Selecting Syringes and Needles (Buying Guide)

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Categories: Patient Care Blogs

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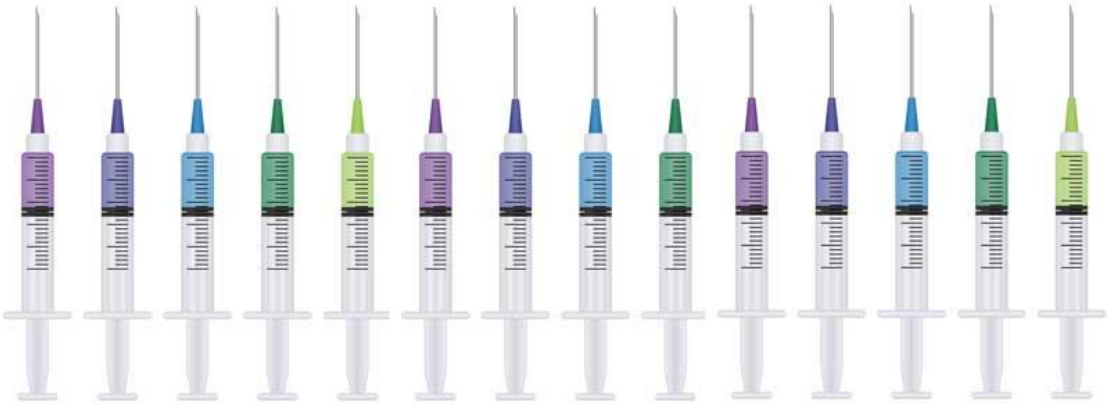
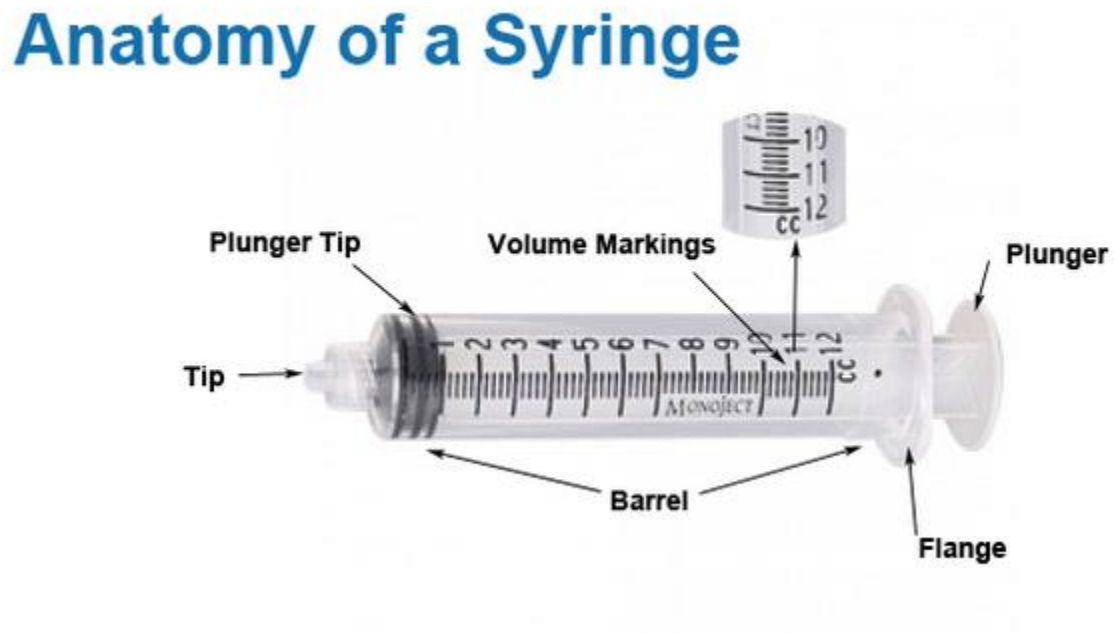


Most of us can recognize a syringe, with a needle sticking out of a long plastic body. For many, it is a childhood horror that they can never forget! While your early years may have been spent dreading a needle, your teens or adulthood might require you to keep a supply of syringes ready to administer a doctor prescribed medication. When you start your own family, you may need a supply of needles for a family member to treat a medical condition. In this case, not only do you need to forget your old dread of this small medical device, but you will also need to know how to use it. Most importantly, you need to know that not all syringes are the same. There are different designs to meet different purposes.

