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Mumps in Kodiak

Between February 3 and June 27, 1995, 10 persons in Kodiak developed mumps. Each had pre-auricular swelling; two persons had orchitis. Seven of the persons were between 4- and 6-years of age, the others were ages 25, 48, and 50 years. Each of the seven children had been vaccinated with one dose of measles-mumps-rubella (MMR) vaccine at 15-21 months of age. Two of the children were siblings, and the three adults lived on the same block. No other epidemiologic links between the cases have been identified. Children had been vaccinated with different vaccine lots.

Diagnostic testing established that illness was due to mumps virus. Five of the children had serologic tests which were positive for mumps IgG antibody. This result may be due to either vaccination or infection. One of the children had a positive test for mumps IgM antibody (the others were not tested for mumps IgM). If accurate, such a result confirms recent mumps infection--however, mumps IgM testing is not approved by the U.S. Food and Drug Administration and may be subject to false-positive results from other recent viral infections, including parainfluenza virus type 3.

Because the above results were not definitive, we conducted supplemental serologic tests. Convalescent sera (drawn 4 to 14 weeks after illness onset) had reciprocal mumps IgG titers by indirect fluorescent antibody testing ranging from 1024 to 8192. By comparison, the usual reciprocal titers seen after MMR vaccination are between 16 and 64. In addition, two sera obtained within 7 days of illness onset were positive for both mumps IgG (titers of 1024 and 4096) and IgM (titers of 40 and 640). The acute specimen with a mumps IgG titer of 4096 had a parainfluenza virus type 3 IgG titer of 512. The lower parainfluenza virus type 3 titer indicated that illness was likely due to mumps, and that the parainfluenza virus type 3 result was from a cross reaction. Only two pair of acute and convalescent sera were available for testing; one pair (drawn 4 days and 6 weeks after illness onset) had reciprocal mumps IgG titers of 4096. However, the other pair (drawn 8 days and 4 weeks after illness onset) increased from a titer of 2048 to 8192.

Throat swabs from four of the ill persons and urine specimens from two have been cultured for viruses at the State Public Health Laboratory. To date, all results are negative.

Mumps is an acute viral infection caused by a paramyxovirus and is characterized by fever and swelling of the salivary glands. Up to one-third of infections are asymptomatic. Orchitis is a common complication among post-pubertal males but rarely causes sterility. Meningeal irritation may be found in 10 - 30% of cases although frank encephalitis is uncommon. Humans are the only known natural hosts, and infection is spread via the respiratory route. Persons generally are infectious for 1 to 2 days before the onset of parotid gland swelling until 5 to 9 days after onset. The usual incubation period is 16 to 18 days, although illness is sometimes seen as soon as 12 days or as long as 25 days after exposure. More than 95% of persons receiving one dose of MMR vaccine develop solid, long lasting immunity.

Mumps outbreaks have been known to occur in highly vaccinated populations, suggesting that mumps transmission is sustainable among the few persons who are not protected by vaccine. The occurrence of a relatively small number of cases among vaccinated children in Kodiak reflects both the high proportion of Alaska children who have been vaccinated and the underlying vaccine efficacy (>95%).

#### Recommendations:

1. MMR vaccine should be administered to any previously unvaccinated person 1 year of age or older. Persons born before 1957 can be considered immune and generally do not need to be vaccinated. However, some persons received killed virus mumps vaccine between 1950 and 1978; these persons may benefit from a dose of MMR. Persons who are unsure of their disease or vaccination status should be offered vaccine. Contraindications include pregnancy and immune suppression.
2. Health-care providers who see patients with mumps-like illness from communities not currently known to have a mumps outbreak should obtain specimens to confirm (or rule-out) the diagnosis. The following should be obtained while the patient is acutely ill: throat swab (placed in viral transport media), urine (clean catch in a sterile container), and serum (2-3 cc). A convalescent serum should be obtained 2-3 weeks later. Contact the Section of Epidemiology at 561-4406 for additional instructions.
3. Possible cases of mumps should be reported to the Section of Epidemiology at 561-4406.

(Thanks to the Kodiak physicians for reporting these cases and to the Public Health Nurses for assistance in the investigation. Contributed by Michael Beller, MD, MPH, Section of Epidemiology.)