Guidelines for Intravenous Infusions

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Current trends in our health care delivery demands more expertise. Quality Assurance is an inherent requirement in the health care practice. Now-a-days, treatment in hospitals is mostly given by parenteral route especially intravenously. Many technical personnel are involved in the client care in different settings like emergency areas, health care institutions, in community etc. Intravenous (IV) infusions have a major share in parenteral therapy. They demand meticulous care. Practical guidelines are enlisted for the safe administration of IV fluids. By careful practice of intravenous (IV) infusions one can prevent and /or minimise minor to major complications that may cost life.

Practical Guidelines

1. Remember that IV infusions work on principle of gravity. Adjust the height above 18" from bed.
2. Verify patient allergies before cleaning the skin at insertion site or touching patient with a latex glove.
3. Assess for the low platelet count or receiving anticoagulants as they increase the risk for bleeding from IV site.
4. Select a site that is naturally splinted by bone, such as the back of the hand or the forearm.
5. Apply an arm board if the IV site is close to the joint.
6. Stroke the extremity from distal to proximal below the proposed venipuncture site. Let the client alternately open and close the fist. Apply warmth to the extremity for 10-15 min with warm washcloth.
7. *Site:* The most distal site is used first so that other sites are available if therapy needs to be continued longer than 48-72 hrs, a new site cannot be placed distal to an old site.
8. Select the catheter with smallest gauge and shortest possible length that will maintain the ordered infusion. Insert it into the largest vein available.
9. *Flow rate:* If the solution is running too slowly, check the site for infiltration. Adjusting the securing device or dressing over the catheter may help. Slightly rotating the catheter may move the tip away from the vein wall.
10. Place the roller clamp 2 - 5 cm below the drip chamber for accurate regulation of flow rate.
11. Maintain strict aseptic technique when opening sterile packages & IV solutions.
12. If unsuccessful with venipuncture after 2 efforts, ask another nurse / health care provider to attempt the venipuncture.
13. Carefully instruct the client and family about the signs of infiltration and complications of IV therapy.
14. When caring for a client with a peripheral IV line, plan additional time for bathing, turning and assisting with daily activities. Commercial plastic sheaths that can be used to cover an IV site on an extremity or a clean plastic bag can be taped to protect the site.
15. Shake the IV bottle before connecting to the tubing to check for the foreign body.

Alert: Potassium is always diluted in fluid and never given as a bolus as it causes cardiac arrhythmias and arrest.

Common Situations

- Fluid does not easily flow into the vein.
- Reposition the extremity because certain positions may prevent the IV line from infusing properly.
- If the IV line is not free flowing, raise the height of the IV pole.
- Attempt to flush the IV with 3 ml of saline in a syringe.
- Check the IV connector to ensure that the clamp is fully open. Still if the fluid does not flow easily or if there is resistance with

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flushing, it needs to be restarted in a different location.

- Fluid does not easily flow into the vein or the skin around the insertion site is swollen and cool to touch.
- The IV fluid has infiltrated. Put on gloves and remove the catheter. Pressure may be needed to hold with a sterile gauge pad.
- Restart the IV line in a new location, if a small haematoma is forming at the site while inserting the catheter. The vein is blowing, a small hole has been made in the vein, and blood is leaking out into the tissues. Remove and discard the catheter and choose an alternate site.
- The client's lung sounds were previously clear, but now some crackles in the bases are heard on auscultation.
- Notify the physician immediately
- Inform the physician about past intake and output total and vital signs and pulse oximetry findings.
- IV infusion set becomes disconnected from IV line. Discard the IV tubing to prevent infection.
- Attempt to flush the IV with 3 ml of normal saline.
- The same site may be used if the IV line is still patent.
- IV catheter is partially pulled out of the insertion site.
- Do not reinsert the catheter.
- Whether IV is salvageable, depends on how much of the catheter remains in the vein.
- If the catheter is not removed, it should be monitored closely for signs of infiltration.
- Infusion fluid does not flow or flow rate changes after bag and tubing is changed.
- Make sure that the flow clamp is open and drip chamber is approximately half full.
- Check the IV site for possible problems with catheter such as bending of the catheter or position of the catheters extremity.
- Inspect the site for signs and symptoms of complications
- Read just the flow rate.
- After attaching new IV tubing air bubbles in the tubing
- If the bubbles are above the roller clamp, remove them by closing the roller clamp, stretching the tubing downward and topping the tubing with finger so bubbles rise to the drip chamber.
- If there is larger amount of air in tubing, swab the medication port on the tubing below the air with an antimicrobial solution, allow it to dry then insert a needle and syringe in to the port below the air, aspirate the air from tubing.

