

IMMUNIZATION PROTOCOL FOR PHARMACISTS

MEASLES, MUMPS AND RUBELLA Live Virus Vaccine

Revised as of May 2006:

- Added a new *Recommendations for Use* section to this order (Section III).

I. **ORDER:**

1. Screen for contraindications.
2. Provide the current Vaccine Information Statement (VIS), answering any questions.
3. Obtain a signed Vaccine Administration Record (VAR).
4. Give MMR vaccine 0.5 ml **subcutaneously**.
 - a. May give simultaneously with all routine vaccines according to age and immunization status of recipient.
 - b. If not given simultaneously with Varicella, give at least 28 days apart.
 - c. If a PPD tuberculin skin test is not given simultaneously with MMR, delay PPD for at least 4 weeks.

Note: In general, adults born before 1/1/57 do not need MMR vaccine, but they should always be assessed for any factors putting them at greater risk for contracting measles, e.g., health care workers.

Pharmacist signature

Date

Electronic copy of this protocol available at
<http://www.oregon.gov/DHS/ph/imm/provider/pharmpro.shtml>
To request material in an alternate format (e.g. Braille), call
(971) 673-0300.

II. LICENSED MMR VACCINE			
Product Name	Vaccine Components	Acceptable Age Range	Thimerosal
M-M-R® II (Merck) ^{1,2}	Measles ² Mumps ³ Rubella ⁴	≥12 months of age	None
<p>¹ Each dose contains approximately 25 mcg of neomycin. The product contains no preservative. Sorbitol and hydrolyzed gelatin are added as stabilizers.</p> <p>² M-M-R® II contains a sterile, lyophilized preparation of ATTENUVAX, a more attenuated line of measles virus, derived from Enders' attenuated Edmonston strain and grown in cell cultures of chick embryo.</p> <p>³ MUMPSVAX®, the Jeryl Lynn strain of mumps virus, is grown in cell cultures of chick embryo.</p> <p>⁴ MERUVAX®, the Wistar RA 27/3 strain of live attenuated rubella virus, is grown in human diploid cell culture.</p>			

III. MMR RECOMMENDATIONS FOR USE

A. Adults needing at least one dose of MMR

- Born in 1957 or later, unless a medical contraindication (e.g. pregnancy), documentation of vaccine, history of measles based on health care provider or lab evidence of immunity.

B. Adults needing two doses of MMR

- Persons recently exposed to measles or in an outbreak setting;
- All persons who work within medical facilities should have evidence of immunity to measles and rubella;
- Students in post-secondary educational institutions;
- Persons who plan to travel internationally;
- Women of childbearing age, regardless of birth year;
- Post-partum women who do not have evidence of immunity to rubella should receive MMR vaccine upon completion or termination of pregnancy.

C. Measles Vaccine Indications for Revaccination.¹

- Vaccinated before the first birthday;
- Vaccinated with killed measles vaccine (KMV),
- Vaccinated with KMV followed by live vaccine less than 4 months after the last dose of KMV,
- Vaccinated before 1968 with an unknown type of vaccine.
- Vaccinated with IG in addition to a further attenuated strain or vaccine of unknown type. (Revaccination not necessary if EG was given with Edmonston B vaccine.)

¹The following groups should be considered unvaccinated and should receive at least one dose of a measles-containing vaccine.

IV. VACCINE SCHEDULE FOR PERSONS ≥ 18 YEARS OF AGE

Dose and Route: 0.5mL SC	
DOSE	MINIMUM SPACING^{1,2}
1 ³	
2 ⁴	28 days

¹ For retrospective checking, doses that violate the minimum spacing or age by 4 or fewer days do not need to be repeated. Doses administered 5 days or earlier than the minimum interval or age should be repeated as age appropriate.

² When an invalid dose needs to be repeated, the repeat dose should be spaced after the invalid dose by a time equal to or greater than the minimum interval between doses.

³ Twelve months of age is the minimum age for MMR #1. Any MMR administered before 12 months of age should be repeated.

⁴ Accept MMR #2 at any age as long as MMR #1 was given on or after the first birthday and MMR #2 was given at least 28 days later.

