sectional study assessing MDRO carriage in daycare-attending and nonattending children in Wisconsin. **Methods:** We applied the following enrollment criteria: Children aged between 6 months and <6 years and not enrolled in kindergarten; children who did not have an MDRO infection in the previous 6 months and did not receive any antimicrobials in the previous month; and children who did not have a gluten allergy, asthma, eczema, allergic rhinitis, cystic fibrosis, or an immunodeficiency. Children were enrolled by a parent or guardian who filled out a questionnaire on MDRO risk factor history and diet. Samples were collected from the nares, axilla or groin (pooled swab), and stool. Nasal samples were cultured for *H. influenzae*, *S. pneumoniae*, *M. catarrhalis*, and methicillin-resistant *S. aureus* (MRSA). Skin samples were cultured for MRSA, and stool samples were cultured for MRSA, *C. difficile*, vancomycin-resistant enterococci (VRE), and extended-spectrum β-lactamase–producing Gram-negative bacilli (ie, ESBL GNR). **Results:** In total, 44 children were enrolled in this study. The average age was 2.6 years and 50% were girls. Furthermore, 30 (68.2%) were identified by their parents as white, 9 (20.5%) as black, and 5 (11.3%) as other or multiracial. Incidentally, 23 children (52.3%) were enrolled in daycare. Overall, 18 children were positive for at least 1 organism, 9 of which had daycare exposure, and 5 children (1 in daycare) were positive for >1 organism (11.4%). From stool samples, 6 children (13.6%, 2 in daycare) were *C. difficile* carriers, 3 were VRE carriers (6.8%, 1 in daycare), 8 carried an ESBL GNR (18.2%, 4 in daycare), and 3 carried MRSA (6.8%, 1 in daycare). One child was positive for *H. influenzae* (2.3%, not in daycare) and 2 were positive for *S. pneumoniae* (4.6%, 1 in daycare) from nares swabs. One child was positive for MRSA (2.3%, not in daycare) from a skin swab. We detected no significant differences between children with and without daycare exposure for any organism. **Conclusions:** Children in this population had higher than expected rates of ESBL GNRs and MRSA for a community population. Daycare exposure was not correlated with increased carriage in this small pilot study, though larger longitudinal studies are needed.

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Presentation Type:
Poster Presentation

Multiscale Modeling of Patient Movement to Determine Effects of Surveillance on Healthcare-Associated Infections

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Background: The transmission of pathogenic organisms in healthcare settings is a major cause of healthcare-associated infections (HAIs). In recent years, infections with carbapenem-resistant Enterobacteriaceae (CRE) have become a significant public health threat, in part because many patients are arriving at the hospital already colonized, and colonization is a major risk factor for infection. Reducing transmission requires understanding how patient movement drives the spread of CRE; however, analysis of this issue has mostly been modeled at a hospital-level without much consideration for the population dynamics that occur outside of the hospital setting and how patients move between healthcare settings. Patients move between hospitals, other healthcare settings, such as long-term care facilities (LTCFs), and the community, all of which pose different colonization risks. Thus, studying each environment in isolation fails to realistically address the consequences of large-scale policy interventions. One such intervention is a statewide electronic registry to track patients who are known to be colonized or have had a CRE infection. Understanding the potential for reducing CRE morbidity and mortality requires consideration of small- and large-scale effects on patients' movement and transmission. **Methods:** We developed a multiscale, metapopulation model for hospitals, communities, and LTCFs in the state of Maryland. In our computational simulation, we included a regional- as well as a local-scale model that were informed by the patient-mix data from the Maryland Health Service Cost Review Commission. We examined the impact of implementing a registry compared to less coordinated scenarios. **Results:** The most effective policy was the implementation of an electronic registry which resulted in 9.6% median reduction in CRE HAIs in Maryland for simulated outcomes (Fig. 1). Other interventions included colonization screening at various or all hospitals and using a predictive algorithm to determine at-risk patients that need to be screened. These interventions only resulted in ~1%–3% reductions in HAIs. We also observed that coupling other interventions with an electronic registry does not aid in reducing more HAIs.

