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Letter to Editor (Pages: 51-54)

COVID-19 Vaccine Injection Techniques and Considerations for Healthcare Providers

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Dear Editor-in-Chief,

Appropriate vaccine administration is essential for achieving optimal safety and efficacy in vaccination. It is crucial to administer the vaccine at the correct site and use the appropriate injection technique. Injecting too far to the side of the arm or too low on the arm risks injury to the axillary or radial nerve, which can cause burning or shooting pain during the procedure and may lead to nerve damage (neuropathy or paralysis). The COVID-19 vaccine should be injected into the deltoid muscle in the upper arm, specifically in its central and thickest portion. If there is insufficient muscle mass in the deltoid area or if, for any reason, the deltoid muscle is unsuitable, the alternative site for injection can be the vastus lateralis muscle in the anterolateral aspect of the thigh. Injection technique, along with the choice of needle length and gauge (diameter), as well as the injection site, are important considerations, as they can affect the immunogenicity of the vaccine and the risk of local reactions at the injection site.

***Key Words*:** COVID-19, Healthcare Providers, Injection, Technique, Vaccine.

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Introduction

COVID-19 vaccines are widely credited with reducing the spread of the disease, as well as its severity and mortality. However, some individuals may still become infected with the virus even after vaccination. Several COVID-19 vaccines are available globally, and the World Health Organization (WHO) maintains an updated list of vaccine candidates under evaluation (1-4). Vaccines must be administered safely and via the correct route. All vaccine providers should receive education and competency-based training on vaccine administration before offering vaccines. Additionally, programs should be established to monitor the quality of immunization services. The Centers for Disease Control and Prevention (CDC) emphasizes that all healthcare personnel who administer vaccines must undergo comprehensive, competency-based training to ensure safe and effective vaccination practices (5).

Vaccines should be administered to the correct person using the appropriate indication, correct vaccine, correct dose, correct route of administration, correct injection site (if applicable), and correct timing (schedule) to optimize their effectiveness and minimize the risk of local reactions or other adverse events. Before administering a vaccine, the vaccine identification label must be checked to ensure the correct vaccine is selected. The expiry date on the vaccine vial and vaccine diluent (if applicable) must also be verified to ensure they have not expired (6-9).

Route and Site of Administration

Injecting the Vaccine into a Muscle:

- The needle should be long enough to ensure the vaccine is injected into the muscle. A 25 mm needle is typically used for administering the COVID-19 vaccine, while a 38 mm needle is available for adults with more fat covering their muscles.
- The COVID-19 vaccine should be injected into the deltoid muscle in the upper arm. If there is insufficient muscle mass in the deltoid area or if the deltoid muscle is unsuitable for any reason, the vaccine can be injected into the vastus lateralis muscle in the anterolateral aspect of the thigh.
- Although the deltoid muscle is more commonly used in older children and adults due to its accessibility and ease of injection, the thigh muscle can also be used in these age groups if necessary (10–12).

Vaccination site:

The COVID-19 vaccine should be administered into the deltoid muscle of the upper arm, specifically in its central and thickest portion (11-13) (**Figure 1**). If there is insufficient muscle mass in the deltoid area, or if the deltoid muscle is otherwise unsuitable for any reason, the vaccine should be injected into the vastus lateralis muscle located on the anterolateral aspect of the thigh (12-14) (**Figure 2**).

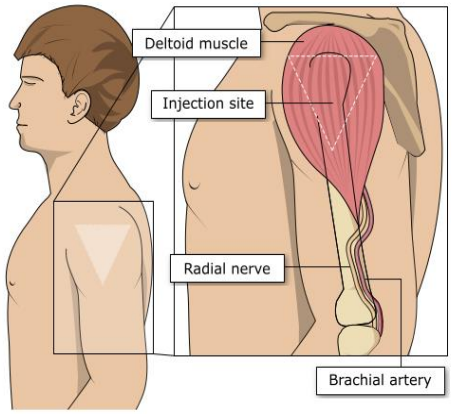

Fig.1: Deltoid muscle in the upper arm (14).

