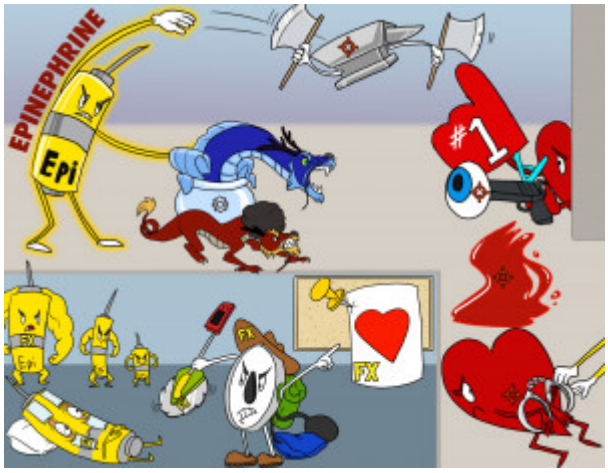
Epinephrine (Adrenaline)

Epinephrine promotes vasoconstriction, increases contractility, increases the heart rate, and promotes bronchodilation. Epinephrine is indicated for the treatment of anaphylaxis, primary open angle glaucoma, cardiac arrest, and bleeding. This medication may be associated with multiple side effects including tachycardia, tremors, hypertension, and insomnia. It is also important to note that epinephrine is a high alert medication, as it has multiple strengths or concentrations based on the route of administration and use.



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Mechanism

Alpha and Beta Agonist
Afro Dragonist and Beta-fish Dragonist
Epinephrine is primarily a beta-1 and beta-2 agonist but also has alpha effects. The beta-1 effects include increasing the force of contraction, increasing the heart rate, and increasing the impulse through the AV node. The alpha effects are responsible for vasoconstriction, when epinephrine is utilized in high doses.

Indications

Anaphylaxis
Anvil-axes
Epinephrine is useful in the treatment of anaphylaxis, because it stimulates beta-2 receptors which are responsible for bronchodilation. This helps open up the lungs and ease the work of breathing. It can also be used in the treatment of acute asthma attacks.

Primary Open Angle Glaucoma (POAG)
#1 Foam-finger Open Angel Glock-eye
Epinephrine stimulates alpha receptors at higher doses. Alpha agonists decrease aqueous humor production and increase the outflow out of the eye and are useful in the management of Primary Open Angle Glaucoma (POAG).

Bleeding
Bleeding
Epinephrine may be used to reduce bleeding due to its vasoconstrictive effects. By constricting the vessels, epinephrine aids in controlling bleeding. Epinephrine can be applied directly to bleeding wounds or injected.

Cardiac Arrest
Heart Arrested
Epinephrine is the first line of drug used for cardiac arrest because it promotes vasoconstriction, which increases perfusion to the heart and brain and increases the heart rate, contractility, and conduction. It can be administered IV or injected directly into the heart (intracardiac).

Side Effects

Tachycardia
Tac-heart-card
Due to epinephrine’s beta-1 effects, it stimulates the heart and increases heart rate. Therefore, one of the main side effects of epinephrine is tachycardia. The patient may experience chest pain or arrhythmias.

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Hypertension

Hiker-BP

Due to epinephrine’s alpha and beta effects, it is possible that it may overstimulate the heart resulting in constriction of the blood vessels leading to hypertension. Also it is important to keep in mind that the vasoconstrictive effect on the blood vessels can lead to necrosis of tissue, if the medication extravasates during IV administration.

Tremors

Trimmer

Epinephrine, due to its stimulating effects, may cause the patient to experience tremors or restlessness.

Insomnia

Eyes-taped-awake

Epinephrine is a highly stimulating drug that may make it difficult for the patient to sleep after administration.

Considerations

Multiple Strengths

Multiple Strength Epi-pens

It is important to mention that there are multiple strengths and forms of epinephrine available. Generally, IV epinephrine is less concentrated than IM or SubQ doses. For this reason, epinephrine is considered a high alert medication and one should be sure that they have the right drug, dose, concentration, amount, and route before administration.

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