whether antibiotics were prescribed in combination, and whether antibiotics prescribed for discharge medicine were checked in 4 steps. A pop-up window appeared in each patient record to enter the reason for the prescription. If the reason was appropriate, the prescription was allowed, but if not, the prescription was restricted. In addition, infectious diseases physicians and an insurance review team visited each department to conduct an education session. To analyze the effect 3 months before activity (January–March 2020) and 3 months after activity (October–December 2020), we compared the first antibiotic administration rate within 1 hour prior to skin incision, the recommended prophylactic antibiotic administration rate, and surgery type. The rate of discontinuation of prophylactic antibiotics within 24 hours after administration and the rate of prescription of prophylactic antibiotics at discharge were compared. **Results:** In total, 1,339 surgeries during the study period were included in the analysis. There were 695 cases before the introduction of the program and 644 cases after the introduction. The rate of first antibiotic use within 1 hour prior to skin incision was 93.1%–99.5% ($P < .001$), the rate of recommended prophylactic antibiotic administration was 85.0%–99.2% ($P < .001$), and the rate of discontinuation of antibiotic administration within 24 hours after surgery improved from 51.8% to 98.3% ($P < .001$), respectively. The prescription rate of antibiotics at discharge improved from 20.7% to 0.8% ($P <.001$) (Table 1). **Conclusions:** A computerized program to improve the adequacy of prophylactic antibiotic use in surgery combined with education of medical staff was very effective.

**Disclosure:** None

**Modeling the impacts of influenza antiviral prophylaxis strategies in nursing homes**
Casey Zipfel; Sinead Morris; Prabasaj Paul; Matthew Biggerstaff and Rachel Slayton

**Background:** Antiviral chemoprophylaxis for influenza is recommended in nursing homes to prevent transmission and severe disease among residents with higher risk of severe influenza complications. Interim CDC guidance recommends that long-term care facilities initiate antiviral chemoprophylaxis with oral oseltamivir for all non-ill residents living in the same unit following the start of an outbreak in a facility (ie, ≥2 patients ill within 72 hours and of whom at least 1 resident has laboratory-confirmed influenza). Prophylaxis continues for a minimum of 2 weeks and for at least 7 days after the last laboratory-confirmed case. However, facilities may not strictly adhere to this guidance, with 1 study showing up to 68% of facilities were nonadherent to national guidance (Silva et al 2020). Here, we model the potential impacts of different antiviral prophylaxis strategies. **Methods:** We developed a susceptible–exposed–asymptomatic–infected–recovered (SEAIR) compartmental model of an average-sized nursing home comprising short-stay residents, long-stay residents, and healthcare personnel (HCP). Persons treated with antiviral chemoprophylaxis were less susceptible to infection, had a lower probability of symptoms if infected, a reduced viral load, and a shortened duration of infectiousness. We included influenza vaccination for residents and
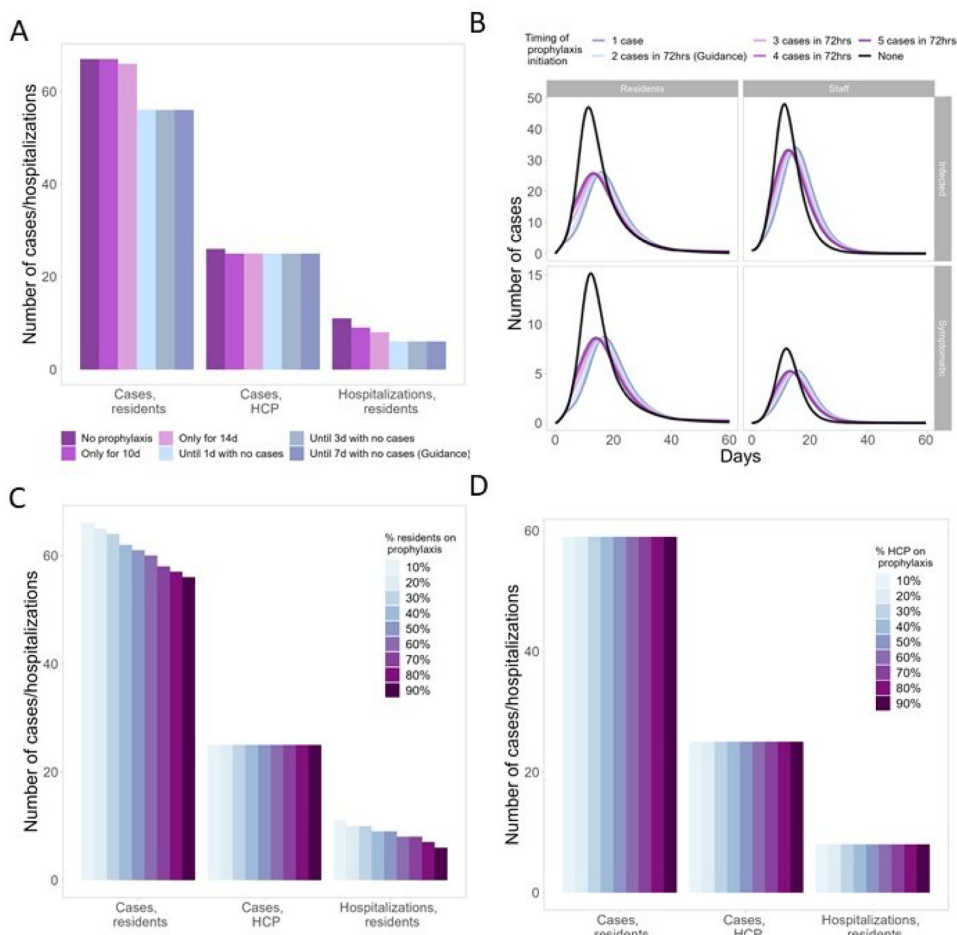
HCP through reduced probability of symptomatic infection. Coverage rates were estimated from CDC FluVaxView and CMS COVID-19 nursing home data. As a base case, we modeled a scenario with prophylaxis implemented according to guidance. We varied uptake by residents and HCP (from 10% to 90%), case thresholds for prophylaxis initiation (1–5 cases identified), and timing of prophylaxis cessation: either time dependent (ie, 10–14 days of prophylaxis) or case-dependent (ie, continuing prophylaxis for 1–7 days with no cases). **Results:** In the scenario based on current guidance, prophylaxis reduced resident cases by 16% and resident hospitalizations by 45%, compared to no prophylaxis (Fig. 1A). Scenarios that differed from the guidance altered case burden and timing: Time-dependent prophylaxis cessation increased resident cases and hospitalizations (Fig. 1A). Timing of prophylaxis initiation had slight effects on the timing of the epidemic and minimal effects on resident cases and hospitalizations (Fig. 1B). High resident uptake was important for reducing resident cases and hospitalizations (Fig. 1C), but increasing HCP uptake had minimal effect (Fig. 1D). **Conclusions:** Our findings support the current prophylaxis guidance. Promptly implementing prophylaxis reduces resident cases and hospitalizations. Continuing prophylaxis until cases are no longer identified reduces cases and hospitalizations.
**Disclosure:** None

