Mumps: A Call for Vigilance

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ABSTRACT

Mumps, a viral infection affecting the parotid glands, was once a common childhood illness. After the introduction of the mumps vaccine, there was a significant decrease in reported cases. A resurgence in the number of outbreaks has been noted in the past 10 years. Individuals developing mumps are not limited to those who have not received the mumps vaccine, but include adolescents and young adults who have received 1 or 2 doses of mumps vaccine. Providers must be up to date on clinical presentation, other possible illnesses, proper diagnosis, treatment, and signs of developing complications to effectively treat individuals with mumps.

Keywords: complications, diagnosis, mumps, parotitis, treatment

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First described by Hippocrates in the fifth century BC, mumps is a viral infectious disease that historically was a common childhood illness.[1,2] The mumps vaccine, first licensed in 1967, has successfully decreased the number of cases to the point that mumps is no longer a frequently encountered disease.[3,4] Before the mumps vaccine program, approximately 186,000 cases of mumps were reported each year in the United Stated.[3] Even with the sporadic clusters of reemergence, there has been a 99% decrease in the number of reported cases since the inception of the vaccination program.[3] As of December 2, 2017, there were 4,980 cases of mumps reported in 2017 in 48 states, making it a clinically relevant, if not prevalent, illness.[3] Although not a new illness, many health care providers may not have diagnosed or treated patients diagnosed with mumps. Here, we provide vital information to nurse practitioners so that they may adequately diagnose and treat mumps and remain vigilant in their surveillance of an old virus that continues to infect individuals today.

PATHOPHYSIOLOGY

Mumps is caused by a paramyxovirus, which is a single-strand RNA virus in the *Rubulavirus* genus in the family *Paramyxoviridae*, order Mononegavirales. Paramyxoviruses have a negative-sense nonsegmented RNA genome, which means they first must be transcribed into a positive-sense RNA that acts as an mRNA. It is an animal virus that is unable to replicate outside a living animal cell.[5] These viral particles spread to other organs through the circulatory and lymphatic systems. Two immune defenses attempt to control the spread of the virus. Circulating antibodies are generated to neutralize the virus, and a cell-mediated immune response occurs in the lymph nodes, spleen, and blood to destroy the virus attacking an individual.[6] The virus is spread by respiratory droplets, saliva, or fomites containing respiratory droplets or saliva.[7-9] Humans are the only natural host of the mumps virus.[7-9] Temporal analysis of seasonal variations in the transmission of mumps may indicate a peak of transmission in the spring.[4] The pathogenesis of the virus in the human body remains unclear.[10]

EPIDEMIOLOGY

Historically a young childhood illness, many patients currently being diagnosed with mumps are now school-age or college students.[3] Globally, there were more than 560,000 cases reported between 2005 and 2010.[11] In 2006, a multistate mumps outbreak in the United States, affected more than 6,500 college students clustering in the Midwest. In 2009 and 2010, 2 large outbreaks occurred, 1 in high school students in New York City and the other affecting school-age children in the US territory of Guam. From 2011 to

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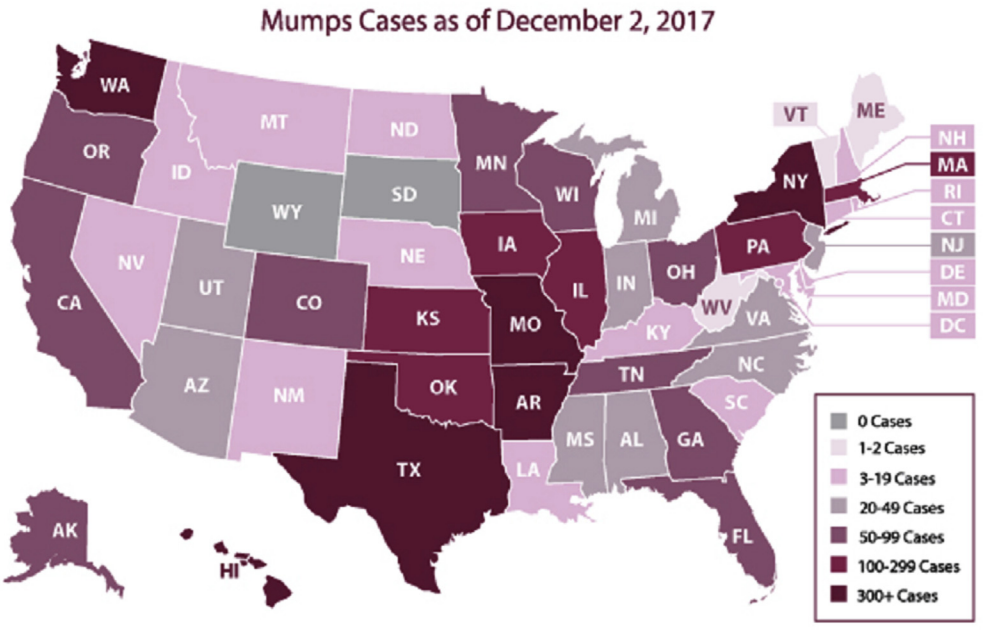
Figure 1. Mumps cases as of July 15, 2017. *Preliminary data reported to Centers for Disease Control and Prevention. Mumps outbreaks are not reportable.*

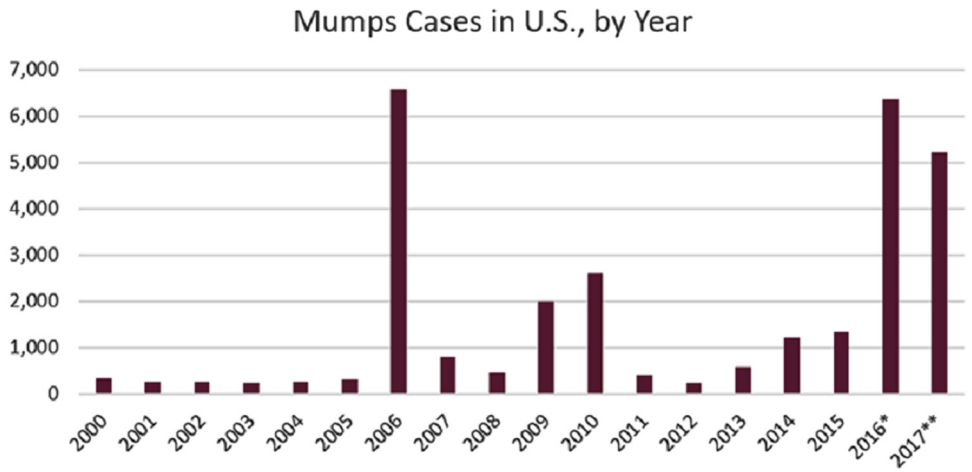


2016, there were outbreaks at universities in multiple states. Epidemics typically occur in locations where children and young adults gather, to include schools and military living areas. Figure 1 shows a current distribution of mumps in the United States, and Figure 2 provides an analysis of the number of cases per year in the United States since 2000.[3]

TRANSMISSION

Respiratory droplets or saliva containing the mumps virus enters through the nose or mouth, with an incubation period of 12–25 days.[3,10] Parotitis, the hallmark of mumps, typically develops between 16 and 18 days postexposure.[3,10] The mumps virus in excreted in the saliva 1 week before and up to 1 week

Figure 2. Mumps Cases in the United States by year.



Source: Morbidity and Mortality Weekly Report (MMWR), Notifiable Diseases and Mortality Tables.

* Case count is preliminary and subject to change.

**Cases as of July 15, 2017. Case count is preliminary and subject to change.

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