675. Current Physician Knowledge, Attitudes, and Clinical Practice Regarding Legionnaires’ Disease in the Aftermath of the Flint Water Crisis in Genesee County, Michigan
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Background. Legionnaires’ disease (LD) is a respiratory illness caused by the inhalation of aerosolized water contaminated with Legionella bacteria. For reasons not yet understood, the incidence of LD has steadily increased across the United States during the past 10 years. In 2014 and 2015, the City of Flint in Genesee County (GC), Michigan underwent a change in the city’s water source, which resulted in the third largest recorded LD outbreak in American history and over 100,000 residents being exposed to contaminated water. In order to reduce the incidence of LD in at-risk populations it is imperative that we evaluate and improve LD knowledge and clinical practice among healthcare personnel.

Methods. This investigation surveyed clinicians practicing in Genesee County who are also members of the Genesee County Medical Society (GCMS). A survey was designed to assess current clinical knowledge, attitudes, and practices related to LD, in addition to measuring the uptake and utility of the LD clinical guidelines. The survey and the LD clinical guidelines were distributed to all GCMS members over a 6-month period. Prompts to complete the survey using Qualtrics programming were emailed to GCMS members and posted in the GCMS monthly bulletin. In addition, surveys were distributed to members at GCMS meetings. Completed responses were entered into Qualtrics software and exported into MS Excel and SPSS statistical software for analysis.

Results. In total, 95 healthcare personnel responded. Of those surveyed, 79.5% have been in practice for more than 10 years and 55% identified as practicing in family, internal medicine, or pediatrics. GCMS members and posted in the GCMS monthly bulletin. In addition, surveys were distributed to members at GCMS meetings. Completed responses were entered into Qualtrics software and exported into MS Excel and SPSS statistical software for analysis.

Conclusion. This survey underscores the continuing need for comprehensive physician education to improve the clinical recognition and evaluation of patients with LD.

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676. Using a Multisectoral One Health Approach to Prioritize Zoonotic Diseases in the United States
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Background. Emerging and endemic zoonoses continue to have adverse global impacts on health, agriculture, and the economy. One Health approaches promoting multisector, transdisciplinary collaboration are important methods to address zoonoses through disease surveillance, prevention, control, and response. We conducted a One Health Zoonotic Disease Prioritization (OHZDP) workshop in the United States (US) to identify zoonotic diseases of greatest national concern that should be jointly addressed by the Centers for Disease Control (CDC), US Department of Agriculture (USDA), and the Interior, and partners.

Methods. We used CDC’s OHZDP tool to prioritize zoonoses. Workshop participants selected criteria for prioritization, and developed questions and weights for each criterion. Questions were answered using available literature and expert opinion with subsequent scoring resulting in a ranked zoonotic disease list. After agreeing on a final prioritized disease list, participants used components of the One Health Systems Mapping and Analysis Resource Toolkit, developed by USDA and University of Minnesota, to review multidisciplinary coordination processes for the prioritized zoonotic diseases.

Results. Participants selected epidemic or pandemic potential, disease severity, economic impact, introduction or increased transmission potential, and national security as criteria to prioritize 56 zoonoses. The eight prioritized zoonotic diseases for the US were zoonotic influenza, salmonellosis, West Nile virus, plague, emerging coronaviruses (e.g., SARS, MERS), rabies, brucellosis, and Lyme disease. Agencies then discussed recommendations to enhance One Health approaches to surveillance, response, prevention, and control of the prioritized zoonoses. Key themes and next steps for further implementation of One Health approaches were identified.

Conclusion. This OHZDP workshop represents the first use of a One Health approach to zoonotic disease prioritization in the United States. It is a critical step forward in US government agency collaboration using One Health approaches. Further, the workshop created a foundation for future US government One Health systems strengthening for the prioritized zoonoses.

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678. Outbreak of Shiga Toxin-Producing Escherichia coli Infections at Marine Corps Recruit Depot (MCRD), San Diego and Camp Pendleton, California: October–November, 2017
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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, military staff identified a high number of gastrointestinal (GI) illnesses among recruits. RBD received 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-strains were defined as confirmed (PFGE-confirmed STEC infection matching outbreak strain) and potential (CIDT evidence of HUS and/or 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 devas-
tated Houston and 36% were 18 years of age or younger. During the 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 respiratory (35.7%), skin-related complaints (69.1%), 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 surveil-

ance for potential outbreaks of infectious disease in a large shelter. Given the chal-

lenges 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 optom-

etry 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 local optomet-

ricts' listserve and in-person at a local continuing education event for optom-

trists. The results were analyzed and represented as percentages.

Results. There were 42 respondents. The online survey response rate (16%) was 52% vs. 41% (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 dis-

card used contact vials which come into contact with conjunctiva. 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 pre-

vented 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 char-

acteristics and outcomes.

Methods. We performed a retrospective cohort analysis of consecutive adult patients (age ≥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 19 hospitals contributing observational data to the Healthcare Cost and Utilization Project Database (October 2010–September 2015). We compared patients with CR vs. carbapenem-sus-
ceptible (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, 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 payer (18.1% vs. 10.9%, P < 0.01). The mean/SD Charlson Comorbidity Index was higher in CR group 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, while mortality among CR patients post-index culture hospital (6 [6] vs. 6 [8], P = 0.01) and ICU (5 [2, 11] vs. 3 [2, 6], 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 hospitaliza-
tion or being discharged home, and longer post-index culture hospital and ICU LOS,