

Policy: MP193

Section: Medical Benefit Policy

Subject: Microvolt T-wave Alternans

I. Policy: Microvolt T-wave Alternans

II. Purpose/Objective:

To provide a policy of coverage regarding Microvolt T-wave Alternans

III. Responsibility:

- A. Medical Directors
- B. Medical Management

IV. Required Definitions

1. Attachment – a supporting document that is developed and maintained by the policy writer or department requiring/authoring the policy.
2. Exhibit – a supporting document developed and maintained in a department other than the department requiring/authoring the policy.
3. Devised – the date the policy was implemented.
4. Revised – the date of every revision to the policy, including typographical and grammatical changes.
5. Reviewed – the date documenting the annual review if the policy has no revisions necessary.

V. Additional Definitions

Medical Necessity or Medically Necessary means Covered Services rendered by a Health Care Provider that the Plan determines are:

- a. appropriate for the symptoms and diagnosis or treatment of the Member's condition, illness, disease or injury;
- b. provided for the diagnosis, and the direct care and treatment of the Member's condition, illness disease or injury;
- c. in accordance with current standards of good medical treatment practiced by the general medical community.
- d. not primarily for the convenience of the Member, or the Member's Health Care Provider; and
- e. the most appropriate source or level of service that can safely be provided to the Member. When applied to hospitalization, this further means that the Member requires acute care as an inpatient due to the nature of the services rendered or the Member's condition, and the Member cannot receive safe or adequate care as an outpatient.

Medicaid Business Segment

Medical Necessity shall mean a service or benefit that is compensable under the Medical Assistance Program and if it meets any one of the following standards:

- (i) The service or benefit will, or is reasonably expected to, prevent the onset of an illness, condition or disability.
- (ii) The service or benefit will, or is reasonably expected to, reduce or ameliorate the physical, mental or development effects of an illness, condition, injury or disability.
- (iii) The service or benefit will assist the Member to achieve or maintain maximum functional

capacity in performing daily activities, taking into account both the functional capacity of the Member and those functional capacities that are appropriate for members of the same age.

DESCRIPTION:

Microvolt T-wave Alternans involve the detection of every-other-beat alternations in T-wave morphology. These alternations are thought to represent abnormalities in intracellular calcium handling that may predispose patients to sudden cardiac death due to ventricular arrhythmias.

INDICATIONS: Microvolt T-wave Alternans diagnostic testing, using the spectral analysis method, may be considered medically necessary for the evaluation of patients at risk for sudden cardiac death and who meet the criteria for cardioverter-defibrillator implantation.

EXCLUSIONS: The Plan does **NOT** provide coverage for Microvolt T-wave Alternans if the measurement is not performed using the spectral analysis method because it is considered **experimental, investigational or unproven**. There is insufficient evidence in the peer-reviewed published medical literature to establish the effectiveness of this treatment on health outcomes when compared to established treatments or technologies.

The Plan does **NOT** provide coverage for Microvolt T-wave Alternans for the diagnosis and assessment of acute coronary syndrome, evaluation of ischemic cardiomyopathy or managing anti-arrhythmic therapy because it is considered **experimental, investigational or unproven**. There is insufficient evidence in the peer-reviewed published medical literature to establish the effectiveness of this treatment on health outcomes when compared to established treatments or technologies.

Note: A complete description of the process by which a given technology or service is evaluated and determined to be experimental, investigational or unproven is outlined in MP 15 - Experimental Investigational or Unproven Services or Treatment.

CODING ASSOCIATED WITH: Microvolt T-wave Alternans

The following codes are included below for informational purposes and may not be all inclusive. Inclusion of a procedure or device code(s) does not constitute or imply coverage nor does it imply or guarantee provider reimbursement. Coverage is determined by the member specific benefit plan document and any applicable laws regarding coverage of specific services. Please note that per Medicare coverage rules, only specific CPT/HCPCS Codes may be covered for the Medicare Business Segment. Please consult the CMS website at www.cms.gov or the local Medicare Administrative Carrier (MAC) for more information on Medicare coverage and coding requirements.

