Pharmacy Protocol

Varicella-containing Vaccines (ProQuad® and Varivax®)	
Last Reviewed	28 September 2021
Last Revised	28 September 2021
This order expires	31 October 2023

Table of contents

1. What's new

Updated formatting.

2. Oregon immunization pharmacy protocol

A. Check the ALERT Immunization Information System (IIS) to determine whether the patient needs this vaccine and any other vaccines.

B. Screen clients for contraindications and precautions.

C. Provide a current Vaccine Information Statement (VIS), answering any questions.

D. Record all required data elements in the client's permanent health record.

E. Verify needle length for subcutaneous (SQ) injection.

F. Administer a 0.5-mL dose of Varicella[1] or MMRV[2] SQ.

G. May be given simultaneously with all routinely commended vaccines. Do not give simultaneously with immune globulin.

H. Ask client to remain seated in the clinic for 15 minutes after vaccination to reduce the risk of injury should they faint.

I have read, understand, and agree to participate by the terms of this protocol.

Immunizing Pharmacist Signature Date

3. Vaccine schedule for Varicella and MMRV

Dose and Route – 0.5-mL, SQ			
Varicella Vaccine[1]			
Dose	**Preferred age**	**Minimum acceptable age**	**Minimum acceptable spacing**
1	7 years	7 years	
2	7 years	7 years	28 days**
MMRV Vaccine[2]			
Dose	**Preferred age**	**Minimum acceptable age**	**Minimum acceptable spacing**
1	7-12 years	7 years	
2	7-12 years	7 years	28 days**

**For children between the ages of 7-12 years, the minimal acceptable spacing is 3 months.

4. Licensed Varicella and MMRV vaccine

Product Name	Vaccine Components	Presentation	Acceptable Age Range	Thimerosal
Varivax[1]	Varicella	0.5-mL single-dose vaccine vials and 0.5-mL single-dose diluent vials	≥ 7 years	No
ProQuad[2]	MMRV		≥ 7 years-12 years	

5. Recommendations for use[3]

A. **Catch-up Vaccination**: All healthy children should be routinely vaccinated with varicella-containing vaccine. A second dose of varicella-containing vaccines is recommended ≥ 3 months after dose 1.

B. **Persons with immunodeficiency**: Persons with impaired humoral immunity may be vaccinated. Persons receiving inhaled, nasal, or topical steroids may be vaccinated. Persons receiving systemic steroids who are not otherwise immunocompromised may receive varicella vaccine if they are receiving <2 mg/kg of body weight or a total of <20 mg/day of prednisone or its equivalent. Certain experts recommend withholding steroids for 2-3 weeks after vaccination if it can be done safely.

C. **Children with HIV Infection**: Because children infected with HIV are at increased risk for morbidity from varicella and herpes zoster compared with healthy children, ACIP recommends that, after weighing potential risks and benefits, single-antigen varicella vaccine should be considered for HIV infected children with CD4+ T-lymphocyte percentages >15%.

D. **Household Contacts of Immunocompromised Persons**: Children living with immunocompromised persons should be vaccinated routinely. Adults living with immunocompromised persons should have their immunity assessed and be offered vaccination, if indicated.

E. **Persons Aged ≥ 13 Years:** Persons ≥ 13 years without acceptable evidence of varicella immunity should receive two doses of single-antigen varicella vaccine, 4-8 weeks apart.

F. **Other Healthy Adults**: All healthy adults should be assessed for varicella immunity, and those who do not have evidence of immunity should receive two doses of single-antigen varicella vaccine, 4–8 weeks apart.

   Persons at increased risk of exposure, including students in post-secondary education, healthcare workers, people at occupational risk (e.g., teachers, daycare workers, corrections officers), non-pregnant women of childbearing age, international travelers, and household contacts of young children should receive special consideration for vaccination.

