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TO: Student Health and Emergency Preparedness
Massachusetts Colleges and Universities

FROM: Susan M. Lett, MD, MPH
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RE: Mumps Update for Higher Education Student Health Services

An outbreak of mumps occurred during the spring of 2016 in Massachusetts, primarily among vaccinated college students. The Massachusetts Department of Public Health (MDPH) and local public health partners, particularly Cambridge Health Alliance and the Boston Public Health Commission, investigated **617** suspected cases of mumps from January through August, 2016. This is four times the number of mumps cases that are investigated during a normal year. Boston area colleges and universities responded to this outbreak using creative means and resources for isolating suspected cases of mumps, and discouraging activities which can spread mumps. Thank you for your efforts to control this unusual outbreak.

210 confirmed and probable mumps cases were identified from January 1 through August 31, primarily among college students in Greater Boston:

- 96% of confirmed and probable cases were in the Boston metropolitan area.
- 85% of the confirmed and probable cases had a link to higher education. Most were students with two documented doses of MMR vaccine. Only 15% of confirmed and probable cases did not have a link to colleges/universities. These data support the notion that spread from the college/university setting into the community is typically limited.

During the summer, very few mumps cases were identified, suggesting that transmission was interrupted significantly. However, there have been mumps cases identified among college students in Greater Boston as recently as the end of August and into September and October. So although the outbreak slowed for the summer, it may continue this fall.

Recommendations:

1. HCWs at student health facilities should consider mumps in patients with clinically-compatible symptoms, regardless of vaccination history, and are asked to report suspected cases to MDPH at 617-983-6800. Cases diagnosed in Boston should be reported to the Boston Public Health Commission at 617-534-5611.
2. Use droplet and standard precautions when caring for suspect or confirmed cases. Exposed healthcare providers, without presumptive evidence of immunity, will need to be excluded from work.
3. Obtain appropriate clinical specimens for testing at the Massachusetts State Public Health Laboratory. **A buccal swab is preferred** for patients with recent onsets (within five days of onset of swelling). The swab

must be in viral transport medium to be considered a satisfactory specimen for testing. Submit specimens with a thoroughly completed [specimen submission form](#) for each specimen type.

4. Suspected and confirmed mumps cases should be isolated for five days after onset of swelling, unless an alternative diagnosis is made. Onset of swelling is considered “day zero.” This step is extremely important to keep mumps from spreading. **Early isolation of suspected cases and social distancing are the most important prevention tools in a well-vaccinated population.**
5. Those without evidence of immunity to mumps should be vaccinated, and outreach should be made to those with medical and religious exemptions.

SYMPTOMS AND DIAGNOSIS

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 can range from 12 to 25 days. Parotitis (swelling of the salivary glands) 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. In the prevaccine era, 15-30% of infections were asymptomatic. Mumps is usually a mild illness, but there can be complications including meningitis, encephalitis, orchitis, oophoritis, mastitis, glomerulonephritis, myocarditis, arthritis, and hearing loss. 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.**

Diagnostic tests indicating mumps include viral isolation, a positive polymerase chain reaction (PCR) for mumps RNA, a four-fold or greater increase in anti-mumps IgG titer between acute and convalescent serum specimens, or a single positive serum IgM (a negative IgM in an immunized person does not rule out disease). Specimens can include buccal swab or blood. **The buccal swab is the preferred specimen when patients have recent onset of illness.** Buccal swabs should be obtained within five days of onset of symptoms, and sent in viral transport medium to the MA State Public Health Laboratory in Jamaica Plain for mumps PCR testing. 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.

A negative mumps PCR result should not be used to “rule out” mumps and release a patient from five days of isolation. According to the Centers for Disease Control and Prevention (CDC), only 30-35% of mumps PCR results are positive in patients with two doses of MMR vaccine. Successful detection of mumps virus depends primarily on the timing of collection and quality of the clinical sample. Vaccinated individuals may shed virus for a shorter period and might shed smaller amounts of virus. In addition, absence of a mumps IgM response in a vaccinated individual presenting with clinically compatible mumps symptoms does not rule out mumps as a diagnosis. Mumps IgM is only detected in 13-15% of vaccinated individuals.

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. Healthcare providers in Massachusetts should have presumptive evidence of immunity to mumps (two doses of MMR, or serologic evidence of immunity, or laboratory confirmed past disease). Healthcare providers should consider offering MMR vaccine to patients without evidence of immunity. Evidence of immunity includes documentation of laboratory confirmed mumps, one or more doses of MMR vaccine or birth in the U.S. before 1957 (except for healthcare workers). Patients with one dose of MMR should receive a second dose of MMR during outbreaks. Revisit vaccination with those who have had medical and religious exemptions in the past; vaccination may now be accepted.

For questions about mumps, please call 617-983-6800 and ask to speak with an epidemiologist. A mumps fact sheet is available at <http://www.mass.gov/eohhs/gov/departments/dph/programs/id/epidemiology/factsheets.html> in six languages. Additional information about mumps is available at the CDC website at <http://www.cdc.gov/mumps/about/index.html>

Report suspected cases to MDPH at 617-983-6800. Cases diagnosed in Boston should be reported to the Boston Public Health Commission at 617-534-5611.