Medical Policy

Blue Cross Blue Shield Blue Care Network of Michigan

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Category: Medicine

Title: Transcranial Doppler Ultrasound

Procedure Code(s): 93886

Description / Background

Transcranial Doppler (TCD) is a noninvasive, relatively inexpensive, easily performed, and reproducible method of accessing important cerebrovascular architecture. It is widely used for diagnosis in a variety of diverse cerebrovascular diseases. One of its unique properties is that it is the only testing modality currently available that can accurately visualize embolic material traveling within basal cerebral arteries.

Transcranial Doppler (TCD), ultrasonic waves are generated by a probe placed over the skull. The bony plate of the skull limits TCD measurements to three primary sites (acoustic windows). These are; 1) the temporal bone along the orbito-meatal line; 2) the foramen magnum at the base of the skull; and 3) the optic foramina. Sound waves transmitted through these windows are reflected by blood cells in the intracranial vasculature. Information on cerebral arterial patency, direction of flow, and cerebrovascular reactivity can be obtained by analyzing the flow velocities of the arteries. Performance of a TCD ultrasound examination requires considerable experience and knowledge of the cerebrovascular anatomy for an effective study.

Intracranial Arterial Steno-Occlusive Disease:
(TCD) has been shown to be an effective noninvasive diagnostic test for evaluating patients suspected of having intracranial arterial steno-occlusive disease and may be used by some physicians as a replacement for invasive cerebral angiography. Since TCD and Magnetic Resonance Angiograpy (MRA) use different physical and technical principles for evaluating the

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cerebral vasculature, the information obtained from TCD and MRA can be complimentary rather than duplicative in some circumstances.
The major advantages of transcranial Doppler ultrasound are that it is non-invasive, relatively inexpensive, can be performed with portable machines, allows monitoring for prolonged periods, and has a high temporal resolution making it ideal for studying dynamic cerebrovascular responses. In addition it has recently been demonstrated that it can be used to detect circulating cerebral emboli which cannot be detected by any other currently available imaging modality.

CPT / HCPCS Level II Codes and Description

93886 Transcranial Doppler study of the intracranial arteries; complete study
93888 Transcranial Doppler study of the intracranial arteries; limited study

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Diagnoses / Medical Conditions

- Subarachnoid hemorrhage
- Cerebral thrombosis
- Cerebral embolism
- Cerebral atherosclerosis
- Subarachnoid hemorrhage following injury without mention of open intracranial wound
- Subarachnoid hemorrhage following injury with open intracranial wound

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Medical Policy Statement

The safety and effectiveness of transcranial doppler ultrasound have been established. It may be considered a useful therapeutic or diagnostic option when indicated for:

- Assessment of patients suspected of having steno-occlusive disease of the intracranial arteries
- Determining risk for transient ischemic attacks (TIA) or cardiovascular accidents (CVA) in patients with sickle cell disease
- Detecting severe stenosis (> 65%) in the major basal intracranial arteries
- Assessing patterns and extent of collateral circulation in patients with known regions of severe stenosis or occlusion
- Evaluating and following patients with vasoconstriction of any cause, especially after subarachnoid hemorrhage
- Detecting arteriovenous malformations (AVMs) and studying their supply arteries and flow patterns
- Supplementing the physical exam in assessing patients with suspected brain death.

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Rationale

Current medical literature through the year 2000 supports the safety, efficacy, and value of TCD for specific diagnostic purposes. Application to different physiological conditions may change as clinical trials continue.

Medical Policy Position Summary (Non-clinical summary statement for customer use)

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Inclusionary and Exclusionary Guidelines (Clinically based guidelines that may support individual consideration and pre-authorization decisions)

Hyperlink (Audit criteria)

Transcranial Doppler ultrasound is considered investigational for:

- Evaluating the hemodynamic significance of extracranial vascular atherosclerosis
- Evaluating dementia
- Evaluating cerebral blood flow after trauma
- Assessing the adequacy of cerebral blood flow and embolic events during cardiopulmonary bypass surgery
- Evaluating blood flow patterns in central nervous system infections
- Migraine headaches
- Assessing hydrocephalus
- Evaluating glaucoma
- Evaluating cerebral circulatory arrest as a **sole** measure of brain death

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Related Policies

N/A

Medicare Information

Transcranial Doppler testing (93886-93888)

- Transcranial Doppler (TCD) is an ultrasound that measures physiologic parameters of blood flow in the major intracranial arteries.
- A pulsed doppler system is able to record blood velocities from intracranial arteries through selected cranial foramina and thin regions of the skull.
- It is indicated for the following conditions:
  a. Assessing tandem lesions (>65% in the major basal intracranial arteries when extra cranial studies fail to identify the problem).
  b. Assessing patterns and extent of collateral circulation in patients with known regions of severe stenosis or occlusion.
  c. Evaluating and following patients with vasoconstriction (i.e. subarachnoid hemorrhage).
  d. Evaluating children with various vasculopathies such as sickle cell disease and Moyamoya
  e. As an aid in differentiating vertebrobasilar symptoms from carotid symptoms
  f. Assessing patients with suspected brain death.
- It has limited use and therefore is not covered for
  a. Evaluation of brain tumors;
  b. Assessment of familial and degenerative diseases of the cerebrum, brainstem, cerebellum, basal ganglia and motor neurons;
  c. Evaluation of infectious and inflammatory conditions;
  d. Psychiatric disorders;
  e. Epilepsy.
- The following conditions are considered investigational:
  a. Assessing patients with migraine or suspected migraine;
  b. Monitoring during cerebral endarterectomy, cardiopulmonary bypass and other cerebrovascular interventions and surgical procedures;
  c. Evaluating patient with dilated vasculopathies such as fusiform aneurysms;
  d. Assessing autoregulation, physiologic and pharmacologic responses of cerebral arteries.

(The above Medicare information is current as of the review date for this policy. However, since Medicare coverage issues and policies may be updated or revised by Centers for Medicare & Medicare Services [CMS, formerly HCFA] on a frequent basis, the most current information may not be contained in this document. For the most current information, you should contact an official source.)

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- Blue Cross Blue Shield Association Medical Policy # 6.01.07, "Transcranial Doppler Ultrasound", effective date 7/18/99.
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- WPS (Wisconsin Physicians' Services), Medicare Part B, Local Medical Review Policy (LMRP), "Noninvasive Vascular Testing" (N.I.V.T.) [Revision], effective date 11/1/93.

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Joint BCBSM/BCN Medical Policy History

Date	Rationale
5/6/02	Joint policy established
11/18/03	Policy retired

Next Review: This policy is established and is no longer subject to periodic review.

Pre-Consolidation Medical Policy History

Original Policy Date		Comments
BCN	N/A	Revised: N/A
BCBSM	7/16/99	Revised: N/A

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