

Thoracic Electrical Bioimpedance for the Measurement of Cardiac Output

Policy Number: PG0282
Last Review: 09/23/2016



ADVANTAGE | ELITE | HMO
INDIVIDUAL MARKETPLACE |
PROMEDICA MEDICARE
PLAN | PPO

GUIDELINES

This policy does not certify benefits or authorization of benefits, which is designated by each individual policyholder contract. Paramount applies coding edits to all medical claims through coding logic software to evaluate the accuracy and adherence to accepted national standards. This guideline is solely for explaining correct procedure reporting and does not imply coverage and reimbursement.

SCOPE

- Professional
- Facility

DESCRIPTION

Cardiac output is a functional measure defined as the volume of blood pumped by the left ventricle in one minute. There is no totally accurate method of measuring cardiac output, but it can be estimated on the basis of various assumptions. The gold standard for measuring cardiac output is use of a thermodilution (TD) catheter. The TD method requires placement of a catheter in the pulmonary artery. When a cardiac output measurement is needed, a small amount of cold saline solution is injected through the catheter. A thermal probe at the catheter tip measures changes in blood temperature following the injection of the cold saline. As the heart pumps warm blood in and cold saline out (thermodilution), the temperature measured by the probe rises back to baseline levels. The area under the TD curve is proportional to cardiac output. Since this is an invasive technique it poses a risk to the patient. Thoracic electrical bioimpedance has been proposed as a noninvasive means of measuring cardiac output and other functional parameters.

Thoracic electrical bioimpedance [TEB], (also referred to as electrical bioimpedance, transthoracic bioimpedance, plethysmography, impedance cardiography [ICG], or bioimpedance cardiography) has been investigated as a noninvasive means of providing continuous assessment of cardiac output and other hemodynamic parameters. A small electric current is applied to the chest through electrodes placed on the neck and sides of the chest. Resistance to the current (impedance) is measured through sensors also placed on the neck and sides of the chest. The pulsatile flow of blood causes fluctuations in the current, and the device calculates cardiac output from the impedance waveform. TEB has been investigated in a number of different clinical settings, including hospital; ambulatory; and specialty care for a variety of purposes including diagnosis, assessment, prognosis determination, and management.

POLICY

TEB for assessment of cardiac output (93701) is non-covered for HMO, PPO, & Individual Marketplace.

TEB for assessment of cardiac output (93701) does not require a prior authorization for Elite/ProMedica Medicare Plan & Advantage.

COVERAGE CRITERIA

HMO, PPO, Individual Marketplace

Paramount has determined that TEB for assessment of cardiac output is experimental and investigational and therefore non-covered because there is insufficient evidence in the peer-reviewed medical literature of the effectiveness of this procedure.

Elite/ProMedica Medicare Plan, Advantage

TEB may be covered for the following uses:

1. Differentiation of cardiogenic from pulmonary causes of acute dyspnea when medical history, physical examination, and standard assessment tools provide insufficient information and the treating physician has determined that TEB hemodynamic data are necessary for appropriate management of the patient.
2. Optimization of atrioventricular (A/V) interval for patients with A/V sequential cardiac pacemakers when medical history, physical examination, and standard assessment tools provide insufficient information, and the treating physician has determined that TEB hemodynamic data are necessary for appropriate management of the patient.
3. Evaluation for rejection in patients with a heart transplant as a predetermined alternative to a myocardial biopsy.
4. Optimization of fluid management in patients with congestive heart failure when medical history, physical examination, and standard assessment tools provide insufficient information, and the treating physician has determined that TEB hemodynamic data are necessary for appropriate management of the patient.

TEB is non-covered when used for patients:

1. With proven or suspected disease involving severe regurgitation of the aorta
2. With minute ventilation (MV) sensor function pacemakers, since the device may adversely affect the functioning of that type of pacemaker
3. During cardiac bypass surgery
4. In the management of all forms of hypertension (with the exception of drug-resistant hypertension).

All other uses of TEB not otherwise specified remain non-covered.

While there is insufficient evidence in the published medical literature to demonstrate the safety, efficacy and long-term outcomes of TEB for assessment of cardiac output, The Ohio Department of Medicaid requires this procedure be covered for medical necessity. Therefore it is covered for Advantage members. For Elite/ProMedica Medicare Plan members it is covered per CMS guidelines.

CODING/BILLING INFORMATION

The appearance of a code in this section does not necessarily indicate coverage. Codes that are covered may have selection criteria that must be met. Payment for supplies may be included in payment for other services rendered.

CPT CODE

93701	Bioimpedance-derived physiologic cardiovascular analysis
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REVISION HISTORY EXPLANATION

ORIGINAL EFFECTIVE DATE: 09/17/2015

09/17/15: Policy created to reflect most current clinical evidence per TAWG.

09/23/16: Policy reviewed and updated to reflect most current clinical evidence per TAWG.

12/18/2020: Medical policy placed on the new Paramount Medical Policy Format

REFERENCES/RESOURCES

Centers for Medicare and Medicaid Services, CMS Manual System and other CMS publications and services

Ohio Department of Medicaid

American Medical Association, *Current Procedural Terminology (CPT®)* and associated publications and services

Industry Standard Review

Hayes, Inc.