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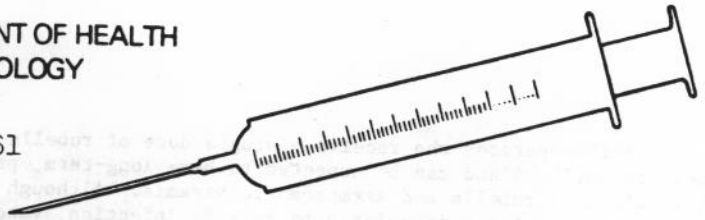

EPIDEMIOLOGY BULLETIN

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Recommendation of the Immunization Practices Advisory Committee (ACIP)
RUBELLA PREVENTION - 1981

Changes in the ACIP recommendation for the use of rubella vaccine focus on more effective delivery of the vaccine to older individuals and, in particular, to females of childbearing age as well as on the continuing vaccination of young children.

INTRODUCTION

Rubella is a common childhood rash disease. It is often overlooked or misdiagnosed because its signs and symptoms vary. The most common ones-postauricular and suboccipital lymphadenopathy, arthralgia, transient erythematous rash, and low fever-may not be recognized as representing rubella. Moreover, subclinical infection occurs frequently. Transient polyarthralgia and polyarthritis sometimes accompany or follow rubella, particularly in women. Central nervous system complications and thrombocytopenia have only rarely been reported.

By far the most important consequences of rubella are fetal anomalies that result from rubella infection in early pregnancy, especially in the first trimester. Preventing fetal infection and consequent congenital rubella syndrome is the major objective of rubella immunization programs.

Postinfection immunity appears to be long-lasting. However, as with other viral diseases, re-exposure to natural rubella occasionally leads to reinfection without clinical illness or detectable viremia. The only reliable evidence of immunity to rubella is the presence of specific antibody. Laboratories that regularly perform antibody testing are generally the most reliable because reagents and procedures are strictly standardized.

Before rubella vaccine became available in 1969, most cases of rubella occurred in school-age children. Now, most cases are in adolescents and young adults. The incidence of reported rubella for adolescents and young adults has not decreased appreciably because vaccine has been primarily used for preschool- and elementary school-age children. Since 1976, more than 70% of persons with rubella have been $\geq$ 15 years old; in these age groups, 10%-20% are susceptible. As of the end of 1979, more than 98 million doses of live attenuated rubella virus vaccine had been distributed in the United States. The practice of vaccinating young children has prevented rubella epidemics, although the disease has continued to be endemic among adolescents and young adults. Outbreaks of rubella continue to be reported in junior and senior high schools, colleges, the military, and places of employment-most notably hospitals. The data suggest that a combined approach of vaccinating susceptible adolescents and young adults as well as children may be necessary to eliminate congenital rubella syndrome.

LIVE RUBELLA VIRUS VACCINE

The live rubella virus vaccine* currently distributed in the United States is prepared in human diploid cell culture. In January 1979, this vaccine (RA 27/3) replaced the HPV-77:DE-5 vaccine grown in duck embryo cell culture. Although both subcutaneous and intranasal administration of the vaccine have been studied, it is licensed only for subcutaneous administration. The vaccine is produced in monovalent (rubella only) form and in combinations: measles-rubella (MR) and measles-mumps-rubella (MMR) vaccines. Health-care providers are encouraged to use MMR in routine child vaccination programs and whenever rubella vaccine is to be given to persons likely to be susceptible to measles and/or mumps as well as to rubella.

*Official name: Rubella Virus Vaccine, Live.

Approximately 95% of susceptible persons who receive a single dose of rubella vaccine when they are ≥ 12 months old develop antibody and can be expected to have long-term, probably life-long, protection against both clinical rubella and asymptomatic viremia. Although vaccine-induced titers are generally lower than those stimulated by rubella infection, vaccine-induced immunity protects against both clinical illness and viremia after natural exposure.

Hemagglutination-inhibition (HI) antibody testing is usually used to screen for rubella immunity. Other acceptable screening assays include passive hemagglutination, hemolysis in gel, and enzyme-linked immunosorbent assay (ELISA) tests. There are now more sensitive measures than the HI test to determine rubella immunity. Indeed, when adults who have failed to seroconvert following vaccination have been examined more closely, almost all have had detectable antibody by a more sensitive test. A small number of children who initially seroconverted have lost detectable HI antibody over the course of 9 years of follow-up. However, almost all have had detectable antibody by more sensitive tests. Accordingly, any detectable rubella antibody or a history of rubella vaccination is presumptive evidence of immunity.

Some vaccinees intermittently shed small amounts of virus from the pharynx 7-28 days after vaccination. However, studies of more than 1,200 susceptible household contacts have yielded no evidence that vaccine virus has been transmitted. These data strongly suggest that vaccinating susceptible children whose mothers or other household contacts are pregnant does not present a risk.

