MEDICAL POLICY – 6.01.502
Single Photon Emission Computed Tomography (SPECT) for Non-cardiac Indications

Effective Date: June 1, 2017
Last Revised: May 23, 2017
Replaces: N/A

RELATED MEDICAL POLICIES:
6.01.54 Dopamine Transporter Imaging with Single-photon Emission Computed Tomography

Select a hyperlink below to be directed to that section.

POLICY CRITERIA  |  CODING  |  RELATED INFORMATION
EVIDENCE REVIEW  |  REFERENCES  |  HISTORY

∞ Clicking this icon returns you to the hyperlinks menu above.

Introduction

SPECT is a type of nuclear imaging test that uses a radioactive dye, also called a tracer, and a special camera to create a three-dimensional (3-D) image of the organs in the body. The images created by tracking the dye in the blood stream can show areas of increased/decreased blood flow and progressive changes in the body. SPECT is proposed to help diagnose or monitor certain tumors, bone disorders, and heart problems.

SPECT imaging of the brain for mental health disorders is used as a research tool in clinical trials. Research has not shown the utility of SPECT brain imaging for differential diagnosis or for assessing or predicting an individual’s risk of getting a mental health disorder.

Dopamine transporter imaging with single-photon emission computed tomography (DAT-SPECT) is addressed in another policy (see Related Medical Policies).

Note: The Introduction section is for your general knowledge and is not to be taken as policy coverage criteria. The rest of the policy uses specific words and concepts familiar to medical professionals. It is intended for providers. A provider can be a person, such as a doctor, nurse, psychologist, or dentist. A provider also can be a place where medical care is given, like a hospital, clinic, or lab. This policy informs them about when a service may be covered.
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Medical Necessity</th>
</tr>
</thead>
</table>
| SPECT scan  | **SPECT scans may be considered medically necessary for any of the following conditions or symptoms:**  
- Brain tumor recurrence versus radiation necrosis, infection  
- Liver hemangioma versus tumor identification  
- Localization of abscess, infection or inflammation  
- Lymphoma evaluation  
- Neuroendocrine tumors  
- Parathyroid disease  
- Renal function and renal scarring evaluation (Dimercaptosuccinic acid [DMSA] scan)  
- Seizure foci localization for patients with intractable epilepsy  
- Vertebral abnormalities evaluation (such as spondylosis, spondyloysis, spondylolisthesis, degenerative joint disease/arthritis of the facet joints, stress fractures) |
| SPECT scan  | **SPECT scans are considered not medically necessary for any of the following conditions or symptoms:**  
- Cerebrovascular accident (also called CVA, stroke, or brain attack)  
- Subarachnoid hemorrhage  
- Transient ischemic attack (TIA)                                                                                                                                                                                                                                                                  |

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Investigational</th>
</tr>
</thead>
</table>
| SPECT scan  | **SPECT scans are considered investigational for any of the following conditions or symptoms:**  
- Attention deficit hyperactivity disorder (ADHD)  
- Colorectal cancer (eg, with CEA-Scan, IMMU-4)  
- Head trauma – evaluation of brain morphology  
- Mental health disorders (diagnosis, prediction, response to medication)  
- Movement disorder evaluation  
- Pervasive development disorders (PDD)  
- Prostate cancer (eg, with ProstaScint) |
### Procedure | Investigational
--- | ---
 | • Unclassified dementia evaluation (e.g., Alzheimer disease)

### Coding

<table>
<thead>
<tr>
<th>CPT</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>78607</td>
<td>Radiopharmaceutical localization of inflammatory process; tomographic (SPECT)</td>
</tr>
</tbody>
</table>

**Note:** CPT codes, descriptions and materials are copyrighted by the American Medical Association (AMA). HCPCS codes, descriptions and materials are copyrighted by Centers for Medicare Services (CMS).

### Related Information

**Definition of Terms**

**Abscess:** A mass filled with pus (made up of dead white blood cells and dead tissue, bacteria, and blood serum) that collects anywhere in the body as a result of the body’s response to an infection.

**Adenoma:** A noncancerous (benign) epithelial tumor that may affect various organs in the body. The adenoma often comes from or resembles glandular tissue, though some grow in nonglandular areas.

**Carcinoid tumors:** Carcinoid tumors are slow growing and usually start in the gastrointestinal tract (anywhere between the stomach and the rectum) or the lung. These tumors make and release (secrete) large amounts of hormones, including cortisol, histamine, insulin and serotonin. Carcinoid tumors are a type of neuroendocrine tumor.

**Liver hemangioma:** A noncancerous tumor (mass) that forms in or on the liver. It is made up of small blood vessels. Liver hemangiomas are more common in women than men.

**Lymphoma:** A cancer of the white blood cells (lymphocytes) of the body’s immune system. It develops in the lymph nodes and lymphatic system.

