



**COMPUTED TOMOGRAPHY  
PERFUSION IMAGING  
HS-161**



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**Computed Tomography  
Perfusion Imaging**

**Policy Number: HS-161**

**Original Effective Date: 3/18/2010**

**Revised Date(s): 3/18/2011**

**DISCLAIMER**

The Clinical Coverage Guideline is intended to supplement certain standard WellCare benefit plans. The terms of a member's particular Benefit Plan, Evidence of Coverage, Certificate of Coverage, etc., may differ significantly from this Coverage Position. For example, a member's benefit plan may contain specific exclusions related to the topic addressed in this Clinical Coverage Guideline. When a conflict exists between the two documents, the Member's Benefit Plan always supersedes the information contained in the Clinical Coverage Guideline. Additionally, Clinical Coverage Guidelines relate exclusively to the administration of health benefit plans and are NOT recommendations for treatment, nor should they be used as treatment guidelines. The application of the Clinical Coverage Guideline is subject to the benefit determinations set forth by the Centers for Medicare and Medicaid Services (CMS) National and Local Coverage Determinations and state-specific Medicaid mandates, if any.

**APPLICATION STATEMENT**

The application of the Clinical Coverage Guideline is subject to the benefit determinations set forth by the Centers for Medicare and Medicaid Services (CMS) National and Local Coverage Determinations and state-specific Medicaid mandates, if any.

## BACKGROUND

Computed tomography (CT) perfusion imaging provides a quantitative measurement of regional cerebral blood flow. A perfusion CT study involves sequential acquisition of CT sections during intravenous administration of an iodinated contrast agent. Analysis of the results allows the physician to calculate the regional cerebral blood volume, the blood mean transit time through the cerebral capillaries, and the regional cerebral blood flow. CT perfusion imaging has been proposed to be used primarily as a method of evaluating patients suspected of having an acute stroke whenever thrombolysis is considered. CT perfusion imaging may provide information about the presence and site of vascular occlusion, the presence and extent of ischemia, and about tissue viability. This information may help the clinician determine whether thrombolysis is appropriate.

Perfusion computed tomography imaging tracks transient attenuation changes in the blood vessels and brain parenchyma during the first pass passage of an intravenously injected contrast medium. Maps of cerebral blood volume, mean transit time, and cerebral blood flow can be obtained from a pixel-by-pixel analysis of the density changes over time. The maps generated depend on the commercial software and algorithms used in the processing of the data. Currently, there are three perfusion CT approaches that use different data acquisition and analysis methods:

- Whole brain CT perfused blood volume – Whole brain CT perfused blood volume is assessed by acquiring a helical scan through the whole brain with and without contrast
- First pass perfusion CT – A first pass or bolus tracking CT perfusion study is performed by acquiring repeated images at the same location (a cine scan) through a volume of interest during bolus injection and passage of contrast through the region of interest
- Dynamic perfusion CT – Acquiring a temporal set of images through an extended volume of interest during a bolus injection of contrast constitutes a dynamic perfusion CT study. In this context, the extended volume of interest refers to imaging of tissue beyond the absolute width of the detector array

Due to the paucity of evidence regarding cerebral CT perfusion imaging, the technique is considered experimental and investigational. There are no clear data showing improved outcomes compared to standard non-contrast CT scanning.

## POSITION STATEMENT

Computed tomography (CT) perfusion imaging **is considered experimental and investigational** for assessing members suspected of having an acute stroke or in triaging members with stroke for thrombolytic therapy.

CT perfusion imaging **is also considered experimental and investigational** for evaluating members with the following indications:

- 437.0 Chronic cerebral ischemia; **OR**,
- 435.9 Cerebral vasospasm; **OR**,
- 854.0 Head trauma; **OR**,
- 191.0 Cerebral gliomas; **OR**,
- 054.3 Herpes simplex virus encephalitis; **OR**,
- Use in balloon occlusion tests; **OR**,
- Any and all other possible indications.

## CODING

### Non Covered CPT\*® Category III Codes

**0042T** Cerebral perfusion analysis using computed tomography with contrast administration, including post-processing of parametric maps with determination of cerebral blood flow, cerebral blood volume, and mean transit time

**ICD-9-CM Procedure Codes** - No applicable codes

**HCPCS Level II Codes** - No applicable codes

### Non-Covered ICD-9-CM Diagnosis Codes

054.3 Herpes simplex virus encephalitis  
191.0 Cerebral glioma  
433.01 Occlusion and stenosis of basilar artery with cerebral infarction  
433.11 Occlusion and stenosis of carotid artery with cerebral infarction  
433.21 Occlusion and stenosis of vertebral artery with cerebral infarction  
433.31 Occlusion and stenosis of multiple and bilateral precerebral arteries with cerebral infarction  
433.81 Occlusion and stenosis of other specified precerebral artery with cerebral infarction  
433.91 Occlusion and stenosis of unspecified precerebral artery with cerebral infarction  
434.01 Cerebral thrombosis, with cerebral infarction  
434.11 Cerebral embolism, with cerebral infarction  
434.91 Cerebral artery occlusion, unspecified, with cerebral infarction  
435.9 Cerebral vasospasm  
437.0 Chronic cerebral ischemia  
854.0 Intracranial (Head) trauma

\*Current Procedural Terminology (CPT) 2010 American Medical Association: Chicago, IL.®©

## REFERENCES

### Peer Reviewed

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**Government Agencies, Professional and Medical Organizations**

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2. AHA guidelines Guidelines and recommendations for perfusion imaging in cerebral ischemia: A scientific statement for healthcare professionals by the writing group on perfusion imaging, from the Council on Cardiovascular Radiology of the American Heart Association. *Stroke.* 2003 Apr;34(4):1084-104.
3. Institute for Clinical Systems Improvement (ICSI). Diagnosis and initial treatment of ischemic stroke. ICSI Healthcare Guidelines. Bloomington, MN: ICSI; October 2001.

**HISTORY AND REVISIONS**

<b>Date</b>	<b>Action</b>
12/1/2011	<ul style="list-style-type: none"><li>• New template design approved by MPC.</li></ul>
3/18/2011	<ul style="list-style-type: none"><li>• Approved by MPC.</li></ul>