**Presentation Type:**
Poster Presentation - Top Poster Award
**Subject Category:** Surveillance/Public Health
**Detection of carbapenem-resistant Enterobacterales from nursing home wastewater effluent from September 2021 to November 2021**
Susanna Lenz; Lauren Franco and Angela Coulliette-Salmond

**Background:** Surveillance and early detection of antibiotic resistance genes and multidrug-resistant organisms (MDROs), such as carbapenem-resistant Enterobacterales (CRE), are important to quell outbreaks early, as antibiotic resistance continues to be an increasing threat. Wastewater surveillance in general has gained attention in the United States, but scientific evidence demonstrating the feasibility to assess antibiotic resistance genes and MDROs is limited. In this study, wastewater effluent was used to screen a nursing home facility, which housed a population at increased risk for colonization with MDROs, for the presence of β-lactam–resistant genes. **Methods:** Wastewater effluent samples (24-hour composite, n = 19; grab samples, n = 6) collected from a skilled nursing home facility from September 2021 to November 2021 in DeKalb County, Georgia, were screened for carbapenem-resistant and extended-spectrum β-lactam (ESBL)–resistant Enterobacterales using 2 selective chromogenic media: mSuperCARBA (mSC) for selection of CRE and CHROMagar ESBL for selection of gram-negative bacteria producing extended-spectrum β-lactamases. Colilert-18 (IDEXX) was applied to detect and quantify total coliforms and *Escherichia coli*, serving as an enrichment approach for potential gram-negative organisms (Enterobacterales) containing antibiotic resistance genes. *E. coli*–positive Colilert-18 (IDEXX) samples (n = 24) had a composite of 1.0 mL total from 5 positive wells or 20% per plate collected and stored at −80°C in 25% glycerol. The *E. coli*–positive Colilert-18 samples were later thawed and plated on mSC and CHROMagar ESBL, where a random subset of all the colonies (ie, mixture of typical and atypical colonies; n = 28) were selected for matrix-assisted laser desorption/ionization time-of-flight (MALDI-TOF) to confirm identification. Additionally, a non-enrichment approach, filtered wastewater samples (10 mL, n = 23) were frozen (−80°C) until DNA extraction, followed by multiplex real-time PCR for the *bla*KPC, *bla*NDM, *bla*VIM, and *bla*OXA-48–like carbapenemase genes. **Results:** Among 24 *E. coli*–positive Colilert-18 samples, 16 (67%) of 24 contained carbapenem-resistant *Klebsiella, Enterobacter, or Citrobacter* (KEC), 88% contained ESBL-resistant KEC (21 of 24), 4% (1 of 24) contained carbapenem-resistant *E. coli*, and 67% contained ESBL-resistant *E.coli* (16 of 24). In the 28 colonies picked from mSC or

