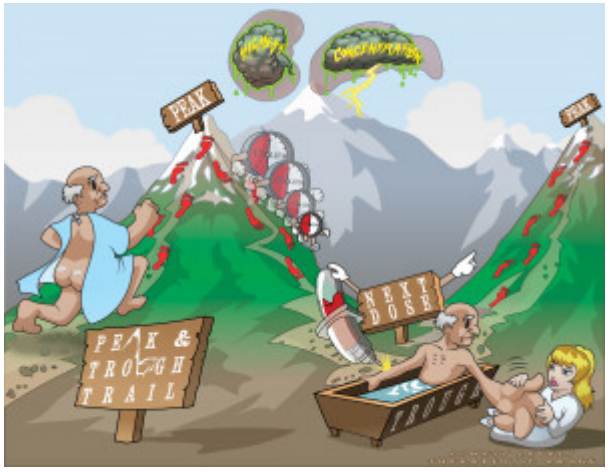
Peak and Trough

It is important to understand when a medication begins working, a drug's half-life, how long it is in the system, and how it is eliminated. It is also important to understand the difference between peak and trough and why they are measured. Peak and trough levels are drawn to determine a drug's concentration within the system. They help determine if a drug is in a toxic range or if the dosage of the medication needs to be increased. It is important to know which medications need to be monitored and what the signs and symptoms of toxicity are. Some medications that are monitored are: antiarrhythmics/cardiotonics [ex. Lanoxin (digoxin)], bronchodilators [ex. Theophylline (anhydrous)], antibiotics (ex. Vancomycin), and anticonvulsants [ex. Phenytoin (dilantin)].



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Peak
Peak of mountain
The peak is the highest concentration that a medication can achieve in the blood. When drawing a peak level, it is helpful for the examiner to note the time it took to achieve this maximum concentration. This is important when measuring toxicity levels.

Highest Concentration
Highest Concentration causing toxic kidney and liver clouds
It is important to know how high a drug concentration can be before liver or kidney damage occurs. Determining the time to draw the peak level will depend on the drug, the method of administration, if it is an extended release, and the drug half-life.

Trough
Trough
When a trough is drawn, the provider is examining what the concentration of a certain medication is at its lowest therapeutic level. This is typically done 30 minutes before the next dose is scheduled to be administered. This is important when measuring therapeutic levels.

Lowest Level of Therapeutic Range
Lowest Level of Therapeutic-massage
A variety of medications have a therapeutic range. The therapeutic range is the dose required to effectively treat a disease, while staying in a nontoxic range for the individual. The trough is the lowest level of the drug while in the therapeutic range.

Obtain Before Next Dose
Obtaining Blood Before Next Dose
A trough level should be drawn before the next dose is due, and helps determine if the next dose needs to be adjusted, depending on the results. In some cases, the next dose could be skipped or the dose will be decreased for patient safety.

Half-Life
Half-life-clock
This is the time it takes the body to excrete or eliminate half of the medicated dose. This is important in administering medication drips, generally cardiac medications. A medication with a shorter half-life needs to be titrated more quickly than a medication with a longer half-life.

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