

	safety with possible damage to radial nerve and axillary nerve (not shown; located under deltoid at head of humerus)
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*Locations are indicated by asterisks on illustrations.

The deltoid muscle, a small muscle near the axillary and radial nerves, can be used for small volumes of fluid in children as young as 18 months old. Its advantages are less pain and fewer side effects from the injectate (as observed with immunizations), compared with the vastus lateralis. [Table 20-6](#) summarizes the three major injection sites and illustrates the location of the preferred IM injection sites for children.

Administration

Although injections that are executed with care seldom cause trauma to children, there have been reports of serious disability related to IM injections in children. Repeated use of a single site has been associated with fibrosis of the muscle with subsequent muscle contracture. Injections close to large nerves, such as the sciatic nerve, have been responsible for permanent disability, especially when potentially neurotoxic drugs are administered. When such drugs are injected, use great care in locating the correct site. Aspiration during IM vaccine administration is no longer recommended by the Centers for Disease Control and Prevention, World Health Organization, American Academy of Pediatrics, or the Immunization Action Coalition ([Petousis-Harris, 2008](#)). One classic study of IM injection techniques revealed that the straighter the path of needle insertion (e.g., 90-degree angle), the less displacement and shear to tissue, causing less discomfort ([Katsma and Smith, 1997](#)).

A reported potential hazard with medication in glass ampules is the presence of glass particles in the ampule after the container is broken. When the medication is withdrawn into the syringe, the glass particles are also withdrawn and subsequently injected into the patient. As a precaution, medication from glass ampules is only