MCHD Critical Care Drips Meds and Procedures

Moore County Hospital District
Education Department

Dopamine

- Increases systolic and diastolic BP
- 400 mg in 250 cc D5W 1600 mcg/ml (pre-mixed bag)
- Initial Infusion 1-5 mcg/kg/min
- Maintenance Infusion rate 5-20 mcg/kg/min
- Maximum Infusion Rate rarely > 25mcg/kg/min
- For renal perfusion, titrate infusion by 1-4 mcg/kg/min

  Q 10-30 min until desired response is achieved (physician usually orders rate for renal perfusion) maintenance dosage.
- Ml/hr rate chart in drip book in ICU or ED

$$\frac{250\text{ml}}{400\text{ mg}} \times \frac{?\text{mcg}}{\text{kg/min}} \times \frac{\text{kg}}{1} \times \frac{1\text{ mg}}{1000\text{ mcg}} \times \frac{60\text{ min}}{1\text{ hr}} = \frac{\text{ml}}{\text{hr}}$$

Dobutamine

- Positive inotrope to increase cardiac output3
- Dilution: 250mg in 250 ml o D5W = 1mg/ml
- Initial dose 2.5-10 mcg/kg/minute
- Titrate to desired response
- Max 40 mcg/kg/minute
- Monitor BP q 15 min
- Maintain parameters ordered by physician
- Do not mix with Sodium Bicarbonate injection , is incompatible with Dobutamine
- Use with caution in patients allergic to sulfites
- Administer in largest vein possible such as antecubital vein

Lidocaine

- Prophylaxis and treatment for suppression of ventricular arrhythmias (PVC's and Ventricular tachycardia).
- 2 Grams in 500 ml of D5W for 4mg/ml (pre-mixed bag)
- Bolus 1-1.5 mg/kg IV push over 2 minutes
- May give 0.5-0.75 mg/kg q 5-10 minutes total dose not to exceed 3mg/kg.
- Maintenance infusion 1mg/min= 15 cc/hr, 2 mg/min = 30 cc/hr, 3mg min = 45 cc/hr, 4 mg/min = 60 cc/hr
- Note 60 cc/hr is not recommended.
- Side Effects: Confusion, tremors, stupor, lightheadedness, seizures, hypotension, double vision, worsening arrhythmias.

Amiodarone

- For stable VT, a Fib
- Stocked as Nexterone in 150 mg premix for loading dose and 360 mg premix for infusion.
- Administer loading bolus over 10 min
- Begin infusion at 1mg per minute or 33.3 ml/hr for 6 hours,
- After 6 hours reduce rate to 0.5 mg/min or 16ml/hr for 18 hours for maintenance.
- Use an in-line filter for infusions
- Monitor rhythm, vitals , and for edema in hands and feet
- Monitor for pulmonary toxicity

Cardizem

- Add 125 mg (25 ml) of Cardizem to 100 ml of NS or D5W to make a solution with a concentration of 1mg/ml.
- Initial dosage: 0.25mg/kg over 2 minutes
- If desired response is not achieved in 15 min, then administer 2nd dose at 0.35mg/kg over 2 minutes.
- Maintenance Dosage: 5-10 mg/hr, increase in 5mg/hr increments up to a maximum of 15mg/hr
- Piggyback into lowest port of main line of NS
- Change solution every 24 hours
- Infuse through separate line due to many incompatibilities
- Patient will be monitored in ICU for arrhythmias & hypotension

Epinephrine

- Vasopressor
- Administer in a large vein
- Dilution: 2mg in 250 ml NS or D5W
- Concentration: 8mcg/ml
- Initial Dose: 1 mcg/minute
- Extravasation management:

Use phentolamine as antidote. Mix 5 mg with 9 ml NS. Inject a small amount of this dilution into extravasated area. Blanching should reverse immediately. If blanching should occur, additional injections of phentolamine may be needed.

