

**OREGON HEALTH AUTHORITY  
IMMUNIZATION PROGRAM**

**MEASLES, MUMPS AND RUBELLA LIVE VIRUS VACCINE<sup>1</sup>  
MEASLES, MUMPS, RUBELLA AND VARICELLA LIVE VIRUS VACCINE<sup>2</sup>**

**I. OREGON IMMUNIZATION MODEL STANDING ORDER:**

1. Check the ALERT Immunization Information System (IIS) to determine whether the patient needs this vaccine and any other vaccines.
2. Screen clients for contraindications.
3. Provide a current Vaccine Information Statement (VIS), and answer any questions.
4. Record all required data elements in the client's permanent health record.
1. MMR or MMRV:
  - a) Give 0.5mL MMR-containing vaccine<sup>1, 2</sup> **subcutaneously** to eligible clients. See Section III. A–D, page 3.
  - b) If not given simultaneously with another live virus vaccine, give at least 28 days apart.
  - c) If a PPD tuberculin skin test is not given simultaneously with a MMR-containing vaccine, delay PPD for at least 4 weeks.
5. May be given with all ACIP-recommended child and adult vaccinations.
6. Observe client for 15 minutes after vaccination to decrease the risk for injury should they faint.

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Signature                      Health Officer or Medical Provider                      Date

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Signature                      Health Officer or Medical Provider                      Date

Note: Single antigen varicella under separate order

**This order expires July 31, 2017**

**II. LICENSED VACCINE**

<b>A. LICENSED COMBINATION MMR VACCINE<sup>1</sup></b>			
<b>Product Name</b>	<b>Vaccine Components</b>	<b>Acceptable Age Range</b>	<b>Thimerosal</b>
M-M-R <sup>®</sup> II* (Merck)	Measles <sup>◇</sup> Mumps <sup>§</sup> Rubella <sup>‡</sup>	≥12 months <sup>‡‡</sup>	No
<b>B. LICENSED COMBINATION MMR AND VARICELLA (MMRV) VACCINE<sup>2</sup></b>			
ProQuad <sup>®◇◇,§§</sup> (Merck)	Measles <sup>◇</sup> Mumps <sup>§</sup> Rubella <sup>‡</sup> Varicella <sup>**</sup>	12 months–12 years	No

\* Each dose contains approximately 25 mcg of neomycin. The product contains no preservative. Sorbitol and hydrolyzed gelatin are added as stabilizers.

◇ M-M-R<sup>®</sup> II contains a sterile, lyophilized preparation of ATTENUVAX<sup>®</sup>, a more attenuated line of measles virus, derived from Enders’ attenuated Edmonston strain and grown in cell cultures of chick embryo.

§ MUMPSVAX<sup>®</sup>, the Jeryl Lynn strain of mumps virus, is grown in cell cultures of chick embryo.

‡ MERUVAX<sup>®</sup>, the Wistar RA 27/3 strain of live attenuated rubella virus, is grown in human diploid cell culture.

\*\* Oka/Merck strain of varicella-zoster virus propagated in MRC-5 cells.

◇◇ MMRV vaccine must be stored frozen at an average temperature ≤ 5°F (≤ 15°C) and the diluent should be stored separately at room temperature.

§§ MMRV, like Varicella vaccine, must be given within 30 minutes of reconstitution.

‡‡ Infants 6–11 months of age, traveling internationally, should have at least one dose of measles-containing vaccine; do not use ProQuad for traveling infants.<sup>2, 3</sup>

### III. RECOMMENDATIONS FOR USE<sup>4</sup>

#### A. All persons $\geq 12$ months of age without medical contraindications (e.g., pregnancy or severe immunosuppression), who...