Any detectable titer (whether resulting from vaccination or from naturally acquired rubella), even if very low, protects against subsequent viremic infection-including the so-called "reinfection" of persons with low levels of antibody. This suggests that immune females reinfected during pregnancy would be unlikely to infect their fetuses. Moreover, because there is very little pharyngeal excretion, there appears to be no risk to susceptible contacts in such reinfection settings. In view of the data on reinfection accumulated during the past decade, the Committee sees no reason to revaccinate persons with low levels of rubella HI antibody. Rather, more attention should be directed toward vaccinating the truly susceptible population.

VACCINE USAGE

General Recommendations

Rubella vaccine is recommended for all children, many adolescents, and some adults-particularly females-unless it is specifically contraindicated (see below). Vaccinating children protects them against rubella and prevents their spreading the virus. Vaccinating susceptible postpubertal females confers individual protection against rubella-induced fetal injury. Vaccinating adolescent or adult males and females in population groups such as those in colleges, places of employment, or military bases protects them against rubella and reduces the chance of epidemics.

Dosage: A single dose of 0.5 cc of reconstituted vaccine should be administered subcutaneously.

Individuals at Risk

Live rubella virus vaccine is recommended for all children ≥ 12 months of age. It should not be given to younger infants because persisting maternal antibodies may interfere with seroconversion. When the rubella vaccine is part of a combination that includes the measles antigen, the combination vaccine should be given to children at about 15 months of age or older to maximize measles seroconversion. Older children who have not received rubella vaccine should be vaccinated promptly. Because a history of rubella illness is not a reliable indicator of immunity, all children should be vaccinated unless there are contraindications. Official health agencies should take steps-including developing and enforcing immunization requirements-to assure that all students in school and children in day-care settings are protected against rubella, unless vaccination is contraindicated.

The ACIP has weighed several considerations in developing recommendations for vaccinating women of childbearing age against rubella. Although there may be theoretical risks in giving rubella vaccine during pregnancy, all available data on previously and currently available rubella vaccines indicate that the risk, if any, of teratogenicity from live rubella vaccine is quite small. As of October 1980, CDC has followed to term 101 known rubella-susceptible pregnant females who had been vaccinated with live rubella vaccine within 3 months before, or 3 months after, conception. Ninety-three received HPV-77 or Cendehill vaccines, and 8 received RA 27/3 vaccine. None of the babies, including 3 who developed presumptive subclinical rubella vaccine virus infection, had malformations consistent with congenital rubella infection. Based on the experience to date, the estimated theoretical risk of serious malformations attributable to rubella vaccine, derived from the binomial distribution, is 0-4%.

Although experience with RA 27/3 is more limited than that with the other rubella vaccines, rubella vaccine virus was not isolated from abortion material from any of 15 susceptible females who had been given RA 27/3 vaccine while pregnant, whereas virus was isolated from abortion material from 17 of 85 (20%) susceptible females who had been given HPV-77 or Cendehill vaccines while pregnant. This provides additional evidence that the RA 27/3 vaccine does not pose any greater risk of teratogenicity than did the HPV-77 or Cendehill vaccines.

Therefore, the ACIP believes that rubella vaccination during pregnancy should not be a reason to routinely recommend interruption of pregnancy. Although a final decision must rest with the individual patient and her physician, the ACIP believes that the risk of vaccine-associated malformations is so small as to be negligible.

The continuing occurrence of rubella among women of childbearing age and the increasing evidence of little or no teratogenicity from the vaccine strongly indicate that increased emphasis should be placed on vaccinating susceptible adolescent and adult females of childbearing age. However, because of the theoretical risk to the fetus, females of childbearing age should receive vaccine only if they say they are not pregnant and are counseled not to become pregnant for 3 months after vaccination. In view of the importance of protecting this age group against rubella, reasonable precautions in a rubella immunization program include asking females if they are pregnant, excluding those who say they are, and explaining the theoretical risks to the others.

Further control of rubella will require increased emphasis on vaccinating susceptible individuals who have left high school. The military services have already instituted routine rubella vaccination of susceptible male and female recruits. Educational and training institutions, such as colleges and universities, should strongly consider requiring proof of rubella immunity (a positive serologic test or documented rubella vaccination) for admission and employment. Nonpregnant females and other employees who lack proof of immunity should be vaccinated unless contraindications exist. Health-care providers should carefully review the rubella immunity status of young adults and vaccinate those who do not have documented immunity, unless there are contraindications. To protect susceptible female patients and female employees, persons (both male and female) working in hospitals and clinics who might contract rubella from infected patients or who, if infected, might transmit rubella to pregnant patients should be vaccinated against rubella, unless there are contraindications.

