We classified all transfers, including those caused by infection, for which infection was POA in any of the 25 diagnosis codes as transfers with infection. Types of infection included respiratory, sepsis, urinary tract infection (UTI), and all (including 'other'). **Results:** Table 1 shows the number of all-cause transfers and the percentage caused by infections. From 2011 to 2014, the rate of all-cause transfers declined from 0.479 to 0.396 per patient; infections were primarily responsible for ~1 in 3 transfers each year. The rate of transfers caused by sepsis increased by 37% from 2011 to 2014, and the rate for respiratory infections fell by 18%. More than half of all transfers from nursing home to hospital in each year had an infection POA. Although the percentage of transfers caused by any kind of infection increased by >7% during the period, the number of transfers per patient dropped by 17%. **Conclusions:** A large number of elderly nursing home residents are transferred to hospitals with infection each year. Many of these transitions may be avoidable with improved infection prevention and surveillance in nursing homes. Reduced infection rates would improve health and quality of life of nursing home residents and reduce infection-related inpatient costs.

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Presentation Type:
Top Rated Posters

The Incidence, Characteristics, and Outcomes of Community and Hospital-Associated *S. aureus* Disease in Fulton County, Georgia

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Background: Due to reliance on hospital discharge data for case identification, the burden of noninvasive and community-acquired *S. aureus* disease is often underestimated. To determine the full burden of *S. aureus* infections, we utilized population-based surveillance in a large urban county. **Methods:** The Georgia Emerging Infections Program (GA EIP) conducted CDC-funded, population-based surveillance by finding cases of *S. aureus* infections in 8 counties around Atlanta in 2017. Cases were residents with *S. aureus* isolated from either a normally sterile site in a 30-day period (invasive cases) or another site in a 14-day period (noninvasive cases). Medical records (all invasive and 1:4 sample of noninvasive cases) among Fulton County residents were abstracted for clinical, treatment, and outcome data. Cases treated were mapped to standard therapeutic site codes. Noninvasive specimens were reviewed and attributed to an invasive case if both occurred within 2 weeks. Incidence rates were calculated using 2017 census population and using a weight-adjusted cohort to account for sampling. **Results:** In total, 1,186 noninvasive (1:4 sample) and 529 invasive cases of *S. aureus* in Fulton county were reviewed. Only 35 of 1,186 (2.9%) noninvasive cases were temporally linked to invasive cases, resulting in 5,133 cases after extrapolation (529 invasive, 4,604 noninvasive). All invasive cases and 3,776 of 4,604 noninvasive cases (82%) were treated (4,305 total). Treatment was highest in skin (90%) and abscess (97%), lowest in urine (62%) and sputum (60%), and consisted of antibacterial agents alone (65%) or in addition to drainage procedures (35%). Overall, 41% of all cases were hospitalized, 12% required ICU admission, and 2.7% died, almost exclusively with bloodstream and pulmonary infections. Attribution of noninvasive infection was most often outside healthcare settings (87%); only 341 (7.9%) were hospital-onset cases; however, 34% of cases had had healthcare exposure in the preceding year, most often inpatient hospitalization (75%) or recent surgery (35%). Estimated county-wide incidence was 414 per 100,000 (130 for MRSA and 284 for MSSA), invasive infection was 50 per 100,000. Among treated cases, 57% were SSTI, and the proportion of cases caused by MRSA was ~33% but varied slightly by therapeutic site (Fig. 1). **Conclusions:** The incidence of treated *S. aureus* infection in our large urban county is estimated to be 414 per 100,000 persons, which exceeds previously estimated rates based on hospital discharge data. Only 12% of treated infections were invasive, and

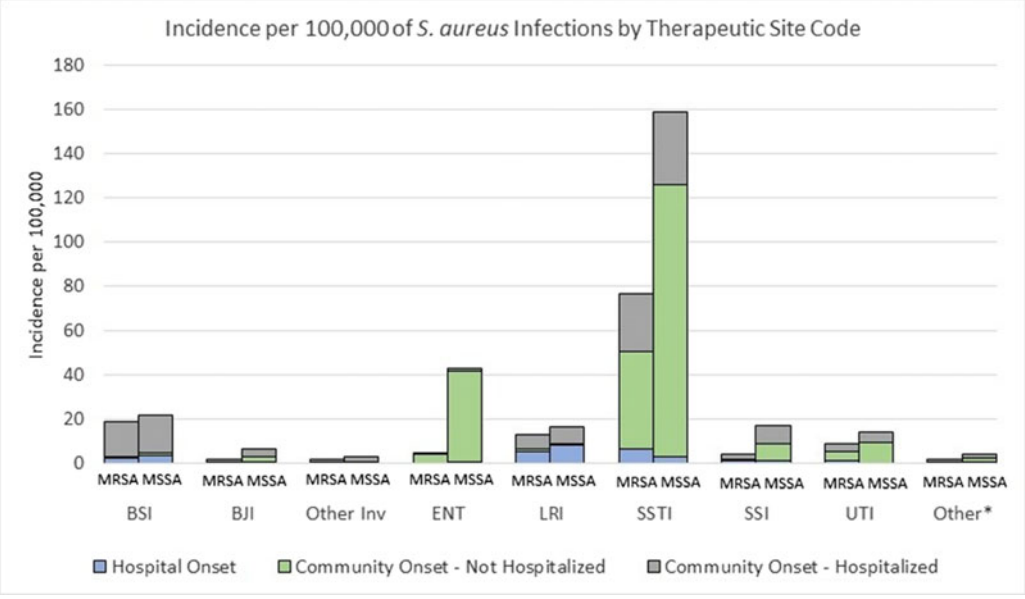

Fig. 1.

