2008 Calc Quiz #2

1. An old-time wrinkle cream formula calls for lanolin, almond oil, water, and cod liver oil in (respectively) parts of 3:2:2:2. A patient requests that you make 1 cup of this for her. Assume you are using a graduated cylinder that measures to the nearest milliliter. What metric volume of each ingredient will you use?

2. A female patient has been taking 1,000 units of cholecalciferol (vitamin D_3) twice daily, but her kidney function has deteriorated, requiring a switch to calcitriol (the most active/potent form of vitamin D_3). Vitamin D 40,000 units is equivalent to 1 mg. It is prudent in people with kidney dysfunction to reduce the initial calculated dose of calcitriol by a factor of 100 (to prevent calcium overload). Calcitriol is available in 0.25 µg and 0.5 µg capsules. What dose and frequency of calcitriol (taking into account her decreased kidney function) will most closely match her current vitamin D regimen?

3. How many grams of dextrose is in one liter of D5W?

4. The recommended iron dose for infants with iron-deficiency anemia is 15mg of elemental iron daily. Ferrous sulfate is 20% elemental iron. How much of a ferrous sulfate 125mg/ml product would be needed for an infant with iron-deficiency anemia? Round your answer to the nearest tenth of a milliliter.

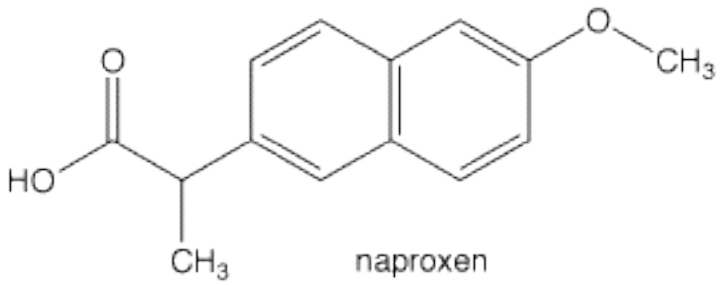
5. A Canadian patient (admitted to rule out a heart attack) has a low-density lipoprotein (LDL) cholesterol concentration of 175 mg/dL. What is this concentration in Canadian units of mmol/L? (MW cholesterol 387)

6. A physician has ordered a 50-ml vial of 8.4% sodium bicarbonate be placed in 500 ml of fluid and infused into a patient. How many milliosmoles will the sodium bicarbonate account for? (MW Na 23, HCO_3 61)

7. How many milliliters of sodium chloride 23.4% will you need to add to the sodium bicarbonate bag (ordered by the physician in the previous question) to provide a sodium equivalent of NS? (MW Na 23, Cl 35.5) Assume the you are starting with sterile water and that your finished product will have a total volume of 500ml. Round the calculated amount of concentrated NaCl solution to the nearest 0.1 ml..

8. A patient takes one potassium chloride 20mEq tablet daily. He loves dried apricots and heard they are a good source of potassium. One reference states that 100g of dried apricots contains about 1700mg of potassium. You check the nutrition facts panel on a package of dried apricots and note that one serving is 40g, which is about 6 apricots. How many whole apricots would this gentleman need to consume daily in order to obtain roughly the same amount of potassium as he is getting in tablet form? (MW K 39, Cl 35.5)

9. The K_a of naproxen is 7.1×10^{-5}. What is its pK_a? Is this drug a weak acid or a weak base? (please indicate both answers in the box below)



naproxen

10. The pH of the stomach is around 3. What will the percent ionization of naproxen be when it is in the stomach?