

Competency Standard Management of Care Impedance Cardiography

Competency Statement

Performs nursing care for the patient with cardiac dysfunction who requires noninvasive hemodynamic monitoring by initiating assessment and monitoring activities, analyzing data, and collaborating with the healthcare team in making clinical decisions regarding therapy.

Competency Requirements

Initial Requirements

1. Attendance at an education program related to noninvasive hemodynamic monitoring: impedance cardiography. This content may be addressed in a critical care course, seminar, nursing orientation, and/or workshop.

Ongoing Requirements

Biennially, one of the following:

1. Completion of Skills Performance Checklist at the bedside with mentor.
2. Completion of Skills Performance Checklist in Skill Simulation Lab.

Purpose

- Impedance cardiography (ICG), a continuous, noninvasive method to obtain hemodynamic data and assess thoracic fluid status is ordered by the physician, and assessed and monitored by the registered nurse.
- ICG, also known as thoracic electrical bioimpedance (TEB), is a technology that converts changes in thoracic impedance to changes in volume over time. In this manner, it is used to track volumetric changes such as those occurring during the cardiac cycle. These measurements are gathered noninvasively and continuously using data signal processing and mathematical algorithms. Noninvasive methods of measuring of cardiac output are coming into clinical use on a larger scale than ever before and are compared with other methods such as thermodilution and the direct and indirect Fick methods.

Prerequisite Knowledge and Skills

1. Anatomy and physiology of the cardiovascular system
2. Principles of hemodynamic monitoring
3. Clinical and technical competence with noninvasive hemodynamic monitoring equipment

Performance Elements

1. Provide a general overview of impedance cardiography (ICG).
2. Describe how ICG reveals problems.
3. Discuss the indications and clinical applications of ICG.
4. Identify precautions in patient populations that may produce unreliable ICG data.
5. Describe patient assessment parameters and preparation prior to initiation of impedance cardiography.
6. Demonstrate the placement of sensors.
7. Demonstrate the skills required to perform ICG: noninvasive hemodynamic monitoring.
8. Describe important concepts and waveforms in ICG analysis including patient monitoring and care.
9. Discuss the hemodynamic parameters measured by or derived from ICG.
10. Identify the steps taken when troubleshooting ICG monitoring system to ensure accurate ICG results.
11. Describe documentation requirements including patient response, waveform measurements and analysis, and therapeutic effects.