When practical, and when reliable laboratory services are available, potential vaccinees of childbearing age can have serologic tests to determine susceptibility to rubella. Routine premarital tests for rubella antibody identify many susceptible females before pregnancy. Prenatal screening of pregnant women is highly recommended because it identifies those who should be vaccinated as soon as their babies are born. (Breast feeding is not a contraindication to postpartum vaccination even though virus may be excreted in breast milk and infants may be infected.) However, routinely performing serologic tests for all females of childbearing age to determine susceptibility so that vaccine is given only to proven susceptibles is expensive and has been ineffective in some areas. Accordingly, the ACIP believes that rubella vaccination of a woman who is not known to be pregnant and has no history of vaccination is justifiable without serologic testing. A stored serum specimen taken at the time of vaccination might help later in assessing whether a woman was already immune at the time of vaccination, should she prove to have been pregnant when vaccinated; however, storing a serum specimen is not necessary. The Committee feels that vaccination of women in the childbearing-age group who are not known to be immune is important for more effective prevention of congenital rubella syndrome. This policy should be encouraged in all settings providing care for women of childbearing age, including colleges and other schools, the military, hospitals, family-planning clinics, physicians' offices, and the like.

Individuals Exposed to Disease

Use of vaccine following exposure: There is no evidence that giving live rubella virus vaccine after exposure will prevent illness or that vaccinating an individual incubating rubella is harmful. Since a single exposure may not cause infection and postexposure vaccination will protect an individual exposed in the future, vaccination is recommended unless otherwise contraindicated.

Use of human immune globulin (IG, formerly called immune serum globulin or ISG) following exposure: IG given after exposure to rubella will not prevent infection or viremia, but it may modify or suppress symptoms. The routine use of IG for postexposure prophylaxis of rubella in early pregnancy is not recommended. (Infants with congenital rubella have been born to women given IG shortly after exposure.) The only time IG might be useful is when a pregnant woman who has been exposed to rubella would not consider termination of pregnancy under any circumstances.

Recent Administration of IG

Vaccination should be deferred for about 3 months after a person has received IG because passively acquired antibodies might interfere with the response to the vaccine. However, previous administration of anti-Rho (D) immune globulin (human) or blood products is not a contraindication to postpartum vaccination. In this situation, 6- to 8-week postvaccination serologic testing should be done on those who have received the globulin or blood products to ascertain that seroconversion has occurred. Obtaining laboratory evidence of seroconversion in other vaccinees is not necessary.

SIDE EFFECTS AND ADVERSE REACTIONS

Children sometimes have vaccine side effects such as rash and lymphadenopathy. Up to 40% of vaccinees in large-scale field trials have had joint pain, usually of the small peripheral joints, although frank arthritis is reported for fewer than 1%. Arthralgia and transient arthritis occur more frequently and tend to be more severe for susceptible women than children. When joint symptoms or non-joint-associated pain and paresthesias do occur, they generally begin 7-21 days after immunization, persist for 1-3 days, and rarely recur. Adults with joint problems usually have not had to disrupt work activities. The occasional reports of persistent or recurrent joint signs and symptoms probably represent coincidental disease rather than a vaccine complication. Transient peripheral neuritic complaints such as paresthesias and pain in the arms and legs have also very rarely occurred. Only susceptible vaccinees have been reported to have side effects of vaccination. There is no increased risk of these reactions for persons who are already immune when vaccinated.

Although vaccine is safe and effective for all persons $\geq$ 12 months of age, its safety for the developing fetus is not fully known. Therefore, though the risk appears to be minimal, rubella vaccine should not be given to women known to be pregnant because of the theoretical risk of fetal abnormality caused by the vaccine virus (see "Individuals at risk").

PRECAUTIONS AND CONTRAINDICATIONS

Pregnancy

Pregnant women should not be given rubella vaccine. If a pregnant women is vaccinated or if she becomes pregnant within 3 months of vaccination, she should be counseled on the theoretical risks to the fetus. As noted above, rubella vaccination during pregnancy is not a routine indication for interruption of pregnancy. Instances of vaccination during pregnancy should be reported through state health departments to the Immunization Division, Center for Disease Control (404-329-3096).

Febrile Illness

Persons with febrile illness should not be vaccinated until they have recovered. Minor illnesses such as upper respiratory infection, however, do not preclude vaccination.

Allergies

Live rubella virus vaccine has not been reported to be associated with allergic reactions. It does not contain penicillin. However, the vaccine does contain trace amounts of neomycin tc which patients may be allergic. Those administering vaccines should review the label information carefully before deciding whether patients with known allergies to neomycin can be vaccinated safely.