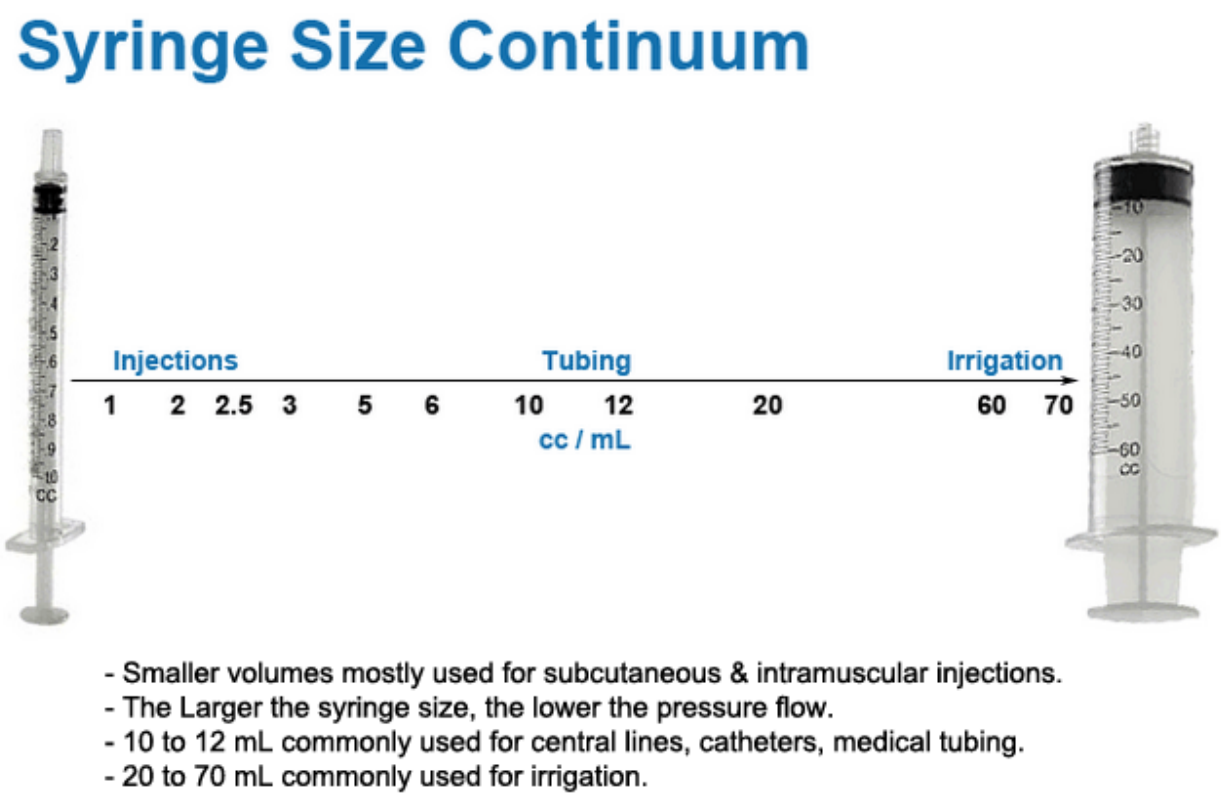
Types of Syringes

Syringes are available in several different designs and varieties. Most are disposable, and many come with an attached needle or with no needle at all. You may select the size of the syringe by the volume of medication it holds. Below is an image depicting the parts of a syringe.



Selecting Syringes

Select syringes based upon the volume of medication prescribed and the desired pressure flow. Marked on the barrel is the amount, measured in centimeters (cc) or milliliters (mL). Both types of measurements are equivalent in volume. One cc is the same as a 1 mL. Large quantities of medication require larger syringe sizes. A need for lower pressure flows also requires a larger dimension. The use of a syringe for injections, with medical tubing or for irrigation are also factors in syringe selection. A prevalent type is the U-100 insulin syringe. It is a low volume syringe commonly used for diabetic medications. This syringe is for one-time use only and is thus a very low-cost syringe. Below is an infographic of a continuum depicting syringe sizes matched with corresponding usage--injections, medical tubing, or irrigation.



