

# Model Immunization Protocol

Recommended Sites for Simultaneous Vaccine Administration	
Last Reviewed	7 November 2024
Last Revised	7 November 2024
This order expires	30 November 2026

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## 1. What’s new

Added additional vaccines that have been approved since the last publication in 2022.

## 2. Oregon immunization protocol

- A. Vaccinators must be familiar with the anatomy of the area where they are administering vaccines.
- B. Determine needle size and site for injection for each patient based on patient's age, body mass, the vaccine volume and correct route for administration. See tables below.
- C. Vaccinator and patient should be positioned so that vaccinator can easily identify anatomical landmarks. For older children and adults, having vaccinator and patient at the same eye level is ideal.
- D. Comfort measures, such as distraction (e.g., playing music or pretending to blow away the pain), cooling of the injection site(s), topical analgesia, ingestion of sweet liquids, breastfeeding, swaddling, and slow, lateral swaying can help infants or children cope with the discomfort associated with vaccination.
- E. Ask client to remain seated on the premises for 15 minutes after vaccination to decrease the risk of injury should they faint.

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### 3. Needle size and route

Intramuscular (IM) Route: 22–25 -gauge needle at a 90° angle			
Age	Needle length	Preferred injection Site	Alternate site / Notes
Newborns <28 days old	5⁄8”	Anterolateral thigh muscle	Stretch skin flat between the thumb and forefinger and insert needle at a 90° angle
Infants 1–12 months of age	1”	Anterolateral thigh muscle	
Toddlers 1–2 years of age	1–1¼”	Anterolateral thigh muscle	Deltoid muscle of arm with needle (5⁄8-1”)
Children 3–10 years of age	5⁄8–1”	Deltoid muscle of arm	Anterolateral thigh muscle (1–1¼” needle)
Adolescents 11–18 years of age	5⁄8–1”	Deltoid muscle of arm	Anterolateral thigh muscle (1–1½” needle)
Adults			
Female or male <130 lbs	5⁄8-1”	Deltoid muscle of arm	Stretch skin flat between the thumb and forefinger and insert needle at a 90° angle
Female or male 130–152 lbs	1”	Deltoid muscle of arm	Anterolateral thigh muscle (1-1½”)
Female 153–200 lbs Male 153–260 lbs	1–1½”		
Female 200+ lbs Male 260+ lbs	1½”		
Subcutaneous (SQ) Route: 23–25 -gauge needle at a 45° angle			
Age	Needle length	Preferred injection Site	
Infants 1–12 months of age	5⁄8”	Fatty tissue over anterolateral thigh muscle	
Children ≥1 year of age – adults		Fatty tissue over triceps or fatty tissue over anterolateral thigh muscle	
Other Routes – Oral and Nasal			
Age	Route	Notes	
Infants 1–8 months of age	Oral	Squirt liquid down one side of the inside of the cheek towards the back of the mouth	

Children ≥6 years of age and adults	Oral	
Children ≥2 years of age and adults	Nasal	Insert tip of sprayer slightly into naris. Spray half of contents into one naris. Remove dose-divider clip and repeat procedure in other naris.

#### 4. U.S. Licensed vaccines – Dose and Route

Vaccine Antigens	Product Name	Dose	Route
Cholera	Vaxchora®	Powder	Oral
<b>COVID-19 Vaccines</b>			
COVID-19	Comirnaty® (18+)	0.3 mL	IM
	Spikevax® (18+)	0.5 mL	IM
	Pfizer bivalent booster (5–11)	0.2 mL	IM
	Pfizer bivalent booster (12+)	0.3 mL	IM
	Pfizer (6 months–4 years)	0.2 mL	IM
	Pfizer (5–11 years)	0.2 mL	IM
	Pfizer (12–17 years)	0.3 mL	IM
	Moderna (6 months–5 years)	0.25 mL	IM
	Moderna (6 years–11 years)	0.5 mL	IM
	Moderna (12+)	0.5 mL	IM
	Moderna bivalent booster (6–11 years)	0.25 mL	IM
	Moderna bivalent booster 12+)	0.5 mL	IM
	Novavax (12+)	0.5 mL	IM
Dengue	Dengvaxia®	0.5 mL	SQ
<b>Diphtheria-Tetanus -Containing Vaccines</b>			
DT	No trade name	0.5 mL	IM
DTaP	Daptacel®		
	Infanrix®		
DTaP-IPV	Kinrix®		
	Quadracel®		
DTaP-HepB-IPV	Pediarix®		
DTaP-Hib-IPV	Pentacel®		

