Oral Presentation
Development of an Electronic Algorithm to Target Outpatient Antimicrobial Stewardship Efforts for Acute Bronchitis
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Background: Antibiotic resistance has increased at alarming rates, driven predominantly by antibiotic overuse. Although most antibiotic use occurs in outpatients, antimicrobial stewardship programs have primarily focused on inpatient settings. A major challenge for outpatient stewardship is the lack of accurate and accessible electronic data to target interventions. We sought to develop and validate an electronic algorithm to identify inappropriate antibiotic use for outpatients with acute bronchitis. Methods: This study was conducted within the University of Pennsylvania Health System (UPHS). We used ICD-10 diagnostic codes to identify encounters for acute bronchitis at any outpatient UPHS practice between March 15, 2017, and March 14, 2018. Exclusion criteria included underlying immunocompromising condition, other comorbidity influencing the need for antibiotics (eg, emphysema), or ICD-10 code at the same visit for a concurrent infection (eg, sinusitis). We randomly selected 300 (150 from academic practices and 150 from nonacademic practices) eligible subjects for detailed chart abstraction that assessed patient demographics and practice and prescriber characteristics. Appropriateness of antibiotic use based on chart review served as the gold standard for assessment of the electronic algorithm. Because antibiotic use is not indicated for this study population, appropriateness was assessed based upon whether an antibiotic was prescribed or not. Results: Of 300 subjects, median age was 61 years (interquartile range, 50–68), 62% were women, 74% were seen in internal medicine (vs family medicine) practices, and 75% were seen by a physician (vs an advanced practice provider). On chart review, 167 (56%) subjects received an antibiotic. Of these subjects, 1 had documented concern for pertussis and 4 had excluding conditions for which there were no ICD-10 codes. One received an antibiotic prescription for a planned dental procedure. Thus, based on chart review, 161 (54%) subjects received antibiotics inappropriately. Using the electronic algorithm based on diagnostic codes, underlying and concurrent conditions, and prescribing data, the number of subjects with inappropriate prescribing was 170 (56%) because 3 subjects had antibiotic prescribing not noted based on chart review. The test characteristics of the electronic algorithm (compared to gold standard chart review) for identification of inappropriate antibiotic prescribing were the following: sensitivity, 100% (161 of 161); specificity, 94% (130 of 139); positive predictive value, 95% (161 of 170); and negative predictive value, 100% (130 of 130). **Conclusions:** For outpatients with acute bronchitis, an electronic algorithm for identification of inappropriate antibiotic prescribing is highly accurate. This algorithm could be used to efficiently assess prescribing among practices and individual clinicians. The impact of interventions based on this algorithm should be tested in future studies.
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Direct Data Mining from the Electronic Medical Record to Assess and Improve Compliance With Infection Prevention Bundles
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Background: Bundles have been proven to reduce the risk of healthcare-associated infections and to provide for rapid recognition and response for the best outcome in patients with sepsis. Each element alone does not provide the statistical significance that all elements together allow. Providing near real-time compliance with bundle measures to clinical staff can drive performance improvement with