

Intravenous Therapy

Nursing 201: Nursing Care of Special Populations

Purpose:

- Administration
 - Fluid and electrolytes
 - Medications
 - Blood products
 - Nutrition

PROS	CONS

Infection Control:

- Potential source of serious illness and death for hospitalized patients (sepsis)
- Reduce the risk!
 - Handwashing
 - Aseptic technique
 - Use each catheter only once
 - Check package integrity
 - Follow institution guidelines

Patient Education:

- Anxiety = vasoconstriction
- Gain patient cooperation
- Relax

- Check patient ID band
- Explain procedure
- Gather all equipment

Site Selection:

- Type of solution
 - Caustic needs a larger vein
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- Duration of therapy
- Cannula size
 - i.e. need 20 gauge or bigger for blood products
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- Pt activity level
 - i.e. breast feeding
- Pt preference
- Presence of disease or surgery
 - i.e.

Elderly Considerations

- Veins are fragile
- Evaluate need for a tourniquet
- Avoid pinching skin
- Apply over gown or clothing
- Avoid sclerotic veins
- Use smallest gauge possible
- Use non-dominant extremity

Vein Selection:

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- Commonly used veins (be aware of anatomy)
- Non-dominant side
- Ask the patient
- Avoiding high risk areas

Vein	Artery
Dark, red blood	Bright, red blood
Slow blood return	Rapid, pulsating blood return
Valves	No valves
Blood flow toward heart	Flow away from heart
Superficial	Deep and surrounded by muscle
Multiple veins supply the area	Single artery supplies an area

- Connective tissue: have patient move arm, if it hardens, it is not a vein!

Preparing the Vein:

- Tourniquet
 - 2-6 inches above insertion site
 - 1-2 minutes only
 - Tight enough to stop venous flow
 - Not too tight that would cause tissue injury
 - Do I need a tourniquet?
- Vein Dilation
 - Dangle arm
 - Tight fist, open-close
 - Light tapping
 - Gentle stroking
 - Warm soaks
 - Cut hair, don't shave
- Needle selection
 - Smallest size able to effectively deliver therapy

Basic Terminology

- Cannula:
- Bevel:
- Gauge:
- Proximal:
- Distal:

IV Insertion:

- Prepare equipment
- Location, location, location
- Prep the site
- Anchor the vein
- Venipuncture
 - Bevel up
 - 10-30 degree angle
 - Flashback
 - PUSH! PULL! CLICK!
- Remove the tourniquet!!
- Secure the Site

High Risk Site:

- -
- C/O:

IV Troubleshooting:

- Unsuccessful attempt(s)
- Obese patient
 - Difficult to visualize veins
 - Visualize anatomy
- “Rolling Veins”
 - Anchor with thumb, alter attack method
- IV Drug Abusers
 - They know their veins best!
 - Ask them
- Irritating medications
 - Use larger veins
- Fragile skin/ veins
 - Is tourniquet needed?
 - Pad tourniquet
- IV Fluid stopped
 - Vein valve occlusion
 - Check equipment
- Calling for help!!
 - Always remember your resources!

Beebe Policy

- Not > 2 attempts by one person; total of 4, then alternative methods
- Extension sets and transparent dressing for all I.V. starts
- Foot access requires MD order
- Site Changes:
 - Site inserted suboptimally or under suboptimal aseptic conditions (i.e., Paramedic in the field) need to be removed within 48 hours
 - IV can stay inserted for as long as clinically indicated if continues to assess WNL.
 - IV tubing:
 - change q 96 hours (date and time tubing)
 - IVF
 - Containing medication: q 24 hours
 - IVF without medication: q 48 hours
 - Label IVF w/date, time up and expired
 - Flush saline plug w/ 3ml NS q 8 hours;
 - Assess site every 4 hours, unless clinically indicated more frequently

IV Infusion Alternatives

- KVO
- Heplock, saline lock, jelco plug, intermittent injection cap
- Used when:
 - Intermittent IV therapy needed without IVF
 - Patient on fluid restriction
 - Physician order
 - Incompatible medications

- Radiological tests with contrast

Pediatric Vein Selection

- Distal to Proximal
- Commonly Used
- Non-dominant Side
 - Eating
 - Thumb sucking
- Long, straight, easily palpated
- Scalp/ Feet Veins
- Surgical cut down
 - Saphenous
- IO if no emergent access in 90 seconds

Preparation

- Assistance
- Restraining
- Parental Involvement

Equipment

- Tourniquet, padded arm board, rolled towels or small blankets, papoose, protective site device, needle selection, buretrol with IV pump on all pediatric patients

IV Insertion

- Comparable technique to adult
 - Secure the child for safety
- Secure site
 - Padded arm board
- ***Check and document on hourly***

Intraosseous Infusion

- Rapid IV access for emergencies
- Temporary
- Inserted in bone marrow of tibial tuberosity or humeral head
- Infuses IVF, meds, blood
- Complication: osteomyelitis, infiltration

Beebe Pediatric IV Policy

- Prevent undue trauma/ distress
- Not > 2 attempts
- Extension sets to all I.V. caths
- Assess site q1hr
- Change site when IV therapy completed or unless complication

Documentation

- IV catheter size/gauge
- Insertion site and condition
- Number of attempts
- Date and time of insertion
- Type of IVF/med/flush
- Site assess per policy