Norepinephrine, (levophed)

- 4 mg in 250 ml D5W for 16 mcg/ml
- Initial Dose: 8-12 mcg/min, dose can go up to 3 mcg/kg/min in sepsis patients.
- Maintenance Dose: 2-4 mcg/min , Titrate to maximum of 30 mcg/ min.
- Should be administered in a large vein such as an AC
- Requires infusion pump
- Monitor vitals, especially BP
- For extravasation, apply warm compress or use nitroglycerin 1 inch to site, may also inject 0.5 ml terbutaline Sub q to affected area.

Fosphenytoin (cerebyx)

- Anti-epileptic
- 1000 mg in 100 ml NS
- Remove 20 ml from NS bag, add 20ml of Fosphenytoin
- Usual Dose: Expressed in phenytoin equivalents (PE)

  15-20 mg PE/kg at a rate not exceed 150 PE/min Given usually over 20-30 minutes

  Maintenance doses of 4-6 mg PE/kg/day IV may follow
- Infuse in large vessel
- Place patient on cardiac monitor during infusion
- Ensure patency of IV cathater
- Y site compatibility lorazepam, phenobarbital

Heparin

- 25,000 units in 250cc D5W for 100u/cc
- Administration: bolus followed by infusion
- Contraindications: bleeding abnormalities, vitamin K deficiency, severe hepatic renal disease, severe HTN
- Side effects: hemorrhage, nausea/vomiting, headaches
- Determine baseline PTT prior to initiating therapy
- Monitor for headache, abdominal or back pain use an electric razor, avoid IM injections.
- Assess for hematuria and occult blood in stool

$$\frac{250\ ml}{25{,}000\ u} \times \frac{\#\ units}{hr} = \frac{ml}{hr}$$

Insulin

- Dilution: Regular Human Insulin 100 units in 100 ml NS
- Concentration: 1 unit/ml
- Administration: Piggy back into lowest port of main line NS
- Change solution every 24 hours
- Initial Dose: 10-30 units IV per physicians orders.
- Maintenance Dose: 2-12 units/hour for correction of hyperglycemia. Units/hr = ml/hr (5 units/hr = 5 ml/hr)
- Must be verified by 2 nurses
- Hourly accuchecks
- Monitor for S/S of hypo and hyper glycemia.

Labetalol

- Anti-hypertensive
- 200 mg in 160 ml of D5W (200 ml total volume) for 1 mg/ml.
- Remove 90 ml from D5W 250 ml bag , Add 40 ml (200 mg) of labetalol to make a total volume of 200 ml
- Bolus :20 mg over 2 min q 10 minutes until desired BP achieved or to max of 300 mg administered.
- Continuous drip: 2mg/min (120ml/hr) titrate rate per BP response or max of 300 mg administered.
- Monitor vital signs especially BP and heart rate to avoid Hypotension and bradycardia.

Methylprednisolone Succinate

- Solu-medrol only
- Used in treatment of acute spinal cord injury
- Must be administered within 8 hours of injury
- Initial bolus: 30mg/kg in 50 cc D5W over 15 minutes
- Wait 45 minutes then give maintenance infusion of 5.4mg/kg in 200 cc D5W at 10 cc/hr via pump over 23 hours.
- Use with caution in pregnancy, and patients already on steroids.
- If patient taken to surgery, continue dose.
- Monitor for S/S of infection and GI bleed

Nitroprusside Sodium (Nipride)

- To lower BP quickly in hypertensive emergencies
- 50 mg in 250 ml D5W for 200 mcg/ ml
- Initial Dose: 0.3 to 0.5 mcg/kg/min, titrate by 0.5 mcg/kg/min every few minutes not to exceed 2 mcg kg/min.
- Not compatible with protonix
- Protect from light
- Stable for 24 hours
- Monitor BP, HR, Acid base status, o2 sat and for cyanide toxicity, (Metabolic acidosis, bradycardia, decreased O2 sat, confusion, and convulsions

Vasopressin

- 20 units in 100 ml NS for 0.2 units/ml
- Septic Shock: 0.03 units per minute with max dose of 0.7 units per minute. (doses greater than 0.03 units/min increase cardiac side effects).
- Gastroesophageal Variceal Hemorrhage: 0.2 to 0.4 units/min max dose 0.8 units/min with max duration of 24 hours.
- When used for hemorrhage at max dose, the use of nitroglycerin concurrently is recommended to prevent myocardial ischemic complications.
- Compatible with Cardizem, Dobutamine, Dopamine, Levophed, Heparin, insulin, protonix, epi, and sodium bicarb.

