

SHEA Spring 2023 Abstracts

Presentation Type:

Poster Presentation - Top Poster Award

Subject Category: Antibiotic Stewardship

Clinical factors and diagnoses associated with inappropriate urine-culture ordering in primary care

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Background: Inappropriate urine-culture ordering is associated with increased antibiotic prescribing in myriad care environments, including acute and long-term care. In primary care, where urinary tract infections (UTIs) are commonly encountered, the appropriateness of urine-culture ordering has not been well described. We examined the appropriateness of urine-culture ordering and factors associated with inappropriate urine-culture ordering in primary care. **Methods:** We conducted a secondary analysis of data from a previous prospective study that included patients aged ≥ 18 years presenting with provider-suspected UTI with an accompanying urine culture at 2 safety-net, primary-care clinics in Houston, Texas, between November 2018 and March 2020. Patients with complicated or uncomplicated UTI were included, but those with a urinary catheter and pregnant females were excluded. Urine cultures were considered appropriate if the patient had an evidence-based symptom of UTI (ie, dysuria, frequency, urgency, hematuria, fever, chills, costovertebral angle tenderness, suprapubic, pelvic, or flank pain, or nephrolithiasis) as a diagnostic code or listed in providers' free-text documentation. Diagnostic codes for symptoms that were not evidence based were grouped into categories based on body system, visit type (eg, routine visit), or sign or symptom clusters. We evaluated the relationships among demographic and clinical factors, the clinic visited, and non-evidence-based diagnostic codes with inappropriately ordered cultures. **Results:** We examined 870 cultures from 807 patients. Overall, 61.5% of patients were Hispanic (61.5%) and 23% were African American or Black. Also, 70.6% were women; the mean age was 49.2 years (SD, 14.6); and the mean Elixhauser score was 1.9 (SD, 5.4). Among the 870 cultures, 210 (24%) were ordered inappropriately. Dysuria ($n = 289$), frequency ($n = 129$), and UTI or cystitis ($n = 117$) were the most common, evidence-based codes among appropriate cultures. In the adjusted model, the nonteaching clinic (aOR, 6.33) and diagnostic codes comprising the following categories were associated with inappropriate culturing: acute lower back pain (aOR, 5.42), cardiac-related visits (aOR, 2.41), urinary incontinence (aOR, 4.46), routine health visits (aOR, 3.66), urine characteristics (aOR, 14.32), voiding difficulties (aOR, 3.88), and well-woman visits with a gynecological exam or family planning aspect (aOR, 12.27) (all $P < .05$). **Conclusions:** This research highlights potential gaps or miscues in provider behavior related to urine culture ordering, and unveiled problematic culturing related to urine characteristics and to routine visits, especially of a gynecological nature. This information can be incorporated into diagnostic stewardship interventions to address misconceptions, and to further explore the reasoning or processes wherein urine cultures are ordered for routine visits.

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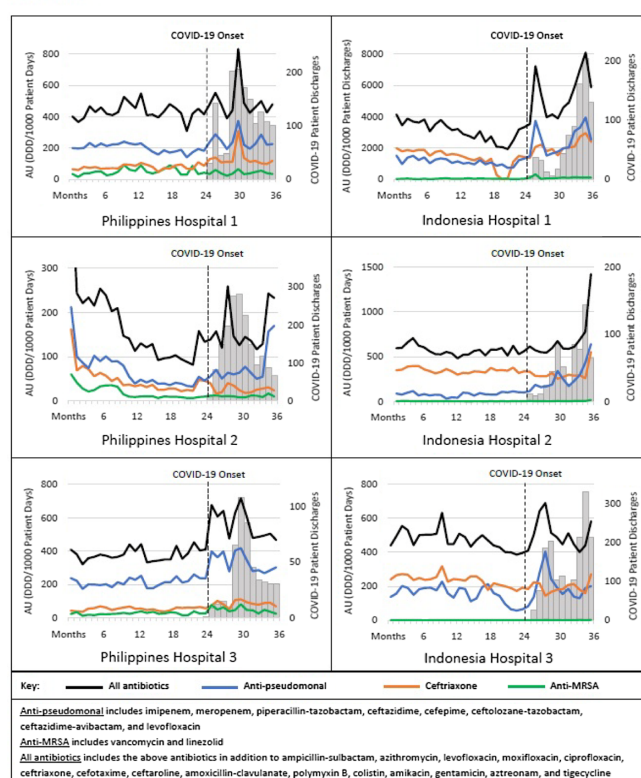
Subject Category: Antibiotic Stewardship

