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**Session:** 66. Public Health: Epidemiology and Outbreaks  
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**Background.** Shiga toxin-producing *Escherichia coli* (STEC) infections are a major cause of foodborne illness and the principal cause of hemolytic-uremic syndrome (HUS). In November 2017, CDC and the US Navy responded to an outbreak of STEC illnesses in military recruits at the Marine Corps Recruit Depot in San Diego (MCRD). We investigated to determine the source of this outbreak and identify prevention and mitigation measures.

**Methods.** In October 2017, medical staff identified a high number of gastrointestinal (GI) illnesses at MCRD. Recruits with diarrhea submitted stool specimens for culture and/or culture-independent diagnostic testing (CIDT) for GI pathogens. We performed pulsed-field gel electrophoresis (PFGE) on culture isolates. Case-patients were defined as confirmed (PFGE-confirmed STEC infection matching outbreak strains), probable (diagnosis of HUS and/or CIDT evidence of STEC), or suspected (bloody diarrhea). We conducted environmental evaluations of dining facilities, training areas, and barracks. A case-control study was performed using PFGE-confirmed case-patients and platoon-matched controls. We performed product traceback for foods identified as exposure risks by interview or case-control study.

**Results.** We identified 64 confirmed, 105 probable, and 91 suspected case-patients. Thirty case-patients required hospitalization and 15 had HUS. Ages ranged from 17 to 28 years (median: 18 years). Poor hygiene practices among recruits and inconsistent cooking temperatures within dining facilities were noted. Forty-three case-patients and 135 controls were interviewed about food, hygiene, and environmental exposures. Consumption of undercooked beef was significantly associated with illness (mOR 2.40, CI 1.04–5.72,  $P = 0.04$ ). We identified a single ground beef supplier for MCRD, but dining facility records did not document the dates on which specific lots of ground beef were used.

**Conclusion.** Case-control analysis and environmental observations suggested undercooked ground beef as a potential source for this outbreak. We recommended the Navy and Marine Corps retain lot information, address food handling concerns, and improve hygiene among recruits.

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#### 679. Mass-Scale Post-Hurricane Sheltering of Evacuees From Hurricane Harvey: Infectious Disease Surveillance and Prevention: Dallas County, Texas, 2017

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**Background.** The record rainfall following Hurricane Harvey's landfall along the Texas coast on August 25, 2017 caused prolonged, widespread flooding, which devastated Houston and areas along the southern Gulf Coast. With shelters in Houston at capacity, residents from adjacent affected regions were evacuated elsewhere, and Dallas received over 3,800 evacuees at a single convention center shelter. Approaches to infectious disease surveillance and prevention in this mega-shelter setting were assessed and refined during the response.

**Methods.** Teams of epidemiologists and medical students reviewed all clinical records daily from the on-site, 24/7 walk-in medical clinic, which was staffed by local volunteer physicians. Demographic data, chief complaints, and diagnosis for each patient visit were reviewed, and daily aggregate summaries of visits for potential communicable disease symptoms were compiled. An additional infection control team consisting of health department staff and volunteer hospital infection preventionists implemented aggressive infection prevention measures in the shelter and clinic.

**Results.** Of the evacuees registered at this mass-scale shelter, 92% were from counties outside of Houston and 36% were 18 years of age or younger. During the shelter's 23 days of operation, the shelter medical clinic received a cumulative volume of 2,654 clinic visits from 1,560 evacuees. The most common reasons for clinic visits included: need for medication refills (27.2%); respiratory symptoms (18.8%); and skin-related complaints (8.6%). Isolated cases of scabies, lice, norovirus, and influenza were confirmed, with no outbreak transmission of communicable diseases reported in the shelter.

**Conclusion.** The need for acute-care medical services and resources at a central shelter location was highlighted by the high proportion (40%) of evacuees seeking care

at least once at the shelter medical clinic. The 24/7 accessibility of this on-site medical clinic to evacuees additionally provided a reliable mechanism for daily syndromic surveillance for potential outbreaks of infectious disease in a large shelter. Given the challenges of mass-sheltering and provision of clinical care in non-residential structures, dedicated staffing with infection control expertise was critical in this shelter setting.