<1 in 10 were hospital onset. Also, two-thirds of treated disease cases were MSSA; most were SSTIs.
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Presentation Type:
Top Rated Posters

Transmissible Spongiform Encephalopathies: An Underrecognized Infection Control Issue

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Background: Transmissible spongiform encephalopathies comprise a class of rapidly progressive and inevitably fatal degenerative brain disorders. The pathogenesis of these diseases is thought to be due to a change in the structure of the normal prion protein to an abnormal structure, leading to propagation of the abnormal protein. This abnormal protein is highly transmissible; thus, appropriate infection control measures should be put in place if the diagnosis is suspected. However, the diagnosis is often not considered at all, and many hospitals do not have protocols in place. Our hospital missed a case of familial fatal insomnia in a 45-year-old male. He was diagnosed with fatal familial insomnia by autopsy. The autopsy was performed without appropriate infection control measures, leading to costly contamination of medical instruments and exposure of multiple staff. This occurrence led our institution to re-evaluate hospital protocols and guidelines regarding workup and management of transmissible spongiform encephalopathies (TSEs). **Methods:** We reviewed cases of TSEs or Creutzfeldt-Jakob Disease (CJD)-like illness presenting to our hospital over a 30-month period. Patients were considered for inclusion based on clinical suspicion. CDC diagnostic criteria were used. Infection control measures were employed, including an alert in the EMR. MRI was then performed. If clinical or diagnostic suspicion was high, the patient underwent lumbar puncture. CSF results were reviewed based on criteria Creutzfeldt-Jakob Disease Foundation criteria. Infection control measures were maintained throughout hospitalization. **Results:** In total, 34 patients met the inclusion criteria: 8 patients had confirmed CJD and 25 were negative. Medical records were not available for 1 patient, who was excluded. Lumbar puncture was performed on all suspected cases. Of those confirmed cases, the 7 patients who underwent lumber puncture had a positive result for 14-3-3 protein. Also, 5 patients underwent RT-QuIC testing and were found to have a positive result. No further cases of contamination occurred using our protocol. Additionally, 1 patient with suspected CJD underwent a brain biopsy with appropriate precautions after an inconclusive lumbar puncture. Although biospy was negative, the case exemplifies how the initiation of a protocol can optimize the workflow and prevent potentially dangerous exposure. **Conclusion:** Diagnosis of TSEs remains difficult and is often missed. In our case, lack of suspicion for TSE led to a waste of resources and unnecessary exposure of staff member. It is of utmost importance to consider TSEs in rapidly progressive dementia and to employ appropriate sterile guidelines to prevent contamination of equipment and potential subsequent transmission. Healthcare providers should consider a similar protocol in cases suspicious for TSEs.
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Use of Simulations to Evaluate the Effectiveness of Barrier Precautions for Prevention of pathogen Transmission

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Background: Barrier precautions (eg, gloves and gowns) are often used in clinical settings to reduce the risk for transmission of healthcare-associated pathogens. However, uncertainty persists regarding the efficacy of different types of barrier precautions in preventing transmission. **Methods:** We used simulated patient care interactions to compare the effectiveness of different levels of barrier precautions in reducing transfer of pathogen surrogate markers. Overall, 30 personnel performed standardized examinations of contaminated mannequins while wearing either no barriers, gloves, or gloves plus cover gowns followed by examination of a noncontaminated mannequin; the order of the barrier precautions was randomly assigned. Participants used their usual technique for hand hygiene, stethoscope cleaning, and protective equipment removal. The surrogate markers included cauliflower mosaic virus DNA, bacteriophage MS2, nontoxigenic *Clostridium difficile* spores, and a fluorescent tracer. We compared

Figure. Transfer of surrogate markers during simulated exams by hands (A) and stethoscopes (B)

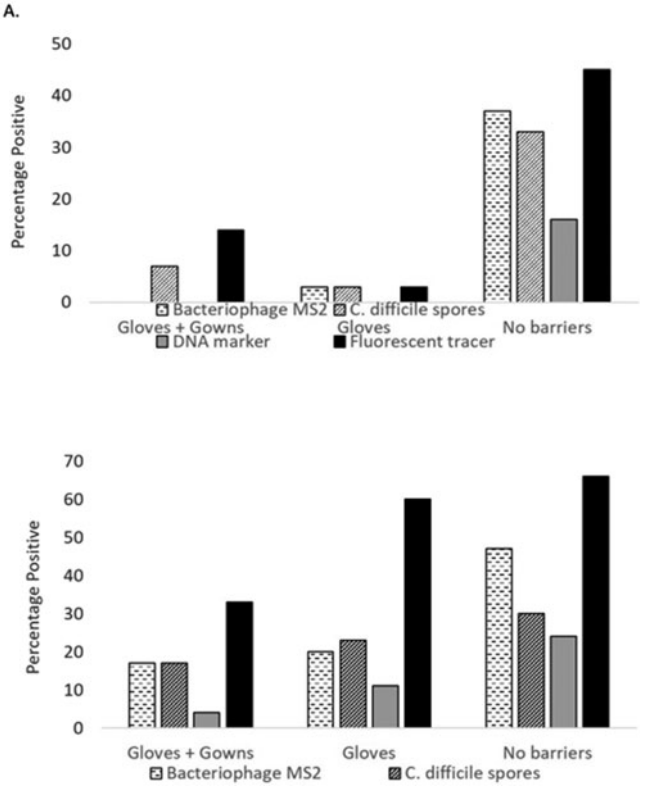

Fig. 2.