Syringe Tips

There are five basic types of syringe tips. The first and most popular is the **Luer lock**, which has a tip that allows the removal and reattachment of the needle. Disconnecting or attaching the needle is easy and quick. The needle hub locks to the syringe tip with a push and a twist. The twisting motion locks the needle hub into place. This twist mount helps secure the needle to the syringe for better safety and stability.

A **slip tip** syringe is also very common. The user may push the needle hub onto the syringe. Friction holds the needle hub in place on the syringe tip. There is no locking function like that found on the Luer lock.

Use **eccentric tips** when you need to administer a medication parallel to the skin of the patient. Use these tips when you want to inject into a surface vein without having the needle penetrate through both vascular walls. Aspiration of liquid medications is also effortless with this type of syringe.

Catheter tip syringes are useful for wound irrigation, for flushing medical tubing. Medical manufacturers make catheter tips with a tapered end to allow catheters to slip on and off of the tip.

The last type of tip is a **syringe with a permanently attached needle**. Frequently used for low-dose applications, these devices decrease medication waste. It is also disposable after use, making cleanup a snap. Tuberculin and insulin injections are popular with this syringe type.

Syringe Tip Selection

Types of Syringe Tips

Luer Lok Tip - secure screw type connection.

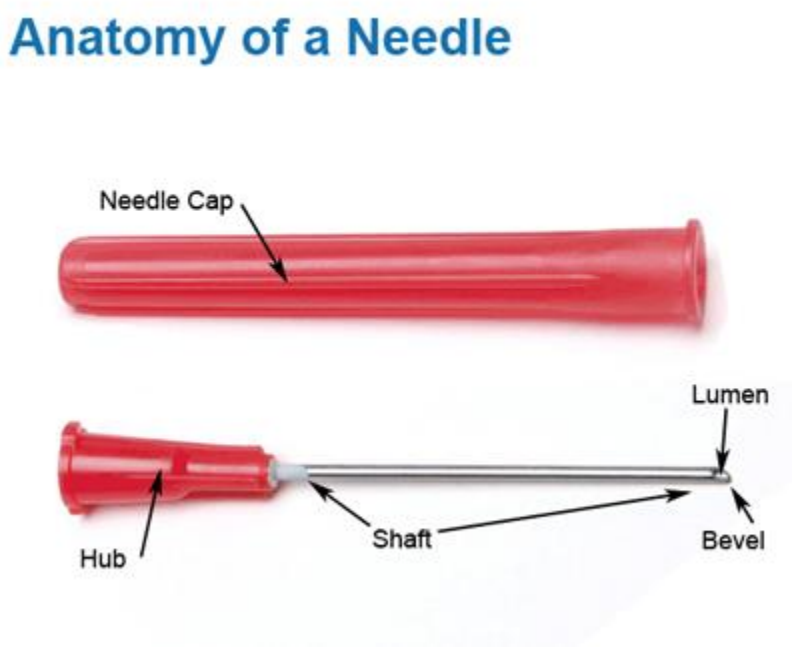
Slip Tip - slip or push-on connection.

Eccentric Tip - off center tip used for surface veins or artery injections.

Catheter Tip - Longer and tapered slip tip design used for irrigation or with tubing.

Selecting Needles

Needles have a simple design with a hollow center, sharp point, and a hub that affixes to the syringe. Needle shafts come in varying lengths measured in inches. Guage sizes measure the thicknesses or diameter of the needle. Needle tips most often have a beveled tip to provide easier cutting or puncturing. Many needles come with a cap to protect the caregiver during the transition from package removal to needle use.



The criteria for selecting the right needle has three primary considerations--gauge, length, and use. Needle gauge measures the width or diameter of the needle. Length measures from the hub to the tip of the needle. Needle use refers to how deep the needle must traverse to reach the target injection area. These injection depths include intradermal (dermis injections), subcutaneous (subcutaneous tissue injections) and muscle (intramuscular injections.

