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Background. Influenza vaccination of healthcare workers is an important component of keeping patients safe, but must be paired with exclusion of ill healthcare workers (HCW) from work. CDC recommends exclusion from work until afebrile for 24 hours, but not all HCW with influenza develop fever and may still be a risk for spreading. Half of HCW with influenza in an H1N1-dominant season (2013–2014) at our institution were afebrile.

Methods. From 1/31–4/24/18 (H3N2-dominant season), HCW with fever or cough were screened for influenza and respiratory syncytial virus by polymerase chain reaction of flocked nasopharyngeal swabs. Additional HCW were tested by their primary care providers. We collected influenza vaccination status and symptoms and calculated the proportion of influenza-positive HCWs with fever or cough. Infection control practitioners (ICPs) contacted each influenza-positive HCW to identify potential patient or HCW exposures 24 hours prior to symptom onset and offered oseltamivir prophylaxis to exposed patients and HCW.

Results. Of 186 HCW tested by UCM, 49 (26%) tested positive for influenza (35 with influenza A; 14 with influenza B) and 11 (6%) tested positive for RSV. Forty-eight HCW (98%) received influenza vaccination. Fever was reported in only 19 (54%) HCW with influenza A and three (21%) HCW with influenza B. Cough was present in the majority of HCW (34 (97%) with influenza A and 12 (86%) with influenza B). An additional 55 HCW were diagnosed with influenza by their primary care providers. ICPs performed contact investigations for 43 HCW who reported exposure to patients or other HCW between 24 hours before symptom onset through the time of diagnosis. Occupational medicine provided 138 courses of prophylactic oseltamivir to HCW.

Conclusion. Afebrile influenza illness is common; current workforce guidelines are insufficient to prevent exposure in the healthcare setting. Expanding employee influenza screening to include fever OR cough doubled the number influenza positive HCW identified. Despite excellent influenza vaccination rates, vigilance is critical to prevent influenza transmission in the hospital. HCW screening for influenza based on fever OR cough, exclusion from work, and identification of potential exposures can help keep patients and colleagues safe.

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1160. Infrequency of Respirator Change Following Annual Respiratory Fit Testing at an Academic Medical Center

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Background. The Occupational Safety and Health Administration (OSHA) of the Department of Labor requires that healthcare employers perform annual respiratory fit testing (RFT) for respiratory protection of employees with patient exposure. The annual cost of RFT in the United States is greater than $8 million and each fit test requires approximately 20 minutes. Due to the high resource expenditure for RFT, we sought to identify factors associated with changing respirators.

Methods. During annual RFT at the University of Virginia, employees complete a questionnaire about interval clinical changes since the last RFT. Questions are based on publications indicating that certain characteristics are associated with respirator change, including: have you had dental surgery, surgery on your face, or trauma; has your weight changed by >10%; have you been or are you currently pregnant; do you recall your mask type; do you want to change masks. Answers to these questions from May 2016 through March of 2018 were compiled and analyzed by Chi-square test using Excel and R. *P*-value of <0.05 was considered significant.

Results. A total of 4,278 employees completed questions at least once during the time period, with 29 requiring respirator change after RFT. Requesting a mask change, and 10% weight change were significantly associated with respirator change. Pregnancy and facial trauma were not significantly associated with respirator change. Of those who changed respirator, nine reported no change in weight, no facial trauma, and no pregnancy.

Conclusion. The infrequency of respirator change suggests that limiting RFT to those most likely to change their respirator may hold more value than screening all employees annually; however, questions included in this evaluation did not identify all employees who would require respirator change. We are continuing evaluation of predictors of respirator changes and association with tuberculin skin test conversion to improve efficiency of RFT.

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1161. Infection Control After Debridement of *Brucella melitensis* Hardware Infection

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Background. Brucellosis is the most common laboratory-acquired bacterial infection, according to the Centers for Disease Control and Prevention (CDC), despite the rare incidence of Brucellosis in the population at large. A 34-year-old man presented with pain and swelling of the left leg, where he had previously sustained an open tibia fracture 1 year prior. After the initial injury, he underwent four corrective surgeries (including bone graft and internal-fixation) and was asymptomatic for 6 months before these new symptoms developed. MRI revealed a 6.5 × 5.1 × 2.7 cm abscess and tibial osteomyelitis. Surgical staff performed an aggressive incision and drainage (I&D) with saucerization of the tibia, to treat what seemed to be a routine hardware infection. Five days later, tissue cultures grew *Brucella melitensis*. Upon further questioning, the patient described butchering a wild boar 10 days prior to symptom onset.

Methods. The CDC provides guidance on serological testing and post-exposure prophylaxis (PEP) for persons exposed to *Brucella* in the laboratory setting. Upon identification of this patient's *Brucella* isolates, infection control staff identified all laboratory workers that met CDC criteria for "high risk" exposure, as well as other healthcare workers (HCW) exposed to aerosolized infectious material (including those workers in the operating room during pulse lavage of the abscess).