Impact of the COVID-19 pandemic on inpatient antibiotic use in Indonesia and the Philippines

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Background: The coronavirus disease 2019 (COVID-19) pandemic severely affected Southeast Asia, with >35 million cases and $\sim 360,000$ deaths. Despite relatively low rates of secondary bacterial infection among inpatients with COVID-19, several countries reported increased antibiotic use; raising concerns for worsening antimicrobial resistance. We assessed the impact of the COVID-19 pandemic on the use of antibiotics commonly used to treat respiratory infections in Southeast Asia. **Methods:** We evaluated intravenous antibiotic use among hospitalized adults in acute-care wards in 6 hospitals; 3 in Indonesia and 3 in the Philippines. We abstracted data on antibiotics that are commonly used to treat respiratory infections in these hospitals. We calculated antibiotic use rates for the 25 included antibiotics as monthly defined daily dose per 1,000 patient days (or patient discharges where patient days was unavailable) using data from pharmacy dispensing records and administrative records. Median antibiotic use rates for the prepandemic period (March 2018–February 2020) and the pandemic period (March 2020–February 2021) were compared, and percentage changes were calculated for (1) all 25 antibiotics combined; (2) ceftriaxone; (3) vancomycin and linezolid combined (anti-MRSA); and (4) broad-spectrum antibiotics with activity against *Pseudomonas aeruginosa* (anti-PSA). Monthly antibiotic use and COVID-19 patient discharges were graphed over the 36-month study period (March 2018–February 2021) to visualize trends (Fig. 1). The Wilcoxon rank-sum test was used to determine whether differences in median antibiotic use rates were statistically significant (2-tailed $P < .05$). **Results:** Overall, trends in antibiotic use were higher during months with increased COVID-19 patient discharges (Fig. 1). Use of all 25 antibiotics combined significantly increased in 4 of 6 hospitals (6.9%–63.6%) during the pandemic period compared to the prepandemic period. Ceftriaxone use significantly increased in 3 of 6 hospitals (37.1%–55.4%) and decreased in 3 of 6 hospitals (15.9%–31.9%). Anti-PSA antibiotic use significantly increased in 4 of 6 hospitals (16.1%–161.5%). Although anti-MRSA antibiotic use was low (comprising $<2\%$ of the overall included antibiotic use in Indonesia and $<11\%$ in the Philippines), use during the pandemic increased in 3 of 6 hospitals (59.8%–212.6%). **Conclusions:** We observed substantial increases in antibiotic use among hospitalized adults in Indonesia and the Philippines during the COVID-19 pandemic. The increased use of broad-spectrum antibiotics is concerning given the potential consequence of worsening antimicrobial resistance. Understanding how increases in antibiotic use

Figure 1. Intravenous Antibiotic Use (AU) and COVID-19 Patient Discharges in Hospitals Over Time, March 2018 – February 2021



compares to rates of bacterial infection, antimicrobial resistance, and antibiotic availability and accessibility during this time is important to contextualize results. These findings reinforce the importance of antibiotic stewardship practices to optimize antibiotic use, especially during pandemics.