Vasopressin

DOSAGE	Rate of Administration
0.01 units/min	3 mL/hr
0.02 units/min	6 mL/hr
0.03 units/min	9 mL/hr
0.04 units/min	12 mL/hr

Neo-Synephrine

- Indicated in hypotensive emergencies during spinal anesthesia, severe hypotension, shock, and psvt.
- Mix 10 mg in 250 NS = 40 mcg/ml, may also be mixed in 500cc NS or D5W.
- Initial infusion rate is at 100 to 180 mcg/min ; then decrease to maintenance infusion of 40-60 mcg/min when BP stable.
- May also be given as a bolus: administer 0.2 mg IV, SC or IM.
- Contraindicated in severe hypertension or V Tach.
- Side Effects: May cause Headaches, bradycardia, arrhythmias, hypertension, asthmatic episodes, tissue with extravasations, possible tachyphylaxis with continued use.

Neo-Synephrine

- Use with extreme caution in elderly patients and patients with heart disease, hyperthyroidism, bradycardia, partial heart block, and myocardial. disease.
- Use large bore IV for administration.
- Use IV pump
- Continuous monitoring of EKG, BP, CO, CVP, PAWP, urine output, and color and temp of limbs.
- Monitor administration site for extravasations.

Propofol

- Indicated for: Sedation, Anesthesia, Rapid sequence intubation.
- Requires a dedicated IV cathater
- Use the 100ml premixed bottle 10 mg/ml
- Disinfect rubber stopper with 70% isopropyl alcahol and allow drying before spiking.
- Initial Infusion: 5mcg/kg/min for 5 minutes.
- Increase rate at 5-10 minute intervals in increments of 5-10 mcg/kg/min until desired level of sedation is achieved.

Propofol

- Maintenance Infusion: Rates of 5-50 mcg/kg/min or higher may be required.
- The tubing and any unused portions of propofol should be discarded every 12 hours.
- Propofol contains no preservative and is capable of supporting growth of microorganisms.
- Nurses may monitor infusions post intubation, Physicians need to administer bolus.
- Monitor vital signs every 5-10 min (HR BP)

Propofol

- Do not administer with blood.
- Discontinue /notify doctor if patient has severe hypotension, bradycardia, or if hypersensitivity occurs.
- If Triglycerides level is > 500mg/dl, use is not recommended
- Prolonged therapy leads to a decrease in Zinc levels
- Daily awakening assessments
- Reduce dose by 20 % in elderly patients
- Smaller doses may be required when used with narcotics.
- Rate chart in IV Drip book in ER and ICU

Nitroglycerin (Tridil)

- 50 mg in 250 ml D5W = 200 mcg/100cc
- Initial Infusion: 10 mcg/min (3cc/hr)
- Maintenance Infusion rate; 10-400 mcg/min
- 400 mcg/min is rarely necessary
- 10 mcg/min = 3 ml/hr
- 20 mcg/min = 6 ml/hr
- 30 mcg/min = 9 ml/hr ect
- Titration: Increase by increments of 10 mcg/min (3cc/hr) every 3-5 minutes until desired response is noted
- Pain free for a patient with chest pain
- Or lowered BP

Nitroglycerin (Tridil)

- Use Nitroglycerin tubing found in bottom cabinet on crash cart or in pharmacy.
- Monitor BP and EKG continuously (BP at q dose change and at least q 5-15 min while titrating.
- Side Effects: Severe headaches, tachycardia, bradycardia, hypotension.
- Record onset, duration, location of CP, obtain baseline BP, monitor for postural hypotension, keep BP within parameters ordered by (usually > 100 systolic)
- MAP (Mean Arterial Pressure) = SBP + (DBPX2)
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Pantoprazole (Protonix)

