

EMT 104 Pharmacology for the Paramedic

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Quantitative Reasoning Principles in EMT 104

- Demonstrate the ability to administer medications safely and effectively within the scope of practice for a paramedic including successfully performing drug calculations required to solve a given problem.
- Use quantitative information to support assertions and/or to solve real world math problems relevant to pharmacology and drug calculations.



Principles (cont'd)

- Convert relevant information into various mathematical forms such as equations, diagrams and tables specifically related to drug calculations including charts and equations/formulas for medication administration dosing.
- Use Metric/English math system calculations in terms of drug administration, patient weights and other pharmacological applications.



Drug Dosage Calculations

- What we cover:
 - The metric system & equivalents to English system
 - Common conversions
 - Multiplying and dividing fractions
 - Equivalencies and determining parts
 - Understand and interpret statistical data related to pharmacokinetics (action of drugs, efficacy rates, etc.), factors altering drug responses (half-lives), etc.





More...

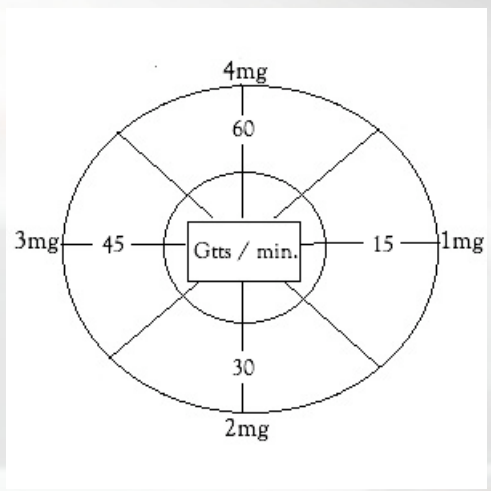
- Methods (equations) for figuring:
 - Patient weights based on metric (kg from lbs)
 - Medication and fluid infusion (drip) rates
 - Medication doses for single administration (IV, PO, SL, etc.)
 - Medication dose by weight
 - Medication dose by time (mg/min)



- All of these include a multi-part mathematical equation for the student.
- They must be able to determine:
 - The dose for the patient
 - How it is to be administered
 - What the concentration of the medication is on hand
 - How to achieve the desired dose

EMT 104...by the numbers!

- Medication administration charts are also used to avoid lengthy calculations & drug errors to simplify the paramedic's job.
- Example: the Lidocaine or dopamine clock
- Medication dose charts



Dopamine (Intropin) 2 - 20 mcg/kg/min

A mixture of 400 mg Dopamine in 250 ml = 1,600 mcg/ml

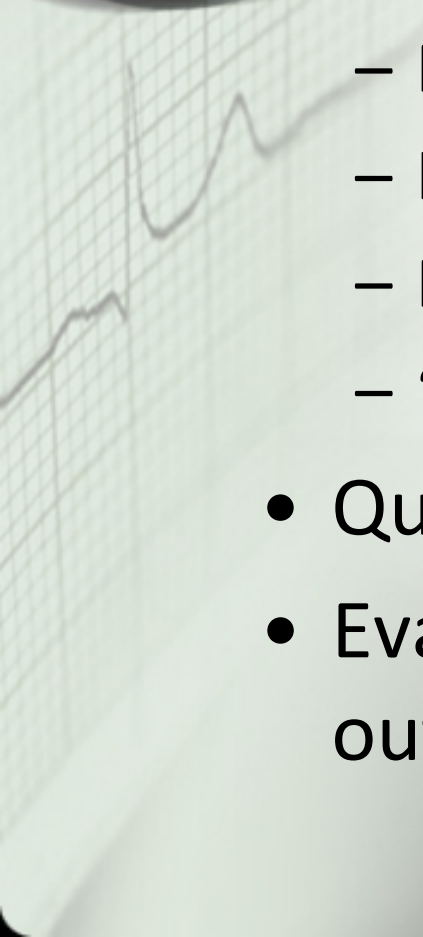
mcg/kg/ minute	Patient's Weight in Kilograms											
	2.5	5	10	20	30	40	50	60	70	80	90	100
2 mcg	-	-	1	2	2	3	4	5	5	6	7	8
5 mcg	-	1	2	4	6	8	9	11	13	15	17	19
10 mcg	1	2	4	8	11	15	19	23	26	30	34	38
15 mcg	1	3	6	11	17	23	28	34	39	45	51	56
20 mcg	2	4	8	15	23	30	38	45	53	60	68	75

With a 60 drop per ml drip set this is the number of drops/minute (or ml/hr)

Observe for extravasation - swelling, pallor, pain, etc. at IV site.



How do we do it?

- Classroom discussions and exercises
 - Real world scenarios in lab exercises
 - Meds math
 - IV stations
 - Medication stations
 - ‘Megacode’ stations (‘putting it all together’)
 - Quizzing and testing
 - Evaluation based on QR learning and outcomes criteria
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