

PULMONARY ARTERY CATHETERIZATION The use of pulmonary artery catheter (PAC) hemodynamic monitoring has declined because clinical trials have shown no mortality benefit. However, PAC hemodynamic data and waveforms can be helpful in both diagnosis and management. PAC data can confirm the presence and severity of CS, involvement of the right ventricle, left-to-right shunting, pulmonary artery pressures and transpulmonary gradient, and pulmonary and systemic vascular resistance. It can help in recognition of acute MR, decreased left atrial filling pressure, right or left dominance, and secondary septic causes and also can exclude left-to-right shunts. Equalization of diastolic pressures suggests cardiac tamponade, but echocardiogram is more definitive. The detailed hemodynamic profile can be used to individualize and monitor therapy and to provide prognostic information, such as cardiac index and cardiac power. The use of a PAC is currently recommended by the American Heart Association for potential utilization in cases of diagnostic or CS management uncertainty or in patients with severe CS who are unresponsive to initial therapy.

ADVANCED HEMODYNAMIC MONITORING Recently, new central venous catheter systems linked to computer-based algorithms provide continuous monitoring of a variety of derived hemodynamic parameters, including cardiac output, stroke volume, stroke volume variation, and systemic vascular resistance ([Table 305-3](#)). When combined with a femoral arterial catheter, calculated extravascular lung water and pulmonary permeability index can be monitored. The information allows for more rational therapy and assessment but has not yet shown improved clinical outcomes in patients with shock or pulmonary edema.

TABLE 305-3 Hemodynamic Patterns^a