TITLE: INJECTION ADMINISTRATION PROTOCOL FOR NURSES

INTRODUCTION

Injections can be described as the act of giving medication by use of a syringe and needle. This document addresses both Intramuscular and subcutaneous injections.

Intramuscular injections (IM) should be given into the densest part of the muscle tissue under the subcutaneous tissue. The vascularity of muscle aids the rapid absorption of medication. For intramuscular injections, the needle needs to be sufficiently long to ensure that the medication is injected into the muscle. A needle size ranging from 21 to 23 gauge is ideal for intramuscular injections in adults whilst a 25 to 27 gauge is ideal for giving children intramuscular injections.

Subcutaneous injections on the other hand, needs to be injected deep into the subcutaneous tissue. A needle size ranging between 25 and 27 gauge are ideal for administering subcutaneous injections.

Injectable medicines are available as single use prefilled syringes, single use vials, single use ampoules and occasionally multi-dose vials. Multi-dose vials are not to be used for deep intramuscular injections.

Intravenous (IV) is a method of administering concentrated medications (diluted or undiluted) directly into the vein using a syringe through a needleless port on an existing IV line or a saline lock. The direct IV route usually administers a small volume of fluid/medicine (max 20 ml) that is pushed manually into the patient.

Medications given by IV are usually administered intermittently to treat emergent concerns. Medications administered by direct IV route are given very slowly over **AT LEAST 1 minute**. Administering a medication intravenously eliminates the process of drug absorption and breakdown by directly depositing it into the blood. This results in the immediate elevation of serum levels and high concentration in vital organs, such as the heart, brain, and kidneys. Both therapeutic and adverse effects can occur quickly with direct intravenous administration.

Before administering injections, nurses must know the eight **(8) 'R's** as a guide to ensuring the right procedure is followed. These are;

Rights of Medication Administration

1. **Right patient (confirm the name of the client and his date of birth)**

2**. Right medication (check the medication label, prescription and expiry date)**

3. **Right dose (confirm from leaflet, prescription, the treating doctor or pharmacist)**

4**. Right route (if medication is oral and client is vomiting speak to the treating doctor or the pharmacist)**

5. **Right time (check the prescription and draft a treatment plan)**

6. **Right documentation (chart the time, route, the site of say an injection, reactions noticed etc)**

7. **Right reason (know why the client is taking the medication incase client asks)**

8. **Right response (whatever purpose drug was administered do a follow up to see that the effect has taken place eg if you give paracetamol to lower temperature of a client, do a follow up temperature reading to determine if medication was able to bring temperature down)**

Always observe client for allergies throughout procedure. Prior to administering any injection please refer to the manufacturer's information leaflet, paying particular attention to recommended site, method and route

General safety practices for administering injections

The following practices are recommended to ensure the safety of injections and related practices:

• hand hygiene; • gloves where appropriate; • skin preparation and disinfection; • other single-use personal protective equipment (such as aprons or mask)

Hand hygiene

Hand hygiene is a general term that applies to either handwashing, antiseptic hand wash, antiseptic hand rub or surgical hand antisepsis. It is the best and easiest way to prevent the spread of microorganisms. Hand hygiene should be carried out as indicated below, either with soap and running water (if hands are visibly soiled) or with alcohol rub (if hands appear clean).

Practical guidance on hand hygiene*:*

- ✓ **Perform hand hygiene BEFORE**:
  - starting an injection session (i.e. preparing injection material and giving injections);
  - coming into direct contact with patients for health-care related procedures;

- putting on gloves (first make sure hands are dry).

✓ **Perform hand hygiene AFTER**:
- an injection session;
- any direct contact with patients;
- removing gloves.

You may need to perform hand hygiene between injections, depending on the setting and whether there was contact with soil, blood or body fluids. Avoid giving injections if your skin integrity is compromised by local infection or other skin conditions (e.g. weeping dermatitis, skin lesions or cuts), and cover any small cuts.

