COMPUTED TOMOGRAPHY SCANS

Brief Coverage Statement
A computed tomography (CT) scan is a medical imaging technique that uses xrays to generate cross sectional images of the body. Sometimes injected contrast is used to highlight structures such as blood vessels that otherwise would be difficult to distinguish from their surroundings. Using contrast material can also help to obtain functional information about tissues or check for blockages in blood vessels.

Note: This policy applies to outpatient providers only and is not intended to address coverage for inpatient hospital stays, hospital observation, or emergency department care.

Services Addressed in Other Benefit Coverage Standards
1. Radiography
2. Cardiac Stress Testing
3. Echocardiography
4. MRI
5. PET Scans
6. Ultrasounds
7. Angiography
8. Bone Mass Measurement
9. Low Back Pain Imaging

Eligible Providers
1. Providers must be enrolled with Colorado Medicaid
2. Eligible sites of service must maintain a certification for Medicare accreditation through a Medicare approved accreditation agency, and provide proof of Medicare certification on the Medicaid provider enrollment forms. Eligible sites of service shall be certified by the Colorado Department of Public Health and Environment (CDPHE)
3. All providers must be trained in the principles of radiation physics and radiation safety

RENDERING PROVIDERS
1. Radiologist
2. Specialty physician with specialized, certified, and recognized training in computed tomography
3. Medical physicist
4. Registered Radiologist Assistant or ARRT Certified Radiologic Technologist (RT)
Note: The rendering provider is the practitioner who can render the service within the scope of their practice, certifications, and licensure. The rendering provider may or may not be the rendering provider on the claim form, as not all provider types are able to enroll as a Colorado Medicaid provider.

Eligible Places of Services

1. Outpatient Hospital
2. Free Standing Radiology Center
3. Ambulatory Surgery Center
4. Physician Office
5. Clinic
6. Mobile Radiology Unit within rural areas

Eligible Clients

All Colorado Medicaid enrolled clients who have documented medical indications listed in the Covered Services and Limitations section.

Covered Services and Limitations

Computed tomography scans are covered when ordered by a physician to diagnose or treat a specific condition based on the client’s signs, symptoms, and past history as documented in the medical record.

1. HEAD (INCLUDING BRAIN, EYE, EAR, JAW, SINUS):
   1.1. CT is the preferred technique for:
      1.1.1. Acute intra-cranial hemorrhage and hematomas
      1.1.2. Recent head trauma
      1.1.3. Suspected fracture or follow-up of a known fracture, foreign body detection, assessment of calcified lesions and temporal bone evaluation
   1.2. Other clinical indications:
      1.2.1. Seeing bony changes from a sellar, para-sellar or orbital mass or infectious process
      1.2.2. Anatomic depiction of the temporal bone anatomy, including the middle and inner ear structures, and sinuses
      1.2.3. Persistent and unexplained symptoms of facial pain, visual loss, and vertigo or dizziness
      1.2.4. Abnormal ocular anatomy or function, such as protrusion, involuntary eye movements, or pain
      1.2.5. Neural or conductive hearing loss or tinnitus
1.2.6. Sinus or nasal airway obstruction that has been unresponsive to medical therapy, including infections, polyps or cysts, headache, recurrent bleeding, peri-orbital swelling

1.2.7. Pre-operative evaluation for cochlear implant, intracranial tumors, mastoidectomy, sinus surgery

1.2.8. Tumor evaluation of intracranial tumors, including diagnosis, staging, and evaluation of response to treatment

1.2.9. Evaluation of structural congenital anomalies of the head, eye, ear, jaw, and sinus

2. **NECK:**

2.1. CT is the exam of choice for the following:

   2.1.1. Detection of sialolithiasis (salivary gland calculi)
   2.1.2. Trauma to the soft tissues of the neck

2.2. Other clinical indications:

   2.2.1. Pre-operative evaluation of thyroid or tumor of the neck
   2.2.2. Monitoring and evaluation of neck or lymph masses, including diagnosis, staging, and response to treatment
   2.2.3. Guidance for biopsy of masses or aspiration of fluid collections in the neck

