

CRITICAL THINKING

TEST YOUR CLINICAL SAVVY

A 65-year-old non-insulin-dependent diabetes mellitus (NIDDM) client with a 10-year history of congestive heart failure is admitted to the intensive care unit with chest pain of more than 24 hours. The client is receiving heparin, insulin, calcium gluconate, and potassium chloride, all intravenously.

- A. Why would an infusion pump be needed with these medications?
- B. Why would medications that are based on body weight require the use of a pump? Why would medications based on BSA require an infusion pump?
- C. Can any of these medications be regulated with standard roller clamp tubing? What would be the advantage? What would be the contraindication?
- D. What other information would you need to calculate the drip rates of these medications?
- E. Why would it be necessary to calculate how long each infusion will last?

PUTTING IT TOGETHER: CLINICAL CASE STUDIES

Mrs. R is a 79-year-old woman with dyspnea without chest pain, fever, chills, or sweats. No evidence for bleeding. Admitted through the ER with BP 82/60, afebrile, sinus tachycardia at 110/minute. She underwent emergency dialysis and developed worsening dyspnea and was transferred to the ICU. BP on admission to ICU was 70/30, tachypneic at 44 breaths/minute, on 100% nonrebreather mask. No c/o chest discomfort or abdominal pain. Dyspnea worsened and the client became bradycardic and agonal respirations developed. A Code Blue was called and the client was resuscitated after intubation. Spontaneous pulse and atrial fibrillation was noted.

Past Medical History: cardiomegaly, severe cardiomyopathy, chronic atrial fibrillation, unstable angina, hypertension, chronic kidney disease with hemodialysis, TIA in 3/07.

Allergies: calcium channel blockers

Current Vital Signs: pulse 150/minute, blood pressure is 90/40, RR 18 via the ventilator. Afebrile. Weight: 90 kg

Medication Orders

piperacillin/tazobactam (Zosyn) antibiotic 0.75 G IV in 50 mL q8h

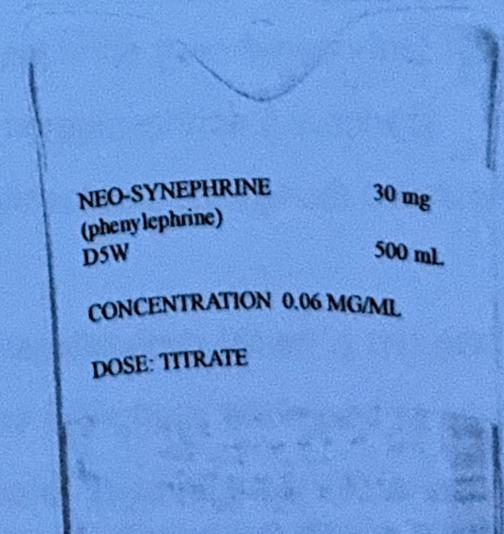
pantoprazole (Protonix) antiulcer 40 mg IV q12h. Dilute in 10 mL NS and give slow IV push.

phenylephrine (Neo-Synephrine) vasopressor drip 30 mg in 500 mL D5W

100 mcg/minute titrate for SBP >90

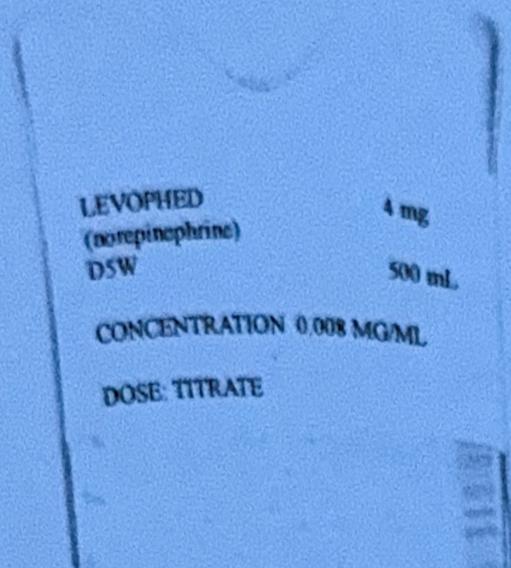
norepinephrine (Levophed) vasopressor in 4 mg in 500 mL D5W

