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A syringe is a medical instrument used to inject medicines, vaccines, or withdraw fluid from the body of humans and animals. Various types of syringes are made from medical-grade materials, to ensure safety and precision.Syringes are made from different materials like the plastic, glass, and metal. The plastic material is the most dominant materials in the syringes, however materials like glass and metal were first used historically. They glass and metal material were used, cleaned and reused again.However, the disposable plastic syringes made of plastic with stainless steel needles are safer as they are disposed after use eliminating the spread of disease.Though the history of invention of syringes is not clearly known, early report by the UK architect Sir Christopher Wren, showed he administered wine and opium into the veins of dogs in the 17th century. The scientist, Robert Boyle, also used syringe to conduct experiment while investigating gas pressure.Alexander Wood, a Scottish physician, is credited with inventing the modern hypodermic syringe in 1853 to treat pain in one part of the body. He attached the hollow needle, created earlier by Irish doctor Francis Rynd, to a plunger.French physician Charles Pravaz also created the hypodermic syringes, at similar time as Alexander Wood. The syringe makes use of a hollow needle to inject substances under the skin and to draw up blood. However, he used the silver material unlike Alexander Wood that used glass material. This made it impossible to control the amount of medicine to be administered. He also did not use plunger like Wood but used a screw.Alexander Wood used his hypodermic syringe (Fergusson syringe) to inject Morphia, a mixture of sherry and morphine to treat a woman with neuralgia in 1853.The invention of plastic disposable syringe is the brainwork of Colin Albert Murdoch, a British citizen living in New Zealand in 1956.Though there may be variations in different types of syringes, the main parts of syringes are the barrel, plunger and the needle.The barrel is mostly made of polypropylene material, and has markings showing different measurements according to the milliliter (mL) scale to help the healthcare giver to administer accurate doses. It is the part of the syringe where the medication is held before it is injected. It is usually transparent.The plunger controls the dosage of injection to be given either through the needle or the connected tube.The needle is the sharp hollow tube that is used to pierce the skin and inject the medicine. Most needles come with caps to protect the healthcare givers from accidental puncture.Different types of syringes have different purpose of use. When large volume of medication are to be administered, larger capacity syringes are necessary. The desired pressure flow is another important consideration, with larger capacity syringes having lower pressure flow unlike smaller syringes.Another consideration during reading the syringe is to measure the plungers top ring.The different types of syringes have different capacity, needle size, needle gauge, and syringe tips.The size of the needle determines the thickness or thinness of the needle.Main Indication of SyringesTo inject medication to the body through intramuscular, intradermal and subcutaneous routes.Measure and draw fluids from the body and for biopsy sampling.Deliver intravenous therapy directly to the bloodstream.Irrigation of wound, eyes, ears, or irrigate catheters for enteral feeding.While selecting from the different types of syringes, you should consider the volume of medication, the viscosity of medication which will determine the needle gauge, the site of injection which will determine the needle gauge and needle length.In selecting the right type of syringe, consider the gauge, length, and use.In choosing the right needle gauge, consider the skin or hide thickness and depth of the injection. The higher the gauge number, the smaller the needle width. However, the smaller the gauge number, the larger the diameter or width. Large diameter gauges with thicker needle walls are durable.Larger gauge number give less bruising or pain to the patient while lower gauge has stronger needle and lesser chances of breaking or bending.Most common gauges are 26 and 27, and they can adapt to intramuscular, intradermal, and subcutaneous injections. For intradermal injection, the recommended gauge number is between 26 to 28, 26 to 30 is for intramuscular injection, while 19 to 27 is for subcutaneous injection.Higher gauge numbers are used for dense skin and for low viscous injection while lower gauge numbers are used for highly viscous injection.In selecting the needle size, the size ranges from 3/8 inch to 3 1/2 inches. Injection deeper into the skin need longer needles. The length used for intramuscular injection