Hypertensive Patient

Answers to Titration lab v3

A post op cardiovascular patient has a BP of 180/90

Review and initiate the following order. Work calculations and then start pump.

Order: Nicardipine (Cardene) 25 mg in 250 mL in NS

Initiate infusion at 5 mg/hr and titrate by 1 – 2.5 mg/hr every 15 minutes to keep SBP less than 150 mmHG

Check vital signs every 15 minutes with titration, then every 1 hour and PRN.

Recommended Maximum dose: 15 mg/hr

Initiate the infusion per order at 5mg/hr.
Concentration of drug on hand = 25 mg in 250 mL = 0.1 mg/mL
We need to administer 5mgm/hr
Desired over have is 5mg divided by 0.1mg/mL = 50 mL per hour

After 15 minutes the BP is 170/80. What should you do now? Increase the infusion by another 1 to 2.5 mg/hr to 6 mg/hr up to 7.5 mg/hr. Check for signs of pain or anything else that might contribute to an increased BP. Continue to increase the infusion every 15 minutes until the SBP is less than 150 mmHG

When should you notify the health care provider that the nicardipine is ineffective? There is a max dose defined in the order. Give yourself enough time to call the health care provider, get a new order, possibly get a different drug from pharmacy. Do not wait until you are at the max does of 15 mg/hr before notifying the health care provider that the drug is not working effectively.

Hypotensive Patient

A patient admitted with septic shock has a BP of 78/50 (59).

Review and initiate the following order. Work calculations and then start pump.

Order: Norepinephrine (Levophed) 4 mg in 250 mL NS

Initiate infusion at 5 mcg/min and titrate by 1 – 5 mcg/min every 5 minutes to keep SBP greater than 90 mmHG

Check vital signs every 15 minutes with titration, then every 1 hour and PRN

Recommended maximum dose: 50 mcg/min

Order says to initiate Norepinephrine at 5mcg/min

Formula: $\frac{\text{ordered dose x pt.wt in kg x 60}}{\text{Drug concentration}}$ however, this time the drug is not delivered according to weight

Concentration on hand is 4 mg in 250 mL = 0.016 mg/mL. The drug is ordered to infuse in mcg so convert concentration to mcg: 0.016 x 1000 = 16 mcg/mL

Leave pt. weight out of formula (yes you can do that)

$\frac{\text{Ordered dose x 60}}{\text{Concentration}} = \frac{5 \times 60}{16 \text{ mcg/mL}} = \frac{300}{16} =$ 18.75 mL/ hour

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After 5 more minutes the BP is 82/40 (54). What should you do now? Increase the Norepinephrine per orders, check accuracy of BP, check IV line for patency. Norepinephrine should only be administered in a central line because if it gets into the tissues it causes necrosis. When increasing the Norepinephrine you will have the nursing decision to increase the infusion by 1 to 5 mcg/hr. **more** than what is currently infusing

Why is it important to assess the patient's fluid status prior to administering a vasopressor like norepinephrine?

Norepinephrine is a vasopressor that constricts blood vessels to then increase the blood pressure. Make sure the patient is adequately hydrated. The patient may only need fluids to increase the BP rather than a vasopressor or the patient may need both.

Sedation Patient

A 198 lb. patient was intubated and placed on a ventilator.

Review and initiate the following order. Work calculations and then start pump.

Order: Propofol (Diprovan): 1000 mgm in 100 mL

Initiate infusion at 5 mcg/kg/min and titrate by 5 – 10 mcg/kg/min every 5 minutes to RASS Score of -2 to -4

Recommended maximum dose: 100 mcg/kg/min

Change IV tubing every 12 hours. Order triglyceride level on every 4 th day of sedation if drip continues.

RICHMOND AGGITATION SEDATION SCALE

+4	Combative: Overtly combative, violent, immediate danger to staff
+3	Very agitated: Pulls or removes tube(s) or catheter(s); aggressive behavior to staff
+2	Agitated: Frequent non-purposeful movement, fights ventilator
+1	Restless: Anxious but movements not aggressive vigorous
0	Alert and calm
–1	Drowsy: Not fully alert, but has sustained awakening (eye-opening/eye contact) to voice (greater than 10 seconds)
–2	Light sedation: Briefly awakens with eye contact to voice (less than 10 seconds)
–3	Moderate sedation: Movement or eye opening to voice (but no eye contact)
–4	Deep sedation: No response to voice, but movement or eye opening to physical stimulation
–5	Unarousable: No response to voice or physical stimulation

Note: Sedation vacation for mechanically ventilated patients is necessary to ensure the minimum dosing of sedative medication is used.

Patient wt. 198 lbs.; 198 divided by 2.2 = 90 kg

Find concentration: Solution on hand 1000mg in 100 ml or 10,000 mcg/ml; order is for mcg/kg/min

We want to initiate the infusion per order of 5 mcg/kg/minute

Formula: $\frac{\text{Ordered dose x Wt. in kg X 60}}{\text{Drug concentration}} = \frac{5 \times 90 \times 60}{10{,}000} = \frac{27{,}000}{10{,}000} = 2.7 \text{ mL/hr.}$

Or look at it as desired over have; we have 10,000 mcg per ml

We want to give 5mcg X 90 kg X 60 or 27,000 mcg in an hour (the 60 is used in the formula because there are 60 minutes in an hour)

27,000 divided by 10,000 = 2.7 ml/hr

The patient continues to pull at the wrist restraints, gag on the endotracheal tube (ETT), and try to sit up despite your calming reassurance. What is the patient's Richmond Agitation Sedation Scale (RASS) score? *+3*

What is the RASS goal? *-2 to -4*. Look at RASS scale above to see what that looks like

What should you do now? Increase the Propofol infusion per order; you can increase it 5 to 10 mcg/kg/min more than what is infusing so you could increase it to a total of 10 or 15 mcg/kg min. This is where you as a nurse at the bedside have the opportunity to make a nursing judgement as long as you use the protocol or guidelines as specified by the health care provider. If that dose does not provide the sedation needed (-2 to -4) then you can increase the Propofol every 5 minutes until you get the desired effect to a max dose of 100 mcg/kg/min. (See order)

4 hours later you turn the Propofol infusion off for 3 to 5 minutes for a "sedation vacation". What is the priority assessment at this time? Neurological assessment – Hand grasp, toe wiggle and nodding appropriately to yes or no questions. Is the patient neurologically intact as far as you can assess when not under sedation? Propofol takes a few minutes to wear off enough to assess the neurological status of the patient and even longer in the elderly or severely ill patient. Do not leave the patient during this process for their safety. The patient may wake up restless & scared!

The patient nods appropriately that they are in pain. What should you do next? Administer ordered pain medication. Propofol is a sedation med and not a pain med. How do you assess pain when a patient is under sedation like Propofol? HR, BP, facial grimacing, etc.

Triglycerides are monitored because Propofol is in a fatty emulsion solution. That is why it looks creamy white in the bottle it comes in. Because of the fatty solution the tubing is change every 12 hours to help prevent bacterial growth. The patient's urine may also turn a light green.