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5975382.3037975 14271853776 104217682.66667 16147626.467391 39338970.555556 61950444.69697 139605810426 58022409588 17914897 41760923376 34697271.711864



Drug Calculation Test Question Preview

The drug Captopril, used to treat hypertension, is prescribed at 25mg/kg/day. If Rodrick was prescribed this medication and he weighs 74kg, what is the total amount of Captopril he needs for a period of 12 days in mg/kg?

✓ **A** 22,200

B 4,054

C 1,850

D 300

[Next Question](#)

Volume (mL to be given) X Total Amount of Drug: 25mg Total Volume: 5mL Desired Dose 5mg X (mL to be given) = (Total Volume x Desired Dose) / Total Amount of Drug Fill in known information to equation: X (mL to be given) = (5mL x 15mg) / 25mg X (mL to be given) = 75mL / 25 (mg cancels out) X (mL to be given) = 3mL Your patient in cardiac arrest requires 300mg of Amiodarone per 1000 ACLS guidelines. Macro drips sets produce larger drops, requiring 10-15 drips/mL (depending on the manufacturer). There are two ways to calculate a Lidocaine drip rate: 1. If you are using a 50mg/mL drip set, what should your flow rate be (gtt/min)? There are two ways to calculate a Dopamine drip rate: 1. Metric System/Convert 8.4 L to mL = Convert 1274 g to kg = Convert 111.4 g to mg = Convert 1350 mg to lb = Convert 125 mL to L = Pounds to Kilograms 40 lbs = 180 lbs = 220 lbs = 260 lbs = 350 lbs = Kilograms to Pounds 4 kg = 50 kg = 70 kg = 120 kg = 135 kg = Medication Concentrations 4mg/2mL = 1mg/100mL
Saline in it. A dose of 5mg/kg/min has different actions on the body than a dose of 20mcg/kg/min. Paramedics usually administer medication by bolus instead of drip. Administer 100mg of Sumatriptan hydrochloride (concentration of 200mg/20mL). Med Math 101: Practice Problems ANSWERS Metric System 8400 mL 1274 mL 114400 mg 0.00135 g

0.125 L 3mL to Kilograms 18 kg 81 kg 99 kg 117 kg 157.5 kg Kilograms to Pounds 8.8 lbs 110 lbs 154 lbs 264 lbs 297 lbs Medication Concentrations 2mg/mL 0.1mg/mL (100mcg/mL) 50mcg/mL 0.1g/mL (100mg/mL) 0.6mg/mL (600mcg/mL) 1mg/mL 20mg/mL 0.1g/mL (100mg/mL) 1meq/mL 4mg/mL Bolus Medications 1.5mL 150mL 1.6mL 0.5mL 12mL 3mL 3.6mL 1mL 10mL 12mL 14mL 19mL 49mL 21mL 40mL 12.5 gtt/min 30 gtt/min 120 gtt/min 75 gtt/min 50 gtt/min 83 gtt/min; yes 1000 gtt/min; no 60 gtt/min Fluid Administration 31 gtt/min 88 gtt/min 83 gtt/min 50 gtt/min 167 gtt/min 80 gtt/min 313 gtt/min 235 gtt/min 7 gtt/min 17 mEq/L Dopamine Drips 14 gtt/min/microlite 47 gtt/min/microlite Lidocaine Drips 53 gtt/min/microlite 18 gtt/min/microlite Dopamine Clock 1) 2) 3) Lidocaine Clock 10mg/minute (2.5 times more than concentration so 2.5 times around the clock) 2. Depending on the information you have, you can use one of two equations to calculate how many mL of a drug you will need to administer: X (mL to be given) = (Desired Dose x Drop Set) / Drop Concentration or X (mL to be given) = (Desired Dose x Drop Set) / Drop Concentration. The abbreviation for drip rate is drips/minute, or gtt/min. Premixed dopamine bags should come in this concentration. X = (Desired Dose x Drop Set) / Drop Concentration 2, 3.