Indications and precautions for hand hygiene is illustrated below:

KEY ELEMENTS	INDICATIONS	PRECAUTION
Hand hygiene (handwashing or alcohol-based handrub)	Hand hygiene before and after contact with every patient is the single most important means of preventing the spread of infection When hands are visibly dirty or contaminated wash them with antibacterial or plain soap and running water, then dry them using single-use paper towels When hands appear clean (i.e. are not visibly soiled), clean them with an alcohol-based hand product for routine decontamination, then dry them using single-use paper towels	Ensure hands are dry before starting any activity **DO NOT** use alcohol-based hand products when hands are visibly soiled **DO NOT** use alcohol based hand products after exposure of non-intact skin to blood or body fluids in such cases, wash hands with antibacterial or plain soap and running water, then dry them using single use paper towels

Gloves

Health workers should wear non-sterile, well-fitting latex or latex-free gloves when coming into contact with blood or blood products. Sterile gloves should be worn if there is a surgical procedure such as suturing.

Indications for glove use in injection practice are shown

	INDICATIONS	**PRECAUTION**
Glove use	Wear non-sterile, well-fitting, single-use gloves: •when there is a likelihood of coming into direct contact with a patient's blood or other potentially infectious materials (e.g. body fluids, moist body substances and saliva [in dental procedures], mucous membranes and non-intact skin •when performing venepuncture or venous access injections, because of the potential for blood exposure at the puncture site •if the nurses's skin is NOT intact (e.g. through eczema, or cracked or dry skin) •if the client's skin is NOT intact (e.g. through eczema, burns or skin infections).	

SKIN CLEANSING PRIOR TO ADMINISTERING INJECTIONS

Practical guidance on skin preparation and disinfection before administering injections.

To disinfect skin, use the following steps:

1. Apply a 70% isopropyl alcohol or water depending on the type of injection on a single-use swab or cotton-wool ball. DO NOT use methanol or methyl-alcohol as these are not safe for human use.

2. Wipe the area from the center of the injection site working outwards, without going over the same area twice.

3. Apply the solution for 30 seconds then allow it to dry completely.

Type of injection	**Soap and water**	**70% isopropyl alcohol / ethanol**
Intradermal	yes	no
Subcutaneous	yes	no
Intramuscular		
• Immunization	yes	no
• therapeutic	yes	yes
Venous access	no	yes

DO NOT pre-soak cotton wool in a container – these become highly contaminated with hand and environmental bacteria.

DO NOT use alcohol skin disinfection for administration of vaccinations.

SUMMARY OF BEST PRACTICE

Infection prevention and control practice

MUST DO	**REMEMBER**
You must carry out hand hygiene (use soap and water) and wash carefully, including wrists and spaces between the fingers, for at least 30 seconds then use one pair of non-sterile or sterile gloves per procedure or patient Always disinfect the skin at the venepuncture site Discard the used needle and syringe immediately into a sharps container Where recapping of a needle is unavoidable, REMEMBER to use the one-hand scoop technique Report immediately to your supervisor any incident or accident linked to a needle or sharp injury to start Post Exposure Prophylaxis as soon as possible.	To ALWAYS wash your hands DO NOT touch the puncture site after disinfecting it DO NOT leave an unprotected needle lying outside the sharps container DO NOT recap a needle at all DO NOT overfill a sharps container DO NOT delay reporting sharp injuries as soon as it occurs. Post Exposure Prophylaxis (PEP) must start within 72 hours. PEP is not effective after 72 hours

INJECTION SITES

- ***SUBCUTANEOUS INJECTIONS (SUBCUT)***

A subcutaneous injection involves depositing medication into the fatty tissue directly beneath the skin using a short injection needle. Body sites typically include the upper arm, abdomen or the top of the thigh.

For subcutaneous injections, Expose site and gently pinch the skin into a fold to elevate the subcutaneous tissue. If needle length is greater than 10mm, insert needle at an angle of 45 degrees If needle length is less than 10mm, insert at an angle of 90 degrees. It is not necessary to aspirate after the needle has been inserted. A needle size ranging between 25 and 27 gauge are ideal for administering subcutaneous injections to both adults and children alike.

