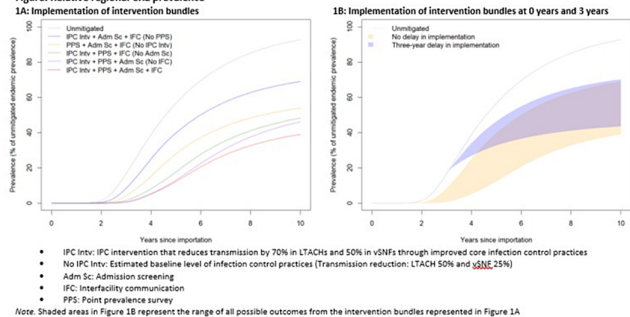


Figure: Relative regional CRE prevalence



Facilities that care for high-acuity patients with long average lengths of stay (eg, long-term acute-care hospitals or LTACHs and ventilator-capable skilled nursing facilities or vSNFs) may amplify this spread. We assessed the impact of interventions on CRE spread within a region individually, bundled, and implemented at different facility types. **Methods:** We developed a deterministic compartmental model, parametrized using CRE data reported to the NHSN and patient transfer data from the CMS specific to a US state. The model includes the community and the healthcare facilities within the state. Individuals may be either susceptible or infected and infectious. Infected patients determined to have CRE through admission screening or point-prevalence surveys at a facility are placed in a state of lower transmissibility if enhanced infection prevention and control (IPC) practices are in place. **Results:** Intervention bundles that included periodic point-prevalence surveys and enhanced IPC at high-acuity postacute-care facilities had the greatest impact on regional prevalence 10 years into an outbreak; the benefits of including admission screening and improved interfacility communication were more modest (Fig. 1A). Delaying interventions by 3 years is predicted to result in smaller reductions in prevalence (Fig. 1B). Increasing the frequency of point-prevalence surveys from biannually to quarterly resulted in a substantial relative reduction in prevalence (from 25% to 44%) if conducted from the start of an outbreak. IPC improvements in vSNFs resulted in greater relative reductions than in LTACHs. Admission screening at LTACHs and vSNFs was predicted to have a greater impact on prevalence if in place prior to CRE introduction (~20% reduction), and the impact decreased by approximately half if implementation was delayed until 3 years after CRE introduction. In contrast, the effect of admission screening in ACH was less (~10% reduction in prevalence) and did not change with implementation delays. **Conclusions:** Our model suggests that interventions that limit unrecognized MDRO introduction to, or dispersal from, LTACHs and vSNFs through screening are predicted to slow distribution regionally. Interventions to detect colonization and improve IPC practices within LTACHs and vSNFs may substantially reduce the regional burden. Prevention strategies are predicted to have the greatest impact when interventions are bundled and implemented before an MDRO is identified in a region, but reduction in overall prevalence is still possible if implemented after initial MDRO spread.

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**Presentation Type:**

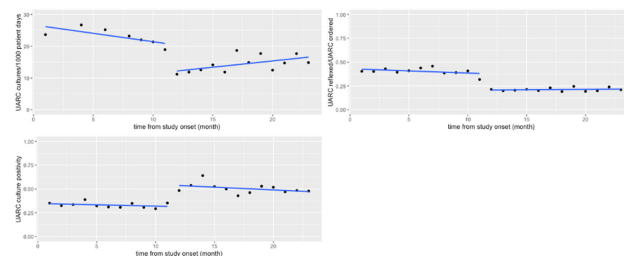
Poster Presentation - Top Poster Award

**Subject Category:** Other

**Effecting the culture: Impact of changing urinalysis with reflex culture criteria on culture rates and outcomes**

Jessica Penney; Angie Rodday; Paola Sebastiani; David Snyderman and Shira Doron

**Background:** Urinalysis and urine culture are frequently ordered diagnostic tests among hospitalized patients, often for nonspecific symptoms.