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Multi-faceted approach to decreasing inappropriate antibiotic prescribing for viral upper respiratory tract infections

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Background: Prescribing of antibiotics for viral upper respiratory infection (URI) remains a pressing public health problem. We sought to reduce inappropriate prescribing of antibiotics for viral URIs at primary-care practices at Mayo Clinic Arizona (MCA). **Methods:** Diagnostic codes for URIs commonly caused by viruses were categorized as tier 3 (ie, never prescribe). The inappropriate prescribing rate was defined as the number of tier 3 encounters resulting in a prescription for a URI antibiotic divided by the total number of tier 3 encounters. MCA primary-care departments, including family medicine, community internal medicine, emergency medicine, and women's health internal medicine, were included in the intervention. Each department was briefed on the project, including baseline department prescribing data, and was provided education. Education topics included appropriate indications for antibiotics, patient-centered strategies for reducing antibiotic use, and a review of electronic resources

Figure 1: Prescribing Rate for Tier 3 Encounters Over Time

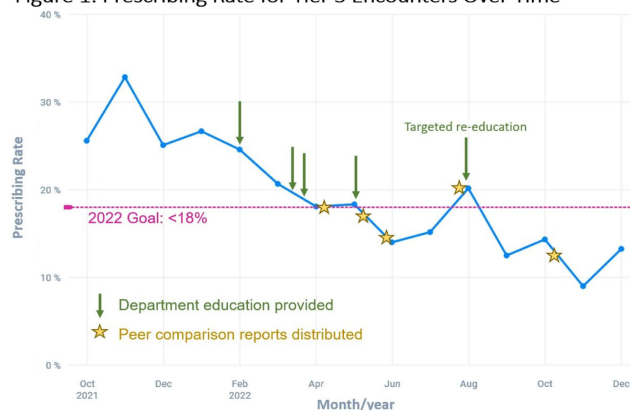
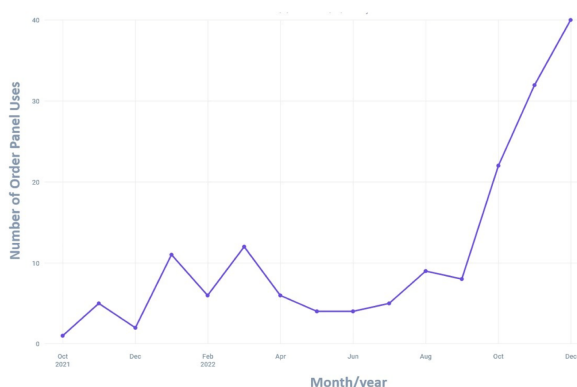


Figure 2: Number of Encounters Using EZ ID Respiratory Order Panel



developed specifically for the project. Resources included a syndromic ambulatory order panel (EZ ID Respiratory Order Panel) and a viral prescription pad, which contains simplified over-the-counter recommendations for symptomatic management of viral URIs and patient education. Quarterly peer comparison reports were provided to the department chairs and/or site leads. Our goal was to reduce inappropriate prescribing by 22% in 2022. An Epic dashboard (SliderDicer model) was developed to track data on an ongoing basis. We used χ^2 tests to compare categorical variables. **Results:** Department education was completed by June 2022 (Fig. 1). The annual antibiotic prescribing rate for tier 3 encounters decreased by 29% from a baseline rate 23.6% in 2021 to 16.4% in 2022 ($P < .001$). The post-education prescribing rate (June 2022–December 2022) was 13.1%. Utilization of the EZ ID ambulatory order panel increased from an average of 1.5 uses per month in 2021 to 13.3 uses per month in 2022 (Fig. 2). Repeated healthcare contact for URIs within 14 days of tier 3 encounters did not differ among patients prescribed and not prescribed an antibiotic in all of 2022 (3.8% vs 3.9%; $P = .91$) or during the posteducation period (1.8% vs 4.2%; $P = .14$). There was no appreciable diagnostic shift over the course of 2022 (Fig. 3). **Conclusions:** A multifaceted intervention, which included baseline education, promotion of syndrome-specific order panels, dissemination of resources for symptomatic management, and distribution of peer comparison reports, resulted in significant reduction of inappropriate antibiotic prescribing for URIs.

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