

(17% vs. 7%, $P = 0.02$), to be hospitalized (92% vs. 54%, $P < 0.01$), and to die (20% vs. 4%, $P < 0.01$).

Conclusion. This is the first review of patients with noninvasive *Lm* using US LI surveillance data. Patients with invasive *Lm* were older and more likely to be associated with an outbreak, hospitalization, or death when compared with patients with noninvasive *Lm*. The reasons that patients with noninvasive *Lm* have a less severe clinical course are not well understood; however, the frequency of hospitalizations and deaths in patients with noninvasive isolates indicates their clinical relevance and public health significance.

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657. Changes in Incidence of Pediatric Hemolytic Uremic Syndrome and Associated Shiga Toxin-producing *E. coli* Infections, FoodNet, 2006–2014

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Background. Post-diarrheal, pediatric hemolytic uremic syndrome (D+HUS) is a sequela of Shiga toxin-producing *Escherichia coli* (STEC) infection and is a common cause of acute kidney failure among US children. The Foodborne Diseases Active Surveillance Network (FoodNet) conducts surveillance in ten sites for physician-diagnosed D+HUS through a network of nephrologists and hospital discharge data review to estimate illness and corroborate STEC surveillance trends. The incidence of pediatric STEC overall in FoodNet sites has increased 18% from 2006 to 2014 while the incidence in STEC O157 has decreased by 28%.

Methods. We summarized data on D+HUS cases, defined as HUS in children <18 years, reported to FoodNet during 2006–2014. We examined changes in incidence rates using US census data. Population density was defined by the United States Department of Agriculture Rural-Urban continuum codes.

Results. During 2006–2014, 719 D+HUS patients were reported, resulting in 13 (1.8%) deaths. The average annual incidence was 0.72 cases/100,000 children which varied by site (range: 0.39–1.28). Incidence was 5-fold greater among patients aged 1–3 years (2.34) than in other age groups (0.44). Incidence rates/100,000 children (IR) were highest among females (0.81) and non-Hispanics (0.70). IRs were higher in rural counties (1.15) than in urban counties (0.64). Comparing 2006–2008 with 2012–2014, average incidence decreased by 19%, from 0.81 to 0.66, with the greatest decreases found in children aged 1–3 years (35%, $P = 0.04$). No laboratory testing was performed for 10 (1%) cases. The proportion of cases with laboratory evidence of STEC infection increased 15 percentage points, from 69% in 2006–2008 to 84% in 2012–2014. In total, 537 (75%) D+HUS patients had laboratory evidence of STEC infection, 432 (80%) were culture-confirmed; the most common serogroups were O157 (94%), O111 (1.4%) and O121 (1.2%).

Conclusion. During 2006–2014 cases of D+HUS decreased and showed marked demographic and geographic differences. The increased number of D+HUS cases with laboratory evidence of STEC is likely in part due to improvements in testing and adherence to guidelines. Prevention strategies for STEC and D+HUS should focus on young children, particularly in rural areas.

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658. Brucellosis Outbreaks Associated with Domestic Consumption of Legally Imported Unpasteurized Goat Cheese—Dallas County, Texas, 2016

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Background. *Brucella* infections associated with travel to endemic countries or imported unpasteurized dairy products continue to present public health challenges in the United States. Although less than 6 brucellosis cases are typically reported annually in Dallas County, a record of 25 brucellosis cases were diagnosed in 2016, primarily due to large outbreaks from imported unpasteurized cheese.

Methods. In 2016, all *Brucella* clinical isolates one isolate from cheese were confirmed as *B. melitensis* by PCR and biochemical testing in the Dallas County laboratory. Case interviews and medical chart reviews were conducted to determine exposures and illness characteristics. Supplemental questionnaires were administered to assess knowledge and practices relevant to brucellosis and pasteurization.

Results. In 2016, 20 confirmed and 5 probable brucellosis cases were reported in Dallas County. Twenty cases, including 2 residents in an adjacent county, were associated with one of 3 separate epidemiologic clusters linked to unpasteurized goat cheese purchased in Mexico, legally imported for personal use, and distributed domestically to friends and relatives. Of the 27 cases, all were Hispanic, 22% were less than 18 years of age (median age 39 years), 67% were male, and only 59% had recent international travel. Although 50% of interviewed adults demonstrated an understanding of pasteurization, 67% were unaware that the consumed cheese was unpasteurized, and 92% were unaware of any health risks associated with consuming unpasteurized cheese. All adults cited economic consequences of their illness, such as missing work (median 31 days) or significant medical costs (median \$4,000).

Conclusion. These findings highlight the need to improve awareness about the health risks associated with consuming unpasteurized dairy products. Public health and healthcare providers should consider that brucellosis can occur in persons without travel history or who are unaware that they consumed unpasteurized food. Active public health follow-up conducted for these brucellosis clusters ensured: education of exposed persons with low English literacy rates, prompt referral of symptomatic patients to clinical care, and notification of evaluating clinicians and laboratories of a suspected diagnosis.

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660. International Importations of Measles Virus into the United States during the Post-Elimination Era, 2001–2015

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Background. Measles is a highly contagious vaccine-preventable disease that can lead to serious complications. Although measles was declared eliminated from the United States in 2000, measles cases and outbreaks continue to occur each year as a result of importations of the disease from countries in which it remains endemic. We describe the epidemiology of importations of measles virus into the US during the post-elimination era.

Methods. Measles is nationally notifiable in the USA and local and state health departments report confirmed measles cases to the Centers for Disease Control and Prevention (CDC). A case is considered internationally imported if at least some of the exposure period (7–21 days before rash onset) occurred outside of the USA, rash onset occurred within 21 days of entering the USA, and there was no known exposure to measles in the US during that time. We describe the demographic characteristics, source regions, and vaccination status of measles importations during 2001–2015.

Results. From 2001 to 2015, 2,012 measles cases were reported to CDC; 535 (27%) were imported. A median of 28 importations occurred each year (range: 18–80). The median age of imported cases was 18 years (range: <1–75 years), 50% were male, 87% were unvaccinated or had unknown vaccination status, and 63% reported travel to countries in the Western Pacific and European Regions of the World Health Organization during their exposure periods. Half of all imported cases had rash onset between January and April. Overall, 62% ($n = 332$) of importations occurred among US residents, varying from a low of 37% in 2001 to a high of 89% in 2014. One imported case occurred among a US resident too young to be vaccinated, and 15 (5%) occurred among US residents born before 1957 (presumed immune from natural disease), and thus were not vaccine preventable.

Conclusion. Importations of measles virus will continue to occur as long as measles remains endemic in many parts of the world. In the post-elimination era in the US, the majority of importations were among US residents, almost all of which were vaccine preventable. Our findings emphasize the importance of measles vaccination of individuals aged ≥ 6 months prior to international travel, per ACIP recommendations, and of supporting global measles control efforts.

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661. Burden of Influenza-like Illness Among Military Personnel Receiving Advanced Training at Ft. Sam Houston, TX

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Background. Influenza-like illness (ILI) places a significant burden on operational readiness in the U.S. military, particularly in trainees who live and work