- Usual Dose: 80mg bolus, followed by 8 mg/hr continuous infusion for active GI bleed.
- Withdraw 20 ml from the NS 100 ml bag and add 10 ml of that volume to each vial of protonix.
- Using one syringe, draw up both vials of Protonix and add back into the NS bag. For 0.8 mg/ml.
- 8 mg/hr = 10 ml/hr (Limit use to 72 hours
- May be administered IV through a dedicated line or through a Y-site.
- The Y-site line should be flushed before and after administration of Protonix IV with 5% DD5W, NS or LR.

Midazolam (Versed)

- 50 mg in 50 ml NS for 1 mg/ml
- Start at 0.02 to 0.1 mg/kg/hr and titrate to effect using sedation scales SAS or RASS
- Max drip rate 20 mg/hr
- May produce apnea with rapid administration.
- Respiratory monitoring is critical to avert potential problems
- Hypotension in hypovolemic patients
- Consider reducing dose 20 to 50% in elderly, chronically ill, and patients receiving opiods or other CNS depressants.
- Use with caution in hepatic and renal impairment
- Incompatible with LR

Procainamide (Pronestyl)

- 2gm in 250ml of D5W for 8 mg/ml
- Bolus: 100mg by slow IV push q 5 minutes. No faster than 25-50 mg/min.
- Give until arrhythmias disappear, adverse reactions develop (ORS widens > 50% of original width), or total dose of 1 GM has been given.
- Loading dose may also be given IVPB in 50ml D5W over 25-30 minutes.

Procainamide (Pronestyl)

- Maintenance Infusion Rate
- 1-6 mg/min
- 1mg/min = 7.5ml/hr
- 2mg/min = 15ml/hr
- If arrhythmias recur, repeat bolus and increase infusion rate
- Monitor EKG and BP, Run on IV pump only
- Side Effects: Hallucinations, Seizures, abdominal Pain, anorexia, diarrhea, hypotension, AV block, ventricular asystole.
- Use cautiously in patients with second or third degree heart block. Monitor QT interval closely in renal failure.

Verapamil (Calan, Isoptin)

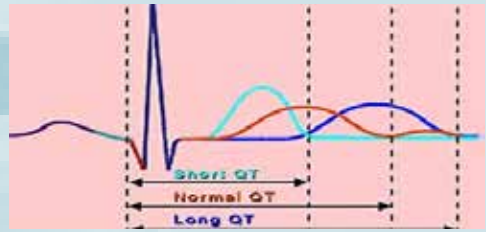
- 5 mg/2cc vial
- Slow IV push only. Verapamil should be given over a minimum of 2 minutes. Administer over 3 minutes in the elderly.
- *Adults:* Initially 5-10 mg may repeat in 30 minutes with 10mg dose if response is not adequate.
- Use with caution in patients with sick sinus syndrome or 2nd or 3rd degree heart blocks, severe hypotension, impaired renal function, and impaired liver function.
- Continuously monitor EKG and BP during IV administration. monitor for rapid ventricular rates, bradycardia, heart blocks. prolongation of PR interval Notify DR immediately if occurs

Corvert (Ibutilide Fumarate)

- Indicated for the rapid conversion of atrial fibrillation or atrial flutter of recent onset to sinus rhythm.
- 0.1mg/ml (available in 10cc vial)
- May be diluted in 50cc NS or given IV push
- Must be given over 10 minutes
- *Initial infusion:* Patient weighing 60 kg (132 lbs) or more
  One vial: 1 mg of Corvert.
- Patient weighing < 60 kg (< 132 lbs) 0.1 mg/kg Covert.
- If arrhythmia does not terminate within 10 minutes after the end of the initial infusion, a second 10 minute infusion of equal strength may be administered 10 min after the end of the initial infusion.

