



**Date:** October 24, 2016  
**To:** CAHAN San Diego Participants  
**From:** Public Health Services, Immunization Program

### **Update #2: Mumps at Colleges and Universities**

This health advisory updates CAHAN participants on recent mumps cases reported on college and university campuses in San Diego and highlights increased mumps activity across the United States in 2016. Information is also provided on the clinical presentation, laboratory testing, and reporting of mumps.

#### **Background**

An undergraduate student at San Diego State University (SDSU) symptomatic with parotitis beginning on October 15 was recently confirmed to have mumps. Epidemiologic investigation determined a housemate who is also an SDSU student had probable mumps in late September. The two patients had not traveled outside the county and both were fully immunized with MMR vaccines as children.

Two other mumps cases have been reported in county residents with no travel history since the start of the school year: an [undergraduate at California State University San Marcos](#) (CSUSM) symptomatic with parotitis and orchitis beginning September 8 and an [individual at San Diego Christian College](#) (SDCC) symptomatic with parotitis starting on September 16. Both of these individuals were immunized with MMR vaccines as children.

There were no direct epidemiologic connections found between the two SDSU cases and the CSUSM and SDCC cases. There is also no apparent link between these cases and a young adult with confirmed mumps who may have [exposed others at the Casbah nightclub](#) at a concert on August 28. These cases indicate that mumps may be circulating in some college-age adults in San Diego County, although no specific campus has an identified mumps outbreak ([defined](#) as three or more mumps cases linked by time and place).

A total of 19 mumps cases have been reported in San Diego County to date this year. In prior years, three or fewer cases of mumps have been reported annually in the county, most associated with overseas travel.

A notable increase in mumps activity has been seen nationally in 2016, with 2,570 probable or confirmed mumps reported to Centers for Disease Control and Prevention (CDC) through October 15. This compares with 1,057 cases in all of 2015. There have been 20 mumps outbreaks this year, 18 of which occurred in university settings, including an [outbreak of 13 mumps cases](#) noted at the University of San Diego that ended in early April. Large outbreaks are currently ongoing in [northwestern Arkansas](#) (695 cases as of October 24) and in [central Oklahoma](#) (110 cases as of October 24). The median age of cases nationally is 21 years.

#### **Mumps Epidemiology and Clinical Symptoms**

Mumps virus is spread through infected respiratory tract secretions. It can be spread within three to six feet when an infected person coughs or sneezes, or with direct contact with infected secretions (e.g., sharing water bottles). The incubation period is typically 16 to 18 days but can range from 12 to 25 days. The disease is seasonal, with more cases noted in the late winter and early spring.

Parotitis is the most common symptom (30-65%), but non-specific symptoms such as myalgia, anorexia, malaise, headache, and low-grade fever may precede the parotitis by several days. Before vaccine was in use, 15-30% of infections were asymptomatic. Mumps is usually a mild illness, but there can be complications. Orchitis is a common complication occurring in as many as 50% of postpubertal males and may be the only symptom of mumps.

Central nervous system (CNS) involvement is also common, but fewer than 10% have symptoms of CNS infection. Other rare complications include arthritis, mastitis, glomerulonephritis, myocarditis, endocardial fibroelastosis, thrombocytopenia, cerebellar ataxia, transverse myelitis, ascending polyradiculitis, pancreatitis, oophoritis, and hearing impairment.

People are considered infectious from two days before symptoms begin until five days after the onset of parotid swelling. Therefore, those suspected of mumps should be isolated and should refrain from public activities for five days after the onset of swelling.

[Mumps vaccine](#) is highly effective in preventing mumps. One dose is 78% effective, and two doses are 88% effective. Protection appears to be long lasting; however immunity may wane and mumps cases do occur in vaccinated individuals. Individuals with one dose of MMR should receive a second dose of MMR, and those with two doses of MMR may benefit from a [third booster shot during outbreaks](#). Neither mumps vaccine nor immune globulin (IG) is effective for mumps post exposure prophylaxis; during an outbreak, a third MMR booster is recommended to further protect individuals in the event of future exposure to mumps.

More information is available at the [CDC mumps website](#) and the California Department of Public Health (CDPH) [mumps website](#), which has a [mumps investigation quicksheet](#) that was updated in March 2016.

### **Diagnosis**

Mumps virus is the only cause of epidemic parotitis. Parotitis – especially sporadic cases – [may be due to viruses other than mumps](#): Epstein-Barr virus, human herpesvirus B6, cytomegalovirus, parainfluenza virus types 1 and 3, influenza A virus, coxsackieviruses and other enteroviruses, lymphocytic choriomeningitis virus, and human immunodeficiency virus. Bacterial causes of parotitis include *Staphylococcus aureus* and nontuberculous *Mycobacterium*.

The preferred method for confirming acute mumps infection is detection of virus from a buccal specimen by PCR. Collection of a buccal specimen within 1 to 3 days of parotitis onset is optimal; however, virus may be detected for up to 9 days after parotitis onset. The parotid gland area (the space between the cheek and the teeth just below the ear) should be massaged for about 30 seconds prior to obtaining the specimen. Detailed specimen collection guidance is available at the [CDPH mumps website](#).

Acute mumps infection may also be laboratory confirmed by the presence of serum mumps IgM, a significant rise in IgG antibody titer in acute- and convalescent-phase serum specimens, or positive mumps virus culture. However, mumps IgM response may be attenuated or absent in vaccinated persons, making serologic confirmation difficult. In addition, studies have shown that individuals with detectable mumps IgG titers have still developed mumps infection. Serum for IgM testing should not be obtained earlier than three days after the onset of parotitis.

### **Actions Requested of Healthcare Providers**

- **Consider a diagnosis of mumps** in anyone (especially college students and international travelers) presenting with typical symptoms of mumps, regardless of vaccination history. Consider mumps in the differential diagnosis of orchitis, meningitis, encephalitis, pancreatitis, acute onset hearing loss, and other potential presentations of the disease, regardless of the presence of parotitis.
- **Use droplet and standard precautions** when caring for suspect or confirmed cases and verify that healthcare workers likely to encounter these patients are up-to-date on immunizations or have documented immunity.
- **Obtain appropriate clinical specimens.** For acutely ill patients who have been previously vaccinated, or who are part of an outbreak, **a buccal swab for PCR testing is preferred.** Care should be taken to [collect the specimen properly](#).

- **Isolate suspect and confirmed mumps cases** and instruct them not return to school, work, or other public places until five days after the onset of parotitis. Exposed healthcare providers, without presumptive evidence of immunity, will need to be excluded from work.
- **Report suspected cases before obtaining confirmatory lab results** by calling the Epidemiology Program at **619-692-8499** during business hours Monday through Friday, or **858-565-5255** after-hours on evenings & weekends.
- **Vaccinate** patients with MMR according to the CDC recommended schedules [for children](#) and [adults](#), including “catch-up” vaccination for those who are not up-to-date, especially travelers and individuals on local college and university campuses.

Thank you for your participation.

**CAHAN San Diego**

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