Diagnostic testing stewardship with urinalysis with reflex culture (UARC) is a practice shown to reduce institutional culture rates by selecting patients who are more likely to have a true infection. Optimal reflex criteria are not well established, and downstream effects, such as antibiotic use, have not been well studied. **Methods:** We compared outcomes in the preimplementation period (December 2018 – October 2019) and postintervention period (November 2019–October 2020) at an academic medical center. The intervention was changing the UARC reflex criteria. The primary outcomes were urine-culture rate per 1,000 patient days, urine-culture positivity, antibiotic prescription for suspected urinary tract infection (UTI) and catheter-associated urinary tract infection (CAUTI) rate per 1,000 Foley catheter days. Analysis was performed using interrupted time-series negative binomial regression or Poisson regression where appropriate. **Results:** We detected a significant decrease in the rate of cultures performed (32.5 cultures per 1,000 patient days before the intervention vs 8.6 cultures per 1,000 patient days after the intervention;  $P = 0.10$ ). Fig. 1 summarizes these results graphically. In an adverse events analysis, of 646 patients in the postintervention period, 130 patients were reviewed for the outcome of sepsis secondary to a urinary tract infection, with only 1 patient meeting criteria for this diagnosis. **Conclusions:** Changing the UARC reflex criteria resulted in the expected decrease in rate of cultures performed with increase in culture positivity, and the stricter criteria appeared to more effectively identify true UTIs. Minimal adverse events were associated with the UARC criteria change, demonstrating that these criteria are also safe. We detected a significant change in antibiotic prescriptions, but much of the decrease occurred during the preintervention period, which likely reflected educational and stewardship interventions performed at that time. Although the intervention affected culture performance, which does decrease institutional costs, continued provider education is needed to influence clinical outcomes.

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**Presentation Type:**

Poster Presentation - Top Poster Award

**Subject Category:** Patient Safety

**Is patient discharge after blood culture collection in the emergency department safe? A retrospective study in Japan**

Toshiki Miwa; Akane Takamatsu and Hitoshi Honda

**Background:** Drawing blood cultures in the emergency room (ER) is essential for detecting bloodstream infections (BSIs). Although a practice of drawing blood culture usually indicates a presence of severe infection requiring hospitalization, some patients may nonetheless be safely discharged from the ER. Previous studies demonstrated that patients with a positive blood culture after ER discharge had favorable clinical outcomes. Moreover, given the increasing incidence of febrile illnesses, especially in the era of COVID-19, the shortage of inpatient hospital beds may lend further justification to this practice. We investigated the prevalence, outcomes, and factors associated with patient discharge from the ER after blood collection. **Method:** The present, nested, case-control study comparing patients initially discharged from the ER with those directly admitted to

the study institution was conducted at a 790-bed tertiary-care medical center in Tokyo, Japan. The ratio of the respective patients was 1:3. Factors associated with ER discharge after a blood-culture collection were identified using multivariate logistic regression analysis. **Results:** From January 2014 through December 2020, 153,432 patients visited the ER. Blood cultures were obtained for 19,010 patients; 2,575 (13.5%) of these had a true BSI, and of the latter, 142 (5.5%) were initially discharged from the ER. During 2020, the proportion of patients with ER discharge increased 1.7 times over previous years. There was no significant difference in 28-day mortality between the groups (2.1% vs 4.5%;  $P = .31$ ). On multivariate logistic regression analysis, factors significantly associated with the decision to discharge after blood culture collection were the absence of hypotension (aOR, 14.92; 95% CI, 3.38–65.93), lack of altered mental status (aOR, 8.44; 95% CI, 3.28–21.71) at ER presentation, unknown diagnosis at ER discharge (aOR, 3.75; 95% CI, 1.97–7.16), high level C-reactive protein (aOR, 0.91; 95% CI, 0.87–0.94), and a diagnosis of intra-abdominal or hepatobiliary infection (aOR, 0.11; 95% CI, 0.04–0.29). **Conclusions:** ER discharge after drawing blood for a culture was more frequently seen in the current COVID-19 era and was deemed acceptable under certain circumstances, such as patients with no systemic illnesses or specific diagnosis who may be managed safely without compromising clinical outcomes.

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#### **Presentation Type:**

Poster Presentation - Top Poster Award

**Subject Category:** Pediatrics

#### **A qualitative study of parent and childcare leadership perspectives on attendance policies at childcare centers**

Nicole Poole; Brooke Dorsey-Holliman; Leisha Anderson; Sean O'Leary and Chloe Glaros