Vaccine Antigens	Product Name	Dose	Route
DTaP-IPV-Hib-HepB	Vaxelis®		
Tdap	Adacel®		
	Boostrix®		
Td	Tenivac®		
	TDVax™		
Haemophilus influenzae type b (Hib)	ActHIB®	0.5 mL	IM
	Hiberix®		
	PedvaxHIB®		
Hepatitis A pediatric (HepA)	Havrix®	0.5 mL	IM
	Vaqta®		
Hepatitis A adult (HepA)	Havrix®	1.0 mL	IM
	Vaqta®		
Hepatitis A – Hepatitis B (HepA-HepB)	Twinrix®	1.0 mL	IM
Hepatitis B pediatric (HepB)	Engerix-B®	0.5 mL	
	Recombivax HB®		
Hepatitis B adult (HepB)	Engerix-B®	1.0 mL	
	Recombivax HB®		
	Heplisav-B®	0.5 mL	
Human Papilloma Virus (HPV)	Guardasil 9®	0.5 mL	IM
Inactivated influenza	Afluria Quadrivalent®	0.5 mL *	IM
	Fluad®	0.5 mL	
	Fluad Quadrivalent®		
	Fluarix Quadrivalent®		
	Flublok Quadrivalent®		
	Flucelvax Quadrivalent®		
	FluLaval Quadrivalent®		
	Fluzone High Dose®	0.7 mL	
	Fluzone Quadrivalent®	0.5 mL *	

Vaccine Antigens	Product Name	Dose	Route
	<b>*0.25 mL available for children ≤3 years of age</b>		
Live, attenuated influenza	Flumist Quadrivalent®	0.2 mL	Nasal
Japanese encephalitis	Ixiaro®	0.25 mL (children <3 yrs.)	IM
		0.5 mL	
Measles, Mumps, Rubella (MMR)	M-M-R II®	0.5 mL	SQ or IM
	Priorix		
Measles, Mumps, Rubella and varicella (MMRV)	Proquad®	0.5 mL	
Meningococcal Conjugate (MenACWY)	Menveo®	0.5 mL	IM
	MenQuadfi®		
Meningococcal Groups A, B, C, W and Y Vaccine	Penbraya™	0.5 mL	IM
Meningococcal Serogroup B (MenB)	Bexsero®	0.5 mL	IM
	Trumenba®		
Mpox	Jynneos	0.5 mL	SQ
Pneumococcal Conjugate (PCV)	Capvaxive™	0.5 mL	IM
	Prevnar 20™		
	Vaxneuvance™		
Pneumococcal Polysaccharide (PPV23)	Pneumovax 23®	0.5 mL	IM or SQ
Polio, inactivated (IPV)	Ipol®	0.5 mL	IM or SQ
Rabies	Imovax®	0.5 mL	IM
	RabAvert®		
Respiratory Syncytial Virus (RSV)	Abrysvo	0.5 mL	IM
	Arexvy®		
	Mresvia™		
Rotavirus (Rota)	Rotarix®	1.0 mL	Oral
	RotaTeq®	2.0 mL	
Typhoid	Typhim VI®	0.5 mL	IM
	Vivotif®	Capsules	Oral

Vaccine Antigens	Product Name	Dose	Route
Varicella (Var)	Varivax®	0.5 mL	SQ or IM
Yellow Fever	YF-Vax®	0.5 mL	SQ
	Stamaril® (available through FDA Investigational New Drug protocol only)		
Zoster	Shingrix®	0.5 mL	IM

## 5. Recommendations for use

N/A

## 6. Contraindications

N/A

## 7. Warnings and precautions

N/A

## 8. Other considerations

- A. Inactivated vaccines containing an adjuvant should be injected into a muscle. Administering a vaccine containing an adjuvant either subcutaneously or intradermally can cause local irritation, induration, skin discoloration, inflammation, and granuloma formation.
- B. If multiple injections are to be given in a single visit, use different anatomic sites when possible. For infants and younger children, if more than 2 vaccines are injected in a single limb, the thigh is the preferred site because of greater muscle mass.
- C. Multiple injections given in the same extremity should be separated by a minimum of 1".
- D. For all intramuscular injections, the needle should be long enough to reach the muscle mass and prevent vaccine from seeping into subcutaneous tissue, but not so long as to involve underlying nerves, blood vessels, or bone.
- E. Different vaccines should never be mixed in the same syringe unless specifically licensed for such use.

- F. Single-dose vials and manufacturer-filled syringes are designed for single-dose administration and should be discarded if vaccine has been withdrawn or reconstituted and not used within the time frame specified by the manufacturer. Syringes that are prefilled by the manufacturer and activated (i.e., syringe cap removed or needle attached) but unused should be discarded at the end of the clinic day.
- G. Changing needles between drawing vaccine from a vial and injecting it into a recipient is not necessary unless the needle has been damaged or contaminated.
- H. Aspiration before injection of vaccines or toxoids (i.e., pulling back on the syringe plunger after needle insertion but before injection) is not necessary because no large blood vessels are present at the recommended injection sites, and a process that includes aspiration might be more painful for infants.
- I. The buttock is not an acceptable site for vaccine administration. Doses of hepatitis B and rabies given in the buttock are not valid and must be repeated.
- J. In patients with bleeding disorders, the risk of bleeding after an IM injection can be minimized by vaccine administration immediately after receipt of replacement factor, use of a 23-gauge (or smaller) needle, and immediate application of direct pressure to the immunization site for at least 2 minutes by the clock.