- do not have acceptable evidence of immunity to measles, mumps, and rubella (see section IV); or
- college students or medical care workers who have “acceptable evidence of immunity to measles” but nevertheless are required by schools or employers to be vaccinated\* should be vaccinated with MMR

#### B. During an outbreak, a 2<sup>nd</sup> dose of vaccine should be considered for all persons $\geq 12$ months of age that are affected by the outbreak and whose only evidence of immunity is documentation of a single dose of vaccine. Children $<12$ months and $>6$ months with ongoing risk of exposure can be vaccinated.<sup>◇</sup>

#### C. Post-partum women who do not have evidence of immunity to rubella should receive MMR vaccine upon completion or termination of pregnancy. Postpartum administration of MMR vaccine to women who lack presumptive evidence of immunity to rubella should not be delayed because anti- Rho(D) IG (human) or any other blood product were received during the last trimester of pregnancy or at delivery. These women should be vaccinated immediately after delivery and tested at least 3 months later to ensure that they have presumptive evidence of immunity to rubella and measles.

#### D. Indications for repeating a dose of measles vaccine

- Vaccination before the first birthday;
- Vaccination  $<28$  days after another live vaccine (e.g. FluMist<sup>®</sup>)
- Vaccination with killed measles vaccine,
- Vaccination with killed measles vaccine followed by live vaccine less than 4 months after the last dose of killed measles vaccine.
- Vaccination before 1968 with an unknown type of vaccine.
- Vaccination with IG in addition to a vaccine of unknown type. (Revaccination not necessary if IG given with Edmonston B vaccine.)
- Persons with perinatal HIV infection who were vaccinated before effective antiretroviral therapy (ART) need 2 appropriately spaced doses after effective ART has been established. Do not give MMRV.
- Children 6–11 months of age who were vaccinated for travel or during an outbreak need 2 appropriately spaced doses

\* Per OIP medical director.

◇ An outbreak is determined and guided by the epidemiology and the setting of the outbreak.

#### IV. ACCEPTABLE EVIDENCE OF IMMUNITY<sup>4</sup>

For routine purposes, persons who meet the criteria below are considered immune to Measles, Mumps, or Rubella, respectively		
	Measles or Mumps	Rubella
Routine Vaccination	1.Documentation of age-appropriate vaccination with a live measles or mumps virus-containing vaccine <sup>*</sup> : -preschool-aged children: 1 dose -school-aged children, K-12: 2 doses -adults not at high risk <sup>5</sup> : 1 dose, or 2.Laboratory evidence of immunity <sup>◇</sup> , or 3.Laboratory confirmation of disease, or 4.Born before 1957	1.Documentation of vaccination with 1 dose of live rubella virus-containing vaccine <sup>*</sup> , or 2.Laboratory evidence of immunity <sup>◇</sup> , or 3.Laboratory confirmation of disease, or 4.Born before 1957 (except women of childbearing age who could become pregnant <sup>‡</sup> )
Students at post-high school educational institutions	1.Documentation of vaccination with 2 doses of live measles or mumps virus-containing vaccine <sup>*</sup> , or 2.Laboratory evidence of immunity <sup>◇</sup> , or 3.Laboratory confirmation of disease, or 4.Born before 1957	1.Documentation of vaccination with 1 dose of live rubella virus-containing vaccine <sup>*</sup> , or 2.Laboratory evidence of immunity <sup>◇</sup> , or 3.Laboratory confirmation of disease, or 4.Born before 1957 (except women of childbearing age who could become pregnant <sup>4</sup> )
International Travelers, Healthcare Personnel <sup>5</sup> , High-risk adults	1.Documentation of age-appropriate vaccination with a live measles or mumps virus-containing vaccine: Measles: infants 6–11 months <sup>5</sup> : 1 dose Measles or Mumps: persons age ≥12 months <sup>◇</sup> : 2 doses, or 2.Laboratory evidence of immunity, <sup>◇</sup> or 3.Laboratory confirmation of disease, or 4.Born before 1957.	1.Documentation of vaccination with 1 dose of live rubella virus-containing vaccine, <sup>*</sup> or 2.Laboratory evidence of immunity, <sup>◇</sup> or 3.Laboratory confirmation of disease, or 4.Born before 1957 (except women of childbearing age who could become pregnant <sup>‡</sup> )