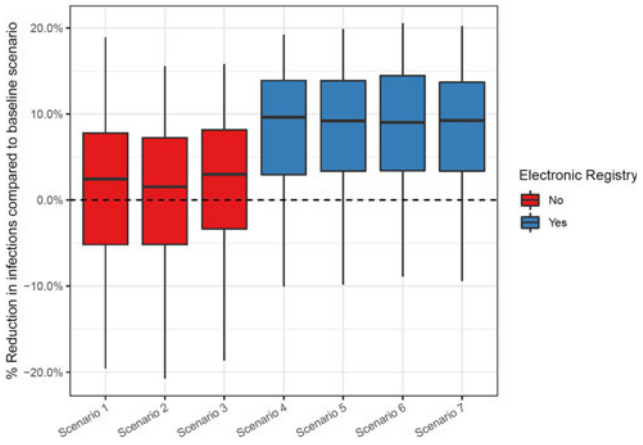

Fig. 1.

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Disclosures: None

Boxplot of simulated outcomes of all scenarios compared to the baseline scenario. The scenarios include (1) complete screening with no electronic registry, (2) selective screening with no electronic registry, (3) predictive screening with no electronic registry, (4) baseline with an electronic registry, (5) complete screening with an electronic registry, (6) selective screening with an electronic registry, and (7) predictive screening with an electronic registry. Scenarios 5-7 include the same interventions as 1–3 coupled with an electronic registry.

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Presentation Type:
Poster Presentation

National Frequencies of Administering or Prescribing Immunosuppressive Opioids in US Ambulatory Care Settings: 2006–2016

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Background: Several decades of animal and basic science research have demonstrated that certain opioids have immunosuppressive properties, but the clinical relevance of opioid-related immunosuppression remains unclear. Although experts have called for epidemiologic research to inform clinical practice, prioritization of that research depends partly on a determination of the number of people potentially affected. To date, population-level estimates of administering or prescribing immunosuppressive opioids (ISOs) have not been measured. Our objective was to estimate the overall frequency of ambulatory visits involving ISOs, and to estimate the frequency of these visits among immunocompromised patients. **Methods:** We used the CDC National Ambulatory Medical Care Survey (NAMCS) and National Hospital Ambulatory Medical Care Survey–Emergency Departments (NHAMCS-ED) data sets (2006–2016) to compute average annual frequencies of patient visits involving ISOs. We accounted for survey sampling design and visit weights using SAS version 9.4 software. We adopted a definition of ISOs from the literature as 'alone or in-combination' formulas of codeine, morphine, and fentanyl. We approximated patients' immunocompromised status by the administering or prescribing of anti-infective drugs, and by chronic conditions indicative of immunocompromised status. We stratified visits with mentions of ISOs by co-occurring clinical-use of anti-infective drugs, and by selected chronic conditions. **Results:** From 2006 to 2016, annual averages of 7.9% (N = 10,383,000; SE, 447,000) of all ED visits and 1.3% (N = 12,674,000; SE, 558,000) of all outpatient office visits involved the administering or prescribing of 1 or more ISO. Over the same period, coprescribing or administering of anti-infective drugs alongside ISOs occurred during 2.1% (N = 2,782,000; SE, 130,000) of all ED visits, and 0.4% (N = 3,525,000; SE, 219,000) of all outpatient office visits. ED visits by patients with selected chronic conditions who were administered or prescribed ISOs include cancer—499,000 (SE, 39,000), diabetes—1,369,000 (SE, 82,000), and HIV—45,000 (SE, 7,000). Outpatient office visits by patients with selected chronic conditions who were administered or prescribed ISOs include cancer—1,032,000 (SE, 92,000), diabetes—1,802,000 (SE, 142,000), and chronic renal failure—138,000 (SE, 22,000). **Conclusions:** More than 10 million ED visits and 12 million outpatient office visits involved the clinical use of ISOs on average, from 2006 to 2016. These averages include visits by immunocompromised patients who could potentially benefit from nonimmunosuppressive analgesic alternatives, when appropriate. Until further research is conducted on the clinical relevance of these opioids' immunosuppressive properties, their use to treat immunocompromised patients may represent unrecognized patterns of inappropriate drug use.