How to administer a subcutaneous injection

Remove the needle cover, being careful not to touch the needle. Hold the syringe as you would hold na pencil. 2. With your free hand, gently pinch the skin at the injection site. You should be pinching one to two inches of skin. 3. Holding the syringe straight up from the injection site, insert the needle using a quick motion. A slow, gentle push will cause more pain. 4. Slowly "pull back" on the plunger of the syringe to see if blood flows into the syringe. 5. If blood does not flow through, inject the client. 6) discard syringe and needle. 7. Wash your hands with soap and water.

- ***INTRAMUSCULAR INJECTIONS (IM)***

Intramuscular injection involves depositing medication into deep, muscle tissue using an injection needle longer than those used for subcutaneous injections. Body sites typically include the mid-thigh or upper, outer quadrant of the buttocks. For intramuscular injections, the needle must be sufficiently long to ensure that the medication is injected into the muscle. A needle size ranging from 21 to 23 gauge is ideal for intramuscular injections in adults whilst a 25 to 27 gauge is ideal for giving children intramuscular injections.

How to administer an Intramuscular injection

1. Remove the needle cover, being careful not to touch the needle. Hold the syringe as you would a pencil. 2. With your thumb and index finger, stretch the skin of the injection site slightly. Try to relax the muscle you will be injecting; as injecting into tense muscles will be more painful. 3. Holding the syringe straight up from the injection site, insert the needle using a quick motion. A slow, gentle push will cause more pain. 4. Slowly "pull back" on the plunger of the syringe to see if blood flows into the syringe. 5. If blood does not flow through, inject the client. 6) discard syringe and needle. 7. Wash your hands with soap and water.

NOTE: For clients who are to receive multiple injections, it is recommended that you alternate body sites each time you give an injection. Keeping a written record is also recommended as it can be helpful in recalling where you injected last.

INJECTION DEVICES (SYRINGES AND NEEDLESS)

- Always use a sterile (new) packet of needles and syringes.
- Never turn your back towards client when preparing for injections. Let them be witnesses to you opening and discarding all items. Having your back against them, makes clients suspicious that you are hiding something.

- When reconstituting or mixing medication or vaccines; **Do not** use same needle for both reconstitution of the medication and injecting the client. Always change the needle
- Inspect the packaging of the syringes and needles to ensure that the protective barrier has not been breached or expired; discard the device if the package has been punctured, torn or damaged by exposure to moisture, or if the expiry date has passed.

PREPARING FOR INJECTIONS

Injections should be prepared in a designated clean area where contamination by blood and body fluids is unlikely

Three steps must be followed when preparing injections.

1. Keep the injection preparation area free of clutter so all surfaces can be easily cleaned. 2. Before starting the injection session, and whenever there is contamination with blood or body fluids, clean the preparation surfaces with 70% alcohol (isopropyl alcohol or ethanol) and allow to dry. 3. Assemble all equipment needed for the injection such as sterile syringes and needles (always have extra), reconstitution solution (either sterile water or specific diluent required for mixing specific medications, always speak to the Pharmacist), alcohol swab or cotton wool, water or alcohol and sharps container.

STEP BY STEP GUIDE TO ADMINISTERING INJECTIONS

- Always confirm the name of the client from the prescription. Pick up the injection from Pharmacy. If medication to be injected is new to you, take time to read leaflet or ask the pharmacist about dosage, route and guidance of how to mix.
- Prepare your tray for administering injections with items discussed above
- Address client by name to ensure you have the right client. Politely ask client to come into the treatment room
- Exchange pleasantries with client. You may ask client how the day is going for him or her. It helps to break the ice and make client comfortable
- Explain procedure and obtain consent for administering injection
- Help client into a comfortable position
- Agree on site to be injected with client
- Wash your hands
- Change your gloves or wash your hands again

- Clean injection site
- Administer injection. If it is a multiple dose vial, wipe the top of the vial with 60–70% alcohol (isopropyl alcohol or ethanol) using a swab or cotton-wool ball
- Observe for reactions (redness, rash etc) and report any to treating doctor immediately
- Dispose syringes and needles
- Apply pressure to site with a clean swab (do not massage area)
- Apply a plaster to site to avoid client bleeding into his clothes
- Thank client for cooperating
- Show client out of the room
- Wash hands again and dry them
- Record the following; Consent, Date, Time, Dose, Name of medicine, Administration site, Expiry date, Batch number and reactions

