

R E V I E W

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Invasive and non-invasive methods for cardiac output measurement

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ABSTRACT: The hemodynamic status monitoring of high-risk surgical patients and critically ill patients in Intensive Care Units is one of the main objectives of their therapeutic management. Cardiac output is one of the most important parameters for cardiac function monitoring, providing an estimate of whole body perfusion oxygen delivery and allowing for an understanding of the causes of high blood pressure. The purpose of the present review is the description of cardiac output measurement methods as presented in the international literature. The articles document that there are many methods of monitoring the hemodynamic status of patients, both invasive and non-invasive, the most popular of which is thermodilution. The invasive methods are the Fick method and thermodilution, whereas the non-invasive methods are oesophageal Doppler, transoesophageal echocardiography, lithium dilution, pulse contour, partial CO₂ rebreathing and thoracic electrical bioimpedance. All of them have their advantages and disadvantages, but thermodilution is the golden standard for critical patients, although it does entail many risks. The ideal system for cardiac output monitoring would be non-invasive, easy to use, reliable and compatible in patients. A number of research studies have been carried out in clinical care settings, by nurses as well as other health professionals, for the purpose of finding a method of measurement that would have the least disadvantages. Nevertheless, the thermodilution technique remains the most common approach in use today.

KEY-WORDS: Cardiac output, thermodilution, Fick method, Doppler monitor, bioimpedance, critically ill patients

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