Effective for dates of service on or after April 1, 2013, refer to: https://www.bcbsal.org/providers/policies/careCore.cfm

Name of Policy:
Computed Tomography and Computed Tomographic Angiography of Extremity or Joint

Policy #: 274
Category: Radiology
Latest Review Date: February 2013
Policy Grade: A

Background/Definitions:
As a general rule, benefits are payable under Blue Cross and Blue Shield of Alabama health plans only in cases of medical necessity and only if services or supplies are not investigational, provided the customer group contracts have such coverage.

The following Association Technology Evaluation Criteria must be met for a service/supply to be considered for coverage:

1. The technology must have final approval from the appropriate government regulatory bodies;
2. The scientific evidence must permit conclusions concerning the effect of the technology on health outcomes;
3. The technology must improve the net health outcome;
4. The technology must be as beneficial as any established alternatives;
5. The improvement must be attainable outside the investigational setting.

Medical Necessity means that health care services (e.g., procedures, treatments, supplies, devices, equipment, facilities or drugs) that a physician, exercising prudent clinical judgment, would provide to a patient for the purpose of preventing, evaluating, diagnosing or treating an illness, injury or disease or its symptoms, and that are:

1. In accordance with generally accepted standards of medical practice; and
2. Clinically appropriate in terms of type, frequency, extent, site and duration and considered effective for the patient’s illness, injury or disease; and
3. Not primarily for the convenience of the patient, physician or other health care provider; and
4. Not more costly than an alternative service or sequence of services at least as likely to produce equivalent therapeutic or diagnostic results as to the diagnosis or treatment of that patient’s illness, injury or disease.
Description of Procedure or Service:
Computerized axial tomography (CAT) or computed tomography (CT) uses a highly collimated x-ray beam that passes through the patient and is differentially absorbed by tissue. The photons are detected and imaged, and contrast is dependent on the differential absorption of the photons by the tissue being studied. On axial CT, each revolution of the gantry around the patient produces one data set or slice. In other CT technology, the x-ray tube rotates continually (i.e., helical CT), allowing a continuous volume of transaxial data to be acquired rapidly and yielding slices at a rate of more than one slice per second at a thickness of 1 mm or less. Gating refers to the use of programs to time data acquisition with organ movements, such as the heart or lungs. Per the American College of Radiology (ACR), the definition of CT angiography (CTA) is a CT examination that is primarily performed for assessment of the heart, arteries, or veins of the body. It requires at a minimum a thin section helical (spiral) CT acquisition coupled with a power injection of intravenous iodinated contrast medium. Three dimensional rendering and multiplanar reformations are important components of many CTA examinations.

Policy:
Effective for dates of service on or after April 1, 2013, refer to:
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Effective for dates of service on or after July 1, 2006 through March 31, 2013:
Computed tomography of the knee meets Blue Cross and Blue Shield of Alabama’s medical criteria for coverage for the following conditions:
- Meniscal or ligament injury, to rule out tear;
- Rule out fracture after injury, comparison for leg length or to assess for fracture union;
- Possible or known septic arthritis, osteomyelitis, or aseptic necrosis;
- Patello-femoral pathology (including patellar tracking disorder).

Computed tomography for evaluation of the shoulder meets Blue Cross and Blue Shield of Alabama’s medical criteria for coverage for the following conditions when an MRI is not feasible:
- Suspected rotator cuff injury;
- Suspected labral tear;
- Known fracture or subluxation;
- Possible axillary mass.

Computed tomography for evaluation of temporomandibular joint (TMJ) disease meets Blue Cross and Blue Shield of Alabama’s medical criteria for coverage when appropriate signs and symptoms are present and MRI is not feasible or not tolerated.

Computed tomography for evaluation of the hip meets Blue Cross and Blue Shield of Alabama’s medical criteria for coverage for the following conditions and x-rays are nondiagnostic and MRI is not feasible:
- Impaired range of motion, gait abnormality, locking or snapping
• Occult or stress fractures
• Acute or chronic soft-tissue injuries or tumors

Computed tomography for evaluation of the upper extremities and/or joints meets Blue Cross and Blue Shield of Alabama’s medical criteria for coverage for the following conditions and MRI is not feasible:
• Evaluation of wrist fracture
• Evaluation of elbow fracture
• Fractures or possible fracture, stress fracture, complex fractures for therapy planning, possible non-union
• Detection of osteochondral lesion, osteocartilaginous intra-articular body, osteomyelitis or pre-op evaluation of osteomyelitis
• Palpable mass, possible bone tumor, follow-up for single bone metastasis after treatment, or primary bone tumor
• Assessment of prosthetic position and alignment
• Septic joint
• Synovitis
• Pre-operative planning for joint replacement