You need to convert their weight to kilograms so you can administer Succinylcholine at 2mg/kg. In order for the math to work properly, you need to ensure the concentration of Dopamine you are using is 1600 mcg/mL (or you have adjusted your math to account for a different concentration) and you need to be using a 60-drop/mL drip set. Administer 300mg/hour Labetalol (concentration of 2.5g/500mL) using a 60-drop/mL drip set. Administer 20mcg/kg/minute Dopamine (concentration of 0.8g/500mL) using a 60-drop/mL drip set. Micro drip sets (60 gtt/mL) are generally used for medication administration because a medication drip usually requires small amounts of medication to be administered over time. Volume (mL to be given): X Concentration: 450mg / 3mL = 150mg/mL Desired Dose: 15mg X (mL to be given) = Desired Dose / Concentration Fill in known information to equation: X (mL to be given) = 300mg / (150mg/mL) (mg cancels out) X (mL to be given) = 2mL Medication administration: Drip Sets IV Drip Functions: Maintenance Drip: A maintenance drip allows you to maintain the therapeutic levels of a drug after giving a bolus medication. If you need to mix your own IV bag with Dopamine, it is important to achieve this concentration as well. 150 - 15 = 135kg You have a 40lb pediatric patient. Administer 940mL/hour using a 15-drop/mL drip set. You need to administer 40mcg/min of Nitroglycerin. You have 2000mg of Lidocaine in 500mL of Normal Saline and are using a 60-drop/mL drip set. 20 - 2 = 18kg Converting Kilograms to Pounds Occasionally, you may need to convert kilograms to pounds. For example, a dose of 2mg/min would require approximately 23 gtt/minute. There is a very simple way to solve this so don't make this too complicated! Let's look at Lidocaine 2%. Desired Dose: 10mcg/kg/minute Drip Set: 60-drop/mL Drug Concentration: 400mg/250mL (1600mcg/mL) Calculated drip rate: X X = (Desired Dose x Drip Set) / Drug Concentration Fill in known information to equation: Desired dose = 10mcg/kg/minute X 100kg = 1000mcg/min X (calculated drip rate) = (1000mcg/minute X 60-drop/mL) / 1600mcg/mL X = 60000 (mcg & mL cancel out) / 1600 X = 60000 / 1600 = 37.5 gtt/minute Calculating a Dopamine Drip... Using the Dopamine Clock Using the same problem and the same numbers, let's calculate this dopamine drip using the Dopamine Clock. Administer 1g/hour Cefazolin sodium (concentration of 1000mg/500mL) using a 60-drop/mL drip set. How many mL will you need to draw up? Fluid Administration (answer in gtt/minute) Administer 125mL/hour using a 15-drop/mL drip set. Maintenance drips are usually dripped in at a specified rate (15mL/hr) instead of a specified dose (300mg total). Total Volume (mL of solution to be mixed with): 1000mL Desired dose: 4mg/mL X: amount of Lidocaine to be injected (mg) (4mg/mL) = (X/Total Volume) Fill in known information to equation and cross multiply. IV Drips (answer in gtt/minute) Administer 70mcg/min Nitroglycerin (concentration of 200mcg/mL) using a 60-drop/mL drip set. 60gtt/mL Drug Concentration: amount of drug in vial/bag (ex. Then solve for X: 4mg / 1mL = X / 1000mL X = 4 x 1000 (mL cancels out) X = 4000mg You should inject 4000mg of Lidocaine into the 1000mL bag of Normal Saline to achieve the desired concentration of 4mg/mL. Amiodarone often comes in vials that contain 150mg of Amiodarone in 3mL. Take, for instance, amiodarone given for stable ventricular tachycardia with pulses. Ok, lets do it. Total Volume (mL to be given): 10000mL Drip Set: 15-drop/mL Total Time: 8 hours Calculated drip rate: X X = (Total Volume x Drip Set) / Total Time Fill in known information to equation: X (calculated drip rate) = (10000 mL x 15 drop/mL) / 8 hours X = 150000 drops (mL cancels out) / 480 minutes X = 150000 drops / 480 minutes = 312.5 gtt/minute Dopamine: Dopamine is administered as a drip because it is a very potent drug that is only given to extremely sick patients. Administer 5mcg/minute of Epinephrine (concentration of 4mcg/mL) using a 60-drop/mL drip set. Dopamine = 1600mcg/mL Your medical kit only has a 250mL bag of Normal Saline in it. Administer 1.2mg/minute Lidocaine (concentration of 4mg/mL) using a 60-drop/mL drip set. When the pressure is on, you will need a fast and easy-to-remember way to do your conversions. Medication Concentrations & Bolus Doses The Paramedic's bread and butter Glossary of Terms While most of these terms are self-explanatory, let's define them so there is no confusion. Administer 5mg/minute Lidocaine (concentration of 4mg/mL) using a 60-drop/mL drip set. Administer 0.16mg Atropine (concentration 1mg/10mL). You can find this number on the medication box or vial. Administer 17mL/hour