Choosing the Needle Gauge

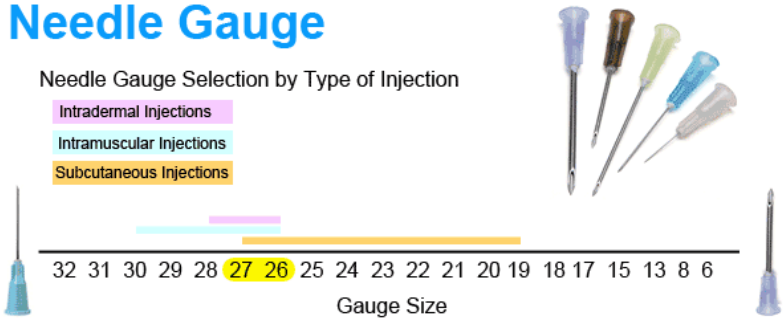
Selecting needles by gauge size occurs by considering skin or hide thickness and the depth of the injection. The needle gauge is a series of numbers in which the lower the number, the wider the diameter of the needle. The higher the gauge number, the smaller the needle width. On the other hand, smaller numbers denote a larger diameter or width. Larger diameter gauges have thicker needle walls and are stronger and more durable. They provide for more viscous medications and support denser skin penetration. Select a lower gauge number when using a high viscosity medication. Fine gauge needles (small diameter) offer less pain for the patient and accommodate low viscosity medications. Select a higher gauge number for these types of injections. The most common needle gauges are 26 and 27. This gauge range adapts to all three types of injections--intradermal, intramuscular and subcutaneous. See the Needle Gauge Continuum below for more details.

Choosing the Right Needle Length

Standard needles vary in length from 3/8 inch to 3-1/2 inch. The location of the administration determines the needle length required. Generally, the further the depth of the injection, the longer the needle. Intramuscular injections require extended needle lengths. Needle lengths for intramuscular injections are usually 7/8 to 1-1/2 inches. Subcutaneous injections call for a 1/2 to 5/8 inch needle. Intradermal injections require a needle length of 3/8 to 3/4 inch. The 1/2 and 5/8 inch needles are the two most common needle lengths and span both intradermal and subcutaneous injections. Below are three graphics to help select which is the best needle for your needs.

Needle Selection Continuum

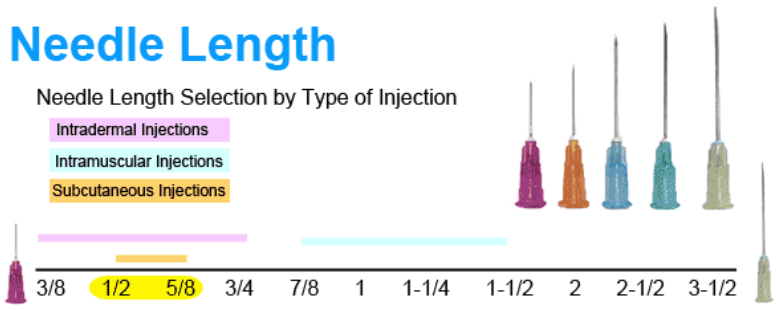
Needle Gauge



- Gauge recommendations for intradermal injections - 26 to 28.
- Gauge recommendations for intramuscular injections - 26 to 30.
- Gauge recommendations for subcutaneous injections - 19 to 27.
- There is overlap between all three injection types for gauges 26 and 27.
- The higher the gauge, number, the smaller the diameter of the needle.
- The higher the viscosity of the fluid, the lower the gauge size.
- The lower the gauge number, the stronger the needle, resulting in less chance of bending or breaking.
- The higher the gauge number, the less pain or bruising experienced by patients.

