How to Administer Intramuscular and Subcutaneous Vaccine Injections

Administration by the Intramuscular (IM) Route

Administer by IM route only

- COVID-19
- Diphtheria-tetanus-pertussis (DTaP, Tdap)
- Diphtheria-tetanus (DT, Td)
- *Haemophilus influenzae* type b (Hib)
- Hepatitis A (HepA)
- Hepatitis B (HepB)
- Human papillomavirus (HPV)
- Inactivated influenza vaccine (IIV)
- Meningococcal serogroup B (MenACWY, MenB, MenABCWY)
- Respiratory Syncytial Virus (RSV & RSV-mAb)
- Pneumococcal conjugate (PCV)
- Zoster (RZV)

Administer by IM or Subcutaneous (Subcut) route

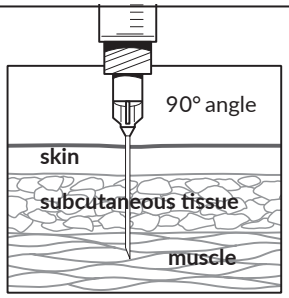
- Inactivated polio vaccine (IPV)
- Measles, mumps, and rubella (MMR II [Merck] only)
- Pneumococcal polysaccharide (PPSV23)
- Varicella (VAR)

PATIENT AGE	INJECTION SITE		NEEDLE SIZE
Newborn (0–28 days)	Anterolateral thigh muscle		⅝"* (22–25 gauge)
Infant (1–12 mos)	Anterolateral thigh muscle		1" (22–25 gauge)
Toddler (1–2 years)	Anterolateral thigh muscle		1–1¼" (22–25 gauge)
	Alternate site: Deltoid muscle of arm if muscle mass is adequate		⅝*–1" (22–25 gauge)
Children (3–10 years)	Deltoid muscle (upper arm)		⅝*–1" (22–25 gauge)
	Alternate site: Anterolateral thigh muscle		1–1¼" (22–25 gauge)
Children (11–18 years)	Deltoid muscle (upper arm)†		⅝‡–1" (22–25 gauge)
Adults (19 years and older)	Deltoid muscle (upper arm)†	130 lbs (60 kg) or less	⅝‡–1" (22–25 gauge)
		130–152 lbs (60–70 kg)	1" (22–25 gauge)
		Men, 153–260 lbs (70–118 kg)	1–1½" (22–25 gauge)
		Women, 153–200 lbs (70–90 kg)	1–1½" (22–25 gauge)
		Men, greater than 260 lbs (118 kg)	1½" (22–25 gauge)
		Women, greater than 200 lbs (90 kg)	1½" (22–25 gauge)

* A ⅝" needle usually is adequate for neonates (first 28 days of life), preterm infants, and children ages 1 through 18 years if the skin is stretched flat between the thumb and forefinger and the needle is inserted at a 90° angle to the skin.

† The anterolateral thigh can also be used. Most adolescents and adults will require a 1 to 1½-inch needle to ensure intramuscular administration.

‡ A ⅝" needle may be used in patients weighing less than 130 lbs (<60 kg) for IM injection in the deltoid muscle only if the skin is stretched tightly and subcutaneous tissues are not bunched.



Needle insertion

Use a needle long enough to reach deep into the muscle without penetrating underlying structures.

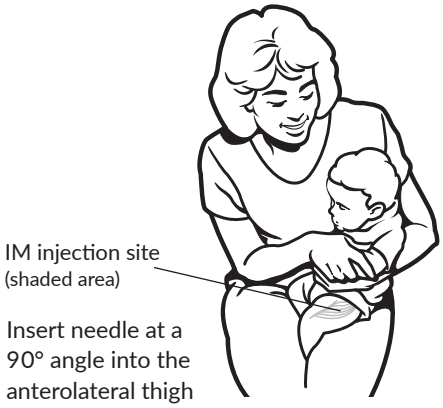
Insert needle at a 90° angle to the skin with a quick thrust.

(Before administering an injection of vaccine, it is not necessary to aspirate, i.e., to pull back on the syringe plunger after needle insertion.)