Results. Staff identified 34 HCW with presumed high-risk exposure, including 19 laboratory personnel, 13 operating room personnel, and two patient care technicians. Baseline serology was obtained on all 34 HCW, and PEP with rifampin and doxycycline was prescribed for each. Nine of the exposed employees changed PEP therapy due to intolerance, and follow-up serology was obtained on 32 of the 34 healthcare workers, with zero seroconversions found.

Conclusion. Brucellosis is a rare disease in clinical practice, so a high index of suspicion is necessary to enact appropriate precautions before widespread exposures. When exposure is identified after the fact, efficient protocols should be in place to identify all susceptible individuals. Due to the low infectious dose of *Brucella melitensis*, CDC guidance should be expanded to include aerosolizing procedures outside of the laboratory.

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1162. Epidemiology of Carbapenem-Resistant *Pseudomonas aeruginosa* Identified Through the Emerging Infections Program (EIP), United States, 2016–2017

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Background. *Pseudomonas aeruginosa* is intrinsically resistant to many commonly used antimicrobials and carbapenems are often required to treat infections. We describe the epidemiology and crude incidence of carbapenem-resistant *P. aeruginosa*(CRPA) in the EIP catchment area.

Methods. From August 1, 2016 through July 31, 2017, we conducted laboratory- and population-based surveillance for CRPA in selected metropolitan areas in Colorado, Georgia, Maryland, Minnesota, New Mexico, New York, Oregon, and

Tennessee. We defined an incident case as the first isolate of *P. aeruginosa*-resistant to imipenem, meropenem, or doripenem from the lower respiratory tract, urine, wounds, or normally sterile sites identified from a resident of the EIP catchment area in a 30-day period. Patient charts were reviewed. A random sample of isolates was screened at CDC for carbapenemases using the modified carbapenem inactivation method (mCIM) and real-time PCR.

Results. During the 12-month period, we identified 3,042 incident cases among 2,154 patients. The crude incidence rate was 21.2 (95% CI, 20.4–21.9) per 100,000 persons and varied by site (range: 7.7 in Oregon to 31.1 in Maryland). The median age of patients was 64 years (range: <1–101) and 41.2% were female. Nearly all (97.1%) had at least one underlying condition and 10.2% had cystic fibrosis (CF); 17.8% of cases were from CF patients. For most cases, isolates were from the lower respiratory tract (49.2%) or urine (35.3%) and occurred in patients with recent hospitalization (87.2%) or indwelling devices (70.3%); 8.7% died. At the clinical laboratory, 84.7% of isolates were susceptible to an aminoglycoside and 66.4% to ceftazidime or cefepime. Among the 391 isolates tested, nine (2.3%) were mCIM-positive; one had a carbapenemase detected by PCR (bla_{VIM-4}).

Conclusion. The burden of CRPA varied by EIP site. Most cases occurred in persons with healthcare exposures and underlying conditions. The majority of isolates were susceptible to at least one first-line antimicrobial. Carbapenemase producers were rare; a more specific phenotypic definition would greatly facilitate surveillance for these isolates.

Disclosures. **All authors:** No reported disclosures.

1163. Impact of Difficult-to-Treat Resistance on Survival in Gram-Negative Bacteremia: A Risk-Adjusted Analysis Using Electronic Health Record-based Clinical Data From 140 US Hospitals

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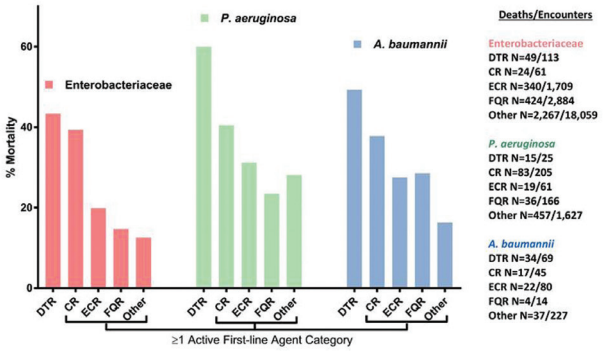
Background. In Gram-negative bacteremia (GNB), administrative data suggest that "difficult-to-treat resistance" (DTR; i.e., co-resistance to all first-line antibiotics) increases mortality. However, adequate risk-adjustment for severity of illness (SOI) may require granular laboratory and physiologic data.

Methods. Adult inpatients with GNB were identified from electronic health records (EHRs) of 140 hospitals in the *Cerner Healthfacts* database between 2009 and 2015. Mortality from DTR (intermediate/resistant *in vitro* to β-lactams including carbapenems and fluoroquinolones) was compared with GNB phenotypes susceptible to at least one first-line agent, but otherwise resistant to carbapenems (CR), extended-spectrum cephalosporins (ECR), or fluoroquinolones (FQR) per US Centers for Disease Control and Prevention surveillance definitions. Relative risk of mortality was adjusted (aRR) for age, sex, baseline Sequential Organ Failure Assessment (SOFA) score, Elixhauser comorbidity index, GNB source, taxon, hospital vs. community onset, year, and hospital region, bed capacity, and urban and teaching status using Poisson regression.