Computed tomography for evaluation of the lower extremities and/or joints meets Blue Cross and Blue Shield of Alabama’s medical criteria for coverage for the following conditions and MRI is not feasible:
• Foot-tarsal deformity or coalition,
• Fracture or fracture fragments, stress fracture, complex fractures for therapy planning, possible non-union
• Ankle impingement syndrome.
• Osteomyelitis or pre-op evaluation of osteomyelitis
• Palpable mass, possible bone tumor, follow-up for single bone metastasis after treatment, or primary bone tumor
• Assessment of prosthetic position and alignment
• Septic joint
• Synovitis
• Pre-operative planning for joint replacement

Computed tomographic angiography of the upper and lower extremity meets Blue Cross and Blue Shield of Alabama’s medical criteria for coverage for the following disorders:
• Upper extremity
  • Suspected occlusion, stenosis
  • Aneurysm or AVM of upper extremity arteries
  • Venous aneurysm
• Lower extremity
  • Suspected occlusion, stenosis (peripheral arterial vascular disease, PAD, PVD)
  • Femoral or popliteal artery aneurysm
  • Trauma (popliteal)
  • Fibular transfer graft
- Venous aneurysm
- Aneurysm or AVM of lower extremity arteries

Individual case consideration will be given to patients with conditions not described above. Clinical notes will be required for review.

*Blue Cross and Blue Shield of Alabama does not approve or deny procedures, services, testing, or equipment for our members. Our decisions concern coverage only. The decision of whether or not to have a certain test, treatment or procedure is one made between the physician and his/her patient. Blue Cross and Blue Shield of Alabama administers benefits based on the members' contract and corporate medical policies. Physicians should always exercise their best medical judgment in providing the care they feel is most appropriate for their patients. Needed care should not be delayed or refused because of a coverage determination.*

**Key Points:**

**Computed Tomography**

**Knee**

Plain radiography is not as sensitive as MRI, but is the most readily available modality. Imaging studies help confirm the diagnosis. Clinical parameters for ordering knee radiographs have been documented by the American College of Radiology (ACR) Appropriateness Criteria to include: joint effusion within 24 hours of direct blow or fall; palpable tenderness over fibular head or patella; inability to walk (four steps) or bear weight immediately, in the emergency room or within a week of the trauma; or inability to flex knee to 90 degrees. MRI is the imaging modality of choice if imaging is indicated.

**Shoulder**

MRI is the imaging modality of choice for evaluation of suspected disease. Standard x-ray should be the initial exam and report available for review. In rotator cuff injuries, plain films are generally the first line of imaging. CT is just as useful in possible fractures. Chest CT may be better for an axillary mass.

**TMJ**

There is no widely accepted standard test to diagnose temporomandibular joint disease. In the majority of cases the symptoms are combined with a physical examination of the face and jaw to provide sufficient information to diagnose these disorders. Routine x-rays may be used to identify underlying osteoarthritis or other bony abnormalities of the TMJ. MRI is the examination of choice since it is the only modality that directly visualizes the meniscus and other soft tissue joint components. Bony components are visualized on CT rather than on MRI. Other sources cite arthrography as being thought to be the criterion standard but MRI is fast becoming the examination of choice.

**Hip**

Clinical data is essential for selecting the most appropriate imaging techniques with chronic hip pain. Plain radiographs are the first method to be used and will aid in the selection of additional techniques and comparison with studies such as MRI and bone scans. MRI is the imaging
modality of choice after plain radiographs. If MRI is not available or feasible, then CT may be used. The only exception for the use of CT over MRI is for osteoid osteoma and labral tears.

**Elbow**
Radiographs are required before other imaging studies. MRI has been advocated as the imaging modality of choice.

**Foot**
Talocalcaneal coalitions are characteristically on medial sides of the sub-talar joint and tend to ossify between 12 and 15 years. CT scan can be used to make the diagnosis and can also be used to judge the relative size of the coalition. With CT scans, both feet are assessed simultaneously after proper uniform positioning. Coalitions and degenerative changes are usually easier to diagnose with CT scans than with standard radiographs. This form of imaging is extremely useful for preoperative planning. MRI is the imaging modality of choice for most conditions of the foot. Other modalities used are high-resolution ultrasound and radiographs.

**Ankle**
There are multiple imaging options for chronic ankle pain. Radiographs are generally obtained as the first option. MRI, bone scanning, ultrasound, CT, MRI and injection procedures are other modalities available. MRI remains in most instances the modality of choice.