Source: Becton Dickinson

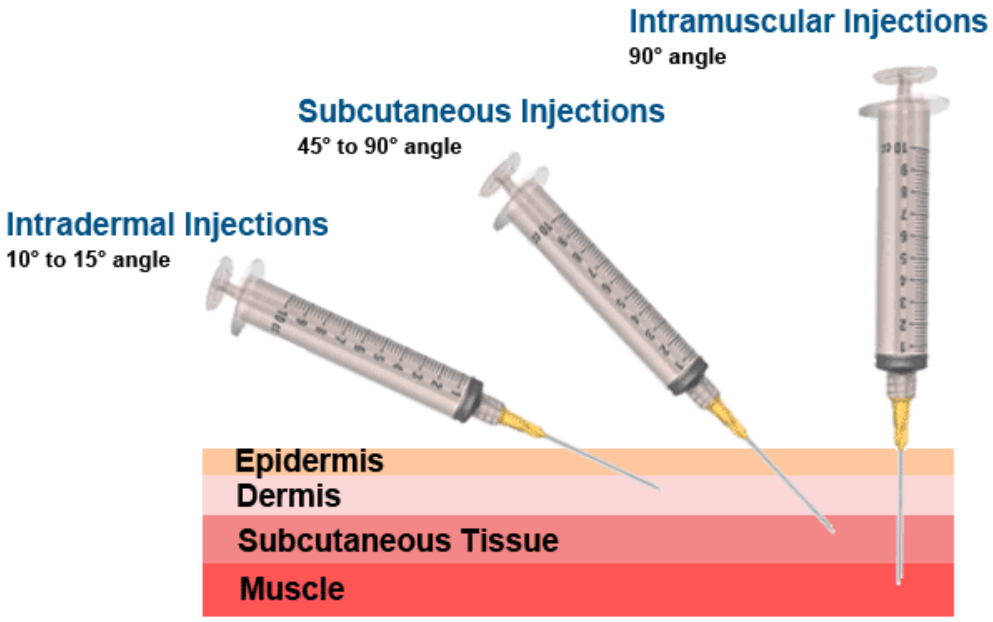
Needle Length



- Length recommendations for intradermal injections - 3/8" to 3/4"
- Length recommendations for intramuscular injections - 7/8" to 1-1/2"
- Length recommendations for subcutaneous injections - 1/2" to 5/8"
- There is overlap between intradermal & subcutaneous injections for 1/2" to 5/8" length needles.
- The deeper the injection, the longer the length of the needle required.
- The shorter the needle length, the less pain or bruising experienced by patients.

Needle Selection Guide

Needle Use



Intramuscular injection angle 90°

Recommended injection sites for intramuscular injections:

- Adults - deltoid muscle of arm, vastus lateralis muscle of thigh.
- Children 18 months (walking) to 18 years - deltoid muscle of arm, vastus lateralis muscle of thigh, or ventrogluteal site.
- Infants less than 18 months - vastus lateralis thigh muscle.

Subcutaneous injection angle 45° to 90°

Recommended injection sites for subcutaneous injections:

- Adults to Infants - anterolateral thigh, upper outer tricep area, upper buttocks, or abdomen (avoid 2" radius around umbillicus).

Intradermal injection angle 10° to 15°

Recommended injection sites for intradermal injections:

- Adults to Infants - anterior aspect of forearm, upper chest, upper back, or back of upper arm.

Source: Becton Dickinson

Purchasing Syringes and Needles

When you buy syringes, it is essential that you know which one you need. Are you using the syringe with needle for intradermal injections, intramuscular injections or subcutaneous injections? The needle gauge and needle length selection are different for each type of injection. Below is a quick list of the selection criteria used for purchasing a syringe and needle.

- The volume of medication to be administered determines syringe size.
- Type of needle hub used determines syringe hub. (Luer Lock, Slip Tip, Eccentric Tip or Catheter Tip)
- The viscosity of the medication determines needle gauge.
- Location of the injection determines needle gauge and needle length.

Make sure you know your needs before shopping!

Current online posting location: https://www.vitalitymedical.com/blog/selecting-syringes-and-needles.html

Target Keyword Phrase – "selecting syringes and needles"

Meta Title: Syringe and Needle Selection Guide by Burt Cancaster

Meta Description: Selecting the right syringe and needle is based on the medication dosage, location of administration and other factors. Syringe with Needle selection criteria are discussed with useful infographics.

Current Google Rankings (9/14/2022)

Search Terms - Ranking

Choosing syringes and needles – 1

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Syringes and needles guide – 1

how to select the best syringes and needles guide – 1

syringe and needle selection guide – 1

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how to select syringes and needles – 1

types of needles and syringes - 1

picking the best needle and syringe – 2

how to choose needles and syringes – 2

sizing needles and syringes – 2

choosing the right needle length – 2

the best needle and syringe - 3

anatomy of a syringe – 3 (image)

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