Corvert (Ibutilide Fumarate)

- Physician Must be Present during Administration
- Contraindicated in patients with hypersensitivity to drug or its components.
- *Side Effects:* Headache, nausea, nonsustained VT, hypotension, BBB, AV block, sustained polymorphic VT, prolonged QT, bradycardia, tachycardia.
- Patient must have cardiac monitoring before during and after infusion (for at least 4 hours after). Monitor defibrillator must be at patients bedside during administration.
- Have recent Mag, Potassium, levels prior to administration.



MCHD Drip Protocol

MOORE COUNTY HOSPITAL DISTRICT - DUMAS, TEXAS
DRIPS PROTOCOL

DRUG	DILUTION	CONCENTRATION	FORMULA
DOPamine	400 mg in 250ml D5W (Premix)	1600 mcg/ml	***For this group:*** If mcg/kg/min ordered: Then (? mcg x 60 x? kg wt.) / ? conc = _____ml/hr (rate)
DOBUTamine	500 mg in 250 ml D5W (Premix)	2000 mcg/ml	
NitroPRUSSIDE	50 mg in 250 ml D5W	200 mcg/ml	If ml/hr (rate) known: Then ((? rate / ? kg wt.) / 60) x ? conc = ____mcg/kg/min
Lidocaine	2 grams in 500 ml D5W (Premix)	4 mg/ml	***For this group:*** 4 mg/min = 60 ml/hr 3 mg/min = 45 ml/hr 2 mg/min = 30 ml/hr 1 mg/min = 15 ml/hr
Procainamide	2 grams in 500 ml D5W (remove equal amt D5W as procainamide added)	4 mg/ml	
NitroGLYCERIN	50 mg in 250 ml D5W (Premix Glass)	200 mcg/ml	***For this group:*** If mcg ordered: Then (? mcg/conc) x 60 = ? ml/hr (rate)
NOREpinephrine (Levophed)	4 mg in 250 ml D5W	16 mcg/ml	If ml/hr (rate) ordered: Then (? ml/hr x ? conc) / 60 = ? mcg/min
Heparin	25,000 units in 250 ml D5W (Premix)	100 units/ml	
Epinephrine	5 mg in 500 ml NS	10 mcg/ml	
Insulin (Regular)	100 units in 100 ml NS	1 unit/ml	
Amiodarone (Cordarone)	150 mg in 100 ml D5W (Premix) 360 mg in 200 ml D5W (Premix)	1.5 mg/ml 1.8 mg/ml	Loading dose of 150 mg over 10 min 1 mg /min for 6 hours = 34 mls/hr 0.5 mg/min for 18+ hours = 17 mls/hr
Diprivan 1% (Propofol)	1000 mg in 100 ml (Premix)	10 mg/ml	5 mcg - 50 mcg/kg/min change tubing and bottle every 12 hours
Trandate/Normodyne (Labetolol)	200 mg in 160 ml D5W (remove equal amt D5W as labetolol added)	1 mg/ml	2 mg/minute and titrate
Cardizem (Diltiazem)	125 mg in 100 ml NS	1 mg/ml	Maintenance infusion: Initial rate of 10 mg/hr may increase in 5 mg/hr increments up to 15 mg/hr (some patients may respond to an initial rate of 5 mg/hr)

