Deltoid, dorsogluteal, rectus femoris, vastus lateralis, or ventrogluteal: which site do you choose for giving an intramuscular (IM) injection? Each has varying potential for adverse effects. Although nurses have traditionally chosen the dorsogluteal site (also called the buttck or upper outer quadrant), which targets the gluteus maximus muscle, it poses unnecessary and unacceptable risks of injury to the superior gluteal artery and sciatic nerve. In fact, juries have awarded damages to patients of nurses whose dorsogluteal IM injections injured the sciatic nerve. In addition, using this site can cause skin and tissue trauma, muscle fibrosis and contracture, hematoma, nerve palsy and paralysis, and infectious processes such as abscess and gangrene.

In contrast, the ventrogluteal site is the only one of these sites to which no major complications have been attributed. Also called the anterior gluteal site, it targets the gluteus medius and avoids all major nerves and blood vessels. The only contraindications to using this site are obvious deformities and apparent scarring.

The ventrogluteal site is now strongly recommended for IM injections of more than 1 mL in patients older than seven months. (These muscles, which develop with crawling and walking, are of insufficient size in infants—and possibly in patients who are unable to walk. In these cases, the vastus lateralis site should be used instead.)

**LOCATING THE VENTROGLUTEAL SITE**

The standard of care is to completely expose the area and then use anatomical landmarks to locate the correct muscle group. Because the buttocks include fat tissue that extends well below the gluteal muscles, relying only on visualization to select the site can lead to inaccurate needle placement.

Find the ventrogluteal site by palpating the greater trochanter of the femur, which feels like a golf ball. Place the heel or palm of your hand over it and position your index finger on or pointing toward the anterior superior iliac spine. Spread apart your third finger from your index finger and give the injection in the center of

**Figure 1.** The ventrogluteal site is located in the center of the triangle indicated by the red dots.
The ventrogluteal site is now strongly recommended for IM injections of more than 1 mL in patients older than seven months.

women, who typically have more adipose tissue around the buttocks. In one study, 72% of adults—90% of women and 44% of men—were found to have dorsogluteal fat deposits that were deeper than the 1-in. length of the shorter IM needles. The ventrogluteal site offers a shorter distance to the muscle. Other techniques that will help you reach the muscle are using a 90° insertion angle, stretching rather than pinching the skin (unless the patient is emaciated), and choosing the appropriate needle based on the patient’s body mass index. Using the Z-track technique—displacing the skin by 2.5 to 3.75 cm laterally before puncturing it, re-releasing it, and applying gentle pressure immediately after withdrawing the needle—is also recommended. This technique “seals off” the site, preventing tracking or leaking of the medication into the subcutaneous tissue.

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REFERENCES

PROMOTING COMFORT
To minimize the discomfort of an IM injection regardless of the site selected:
- **Position the patient.** Enhance muscle relaxation in a supine patient by having her bend her leg at the knee, in a prone patient by having him point his toes inward, and in a side-lying patient by having her place her upper leg in front of her lower leg.

- **Apply manual pressure.** Firmly press the site for 10 seconds before inserting the needle. Stimulating the surrounding nerve endings is thought to reduce the sensory input from the injection.

- **Depress the plunger slowly.** Give medications at a rate of 10 seconds per milliliter to allow the fluid to absorb.

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