Results. Of 25,448 unique GNB encounters, 207 (1%) met DTR criteria. DTR patients were 2-fold more likely to receive intravenous colistin and 5-fold more likely to receive tigecycline compared with CR cases susceptible to ≥1 first-line agent. Crude mortality varied considerably by taxon and resistance phenotype, but resistance *per se* was associated with only a minority of overall deaths (DTR = 3% of deaths; any of the four resistance phenotypes = 28% of deaths; Figure 1). Inclusion of EHR-derived, baseline SOFA scores in SOI adjustments decreased aRR effect estimates; nonetheless, all resistance phenotypes still significantly increased mortality (Figure 2A). Among resistance phenotypes, aRR of mortality was similar for DTR vs. CR (aRR = 1.18; 95% CI, 0.91–1.54; $P = 0.2$), but higher for DTR vs. ECR (aRR = 1.26 [1.01–1.58]; $P = 0.04$), and DTR vs. FQR (aRR = 1.36 [1.08–1.70]; $P = 0.008$), respectively (Figure 2B).

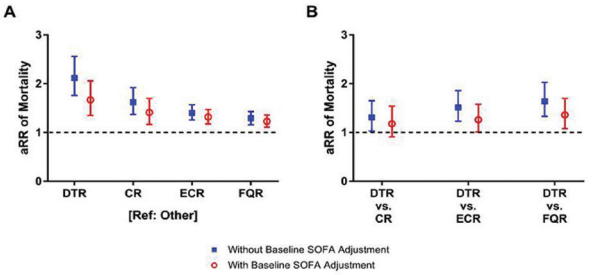
Conclusion. DTR is associated with nonsurvival and greater use of reserve antibiotics in GNB, but adds little to the risk of death associated with CR. The impact of resistance on survival is attenuated but still present even after risk adjustment using granular clinical data.

Figure 1. Crude mortality across patients with Gram-negative bacteremia by taxon and resistance phenotype



Crude mortality varied considerably by taxon and phenotype as seen in the figure. 97% of deaths in patients with GNB occurred in those in whom at least 1 first line agent was active, and 72% of deaths in those with GNB without any of the 4 resistance phenotypes. "Other" category refers to GNB encounters not classified as either DTR, ECR or FQR. CR= Carbapenem resistant; DTR=Difficult to treat resistance; ECR= Extended-spectrum cephalosporin-resistant; FQR= Fluoroquinolone resistant

Figure 2: Adjusted relative risk of mortality in Gram-negative bacteremia by resistance phenotype with and without adjustment for baseline Sequential Organ Failure Assessment (SOFA) score



In all Poisson regression models, aRR was adjusted using age, gender, Elixhauser comorbidity index, taxon, infection source, hospital vs. community onset, year, as well as hospital region, bed capacity, and urban and teaching status. The impact of adjustment by severity of acute illness using laboratory and physiologic data in the form of baseline SOFA score are presented by estimates in solid blue and hollow red. "Other" category refers to GNB encounters not classified as either DTR, ECR or FQR. CR= Carbapenem resistant; DTR=Difficult to treat resistance; ECR= Extended-spectrum cephalosporin-resistant; FQR= Fluoroquinolone resistant.

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1164. County-Level Geographic Distribution of Extended-Spectrum Cephalosporin-Resistant Enterobacteriaceae Across Outpatient Settings of the Veterans Health Administration, 2000–2017

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Background. Extended-spectrum cephalosporin resistance (ESCR) among Enterobacteriaceae has emerged globally over the last two decades, with increased prevalence in the community. Data from European countries and healthcare-associated isolates in the United States have demonstrated substantial geographic variability in the prevalence of ESCR, but community-onset isolates in the United States have been less studied. We aimed to describe geographic distribution and spread of ESCR among outpatient settings across the Veterans Health Administration (VHA) over 18 years.

Methods. We analyzed a retrospective cohort of all patients who had any positive clinical culture specimen for ESCR Enterobacteriaceae collected in an outpatient setting; ESCR was defined by phenotypic nonsusceptibility to at least one extended-spectrum cephalosporin agent or detection of an extended-spectrum β-lactamase. Patient-level data were grouped by county of residence, and the total number of unique patients who received care within VHA for each county was used as a denominator. We aggregated data by time terciles (2000–2005, 2006–2011, and 2012–2017), and overall and county-level incidence rates were calculated as the number of unique patients in each year with ESCR Enterobacteriaceae per person-year.

Results. During the study period, there were 1,980,095 positive cultures for Enterobacteriaceae from 870,797 unique patients across outpatient settings of VHA, from a total of 107,404,504 person-years. Among those, 136,185 cultures (6.9%) from 75,500 unique patients (8.7%) were ESCR. The overall incidence rate was 9.0 cases