Presentation Type:
Poster Presentation

Assessing Effectiveness of Antibiotic Therapy Against Gram-Negative Bacteria in a Saudi Hospital Using a Drug Resistance Index

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Background: Assessing the effectiveness of antibiotics and communicating the problem of resistance is essential when devising antimicrobial stewardship programs in hospital settings. The drug resistance index (DRI) is a useful tool that combines antibiotic consumption and bacterial resistance into a single measure. In this study, we used the DRI to assess the impact of introducing a new antibiotic restriction form on antibiotic effectiveness for the treatment of gram-negative infections in the intensive care unit (ICU). **Methods:** We conducted a before-and-after intervention study from 2015 to 2017 at King Abdulaziz Medical City, a tertiary-care facility in Jeddah, Saudi Arabia. The antibiotic susceptibility of gram-negative bacteria and antibiotic prescribing rates for antibiotics indicated for gram-negative bacteria were assessed to evaluate the impact of a new antibiotic restriction form introduced in the ICU in July 2016. Changes in antibiotic effectiveness before and after the intervention were evaluated by calculating the DRI for 4 of the most common gram-negative pathogens and 8 commonly used antibiotic classes. **Results:** The overall DRI for the adult ICU (59.45) was higher than the hospital-wide DRI (47.96). A higher DRI was evident for carbapenems and antipseudomonal penicillins + β-lactamase inhibitors. *A. baumannii* had the highest DRI, followed by *K. pneumoniae* in both the adult ICU and hospital-wide. After implementation of antibiotic restriction in the adult ICU, the DRI for carbapenems was significantly lower in the postintervention phase, from 31.61 to 26.05 ($P = 0.031$). **Conclusions:** DRI is a useful tool for tracking the effectiveness of antibiotics over time. The results highlight the importance of having effective antibiotic

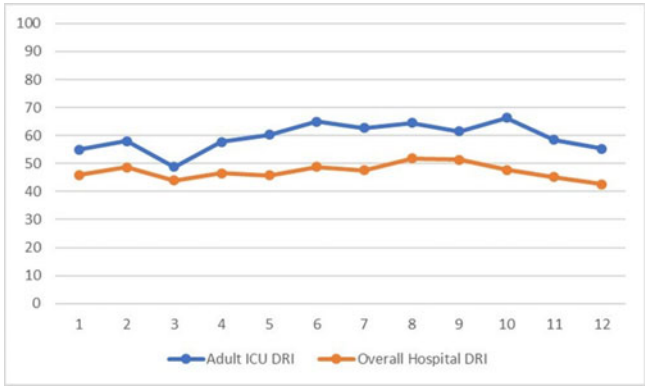
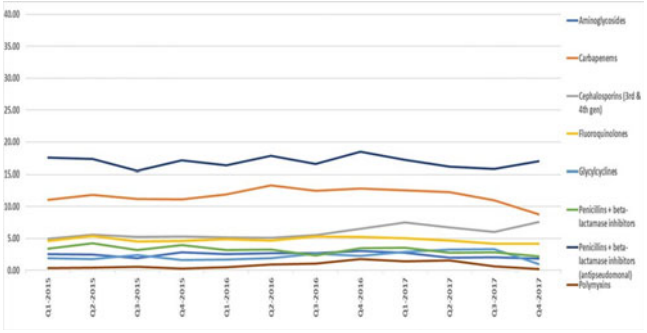


Fig. 1.



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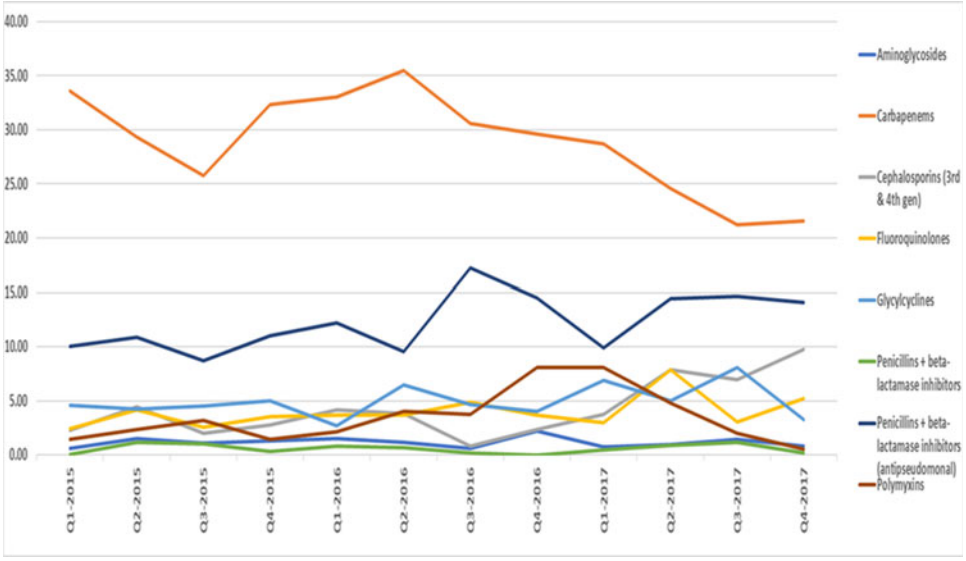

Fig. 2.