ranges from 3/8 inch to 3 1/2, while intradermal injection requires between 3/8 inch to 3/4 inch. Subcutaneous injection use a needle size range between 1/2 inch to 5/8 inch.The The 1/2- and 5/8-inch needles are most used lengths for intradermal and subcutaneous injection. Shorter needle length gives less bruising or pain.Intradermal injection is given at 10 to 15 degree angle in the dermis. Subcutaneous injection is given at 45 to 90 degree angle in the subcutaneous layer while the intramuscular injection is given at 90 degree angle in the muscle just below the subcutaneous layer.We have various types of syringes in clinical settings and they include:Disposable syringes are the most used types of syringes. They are meant for single use and comes in sizes ranging from 1 ml to 60 ml. The disposable syringes are used for routine injection, vaccination and extraction of blood.This luer slip syringe is a new technology that has a smooth spigot on the top unlike other types of syringes. It uses a friction-fit connection, unlike other types that use collars or threaded connections. This ensure a seamless and secure attachment. The tip can be easily pushed into the needle hub to ensure a secure connection.The Luer slip syringe can be a three-part syringe or a two-part syringe. The three part syringe has a barrel, a plunger with a gasket, and a needle, while the two-part syringe has no gasket on top of the plunger.The gasket in the three-part syringe is made from latex or latex-free rubber. The latex-free rubber is for people having latex allergy. The gasket is to guarantee smooth and effortless movement of the plunger.Both the barrel and plunger are made from medical-grade polypropylene (PP) as it is more durable, and resist chemical degradation, stress, cracking and fatigue.Luer slip types of syringes are available in sizes 1ml, 3ml, 5ml, 10ml, 20ml, 30ml, 60mlThe luer lock syringe is also called three-part syringe has three important parts: the barrel, plunger with gasket and needle. This syringe has an internal thread and a collar on the top. The internal thread allows for tight screw-like connection between the needle and syringe and prevent any movement or separation. It secures the needle in place.Both the barrel and plunger in the Luer lock syringe is made from medical-grade polypropylene (PP). This material has properties like chemical resistance, durability, resistance to cracking, stress, fatigue, ethylene oxide sterilisation.Gasket is made from either latex or latex-free rubber. It is used to create an airtight seal between the barrel and the plunger, preventing air entry or leakage, and ensure accurate fluid injection. The gasket also ensure smooth movement of the plunger.The Luer lock types of syringes are available in sizes like 1ml, 3ml, 5ml, 10ml, 20ml, 30ml, 60ml.Used to inject directly into the vein. It has an off-center tip, used for surface vein or artery injection. The available eccentric tip sizes are 10ml, 20ml, 60ml.Insulin syringes have finer needles and are used to inject insulin doses in diabetic patients. These types of syringes are ysed to deliver low dose of insulin injection.Tuberculin syringes are calibrated in tenths and hundredths of a milliliter, are usd to administer small doses accurately. They are used in the testing and treatment of tuberculosis.Catheter syringes are used for purposes like drainage and irrigation procedures. It is manufactured with tapered tips end to allow catheters to slip on and off of the tip.Used to inject and withdraw fluid through a catheter, flushing wounds or when using a slip tip needle that is too large to use standard slip tip syringe.This type has wider opening straight tip that fits onto feeding tube, used for wound irrigation. It may have a loop on the plunger to allow for one-handed operation.It is a special syringe that refills itself after an injection from an inbuilt reservoir giving several doses with the same syringes. However, this type of syringe is rarely used due to contamination.A more advanced syringe type used in emergency rooms, and high risk environment where accidental needle-stick injury and risk of blood-borne infection and disease transmission is high.Dental syringes are used by dentists to administer anaesthetic solutions. It can also be used to supply water, mist or compressed air to the oral cavity and clean debris in the areas the dentist is working on.Oral syringes are mostly used in small children and animals to deliver medications directly to the mouth. The syringes are used as measuring instrument to get accurate dose of medication to be given.Venom extraction syringe creates a vacuum that sucks out poison from a wound. It is used to venom from wound without the need to puncture the woundThis type of syringe comes pre-loaded with medication. It is for single use, and ensures medication accuracy as it is already loaded.A type