6. Contraindications:

A. **Allergy**: Severe allergic reaction (e.g., anaphylaxis) to a previous dose or to any vaccine component.

Vaccine	Vaccine Excipient Summary[6]
Varivax	sucrose, hydrolyzed gelatin, sodium chloride, monosodium L-glutamate, sodium phosphate dibasic,

	potassium phosphate monobasic, potassium chloride, MRC-5 human diploid cells including DNA & protein, sodium phosphate monobasic, EDTA, neomycin, fetal bovine serum
ProQuad	MRC-5 cells including DNA and protein, sucrose, hydrolyzed gelatin, sodium chloride, sorbitol, monosodium L-glutamate, sodium phosphate dibasic, recombinant human albumin, sodium bicarbonate, potassium phosphate monobasic, potassium chloride, potassium phosphate dibasic, neomycin, bovine calf serum, other buffer and media ingredients

B. **Pregnancy:** Do not vaccinate pregnant persons with varicella or MMRV. Persons should be told to avoid pregnancy for one month after each vaccine dose. Nursing is not a contraindication to vaccination.[3]

C. **Immunodeficiency**[3]: Varicella and MMRV should not be administered to persons who have cancer, blood dyscrasias, or other malignant neoplasms affecting the blood marrow or lymphatic systems.

   a. MMRV should not be administered to persons with primary or acquired immunodeficiency, including persons with AIDS or other clinical manifestations of HIV infections.

   b. Persons with HIV who are not currently severely immunosuppressed may receive varicella vaccine. MMRV is contraindicated in persons with HIV.

   c. Persons who have a family history of congenital or hereditary immunodeficiency in first-degree relatives (e.g., parents and siblings), should not receive varicella or MMRV unless the immune competence of the potential vaccine recipient has been substantiated clinically or verified by a laboratory.

   d. Persons receiving systemic immunosuppressive therapy, including corticosteroids ≥2 mg/kg of body weight or ≥20 mg/day of prednisone (or equivalent) for persons who weigh >10 kg, when administered for ≥2 weeks, should not receive varicella or MMRV.

D. **IG**: Do not administer varicella or MMRV simultaneously with immune globulin.[3]

7. Warnings and precautions:

A. Moderate or severe illness, with or without fever.[5]

B. Thrombocytopenia is not a contraindication for single-antigen varicella vaccine.[3]

C. **Antibody-containing blood products**: Receipt of antibody-containing blood products (e.g.,IG, whole blood, or packed red blood cells) might interfere with the serologic response to varicella vaccine for variable periods, depending on the dose of IG administered. Varicella vaccine should be administered to persons who have received an IG preparation only after the recommended intervals have elapsed.[3]

D. **Tuberculosis testing**: TB skin tests may be administered simultaneously with varicella or MMRV vaccine. If not administered simultaneously, wait 4-6 weeks after vaccination to place the TB test.[5]

E. **Personal or Family History of Seizures**: A personal or family (i.e., sibling or parent) history of seizures of any etiology is a precaution for the first dose of MMRV but not single-antigen varicella vaccination.[3]

F. **History of thrombocytopenia or thrombocytopenic purpura**: Thrombocytopenia is not a contraindication for single-antigen varicella vaccine.[3]

G. **Simultaneous and non-simultaneous vaccination with live vaccines**: Two or more live vaccines may be administered on the same clinic day. Live vaccines not administered simultaneously need to be separated by 28 days. If not separated by at least 28 days, the vaccine administered second needs to be repeated at least 28 days later.[3]

H. **Salicyclate Therapy**: Avoid the use of salicylates (aspirin) or salicylate-containing products in children aged 7 years to 12 years for six weeks following vaccination wit MMRV due to the association of Reye Syndrome with salicylate therapy and wild-type varicella infection.[3]

8. Other considerations

A. **Post-Exposure Prophylaxis**: Single-antigen varicella vaccine may be effective in preventing illness or modifying varicella severity if administered to children within 3 days, and possibly up to 5 days, of exposure to rash.[3]

B. **Evidence of Immunity**:

Evidence of Immunity to Varicella[3]
• Documentation of vaccination with a live varicella-virus containing vaccine: – PreK: 1 dose – K-12: 2 doses – Adults: 2 doses • Laboratory evidence of immunity;

- Laboratory confirmation of disease;
- Birth in the United States before 1980;
- Diagnosis or verification of a history of varicella disease by a health care provider;
- Diagnosis or verification of a history of herpes zoster by a health care provider.

