Presentation Type:
Poster Presentation
Containment Strategies for Carbapenem-Resistant Enterobacteriaceae in Low- and Middle-Income Countries
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Background: Carbapenem-resistant Enterobacteriaceae (CRE) represent one of the most critical emerging antimicrobial-resistance threats globally. Data from low-and middle-income countries (LMICs) are increasingly reported as a part of global efforts to improve surveillance, and they demonstrate a high and increasing burden of CRE. However, containment of CRE using all recommended infection prevention and control (IPC) strategies requires substantial resources, which may be limited in LMICs. We conducted a review of the literature to better understand how approaches to CRE containment in LMICs have varied. **Methods:** We conducted a literature search using electronic databases (Medline, Embace, Cochrane Library, and Global Health) with no limit to study design or publication year. Search terms consisted of 3 categories: CRE, IPC, and LMIC. Additional publications were also identified from the references of identified articles. Publications were screened for eligibility; non-English articles and studies on other gram-negative organisms were excluded from the analysis. Control measures in included studies were categorized as active surveillance, hand hygiene, contact precautions, isolation, education, environmental control, monitoring and feedback, and other. **Results:** In total, 2,667 publications were identified using the databases and an additional 24 were manually identified. After deduplicating and screening for eligibility, 27 publications were included in the analysis. Overall, 21 publications (78%) were outbreak reports and 3 (11%) were quasi-experimental studies in settings of high rates of CRE. Also, 23 (85%) described a successful reduction in CRE. Among those 23 publications, 22 publications described adequate descriptions of IPC measures implemented, and the median number of IPC measures was 4.5 (range, 1–8). Environmental control was the most commonly utilized intervention (n = 19, 86%), followed by hand hygiene (n = 14, 64%) and contact precautions (n = 14, 64%). Three publications did not show a reduction in CRE despite the combination of IPC measures (median, 4.5). Overall, 13 publications utilized some method of active surveillance, but complete details on methodology were often lacking. In addition, 4 studies (15%) used only horizontal measures (defined as hand hygiene, environmental control, and/or education) and successfully controlled the CRE outbreaks. **Conclusions:** Among published reports, successful approaches to CRE control have been reported from LMICs. Use of only horizontal approaches, which are often lower cost and simpler to implement than some vertical strategies, have demonstrated some success; however, additional experience with identifying and implementing cost-effective strategies is needed.
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Presentation Type:
Poster Presentation
Contamination of CSF Culture: Serious Risk to Patient Safety
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Background: Acute bacterial meningitis is a medical emergency, and early initiation of appropriate therapy is important to improving outcomes. Culture-based methods are still the standards for the detection of microorganisms in cerebrospinal fluid (CSF). Automated blood culture systems yield better results in cultures sterile body fluids, including CSF. However, the high sensitivity of this technology does not negate the danger of contamination compromising the final outcome. Thus, we tried to study the culture yield in suspected meningitis to determine the rate of contamination. **Methods:** We conducted a retrospective cohort study of CSF samples collected for culture over 1 year from January 2018 to December 2018 from patients who presented with signs and symptoms indicative of meningitis. The bacterial etiologies and rates of contamination were extracted from laboratory records. Descriptive statistics from Microsoft Excel software were used to analyze patient data. Limited statistical analysis (ie, the Fisher exact test) was performed using SPSS for Windows version 18 software. **Results:** In total, 1,053 CSF samples were received for aerobic culture, of which the most frequent were conventional cultures (685 of 1053, 65%), whereas BacT/ALERT cultures were requested for 368 of 1,053 cases (35%). Of 685 conventional CSF cultures, pathogens were isolated in 28 of 685 (4.1%), most commonly *Acinetobacter baumannii complex* (10 of 28, 35.7%). Contaminants were identified in 0.58% samples (4 of 685). In the 368 BacT/ALERT cultures, pathogens were detected in 15 (4.1%), most commonly *Streptococcus* spp (5 of 15, 33.3%). The contamination rate was 51.1% (188 of 368 cases). The overall rate of contamination was 18.2% (192 of 1,053 cases). The most CSF cultures were received from patients in neurosurgery (350 of 1,053, 33.2%) followed by medicine wards (270 of 1,053, 25.6%). Aerobic spore bacilli was by far the most common contaminant (109 of 1,053, 10.35%).

Conclusions: We believe efforts to decrease contamination are among the most cost-effective, but targeted clinical re-evaluation for all patients with positive CSF cultures remains vital. Due to the high sensitivity of the automated culture system, it is a imperative to maintain strict aseptic conditions while collecting CSF samples. Failure to do so may lead to overgrowth of contaminants masking the growth of the true pathogens in culture.
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Presentation Type:
Poster Presentation
Core Elements of a State HAI/AR Program With Emphasis on Partnership Networks
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Background: There is a critical need for comprehensive and effective healthcare- associated infection and antibiotic resistance (HAI/AR) programs in the United States. Since 2009, the CDC has funded and engaged public health, healthcare, academic,