ESBL, 10 different genera were confirmed using MALDI-TOF: *Aeromonas, Citrobacter, Enterobacter, Escherichia, Klebsiella, Providencia,* and *Raoultella*. Of 23 filtered samples, 18 (78%) were positive for the *bla*KPC gene, whereas all samples were negative for *bla*NDM, *bla*VIM, and *bla*OXA-48–like genes. In this nursing home, these findings suggest a concerning frequency of bacteria resistant to last-line antibiotics. Wastewater surveillance can potentially serve as an approach to identify antibiotic resistance and track its presence over time.
**Disclosure:** None

**Presentation Type:**
Poster Presentation - Top Poster Award
**Subject Category:** VAE
**A national survey of PICU clinician practices and perceptions about respiratory cultures for invasively ventilated patients**
Anna Sick-Samuels; Danielle Koontz; Anping Xie PhD; Daniel Kell; Charlotte Woods-Hill; Anushree Aneja; Shaoming Xiao; Elizabeth Colantuoni; Jill Marsteller and Aaron Milstone

**Background:** Respiratory cultures are commonly obtained from patients with suspicion for ventilator-associated infections (VAIs). In the absence of specimen ordering and collection guidelines, management practices may differ. We characterized current respiratory culture collection practices and perceptions and identified potential barriers to changing practices among a national collaborative of pediatric intensive care units (PICUs). **Methods:** We conducted an electronic survey of PICU physicians, advanced practice providers (APPs), respiratory therapists (RTs), and nurses at 16 US academic pediatric hospitals across the United States. Positive Likert-scale responses (eg, "agree" and "strongly agree") were grouped. To account for varying hospital representation, we analyzed the results as the median proportion of participants with that response across the hospitals. **Results:** After excluding incomplete responses, 568 (44%) of 1,301 invited participants responded (range, 16–107 per site); the median hospital response rate was 60% (range, 17%–83%). Roles included physicians (35%), APPs (10%), RTs (24%), and nurses (31%). Moreover, 44% of the participating units cared for cardiac surgery patients. Across hospitals, specimens are often collected by RTs, followed by nurses, typically via inline endotracheal aspirate for either endotracheal tubes or tracheostomies. Saline lavage is a common practice, but only 4% reported a standardized approach. Examining the likeliness to obtain cultures for different clinical symptoms, the widest variation in responses were for fever and inflammatory markers without respiratory symptoms (median proportion, 68%; IQR, 54%–79%), isolated change in secretion characteristics (67%; IQR, 54%–78%), isolated increased secretions (55%; IQR, 40%–65%), isolated inflammatory markers (49%; IQR, 38%–57%) or isolated fever (49%; IQR, 38%–61%). Overall, 75% (IQR, 70%–86%) of reported respiratory cultures were likely to be obtained as a "pan culture." Most respondents (median proportion, 69%) felt confident about the indications to obtain cultures, but 60% felt that clinicians had a low threshold, and 84% reported clinical practice variation. Barriers to change included reluctance to change (70%), opinion of consultants (64%), and fear of missing a diagnosis of VAI (62%). Respondents agreed that they would find clinical decision support (CDS) tools helpful (79%). In addition, 83% expected that they would follow CDS, and 82% thought that CDS would help align ICU and/or consulting teams. **Conclusions:** Among 16 participating hospitals, we detected a lack of standardized respiratory-culture specimen collection and ordering practices. Most respondents agreed that CDS tools would be helpful. Diagnostic stewardship of respiratory cultures using CDS must account for potential reluctance to change and needs to address stakeholder perspectives, including fear of missing infections.
**Disclosure:** None