of syringe designed for one-time use only as the plunger locks automatically after the syringe is used which prevents reuse. It is recommended by WHO for immunization as it prevents reuse.Used in situation where precision and purity is important. The glass material can be sterilised and reused. It is ideal for medication that reacts with plastic materials.We classify most syringes based on the capacity, which is expressed in milliliter (mL) or cubic centimeter (cc), with one milliliter (1 ml) equal to one cubic centimeter (1 cc). The milliliter measurement is used for the liquid volume, but the cubic centimeters is used for the measurement of volume of solids.The syringe sizes determine the needle gauge and needle size.Syringe are available in sizes ranging from 0.25mL to 450mL. The common syringes sizes are 1ml, 2ml, 2.5ml, 3ml, 5ml, 10ml, 20ml, 30ml, 50ml, and 60ml.1 ml syringe is a versatile and commonly used syringe for tuberculin, diabetes injection, vitamin deficiencies (vitamin K for infant and newborn), post-operative situations, and also intradermal injection. 1 ml syringe with gauge size from 25G and 26G are used in intradermal injection. Tuberculin syringes have greater than half inches of needle length and gauges between 26G and 27G.For insulin injection, we have three types of insulin syringes to administer the required lower doses of insulin. The needles are not greater than half inches with gauges between 29G and 31G. For insulin dose of 30 units or less, a 0.3 mL syringe is required. A 0.5 mL syringe is used for insulin doses between 31 to 50 units. A 1mL syringe is used for insulin doses between 51 to 100 units.The 2 ml or 3 ml syringes are also commonly used in hospital setting for administering vaccine injection, and for low dose intramuscular and intravenous injections. The needle gauge is between 23G and 25G, while the needle length is dependent on the patient age and other factors.This syringe can measure doses of medicines up to to 5 ccs. It is used for intramuscular injections, which is given at an angle of 90 degrees. The needle gauge size is between 22G and 23G.When a high volume of intramuscular injection that requires a larger volume of medicine, the 10 ml syringe can be effective. Needle length for intramuscular injection in adult is between 1 and 1.5 inches, while the needle gauge is between 22G and 23G. The injection is given mostly through the cannula.Due to the larger capacity of the 20 ml syringe, it can be used in taking and fusing many drugs in a syringe before injecting them in an infusion giving set. This is then injected into the patient. The injection is mostly through the cannula.The 50 60 mL syringes are normally used with the scalp vein sets (ranging from 18G to 27G) when administering intravenous injections.The 50 ml syringes is also used for nasogastric and gastroenteral feeding, manual pharyngeal or tracheal suction and for manual aspiration of liquids or gas from the stomach.All disposable syringes and needles are for single use only. Reuse can increase the spread of blood borne infection and disease from contaminated syringes, injury or pain.References: //muzamedical.co.uk/blogs/blog/choosing-a-syringe-what-type-of-syringes-are-there-and-which-should-i-use //www.nms.ac.uk/explore-our-collections/stories/science-and-technology/syringes/ //www.vitalitymedical.com/blog/selecting-syringes-and-needles.html Whats one of the most important aspects of using a syringe correctly?The ability to measure accurately.Whether administering medication, drawing blood, or measuring liquids, knowing how to read a syringe is crucial for client safety and proper treatment.In this guide, well cover the basics of measurements with different types of syringes.Before we dive into basic measurements of syringes, lets first familiarize ourselves with the different parts of a syringe.Adaptor: The end of the syringe where the needle attaches.Barrel: The long cylindrical part of the syringe that holds liquids. It has a readable scale, usually marked with measurements in milliliters (mL), cubic centimeters (cc) or units (IU).Plunger: The push rod that moves back and forth within the barrel to expel or draw in liquid.Plunger seal: The black or clear rubber part at the end of the plunger that creates a tight seal with the barrel.Scale: The marked measurements on the barrel that show volume.Here are four simple steps to accurately measure with a syringe.Find the units of measurement shown on the syringe. Most syringes use mL as the standard unit of measurement, but specialized syringes may display units such as insulin which is dispensed in units (IU).Each syringe has lines that correspond to specific volume measurements. Each one marks a certain number of mL or a fraction of an mL. By counting these lines, you can determine the amount of medication or fluid in the syringe.Reading the syringe