Discontinuing an IV

- Need order
- Gather
 - Gloves
 - Band-Aid or tape
 - Gauze pad
- Explain procedure to pt/family
- Secure patient
- Remove tape
- Remove and inspect IV
- Pressure to site
- Observe for hematoma
- Document

Local Complications:

Infiltration:

- Fluid outside the blood vessel in extravascular space
- Assessment: edema, blanchable, bump at access site, pain, redness, possible skin necrosis, cool to touch
- Nursing: assess, call physician, follow protocol for medication

Phlebitis:

- Inflammation of vein secondary to mechanical or chemical injury
- Assessment: red, warm, sore
- Nursing: D/C IV, warm compress

Thrombophlebitis:

- Inflammation of vein with clot formation
- Assessment: sore, hard, cordlike vein, red line above site, edema, sluggish/stopped IV
- Nursing: D/C IV, warm compresses, assess, document

Infection:

- Pathogenic organism through the skin
- Assessment: red, sore, edematous, drainage
- Nursing: D/C IV, Culture site and catheter tip, dressing, observe for systemic s/sx
- Prevention: wash hands, clean site properly, keep IV system intact

Hematoma/Bruising:

- Blood outside vein, in extravascular space
- Assessment: discoloration at site, edema
- Nursing: D/C IV, pressure

Extravasation:

- Caustic infiltration that causes tissue necrosis
- Treatment: keep IV in place for possible antidote infusion OR D/C IV

Systemic Complications:

Circulatory Overload:

- S/sx
 - Dyspnea, cough, pitting edema/wt gain
- Cause
 - IV infused too rapidly
 - Underlying cardiac or renal disease
- Treatment
 - Decrease IV rate
 - Elevate head, dangle feet
 - VS, breath sounds
 - MD
- Complication
 - CHF/pulmonary edema

Air Embolism:

- S/sx
 - Chest, shoulder, low back pain, Hypotension, weak pulse, SOB, cyanosis, Decreased LOC
- Cause
 - Air entry into venous system, Central line
- Treatment
 - Left side, trendelenburg

- MD
- VS, O2, IV
- Complication
 - Shock and death

FB Embolism:

- S/sx
 - CP, shoulder, low back pain, SOB, cyanosis, Hypotension, weak pulse, Decreased LOC
- Cause
 - Severed IV catheter
- Treatment
 - Left side, trendelenburg
 - Tourniquet above VP site
- Complications
 - Occlusion
 - Shock/death

Septicemia:

- S/sx
 - Fever, chills, tachy, HA, n/v, diarrhea
- Cause
 - Contamination
 - Aseptic break
- Treatment
 - D/C IV
 - Cultures
- Complications
 - Septic shock, death

IV Push/ IV Bolus: a high concentration of medication administered directly into IV through an injection port to achieve rapid and predictable serum levels

- Only given by RN
- Meds given in 5 minutes or less
- Takes 10-20 seconds for medication to reach heart and brain
- Medication entirely circulated in one minute
- Precision is critical

Advantages	Disadvantages

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Medication Administration:

- Compatibility
 - Begin with patient
 - Note all IV fluids
 - Note all IV meds
- IV Site Inspection
 - Infiltrated?
 - Size of vein
- Dilution/Concentration
- Rate
 - Slower always okay, unless stated differently*****
- Equipment: correct syringe, filter need for glass vials, pre-filled NSS flush prn, alcohol swabs
- Check line patency: aspirate, flush line with NS
- Give in port closest to patient
 - Pinch
 - Push
 - Release
- Compatible- consider rate
- Jelco- Flush with 3ml NSS before and after administration
- Not compatible- stop infusion
 - Flush with 10 ml NSS before and after administration
- Post med flushing
 - Flush first 1ml of NSS at same rate as 1ml of medication administration
- Observe for 5-10 minutes after medication administration.
- Observe patient for
 - Allergic reaction
 - Breathing, LOC,
 - Patient complaints

Complications:

Speed Shock:

- Drug infused too rapidly
 - High concentration of drug reaches heart/brain
- Signs and symptoms
 - HA, flushing
 - Syncope, BP drop
 - Chest tightness, Irregular HR

- Irregular respirations
- Cardiac Arrest
- Prevention
 - Drug dilution- mixed by pharmacy
 - Push at specified rate

Peripheral Pain:

- Due to:
 - Pushing medication too quickly
 - Administering irritating medication into vein which is too small
- Signs and symptoms
 - Burning, pain along IV vein
 - Possible redness at site
- Prevention
 - Choose correct size vein for medication
 - Give medication slowly, listening for pt's comments

Allergic Reaction:

- Just doesn't feel right
- Hives
 - Red skin/rash
 - Itchy!
- Difficulty Breathing
- Diarrhea
- Shock
 - Syncope
 - Pale skin
 - Low BP and HR

Potassium Chloride:

- NEVER IVP!!!
- Avoid adding to hanging IV bag
- Must be diluted and infused slowly (MD order)
 - Obtain KCl bags from Pharmacy
- Monitor for phlebitis or extravasation

Syringe Sterility:

- Always keep tip of syringe sterile
- Use alcohol pads or the cap (if remained sterile)
- You are not to set your open-ended syringe on a patient table, cart, etc. It is now contaminated!
- Always take extra alcohol preps than what you plan to use for good practice and easy access.
- Do not stick gloved hands into pockets!