AFTER-CARE AND ADVICE FOR INTRAMUSCULAR AND SUBCUTANEOUS INJECTIONS

IMPORTANT POINTS

• DO NOT allow the needle to touch any contaminated surface. • DO NOT reuse a syringe, even if the needle is changed. • DO NOT touch the diaphragm after disinfection with the 60–70% alcohol (isopropyl alcohol or ethanol). • DO NOT enter several multidose vials with the same needle and syringe. • DO NOT re-enter a vial with a needle or syringe used on a patient if that vial will be used to withdraw medication again (whether it is for the same patient or for another patient). • DO NOT use bags or bottles of intravenous solution as a common source of supply for multiple patients (except in pharmacies using laminar flow cabinets).

SUMMARIZED STEPS IN THE PROCEDURE FOR PREPARING AND DRAWING MEDICATIONS INTO A SYRINGE

These procedures will differ according to the type of medicine and from the type of vial.

a. Verify Medication.

The Nurse together with the Doctor and Pharmacist MUST COMMUNICATE before medications are administered so there is no ambiguity regarding route, dosage and how to reconstitute the medication to be administered.

b. Perform Hand wash with soap and water.

c. Gather Equipment or items needed

The following should be placed on the medication tray.

(1) Correct type of medication.

(2) Sterile syringes and appropriate size needles (always have extra)

(3) skin antiseptic (70% isopropyl alcohol or water if you are administering vaccines)

(4) a sharp box should be within reach

d. Assemble Needle and Syringe.

e. Check Drug Container Label.

(1) Verification should be made at least three times to ensure accuracy. This verification should happen at the following times:

(a) When the nurse obtains the container the pharmacy

(b) Before the nurse withdraws medication from the container.

(c) When the container is returned to the place of storage.

(2) Follow directions on container regarding expiration date and follow above policy regarding use of multidose vials.

(3) Check to determine if medication was stored properly (refrigerated).

f. Examine Rubber Stopper.

The rubber stopper should not be damaged. There should not be any small cores or plugs torn from the stopper due to improper injection of needles. Follow the examination procedures below:

(1) If vial is new, remove metal protective cap.

(2) Examine the rubber stopper for defects such as small cores or plugs torn in the stopper.

(3) If a defective stopper is identified, hold the vial to the light to examine for any foreign particles and to detect any changes in the color and consistency of the medication.

(4) Check the date that the multidose vial was opened and the expiration date on the medication.

(5) Follow the directions on the container regarding expiration date and follow local policy regarding use of multidose vials.

(6) Check to determine if the medication was stored properly; e.g., refrigeration.

(7) The dosage should be verified against the doctor's order

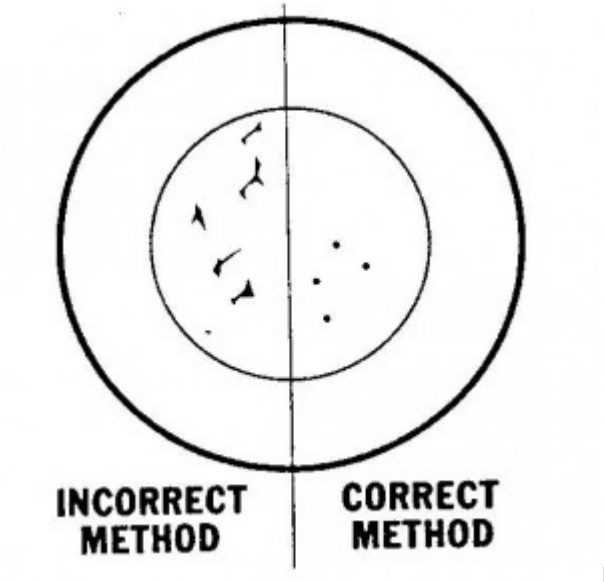

Figure 1-6. Results of correctly and incorrectly inserting a needle in a stoppered vial.

g. Check Medication for Defects.

(1) If there are any foreign particles in the solution or if there is any change in color of the solution, discard the container and obtain another container.

