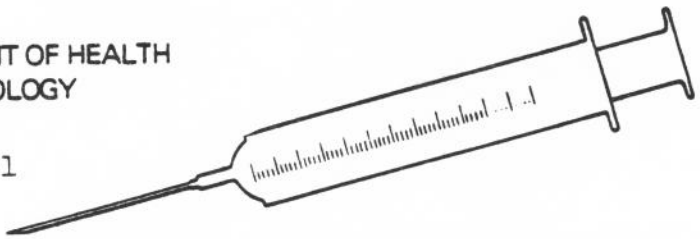
VIRGINIA DEPARTMENT OF HEALTH
DIVISION OF EPIDEMIOLOGY

TELEPHONE
(804) 786-6261

VOLUME 83 NUMBER 2
DATE February, 1983



EPIDEMIOLOGY BULLETIN

James B. Kenley, M.D., Commissioner
Grayson B. Miller, Jr., M.D., Epidemiologist

EDITOR: Carl W. Armstrong, M.D.

Recommendation of the Immunization Practices Advisory Committee (ACIP) of the U.S. Public Health Service

MUMPS VACCINE

INTRODUCTION

There has been a steady decrease in the incidence rate of reported mumps cases in the United States since the introduction of the live mumps virus vaccine. In 1981, there was a record low of 4,729 cases, which represents a 97% decline from the 185,691 cases reported in 1967, the year of live mumps virus vaccine licensure. Mumps is still primarily a disease of young schoolage children; only about 15% of reported cases occur among adolescents and adults.

Mumps disease is generally self-limited, but it may be moderately debilitating. Benign meningeal signs appear in up to 15% of cases, but permanent sequelae are rare. Nerve deafness is one of the most serious of the rare complications involving the central nervous system (CNS).

Orchitis (usually unilateral) has been reported as a complication in up to 20% of clinical mumps cases in postpubertal males, although sterility is a rare sequela. Symptomatic involvement of other glands and organs has been observed less frequently.

There are limited experimental, clinical, and epidemiologic data that pancreatic damage may result from injury caused by direct viral invasion. However, further research is indicated 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. There is no evidence that mumps during pregnancy causes congenital malformations.

Naturally acquired mumps infection, including the estimated 30% of cases that are subclinical, confers longlasting immunity.

---

* Official name: Mumps Virus Vaccine, Live.

MUMPS VIRUS VACCINE

Live mumps virus vaccine* is prepared in chick-embryo cell culture. From its introduction in December 1967, through 1981, more than 55 million doses have been distributed in the United States. The vaccine produces a subclinical, non-communicable 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 combined MMR vaccine is the vaccine of choice. In all situations where mumps vaccine is to be used, MMR vaccine should be given if recipients are likely to be susceptible to measles and/or rubella as well as to mumps. There is a positive benefit-cost ratio for mumps immunization, that is more marked when mumps vaccine is administered as MMR. All vaccines containing measles antigen should be used at about 15 months of age under routine conditions.

Following vaccination, more than 90% of persons susceptible to mumps develop measurable antibody, which, although of considerably lower titer than that following natural infection, is protective and long-lasting. The duration of vaccine-induced immunity is unknown, but observations over 15 years of live vaccine use indicate both the persistence of antibody and continuing protection against infection. Reported clinical vaccine efficacies have ranged from 75%-90%.

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

Vaccine Shipment and Storage

Failure of protection against mumps may result from the administration of improperly stored vaccine. 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 and discarded if not used within 8 hours. Temperature measuring devices should be available at all sites of vaccine storage and monitored daily.

VACCINE USAGE

General Recommendations

Susceptible children, adolescents, and adults should be vaccinated against mumps, unless vaccination is contraindicated. Mumps vaccine can be of particular value for children approaching puberty and for adolescents and adults, especially males, who have not had mumps. Persons who previously received killed mumps vaccine might benefit from revaccination with live mumps vaccine. Persons can be considered susceptible to mumps unless they have documentation of 1) physician-diagnosed mumps or laboratory evidence of immunity, or 2) adequate immunization with live mumps virus vaccine when 12 or more months of age. Most adults are likely to have been infected naturally and generally may be considered immune, even if they did not have clinically recognizable disease.