accurately means counting in consecutive increments. For example, when measuring 2 mL, start at 0 on the scale, count each hash line until the line that measures 2.Nurses may need to administer a dosage between two marked lines on the syringe.In these cases, identify the amount of medication in between the two given lines.There are various types of syringes available, each with its own unique features.Here is a breakdown of the measurements of the most common ones:The 10 mL syringes markings allow for measurements in 0.5 increments.The 5 mL syringes markings allow for measurements in 0.2 mL increments.With a 3 mL syringe, each line represents 0.1 mL increments.Each line on a 1 mL syringe represents 0.01 mL, making it the most precise syringe for measuring small doses of medication.Fast Fact: There are 1,000 mg in 1 mL syringeThe markings on this syringe correspond to insulin units rather than volume measurements. Each line represents two units of insulin.Answer the following questions.Where is 0.25 mL on a 1 mL syringe?Where is 0.54 mL on a 1 mL syringe?Where is 1.6 mL on a 3 mL syringe?AnswersFind the half mark between the 0.2 mL and 0.3 mL lines.The fourth line between 0.5 mL and 0.6 mL represents 0.5 mL.Look for the first line past the 1.5 mL indicator on the 3 mL syringe.Remember, proficiency in reading a syringe is a critical aspect of nursing practice. By mastering this skill, nurses ensure the safe and effective administration of medications to clients.SimpleNursing is an online learning platform to help nursing students excel in their careers.With animated videos, practice questions, and a variety of study materials, SimpleNursing offers a convenient, efficient way to prepare for nursing exams.By using SimpleNursing, you can enhance your nursing skills and become a confident, competent, and compassionate health care professional.Plus, you can access materials anytime and anywhere. So, you can learn on your schedule.Sign up for a free trial today.Industrial & Scientific/Medical & Dental/Medical Syringes Uses item details. Price when purchased onlineA syringe is a medical device used to inject fluids into or withdraw fluids from the body. It typically consists of a hollow cylindrical barrel, a plunger that fits tightly within the barrel, and a needle attached to the end. Push the plunger down to inject fluid, or pull it up to draw fluid into the barrel. Syringes, commonly made from plastic, are designed for single use to prevent contamination and ensure patient safety.It usually consists of a syringe, a piston, a needle, and a protective cover. The syringe is generally made of transparent plastic or glass with scales on it, which can accurately measure and control the injection dose. The piston can slide back and forth in the syringe, and the liquid or medicine can be pushed out by pushing the piston. The needle is the sharp part, which is used to pierce the skin and enter the human tissue for injection. The protective cover protects the needle from contamination when not in use.The main uses of syringes includeDrug injection: accurately injecting various drugs, such as antibiotics, vaccines, and painkillers, into the human body to treat diseases, prevent diseases, or relieve symptoms.Extracting body fluids: Blood, cerebrospinal fluid, and other body fluids can be extracted from the human body for testing or diagnosis.Infusion of nutrient solution: Provide nutritional support for patients who cannot eat orally and inject the nutrient solution into the gastrointestinal tract or veins through a syringe.There are mainly the following types of syringes:Micro syringes: They are mainly used to inject small amounts of drugs, such as insulin, precisely, usually with a capacity of less than 1 ml.Ordinary syringes: Common specifications include 2 ml, 5 ml, 10 ml, etc., suitable for general drug injection and infusion dosing.Large-capacity syringes, such as 20 ml, 50 ml, or even larger capacity, can extract or inject a large amount of liquid, such as thoracentesis, abdominal puncture, etc.Medical syringes: They primarily use syringes in the medical field for drug injections, infusion dosing, blood drawing, and other operations.Veterinary syringes: syringes designed for animal medical treatment, usually more durable, and with different specifications to meet the needs of different animals.Industrial syringes: In some industrial fields, such as chemicals and electronics, people use them to precisely inject liquids, glue, and other materials.Glass syringes: Glass syringes have the advantages of high transparency and good chemical stability but are easy to break.Plastic syringes: Plastic syringes are currently widely used, lightweight, not easy to break, and relatively low-cost.If you are self-injecting drugs, like insulin for diabetes, you can choose a special insulin syringe or insulin pen. Insulin syringes usually have