Titrate SBP >90 start at 0.5 mcg/minute



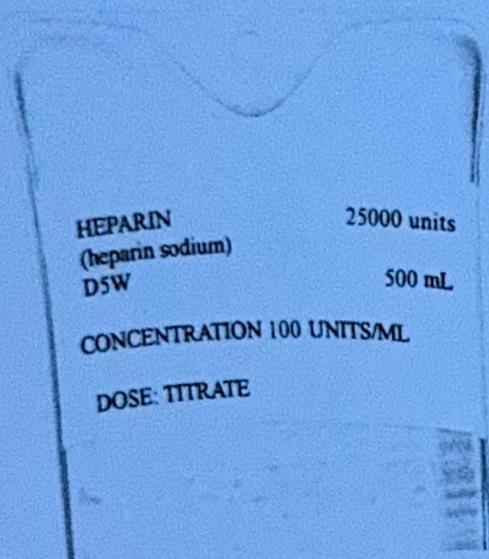
(continued)

PUTTING IT TOGETHER: CLINICAL CASE STUDIES (continued)



$\frac{1}{2}$ NS 1000 mL at 150 mL/hour

Heparin *anticoagulant* 12 units/kg/hour. No loading dose. IV solution 25,000 units in 500 mL D5W. Titrate to keep PTT 49–70.



Aspirin *antiplatelet* 81 mg po/N/G daily
 digoxin (Lanoxin) *cardiac glycoside* 0.25 mg IV daily
 propofol (Diprivan) *sedative* 10 mg/mL
 Titrate 5–50 mcg/kg/min for sedation

Calculations. Round the infusion rate to the nearest whole number.

1. Calculate how many micrograms per milliliter of phenylephrine (Neo-Synephrine).
2. Calculate the rate on the infusion pump of phenylephrine (Neo-Synephrine) 100 mcg/minute.
3. Calculate how many micrograms per milliliter of norepinephrine (Levophed).
4. Calculate the rate on the infusion pump of norepinephrine (Levophed) 0.5 mcg/minute.
5. Calculate the dose of heparin.
6. Calculate the rate on the infusion pump of the heparin dose. When is the next PTT due?
7. Propofol (Diprivan) is mixed in 100 mL. How many milligrams are mixed to equal 10 mg/mL?
8. Calculate the rate on the infusion pump of propofol (Diprivan)—calculate using the range of 5 to 50 mcg/kg/minute. (Hint: calculate using 5 mcg/kg/minute and then recalculate using 50 mcg/kg/minute.)

PUTTING IT TOGETHER: CLINICAL CASE STUDIES (continued)

Critical Thinking Questions

1. Do any of the client's medical conditions warrant changes in the medication orders?
2. Why would two vasopressors be given together?
3. What is the reason for giving the client propofol (Diprivan)?
4. What medication may help atrial fibrillation yet be contraindicated in this client?
5. What is a possible reason for the sinus tachycardia of 150/minute?
6. What is the reason for giving a drug slow IV push, such as the pantoprazole (Protonix)?

Answers in Appendix B.

Med Math - Harelyn Hunter

10/12/25

1. 60mcg/ml
2. 100ml/hr
3. 0.008mg/ml
4. 3.76ml/hr \rightarrow 4ml/hr
5. 1080units/hr
6. Set at 21.6 \rightarrow 22ml/hr
L \rightarrow PTT due in 6hrs
7. 1000mg
8. 2.69ml/hr \rightarrow 3ml/hr | 26.99ml/hr \rightarrow 27ml/hr

- Critical Thinking Questions -

1. Adjust meds because of renal failure and may need to change times because of dialysis.
2. They are both used to raise the bp but, it depends on the dose and how the client reacts.
3. It is used to keep the client comfortable and sedated.
4. A type of Calcium Channel blocker but they are allergic.
5. Depends on how the vasopressors affect the receptors (alpha + beta).
6. May be because of the drugs concentration and to prevent side effects.