- \* The first dose of MMR vaccine should be administered on or after age 12 months; the second dose of measles- or mumps- containing vaccine should be administered no earlier than 28 days (minimum spacing) after the first dose.<sup>4</sup>
- ◇ Measles, rubella, or mumps immunoglobulin (IgG) serum; equivocal results should be considered negative.<sup>4</sup>
- § Children who receive a dose of MMR vaccine before age 12 months should be revaccinated with 2 doses, the first of which should be administered when the child is aged 12-15 months (12 months if the child remains in a high-risk area) and the second at least 28 days later.<sup>4</sup>
- ‡ Women of childbearing age are adolescent girls and premenopausal adult women. Because rubella can occur in some persons born before 1957 and because congenital rubella and congenital rubella syndrome can occur in the offspring of women infected with rubella virus during pregnancy, birth before 1957 is not acceptable evidence of rubella immunity for women who could become pregnant. Women of childbearing age who have received 1 or 2 doses of rubella-containing vaccine and have rubella serum IgG levels that are not clearly positive should be administered 1 additional dose of MMR vaccine (maximum of 3 doses) and do not need to be retested for serologic evidence of rubella immunity.<sup>4</sup>

**V. A. VACCINE SCHEDULE FOR MEASLES MUMPS RUBELLA (MMR)**

<b>Dose and Route: 0.5mL SC</b>			
<b>DOSE</b>	<b>MINIMUM AGE</b>	<b>MINIMUM SPACING</b>	<b>Recommended Age</b>
1	12 months		12–15 months
2	13 months	28 days	4–6 years

1. For retrospective checking, doses that violate the minimum spacing or age by 4 or fewer days do not need to be repeated. However, live parenteral vaccines that are not administered simultaneously should be separated by at least 28 days.<sup>6</sup>
2. When an invalid dose needs to be repeated, the repeat dose should be spaced after the invalid dose by at least 28 days.<sup>6</sup>
3. May give as young as 6 months of age during a measles outbreak or for international travel. Children vaccinated prior to one year of age should be revaccinated at 12–15 months and should receive a third dose at school entry or at least 28 days (minimum spacing) after the second dose.<sup>4</sup>
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.<sup>4</sup>
5. Oregon Administrative Rules (OAR) require that a second measles-containing vaccine be administered to Kindergartners unless a valid exemption is in place. See the October 2014 Immunization Law Handbook located at <http://1.bit.ly/ORSchoollawhandbook> .
6. To include persons with HIV infection who do not have evidence of current severe immunosuppression, see Vaccination of Persons with HIV infection, Section IX. p. 12.<sup>4</sup>

## V. B. VACCINE SCHEDULE FOR MEASLES MUMPS RUBELLA AND VARICELLA (MMR-V)

Dose and Route: 0.5mL SC			
Dose	Minimum Age	Minimum Spacing	Recommended Age <sup>§</sup>
1 <sup>*</sup>	12 months		12–15 months <sup>*</sup>
2 <sup>◇§</sup>	15 months <sup>‡**</sup>	3 months from dose #1 to dose #2 <sup>‡</sup>	4–6 years <sup>◇◇</sup>

<sup>\*</sup> For the 1st dose of measles, mumps, rubella, and varicella vaccines at age 12–47 months, use MMR and varicella vaccines separately unless the parent or caregiver expresses a preference for MMRV. A personal or family history of seizures of any etiology is a precaution for MMRV vaccination (Section VII, pages 10–11)<sup>7</sup>

<sup>◇</sup> MMRV is NOT recommended for persons with HIV infection regardless of degree of immunosuppression because it has not been studied in this population.<sup>4, 8</sup>