MCHD Drip Protocol

MOORE COUNTY HOSPITAL DISTRICT - DUMAS, TEXAS
DRIPS PROTOCOL

DRUG	*DILUTION*	*CONCENTRATION*	*FORMULA*
Methylprednisolone (Solu-Medrol)	30 mg/kg in 50 ml D5W (loading dose) 5.4 mg/kg in D5W (maintenance dose)		administer loading dose over 15 minutes wait 45 minutes then begin maintenance dose total volume should be 230 ml administer over 23 hours (10 ml/hr)
Neo-Synephrine (Phenylephrine)	10 mg in 250 ml NS	40 mcg/ml	initial rate is 100-180 mcg/min then decrease to 40-60 mcg/min when BP stabilizes If mcg/min ordered: Then (? mcg/min x 60)/? mcg/ml = _____ ml/hr (rate)
Potassium Chloride 2 mEq/ml	20 mEq in 100 ml NS or D5W (peripheral line) 40 mEq in 250 ml NS or D5W (peripheral line) 40 mEq in 100 ml NS or D5W **(central line only)** 2 ml of Lidocaine 1% may be added to each bag		**Maximum rate of 10 mEq/hour = 55 ml/hr** **Maximum rate of 10 mEq/hour = 65 ml/hr** **Maximum rate of 10 mEq/hour = 30 ml/hr**
Potassium Phosphate 4.4 mEq/ml potassium 3 mM/ml phosphorus	20 mEq in 100 ml water for injection (Premix) 40 mEq in 250 ml NS or D5W (peripheral line) 40 mEq in 100 ml NS or D5W **(central line only)** 13 mM in 100 ml NS or D5W (peripheral line) 27 mM in 250 ml NS or D5W (peripheral line) 27 mM in 100 ml NS or D5W **(central line only)** 2 ml of Lidocaine 1% may be added to each bag		**Maximum rate of 10 mEq/hour = 52 ml/hr** **Maximum rate of 10 mEq/hour = 64 ml/hr** **Maximum rate of 10 mEq/hour = 27 ml/hr** **Maximum rate of 10 mEq/hour = 52 ml/hr** **Maximum rate of 10 mEq/hour = 64 ml/hr** **Maximum rate of 10 mEq/hour = 27 ml/hr**
Banana Bag	0.9 % NS 1000 ml MVI 1 amp Thiamine 100 mg Folic Acid 1 mg		

Rapid Sequence Intubation

- **Equipment:**
- Intubation Equipment available in Drawer # 2 of any crash cart
- Contents of Respiratory Tray
- Laryngoscope Handle in middle
- Oral and Nasal Airways in middle
- End cap Co2 detector in middle
- Laryngoscope blades with size L side
- Flexible Suction catheter L side
- ET Tubes with size on PKG R side

Rapid Sequence Intubation

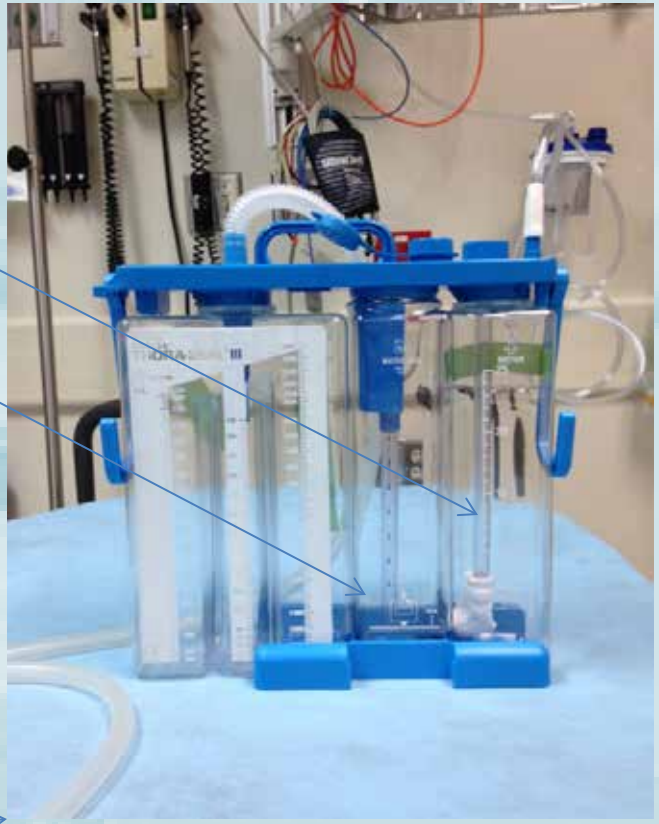
- **Medications:**
- Physicians Intubation Box in Omnicel
- Propofol
- Vecuronium (Norcuron)
- Etomidate
- Omnicel Central and ER - Versed
- Omnicel ER Only - Ketamine
- Omnicel frige Central and ER
- Succinylcholine (Succs)
- Omnicel frige ER only
- Rocuronium (Roc)