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stewardship program in healthcare settings as well as regular feedback of antibiotic consumption data to the stakeholders to keep the antibiotic prescriptions in check, thereby ensuring their sustained effectiveness.
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Assessing Policies Versus Practices Utilizing the CDC Infection Control Assessment and Response Tool
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Background: The Infection Control Assessment and Response (ICAR) tool was developed by the CDC following the 2014 Ebola outbreak. Over a 3-year period, the CDC dispensed **Funding:** to all public health divisions in all 50 states to implement and promote the ICAR. The ICAR was developed as a self-assessment tool to evaluate policies, competencies, and practices across healthcare settings. The primary aim of the tool and associated **Funding:** was to guide quality improvement activities by addressing the identified gaps in infection prevention (IP). Independent of state funding, we sought to use the ICAR to evaluate whether there were differences in reported policies from observed practices related to hand hygiene (HH) and personal protective equipment (PPE) use in long-term care facilities (LTCFs), ambulatory surgical centers (ASCs), and outpatient pain clinics (OPCs). **Methods:** From November 2018 to August 2019, we conducted in-person ICAR assessments in 7 LTCFs in 3 states (Arizona, Utah, and Idaho), 2 ASCs in 2 states (Arizona, Indiana), and 5 OPCs in 1 state (Arizona). All on-site assessments were conducted with the ICAR tool by a board-certified infection preventionist. The paper form was converted to a mobile compatible digital audit tool utilizing Microsoft Forms on the Microsoft 365 platform. Once a survey was completed, it was sent to an Excel database and analyzed utilizing SPSS software. **Results:** All facilities (14 of 14, 100%) had a designated person responsible for coordinating and/or directing the IP program. Moreover, 4 of 7 LTCFs (57%), 2 of 2 ASCs (100%), and 5 of 5 OPCs (100%) reported having written IP policies that met evidence-based guidelines, regulations, or standards (eg, CDC/HICPAC). None of the 7 LTCFs (0%), 2 of 2 ASCs (100%), and none of the 5 OPCs (0%) reported active surveillance to monitor and document adherence to proper PPE selection and use. During direct observation of hand hygiene opportunities, compliance was 23% for LTCFs (7 of 31 opportunities), 37% for ASCs (7 of 19 opportunities), and (11 of 28 opportunities) 39% in OPCs. **Conclusions:** Our results indicate that the ICAR tool remains a useful resource for distinguishing between the reporting of IP polices from the actual implementation of evidence-based practices. Although all facilities had a designated role for IP and most had written evidence-based IP polices, this did not translate to the observation of recommended HH and PPE practices. By utilizing this tool, healthcare facilities can support their evidence-based IP polices and further promote patient safety by identifying and mitigating gaps in practices.
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Assessing the Potential Impact of a Long-Acting Skin Disinfectant in the Prevention of MRSA
Christopher Short Matthew Mietchen; Eric Lofgren, Washington State University

Background: Healthcare-associated transmission of methicillin-resistant *Staphylococcus aureus* (MRSA) remains a persistent problem despite advances in prevention. The use of chlorhexidine gluconate (CHG) as a means of decolonizing patients, either through targeted decolonization or daily bathing, is a frequently used measure to supplement other MRSA reduction interventions. However, there is room for new and innovative decolonizing agents. We explored the potential utility of a long-acting CHG-like disinfectant with a persistent protective effect as well as an immediate decolonizing action in the prevention of MRSA acquisition as well as the subsequent development of clinical illness and MRSA-related mortality. **Methods:** We modeled MRSA transmission throughout an 18-bed intensive care unit, based on previously published models. A baseline model with no daily decolonizing protocol was used as a baseline and was compared to a scenario assuming that patients were bathed with CHG, which decolonizes them but provides no ongoing protection, as well as a scenario involving a hypothetical treatment that both decolonizes and provides ongoing protection from subsequent colonization. We varied the duration and efficacy of this protection to fully explore the potential utility of such a treatment. **Results:** The results of the simulations are shown in Fig. 1, where duration and efficacy of protection varied. The number of MRSA acquisitions from each combination is depicted as a single point, with blue points indicating correspondingly fewer MRSA acquisitions. Overall, improved efficacy of the hypothetical disinfectant resulted in immediate improvements in MRSA acquisition rates when compared to the baseline. To see major improvements in the MRSA acquisition rate due to the duration of infection, that duration must be well above 10 hours in many scenarios. There is also little evidence of synergy between the two. **Conclusions:** Based on recent results suggesting CHG has a relatively modest per-use efficacy (<.20), there is room

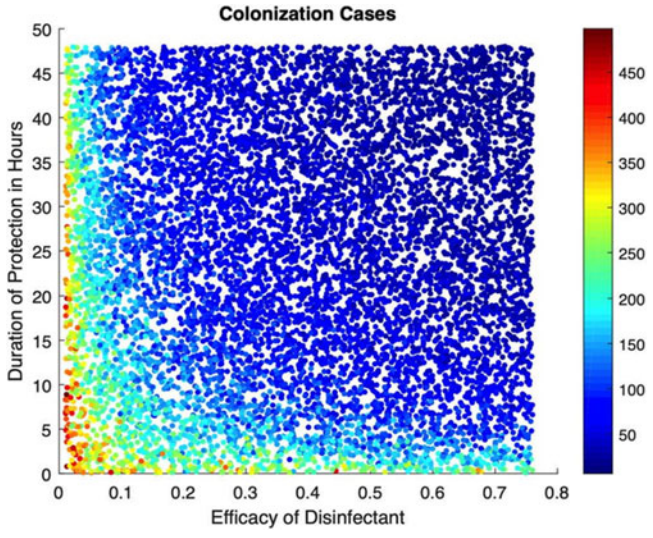

Fig. 1.