<sup>§</sup> For the second dose of measles, mumps, rubella, and varicella vaccines (15 months–12 years) and for the 1st dose at age ≥48 months, use of MMRV generally is preferred over separate injections of its equivalent component vaccines. Considerations should include provider assessment, patient preference, and the potential for adverse events.<sup>7</sup>

<sup>‡</sup> MMRV may be used in children 12 months–12 years of age if a second dose of measles, mumps and rubella vaccine is to be administered and if no MMR is available at the time the second dose of MMR is indicated.<sup>4</sup>

<sup>\*\*</sup> Although 15 months is the recommended minimum age for the 2nd dose (allowing for a 3-month interval between doses one and two), if the second dose is administered at least 28 days, with the first dose administered at age ≥12 months, following the first dose, the second dose is considered valid and does not need to be repeated.<sup>9</sup>

<sup>◇◇</sup> If MMRV is inadvertently given to a patient age 13 years and older, it may be counted towards completion of the MMR and varicella vaccine series and does not need to be repeated. [http://www.immunize.org/askexperts/experts\\_combo.asp](http://www.immunize.org/askexperts/experts_combo.asp)<sup>9</sup>

## VI. CONTRAINDICATIONS

1. **History of anaphylactic reactions to neomycin;** does not include contact dermatitis.<sup>4</sup>
2. **History of severe allergic reaction to any component of the vaccine.** Allergy to egg is not a contraindication. There is no need for prior routine skin testing or use of special protocols.<sup>4</sup>
3. **Pregnancy;** do not give to pregnant women. Women should be counseled to avoid becoming pregnant for 28 days after receipt of MMR vaccine. Close contact with a pregnant woman is not a contraindication.<sup>4</sup>
4. **Immunosuppression:**
  - a.) persons with primary or acquired immunodeficiency, including persons with immunosuppression associated with cellular immunodeficiencies, hypogammaglobulinemia, dysgammaglobulinemia and AIDS or severe immunosuppression associated with HIV infection;
  - b.) persons with blood dyscrasias, leukemia, lymphomas of any type, or other malignant neoplasms affecting the bone marrow or lymphatic system;
  - c.) persons who have a family history of congenital or hereditary immunodeficiency in first-degree relatives (e.g., parents and siblings), unless the immune competence of the potential vaccine recipient has been substantiated clinically or verified by a laboratory; or
  - d.) persons receiving systemic immunosuppressive therapy, including corticosteroids  $\geq 2$  mg/kg of body weight or  $\geq 20$  mg/day of prednisone or equivalent for persons who weigh  $>10$  kg, when administered for  $\geq 2$  weeks.<sup>4, 8, 10</sup>
5. **Immune Globulin (IG) and MMR-containing vaccines should not be administered simultaneously:**
  - If IG is given before MMR or MMRV, consult the table in Sect. VIII p.10 for the appropriate interval.
  - If the live vaccine\* is given first, it is necessary to wait at least 2 weeks (i.e., an incubation period) before giving the antibody.<sup>6</sup>

- If the interval between the vaccine and antibody is less than 2 weeks, the recipient should be tested for immunity or the vaccine dose should be repeated.<sup>6</sup>