Multiple injections given in the same extremity should be separated by a minimum of 1 inch, if possible

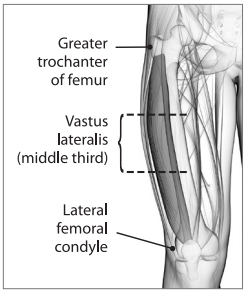
Reference: CDC. *Epidemiology and Prevention of Vaccine-Preventable Diseases.* Hall E., Wodi A.P., Hamborsky J., et al., eds. 14th ed. Washington, D.C., Public Health Foundation, 2021. "Vaccine Administration" at www.cdc.gov/vaccines/pubs/pinkbook/vac-admin.html

Intramuscular (IM) injection site for infants and toddlers

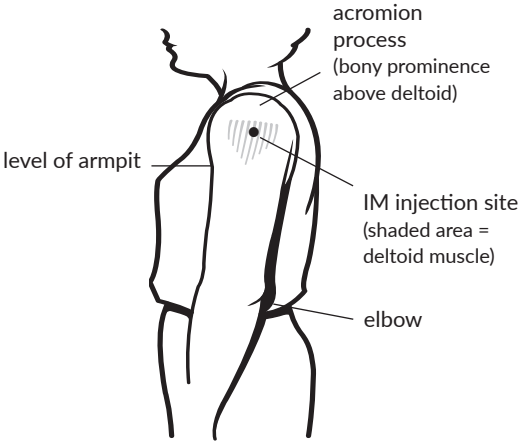


Insert needle at a 90° angle into the anterolateral thigh muscle.

Alternate injection site for adults (outer portion of middle third of thigh)



Intramuscular (IM) injection site for children and adults



Give in the central and thickest portion of the deltoid muscle — above the level of the armpit and approximately 2–3 fingerbreadths (~2") below the acromion process. See the diagram. To avoid causing an injury, do not inject too high (near the acromion process) or too low.

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Administration by the Subcutaneous (Subcut) Route

Administer by Subcut route only

- MMR (Priorix [GSK])

Administer by Subcut or IM route

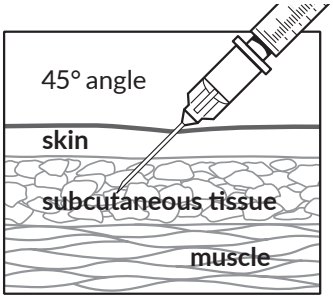
- Inactivated polio vaccine (IPV)
- MMR (MMR II [Merck])
- Pneumococcal polysaccharide (PPSV23)
- Varicella (VAR)

Administer by Subcut or intradermal (ID) route

- Mpox vaccine (Jynneos)

Note: *Subcut is the FDA-approved route and is preferred to reduce the risk of painful injection-site reactions. Intradermal administration for eligible adults is permitted under an FDA Emergency Use Authorization (EUA). See www.fda.gov/media/160774/download.*

PATIENT AGE	INJECTION SITE	NEEDLE SIZE
Birth to 12 months	Fatty tissue overlying the anterolateral thigh muscle	⅝" (23–25 gauge)
12 months and older	Fatty tissue overlying the anterolateral thigh muscle or fatty tissue over triceps	⅝" (23–25 gauge)



Needle insertion

Pinch up the subcutaneous tissue to prevent injection into muscle.

Insert needle at 45° angle to the skin.

(Before administering an injection of vaccine, it is not necessary to aspirate, i.e., to pull back on the syringe plunger after needle insertion.)

Multiple injections given in the same extremity should be separated by a minimum of 1 inch.

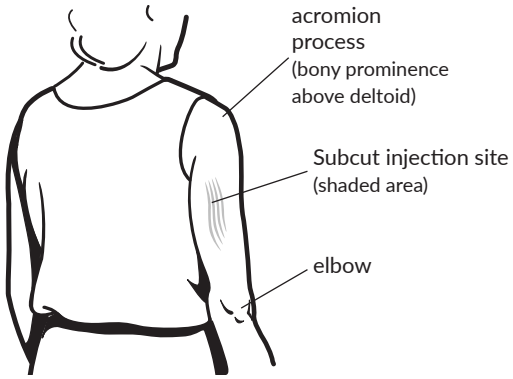
Subcutaneous (Subcut) injection site for infants



Subcut injection site
(shaded area)

Insert needle at a 45° angle into fatty tissue of the anterolateral thigh. Make sure you pinch up on subcutaneous tissue to prevent injection into the muscle.

Subcutaneous (Subcut) injection site for children (after the 1st birthday) and adults



Insert needle at a 45° angle into the fatty tissue overlying the triceps muscle. Make sure you pinch up on the subcutaneous tissue to prevent injection into the muscle.