Texas Preventable Disease NEWS

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contents:

**Bureau of Disease Control and Epidemiology,
1100 West 49th Street, Austin, Texas 78756 (512-458-7455)**

ACIP: MUMPS PREVENTION--PART I*

This revised Immunization Practices Advisory Committee (ACIP) recommendation on mumps vaccine updates the 1982 recommendation. Changes include: a discussion of the evolving epidemiologic characteristics of mumps, introduction of a cutoff of 1957 as the oldest birth cohort for which mumps vaccination is routinely recommended, and more aggressive outbreak-control measures. Although there are no major changes in vaccination strategy, these revised recommendations place a greater emphasis on vaccinating susceptible adolescents and young adults.

INTRODUCTION

Mumps Disease

Mumps disease is generally self-limited, but it may be moderately debilitating. Naturally acquired mumps infection, including the estimated 30% of infections that are subclinical, confers long-lasting immunity.

Among the reported mumps-associated complications, strong epidemiologic and laboratory evidence for an association with meningoencephalitis, deafness, and orchitis has been reported. Meningeal signs appear in up to 15% of cases. Reported rates of mumps encephalitis range as high as five cases per 1,000 reported mumps cases. Permanent sequelae are rare, but the reported encephalitis case-fatality rate has averaged 1.4%. Although overall mortality is low, death due to mumps infection is much more likely to occur in adults; about half of mumps-associated deaths have been in persons ≥20 years old. Sensorineural deafness is one of the most serious of the rare complications involving the central nervous system (CNS). It occurs with an estimated frequency of 0.5-5.0 per 100,000 reported mumps cases. Orchitis (usually unilateral) has been reported as a complication in 20%-30% of clinical mumps cases in postpubertal males. Some testicular atrophy occurs in about 35% of cases of mumps orchitis, but sterility rarely occurs. Symptomatic involvement of other organs has been observed less frequently. There are limited experimental, clinical and epidemiologic data that suggest permanent pancreatic damage may result from injury caused by direct viral invasion. Further research is needed to determine whether mumps infection contributes to the pathogenesis of diabetes mellitus. Mumps infection during the first trimester of pregnancy may increase the rate of spontaneous abortion (reported to be as high as 27%). There is no evidence that mumps during pregnancy causes congenital malformations.

Epidemiology

Following the introduction of the live mumps virus vaccine in 1967 and recommendation of its routine use in 1977, the incidence rate of reported mumps cases decreased steadily in the US. In 1985, a record low of 2,982 cases was reported, representing a 98% decline from the 185,691 cases reported in 1967. However, between 1985 and 1987, a relative resurgence of mumps occurred, with 7,790 cases reported in 1986 and 12,848 cases in 1987. During this three-year period, the annual reported incidence rate rose almost five-fold, from 1.1 cases per 100,000 population to 5.2 cases per 100,000 population. In 1988, a provisional total of 4,730 cases was reported, representing a 62% decrease from 1987.

As in the prevaccine era, the majority of reported mumps cases still occur in school-aged children (5-14 years of age). Almost 60% of reported cases occurred in this population between 1985 and 1987, compared with an average of 75% of reported cases between 1967 and 1971, the first five-year period postlicensure. However, for the first time since mumps became a reportable disease, the reported peak incidence rate shifted from 5- to 9-year- olds to older age groups for

*CDC. MMWR 1989;38(22):388-92, 397-400.

two consecutive years (1986 and 1987). Persons ≥15 years of age accounted for more than one third of the reported total between 1985 and 1987; in 1967-1971, an average of only 8% of reported cases occurred among this population. Although reported mumps incidence increased in all age groups from 1985 to 1987, the most dramatic increases were among 10- to 14-year-olds (almost a sevenfold increase) and 15- to 19-year-olds (more than an eightfold increase).

The increased occurrence of mumps in susceptible adolescents and young adults has been demonstrated in several recent outbreaks in high schools and on college campuses and in occupational settings. Nonetheless, despite this age shift in reported mumps, the overall reported risk of disease in persons 10-14 and ≥15 years of age is still lower than that in the prevaccine and early postvaccine era.