**\*Does not include: LAIV, Rotavirus, Zoster, oral Typhoid or Yellow Fever vaccine.<sup>6</sup>**

## VII. PRECAUTIONS AND WARNINGS

1. **Recent ( $\leq 11$  months) receipt of antibody-containing blood Product:** Receipt of antibody-containing blood products (e.g., IG, whole blood, or packed red blood cells) might interfere with the serologic response to measles and rubella vaccine for variable periods, depending on the dose of IG administered. The effect of IG-containing preparations on the response to mumps vaccine is unknown.<sup>4</sup>
2. **Salicylates:** Avoid use of salicylates for 6 weeks after varicella vaccine<sup>2</sup>
3. **Defer MMR-containing vaccine during moderate or severe illness with or without fever.<sup>4</sup>**
4. **History of thrombocytopenia or thrombocytopenic purpura** or low platelet counts at time of injection may be at increased risk for clinically significant thrombocytopenia following a MMR-containing vaccine. If a patient experiences an episode of thrombocytopenia within 6 weeks after receiving an MMR-containing vaccine, consult with client's physician before giving subsequent doses. Serologic testing for measles and varicella immunity may be prudent prior to administration of either vaccine.<sup>4</sup>
5. **Tuberculosis:** Vaccination in persons with active tuberculosis should be deferred until they have recovered. There is a theoretical concern that measles vaccine might exacerbate tuberculosis.<sup>4</sup>
6. **Tuberculin testing:** if a tuberculin skin test is to be performed, it should be administered either any time before, simultaneously with, or at least 4–6 weeks after MMR or MMRV vaccine. As with the tuberculin skin tests, live virus vaccines also might affect tuberculosis interferon-gamma release assay (IGRAs) blood test results.<sup>4</sup>
7. **Personal or family history of seizures of any etiology:** Studies suggest that children who have a personal or family history of febrile seizures or epilepsy are at increased risk for febrile seizures compared with children without such histories. In one study, the risk difference of febrile seizure within 14 days of MMR vaccination for children aged 15 to 17 months with a personal history of febrile seizures was 19.5 per 1,000 (CI = 16.1– 23.6) and

for siblings of children with a history of febrile seizures was four per 1,000 (CI = 2.9–5.4) compared with unvaccinated children of the same age.<sup>4</sup>

## VIII. SUGGESTED INTERVALS BETWEEN ADMINISTRATION OF IMMUNE GLOBULIN PREPARATIONS AND MEASLES-OR VARICELLA-CONTAINING VACCINE\*

Product / Indication	Dose, including mg immunoglobulin G (IgG)/kg body weight	Recommended interval before measles or varicella-containing <sup>1</sup> vaccine administration
Blood transfusion		
- Red blood cells (RBCs), washed	10 mL/kg (negligible IgG/kg) IV	None
- RBCs, adenine-saline added	10 mL/kg (10 mg IgG/kg) IV	3 months
- Packed RBCs (hematocrit 65%) <sup>2</sup>	10 mL/kg (60 mg IgG/kg) IV	6 months
- Whole blood (hematocrit 35%-50%) <sup>2</sup>	10 mL/kg (80-100 mg IgG/kg) IV	6 months
- Plasma/platelet products	10 mL/kg (160 mg IgG/kg) IV	7 months
Botulinum Immune Globulin Intravenous (Human)	1.5 mL/kg (75 mg IgG/kg) IV	6 months
Cytomegalovirus IGIV	150 mg/kg maximum	6 months
Hepatitis A IG		
- Contact prophylaxis	0.02 mL/kg (3.3 mg IgG/kg) IM	3 months
- International travel	0.06 mL/kg (10 mg IgG/kg) IM	3 months
Hepatitis B IG (HBIG)	0.06 mL/kg (10 mg IgG/kg) IM	3 months
IGIV		
- Replacement therapy for immune deficiencies <sup>3</sup>	300-400 mg/kg IV	8 months
- Immune thrombocytopenic purpura treatment	400 mg/kg IV	8 months
- Measles IG, contact prophylaxis (immunocompromised contact)	400 mg/kg IV	8 months
- Postexposure varicella prophylaxis	400 mg/kg IV	8 months
- Immune thrombocytopenic purpura treatment	1,000 mg/kg IV	10 months
Measles IG, contact prophylaxis		
- Standard (i.e., nonimmunocompromised) contact	0.5 mL/kg (80 mg IgG/kg) IM	6 months
Monoclonal antibody to respiratory syncytial virus F protein (Synagis™) <sup>4</sup>	15 mg/kg (IM)	None
Rabies IG (RIG)	20 IU/kg (22 mg IgG/kg) IM	4 months
Tetanus IG (TIG)	250 units (10 mg IgG/kg) IM	3 months
Varicella IG <sup>5</sup>	125 units/10 kg (60-200 mg IgG/kg) IM, maximum 625 units	5 months
Kawasaki disease	2gm/kg IV	11 months <sup>3</sup> chapter 2