community, corporate, federal, and other stakeholders to develop effective HAI programs that rely upon such these stakeholders for success. State and local public health programs play a central role in these programs because they bridge healthcare and the community. They may regulate and assess facilities, collect and validate data on infections, and implement prevention programs. Myriad other state, federal, and privately supported stakeholders play essential roles. CDC is developing a framework for highly effective state HAI/AR programs that describes core program elements and can be used as a strategic tool, both in day to day processes and in a public health crisis, such the COVID-19 response. Program elements may include engaged leaders and champions, reliable data for action, effective policies, evaluation, program innovation, communications, and partner networks. This presentation describes a success framework for developing and leveraging HAI/AR partner networks to achieve and sustain their capacities and impact. **Methods:** CDC collected qualitative data in select states and combined with expert opinion to draft core elements for success among a network of partners working to achieve HAI/AR and COVID-19 response and prevention in states. The core elements serve as a foundation for the framework. Ongoing analyses will inform refinement of the core elements and framework. The CDC is gathering stakeholders' input on the framework for applicability and usability in states, with the goal of national implementation. **Results:** Currently, data indicate the following core elements for partner networks: leadership, strategy and structure; policies; innovation and adaptability; implementation; expertise and resources; communications; and monitoring and evaluation. The framework includes a process for partner network development and sustenance, maturity levels, and supporting tools. States have reported support for core elements and agreed that a success framework is beneficial to achieving core elements. Multiple states have reported support for a process that includes building partner networks and clearly defining roles, as a critical step toward full implementation of Program core elements. **Conclusions:** A framework for building high-level strategy and competency in partner networks has never been developed for HAI/AR programs. Effective partner networks represent an essential core element of a comprehensive state HAI/AR program. This framework could be applied to a variety of programs and public health contexts, increasing the effectiveness of partner networks.
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Creating an Outpatient-Specific Antibiogram to Guide Treatment for Urinary Tract Infections

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Background: Outpatients with uncomplicated urinary tract infections (UTIs) are often treated empirically without culture, whereas urine cultures are typically collected from patients with complicated UTI. Susceptibilities for fosfomycin (a first-line agent) are not routinely performed or reported in the antibiogram. Understanding the prevalence of antibiotic resistance for UTI is critical for empiric treatment and antibiotic stewardship in primary care. **Methods:** We developed a UTI-focused antibiogram from a prospective sample of outpatients (women and men) with UTIs from 2 public family medicine clinics in an urban area with a diverse, international population (November 2018 to present). During the study period, providers ordered a urine culture for any adult patient presenting with UTI symptoms, including uncomplicated and complicated infections. We estimated the prevalence of resistance to UTI-relevant antibiotics in the overall study population and compared it between patients born in the United States and other countries. **Results:** We collected 678 urine cultures from 644 unique patients (79% female). Of these cultures, 158 (23.3%) had no growth, 330 (48.7%) grew mixed urogenital flora, and 190 (28.0%) were positive (>10,000 CFU/mL). Patients with positive cultures were mostly female (88.2%), and their mean age was 46.6 ± 14.8 years. Among patients with positive cultures, 42.7% were born in the United States and 57.3% were born Mexico or Central America. *Escherichia coli* was the most commonly isolated organism (Fig. 1). Susceptibility results for *E. coli* and all gram-negative organisms combined are presented in Fig. 2. Susceptibility of uropathogens to TMP-SMX was significantly higher in patients born in the United States compared to patients from Mexico or Central America (82% vs 61%; $P =$
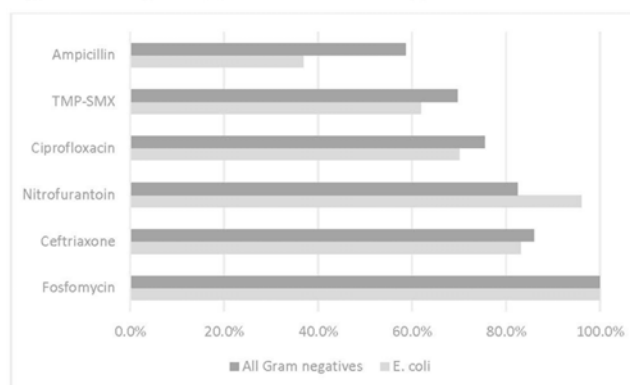
Figure 1. Gram negative isolates from urine cultures (n=103).
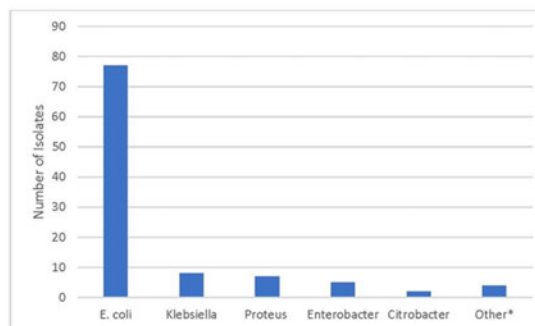
*Other category included 1 *Stenotrophomonas sp.*, 1 *Providencia sp.*, 1 *Acinetobacter sp.*, and 1 *Pseudomonas aeruginosa*.

Fig. 1.

Figure 2. Susceptibility pattern for all Gram-negative isolates.

Fig. 2.