Because there is no evidence that persons who have previously either received the vaccine or had mumps are at any risk of local or systemic reactions from

receiving live mumps vaccine, testing for susceptibility before vaccination is unnecessary. Furthermore, such testing may be unreliable (e.g., mumps skin-test and the complement-fixation antibody test). Those tests that have demonstrated reliability (neutralization, ELISA, 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.

Age: Live mumps virus vaccine is recommended for all children at any age after 12 months. It should not be administered to younger infants because persisting maternal antibody may interfere with seroconversion. Persons vaccinated before the first birthday might benefit from revaccination after reaching one year of age.

Individuals Exposed to Disease

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, the vaccine should induce protection against subsequent infection.

Use of Immune Globulin (IG): Immune globulin has not been demonstrated to be of established value in postexposure prophylaxis and is not recommended.

Adverse Effects

Parotitis after vaccination has been reported rarely. Allergic reactions including rash, pruritus, and purpura have been associated temporally with mumps vaccination but are uncommon and usually mild and of brief duration. Very rarely, manifestations of CNS involvement, such as febrile seizures, unilateral nerve deafness, and encephalitis within 30 days of mumps vaccination, are reported. No deaths have been reported among patients with such complications, and almost all have recovered completely. It should be emphasized that reports of nervous system illness following mumps vaccination do not necessarily denote an etiologic relationship between the illness and the vaccine. The frequency of reported CNS dysfunction following mumps vaccination is lower than the observed background incidence rate of CNS dysfunction in the normal population.

PRECAUTIONS AND CONTRAINDICATIONS

Pregnancy

Although mumps virus is capable of infecting the placenta and fetus, there is no good evidence that it causes congenital malformations in humans. Mumps vaccine virus also has been shown to infect the placenta, but the virus has not been isolated from the fetal tissues from susceptible women who were vaccinated and underwent elective abortions. However, because of the theoretical risk of fetal damage, it is prudent to avoid giving mumps vaccine to pregnant women.

Allergies

Live mumps vaccine is produced in chick-embryo cell culture. Persons with a history of anaphylactic reactions (hives, swelling of the mouth and throat, difficulty breathing, hypotension, or shock) subsequent to egg ingestion should be vaccinated only with extreme caution. Evidence indicates that persons are not at

increased risk if they have egg allergies that are not anaphylactic in nature. Such persons may be vaccinated in the usual manner. There is no evidence to indicate that persons with allergies to chickens or feathers are at increased risk of reaction to the vaccine.

Since mumps vaccine contains trace amounts of neomycin (25 ug), persons who have experienced anaphylactic reactions to topically or systemically administered neomycin should not receive mumps vaccine. Most often, neomycin allergy is manifested as a contact dermatitis which is a delayed-type (cell-mediated) immune response rather than anaphylaxis. In such individuals, the adverse reaction, if any, to 25 ug of neomycin in the vaccine would be an erythematous, pruritic nodule or papule at 48-96 hours. A history of contact dermatitis to neomycin is not a contraindication to receiving mumps vaccine. Live mumps virus vaccine does not contain penicillin.

Recent Administration of Immune Globulin

Passively acquired antibody can interfere with the response to live, attenuated-virus vaccines. Therefore, administration of mumps vaccine should be deferred until approximately 3 months after the administration of immune globulin.

Altered Immunity

Replication of the mumps vaccine virus may be potentiated in patients with immune deficiency diseases and by the suppressed immune responses that occur with leukemia, lymphoma, generalized malignancy, or with therapy with corticosteroids, alkylating drugs, antimetabolites, or radiation. Patients with such conditions should not be given live mumps virus vaccine. Since vaccinated persons do not transmit mumps vaccine virus, the risk of mumps exposure for those patients may be reduced by vaccinating their close susceptible contacts.

Other

There is no proven association between mumps vaccination and pancreatic damage or subsequent development of diabetes mellitus.