Child Considerations

- Scalp and feet can be used as alternate insertion sites for younger child.
- Once the child can walk do not use the feet as insertion sites.
- Hand insertion sites should not be the first choice for children, because nerve ending are very close to the surface of the skin and it is more painful.
- Do not replace the peripheral catheters in children unless clinically indicated.

Older Adult Considerations

- Avoid using vigorous friction and too much alcohol at insertion site. Both can traumatise fragile skin and veins in elderly.
- If the client veins appear large and tortuous do not apply tourniquet. Confused elders who are pulling at the tubing and catheter, roller gauze can be used to cover the site and equipment or a commercial shield shape can be taped over the catheter site.
- The elderly must be frequently assessed to determine that fluid overload is not occurring. Do auscultate the lungs at least once in each shift for crackles that may indicate fluid overload. Rapid pulse, shortness of breath and distended neck veins are the possible signs of fluid overload.
- Using a blood pressure cuff, rather than a tourniquet sometimes assists the successful venipuncture for the fragile veins of elderly. Place the cuff about 6" above the selected site. Inflate the cuff about 10 mm Hg above the diastolic pressure to restrict the blood flow slightly and to dilate the vein. If the client is fluid-depleted, inflate 20 mm Hg over the diastolic pressure.

DOs

1. Prime the tubing slowly with fluid, instead of allowing a wide open flow of the solution, the air bubble s can be reduced. *Priming Technique:* Attach the tubing to bottle. Hang the bottle. Hold the tubing high. Release the clamp. Slowly down the tubing. Tube is primed with gravity. It reduces the wastage overload.
2 Take time to find the most suitable vein.
3. Use fewer angles for insertion i.e. 5°-15°
4. Set the flow rate of IV medications not more than 100 ml/hr. For clients with congestive cardiac failure and renal failure, set the rate at 50 ml/hr.
5. Cover the IV dressing with minimal tape and keep the insertion site visible at all times.

DON'Ts

1. Never perform venipuncture in an extremity where there is a haemodialysis access, stent or on the side of a mastectomy or paralysis compromised arm such as having arterio-venous fistula.
2. Blood products are not infused into the same IV line as medications or other fluids. Obtain baseline vital signs before starting the infusion of blood products.

Alert: Do not puncture the IV fluid bottle with needle to facilitate fluid flow, as collapsible IV bottle is a closed system. Puncturing the plastic bottle is like creating a portal of entry for the micro-organisms to access.

3. Do not use hand veins in starting IV line.
4. Do not slap the arm to visualize the client's veins.
5. Do not use circumferential restraints on extremity with IV line.
6. Do not use the client's lower extremities for IV insertion to avoid phlebitis.
7. Do not touch the spike as it is sterile. If contamination occurs discard that tubing and obtain new one.
8. Do not apply vigorous friction or multiple tapping of veins, as they may cause haematoma or venous constriction. Do not shave area as it may cause micro abrasions and predispose infection.
9. Do not write directly on IV bags with pens or markers as ink may contaminate the solution.

Some Reasons for Inserting Needle as Airway in IV Infusion Bottle

Air is needed to push the fluid into vein.

- Air way is not needed to push the fluid as IV fluid container is self-compressible by atmospheric pressure.
- When the bottle gets compressed it does not show the fluid level.
- Only required amount of fluid is infused as per the physician's advice by discarding additional amount.
- Self-compressive bottle looks shapeless.
- Sterile practice is safe rather than the shape of the bottle.
- Sterile needle inserted as an airway into bottle does not cause contamination.
- The bore in the needle acts as portal of entry for micro-organisms.

Conclusion

Careful administration of intravenous infusions is the vital responsibility of health care professionals. Knowledgeable care and concern occupies important place in assuring quality.

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