**Wrist**
Imaging in chronic wrist pain in many instances is controversial. The guideline from the American College of Radiology for Chronic Wrist Pain states that there is disagreement about which imaging study should be performed, if any. Most agree that any imaging evaluation should begin with standard radiographs. MRI has been advocated for those with chronic wrist pain. Some have used CT post-arthrography for diagnosing ligament injuries of the wrist. CT can be useful in the follow-up of complex fractures or distal radioulnar subluxations.

**Suspected Fractures**
Bone scan is the imaging modality of choice for detecting occult fractures after a period of immobilization. Cases may be referred for a secondary medical review.

**Pre-operative Evaluation for Osteomyelitis**
CT scans can depict abnormal calcification, ossification, and intracortical abnormal lesions. CT is probably most useful in the evaluation of spinal vertebral lesions. The extent of bone or soft tissue involvement can be better defined with CT scanning. CT has also been used to identify single or multiple sequestra, bone or soft tissue abscesses, and sinus tracts. MRI is effective in the early detection and surgical localization of osteomyelitis. A 3-phase bone scan with technetium 99m is probably the initial imaging modality choice. Scintigraphy and MRI are preferred methods in the early diagnosis of osteomyelitis.

**Possible Fracture Non-union**
Plain radiography is the most helpful tool. Any rotational component must be assessed either clinically or with CT scanning. Fracture stability must be determined by the fracture nonunion; this difficult to assess on plain radiography and fluoroscopy. CT scanning may be helpful.
Evaluation by radionuclide imaging and CT may be applicable. Only then can proper treatment, whether by immobilization, internal fixation with or without incorporation of bone grafts, or electrostimulation be instituted.

**Possible Bone Tumor, Follow-up Primary Bone Tumor and Single Bone Metastases**
Pain in the affected bone is the most common complaint of patients with bone cancer. Pain will progress with time and increases with activity. If the cancer has spread, there may be generalized symptoms such as weight loss and fatigue. Most bone cancers show up on x-rays of the bone. CT is more specific than bone scan and can distinguish between osteolytic and osteoblastic lesion. MRI is the most sensitive method of detection of bone metastases because cells can be spotted before local bone reaction has occurred.

**Septic Joint**
X-ray studies of the joint can be helpful to detect injury of bone adjacent to the joint. MRI scanning is very sensitive in evaluating joint destruction. Blood tests are frequently used to detect and monitor inflammation. These tests include the white blood cell count.

**Synovitis**
Radiographs are often unremarkable, whereas magnetic resonance imaging may show characteristic intra-articular masses with signal dropout on T2-weighted sequences. Imaging modalities more sensitive than radiographs are necessary to monitor disease.

**Joint Replacement (Pre-operative mgmt)**
CT is commonly used to delineate the presence and severity of degenerative disease as part of the workup prior to joint replacement surgery. While cartilage is better assessed directly with high-performance MR, CT is superior, particularly to conventional radiography, in displaying the full extent of secondary changes of degenerative disease, such as joint space narrowing, osteophyte formation, cortical eburnation, and subchondral cystic change. ACR Appropriateness Criteria also states in Imaging after Total Hip Surgery that “for planning, if osteolysis is suspected or assessment of bone stock is needed. CT may be useful to see subtle wear. With multidetector, thin section CT, this study is providing more information.

**CT Angiography**
CT angiography is a proven and useful procedure for the detection and characterization of vascular diseases and of vascular anatomy relevant to the treatment of extravascular disorders. CT angiography may be used as the primary modality for detecting disease or as an adjunctive tool for better characterizing known disease or assessing changes in disease state over time. CT angiography should be performed only for a valid medical reason and with the minimum radiation exposure that provides the image quality necessary for adequate diagnostic information. (ACR Practice Guideline for the Performance and Interpretation of CT Angiography)

**Lower Extremity**
A complete vascular physical examination is the first step in assessing a patient. Duplex Doppler ultrasound (US) imaging may more clearly define the problem. Magnetic resonance angiography (MRA) and computed tomography angiography (CTA) are increasingly promising and available. MRA and CTA may more easily visualize lesions obscured by overlying bone cortex in the calf. In patients who are at risk for renal function deterioration and significant
reactions to iodinated contrast medium, MRA may be the procedure of choice and even warrant sending a patient to another institution with MRA capability.

