MUMPS: THE NEXT OUTBREAK?
Paul Rega MD
Brian Fink PhD

The Seattle Times, February 10, 2015

“.... A mumps outbreak that started at the Moscow campus of the University of Idaho last fall has spread outside the area and now includes two cases in Washington state. Idaho health officials have reported 21 confirmed and probable cases, including six in the Boise, Idaho, region. The outbreak began in September and has continued to grow. The outbreak comes amid a growing measles outbreak that has sickened at least 121 people in 17 states and Washington, D.C., according to the Centers for Disease Control and Prevention....”

Objectives

• Discuss the epidemiology of mumps
• List the manifestations of mumps
• List the complications of mumps
• Discuss the risks vs. benefits of the mumps vaccine
2014

- 1,151 people in the United States have been reported to have mumps.
- Since November 2014, CDC has received reports of people with mumps, who are affiliated with professional hockey teams.

The Pre-Vaccine Era in the U.S.

- Over 150,000-200,000 mumps cases were reported every year
  - Many more unreported
- 20 to 30 deaths/year also
- Now, a few hundred cases of mumps are reported every year on average (e.g. 2013, 438 people from 39 states).
  - Why?
    - 1967: The first vaccine against mumps was licensed in the US
    - By 2005: Two-dose childhood vaccination coverage reduced disease rates by 99%
- Outbreaks still occasionally occur.

Recent outbreaks

- 2006: More than 6,584 people in the United States
  - Many cases occurring on college campuses.
- 2009: an outbreak started in close-knit religious communities and schools in the Northeast
  - More than 3,000 cases.
  - Index case: A boy traveled to Great Britain, where mumps cases were ongoing.
    - He returned to the US, went to a summer camp and became symptomatic
    - The virus spread within the camp
    - After camp ended, the disease spread primarily in schools and then into households.
Mumps outbreaks

- Can occur any time of year
- Often occur in winter and spring.
- A major factor contributing to outbreaks
  - Crowded environment
  - attending the same class
  - playing on the same sports team
  - living in a dormitory with a person who has mumps.

The virus

- A paramyxovirus of the genus Rubulavirus.

Transmission

- Droplets of saliva or mucus from the mouth, nose, or throat of an infected person
- Items or surfaces used or touched by an infected person and shared or touched by another (fomites).
- Most mumps transmission likely occurs before the salivary glands begin to swell and within the 5 days after the swelling begins.
Incubation period

- Mean: 16-18 days
- Range of 12–25 days.
- Persons with mumps are usually considered most infectious from 1-2 days before until 5 days after onset of parotitis.

Manifestations

- Fever
- Headache
- Muscle aches
- Tiredness
- Loss of appetite
- 40%–50% of mumps infections are associated with nonspecific or primarily respiratory symptoms, particularly among children less than 5 years of age
- Parotitis: Swollen and tender salivary glands (usually parotid) under the ears or jaw on one or both sides of the face

Parotitis

- In about 50%
- Usually lasts 7–10 days.
- Either unilateral or bilateral
- Develops about 16 to 18 days after exposure.
- Submandibular and sublingual glands in a small percentage.
- Nonspecific symptoms may precede parotitis by several days.
Complications

- Occasionally
- More common in people who have reached puberty.
- Orchitis: Inflammation of the testicles
  - Post-pubertal males (20–50%)
  - Rarely leads to sterility
- Oophoritis: Inflammation of the ovaries (5% post-pubertal females)
- Mastitis: Inflammation of the breast (30% post-pubertal females)
- Encephalitis: <2/100,000 cases and ~1% are fatal.
- Meningitis (15% of cases)

Mumps & pregnancy

- Mumps infection has not been associated with problems during pregnancy
- There are some reports of an increase in fetal loss associated with mumps infection during the first trimester.
- No evidence that mumps during pregnancy causes congenital malformations.

Prophylaxis

- The MMR (measles, mumps, and rubella) vaccine
  - Live, attenuated in embryonated chicken eggs
  - Two doses of mumps vaccine are 88% (range: 66-95%) effective at preventing the disease;
  - One dose is 78% (range: 49%–92%) effective.
- Should be routinely given when children are 12-15 months old
- A second dose should be given when they are 4-6 years old.
  - Two doses: More effective than one against mumps
- All adults born during or after 1957 should have documentation of one dose.
- Adults at higher risk (university students; health care personnel; international travelers; persons with potential mumps outbreak exposure) should have documentation of two doses of mumps vaccine or other proof of immunity to mumps.
### MMR vaccine side-effects  
(Measles, Mumps, and Rubella)

- What are the risks from MMR vaccine?
  - A vaccine, like any medicine, is capable of causing serious problems
  - The risk of MMR vaccine causing serious harm, or death, is extremely small.
  - Getting MMR vaccine is much safer than getting the disease.
  - Most people who get MMR vaccine do not have any serious problems with it.
- Mild Problems
- Moderate Problems
- Severe Problems (Very Rare)

### Mild Problems

- Fever (up to 1 person out of 6)
- Mild rash (about 1 person out of 20)
- Swelling of glands in the cheeks or neck (about 1 person out of 75)
- If these problems occur, it is usually within 7-12 days after the shot. They occur less often after the second dose.

### Moderate Problems

- Febrile seizures (about 1 out of 3,000 doses)
  - Usually 5-12 days after the first dose.
  - They happen less often when MMR and varicella vaccines are given at the same visit as separate shots
- Temporary pain and stiffness in the joints
  - Mostly in teenage or adult women (up to 1 out of 4)
- Thrombocytopenia
  - Low platelet count
  - Temporary
  - About 1 out of 30,000 doses
Severe Problems (Very Rare)

- Serious allergic reaction
  - Less than 1 out of a million doses
- Deafness
- Long-term seizures, coma, or lowered consciousness
- Permanent brain damage
- These are so rare that it is hard to tell whether they are caused by the vaccine.

Some people should not get MMR vaccine or should wait till later.

- Anyone who has ever had a life-threatening allergic reaction to the antibiotic neomycin, or any other component of MMR vaccine
- Anyone who had a life-threatening allergic reaction to a previous dose of MMR or MMRV vaccine
- Some people who are sick at the time the shot is scheduled may be advised to wait until they recover before getting MMR vaccine.
- Pregnant women should not get MMR vaccine.
  - Pregnant women who need the vaccine should wait until after giving birth.
  - Women should avoid getting pregnant for 4 weeks after vaccination with MMR vaccine.
- Has HIV/AIDS, or another disease that affects the immune system
- Being treated with drugs that affect the immune system, such as steroids
- Cancer & cancer therapy
- Low platelet count (a blood disorder)
- Received another vaccine within the past 4 weeks
- Recent blood transfusion or received other blood products

What children should not get MMRV vaccine?

- A life-threatening allergic reaction to a previous dose of MMRV vaccine, or to either MMR or varicella vaccine.
- A life-threatening allergic reaction to any component of the vaccine, including gelatin or the antibiotic neomycin. Tell the doctor if your child has any severe allergies.
- HIV/AIDS, or another disease that affects the immune system.
- Being treated with drugs that affect the immune system, including high doses of oral steroids for 2 weeks or longer.
- Have any kind of cancer & being treated for cancer with radiation or drugs.
- Check if history of seizures in child or child’s family
Sources