Consistent with previous findings, reported incidence rates are lower in states with comprehensive school immunization laws. The District of Columbia and 14 states that routinely reported mumps cases in 1987 had comprehensive laws that require proof of immunity against mumps for school attendance from kindergarten through grade 12 (K-12). In these 15 areas, the incidence rate in 1987 was 1.1 mumps cases per 100,000 population. In contrast, among the other states that routinely reported mumps cases in 1987, mumps incidence was highest in the 14 states without requirements for mumps vaccination (11.5 cases per 100,000 population), and intermediate (6.2 cases per 100,000 population) in the 18 states with partial vaccination requirements for school attendance (ie, those that include some children but do not comprehensively include K-12). Furthermore, the shift in age-specific risk noted above occurred only in states without comprehensive K-12 school vaccination requirements.

Both the shift in risk to older persons and the relative resurgence of reported mumps activity noted in recent years are attributable to the relatively underimmunized cohort of children born between 1967 and 1977. There is no evidence of waning immunity in vaccinated persons. During 1967-1977, the risk of exposure to mumps declined rapidly even though vaccination of children against mumps was only gradually being accepted as a routine practice. Simultaneously, mumps vaccine coverage did not reach levels >50% in any age group until 1976 (5- to 9-year-olds); in persons 15-19 years old, vaccine coverage did not reach these levels until 1983. This lag in coverage relative to measles and rubella vaccines reflects the lack of an ACIP recommendation for routine mumps vaccine until 1977 and the lack of emphasis in ACIP recommendations on vaccination beyond toddler age until 1980. These facts and the observed shift in risk to older persons in states without comprehensive mumps immunization school laws provide further evidence that a failure to vaccinate, rather than vaccine failure, is primarily responsible for the recently observed changes in mumps occurrence.

MUMPS VIRUS VACCINE

A killed mumps virus vaccine was licensed for use in the US from 1950 through 1978. This vaccine induced antibody, but the immunity was transient. The number of doses of killed mumps vaccine administered between licensure of live attenuated mumps vaccine in 1967 until 1978 is unknown but appears to have been limited.

Mumps virus vaccine* is prepared in chick-embryo cell culture. More than 84 million doses were distributed in the United States from its introduction in December 1967 through 1988. The vaccine produces a subclinical, noncommunicable infection with very few side effects. Mumps vaccine is available both in monovalent (mumps only) form and in combinations: mumps-rubella and measles-mumps-rubella (MMR) vaccines.

The vaccine is approximately 95% efficacious in preventing mumps disease; >97% of persons known to be susceptible to mumps develop measurable antibody following vaccination. Vaccine-induced antibody is protective and long-lasting, although of considerably lower titer than antibody resulting from natural infection. The duration of vaccine-induced immunity is unknown, but serologic and epidemiologic data collected during 20 years of live vaccine use indicate both the persistence of antibody and continuing protection against infection. Estimates of clinical vaccine efficacy ranging from 75% to 95% have been calculated from data collected in outbreak settings using different epidemiologic study designs.

Vaccine Shipment and Storage

Administration of improperly stored vaccine may fail to protect against mumps. During storage before reconstitution, mumps vaccine must be kept at 2-8 C (35.6- 46.4 F) or colder. It

must also be protected from light, which may inactivate the virus. Vaccine must be shipped at 10 C (50 F) or colder and may be shipped on dry ice. After reconstitution, the vaccine should be stored in a dark place at 2-8 C (35.6-46.4 F) and discarded if not used within 8 hours.

VACCINE USAGE

(See also the current ACIP statement, "General Recommendations on Immunization." MMWR 1989; 38:205-14, 219-27.)