V. CONTRAINDICATIONS and PRECAUTIONS

A. Women known to be pregnant or likely to become pregnant within 4 weeks should not receive a measles-containing vaccine. However, MMR, or measles, or mumps or rubella vaccination during pregnancy should not be a reason to consider interruption of pregnancy. Breastfeeding is not a contraindication to MMR vaccination of either the woman or the breast-feeding child. Close contact with a pregnant woman is not a contraindication to MMR administration.

B. Persons who are severely immunocompromised for any reason should not be given the MMR vaccine. (e.g., persons with HIV*, congenital immunodeficiency, leukemia**, lymphoma or generalized malignancy, or persons receiving therapy with alkylating agents, antimetabolites, radiation, or large doses of corticosteroids***).

* MMR is recommended for all asymptomatic HIV-infected persons, and should be considered for symptomatic persons who are not severely immunosuppressed. (consult with client's physician).

** MMR may be considered for persons with leukemia in remission if at least 3 months have passed since termination of chemotherapy. (consult with client's oncologist).

*** A "large" dose of corticosteroids is considered equivalent to prednisone ≥ 2 mg/kg/day or ≥ 20 mg/day either given daily or every other day for a minimum of 14 days. MMR and its component vaccines should be avoided for at least 1 month after cessation of high dose therapy.

Persons receiving low dose or short course (<14 days) therapy, alternate-day treatment, maintenance physiologic doses, or topical, aerosol, intra-articular, bursal, or tendon injections may be vaccinated. (refer to pg. 23 of 2/8/02 ACIP General Recommendations on Immunization for more specific precautions).

(Continued)

CONTRAINDICATIONS AND PRECAUTIONS – cont.

C. Persons who have experienced a severe allergic reaction or anaphylaxis (i.e., hives, swelling of the mouth or throat, difficulty breathing, hypotension, shock) following a prior dose of measles vaccine or to a vaccine component (e.g., gelatin, neomycin) **should not be vaccinated with MMR.**

1. A history of penicillin allergy is not a contraindication to MMR.
2. MMR may be given to egg-allergic adults without prior routine skin testing or use of special protocols.

D. Do not give MMR to persons with untreated, active tuberculosis until anti-tuberculosis therapy has been initiated and their physician has been consulted.

E. For persons with a **moderate or severe illness** with or without fever; **delay MMR** immunization until the illness has resolved.

F. Children with a history of thrombocytopenia or low platelet counts at time of injection may be at increased risk for clinically significant thrombocytopenia following MMR. **If a patient experiences an episode of thrombocytopenia within 6 weeks after receiving an MMR, consult with client's physician before giving subsequent doses.** Serologic testing for measles immunity may be prudent prior to MMR administration.

G. Different live vaccines (e.g., varicella, MMR) not administered on the same day should be given at least 28 days apart. If there are fewer than 28 days between doses of live vaccine, the dose administered 2nd needs to be repeated at least 28 days later.

H. Immune globulin (IG) and MMR should not be administered simultaneously.

1. If IG is given before MMR, see table in Section VI. below for the appropriate interval.
2. If MMR is given first, wait at least 2 weeks before giving IG.
3. Should MMR need to be administered post-partum to a woman who is also receiving a post-partum dose of Rho (D) immune globulin, the woman should be tested 3 months later to ensure seroconversion for measles and rubella.

VI. Suggested intervals between administration of immune globulin preparations for various indications and vaccines containing live-measles virus*

Indications	Dose (mg IgG/kg)	Interval (months) before measles vaccination
Tetanus prophylaxis (TIG)	250 units (10 mg IgG/kg) IM	3
Hepatitis A prophylaxis (IG):		
-Contact prophylaxis	0.02 ml/kg (3.3 mg IgG/kg) IM	3
-International travel	0.06 ml/kg (10 mg IgG/kg) IM	3
Hepatitis B prophylaxis (HBIG)	0.06 ml/kg (10 mg IgG/kg) IM	3
Rabies prophylaxis (HRIG)	20 IU/kg (22 mg IgG/kg) IM	4
Varicella prophylaxis (VZIG)	125 units/10 kg (20-40 mg IgG/kg) IM (max. 625 units)	5
Measles prophylaxis (IG):		
-Standard (i.e., non-immunocompromised) contact	0.25 ml/kg (40 mg IgG/kg) IM	5
-Immunocompromised contact	0.50 ml/kg (80 mg IgG/kg) IM	6

