

Presentation Type:

Poster Presentation

Save Carbapenem Campaign: Assessment of Antibiotic Combinations Against Multidrug-Resistant Gram-Negative Bacilli
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Background: Infections caused by multidrug-resistant gram-negative bacilli (MDR GNB) are a therapeutic challenge to clinicians. Combination antimicrobial therapy with empirically selected antibiotics is often used to treat these infections. This approach is ill advised because the antibiotics selected may not be optimal because of different killing activity. We aimed to determine the in vitro efficacy of antibiotic combinations devoid of carbapenems to explore potential synergy between antibiotics of different chemical classes. **Methods:** Prospective, experimental descriptive study of 85 MDR GNB isolated from clinical samples. The minimum inhibitory concentrations (MICs) of ceftazidime, amikacin, imipenem, and ciprofloxacin were determined by broth microdilution. The in-vitro effects of CAZ-AMK, CAZ-CIPRO, IMP-AMK and IMP-CIPRO combinations were studied by checker-board assay. **Results:** ESBL, AmpC, and MBL production was observed among 62.35%, 27.05%, and 44.70% of the MDR GNB, respectively. Moreover, 27.05% coproduced multiple β -lactamases. The MIC₉₀ ranges were 16 to ≥ 1028 $\mu\text{g}/\text{mL}$ for CAZ; 0.25 to ≥ 256 $\mu\text{g}/\text{mL}$ for Amk, 0.25 to 12 $\mu\text{g}/\text{mL}$ for CIPRO; and 0.125 to 512 $\mu\text{g}/\text{mL}$ for IMP. CAZ-AMK and IMP-AMK combinations showed synergistic effects in $>85\%$ of MDR-GNB, with a fractional inhibitory concentration index ≤ 0.5 . Higher rates of indifference and antagonism were observed with combinations including

fluroquinolones. **Conclusions:** The in vitro antimicrobial activity of antibiotic combinations having third- or fourth-generation cephalosporin with aminoglycosides was comparable to that of imipenem alone or in combination therapy. Combinations devoid of carbapenems should be advocated to prolong the clinical usefulness of this antibiotic group

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Scenario-Based, Interactive Infection Prevention and Control and Bloodborne Pathogen Education

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Background: Infection prevention and control (IPAC) and bloodborne pathogen (BBP) education are required for all healthcare workers at least annually by the Occupational Safety and Health Administration and The Joint Commission. An inventory in 2016 at a large health system with $>60,000$ employees identified 46 different training modules used to fulfill this regulatory mandate. **Objective:** Using quality improvement tools and management, we sought to reduce duplication of effort, to enhance education, and to improve employee engagement. **Methods:** A multidisciplinary team that included IPAC, physician, nursing, educational design and occupational safety was formed. The team reviewed regulatory standards, cross checked site-specific practices, and identified gaps in the current

