

## Features of Available Minimally Invasive Techniques for Monitoring Cardiac Output<sup>13</sup>

Method	Accuracy	Estimate of Cardiac Preload?	Special Considerations
Indirect Fick	fair	no	Patient must be intubated; Accuracy limited by pulmonary disease
Esophageal Doppler	good	yes <sup>a</sup>	Patient movement is a problem; requires specialized training
Thoracic electrical bioimpedance	good	no	Decreased accuracy with abnormal cardiac rhythm or severe peripheral edema
Transpulmonary pulse contour	very good	yes <sup>b</sup>	Requires proximal access
Lithium dilution	very good	no	Does not require catheter in central circulation

a corrected flow time

b intrathoracic blood volume

**Adapted from:** Chaney JC, Derdak S. Minimally invasive hemodynamic monitoring for the intensivist: Current and emerging technology. *Crit Care Med.* 2002;30:2338-2345.