77 observational months (55 before the intervention and 22 after the intervention) were included. The mean monthly MRSA acquisition rates were 7.0 per 1,000 patient days before the intervention and 4.4 per 1,000 patient days after the intervention ($P < .001$), with a mean number of patient days of 2,516.3 per month before the intervention and 2,427.2 per month after the intervention ($P = .0172$). The mean monthly number of MRSA-colonized patients on admission to the hospital decreased from 24.8 before the intervention to 18.7 after the intervention ($P < .001$). Mean monthly hand hygiene compliance rate increased significantly from 65.7% before the intervention to 87.4% after the intervention ($P < .001$). After adjusting for the number of MRSA-colonized patients on admission and hand hygiene compliance rates, a constant trend was observed from January 2013 to July 2017 (adjusted mean coefficient, 0.012; 95% CI, −0.037 to 0.06), with an immediate drop in September 2017 (adjusted mean coefficient, −2.145; 95% CI, −0.248 to −0.002; $P = .033$), followed by a significant reduction in MRSA acquisition after the intervention from September 2017 through June 2019 (adjusted mean coefficient, −0.125; 95% CI, -4.109 to -0.181; $P = .047$). **Conclusions:** Topical intranasal octenidine, coupled with universal chlorhexidine baths, can reduce MRSA acquisition in extended-care facilities. Further studies should be conducted to validate the findings in other healthcare settings.

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Poster Presentation

Investigation and Containment of New Delhi Metallo-β-Lactamase (NDM)–Producing Carbapenem-Resistant Enterobacteriaceae (CRE) in a Hospital Intensive Care Unit

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Background: With increasing medical tourism and international healthcare, emerging multidrug resistant organisms (MDROs) or "superbugs" are becoming more prevalent. These MDROs are unique because they are resistant to antibiotics and can carry special resistance mechanisms. In April 2019, our hospital was notified that a superbug, New Delhi Metallo-β-lactamase (NDM)–producing carbapenem-resistant Enterobacteriaceae (CRE), was identified in a patient who had been transferred to another hospital after being at our hospital for 3 weeks. Our facility had a CRE admission screening protocol in place since 2013, but this patient did not meet the criteria to be screened on admission. **Methods:** The infection prevention (IP) team consulted with the Minnesota Department of Health (MDH) and gathered stakeholders to discuss containment strategies using the updated 2019 CDC Interim Guidance for Public Health Response to Contain Novel or Targeted Multidrug-resistant Organisms (MDROs) to determine whether transmission to other patients had occurred. NDM CRE was classified under tier 2 organisms, meaning those primarily associated with healthcare settings and not commonly identified in the region, and we used this framework to conduct an investigation. A point-prevalence study was done in an intensive care unit that consisted of rectal screening of 7 patients for both CRE and *Candida auris*, another emerging MDRO. These swabs were sent to the Antibiotic Resistance Laboratory Network (ARLN) Central Regional Lab at MDH for testing. An on-site infection control risk assessment was done by the MDH Infection Control Assessment and Response (ICAR) team. **Results:** All 7 patients were negative for both CRE and *C. auris*, and no further screening was done. During the investigation, it was discovered that the patient had had elective ambulatory surgery outside the United States in March 2019. The ICAR team assessment provided overall positive feedback to the nursing unit about isolation procedures, cleaning products, and hand hygiene product accessibility. Opportunities included set-up of soiled utility room and updating our process to the 2019 MDH recommendation to screen patients for CRE and *C. auris* on admission who have been hospitalized, had outpatient surgery, or hemodialysis outside the United States in the previous year. **Conclusions:** Point-prevalence study results showed no transmission of CRE and highlighted the importance of standard precautions. This event supports the MDH recommendation to screen for CRE any patients who have been hospitalized, had outpatient surgery, or had hemodialysis outside the United States in the previous year.

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Investigation of a Prolonged Group A *Streptococcus* Outbreak Among Residents and Outpatients Receiving Wound Care at a Long-Term Care Facility (LTCF)

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Background: In February 2019, the Colorado Department of Public Health and Environment (CDPHE) identified a cluster of 3 invasive group A *Streptococcus* (GAS) infections in residents receiving wound care in a long-term care facility (LTCF). An investigation revealed a larger outbreak that extended to nonresidents receiving outpatient wound care at the LTCF. **Methods:** A case was defined as a positive culture for GAS *emm* type 82 from an individual with exposure to the LTCF between January and June 2019. Cases were categorized as clinical (symptoms of GAS disease or GAS isolated from a wound or sterile site) or carriage (no symptoms). Carriers were identified via samples collected from throat and skin lesions. Screening occurred in 2 rounds and included residents of affected units followed by screening of all wound-care staff and residents facility-wide. Available isolates were sent for *emm* type testing and whole-genome sequencing (WGS) at the CDC. CDPHE staff performed infection control observations. **Results:** We identified 14 cases: 8 clinical and 6 carriage (from 5 residents and 1 staff member). Two patients with invasive GAS died. Of 8 patients with clinical GAS, 6 resided in the facility on or 1 day prior to symptom onset; 2 were not residents but received outpatient therapy at the LTCF. All 8 patients with clinical GAS (100%) and 3 carriers had received wound care. The staff member with *emm* 82 carriage had provided wound care and occupational therapy to the affected residents and the 2 outpatients. Two

additional cases were detected with onset dates following staff member decolonization. Moreover, 13 of the 14 *emm* 82 isolates were found to be identical by WGS. Infection control observations identified lapses in staff wound care and hand hygiene practices in the residential and outpatient settings of the facility. **Conclusions:** This investigation details a large GAS outbreak in an LTCF associated with asymptomatic carriage in residents and staff that included patients who had only received care in the outpatient portion of the facility. The outbreak was halted following decolonization of a staff member and improvements in infection control, including in the outpatient setting. Outpatient services, particularly wound care, provided by LTCFs should be considered when investigating LTCF-related GAS cases and outbreaks.