Indications	Dose	Interval in months before measles vaccine
Blood transfusion		
-Red blood cells (RBCs), washed	10 ml/kg (negligible IgG/kg) IV	0
-RBCs, adenine-saline added	10 ml/kg (10 mg IgG/kg) IV	3
-Packed RBCs (Hct 65%) [‡]	10 ml/kg (60 mg IgG/kg) IV	6
-Whole blood (Hct 35%-50%) [‡]	10 ml/kg (80-100 mg IgG/kg) IV	6
-Plasma/platelet products	10 ml/kg (160 mg IgG/kg) IV	7
Replacement therapy for immune deficiencies [¶]	300-400 mg/kg IV (as IGIV)	8
Respiratory syncytial virus prophylaxis	750 mg/kg IV (as RSV-IGIV)	9
Immune thrombocytopenic purpura(ITP)	400 mg/kg IV (as IGIV) 1000 mg/kg IV (as IGIV)	8 10
Kawasaki disease	2 g/kg IV (as IGIV)	11

* This table is not intended for determining the correct indications and dosage for the use of immune globulin preparations. Unvaccinated persons may not be fully protected against measles during the entire suggested time interval, and additional doses of immune globulin and/or measles vaccine may be indicated after measles exposure. The concentration of measles antibody in a particular immune globulin preparation can vary by lot. The rate of antibody clearance after receipt of an immune globulin preparation can vary.

[‡] Assumes a serum IgG concentration of 16 mg/ml.

[¶] Measles vaccination is recommended for HIV-infected children who do not have evidence of severe immunosuppression, but is contraindicated for patients who have congenital disorders of the immune system.

Abbreviations: HBIG=hepatitis B immune globulin; Hct=hematocrit; HRIG=human rabies; immune globulin; IG=serum immune globulin; IGIV=immune globulin, intravenous; IM=intramuscular; IV=intravenous, RBCs=red blood cells; RSV-IGIV=respiratory syncytial virus immune globulin intravenous; TIG=tetanus immune globulin; VZIG=varicella zoster immune globulin.

VII. IMMUNITY		
For Routine Purposes, Persons are Considered Immune to Measles, and/or Mumps, and/or Rubella if:		
MEASLES	MUMPS	RUBELLA
<p>1. Born prior to January 1, 1957; OR</p> <p>2. Met confirmed case definition for disease as described in the <i>Investigative Guidelines</i> (OHS); OR</p> <p>3. Has laboratory evidence of measles antibody titer; OR</p> <p>4. Has had two doses of live measles vaccine (documented by month and year of each dose) on or after the first birthday, with a minimum of 28 days between the first and second dose; OR</p> <p>5. Has a history of two doses, with no available month, and year for the first dose, but documentation of the month, and year of the second dose <u>during or after</u> December 1989.</p>	<p>1. Born prior to January 1, 1957; OR</p> <p>2. Met confirmed case definition for disease by report of a health professional; OR</p> <p>3. Has laboratory evidence of mumps antibody titer; OR</p> <p>4. Has had one dose of live mumps vaccine (documented by month and year) received on or after the first birthday.</p>	<p>1. Born prior to January 1, 1957 [Except women of childbearing age who could become pregnant]; OR</p> <p>2. Met case definition for disease as listed in the <i>Investigative Guidelines</i> (OHS), as reported by a health professional;* OR</p> <p>3. Has laboratory evidence of rubella antibody titer; OR</p> <p>4. Has had one dose of rubella vaccine (documented by month and year) received after the first birthday.</p> <p>*Clinically diagnosed rubella is unreliable and should not be used to assess immune status.</p>