**Upper Extremity**
Helical CT arteriography can be performed as the initial diagnostic method in most patient suspected to have focal arterial injuries of the proximal portions of the extremities. Helical CT is being performed increasingly for the evaluation of medical and surgical emergencies. The availability of CT for emergency studies exceeds that of MRI. Helical CT is becoming the modality of choice for detecting aortic injuries.

The number of Computer Tomography (CT) scanners continues to increase as well as the usage of those scanners. It is estimated that more than 62 million CT scans per year are currently done in the United States, including at least 4 million children.

Conventional radiography doses of radiation are much smaller than CT; an abdominal CT delivers about 50 times more radiation to the stomach than conventional x-ray. Data has been gathered on the correlating radiation exposure and subsequent cancer rates from the Japanese survivors of atomic bombs, it is estimated by Brenner and Hall that 1.5% to 2.0% of cancers in the U.S. could be attributable to CT radiation. One study is now underway to gather direct data on CT-associated cancer with results not being available for some years. Per the December 6, 2007, Journal Watch, a recent survey suggested that many physician are unaware of radiation doses and potential risks associated with CT. (Radiology 2004; 231:393)

**Key Words:**
Computer tomography, CT computerized tomography, computed tomography, Computerized axial tomography, CAT, computer tomography angiogram, CTA, fracture, non-union fracture, bone cancer, bone tumor, osteomyelitis

**Approved by Governing Bodies:**
Not applicable

**Benefit Application:**
Coverage is subject to member’s specific benefits. Group specific policy will supersede this policy when applicable.

ITS: Home Policy provisions apply
BellSouth/AT&T contracts: No special consideration
FEP contracts: No special consideration
Wal-Mart: Special benefit consideration may apply. Refer to member’s benefit plan.
**Pre-certification requirements:** Effective for dates of service on or after November 1, 2007, required when ordered by a provider in a Blue Cross and Blue Shield of Alabama’s Preferred or Participating Network for a patient covered by Blue Cross and Blue Shield of Alabama who will
receive outpatient imaging services(s) from a Preferred Medical Doctor (PMD) or Preferred Radiology Participating (PRP) provider for dates of service on or after November 1, 2006.

**Exceptions to the Alabama PMD and PRP pre-certification requirement:** NASCO, Wal-Mart, Blue Advantage, Flowers Foods, Inc., FEP.

In addition to the above Blue Cross and Blue Shield of Alabama PMD/PRP Network requirement, **some self-insured national account groups** may require pre-certification for all MRIs **effective for dates of service on or after January 1, 2009**. Please confirm during your benefit verification process if a pre-certification is required.

**Coding:**

CPT Codes:

- 73200 Computed tomography, upper extremity, without contrast material
- 73201 Computed tomography, upper extremity, with contrast material
- 73202 Computed tomography, upper extremity, without contrast material, followed by contrast material(s) and further sections
- 73206 Computed tomographic angiography, upper extremity, with contrast material(s), including noncontrast images, if performed, and image postprocessing
- 73700 Computed tomography, lower extremity; without contrast material
- 73701 Computed tomography, lower extremity; with contrast material(s)
- 73702 Computed tomography, lower extremity, without contrast material, followed by contrast material(s) and further sections
- 73706 Computed tomographic angiography, lower extremity, with contrast material(s), including noncontrast images, if performed, and image postprocessing

**References:**


Policy History:
Medical Policy Group, March 2006 (1)
Medical Policy Administration Committee, June 2006
Available for comment, May 30-July 13, 2006
Medical Policy Group, September 2007 (1)
Medical Policy Administration Committee, October 2007
Available for comment October 23-December 6, 2007
Medical Policy Group, December 2007 (1)
Medical Policy Group, December 2008 (2)
Medical Policy Group, July 2009 (1)
Medical Policy Administration Committee, August 2009
Available for comment August 10-September 23, 2009
Medical Policy Group, February 2013 (2): Updated policy with link to CareCore National© medical policies effective April 1, 2013
Medical Policy Administration Committee, March 2013
Available for comment February 15 through March 31, 2013
Medical Policy Group, November 2013 (2): Updated link to CareCore National©

This medical policy is not an authorization, certification, explanation of benefits, or a contract. Eligibility and benefits are determined on a case-by-case basis according to the terms of the member’s plan in effect as of the date services are rendered. All medical policies are based on (i) research of current medical literature and (ii) review of common medical practices in the treatment and diagnosis of disease as of the date hereof. Physicians and other providers are solely responsible for all aspects of medical care and treatment, including the type, quality, and levels of care and treatment.

This policy is intended to be used for adjudication of claims (including pre-admission certification, pre-determinations, and pre-procedure review) in Blue Cross and Blue Shield’s administration of plan contracts.