Update on Emerging Infections: News From the Centers for Disease Control and Prevention

Commentator
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Editor's note: *This article is part of a regular series on emerging infection from the Centers for Disease Control and Prevention (CDC) and the EMERGEncy ID NET, an emergency department–based and CDC-collaborative surveillance network. Important infectious disease public health information with relevance to emergency physicians is reported. The goal of this series is to advance knowledge about communicable diseases in emergency medicine and foster cooperation between the front line of clinical medicine and public health agencies.*

Increase in Measles Cases—United States, January 1–April 26, 2019

[Centers for Disease Control and Prevention. Increase in measles cases—United States, January 1–April 26, 2019. *MMWR Morb Mortal Wkly Rep.* 2019;68:402-404.]

As of April 26, 2019, the Centers for Disease Control and Prevention (CDC) had reported 704 cases of measles in the United States since the beginning of 2019, representing the largest number of cases reported in the country in a single year since 1994, when 963 cases occurred, and since measles was declared eliminated in 2000.[1,2] Measles is a highly contagious, acute viral illness characterized by fever and a maculopapular rash; complications include pneumonia, encephalitis, and death. Among the 704 cases, 503 (71%) were in unvaccinated persons and 689 (98%) occurred in US residents. Overall, 66 patients (9%) were hospitalized. Thirteen outbreaks have been reported in 2019, accounting for 663 cases, 94% of all reported cases. Six of the 13 outbreaks were associated with underimmunized close-knit communities and accounted for 88% of all cases. High 2-dose measles vaccination coverage in the United States has been critical to limiting transmission.[3] However, increased global measles activity poses a risk to US elimination, particularly when unvaccinated travelers acquire measles abroad and return to communities with low vaccination rates.[4] Health care providers should ensure persons are up to date with measles, mumps, and rubella (MMR) vaccine, including before international travel, and rapidly report all suspected cases of measles to public health authorities.

Measles cases are classified according to the Council of State and Territorial Epidemiologists' case definition for measles.[5] Cases are considered to be internationally imported if at least part of the exposure period (7 to 21 days before rash onset) occurred outside the United States and rash occurred within 21 days of entry into the United States, with no known exposure to measles in the United States during the exposure period. An outbreak of measles is defined as a chain of transmission of 3 or more cases linked in time and place and is determined by local and state health department investigations.

During January 1 to April 26, 2019, a total of 704 measles cases were reported in 22 states; the highest number of weekly cases (87) was reported during the week ending March 23. Median patient age was 5 years (interquartile range 1 year to 18.5 years). Twenty-five patients (4%) were younger than 6 months; 68 (10%) were aged 6 to 11 months; 76 (11%), 12 to 15 months; 167 (24%), 16 months to 4 years; 203 (29%), 5 to 19 years; 138 (20%), 20 to 49 years; and 27 (4%), 50 years or older. Among all measles patients, 503 (71%) were unvaccinated, 76 (11%) were vaccinated (received $\geq$1 MMR vaccine), and the vaccination status of 125 (18%) was unknown. Overall, 66 patients (9%) were hospitalized, and 24 (3%) had pneumonia. No deaths or cases of encephalitis were reported to CDC.

Of the 704 total cases, 663 (94%) were associated with outbreaks; 13 outbreaks have been reported in 2019. Outbreak-related cases have been reported in 12 states and New York City; multistate transmission was documented in 4 outbreaks. Six outbreaks were associated with underimmunized close-knit communities and accounted for 88% of all cases. New York State and New York City accounted for 474 (67%) of all cases reported in 2019 and have had ongoing transmission since October 2018.

Among the 704 cases, 689 (98%) occurred in US residents. Forty-four cases were directly imported from other countries, including 34 (77%) that occurred in US residents; 23 imports resulted in no known secondary cases. Among the 44 internationally imported measles cases, 40

(91%) were in unvaccinated persons or persons whose vaccination status was unknown; all 40 were age eligible for vaccination, including 2 infant travelers aged 6 to 11 months. Source countries included Philippines (14 cases), Ukraine (8), Israel (5), Thailand (3), Vietnam (2), and Germany (2), with one importation each from Algeria, France, India, Lithuania, Russia, and the United Kingdom. Four travelers went to multiple countries during their exposure period, including Italy and Singapore; Thailand and Cambodia; Ukraine and Israel; and Cambodia, Thailand, China, and Singapore. Among 245 cases (35%) for which molecular sequencing was performed, B3 and D8 were the only genotypes identified, which were the most commonly detected genotypes worldwide in the past 12 months.

DISCUSSION

Before 2019, the highest number of measles cases after elimination in the United States occurred in 2014, when 667 cases were reported; 383 of those cases (57%) were associated with an outbreak in an underimmunized Amish community in Ohio.[6] Worldwide, 7 million measles cases are estimated to occur annually, and since 2016, measles incidence has increased in 5 of the 6 World Health Organization regions,[7] contributing to increased opportunities for measles importations into the United States. Fortunately, the majority of importations do not lead to outbreaks because of rapid implementation of control measures by state and local health departments. Additionally, the United States benefits from a long-standing vaccination program, with overall measles vaccination coverage of greater than 91% in children aged 19 to 35 months.[8] However, unimmunized or underimmunized subpopulations within US communities are at risk for large outbreaks of long duration that are resource intensive to control.[9] Recent outbreaks have been driven by misinformation about measles and MMR vaccine, which has led to undervaccination in vulnerable communities.

Unvaccinated US residents traveling internationally are at risk for acquiring measles. Health care providers should vaccinate persons without contraindications and without acceptable evidence of immunity to measles before travel to any country outside the United States. Only written (not self-report) documentation of age-appropriate vaccination, laboratory evidence of immunity, laboratory confirmation of disease, or birth before 1957 is considered acceptable presumptive evidence of immunity. In addition to routine recommendations for MMR vaccination,[3] infants aged 6 to 11 months should receive 1 dose of MMR vaccine, and adults should receive a second dose before international travel[3]; infants who receive MMR vaccine before their first birthday should receive 2 additional doses (1 dose at 12 to 15 months and another dose at least 28 days after the first dose). Measles is a nationally notifiable disease in the United States; health care providers should rapidly report all cases of suspected measles to public health authorities to ensure that timely control measures are implemented. High coverage with MMR vaccine is the most effective strategy to limit transmission and maintain elimination of measles in the United States.

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COMMENTARY

[Ann Emerg Med. 2019;74:593-595.]

Despite high efficacy of MMR vaccines, measles caused 110,000 deaths worldwide in 2017.[1] Only 4 months into 2019, the United States has already faced 13 measles outbreaks across 22 states, with 66 patients requiring