93025 Microvolt T-wave Alternans for assessment of ventricular arrhythmias

Medicare Approved ICD- 10 Codes

I21.01 , I21.02 , I21.09 , I21.09 , I21.11 , I21.19 , I21.21 , I21.29 , I21.29 , I21.3 , I21.4 , I22.0 , I22.1 , I22.2 , I22.8 , I22.9 , I24.8 , I24.9 , I47.0 , I47.2 , I49.01 , I49.02 , R55 , Z98.89

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LINE OF BUSINESS:

Eligibility and contract specific benefits, limitations and/or exclusions will apply. Coverage statements found in the line of business specific benefit document will supersede this policy. For Medicare, applicable LCD's and NCD's will supercede this policy. For PA Medicaid Business segment, this policy applies as written.

REFERENCES:

Antman Em, Anbe DT, Armstrong PW, Bates ER, Green LA, Hand M, Hochman JS, Krumholz HM, Kushner FG, Lamas GA, Mullany CJ, Ornato JP, Pearle DL, Sloan MA, Smith SC, Alpert JS, Anderson JL, Faxon DP, Fuster V, Gibbons RJ, Gregoratos G, Halperin JL, Hiratzka, Hunt SA, Jacobs AK. ACC/AHA Guidelines for the management of patients with ST-elevation myocardial infarction. Circulation 2004;110:82-292.

Baravelli M, Salerno-Uriarte D, Guzzetti D, Rossi MC, Zoli L, Forzani T, Salerno-Uriarte JA. Predictive significance for sudden death of microvolt-level T wave Alternans in New York Heart Association class II congestive heart failure patients: a prospective study. Int J Cardiol 2005 Oct 20;105(1):53-7.

Bloomfield DM, Bigger JT, Steinman RC, Namerow PB, Parides MK, Curtis AB, Kaufman ES, Davidenko JM, Shinn TS, Fontaine JM. Microvolt T-wave alternans and the risk of death or sustained ventricular arrhythmias in patients with left ventricular dysfunction. J AM Coll Cardiol 2006;47:456-63.

Bloomfield DM, Steinmann RC, Namerow PB, Parides M, Davidenko J, Kaufman ES, Shinn T, Curtis A, Fontaine J, Holmes D, Russo A, Tang C, Bigger Jr. JT. Microvolt T-wave Alternans distinguishes between patients likely and patients not likely to benefit from implantable cardiac defibrillator therapy: A solution to the multicenter automatic defibrillator implantation trial (MADIT) II Conundrum. *Circulation* 2004;110:1885-1889.

Blue Cross Blue Shield Technology Evaluation Center (TEC). Microvolt T-wave alternans testing to risk stratify patients being considered for ICD therapy for primary prevention of sudden death. TEC Assessment Program. Chicago, IL: October 2005;20(9).

Centers for Medicare & Medicaid Services (CMS). National Coverage Determination (NCD) for MICROVOLT T-WAVE ALTERNANS (MTWA) (20.30)

Chow T, Kereiakes DJ, Barone C, Booth T, Schloss EJ, Waller T, et al. Prognostic utility of microvolt T-wave alternans in risk stratification of patients with ischemic cardiomyopathy. 2006; 47(9):1820-7.

Kaufman ES, Bloomfield DM, Steinmann RC, Namerow PB, Constantini O, Cohen RJ, Bigger JT. "Indeterminate" microvolt T-wave Alternans test predict high risk of death or sustained ventricular arrhythmias in patients with left ventricular dysfunction. *J Am Coll Cardiol* 2006;48:1399-404.

Chow T, kereiakes DJ, Bartone C, Booth T, Schloss EJ, Waller T, Chung E, Menon S, Nallamothu BK, Chan PS. Microvolt T-wave Alternans identifies patients with ischemic cardiomyopathy who benefit from implantable cardioverter-defibrillator therapy. *J Am Coll Cardiol* 2007;49:50-8.

