PHARMACOLOGY: Epinephrine is a sympathomimetic drug. It activates adrenergic receptors mediating vasoconstriction and increased heart rate. It is used to treat the symptoms of anaphylactic shock, heart failure, and certain heart conditions.

INDICATIONS: Epinephrine is used as a hemostatic agent. It is also used in treating mucosal congestion of hay fever, traumatic, or cardiogenic shock.

Contraindications: Epinephrine is contraindicated in narrow-angle (open-angle) glaucoma, shock, during general anesthesia with halothane, cyclopropane, or enflurane in patients with hypersensitivity or for prophylaxis of severe allergic reactions in patients with asthma. Epinephrine should not be used in patients with hyperthyroidism, digitalis intoxication, and cardiac decompensation.

Dosage and Administration: The usual adult I.V. dose is 0.01 mg/kg (0.1 mL/kg) or 0.3 mg/m² (0.3 mL/m²) to a maximum of 0.5 mg (0.5 mL) S.C. Doses may be repeated at 10 to 15 minute intervals in patients with anaphylactic shock. In children, the initial dose may have to be reduced in young children, followed by a continuous infusion at an initial rate of 0.1 µg/kg per minute, (to a maximum of 1.5 µg/kg per minute). If necessary, I.V. doses may be repeated at 20 minute to 4 hour intervals, depending on the severity of the condition and the response of the patient. In severe anaphylactic shock, I.V. administration may be necessary since absorption of the drug may be impaired with S.C. or I.M. administration. If necessary, epinephrine (0.2 to 0.4 mL) may be mixed with spinal anesthetic agents (may prolong anesthetic action).

Additional Precautions: Epinephrine should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus. Epinephrine may lead to precordial distress, vomiting, headache, dyspnea, as well as unusually elevated blood pressure. Signs and symptoms of over dosage are the expected actions of the drug. A sharp rise in blood pressure may contribute to the already impaired cardiac output of patients, especially those with shock. Epinephrine is the preferred treatment for serious allergic or other emergency situations even though it may potentiate the pressor effects of epinephrine. Epinephrine should not be used in patients with hyperthyroidism, digitalis intoxication, and cardiac decompensation.

Pregancy: The effects of epinephrine may be potentiated by tricyclic antidepressants, certain antihistamines, e.g. chlorpheniramine, hydroxyzine, and certain nasal decongestants, e.g. oxymetazoline. Since epinephrine is a sympathomimetic, it may potentiate the pressor effects of other sympathomimetic agents in patients with cardiovascular disease or in those with constrictive pericarditis. Appropriate steps should be taken to prevent the terminal rise in blood pressure.

Beta-Blockers: Beta-adrenergic blockers should be used in patients with cardiovascular disease for whom epinephrine is indicated. Beta-adrenergic blockers may counteract the marked pressor effects of epinephrine.

Hypersensitivity Reactions: Patients with cardiovascular disease, hyperthyroidism, diabetes or hyperglycemia, or phlebitis, endocarditis, and in pregnancy. Patients with long-standing bronchial asthma and ephedrine who have developed hypertensive disease of the kidneys or have renal failure should not be given epinephrine. Patients with chronic obstructive pulmonary disease should not receive epinephrine. Epinephrine should not be given to patients with long-standing bronchial asthma and ephedrine who have developed hypertensive disease of the kidneys or have renal failure.

Children: 0.1 to 0.25 mg of epinephrine (1 to 2.5 mL of 1:10,000 solution prepared by diluting 1 mL of 1 mg/mL solution with 0.9% sodium chloride). The usual neonatal I.V. dose is 0.01 to 0.03 mg/kg (0.1 to 0.3 mL/kg of a 1:10,000 solution). I.V. doses may be repeated at 10 to 15 minute intervals in patients with anaphylactic shock. In children, the initial dose may have to be reduced in young children, followed by a continuous infusion at an initial rate of 0.1 µg/kg per minute, (to a maximum of 1.5 µg/kg per minute). If necessary, I.V. doses may be repeated at 20 minute to 4 hour intervals, depending on the severity of the condition and the response of the patient. In severe anaphylactic shock, I.V. administration may be necessary since absorption of the drug may be impaired with S.C. or I.M. administration. If necessary, epinephrine (0.2 to 0.4 mL) may be mixed with spinal anesthetic agents (may prolong anesthetic action).