9. Side effects and adverse reactions

Adverse Event	Frequency
Varivax[1]	
Children 7-12 years of age	
Fever ≥102°	Up to 15%
Local reactions: pain, swelling, redness, rash, itching	Up to 20%
Generalized varicella-like rash	Up to 4%
Children ≥13 years of age and adults	
Fever ≥100°	Up to 11%
Local reactions: pain, swelling, redness, rash, itching	Up to 33%
Generalized varicella-like rash	Up to 6%
ProQuad[2]	
Children up to 3 years of age	
Fever	Up to 21%
Other systemic reactions: irritability, rash, diarrhea	Up to 6%
Injection site pain	Up to 22%
Other local reactions: swelling, redness, bruising	Up to 15%

10. Storage and handling

All clinics and pharmacies enrolled with the Vaccines for Children (VFC) Program must immediately report any storage and handling deviations to the Oregon Immunization Program at 971-673-4VFC (4823).

Vaccine	Temp	Storage Issues	Notes
Varivax[1] and ProQuad[2]	-50° to -15°C (-58° to 5°F)	Store frozen to maintain potency. Vaccine may be stored in the refrigerator for up to 72 hours before reconstitution.	Reconstituted vaccine may be stored at room temperature, protected from light, for up to 30 minutes. Do not freeze reconstituted vaccine.

Varivax[1] and ProQuad (diluent)[2]	2° to 25°C (36° to 77°F)	Diluent may be stored refrigerated or at room temperature.	Do not freeze.

11. Adverse events reporting

Report adverse events online to the Vaccine Adverse Events Reporting System (VAERS) at https://vaers.hhs.gov/reportevent.html.

VAERS Reporting Table:
https://vaers.hhs.gov/docs/VAERS_Table_of_Reportable_Events_Following_Vaccination.pdf

Event and interval from vaccination
A. Anaphylaxis or anaphylactic shock (7 days) B. Disseminated varicella vaccine-strain viral disease. a. Vaccine-strain virus identified (time interval unlimited) o b. If strain determination is not done or if laboratory testing is inconclusive (42 days) C. Varicella vaccine-strain viral reactivation (time interval unlimited) D. Shoulder Injury Related to Vaccine Administration (7 days) E. Vasovagal syncope (7 days) F. Any acute complication or sequelae (including death) of above events (interval - not applicable) G. Events described in manufacturer's package insert as contraindications to additional doses of vaccine (interval - see package insert)

A pharmacist who administers any vaccine must report the following elements to the OHA ALERT Immunization Information System in a manner prescribed by OHA within 15 days of administration. This replaces the former requirement to notify the primary health care provider. A pharmacist is not required to notify the primary health care provider. Oregon Administrative Rule 855-019-0290(2).

12. References

1. Varivax package insert. March 2020. Merck and Co. Available at: https://www.fda.gov/media/76008/download. Accessed on 25 September 2021.
2. ProQuad package insert. Current as of April 2021. Merck and Co. Available at: https://www.fda.gov/media/147563/download. Accessed on 25 September 2021.
3. CDC. Prevention of Varicella: Recommendations of the ACIP. MMWR 2007; 56(4);1-48. Available at: https://www.cdc.gov/mmwr/pdf/rr/rr5604.pdf. Accessed

on 25 September 2021.

4. Marin M, Broder K, Tente J, Snider D, Seward J. Use of combination measles, mumps, rubella, and varicella vaccine. Recommendations of the ACIP. MMWR 2010; 59(3);1-12. Available at: https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5903a1.htm. Accessed 25 September 2021.
5. Kroger AT, Duchin J, Vázquez M. General Best Practice Guidelines for Immunization. Best Practices Guidance of the Advisory Committee on Immunization Practices (ACIP). www.cdc.gov/vaccines/hcp/aciprecs/general-recs/downloads/general-recs.pdf. Accessed 25 September 2021.
6. CDC. Vaccine Excipient Summary. February 2020. Available at: www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table2.pdf. Accessed 25 September 2021.

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: standing orders

Electronic copy of this pharmacy protocol is available at: protocols

13. Appendix A

Recommended intervals between administration of antibody-containing products and measles- or varicella-containing vaccine, by product or indication for vaccination. Updated February 2021. Available at: https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/a/recommended-intervals-between-administration.pdf. Accessed 25 September 2021.