Chest Tube Placement

- **Equipment:**
- Sterile Chest tube Tray located in covered shelves in trauma 1 in the Emergency Department.
- Thora-Seal Collection Chamber & Chest tubes located in covered shelves in trauma 1 in the Emergency Department or ICU supply room.
- Betadine, Sterile gloves for physician
- Lidocaine
- 10 cc syringe

Chest Tube Placement

- **Current Thora-Seal set up:**
- Put sterile water in suction chamber to ordered cm h2o by physician
- Fill water seal chamber to line with sterile water
- Note: 2 250 ml bottles of sterile water is usually enough for both chambers.
- Attach suction tubing to wall suction
- Have connection tube ready to hook to chest tube.



Central Line Placement

- **Equipment:**
- Arrow multi=Lumen CVC catheter Kit with 3 lumen, Located in ICU supply room and the ER supply room.

- 3 Ultrasite end valves for the end of each lumen. , Located in ICU supply room and ER supply room.

- Have 3 10 cc saline flushes available.

Arterial Line Placement

- **Equipment:**
- Radial Artery catheterization Kit
- Pressure Transducer
- Pressure transducer Cable
- 500 cc bag NS
- Pressure infuser
- Transducer Holder and Clamp
- All Equipment in ICU Supply Room

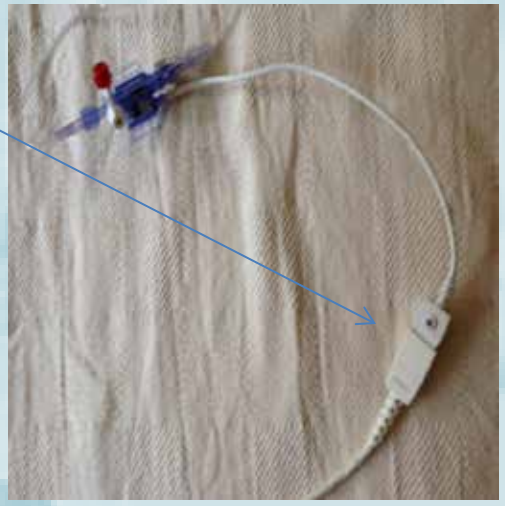
Arterial Line Placement

- Spike NS Bag with transducer line and prime .
- Place NS Bag in pressure infuser and pump up infuser to Green line (300 mmhg).

- Place transducer holder on IV pole with clamp and place at level of Phlebostatic axis.

Arterial Line Placement

- Plug Transducer cable into transducer on A line



- Plug other end of transducer cable into top port on cardiac monitor.

Arterial Line Placement

- Upon plugging transducer cable into monitor the red ABP wave form will appear.

- Open transducer chamber to atmosphere and press zero button on monitor. then open valve to patient
- Hook Transducer line to A line after placed by physician.

ML/HR Dose Calculations

- Amount of Fluid over a period of time:

$$\frac{\#\ \text{ml}}{\#\ \text{min}} \times \frac{60\ \text{min}}{1\ \text{hr}} = \_\_\_\_\ \text{ml/hr}$$

- IV Solution with medication ml/hr:

$$\frac{\#\ \text{ml}}{\text{Amount of med}} \times \frac{\text{ordered med}}{\text{hr}} = \_\_\_\_\ \text{ml/hr}$$

- mcg/kg/min calculation:

$$\frac{250\text{ml}}{400\ \text{mg}} \times \frac{?\text{mcg}}{\text{kg/min}} \times \frac{\text{kg}}{1} \times \frac{1\ \text{mg}}{1000\ \text{mcg}} \times \frac{60\ \text{min}}{1\ \text{hr}} = \_\_\_\_\_\ \text{ml/hr}$$

Conclusion

Thank You And

keep up the good work

Our Patients are Counting

On Us