MUMPS CONTROL

The principal strategy to remove the burden of mumps illness is through achieving and maintaining high immunization levels. Universal immunization as a part of good health care should be routinely carried out in physicians' offices and public health clinics. Programs aimed at vaccinating children with MMR should be established and maintained in all communities. In addition, all other persons thought to be susceptible should be vaccinated unless otherwise contraindicated. Because of limited accessibility to some population subgroups, the Committee recommends taking maximal advantage of clinic visits to vaccinate susceptible persons 15 months of age or older by administering MMR, DTP and OPV simultaneously if all are needed. Health agencies should take necessary steps, including the development and enforcement of school immunization requirements, to assure that all persons in schools at all grade levels and in day-care settings are protected against mumps.

SURVEILLANCE

There is a continuing need to improve the reporting of mumps cases and mumps complications and to document the duration of vaccine effectiveness. Continuous and

careful review of adverse reactions is also important. All severe reactions in vaccinated individuals should be evaluated and reported in detail to local or state health officials and to the manufacturer. Even though there are no data to raise concern about a teratogenic effect of mumps vaccine, the Centers for Disease Control would like to collect prospective data on mumps vaccination of women in early pregnancy. Therefore, administration of mumps vaccine to a woman within 3 months of conception should be reported through state health departments to the Immunization Division, Centers for Disease Control, (404/329-3747).

SELECTED BIBLIOGRAPHY

Drash AL. The etiology of diabetes mellitus. N Engl J Med 1979; 300: 1211-3. Editorial.

Ennis FA, Hopps HE, Douglas RD, Meyer HM Jr. Hydrocephalus in hamsters: induction by natural and attenuated mumps viruses. J Infect Dis 1969; 119: 75-9.

Harris RW, Turnbull CD, Isacson P, Karzon DT, Winkelstein W Jr. Mumps in a northeast metropolitan community. I. Epidemiolgoy of clinical mumps. Am J Epidemiol 1968; 88: 224-33.

Hayden GF, Preblud SR, Orenstein WA, Conrad JL. Current status of mumps and mumps vaccine in the United States. Pediatrics 1978; 62: 965-9.

Hilleman MR, Buynak EB, Weibel RE, Stokes J Jr. Live, attenuated mumps-virus vaccine. N Engl J Med 1968; 278: 227-32.

Koplan JP, Preblud SR. A benefit-cost analysis of mumps vaccine. Am J Dis Child 1982; 136: 362-4.

Sinaniotis CA, Daskalopoulou E, Lapatsanis P, Doxiadis S. Diabetes mellitus after mumps vaccination. Arch Dis Child 1975; 50: 749-50. Letter.

Weibel RE, Buynak EB, McLean AA, Hilleman MR. Follow-up surveillance of antibody in human subjects following live attenuated measles, mumps, and rubella virus vaccines. Proc Soc Exp Biol Med 1979; 162: 328-32.

Witte JJ, Karchmer AW. Surveillance of mumps in the United States as background for use of vaccine. Public Health Rep 1968; 83: 95-100.

Yamauchi T, Wilson C, St. Geme JW Jr. Transmission of live, attenuated mumps virus to the human placenta. N Engl J Med 1974; 290: 710-2

Reprinted from MMWR 1982; 31: 617-625.

REGULATIONS TO BE REVIEWED

The Governor has required that state agencies review the regulations which they have promulgated in order to identify any which unnecessarily intrude on the legitimate practices of individuals or businesses. Accordingly, the Department of Health is reviewing the Regulations for Disease Reporting and Control. These regulations were adopted by the Board of Health on May 19, 1980 and have since been sent to all licensed physicians.

This notice is to inform physicians, hospitals and laboratory directors of the opportunity to comment on the regulations under review. The issues under consideration are as follows:

A. The Code of Virginia (§32.1-35) requires the Board of Health to promulgate a

list of reportable diseases. Was the list so promulgated in Section 3.00.01 of the regulations appropriate?

B. The Code of Virginia (§32.1-46) requires that vaccines used to immunize children against diphtheria, tetanus, whooping cough, poliomyelitis, measles, rubella and mumps must meet the standards of, and be administered in accordance with, the regulations of the Board of Health. Are the dosage and age requirements for immunizations contained in Section 5.00 of the regulations appropriate?

C. The Code of Virginia (§ 32.1-60) requires the Board of Health to designate the venereal diseases for which a pregnant woman must be tested by the attending physician. The Board, in Section 6.00, requires testing only for syphilis. Is this appropriate?