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NHSN Catheter-Associated Urinary Tract (CAUTI) Definition—Opportunity for Improvement

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Background: Urinary tract infections (UTIs) are one of the most common hospital-acquired infections; ~70%–80% are attributable to an indwelling urethral catheter. Daily risk of bacteriuria acquisition varies from 3% to 7% with a catheter. CAUTIs are associated with increased mortality, cost, and inappropriate treatment of asymptomatic bacteriuria which promotes antimicrobial resistance and *Clostridium difficile* infection. NHSN CAUTI criteria is most commonly met when a patient has a positive urine culture and a fever. Although fever can be associated with many sources, it cannot be excluded from UTI determination even when attributable to another recognized source. Given the high prevalence of bacteriuria in catheterized patients and the many sources of fever, the NHSN definition lacks specificity. **Objective:** To better classify CAUTI using enhanced criteria to so that appropriate reduction efforts would be utilized. **Methods:** A retrospective review was conducted to evaluate NHSN-defined CAUTIs from July 2017 to December 2018. Patients with NHSN defined CAUTI were evaluated to determine elements present to meet criteria. Overcaptured (O-CAUTIs) were defined as follows: (1) O-CAUTI 1, a positive culture with fever attributable to an infectious source; (2) O-CAUTI 2, a positive culture with fever attributable noninfectious source; (3) O-CAUTI 3, repeated

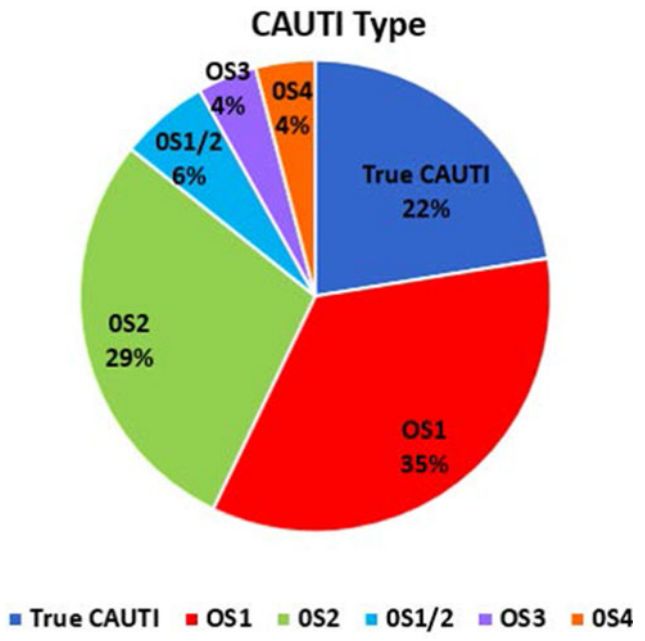

Fig. 1.

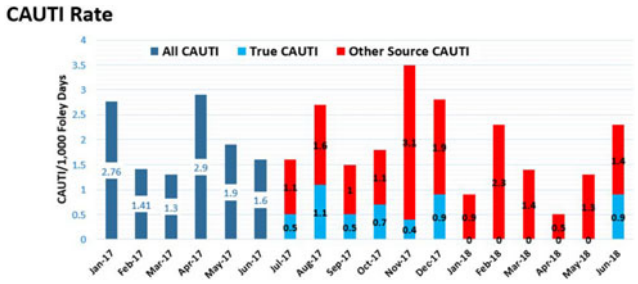

Fig. 2.