**Background:** Attendance policies for common pediatric illnesses vary widely across childcare centers despite nationally published guidelines from the American Academy of Pediatrics. The COVID-19 pandemic has exacerbated this problem, leading to economic loss from parental work absenteeism and excess medicalization of children with common illnesses. We sought to understand barriers to and recommendations for adopting best practices on attendance policies at Early Head Start and Head Start (EHS/HS) childcare centers. **Methods:** We conducted 19 semistructured qualitative interviews: 9 with childcare leadership and 10 with parents from EHS/HS childcare centers across Colorado. Interviews took place between April and December 2021. Interviews were audio-recorded, transcribed, and coded in ATLAS.ti using a priori and emergent coding strategies. Descriptive content analysis was used to identify central themes, which were iteratively revised by 2 authors. **Results:** We derived 7 convergent and 4 divergent themes from leadership and parents addressing attendance decisions. Overlapping themes on barriers to adopting best practices included difficulty assessing symptom severity, limited medical provider understanding of childcare requirements, parent employment pressures, and the impact of the COVID-19 pandemic on exclusion durations. Leadership and parent perspectives differed on resources utilized, understanding of exclusionary symptoms, and role of medical providers in making attendance decisions. Overlapping themes on recommendations for best practices included access to registered nursing, concrete guidance on symptoms, and partnering with health departments. Leadership and parents agree that the COVID-19 pandemic led to increased guideline use in making attendance decisions and increased rates of excluding children from class for minor illness compared to prepandemic times. Both leadership and parents recommended consistency in exclusion practices, but leadership and parents identified medical providers and childcare leadership, respectively, as current sources of inconsistency. Salient findings showed variability in defining a fever by age from both leadership and

parents. **Conclusions:** Coordination is needed between childcare centers, medical facilities, and health departments to improve attendance decisions for common pediatric illnesses. Future work should (1) develop concrete symptom guidance for parents with specific exclusion criteria (eg, via a decision aid), (2) assess the utility and feasibility of regular classroom access to registered nursing, and (3) advocate for employee protections to care for sick children at home.

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#### **Presentation Type:**

Poster Presentation - Top Poster Award

**Subject Category:** Surveillance/Public Health

#### **Outbreak response activities conducted by public health programs in healthcare facilities nationwide, August 2019–July 2020**

Nijika Shrivastwa; Lucas Ochoa; Maroya Walters; Kiran Perkins; Joseph Perz and Jennifer C. Hunter

**Background:** Rapid response is critical to control healthcare-associated infection (HAI) and antibiotic resistance threats within healthcare facilities to prevent illness among patients, residents, and healthcare personnel. Through this analysis, we aimed to quantify public health response activities, by healthcare setting type, for (1) novel and targeted multidrug-resistant organisms or mechanisms (MDROs), (2) SARS-CoV-2, and (3) other possible outbreaks. **Method:** We reviewed response activity data submitted by US state, territorial, and local health department HAI/AR programs to the CDC as part of funding requirements. We performed descriptive analyses of response activities conducted during the funding reporting period (August 2019–July 2020). SARS-CoV-2 response activities were reported from January through July 2020. Data were analyzed by response category (novel or targeted MDRO, SARS-CoV-2, other HAI/AR responses), and healthcare setting type. **Results:** During August 2019–July 2020, 57 HAI/AR Programs (50 state, 1 territorial, 5 local health departments, and District of Columbia) reported 18,306 public health responses involving healthcare facilities. These data included 3,860 responses to 1 or more cases of novel or targeted MDROs, 13,992 responses to SARS-CoV-2 outbreaks (beginning in January 2020), and 454 responses to other possible outbreaks. Novel and targeted MDRO responses most frequently occurred in acute-care hospitals (ACHs, 64.5%), skilled nursing facilities (SNFs, 24.5%), and long-term acute-care hospitals (LTACHs, 5.8%). SARS-CoV-2 responses most frequently occurred in SNFs (55%), and assisted living facilities (24%). Other HAI/AR responses most frequently occurred in ACH (50%), SNF (28.4%), and outpatient settings (19.6%). Of the “other” HAI/AR responses, 76% were responses to cases, clusters, or outbreaks, and 23.8% were responses to serious infection control breaches including device and instrument reprocessing, injection safety, and other deficient practices. **Conclusions:** During the study period, public health programs performed a high volume of HAI/AR response activities largely focused on SARS-CoV-2 in nursing homes and assisted living facilities. Other important response activities occurred across a range of other healthcare settings, including responses to novel and targeted MDROs, HAI outbreaks, and serious infection control breaches. Whereas SARS-CoV-2 response activities largely centered in long-term care settings, MDRO and other HAI/AR responses occurred mostly in acute-care settings. These data demonstrate the importance of building and sustaining public health response capacity for a broad array of healthcare settings, pathogens, and patient populations to meet the range of current and emerging HAI/AR threats.

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