## 9. Side effects and adverse reactions

N/A

## 10. Storage and handling

N/A

## 11. Adverse events reporting

Report suspected adverse events to the Vaccine Adverse Events Reporting System (VAERS) online at <https://vaers.hhs.gov/reportevent.html>. VAERS Reporting Table: <https://vaers.hhs.gov/resources/infoproviders.htm>

## 12. References

1. Kroger A, Bahta L, Long S, Sanchez P. General Best Practice Guidelines for Immunization. Available at: [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html). Accessed 7 November 2024.

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](#)

### 13. Appendix

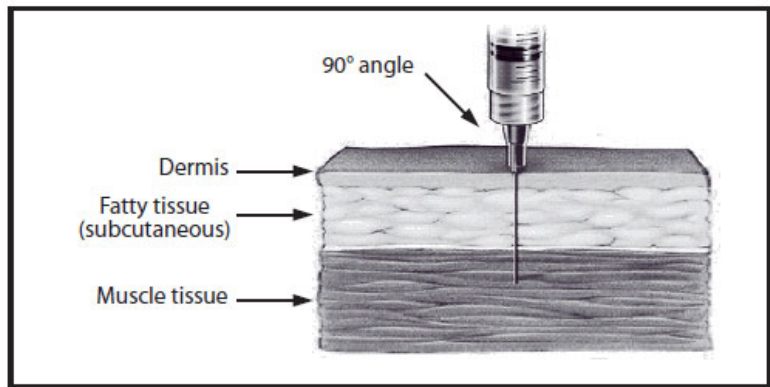


Figure 1. Intramuscular needle insertion

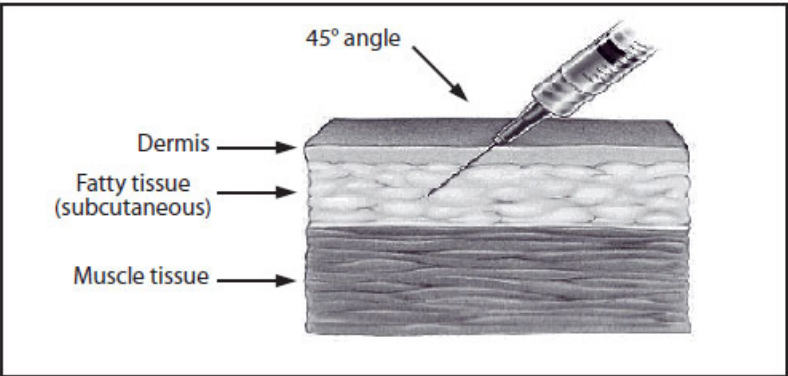


Figure 2. Subcutaneous needle insertion



Figure 3. Anterolateral thigh – use for intramuscular/subcutaneous vaccine administration in infants.

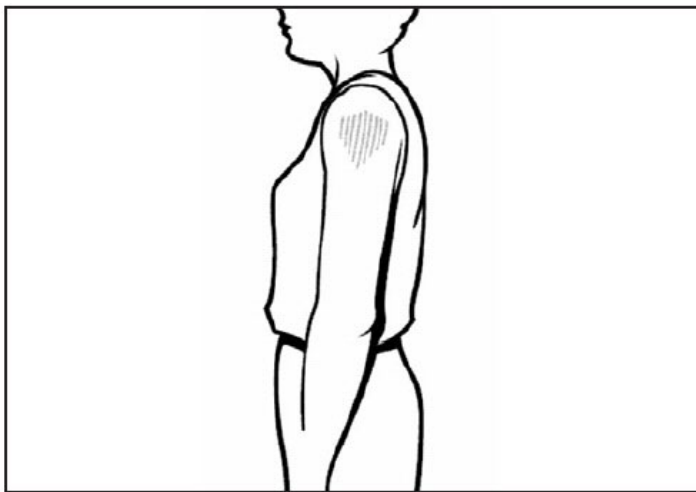


Figure 4. Deltoid – use for intramuscular vaccine administration in older children and adults.

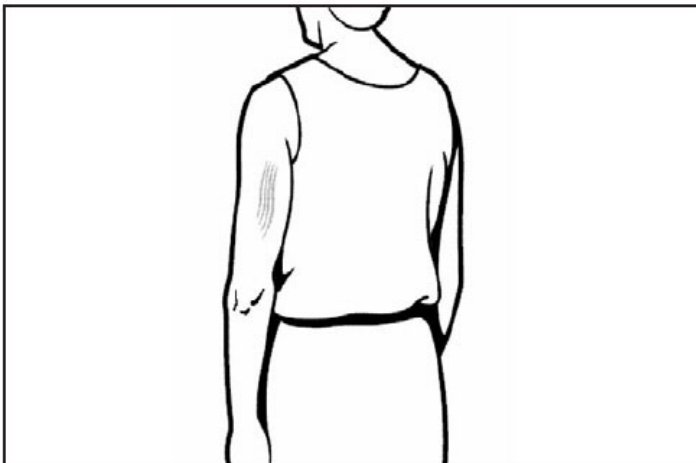


Figure 5. Tricep – use for subcutaneous vaccine administration in older children and adults.