VIII. OTHER CONSIDERATIONS

- A. Persons who received a "further attenuated" (Moraten or Swartz) measles vaccine and immune globulin or measles immune globulin simultaneously are considered un-immunized. Give MMR, 2 doses at least 28 days apart.
- B. Persons vaccinated in the U.S. with measles vaccine of unknown type from 1963 through 1967 are considered unimmunized. Give MMR, 2 doses at least 28 days apart.
- C. Susceptible pharmacists and other health care workers who work within medical facilities or settings with patient contact, should have evidence of immunity to measles and rubella. Serologic screening need not be done before vaccinating for measles and rubella unless the medical facility considers it cost-effective.
- D. Health care students born prior to January 1, 1957 with no history of disease, no history of immunization, or have a negative serology for measles should receive a two-dose series of MMR vaccine.
- E. Edmonston B measles vaccine, a live attenuated vaccine (1963-1975), given with IG or MIG is acceptable as the first dose of measles vaccine if received on or after the first birthday.
Give a second dose of MMR.
- F. A documented history of laboratory confirmed disease is not a contraindication to administering MMR, unless the individual is immune to all three disease strains.
- G. Tuberculin (TB) skin testing
 - 1. A TB skin test should be given before MMR administration or on the same day as MMR administration.
 - 2. If TB skin test is needed after MMR has been given, wait at least 4 weeks to place a TB skin test. Measles vaccination may temporarily suppress tuberculin reactivity, therefore giving false-negative skin test results.
 - 3. Some colleges require TB testing of students. Others have policies that target high-risk populations. Screen vaccine recipients about need for or receipt of a TB skin test. Educate about G1 and G2 above.

VIII. OTHER CONSIDERATIONS, cont.

H. International Travel

International travelers born on or after January 1, 1957 (and are at least 12 months of age) should have 2 doses of a live measles-containing vaccine.

- I. Persons who have received single or double antigens, but not all three antigens: This person is eligible for MMR, if they meet the criteria listed in Measles, Mumps, Rubella vaccine schedule on page 4 of this document. Give 2 doses at least 28 days apart. If one dose of single-antigen measles was given after the first birthday, only one dose of MMR is needed.
- J. More specific guidelines for acceptable evidence of immunity in persons who work in health-care facilities, international travelers, and students at post-high school educational institutions can be found in Section VII above or in the ACIP statement as published in the MMWR 5/22/98; Vol. 47(RR-8).
- K. For someone with a history of fainting with injections, a 15 minute observational period is recommended post immunization.

IX. ADVERSE EVENTS REPORTING

Adverse events following immunization must be reported to the Vaccine Adverse Events Reporting system (VAERS) at 1-800-822-7967. Forms and procedures can be found at the VAERS website: www.vaers.org. In addition, a copy of the reporting form should be sent to the patient's primary provider, per ORS 855-041-0510.

Table 2. Events reportable to VAERS:

Vaccine	Illness, disability, injury or condition covered	Time period until first symptom
Vaccines containing measles, mumps, or rubella (e.g., MMR, MR, M, R)	1. Anaphylaxis or anaphylactic shock	4 hours
	2. Encephalopathy (or encephalitis)	5-15 days (not less than 5 and not more than 15 days)
	3. Any acute complication sequela (including death)	Not applicable
Vaccines containing rubella virus (e.g., MMR, MR, R)	1. Chronic arthritis	7-42 days
	2. Any acute complication sequela (including death)	Not applicable
Vaccines containing measles virus (e.g., MMR, MR, M)	1. Thrombocytopenic purpural	7-30 days
	2. Vaccine-strain measles viral infection in an immunodeficient recipient	6 months
	3. Any acute complication sequela (including death)	Not applicable

X. REFERENCES

1. Measles. In: *Epidemiology and Prevention of Vaccine-Preventable Diseases* ("Pink Book"). Atkinson W, Hamborsky J, Wolfe S, eds. 9th ed. Washington, DC: Public Health Foundation, 2006: 125-44.
2. General Recommendations on Immunization, MMWR Vol. 51, No. RR-2, 2/8/02.
3. Measles, Mumps, and Rubella Vaccine Use and Strategies for Elimination of Measles, Rubella, and Congenital Rubella Syndrome and control of Mumps; MMWR, Vol. 47, No. RR-8, 5/22/98.
4. Vaccine package inserts.

For more information or to clarify any part of the above order, consult with your vaccine recipient's primary care provider, or contact Health Services, Immunization Program at (971) 673-0300.