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Investigation of Pansusceptible *Pseudomonas aeruginosa* Meningitis Cases in Patients With External Ventricular Devices

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Background: During a 2-month period at an academic medical system, 4 cases of pansusceptible *P. aeruginosa* (PsA) meningitis were identified among neuroscience intensive care unit (NSICU) patients with an external ventricular device (EVD). **Methods:** We reviewed microbiology data for the previous 2 years to determine background PsA rates and to identify additional cases of PsA meningitis. A case was defined as the isolation of PsA from a CSF specimen. We convened a multidisciplinary group of stakeholders to review medical records of case patients and to conduct a series of observational rounds. Scalp swab specimens were collected from NSICU patients to detect possible skin colonization. Pulsed-field gel electrophoresis (PFGE) analyses were performed on PsA isolates from the 4 case patients and 5 patients with PsA isolates from other body sites. **Results:** There was no hospital-wide increase in PsA incidence, and no patient without an EVD had PsA cultured from CSF. Infections occurred, on average, 10 days (range, 6–15 days) after EVD insertion. Cases were geographically dispersed in the NSICU and did not share common staff. None of the PsA isolates were genetically related and all scalp cultures were negative. Observations included multiple opportunities for contact with water sources: sinks in proximity to the head of the bed, storage of supplies next to sinks, reuse of bath basins, and use of dilute peroxide to clean surgical wounds. Multiuse shampoos, conditioners and lotions, not approved for hospital use, were found on the unit. Furthermore, 3 of 4 patients received cefazolin >24 hours after 6 of their 7 neurosurgeries for an average of 4.7 days (range, 0.8–4 days). Care practices were changed to mitigate contact between EVD sites and environmental water sources, and extended cefazolin surgical prophylaxis was discontinued. EVD practices were revised, and clinical teams had their competency confirmed. No additional cases have been identified in the 16 months following these interventions. **Conclusions:** This cluster of EVD infections was likely caused by patient care practices that resulted in independent introductions of PsA from multiple nonsterile or contaminated water sources. Antibiotic selection of PsA by extended use of cefazolin perioperative prophylaxis may have also contributed. EVD care practices should be designed to limit contact between and EVD insertion sites and nonsterile water sources or potentially contaminated care supplies. To substantiate performance improvement efforts and ensure interinstitutional comparability, a practical, standardized EVD-associated infection surveillance definition is needed.

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Investigation of Surgical Site Infection Outbreak Among Neurosurgical Patients

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Background: The infection control service of a private hospital in Belo Horizonte, Brazil, performs continuous surveillance of surgical patients according to the CDC NHSN protocols. In a routine analysis of the neurosurgical service, we identified a subtle increase in the incidence of surgical site infection (SSI): in 5 months (June–October 2018), 6 patients developed an SSI. From January 2017 until May 2018, there were no cases of infection in neurosurgery, which led us to suspect an outbreak. **Methods:** A cohort study was used to investigate the factors associated with risk of SSI. We investigated the following variables: ASA score, number of hospital admissions, age, preoperative hospital length of stay, duration of surgery, wound class, general anesthesia, emergency, trauma, prosthesis, surgical procedures, surgeon. Furthermore, 9 key steps were followed to investigate the outbreak: case definition (step 1), search for new SSI cases (step 2); confirmation of the outbreak (step 3); analysis of SSI cases by London Protocol (step 4); analysis of the cohort data (step 5); inspections in the surgical ward (step 6); qualitative and quantitative reports sent to the neurosurgical departments (step 7); continuing with active surveillance (stage 8); announcement of research findings (step 9). **Results:** The outbreak was confirmed: SSI incidence in the pre-epidemic period (January–May 2018) was 0 of 218 (0%); in the epidemic period (June–October 2018), SSI incidence was 6 of 94 (6.4%) ($P < .001$). We identified 3 SSI etiologic agents: 2 *Klebsiella pneumoniae*, 2 *S. aureus*, and 1 *Serratia marcescens*. It was unlikely that there was a common source for the outbreak. We identified the following risk factors: second or third hospital admissions (RR, 3.7; $P = .041$), and preoperative hospital length of stay: SSI patients (4.3±5.7 days) versus control patients (0.7 ± 2.1 days) ($P = .048$). None of the surgeons presented an SSI rate significantly different from each other. We used the London protocol to identify antibiotic prophylaxis failures in most cases. **Conclusions:** New cases of infections can be prevented if the length of preoperative hospital stay becomes as short as possible and, most importantly, if antibiotic prophylaxis does not fail.

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