(2) If the used container is dark colored glass, insert needle and draw some solution to examine its color; if defective, discard vial, syringe, and needle and obtain new solution.

h. Prepare and Draw Premixed Medication.

Nurse prepares and draw

medication from a stoppered vial (a vial that has been opened) in the following manner:

(1) Cleanse the stopper with an alcohol sponge. You should leave the sponge on the stopper at least 30 seconds.

(2) With the dominant hand, pick up the assembled needle and syringe and remove the needle cover. Pull the plunger out and fill the syringe with air equal to the amount of medication ordered.

(3) With the free hand, pick up and invert the vial, and then insert the needle into the rubber stopper. Make certain the needle tip passes completely through the cap (see figure 1-7).

When inserting the needle, the bevel should face up with a slight pressure being exerted down and forward against the needle to prevent rubber from contaminating medication. To avoid contaminating the needle, the hub of the needle should not touch the rubber cap.

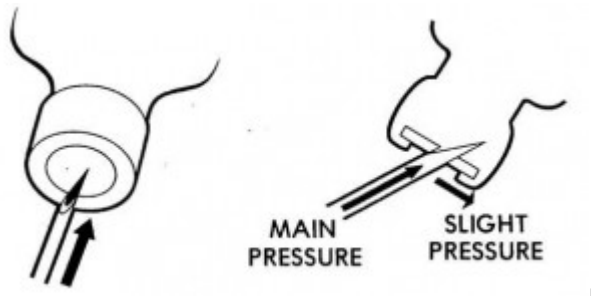

Figure 1-7. Examination of a rubber stopper.

(4) Slowly draw the plunger of the syringe until slightly more than (about 0.2 cc more) the amount of medication prescribed in the doctor's orders has been drawn into the syringe. This extra medication will be expelled when the syringe is cleared of air bubbles (step k below).

i. Prepare and Draw Powdered Medication.

(1) Remove the metal protective caps of the stoppered vial containing the powdered medication and the vial containing the sterile diluent used to put the powdered medication into a solution.

(2) Cleanse the stoppers of both vials. (Blot the top of the stopper with an alcohol sponge rather than move it around in a circular motion. You can rub off fibers of the sponge onto the top of the stopper.)

(3) If the vial with the powdered medication contains air, the solution may be difficult to inject. Therefore, the nurse must withdraw a sufficient amount of air to allow the solution to be injected.

(4) Withdraw the required diluent (solution) using the procedure for the stoppered vial.

(5) Holding the vial with the powdered medication horizontally, insert the needle through the stopper and inject solution.

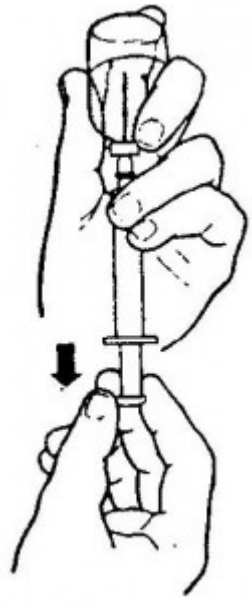

Figure 1-8. Withdrawing medication with vial inverted.

(6) Withdraw the needle. Hold the needle/syringe in non-dominate hand, being careful not to contaminate the needle. Gently shake the vial until all of the powder is dissolved. Visually inspect the solution to ensure that the solution is well mixed. All powder should be thoroughly dissolved for maximum safety and effectiveness and to ensure that the required medication is delivered. Change the needle.

Select a needle according to the type of injection. Push the plunger fully into the barrel to inject air equal to the amount of medication to be withdrawn. With the vial inverted, pull the plunger back, withdrawing slightly more (about 0.2 cc) than the prescribed medication (see figure 1-8).

(a) The tip of the needle should be kept in the solution while withdrawing the solution in order to prevent air bubbles in the syringe.

(b) Pull the plunger back to the desired cc mark on the barrel.

(c) Withdraw the needle from the container. Care should be taken not to separate the needle and syringe while withdrawing the needle.

(d) Verify the correct dosage in the syringe by raising the syringe to eye level and ensuring the forward edge of the plunger is at the desired level (prescribed dosage plus about 0.2 cc). Verify the correct dosage with the written order.