**Footnotes:**

This table is not intended for determining the correct indications and dosages for using antibody-containing products. Unvaccinated persons might not be fully protected against measles during the entire recommended interval, and additional doses of IG or measles vaccine might be indicated after measles exposure. Concentrations of measles antibody in an IG preparation can vary by manufacturer's lot. Rates of antibody clearance after receipt of an IG preparation also might vary. Recommended intervals are extrapolated from an estimated half-life of 30 days for passively acquired antibody and an observed interference with the immune response to measles vaccine for 5 months after a dose of 80 mg IgG/kg.

1. Does not include zoster vaccine. Zoster vaccine may be given with antibody-containing blood products.
2. Assumes a serum IgG concentration of 16 mg/mL.
3. Measles vaccination is recommended for children with mild or moderate immunosuppression from human immunodeficiency virus (HIV) infection, and varicella vaccination may be considered for children with mild or moderate immunosuppression from HIV, but both are contraindicated for persons with severe immunosuppression from HIV or any other immunosuppressive disorder.
4. Contains antibody only to respiratory syncytial virus.
5. Licensed VariZIG is a purified human IG preparation made from plasma containing high levels of anti-varicella antibodies (IgG).

Adapted from Table 5, ACIP General Recommendations on Immunization<sup>6</sup>

**[http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/A/mmr\\_ig.pdf](http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/A/mmr_ig.pdf)**

## IX. VACCINATION OF PERSONS WITH IMMUNOSUPPRESSION

1. Who do not have evidence of current severe immunosuppression<sup>4</sup>
  - Age 12 months: CD4 %  $\geq$  15% for  $\geq$  6 months
  - Age > 5 years: CD4%  $\geq$ 15 for  $\geq$  6 months AND  $\geq$  200 / mm<sup>3</sup> for  $\geq$  6 months
2. And do not have other evidence of measles, rubella, and mumps immunity:
  - Two doses of MMR vaccine for all persons aged  $\geq$  12 months<sup>4</sup>
  - The first dose should be administered at age 12 – 15 months and the second dose at age 4 – 6 years, or as early as 28 days after the first dose.<sup>10</sup>
  - Persons with perinatal HIV infection who were vaccinated prior to establishment of effective Anti-Retroviral Therapy (ART) should receive two appropriately spaced doses of MMR vaccine once effective ART has been established.<sup>4</sup>
  - MMRV is NOT recommended for persons with HIV infection regardless of degree of immunosuppression because it has not been studied in this population.<sup>4, 8, 10</sup>
3. MMR-containing vaccine may be considered for persons with leukemia in remission if at least 3 months have passed since termination of chemotherapy (Consult with patient's oncologist).<sup>8</sup>
4. A large dose of corticosteroids is considered equivalent to prednisone  $\geq$ 2 mg/kg/day or  $\geq$ 20 mg/day either given daily or every other day for  $\geq$ 14 days. An isolated treatment  $\geq$ 2 mg/kg/day or  $\geq$ 20 mg/day either given daily or every other day for  $\leq$ 14 days, is permitted. Treatment with <2 mg/kg/day, alternate-day, topical, replacement, or aerosolized, or tendon bursal injection steroid preparations is not a contraindication to an MMR-containing vaccine.<sup>3</sup>
5. MMR-containing vaccines should be avoided for at least 1 month after cessation of high-dose steroid treatment.<sup>3</sup>

