- Risk for Injury: Myocardial infarction, stroke, or renal damage related to decreased blood flow to vital organs

Planning/Goals

The client will:

- Have improved tissue perfusion and relief of symptoms
- Have improved vital signs
- Be guarded against recurrence of hypotension and shock if possible
- Be assessed for therapeutic and adverse effects of adrenergic drugs
- Avoid preventable adverse effects of adrenergic drugs

Interventions

Use measures to prevent or minimize hypotension and shock.

- General measures include those to maintain the airway, maintain fluid balance, control hemorrhage, manage infections, prevent hypoxia, and control other causative factors.
- Learn to recognize impending shock so management can be initiated early. Do not wait until symptoms are severe. The earlier the management, the greater the likelihood of reversing shock and preventing end-organ damage.
- Assist in recognizing and managing the underlying cause of shock in a particular client (eg, replacing fluids; preventing further loss of blood or other body fluids).

Monitor clients during shock and vasopressor drug therapy.

- Titrate adrenergic drug infusions to maintain blood pressure and tissue perfusion without causing hypertension.
- Check blood pressure and pulse constantly or at least every 5 to 15 minutes during acute shock and vasopressor drug therapy. Intra-arterial monitoring may be more reliable than cuff blood pressures in shock conditions.
- Monitor mental status, distal pulses, urine output, and skin temperature and color closely to assess tissue perfusion.
- Assess venipuncture sites frequently for signs of infiltration or extravasation. Have phentolamine (Regitine), an alpha-adrenergic blocking agent that reverses vasoconstriction, readily available in any setting where IV adrenergic drugs are used. If infiltration occurs, instill phentolamine through the IV catheter prior to removal.
- Keep family members informed about client status, management measures, including drug therapy, monitoring equipment, and the need for close observation of vital signs, IV infusion site, urine output, and so forth.

Evaluation

Observe for improved vital signs, color and temperature of skin, urine output, and mental responsiveness.

PRINCIPLES OF THERAPY

Goal of Therapy

The goal of adrenergic drug therapy in hypotension and shock is to restore and maintain adequate tissue perfusion, especially to vital organs.

Choice of Drug

The choice of drug depends primarily on the pathophysiology involved. For cardiogenic shock and decreased cardiac output, dopamine or dobutamine is given. With severe heart failure characterized by decreased cardiac output and high peripheral vascular resistance, vasodilator drugs (eg, nitroprusside, nitroglycerin) may be given along with the cardiotonic drug. The combination increases cardiac output and decreases cardiac workload by decreasing preload and afterload. However, vasodilators should not be used alone because of the risk of severe hypotension and further compromising tissue perfusion. Milrinone may be given when other drugs fail.

For distributive shock characterized by severe vasodilation and decreased peripheral vascular resistance, a vasoconstrictor or vasopressor drug, such as norepinephrine, is the drug of first choice. Drug dosage must be carefully titrated to avoid excessive vasoconstriction and hypertension, which causes impairment rather than improvement in tissue perfusion.

Guidelines for Management of Hypotension and Shock

- Vasopressor drugs are less effective in the presence of inadequate blood volume, electrolyte abnormalities, and acidosis. These conditions also must be treated if present. In addition, normalizing the blood pH and body temperature facilitates the release of oxygen from hemoglobin to the cells.
- Minimal effective doses of adrenergic drugs are recommended because of their extreme vasoconstrictive effects that can produce lactic acidosis at the cell level and create metabolic acidosis. Because catecholamine drugs have short half-lives, varying the flow rate of IV infusions can easily control dosage. Dosage and flow rate usually are titrated to maintain a low-normal blood pressure. Such titration depends on frequent and accurate blood pressure measurements.
- Septic shock due to bacterial infection requires appropriate antibiotic therapy in addition to other management measures (see Section VI). If an abscess is the source of infection, it must be surgically drained.
- Hypovolemic shock is most effectively managed by IV fluids that replace the type of fluid lost; that is, blood loss should be replaced with whole blood; gastrointesti-

How Can You Avoid This Medication Error?

Your postoperative patient is hypotensive and has low urine output. When a fluid bolus does not produce a significant increase in urine output, the physician orders low-dose IV dopamine. After the dopamine has infused for 2 hours, the patient complains of burning at the infusion site. When you assess the site, you do not detect swelling or warmth. You decide to continue to monitor the IV site rather than change it because you know starting another IV will be very difficult.