(e) Place the protective cover on the needle.

j. Ampule. Follow this procedure for the ampule.

(1) Lightly tap the top of the upright ampule to force trapped medication back from the bottle neck (see figure 1-9).

(2) Cleanse the neck of the ampule with an alcohol sponge.

(3) Wrap the neck of the ampule with the sponge and leave for 30 seconds.

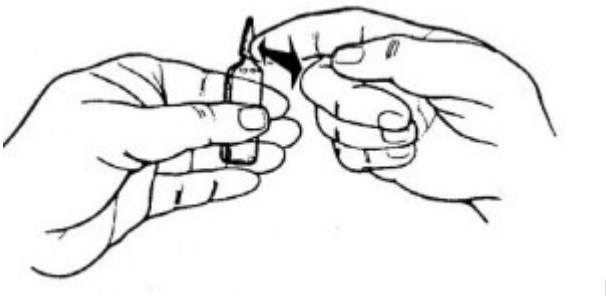

Figure 1-9. Tapping medication down.

(4) Grasp the ampule with both hands (see figure 1-10). Snap the neck of the ampule by bending away from the break line. Ampule should be snapped away from any person, including the patient, and the medication tray to prevent possible injury from flying glass.

Figure 1-10. Grasping ampule.

(5) Inspect the ampule for minute glass particles. If any glass particles are observed, discard the ampule and obtain another or use a filter needle.

(6) Pick up the assembled needle and syringe in dominant hand and remove the protective cover. Regardless of method used, care must be exercised not to contaminate the needle.

(7) Insert the needle and withdraw the medication in either of the following ways (see fig 1-11):

(a) Holding the ampule horizontally in the non-dominant hand and the syringe in the dominant hand, insert the needle into the medication.

OR

(b) Placing the ampule upright on a flat surface and stabilizing it with the non-dominant hand, insert the needle to withdraw the medication.

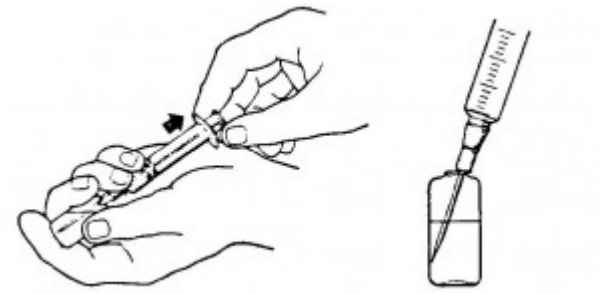

Figure 1-11. Withdrawing medication.

(8) The prescribed amount of medication plus 0.2 cc is withdrawn while keeping the needle immersed in solution.

(9) Withdraw the needle.

(10) Verify the correct dosage. Refer to the doctor’s prescription

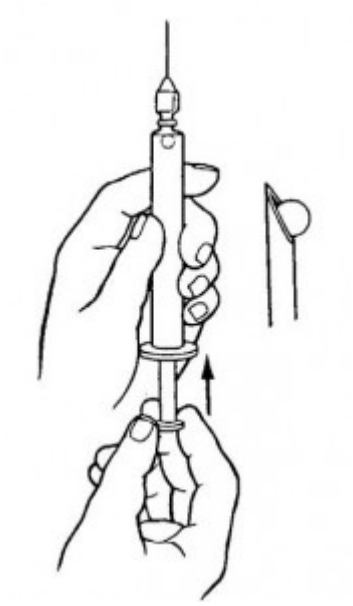

Figure 1-12. Clearing bubbles from barrel.

k. Clear Syringe of Air Bubbles.

Use the following procedures (see figure 1-12) to clear the syringe of any air bubbles.

(1) Hold the syringe with the needle pointing up.

(2) Pull back on the plunger slightly to clear all medication from the shaft of the needle.

(3) Flick the barrel lightly with your finger to force air bubbles to the top of the barrel.

(4) Pull the plunger back slightly and push forward until the solution is in the needle hub, clearing it of bubbles.

(5) Continue pushing plunger forward until the proper amount of medication remains in syringe (excess medication is expelled).