D. The Code of Virginia (§32.1-62) requires the Board of Health to prescribe the procedure to be used by physicians in order to prevent opthalmia neonatorum. The Board in Section 7.00 of the regulations has prescribed either silver nitrate solution, tetracycline solution, tetracycline ointment or erythromycin ointment. Are these appropriate?

If a physician desires to comment on all or any of these issues, he should do so by writing to:

Grayson B. Miller, Jr., M.D.
Division of Epidemiology
State Health Department
109 Governor Street
Richmond, Virginia 23219

Comments received within the next 30 days will be included in the official record of this review. Each will be considered carefully by the Department, and where appropriate, incorporated into recommendations to the Governor for amending these regulations. The substance of every comment, whether or not it results in a recommendation for amendment, will be shared with the Governor and his staff. Copies of these regulations may be obtained by sending requests to Dr. Miller at the above address or by calling (804) 786-6261.

Any changes in the requirements made of physicians, by the Code, are not within the Board's or Department's discretion. Such changes may only be accomplished by amending the Code through the General Assembly.

MONTH: February, 1983

DISEASE	STATE					REGIONS				
	THIS MONTH	LAST MONTH	TOTAL TO DATE 1983	TOTAL TO DATE 1982	MEAN 5 YEAR TO DATE	THIS MONTH N.W.	N.	S.W.	C.	E.
CHICKENPOX	78	105	183	181	187	25	4	29	3	17
MEASLES	1	1	2	9	78	0	1	0	0	0
MUMPS	3	5	8	10	25	2	0	1	0	0
PERTUSSIS	6	1	7	0	2	1	2	1	2	0
RUBELLA	1	0	1	5	6	0	1	0	0	0
MENINGITIS – ASEPTIC	7	21	28	17	17	0	0	0	2	5
BACTERIAL	31	27	58	29	34	4	5	6	7	9
ENCEPHALITIS – INFECTIOUS	5	6	11	4	4	0	1	2	1	1
POST-INFECTIOUS	0	1	1	0	1	0	0	0	0	0
HEPATITIS A (INFECTIOUS)	9	17	26	30	39	2	3	2	1	1
B (SERUM)	34	46	80	63	69	4	8	4	8	10
SALMONELLOSIS	58	75	133	128	113	5	12	6	23	12
SHIGELLOSIS	14	13	27	37	39	0	3	4	2	5
TUBERCULOSIS – PULMONARY	17	15	35	79	–	–	–	–	–	–
EXTRA-PULMONARY	4	6	12	10	–	–	–	–	–	–
SYPHILIS (PRIMARY & SECONDARY)	47	53	100	93	96	3	6	4	12	22
GONORRHEA	1464	1719	3183	3074	3207	–	–	–	–	–
ROCKY MOUNTAIN SPOTTED FEVER	0	0	0	0	0	0	0	0	0	0
RABIES IN ANIMALS	53	52	105	53	12	8	45	0	0	0
MENINGOCOCCAL INFECTIONS	7	7	14	9	14	1	1	1	2	2
INFLUENZA	230	7	237	34	1774	6	14	189	5	[illegible]
MALARIA	2	1	3	1	5	0	1	0	1	0
OTHER: Hepatitis Unspecified	4	9	13	12	28	1	0	0	0	3

COUNTIES REPORTING ANIMAL RABIES: Arlington 1 raccoon; Fairfax 38 raccoons; Fauquier 1 raccoon; Frederick 1 raccoon; Fredericksburg 1 raccoon; Loudoun 3 raccoons; Orange 1 raccoon; Prince Wm. 1 calf, 2 raccoons; Rockingham 1 skunk, 1 fox; Stafford 2 raccoons.

OCCUPATIONAL ILLNESSES: Occupational pneumoconioses 12; Occupational dermatitis 2; Occupational hearing loss 9; Asbestosis 2; Mesothelioma 1.

Published Monthly by the
VIRGINIA HEALTH DEPARTMENT
Division of Epidemiology
109 Governor Street
Richmond, Virginia
23219

Bulk Rate
U. S. POSTAGE
PAID
Richmond, Va.
Permit No. 1225