



Figure 1.

December 31, 2017, with monomicrobial urine cultures growing $\geq 100,000$ colony-forming units of GBS. Urinary tract infection (UTI) cases were defined as urinalysis positive for leukocyte esterase and pyuria (≥ 10 white blood cells), an *International Classification of Diseases* (ICD) code for UTI, and an antibiotic prescription. Cases with colonization were defined as negative for leukocyte esterase and pyuria, no ICD code for UTI, and no antibiotic prescription. Cases not meeting either definition were deemed unclassifiable. We compared demographics, comorbidities, and all-cause mortality among these 3 groups. **Results:** Over the 10-year study period, 26,848 veterans had 30,740 urine cultures positive for GBS. Applying the definitions above, there were 2,807 cases of infection, 8,789 cases of colonization, and 15,252 cases that were unclassifiable. Patients with a GBS UTI were slightly older compared to those who were colonized, with a higher Charlson comorbidity index and greater burden of chronic renal disease (Table 1). Individuals with infection versus colonization had 30-day mortality rates of 1% and 0%, respectively, and 1-year mortality rates of 9% and 4%, respectively (Figure 1). **Conclusions:** The association of a greater burden of illness among veterans who met our definition of UTI compared to colonization might be more reflective of providers' responses to patients with chronic medical conditions rather than a difference in GBS as a cause of UTI. Overall, the prospect of a urine culture that grows GBS does not appear to be associated with adverse long-term outcomes.

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Assessing Baccalaureate Nursing Students' Antibiotic Stewardship Knowledge Using Virtual Standardized Patient Simulations

Mary Lou Manning; Monika Pogorzelska-Maziarz; David Jack and Lori Wheeler

Background: According to the Centers for Disease Control and Prevention, the single most important factor leading to the development of antibiotic resistance (AMR) is the use of antibiotics. Studies indicate that up to 50% of hospitalized patients receive at least 1 antibiotic, half of which are inappropriate. The outpatient setting accounts for >60% of antibiotic use and over half of these prescriptions are inappropriate. Antibiotic stewardship programs improve appropriate antibiotic use, reduce AMR, decrease complications of antibiotic use, and improve patient outcomes. Building a nursing workforce with necessary AMR and antibiotic stewardship knowledge and skill is critical. Nursing graduates can translate knowledge into practice, promoting the judicious use of antibiotics to keep

patients safe from antibiotic harm. **Methods:** Third-year baccalaureate nursing students enrolled in a fall 2020 health promotion course at an urban university affiliated with an academic medical center participated. Students received a 3-hour lecture on antibiotics, AMR and antibiotic stewardship nursing practices and actively engaged in antibiotic stewardship simulations using standardized patient (SP) encounters. The SP participants were specifically trained for these activities. Simulations included a 30-minute brief before and a 60-minute briefing after the activities. All activities occurred via video conferencing. Case scenarios, developed by the authors, focused on penicillin-allergy delabeling of an adolescent prior to elective surgery and appropriate use of antibiotics in managing pediatric urinary tract infections and acute otitis media (AOM). Before-and-after tests were used to assess the impact on AMR and antibiotic stewardship knowledge. **Results:** Over a period of 4 days, all enrolled students ($n = 165$) participated in 1 three-hour virtual simulation session. Using Zoom video conferencing with multiple breakout rooms, the activities were easily managed. During the simulations, students often struggled with reading an antibiogram and applying the concept of "watchful waiting" in AOM management. Significant differences were found in before-and-after test results, with significant improvement in students' general and specific knowledge and awareness of antibiotics ($P < .01$). During the debriefing sessions, students reported increased awareness related to their role in advancing the judicious use of antibiotics. **Conclusions:** Initially, we planned to conduct in-person SP simulations. Due to the COVID-19 pandemic, faculty and students demonstrated remarkable flexibility and resilience as we successfully converted to a virtual format. Virtual lecture and SP simulations, followed by debriefing, was an effective approach to educate baccalaureate nursing students about AMR and their role in antibiotic stewardship. Areas for course content improvement were identified.

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How the COVID-19 Pandemic Affected Antimicrobial Prescribing Practices at a Tertiary-Care Healthcare System in Detroit, Michigan

Angela Beatriz Cruz; Jennifer LeRose; Avnish Sandhu and Teena Chopra

Background: Inappropriate antimicrobial use continues to threaten modern medicine. The ongoing pandemic likely exacerbated this problem because COVID-19 presents similarly to bacterial pneumonia, confusion exists regarding treatment guidelines, and testing turnaround times (TATs) are slow. Our primary object was to quantify antimicrobial use changes during the pandemic to rates before the crisis. A subanalysis within the COVID-19 cohort was completed based on SARS-CoV-2 status. **Methods:** The pre-COVID-19 period was January–May 2019 and the COVID-19 period was January–May 2020. Subanalyses were used to explore differences in antibiotics use between persons not under investigation (non-PUIs), SARS-CoV-2–negative PUIs, and SARS-CoV-2–positive PUIs. Non-PUI patients were those without respiratory symptoms and/or fever. The χ^2 and Wilcoxon signed rank-sum tests were used for analysis. **Results:** During the 2019 and 2020 study periods, 7,909 and 7,283 patients received >1 antimicrobial, respectively (Figure 1). Overall, antibiotic therapy per 1,000 patient days increased from 633.1 before COVID-19 to 678.5 during COVID-19, a 7.2% increase (Table 1). Notably, broad-spectrum respiratory antibiotics demonstrated a significant increase between pre-COVID-19 and COVID-19 cohorts ($p < 0.001$). Of the 7,283 patients within the COVID-19 cohort, 34.7% ($n = 2,532$) were PUI and 13.8% ($n = 1,002$) of these patients tested SARS-CoV-2 positive. Again, broad-spectrum respiratory antibiotics use was significantly increased for COVID-19 patients ($p < 0.001$). Of note, the proportion of patients receiving respiratory antibiotics steadily decreased over time ($R^2 = 0.99$). **Conclusions:** There was a significant increase in antibiotic use during the COVID-19 pandemic. Encouragingly, antimicrobial use