(6) Verify the correct dosage.

Cover needle with plastic protective cover to maintain sterility until the injection is performed.

Prevention of sharps injuries to health workers

Use of best practices can help to prevent sharps injuries to health workers.

Practical guidance on prevention of sharps injuries to avoid sharps injuries:

• ensure that the patient is adequately prepared for the procedure;

• do not bend, break, manipulate or manually remove needles before disposal;

• avoid recapping needles, but if a needle must be recapped, use a single-handed scoop technique;

• discard used sharps and glass ampoules immediately after use in the location where they were used, disposing of them into a robust sharps container that is leak and puncture resistant;
• place the sharps container within arm's reach (preferably in a secured area) to allow for easy disposal of sharps;

• seal and replace sharps container when the container is three quarters full.

INTRAVENOUS MEDICATION ADMINISTRATION: WHAT TO KNOW

Some medications must be given by an intravenous (IV) injection or infusion. This means they're sent directly into your vein using a needle or tube. In fact, the term "intravenous" means "into the vein."

With IV administration, a thin plastic tube called an IV catheter is inserted into your vein. The catheter allows your healthcare provider to give you multiple safe doses of medication without needing to poke you with a needle each time.

Uses of IV medications

IV medication is often used because of the control it provides over dosage. For instance, in some situations, people must receive medication very quickly. This includes emergencies, such as a heart attack, stroke, or poisoning. In these instances, taking pills or liquids by mouth may not be fast enough to get these drugs into the bloodstream. IV administration, on the other hand, quickly sends a medication directly into the bloodstream.

Other times, medications may need to be given slowly but constantly. IV administration can also be a controlled way to give drugs over time.

Certain drugs may be given by IV administration because if you took them orally (by mouth), enzymes in your stomach or liver would break them down. This would prevent the drugs from working well when they're finally sent to your bloodstream. Therefore, these drugs would be much more effective if sent directly into your bloodstream by IV administration.

HOW TO CALCULATE THE FLOW RATE IN 'MILLILITERS PER HOUR'?

volume of infusion in ml = flow rate in milliliters per hour

number of hours

HOW TO CALCULATE THE FLOW RATE IN 'DROPS PER MINUTE'?

Volume of infusion in ml x number of drops per ml = flow rate in drops

Time in minutes

Please note:

Standard administration set for IV Fluids in adults= 20 drops per minute

Standard administration for blood = 15 drops per minute

Standard administration set for IV Fluids in adults Paediatric = 60 drops per minute

STANDARD IV LINES

About standard IV lines

Standard IV lines are typically used for short-term needs. For instance, they may be used during a short hospital stay to administer medication during surgery or to give pain medications, nausea medications, or antibiotics. A standard IV line can typically be used for up to four days.

With standard IV administration, a needle is usually inserted into a vein in your wrist, elbow, or the back of your hand. The catheter is then pushed over the needle. The needle is removed, and the catheter remains in your vein. All IV catheters are typically given in a hospital or clinic.

A standard IV catheter is used for two kinds of IV medication administration:

IV push

An IV "push" or "bolus" is a rapid injection of medication. A syringe is inserted into your catheter to quickly send a one-time dose of drug into your bloodstream.

IV infusion

An IV infusion is a controlled administration of medication into your bloodstream over time. The two main methods of IV infusion use either gravity or a pump to send medication into your catheter:

Drip infusion: This method uses gravity to deliver a constant amount of medication over a set period of time. With a drip, the medication and solution drip from a bag through a tube and into your catheter.

Drugs typically given by IV

Many different types of medications can be given by IV. Some of the drugs more commonly given by this method include:

- chemotherapy drugs such as doxorubicin, vincristine, cisplatin, and paclitaxel
- antibiotics such as vancomycin, meropenem, and gentamicin
- antifungal drugs such as micafungin and amphotericin
- pain medications such as hydromorphone and morphine
- drugs for low blood pressure such as dopamine, epinephrine, norepinephrine, and dobutamine
- immunoglobulin medications (IVIG)

Side effects

While IV medication use is generally safe, it can cause both mild and dangerous side effects. Medications given intravenously act on the body very quickly, so side effects, allergic reactions, and other effects can happen fast. In most cases, a healthcare provider will observe you throughout your infusion and sometimes for a period afterward. Examples of IV side effects include:

Infection

Infection can occur at the injection site. To help prevent infection, the administration process must be done carefully using sterile items. An infection from the injection site can also travel into the bloodstream. This can cause a severe infection throughout the body.