Product/Indication	Dose (mg IgG/kg) and route[a]	Recommended interval before measles- or live varicella-containing vaccine[b] administration
Blood transfusion—RBCs, washed	10 mL/kg, negligible IgG/kg IV	None
Blood transfusion—RBCs, adenine-saline added	10 mL/kg (10 mg IgG/kg) IV	3 months
Blood transfusion—Packed RBCs (hematocrit 65%)[c]	10 mL/kg (60 mg IgG/kg) IV	6 months
Blood transfusion—Whole blood (hematocrit 35%-50%)[c]	10 mL/kg (80-100 mg IgG/kg) IV	6 months
Blood transfusion—Plasma/platelet products	10 mL/kg (160 mg IgG/kg) IV	7 months
Botulinum Immune Globulin Intravenous (Human)	1.0 mL/kg (50 mg IgG/kg) IV	6 months
Cytomegalovirus IGIV	150 mg/kg maximum	6 months
Hepatitis A IG—Contact prophylaxis	0.1 mL/kg (16.5 mg IgG/kg) IM	6 months[d]
Hepatitis A IG—International travel, <1 month stay	0.1 mL/kg (16.5 mg IgG/kg) IM	6 months[d]
Hepatitis A IG—International travel, ≥1 month stay	0.2 mL/kg (33 mg IgG/kg) IM	6 months[d]
Hepatitis B IG	0.06 mL/kg (10 mg IgG/kg) IM	3 months
IGIV—Replacement therapy for immune deficiencies[e]	300-400 mg/kg IV	8 months
IGIV—Immune thrombocytopenic purpura treatment	400 mg/kg IV	8 months
IGIV—Postexposure varicella prophylaxis	400 mg/kg IV	8 months
IGIV—Postexposure measles prophylaxis for immunocompromised contacts	400 mg/kg IV	8 months
IGIV—Immune thrombocytopenic purpura treatment	1000 mg/kg IV	10 months
IGIV—Kawasaki disease	2 g/kg IV	11 months
Measles prophylaxis IG—Standard (i.e., nonimmunocompromised) contact	0.50 mL/kg (80 mg IgG/kg) IM	6 months
Monoclonal antibody to respiratory syncytial virus F protein (e.g., Synagis [MedImmune])[f]	15 mg/kg IM	None
Rabies IG	20 IU/kg (22 mg IgG/kg) IM	4 months
Tetanus IG	250 units (10 mg IgG/kg) IM	3 months
Varicella IG	125 units/10 kg (60-200 mg IgG/kg) IM, maximum 625 units	5 months

Abbreviations: HIV = human immunodeficiency virus; IG = immune globulin; IgG = immune globulin G; IGIV = intravenous immune globulin; mg IgG/kg = milligrams of immune globulin G per kilogram of body weight; IM = intramuscular; IV = intravenous; RBCs = red blood cells.

(a) This table is not intended for determining the correct indications and dosages for using antibody-containing products. Unvaccinated persons might not be protected fully 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. Sources: Mason W, Takahashi M, Schneider T. Persisting passively acquired measles

antibody following gamma globulin therapy for Kawasaki disease and response to live virus vaccination [Abstract 311]. Presented at the 32 meeting of the Interscience Conference on Antimicrobial Agents and Chemotherapy, Los Angeles, California, October, 1992, AND Siber GR, Werner BG, Halsey NA, et al. Interference of immune globulin with measles and rubella immunization. J Pediatr. 1993;122(2):204-211. DOI: 10.1016/ S0022-3476(06)80114-9, AND Mason WH, Schneider TL, Takahashi M. Duration of passively acquired measles antibody and response to live virus vaccination allowing gamma globulin therapy for Kawasaki syndrome. Prog Pediatr Cardiol. 1992;1(1):82. DOI: 10.1016/S1058-9813(06)80067-6. The extrapolation is performed by counting months from 80 mg down to (1-3 mg) (e.g. 80 >>> 40 >> >20 >> >10 >>> 5>>>2.5….equal to FIVE intervals) and adding a grace month, so 80 mg values take a “6 month” interval).

(b) Does not include zoster vaccine recombinant because this vaccine is non-live.

(c) Assumes a serum IgG concentration of 16 mg/mL.

(d) The reason the interval is 6 months (and not 4 months) is that the quantity of 16.5 IgG/kg does not reflect the upper ceiling of the quantity of measles IgG in the product.

(e) Measles vaccination is recommended for children with mild or moderate immunosuppression from HIV infection, and varicella vaccination may be considered for children with mild or moderate immunosuppression from HIV infection, but both are contraindicated for persons with severe immunosuppression from HIV or any other immunosuppressive disorder.

(f) Contains antibody only to respiratory syncytial virus.