General Recommendations

Susceptible children, adolescents, and adults should be vaccinated against mumps, unless vaccination is contraindicated. Mumps vaccine is of particular value for children approaching puberty and for adolescents and adults who have not had mumps. MMR vaccine is the vaccine of choice for routine administration and should be used in all situations where recipients are also likely to be susceptible to measles and/or rubella. The favorable benefit-cost ratio for routine mumps immunization is more marked when vaccine is administered as MMR. Persons should be considered susceptible to mumps unless they have documentation of 1) physician-diagnosed mumps, 2) adequate immunization with live mumps virus vaccine on or after their first birthday, or 3) laboratory evidence of immunity. Because live mumps vaccine was not used routinely before 1977 and because the peak age-specific incidence was in 5- to 9-year-olds before the vaccine was introduced, most persons born before 1957 are likely to have been infected naturally between 1957 and 1977. Therefore, they generally may be considered to be immune, even if they may not have had clinically recognizable mumps disease. However, this cutoff date for susceptibility is arbitrary. Although outbreak-control efforts should be focused on persons born after 1956, these recommendations do not preclude vaccination of possibly susceptible persons born before 1957 who may be exposed in outbreak settings.

Persons who are unsure of their mumps disease history and/or mumps vaccination history should be vaccinated. There is no evidence that persons who have previously either received mumps vaccine or had mumps are at any increased risk of local or systemic reactions from receiving live mumps vaccine. Testing for susceptibility before vaccination, especially among adolescents and young adults, is not necessary. In addition to the expense, some tests (eg, mumps skin test and the complement-fixation antibody test) may be unreliable, and tests with established reliability (neutralization, enzyme immunoassay, and radial hemolysis antibody tests) are not readily available.

Dosage. A single dose of vaccine in the volume specified by the manufacturer should be administered subcutaneously. While not recommended routinely, intramuscular vaccination is effective and safe.

Age. Live mumps virus vaccine is recommended at any age on or after the first birthday for all susceptible persons, unless a contraindication exists. Under routine circumstances, mumps vaccine should be given in combination with measles and rubella vaccines as MMR, following the currently recommended schedule for administration of measles vaccine. It should not be administered to infants <12 months old because persisting maternal antibody might interfere with seroconversion. To insure immunity, all persons vaccinated before the first birthday should be revaccinated on or after the first birthday.

Persons Exposed to Mumps

Use of Vaccine. When given after exposure to mumps, live mumps virus vaccine may not provide protection. However, if the exposure did not result in infection, vaccine should induce protection against infection from subsequent exposures. There is no evidence that the risk of vaccine-associated adverse events increases if vaccine is administered to persons incubating disease.

Use of Immune Globulin. Immune globulin (IG) has not been demonstrated to be of established value in postexposure prophylaxis and is not recommended. Mumps immune globulin has not been shown to be effective and is no longer available or licensed for use in the US.

[Continued in PDN, Vol. 49, No. 31.]

CPSC: LAWN DART RECALL

Franklin Sports Industries, Inc. of Stoughton, Massachusetts, is once again voluntarily recalling its yard dart sets because the blunt metal tips may pose a risk of injury, especially to children.

The Consumer Product Safety Commission banned the sale of lawn/yard darts on December 19, 1988; Franklin Sports is the first company to recall their dart sets and initially did so in the fall of 1988.

The Franklin yard darts were sold separately as Model #3210 Yard Dart Set and as part of combination sets as Model #3283 Three Game Combination Set, Model #3284 Three Game Combination Set, and Model #3287 Five Game Combination Set. Each of these sets contained four yard darts, 12 1/2 inches long with a 1 3/4 inch blunt metal tip. Each dart has one aerodynamic fin with three wings.

Consumers that have these yard darts should stop using the darts immediately and return just the four darts directly to: Yard Dart Recall, Franklin Sports Industries, Inc., 17 Campanelli Parkway, Stoughton, MA 02072. Consumers will receive $5.00 directly from Franklin Sports Industries, Inc. for the return of the four yard darts.

To identify yard darts made by Franklin, consumers should check for the permanently embossed FRANKLIN logo and the warning "ADULT GAME NOT RECOMMENDED FOR CHILDREN'S USE" which appears on two of the wings. Only yard darts with both identifying marks should be returned.

Consumers requiring additional information may call Franklin Sports at 1-800-225-8679.

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