## X. SIDE EFFECTS AND ADVERSE EVENTS<sup>2</sup>

Number followed for Safety	MMR <sup>®</sup> II and Varivax <sup>®</sup> Study Number N =1997 Adverse Reaction % 12–23 months	ProQuad <sup>®</sup> Study Number N=4224 Adverse Reaction % 12–23 months
Age in Years		
Local Reaction, Injection site		
Pain	26.7	22.0
Redness	15.8	14.4
Swelling	9.8	8.4
Ecchymosis	2.3	1.5
Rash	1.5	2.3
Systemic Complaints		
Fever ≥102°F	14.9	21.5
Irritability	6.7	6.7
Measles-like rash	2.1	3.0
Varicella-like rash	2.2	2.1
Rash not otherwise specified	1.4	1.6
Upper respiratory infection	1.1	1.3
Viral exanthema	1.1	1.2
Diarrhea	1.3	1.2
Table 1, pages 5 and 6		

## XI. OTHER CONSIDERATIONS

1. **Adverse Events:** epinephrine hydrochloride solution (1:1,000) and other appropriate agents and equipment must be available for immediate use in case of anaphylactic or acute hypersensitivity reaction.<sup>6</sup>
2. **Arthralgia and arthritis:** arthralgia develops among approximately 25% of nonimmune postpubertal females after vaccination with rubella RA 27/3 vaccine, and approximately 10% to 30% have acute arthritis-like signs and symptoms. Arthralgia or arthritis generally begin 1–3 weeks after vaccination, usually are mild and not incapacitating and persist 1 day to 3 weeks, and rarely recur.<sup>7</sup>
3. **Penicillin allergy** is not a contraindication for MMR or MMRV.<sup>6</sup>
4. **Breastfeeding** is not a contraindication to MMR-containing vaccine for the woman or the breast-feeding child.<sup>6</sup>
5. **Serologic screening:** For unvaccinated persons who work within medical facilities, serologic screening need not be done before vaccinating for measles, mumps and rubella unless the medical facility considers it cost-effective.<sup>4</sup>
6. **Healthcare workers:** Healthcare students born after January 1, 1957 with no history of disease, no history of immunization, or a negative serology for measles should receive a two-dose series of MMR vaccine.<sup>4</sup>
7. **Documented Immunity:** Individuals with laboratory documentation of immunity to all three MMR viruses need not be vaccinated.<sup>4</sup>
8. **Internationally adopted children:** Vaccination of internationally adopted children: The simplest approach to resolving concerns regarding MMR immunization is to revaccinate with one or two doses of MMR depending on the child's age. Alternatively, serologic testing for IgG antibody to vaccine viruses indicated on the vaccine record can be considered. Consult CDC General Recommendations on Immunization for further clarification regarding serologic follow-up, page 34.<sup>6</sup>
9. **Chemotherapy** patients who have not received chemotherapy for at least three months may receive live virus vaccine. Provider approval required.<sup>6</sup>
10. **Hematopoietic Stem Cell Transplant (HSCT) Per ACIP MMR and IDSA:** vaccine should be administered 24 months after transplantation if the HSCT

recipient is presumed to be immunocompetent. Since adults who experience natural measles infection prior to transplantation usually retain immunity for several years after HSCT, it is recommended that a measles serology be performed, with vaccination of only seronegative patients. If a decision is made by transplant's provider to vaccinate with varicella vaccine, the vaccine should be administered a minimum of 24 months after transplantation.<sup>4, 8</sup>

**11. Protection of Contacts and Outbreak Control:**

- See the Oregon Disease Investigative Guidelines for measles, mumps and rubella.  
(<http://public.health.oregon.gov/DiseasesConditions/CommunicableDisease/ReportingCommunicableDisease/ReportingGuidelines/Pages/index.aspx>)
- Although mumps vaccine may not provide post-exposure protection, it may protect against subsequent exposures.<sup>11</sup>
- There is no evidence of increased risk for vaccine-associated adverse events if mumps vaccine is given while disease is incubating.