using a 60-drop/mL drip set. You have a 200lb patient. Your patient weighs 75 kg. Calculating a Lidocaine Drip... Using the Drip Rate Formula Your cardiac arrest patient has experienced return of spontaneous circulation. Dopamine Clock (answer in gtt/minute - draw line on clock) Administer 7.5mcg/kg/minute Dopamine (concentration of 400mg/250mL) using a 60-drop/mL drip set. Lidocaine Clock (answer in gtt/minute - draw line on clock) Administer 10mg/minute Lidocaine (concentration of 4mg/mL) using a 60-drop/mL drip set. Administer 1.5mg/min Amiodarone (concentration of 3mg/mL) using a 60-drop/mL drip set. You have 400mg of Dopamine in 250mL of Normal Saline and are using a 60-drop/mL drip set. The Amiodarone is supplied in a pre-filled syringe that contains 450mg in 3mL. Desired Dose: 2mcg/minute Drip Set: 60-drop/mL Drug Concentration: 1mg/250mL (1000mcg/250mL = 4mcg/mL) Calculated drip rate: X X = (Desired Dose x Drip Set) / Drug Concentration Fill in known information to equation: X (calculated drip rate) = (2mcg/minute x 60-drop/mL) / 4mcg/mL X = 120 (mcg & mL cancel out) / 4 X = 120 / 4 = 30 gtt/minute Let's calculate the drip rates for some fluid administration... You have been ordered to administer 1L of Normal Saline during your 1-hour transfer. Administer 1000mL/hour using a 10-drop/mL drip set. Milligrams to Grams (move the decimal 3 points to the left) 740mg = .740g 2mg = .002g 100mg = .1g Grams to Kilograms (move the decimal 3 points to the left) 4000g = 4kg 750g = .75kg 93500g = 93.5kg Micrograms to Milligrams (move the decimal 3 points to the left) 250mcg = .25mg 500mcg = .5mg 1000mcg = 1mg Tip: If you're going from a larger unit to a smaller unit, move the decimal point to the right. Administer 43mL/hour using a 10-drop/mL drip set. As you are well aware by now, this is done for any medication that has weight-based dosing. Protocol indicates you should start a Lidocaine drip at 2mg/minute. Premixed Lidocaine bags should come in this concentration. Choosing a Drip Set: macro drip sets (10-15 gtt/mL) are generally used for fluid administration because they allow for quick administration of large amounts of volume. You need to convert their weight to kilograms so you can administer a Lidocaine bolus at 1.5mg/kg Cut the patient's weight in half... 300lb / 2 = 150 Take 10% of that number and subtract it from itself... 150 / 10 = 15. What should your flow rate be (gtt/min)? Take 10% of that number and subtract it from itself... 20 / 10 = 2. Administer 4.5mg/minute Lidocaine (concentration of 4mg/mL) using a 60-drop/mL drip set. A nitroglycerin drip is started at 10mcg, which means that 1/40 of a sublingual dose is given over 1 minute! By administering Nitroglycerin via drip, you can titrate the drug to relief of pain and reduce the negative effects it has on blood pressure. Some IV drugs come in premixed IV bags (Lidocaine, Dopamine) while others require premixing prior to administration (Amiodarone, Epinephrine). The sublingual dose is 4mg (400mcg) and is administered all at once. Use the drip rate formula and perform the mathematical operations to find the exact drip rate. The Diliazem is supplied in a vial that contains 25mg in 5mL. Med Math 101: Practice Problems Below are a series of practice problems meant to increase your proficiency and test your understanding of what you have just learned. Administer 24mg of Etomidate (concentration of 20mg/10mL). For example, Nitroglycerin works to relieve chest pain but can cause a patient's blood pressure to drop dangerously low. Here is what we know: Desired Dose: 10mcg/kg/minute Patient Weight (in Kg): 100 kg The Dopamine Clock is dosed as mcg/min so we need to get our math to show mcg/min. Your patient weighs 80 kg. When calculating Dopamine drip rates, your calculations should be based on a concentration of 1600mcg/mL. 400mg/250mL Fluid administration formula: administration of a specified volume of solution given over time X = (Total Volume x Drip Set) / Total Time X: calculated drip rate, expressed in drips/minute (gtt/min) Total Volume: total amount of volume needing to be administered (ex. 120 + 12 = 132Lb. Here is a quick and easy way to do so: Multiple the patient's weight in kilograms by 2... 60kg x 2 = 120 Take 10% of that new number and add it to itself... 120/10 = 12. So let's put this all together... Let's set up this calculation for the most typical concentration we see in the field: mg/mL. The effects of Dopamine on the body are dependent on the dose given. Administer 500mL/hour using a 10-drop/mL drip set. If you need to mix your own IV bag with Lidocaine, it is important to achieve this concentration as well. By mixing it in a 100mL IV bag of normal saline and starting an IV drip! Drip to Decrease Potency Effects: Some of the drugs we give are very potent and can cause adverse reactions and side effects that need to be avoided in certain circumstances. 