a small capacity and precise scale, insulin pens are more convenient, and the dosage adjustment is more accurate.When it comes to home emergency treatment of small wounds, such as applying disinfectant, the use of a small syringe of 1 ml or 2 ml is a powerful tool. It allows for precise control over the amount of medicine, empowering you in such situations and reducing the risk of waste.For situations requiring intramuscular drug injections, the choice of an ordinary syringe of appropriate capacity is crucial. The common usage of 2 ml to 5 ml syringes in such scenarios should instill confidence in your selection.Check the packaging: Carefully check whether the syringes packaging is complete and whether there is damage, leakage, expiration, etc. If there is a problem with the packaging, do not use it to avoid infection or affect the drugs effect.Check the specifications: Ensure the syringes capacity matches the amount of medicine you need to inject or extract to avoid inaccurate dosing or inconvenient operations due to an inappropriate capacity.Check the cleanliness: Observe whether the syringe barrel, piston, and needle are clean and free of foreign matter, stains, etc. You cannot use them if they are unclean.Choose the appropriate drug: Make sure that the drug used is compatible with the syringe and that no chemical reaction or physical change will occur.For example, plastic syringes cannot extract some drugs to prevent adsorption or degradation.Disinfect the bottle mouth: Disinfect the bottle mouth with an alcohol cotton ball before extracting the drug to prevent contaminationCorrectly draw the drug: After inserting the needle into the medicine bottle, slowly pull the piston to extract the drug, and be careful to avoid bubbles. After the extraction, check whether the drug dosage in the syringe is accurate.Choose the injection site: Different methods (such as intramuscular injection, allowing the patient to choose the appropriate injection site for a subcutaneous injection, intravenous injection, etc. Intramuscular injection usually chooses the buttocks, upper arm deltoid muscle, and other parts. Subcutaneous injection can choose the abdomen, upper arm, outer side, and other parts, and intravenous infusion requires the selection of appropriate veins.Disinfect the skin: Use alcohol cotton balls to disinfect the injection site. Wipe from the inside to the outside, and the area should be large enough to ensure the disinfection effect.Exhaust: Before injection, gently push the piston to expel a small amount of air in the syringe to avoid injecting air into the body.Insert the needle: Hold the syringe and quickly and steadily pierce the needle into the skin at an appropriate angle. Be decisive when inserting the needle to avoid hesitation that may cause the patients pain to increase or the needle to bend.Inject the drug: Slowly push the piston to inject the drug into the body. Determine the injection speed based on the nature of the drug and the patients condition, and generally keep it a bit slow. Observe the patients reaction, and immediately stop the injection if any abnormalities occur.Pull out the needle: Quickly pull out the needle after the injection. Press the injection site with a sterilized cotton ball to prevent bleeding and exudation.Proper disposal: Place the used syringe in a dedicated medical waste container. Do not dispose of it carelessly. Never reuse disposable safe syringes.Clean your hands: Before and after using the syringe, wash your hands carefully and keep your hands clean and hygienic to reduce the risk of infection.The syringe is a simple yet indispensable tool in the world of medicine. Its ability to deliver life-saving medications and perform critical diagnostic procedures makes it a cornerstone of healthcare. As technology advances, syringes will continue to evolve, becoming safer and more efficient. Understanding what a syringe is and its vital role in healthcare helps us appreciate the intricate details that go into even the most routine medical procedures.What are the different sizes of syringes available?Syringes come in various sizes, typically ranging from 0.5 mL to 150 mL. The size used depends on the medical application.What is the difference between a syringe and a needle?The syringe holds and administers fluids. The needle, a sharp hollow tube attached to the syringe, injects or withdraws fluid from the body.Can you use a syringe without a needle?Yes, you can use syringes without needles for tasks like giving oral medication, irrigating wounds, or drawing fluids through a needle-free system.Why is it important to use a sterile syringe?Using a sterile syringe is crucial to preventing infections. Non-sterile syringes can introduce harmful bacteria or viruses into the body, leading to potentially severe health complications.

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