**Movement disorders:** A group of diseases that includes abnormally slow movement (bradykinesia), rigidity, tremor at rest, and postural instability.
**Neuroendocrine tumors:** A diverse group of tumors that form from cells of the hormone and nervous systems. They may be found in the intestine and also occur in the thyroid, lung and other parts of the body.

**Pervasive developmental disorders (PDD):** Refers to a group of disorders defined as delays in the development of socialization and communication skills often accompanied by cognitive and language delays.

**Transient ischemic attack (TIA):** A temporary lack of adequate blood and oxygen (ischemia) to the brain. The neurological signs and symptoms are similar to a brain attack (stroke), but go away within a short period of time. This may also be referred to as a mini-stroke.

---

**Evidence Review**

### Abscess/Infection

Labeled white blood cells are infused prior to SPECT imaging of the suspected clinical site of infection. This infusion helps with localization of tissue inflammation.¹

### Surgical Repair

SPECT can be useful in distinguishing between tumor regrowth and radiation necrosis in patients with cerebral metastases.²

### Cerebrovascular Disease (CVA, stroke, brain attack, TIA)

The use of SPECT has become outdated for the evaluation and management of cerebrovascular disease, including cerebrovascular accidents (CVA or stroke), subarachnoid hemorrhages, and transient ischemic attacks (TIA). Newer imaging techniques are more common such as computed tomography angiography (CTA) and magnetic resonance angiography (MRA).³⁻⁵
Epilepsy Seizure Foci

Interictal or intra-ictal SPECT may be applicable for patients being considered for surgery to treat intractable epilepsy, when seizure focus cannot be localized by EEG, video-EEG, or MRI.\textsuperscript{6,7}

Kidney (renal)

Using Technetium-99m labeled dimercaptosuccinic acid (DSMA) for diagnostic imaging may be useful to evaluate the kidneys function and identify of scarring.\textsuperscript{8,9}

Liver Hemangioma versus Primary Hepatoma or Metastases

Technetium-labeled red blood cells are infused prior to SPECT imaging of the liver.\textsuperscript{10}

Lymphoma

SPECT scans may be useful to distinguish tumor from radiation necrosis in the chest and abdomen. An initial study can be compared with a follow-up study after the completion of treatment. SPECT is not appropriate for initial staging of lymphoma.\textsuperscript{11}

Mental Health Disorders

SPECT imaging of the brain for mental health disorders is used as a research tool in clinical trials. The National Institute of Mental Health (NIMH) made the following statement in their brochure titled “Neuroimaging and Mental Illness: A window into the brain”:

No scientific studies to date have shown that a brain scan by itself can be used for diagnosing a mental illness or to learn about a person’s risk for disease. Brain scans alone cannot be used to diagnose a mental disorder, such as autism, anxiety, depression, schizophrenia, or bipolar disorder. Other types of tests are needed for a mental illness to be properly diagnosed.\textsuperscript{12,13}
Mild Cognitive Impairment (MCI) Conversion to Alzheimer’s Disease (AD)

The utility of SPECT to predict conversion from mild cognitive impairment (MCI) to Alzheimer’s disease (AD) is limited.\textsuperscript{14,15}

Neuroendocrine Tumors

SPECT for the diagnosis and staging of neuroendocrine tumors may be done using a monoclonal antibody (OctreoScan™) or I-131 meta-iodobenzyl-guanidine (MIBG).\textsuperscript{16,17}

Parathyroid Disease

Guidelines on parathyroid scintigraphy from the Society of Nuclear Medicine\textsuperscript{19} state that there is a developing consensus that SPECT and SPECT/CT are most useful for improving the precision of anatomic localization. The Parathyroid Task Group of the EANM\textsuperscript{20} state that the use of SPECT/CT has a major role for obtaining anatomical details on ectopic foci. However, its use as a routine procedure before target surgery is still investigational. Preliminary data suggest that SPECT/CT has lower sensitivity in the neck area compared to pinhole imaging.\textsuperscript{18-20}

Pervasive Development Disorders (PDD)

Pervasive developmental disorder (PDD) can be difficult to diagnose due to the variety and severity of the presentation of symptoms. The American Academy of Neurology Practice Guideline states the following: "There is no evidence to support a role for functional neuroimaging studies in the clinical diagnosis of autism at the present time".\textsuperscript{21}

Vertebral Abnormalities

SPECT scans may be useful in evaluating chronic back or neck pain that is atypical, that may be caused by spondylolysis or stress fractures that are undiagnosed by conventional imaging studies.\textsuperscript{22,23}