15gtt/mL Total Time: total amount of time that fluid needs to be administered over (ex. General formula; a certain amount of drug (with a specified concentration) to be given at a desired dose X = (Desired Dose x Drip Set) / Drug Concentration X: calculated drip rate, expressed in drips/minute (gtt/min) Desired Dose: total amount of drug needing to be administered, usually defined as a rate (ex. The bag can be regular fluid (normal saline) or it can have a drug mixed in with it. Drip Set: an IV drip set connects the IV bag to the actual IV catheter, allowing the solution to be administered to the patient. Is this drip rate possible to achieve? IV Drip Formulas There are two formulas that can be used when calculating drip rates. Administer 1.75mg/minute Lidocaine (concentration of 4mg/mL) using a 60-drop/mL drip set. An IV drip of Dopamine allows you to control the actions of the drug in the body as needed. When calculating Lidocaine drip rates, your calculations should be based on a concentration of 4mg/mL. 4.5mg/minute (just a little more than the concentration so just a little more than one whole time around the clock) Your patient weighs 125 kg. According to current ACLS guidelines, 150mg of Amiodarone should be given over 10 minutes. Take the percentage number (50%) and make it grams... 50% = 50 grams Take the number of grams and place it over 100mL: 50g / 100mL = 50000mg / 100mL = 500mg / 1mL = 0.5g/mL (This is the concentration seen on a D50% box) Bolus Medications When you administer a bolus of a medication, you are giving a specific amount all at once. Administer 80mL/hour using a 60-drop/mL drip set. Your patient weighs 100kg. 10 Liters of NS) Drip Set: number of drips required to produce one mL of solution (ex. Lidocaine Drips (answer in gtt/minute) Administer 3.5mg/minute Lidocaine (concentration of 4mg/mL) using a 60-drop/mL drip set. Administer 15g Dextrose 10% (concentration of 50g/500mL). Take the percentage number (2%) and make it grams... 2% = 2 grams Take the number of grams and place it over 100mL: 2g / 100mL = 2000mg / 100mL = 20mg/mL (This is the concentration seen on a prehospital Lidocaine vial) Feel like trying Dextrose 50%? Here is what we know: Desired Dose: 1.5 mg/minute Now locate on the clock approximately where 1.5mg/minute would be. This is different from a drip, where a certain amount of drug is administered slowly over a period of time. Administer 0.5mg/minute Diazepam (concentration of 30mg/L) using a 10-drop/mL drip set. Use the Dopamine clock to quickly obtain a relatively accurate drip rate. 1) Grams to Milligrams (move the decimal 3 points to the right) 50g = 50000mg 7500 = 7500000mg 3g = 3000mg 2) Kilograms to Grams (move the decimal 3 points to the right) 35kg = 35000g 250kg = 250000g 7kg = 7000kg 1kg ——— 1,000g ——— 1,000,000mg ——— 1,000,000,000 mcg Converting Pounds to Kilograms As a paramedic, you will be required to quickly convert a patient's weight in pounds to kilograms. Micro drip sets produce smaller drops, requiring 60 drips/mL. How much Dopamine do you need to inject into the bag to achieve the desired concentration of 1600mcg/mL? EMTprep Staff Updated Oct 24, 2015 Med Math 101: The Basics Everyone Should Know Trust us, you need to know this stuff... The Units of Measurement In the EMS setting, we worry about three metric units of measurement... Grams (g) - patient's blood pressure to drop dangerously low. 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Take the percentage number (50%) and make it grams... 50% = 50 grams Take the number of grams and place it over 100mL: 50g / 100mL = 50000mg / 100mL = 500mg / 1mL = 0.5g/mL (This is the concentration seen on a D50% box) Bolus Medications When you administer a bolus of a medication, you are giving a specific amount all at once. Administer 80mL/hour using a 60-drop/mL drip set. Your patient weighs 100kg. 10 Liters of NS) Drip Set: number of drips required to produce one mL of solution (ex. Lidocaine Drips (answer in gtt/minute) Administer 3.5mg/minute Lidocaine (concentration of 4mg/mL) using a 60-drop/mL drip set. Administer 15g Dextrose 10% (concentration of 50g/500mL). Take the percentage number (2%) and make it grams... 2% = 2 grams Take the number of grams and place it over 100mL: 2g / 100mL = 2000mg / 100mL = 20mg/mL (This is the concentration seen on a prehospital Lidocaine vial) Feel like trying Dextrose 50%? 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