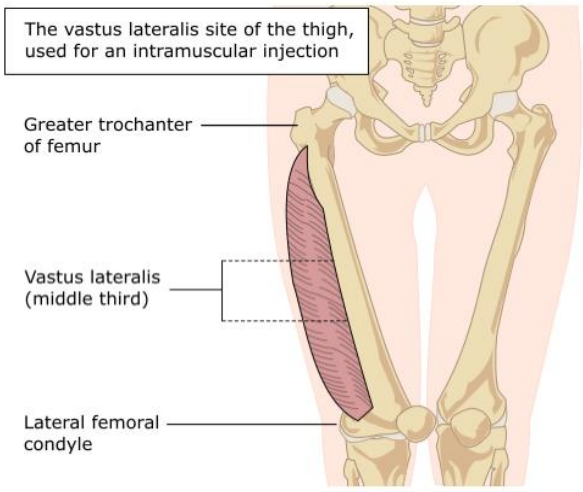

Fig.2: Vastus lateralis muscle of the thigh (14).

Intramuscular (IM) Injection Process:

- Identify the appropriate site for the IM injection.
- Stretch the skin taut at the selected site.
- Insert the needle at a 90° angle, ensuring it is deep enough to deliver the vaccine into the muscle.
- Depress the plunger to administer the vaccine.
- Gently withdraw the needle.
- Apply light pressure to the injection site if bleeding occurs (14, 16, 17) (**Figure 3**).

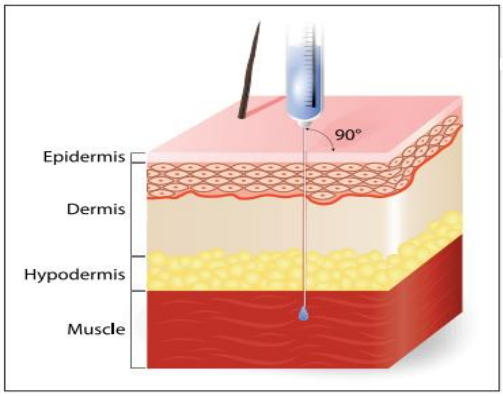

Fig.3: Intramuscular injection technique for COVID-19 vaccination (16).

IM Vaccine Administration:

- Have the patient sit in a chair with their arm relaxed.
- Expose the entire arm and shoulder of the patient.
- The skin does not need to be cleaned before vaccination; however, if it is visibly dirty, rinsing with water is sufficient.
- Identify the correct site for the IM injection.
- Stretch the skin taut at the injection site.
- Insert the needle at a 90° angle, ensuring it is deep enough to deliver the vaccine into the muscle.
- It is not necessary to aspirate (pull back on the plunger) after inserting the needle into the muscle.
- Depress the plunger to administer the vaccine.
- Gently withdraw the needle.
- Apply light pressure using gauze or cotton wool if bleeding occurs (13, 17-19).

Before Administration:

Vaccinators should ensure that:

- There are no contraindications to the vaccine.
- The vaccinator is fully informed about the brand of vaccine(s) to be administered and understands the vaccination procedure.
- The vaccinator is aware of possible adverse reactions (ADRs) and knows how to treat them (12, 14, 15, 20, 21).

Conclusion

COVID-19 vaccines have been instrumental in reducing the spread, severity, and mortality of the disease, though breakthrough infections can still occur. Proper vaccine administration is critical to ensure safety and effectiveness. Vaccinators must be trained in correct techniques, verify contraindications, and understand potential adverse reactions and their management.

The deltoid muscle is the preferred injection site for adults, with the vastus lateralis as an alternative when necessary. Correct vaccine selection, dosage, route, and injection site are essential to optimize effectiveness and minimize adverse events. Comprehensive training and quality monitoring programs are vital to maintaining high standards in immunization practices.

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