Centers for Medicare & Medicaid Services (CMS). NCD 20.30 Microvolt T-Wave Alternans (MTWA)

Gold MR, Ip JH, Costantini O, et al. Role of microvolt T-wave alternans in assessment of arrhythmia vulnerability among patients with heart failure and systolic dysfunction: Primary results from the T-wave alternans sudden cardiac death in heart failure trial substudy. *Circulation*. 2008;118(20):2022-2028.

Costantini O, Hohnloser SH, Kirk MM, et al; ABCD Trial Investigators. The ABCD (Alternans Before Cardioverter Defibrillator) Trial: Strategies using T-wave alternans to improve efficiency of sudden cardiac death prevention. *J Am Coll Cardiol*. 2009;53(6):471-479.

Van der Avoort CJ, Filion KB, Dendukuri N, Brophy JM. Microvolt T-wave alternans as a predictor of mortality and severe arrhythmias in patients with left-ventricular dysfunction: A systematic review and meta-analysis. *BMC Cardiovascular Disorders*. 2009;9(5):1-9.

Guy Amit, MD, MPH David S. Rosenbaum, MD, FHRS , Dennis M. Super, MD, MPH Otto Costantini, MD. Microvolt T-wave alternans and electrophysiologic testing predict distinct arrhythmia substrates: Implications for identifying patients at risk for sudden cardiac death. *Heart Rhythm* 2010 7(6) 763-768

Euler V. Garcia^{1,2}; Carlos Alberto Pastore¹; Nelson Samesima¹; Horácio G. Pereira Filho¹. T-wave alternans: clinical performance, limitations and analysis methodologies. *Arq. Bras. Cardiol*. 2011; 96(3)

Chen Z, Shi Y, Hou X, Xu S, Zou J. Microvolt T-wave alternans for risk stratification of cardiac events in ischemic cardiomyopathy: a meta-analysis. *International Journal of Cardiology* 2013; 167(5): 2061-2065

Chow T, Kereiakes DJ, Onufer J et al. Does microvolt T-wave alternans testing predict ventricular tachyarrhythmias in patients with ischemic cardiomyopathy and prophylactic defibrillators? The MASTER (Microvolt T Wave Alternans Testing for Risk Stratification of Post-Myocardial Infarction Patients) trial. *J Am Coll Cardiol* 2008; 52(20):1607-15.

Merchant FM, Ikeda T, Pedretti RF et al. Clinical utility of microvolt T-wave alternans testing in identifying patients at high or low risk of sudden cardiac death. *Heart Rhythm* 2012; 9(8):1256-64 e2.

Calo L, De Santo T, Nuccio F et al. Predictive value of microvolt T-wave alternans for cardiac death or ventricular tachyarrhythmic events in ischemic and nonischemic cardiomyopathy patients: a meta-analysis. *Ann Noninvasive Electrocardiol* 2011; 16(4):388-402.

Shizuta S, Ando K, Nobuyoshi M, et al. Prognostic utility of T-wave alternans in a real-world population of patients with left ventricular dysfunction: the PREVENT-SCD study. Clin Res Cardiol. 2012; 101(2):89-99

Aro, Aapo L, Tuomas V Kenttä, and Heikki V Huikuri. "Microvolt T-Wave Alternans: Where Are We Now?". Arrhythmia & Electrophysiology Review 5.1 (2016): 37.

Al-Khatib SM, Stevenson WG, Ackerman MJ, et al. 2017 AHA/ACC/HRS guideline for management of patients with ventricular arrhythmias and the prevention of sudden cardiac death - Executive Summary. A report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society. Heart Rhythm. 2017 Oct 30

This policy will be revised as necessary and reviewed no less than annually.

Devised: 10/2006

Revised: 5/10 (ref); 5/15 (exclusions)

Reviewed: 04/08, 4/09, 5/11, 5/12, 5/13, 5/14, 5/16, 4/17, 4/18