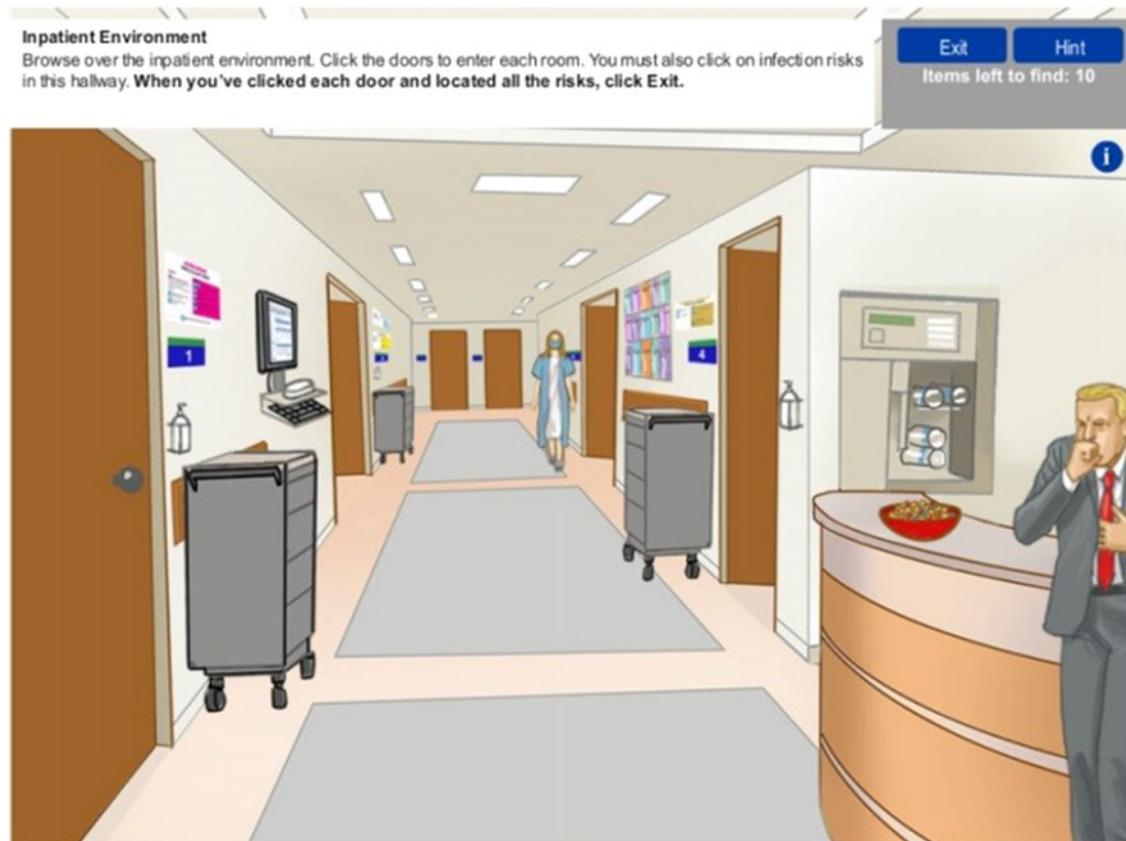


Fig. 1.



Fig. 2.

training structure. The goal was to create a module with multiple pathways that tailored regulatory content and delivery to the employee's job responsibilities (Figs. 1 and 2). Results: The 46 individual training modules were replaced with 1 module that averaged 24.46 minutes to complete. Branching was incorporated that customized education to the employee's role. The employee completion rate was 99% ($n = 61,456$). The scenario-based interactive approach engaged learners by challenging them to respond to real-life activities tailored to their level of risk. Most responders (87.4%) rated the learning activity as "good" or "excellent," and 92.4% of responders agreed or strongly agreed that the activities in the course aided their learning. Conclusions: We leveraged adult learning principles and industry-proven instructional design activities to deliver interactive and relevant infection control training that met regulatory requirements and engaged employees through action-driven tasks. In 2018, the work group created fast paths for employees who had previously completed this module whereby they could revisit the original content and/or focus only on updates and targeted areas of interest. A pathway for laboratory workers involved in specimen handling and processing is planned next.

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Screening for Multidrug-Resistant Organisms in a Tertiary-Care University Hospital in the North West Bank: A Descriptive Study
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Background: The prevalence of multidrug-resistant organisms (MDROs) in acute healthcare settings is increasing worldwide. Active screening for MDROs carriers on admission permits the

prompt implementation of the appropriate precautions to decrease the probability of cross transmission to other inpatients. **Objective:** To report the spectrum of bacterial nasal, axilla, and perianal colonization among inpatients at Najah National University Hospital (NNUH) during 2018. **Methods:** A retrospective observational study was performed at NNUH, a tertiary-care referral university hospital in Nablus, north of Palestine, that includes medical and surgical ICUs for both adults and children from January to August 2018. Nasal, axilla, and perianal swabs were collected within the first 24 hours of admission according to hospital policy. Patients who were referred from another hospital, who were admitted to a hospital for at least 2 nights during the previous 8 months, and who are known to have an MDROs in the past were included. Swab samples were processed for isolation and identification of these multidrug-resistant strains. Transmission-based precautions were implemented if positive results were reported (ie, contact isolation) and decolonization regimens were applied according to the CDC recommendations (mupirocin ointment for nasal MRSA, daily bathing with chlorhexidine 2% soap for the rest). A daily isolation list was circulated among bed managers and senior nurses and head of departments for appropriate management of beds and reallocation of patients. The antibiotic susceptibility pattern was assessed using the disc-diffusion method on Mueller-Hinton agar and a Vitek-2 system. **Results:** During the period of the study, 1,425 nasal swabs, 1,245 axilla swabs, and 300 perianal swabs were collected according to the inclusion criteria. Positive results were reported in 7%, 4%, and 44% for nasal, axilla, and perianal specimens, respectively. Regarding the distribution of bacterial colonization in the nasal swab, 73% were MRSA; for the axilla, 29% were *Pseudomonas*; and from the perianal swab, the most prevalent pathogen was ESBL (56%) (Figs. 1–3). A discrepancy between the number of nasal or axilla and perianal swabs was observed, which was mainly due to the refusal of many patients to have the sample collected by the nurse. **Conclusions:** Colonization of the skin and mucous membranes of inpatients with MDROs is