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#### 680. "There's More to This Than Meets the Eye": Opportunities for Infection Prevention in Optometry Clinics

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**Background.** Los Angeles County Department of Public Health (LAC-DPH) investigated an outbreak of epidemic keratoconjunctivitis secondary to adenovirus between June and July 2017, and all cases were linked to a single optometry clinic. The LAC-DPH aimed to determine whether sub-optimal infection prevention practices used in the implicated clinic were commonplace within other local optometry clinics. The objective of this study was to understand infection prevention practices in optometry clinics within Los Angeles County.

**Methods.** LAC-DPH conducted a survey consisting of 17 questions related to infection prevention practices among a sample of optometry providers in the county. The survey was administered online (SurveyMonkey) via emails sent to a local optometric society's listserve and in-person at a local continuing education event for optometrists. The results were analyzed and are represented as percentages.

**Results.** There were 42 responses, 20 via the online survey (response rate 15%) and 22 via the in-person survey (response rate 22%). The majority worked in an optometry clinic: 77.5% ( $n = 31$ ). More than half had no written hand-hygiene policy (58.5%,  $n = 24$ ), 46.2% ( $n = 18$ ) did not wear gloves while examining patients with eye drainage and about half (48.7%,  $n = 18$ ) did not use droplet precautions for patients with respiratory symptoms. The vast majority used multi-dose eye-drop vials (92.5%,  $n = 37$ ) but more than 40% ( $n = 21$ ) did not discard the vial if the tip came into contact with conjunctiva. The majority (68.4%,  $n = 26$ ) used alcohol wipes with 70% isopropyl alcohol to disinfect tonometers, while 47.4% ( $n = 18$ ) used noncontact tonometers and 23.6% ( $n = 9$ ) used disposable tips (options for this question were not mutually exclusive).

**Conclusion.** Infection prevention practices in optometry clinics are sub-optimal and must be improved. All optometry clinics must have a hand-hygiene policy and discard multi-dose vials which come into contact with conjunctivae. While the evidence on the best disinfectant for tonometers is limited, commonly used disinfectants like 70% alcohol wipes or 3% hydrogen peroxide have been associated with adenovirus outbreaks. Current evidence suggests that infectious spread via tonometers can be prevented by using disposable covers or by disinfection with 1:10 diluted bleach.

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#### 681. Epidemiology and Outcomes of Patients with Carbapenem-Resistant Bloodstream Infection in United States Hospitals, 2010–2015

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**Background.** Carbapenem resistance (CR) in patients with Gram-negative (GN) bloodstream infections (BSI) presents a mounting therapeutic challenge. To gain a better understanding of CR among patients in US hospitals, we explored their characteristics and outcomes.

**Methods.** We performed a retrospective cohort analysis of consecutive adult patients (age  $\geq 18$  years) with a positive blood culture for GN pathogens (11 most prevalent pathogens reported in ~53,811 study patient samples), hospitalized in one of 181 institutions contributing microbiology data to the Premier Healthcare Database (October 2010–September 2015). We compared patients with CR vs. carbapenem-susceptible (CS) BSIs based on their characteristics and outcomes. Primary outcome was mortality, and secondary outcomes included post-index culture hospital and ICU lengths of stay (LOS), and likelihood of being discharged home.

**Results.** Of the ~53,811 study patient samples, 46,381 patients had a GN BSI, with the prevalence of CR occurring at 3.5% ( $n = 1,602$ ). Compared with patients with CS, those with CR were younger (mean/SD 60.4/17.1 vs. 67.4/16.4 years,  $P < 0.01$ ), more likely to be male (52.8% vs. 45.9%,  $P < 0.01$ ), black (22.7% vs. 17.7%,  $P < 0.01$ ), and had Medicaid as a payor (18.1% vs. 10.9%,  $P < 0.01$ ). The mean/SD Charlson Comorbidity Index was higher in CR than CS group (2.9/2.5 vs. 2.3/2.5,  $P < 0.01$ ). Crude mortality was also higher (20.6% vs. 9.7%,  $P < 0.01$ ) in the setting of CR than CS, as were unadjusted median (IQR) post-index culture hospital (9 [6, 15] vs. 7 [5, 10] days,  $P < 0.01$ ), and ICU (5 [2, 11] vs. 3 [2, 6] days,  $P < 0.01$ ) LOS. Patients with CR BSI were less likely to be discharged home than those with CS (32.7% vs. 53.8%,  $P < 0.001$ ).

**Conclusion.** Patients with CR BSIs have lower likelihood of surviving hospitalization or being discharged home, and longer post-index culture hospital and ICU LOS,