Altered Immunity

Theoretically, replication of rubella vaccine virus may be potentiated in patients with immune-deficiency diseases and by the suppressed immune responses that occur with leukemia, lymphoma, or generalized malignancy, or that result from therapy with corticosteroids, alkylating drugs, antimetabolites, or radiation. Patients with such conditions should not be given live rubella virus vaccine.

Simultaneous Administration of Certain Live Virus Vaccines

See "General Recommendations on Immunization," MMWR 1980;29:76,81-3.

OUTBREAK MANAGEMENT

To curb rubella outbreaks, susceptible persons at risk should be vaccinated promptly. Women at risk of exposure who say they are not pregnant and are counseled not to become pregnant for 3 months should be vaccinated (see "Individuals at risk").

SURVEILLANCE

Accurate diagnosis and prompt reporting to local and state health departments of rubella or suspected rubella, congenital rubella syndrome, and vaccine complications are of great importance in assessing the progress of rubella control. Furthermore, all cases of birth defects suspected of being related to rubella should be thoroughly investigated and reported to state health departments.

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REFERENCE: MMWR, February 6, 1981/Vol. 30/No. 4.
Replaces previous recommendation on this subject, "Rubella Vaccine" (MMWR 1978;27:451-4, 459).

SHIGELLOSIS INCREASE

Laboratory-confirmed cases of shigellosis reported to the State Health Department for the first three months of 1981 show more than a three-fold increase over the same period in 1980 (154 versus 41). Ninety percent are S. sonnei, which is typically the most prevalent species, accounting for approximately 80% of all Shigella spp. isolates in Virginia in any year. Of the S. sonnei cases, 54% are female and 46% male. The greatest proportion are in young children, 37% being in the 0-4 age group with another 20% in the 5-9 age group. Among adults in the 20-44 age grouping, females account for three times as many cases as males (15% versus 5%).

There have been several clusters of cases around the state this year requiring investigation. City and county health departments need to be notified immediately about culture positive cases as well as compatible clinical syndromes (diarrhea, fever, abdominal cramps), and will in turn provide laboratory and epidemiologic support.

MONTH: FEBRUARY

DISEASE	STATE					REGIONS				
						THIS MONTH				
	THIS MONTH	LAST MONTH	TOTAL TO DATE 1981	TOTAL TO DATE 1980	MEAN 5 YEAR TO DATE	N.W.	N.	S.W.	C.	E.
CHICKENPOX	163	102	265	43	194.8	12	42	21	16	72
MEASLES				65	117.6					
MUMPS	22	13	35	18	43.8			3		19
PERTUSSIS	2		2	2	2.6	1	1			
RUBELLA	1	4	5	3	21.8					1
MENINGITIS – ASEPTIC	6	15	21	14	12.6	2	1		2	1
BACTERIAL	15	31	46	34	27.0	3	1	3	2	6
ENCEPHALITIS – INFECTIOUS	1	8	9		2.2	1				
POST-INFECTIOUS		2	2		0.4					
HEPATITIS A (INFECTIOUS)	20	15	35	56	46.2	1	4	6	3	6
B (SERUM)	37	28	65	98	62.2	9	6	5	7	10
SALMONELLOSIS	66	97	163	97	84.8	5	20	10	15	16
SHIGELLOSIS	41	11	52	32	25.8	11	1	16	10	3
TUBERCULOSIS – PULMONARY	49	20	78	79	78.4					
EXTRA-PULMONARY	10	4	17	13	17.4					
SYPHILIS (PRIMARY & SECONDARY)	75	47	122	89	99.4	4	14	2	12	43
GONORRHEA	1,565	1,962	3,527	3,060	3,549.8					
ROCKY MOUNTAIN SPOTTED FEVER					0.2					
RABIES IN ANIMALS	3	6	9		2.0	3				
MENINGOCOCCAL INFECTIONS	14	7	21	11	10.2		2	2	4	6
INFLUENZA	870	3,522	4,392	169	2,232.2	211	4	542	76	37
MALARIA	4	2	6	7	3.4		4			
OTHER: KAWASAKI DISEASE	2	4	6	4	N/A	1		1		
PSITTACOSIS	2		2		N/A		1	1		
REYE'S SYNDROME	3	3	6	1	1.2			1	2	
HISTOPLASMOSIS	1	1	2	2	N/A			1		

COUNTIES REPORTING ANIMAL RABIES: Page - 1 skunk, 1 raccoon; Shenandoah - 1 raccoon

OCCUPATIONAL ILLNESSES: Occupational pneumoconioses 9, Occupational dermatitis 8, Occupational hearing loss 7, Asbestosis 14, Hydrocarbon inhalation 4

N/A-Not Available

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