**12. Persons who lack evidence of immunity** to any of the three viruses in MMR are eligible for MMR. Give 2 doses at least 28 days apart.<sup>4</sup>

**13. IG has not been of any value** after exposure to either mumps or rubella. Such use is not recommended.<sup>4, 10</sup>

**14. Rubella vaccine** has not been of any value after exposure to rubella.<sup>4, 10</sup>

**15. Exclusion of susceptibles** in schools or day-care settings:

- Local public health authorities should consider this option.
- In the case of mumps, exclude susceptibles for 26 days after the onset of parotitis in the last case at the facility.<sup>11</sup>

## XII. STORAGE AND HANDLING

All clinics and pharmacies enrolled with the VFC program must **immediately** report any storage and handling deviations to their Oregon Immunization Program health educator. The health educator assignment map is located at: [http://bit.ly/HE\\_Map](http://bit.ly/HE_Map)

Vaccine	Temp	Storage Issues	Notes
<b>M-M-R<sup>®</sup> II<sup>1</sup></b>	Store at -50°C–+8°C (-58°F–+46°F)  <b>OR</b> Store at 2°–8°C (36°F–46°F)	Protect from light at all times  Diluent may be stored in refrigerator or at room temperature (do not freeze diluent).	<b>Use immediately</b> after reconstitution.  If not, may store in a dark place at 2°–8°C (36°F–46°F) and <b>discard within 8 hours.</b>
<b>ProQuad<sup>®</sup> 2</b>	Store at -50°C–-15°C (-58°F–+5°F)	Do not use dry ice.  Diluent may be stored in refrigerator or at room temperature (do not freeze diluent).  ProQuad <sup>®</sup> vaccine powder may be stored at refrigerator temperature for up to 72 hours prior to reconstitution.  Discard any ProQuad <sup>®</sup> vaccine powder stored at 36°F–46°F which is not used in 72 hours of removal from 5°F (-15°C) storage.	<b>If not used immediately</b> may be stored at room temperature and protected from light for up to 30 minutes.  <b>Discard vaccine if not used</b> within 30 minutes of reconstitution.  <b>Do not freeze reconstituted vaccine</b>

<b>VAERS Table of Reportable Events Following Vaccination</b>	
<b>Vaccine – Toxoid</b>	<b>Event and interval from vaccination</b>
Measles Mumps Rubella  [MMR, MR, M, MMRV, R]	A. Anaphylaxis or anaphylactic shock (7 days) B. Encephalopathy or encephalitis (15 days) C. Any acute complications or sequelae (including death) D. Events described in manufacturer’s package insert as contraindications to additional doses of vaccine (interval–see package insert) E. Chronic arthritis (42 days) F. Thrombocytopenic purpura (7–30 days) G. Vaccine–strain measles viral infection in an immunodeficient recipient (6 months)
Varicella [V, MMRV]	Events described in manufacturer’s package insert as contraindications to additional doses of vaccine (interval–see package insert)

[https://vaers.hhs.gov/resources/VAERS Table of Reportable Events Following Vaccination.pdf](https://vaers.hhs.gov/resources/VAERS%20Table%20of%20Reportable%20Events%20Following%20Vaccination.pdf) Accessed 23 November 2015.

**XI.ADVERSE EVENTS REPORTING**

Public providers are to complete the Vaccine Adverse Events Reporting System (VAERS) report online at <https://vaers.hhs.gov/esub/step1>. Save a copy of the report number for your records, and send copies of the report and VAERS ID number to the Oregon Immunization Program Vaccine Safety Coordinator via confidential email at [ORVAERS.Reports@state.or.us](mailto:ORVAERS.Reports@state.or.us) or fax (971-673-0278). Private providers are to report events directly to VAERS and can read about options on how to do so at <http://vaers.hhs.gov/index>.

To request this material in an alternative format (e.g., Braille) or to clarify any part of the above order, contact the Oregon Health Authority Immunization Program at 971.673.0300 and 711 for TTY. For other questions, consult with the vaccine recipient’s primary health care provider or a consulting physician.

Electronic copy of this standing order is available at:  
<http://1.usa.gov/OregonStandingOrders>

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