

Syringe/Dose Preparation for COVID Vaccine Administration

Multiple considerations are necessary to ensure maximum safety and accuracy in vaccine administration, including preparing the syringe/dose according to accepted standards of practice. When drawing medication from a vial, it is common for air bubbles to collect in the syringe, displacing some of the fluid and potentially distorting measurement of the medication/vaccine to be administered. Standard practice is to remove air bubbles from the syringe before administering the medication/vaccine to ensure the accurate dose is administered and to minimize risk associated with the injection. Removing the air bubbles may be accomplished by securely holding the vial and syringe to keep the needle in the vial, gently tapping the syringe with your fingers until the air bubbles rise to the top of the syringe, and then slowly pushing the plunger up to force the air bubbles out of the syringe, and/or, after removing the needle from the vial and recapping the needle, holding the syringe upright and tapping the barrel of the syringe until the air bubbles rise to the top of the syringe, and then slowly pushing the plunger up to force the air bubbles out of the syringe.

Before the advent of syringes with retractable needles, standard of practice was to change the needle between drawing up the medication and administering the injection, often using a larger needle for drawing up the drug, which accelerated the process and minimized the collection of air bubbles in the syringe, and using a smaller needle to administer the injection. The CDC guidance for preparing and administering all three of the COVID vaccines states, "It is not necessary to change needles between drawing vaccine from a vial and injecting it into a recipient unless the needle has been damaged or contaminated." The CDC Pink Book states, "Vaccines must reach the desired tissue to provide an optimal immune response and reduce the likelihood of injection-site reactions, a supply of needles should be available in varying lengths appropriate for the patient population, and clinical judgment should be used when selecting needle length," and provides guidelines for selecting the appropriate needle length and gauge for intramuscular (IM) injections.

Needles tend to break most at the hub, where the needle enters the syringe, and needle breakage is more likely to occur if the needle is bent prior to insertion and/or is inserted into soft tissues for its entire length. Steps that should be taken to prevent damage to the needle include:

1. Avoid bending the needle; care should be taken to not bend the needle during insertion into and removal from the vial, the recapping process, and the removal of air bubbles; the practice of leaving the needle inserted in the vial, only holding/securing the syringe in one hand and leaving the vial unsecured and hanging off the end of the needle while tapping the barrel of the syringe increases the risk of weakening and bending the needle, potentially resulting in needle breakage at the time of vaccine administration;
2. Use a larger gauge needle if significant depths of soft tissue are involved;
3. Use longer needles for injections requiring penetration of significant depths of soft tissues (>18mm); a 1.5 inch needle is recommended for administering an IM injection to a male weighing more than 260 pounds or a female weighing more than 200 pounds;
4. Do not insert the needle to its hub;
5. Do not redirect a needle once inserted into the arm tissues;
6. Do not force needle insertion against resistance; and
7. Change needles between syringe preparation and vaccine injection if there is any possibility the needle has been bent and/or weakened.

References:

<https://www.cdc.gov/vaccines/covid-19/info-by-product/moderna/downloads/prep-and-admin-summary.pdf>

<https://www.cdc.gov/vaccines/covid-19/info-by-product/pfizer/downloads/prep-and-admin-summary.pdf>

<https://www.cdc.gov/vaccines/covid-19/info-by-product/janssen/index.html>

<https://www.cdc.gov/vaccines/pubs/pinkbook/vac-admin.html>

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