### History

<table>
<thead>
<tr>
<th>Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>09/01/16</td>
<td>New policy, approved August 9, 2016. Add to Medicine section. SPECT may be considered medically necessary when criteria are met for select non-cardiac indications. SPECT is not medically necessary for cerebrovascular indications. SPECT is investigational when criteria are not met.</td>
</tr>
<tr>
<td>06/01/17</td>
<td>Annual review, approved May 23, 2017. Policy reorganized for clarity; no change in policy statements.</td>
</tr>
</tbody>
</table>

**Disclaimer:** This medical policy is a guide in evaluating the medical necessity of a particular service or treatment. The Company adopts policies after careful review of published peer-reviewed scientific literature, national guidelines and local standards of practice. Since medical technology is constantly changing, the Company reserves the right to review and update policies as appropriate. Member contracts differ in their benefits. Always consult the member benefit booklet or contact a member service representative to determine coverage for a specific medical service or supply. CPT codes, descriptions and materials are copyrighted by the American Medical Association (AMA). ©2017 Premera All Rights Reserved.

**Scope:** Medical policies are systematically developed guidelines that serve as a resource for Company staff when determining coverage for specific medical procedures, drugs or devices. Coverage for medical services is subject to the limits and conditions of the member benefit plan. Members and their providers should consult the member benefit booklet or contact a customer service representative to determine whether there are any benefit limitations applicable to this service or supply. This medical policy does not apply to Medicare Advantage.
Discrimination is Against the Law

Premera Blue Cross complies with applicable Federal civil rights laws and does not discriminate on the basis of race, color, national origin, age, disability, or sex. Premera does not exclude people or treat them differently because of race, color, national origin, age, disability or sex.

Premera:
• Provides free aids and services to people with disabilities to communicate effectively with us, such as:
  • Qualified sign language interpreters
  • Written information in other formats (large print, audio, accessible electronic formats, other formats)
• Provides free language services to people whose primary language is not English, such as:
  • Qualified interpreters
  • Information written in other languages

If you need these services, contact the Civil Rights Coordinator.

If you believe that Premera has failed to provide these services or discriminated in another way on the basis of race, color, national origin, age, disability, or sex, you can file a grievance with:
Civil Rights Coordinator - Complaints and Appeals
PO Box 91102, Seattle, WA 98111
Toll free 855-332-4535, Fax 425-918-5992, TTY 800-842-5357
Email AppealsDepartmentInquiries@Premera.com

You can file a grievance in person or by mail, fax, or email. If you need help filing a grievance, the Civil Rights Coordinator is available to help you.

You can also file a civil rights complaint with the U.S. Department of Health and Human Services. Office for Civil Rights, electronically through the Office for Civil Rights Complaint Portal, available at https://ocrportal.hhs.gov/ocr/portal/lobby.jsf, or by mail or phone at:
U.S. Department of Health and Human Services, Office for Civil Rights, electronically through the Office for Civil Rights Complaint Portal, available at https://ocrportal.hhs.gov/ocr/portal/lobby.jsf, or by mail or phone at:
200 Independence Avenue SW, Room S09F, HHH Building
Washington, D.C. 20201, 1-800-368-1019, 800-537-7697 (TDD)

Getting Help in Other Languages

This Notice has Important Information. This notice may have important information about your application or coverage through Premera Blue Cross. There may be key dates in this notice. You may need to take action by certain deadlines to keep your health coverage or help with costs. You have the right to get this information and help in your language at no cost. Call 800-722-1471 (TTY: 800-842-5357).

Arabic:

Chinese (Chinese):
本通知有重要的讯息。本通知可能有关於您透过 Premera Blue Cross 提交的 申请或保险的重要讯息。本通知可能有关於重要日期。您可能需要在截止日期之前採取行動，以保留您的健康保险或者費用補貼。您有權利免費以您的母語得到本訊息和幫助。請撥電話 800-722-1471 (TTY: 800-842-5357).

Italiano (Italian):
Japanese (Japanese):
この通知には重要な情報を含まれています。この通知には、Premera Blue Crossの申請または補償範囲に関する重要な情報が含まれている場合があります。この通知に記載されている可能性がある重要な日付をご確認ください。

한국어 (Korean):
본 통지서에는 중요한 정보가 들어 있습니다. 특히 이 통지서는 귀하의 신청에 관하여 그리고 Premera Blue Cross를 통한 커버리지에 관한 정보를 포함하고 있습니다.

Română (Romanian):

Русский (Russian):
Настоящее уведомление содержит важную информацию. Это уведомление может содержать важную информацию о вашем заявлении или страховом покрытии через Premera Blue Cross. В настоящем уведомлении могут быть указаны ключевые даты. Вам, возможно, потребуется принять меры к определенным предельным срокам для сохранения страхового покрытия или помощи с расходами.

Español (Spanish):
Este aviso contiene información importante. Es posible que este aviso contenga información importante acerca de su solicitud o cobertura a través de Premera Blue Cross. Es posible que haya fechas clave en este aviso.

Tagalog (Tagalog):