Infection symptoms can include fever and chills, as well as redness, pain, and swelling at the injection site. If you have any symptoms of infection, call your doctor right away.

Damage to blood vessels and injection site

A vein can be damaged during injection or by the use of an IV catheter line. This can cause infiltration. When this occurs, medication leaks into surrounding tissue instead of going into the bloodstream. Infiltration can cause tissue damage.

IV administration can also cause phlebitis, or inflammation of the veins. Symptoms of both infiltration and phlebitis include warmth, pain, and swelling at the injection site. Call your doctor right away if you have any of these symptoms.

Air embolism

If air gets into the syringe or the IV medication bag and the line runs dry, air bubbles can enter your vein. These air bubbles can then travel to your heart or lungs and block your blood flow. An air embolism can cause severe problems such as heart attack or stroke.

Blood clots

IV therapy can cause blood clots to form. Clots can block important blood vessels and cause problems such as tissue damage or death. Deep vein thrombosis is one type of dangerous blood clot that IV treatment can cause.

PROCEDURE

steps	**Additional information**
1. Prepare one medication for a client at a time. Math calculations may be required to determine the correct dose to prepare the medication. Ask the Pharmacist or Doctor for help if you require that.	Always apply the eight (8) rights of medication administration. Review the client's prescription if a medication is a stat, given for the first time, a loading dose, or a one-time dose. After preparing the medication, always label the medication syringe with the client's name, date, time, medication, and concentration of the dose

2. Create privacy for all clients 3. Discuss purpose, action, and possible side effects of the medication. Provide client an opportunity to ask questions. Encourage client to report discomfort at the IV site (pain, swelling, or burning). 4. Perform hand hygiene and put on gloves.	(e.g., morphine 2 mg/ml), dose, and your initials. Never leave the medication syringe unattended Keeping client informed of what is being administered. It helps decrease anxiety.
5. Clean access port in a circular motion with an alcohol swab for 15 seconds. Allow to dry. 6. Remove air from prefilled syringe. Release clamp on extension tubing and flush the saline lock with 3 to 5 ml of normal saline to ensure patency. Do not force if resistance is felt. Remove syringe 7. Attach medication syringe (without needle) to access device. 8. Using a timer with a second hand, inject medication at the correct rate. Use a push-pause method to inject the medication 9. discard used syringes, gloves etc 10. observe reactions and document	This technique prevents introduction of microorganisms by the syringe. If swelling, pain, or redness exists, remove IV cannula and restart new IV site. Tenderness is the first sign of inflammation. Using a timer ensures safe medication administration. Rapid injection of IV medications can be fatal. A slow rate allows medications to be administered correctly. Flushing the IV line at the same rate as medication delivery ensures that any medication remaining within the IV line is delivered at the correct rate, and avoids giving the patient an accidental bolus of the medication Flushing the saline lock clears the medication from the device. Establish positive pressure as per manufacturer's directions.

Safety Considerations:

- Always administer IV Medication slowly
- If the medication has been diluted and there is wastage, always discard unused diluted portion of the prepared IV medication before going to the bedside.
- Always label the IV syringe with the client's name, date, time, medication, concentration of the dose, dose, and your initials. Once the medication is prepared, never leave it unattended.
- NEVER administer an IV medication through an IV line that is infusing blood, blood products, heparin IV, insulin IV, cytotoxic medications, or parenteral nutrition solutions.
- You will need a timer with a second hand to time the rate of administration.
- Observe client throughout procedure

TAKE NOTE

Observe for any immediate reactions to the medicine during the whole process.

Give a clear explanation of potential effects of injection, for example, site tenderness, mild fever etc. Advise on appropriate treatment for any effects. Always document what you tell client.

Observe client for any immediate adverse allergic reaction of the medication. Some reactions can be deadly so observations are very important.