2.3. Limitations:

   2.3.1. CT of the eye, ear, jaw or neck for infectious or inflammatory processes (such as abscess or cellulitis) is generally emergent and initial evaluation should be done in an urgent care or emergency room. CT for this indication is only done in a non-acute setting after the process has been unresponsive to medical treatment
   2.3.2. CT is appropriate for recurrent or chronic rhinosinusitis only in the following circumstances:
   
   2.3.2.1. Documentation of recurrent (3 or more episodes per year) or chronic (lasting over 12 weeks); AND
   2.3.2.2. Imaging used to corroborate the diagnosis or investigate underlying causes; AND
   2.3.2.3. Clinicians have assessed patients for factors that affect management, such as allergic rhinitis, cystic fibrosis, compromised immune states, and anatomic variations
   2.3.3. CT of the neck should be performed only after endoscopic examination, if available, for suspected glottic lesions, vocal cord paralysis, chronic stridor, or persistent hoarseness
   2.3.4. CT of the neck should be performed only after ultrasound examination for thyroid nodules or thyroid enlargement
3. CHEST:

3.1. Indicated for the following specific diagnoses, or for signs or symptoms suspicious of:

3.1.1. Pulmonary embolism

3.1.2. Infectious and inflammatory processes, including complications of pneumonia, lung abscess, empyema, or other chest infections

3.1.3. Chest wall mass

3.1.4. Thoracic outlet syndrome

3.1.5. Suspicion of or confirmed malignancy (pulmonary nodules or mass or positive sputum), for staging and periodic follow-up

3.1.6. Congenital thoracic or cardiac abnormalities

3.1.7. Asbestos-related or other exposure-related diseases (e.g. mesothelioma, lung cancer, pleural effusion)

3.1.8. Aneurysm or dissection or other vascular abnormalities of the thoracic aorta

3.1.9. Complex congenital heart disease

3.1.10. Pericardial conditions (pericardial effusion, pericarditis, or cardiac masses and tumors)

3.1.11. Persistent and unexplained pleural conditions, such as fluid collection, blood in the chest, pleural mass, or pneumothorax

3.1.12. Diaphragmatic hernia

3.1.13. Pre-operative evaluation for thoracic surgery

3.1.14. Hemoptysis (coughing up blood), after chest x-ray

3.1.15. Persistent pneumonia (after 4-6 weeks of antibiotic treatment) or recurrent pneumonia within 6 months

3.1.16. Interstitial lung disease or pulmonary fibrosis (after chest x-ray)

3.1.17. Hilar enlargement seen on chest x-ray

3.1.18. Hoarseness or vocal cord weakness, suspected to result from recurrent laryngeal nerve injury

3.1.19. Evaluation of post-operative complications following cardio-thoracic surgery

3.1.20. Traumatic injury involving the chest wall, cardi mediastinal structures, lungs, or aorta

3.1.21. Chronic Dyspnea, asbestos related, Interstitial Lung Disease

3.1.22. Subacute cough (lasting 3-8 weeks) or chronic cough (persisting for over 8 weeks) after chest x-ray

3.1.23. Atypical pneumonia, such as would occur with TB or fungal pneumonia

3.2. Chest CT Scanning: Limitations

3.2.1. Thoracic outlet syndrome (TOS). For suspected nerve compression in TOS, nerve conduction studies and/or MRI are preferred over CT as the initial study. For
suspected vascular compression in TOS, CTA/CTV is the examination of choice, followed by contrast angiography or venography if abnormal.

3.2.2. Chest radiographs (x-rays) should be performed prior to using CT in most clinical situations, and preferably within 30 days of the chest CT exam.

3.2.3. Acute Pneumonia

3.2.3.1. CT is not appropriate for routine evaluation of pneumonia. Plain radiography (chest x-ray) is the initial examination of choice and will suffice for initial diagnosis and follow-up in the great majority of cases. If the pneumonia is unresponsive to antibiotic treatment for 4 weeks, or if pneumonia is recurrent within 6 months then CT evaluation is appropriate. If plain chest radiographs in the first 4 weeks show a lung mass or significant/enlarging pleural effusion then CT examination is appropriate. Endoscopy or lung biopsy may be needed to evaluate a mass, and pleural drainage may be needed to prevent the long-term complications of pleural fibrosis that can occur if a large pleural effusion is not treated within the first 6 weeks.

3.2.3.2. Fever of unknown origin (after chest x-ray)

3.2.3.3. Emphysema (after chest x-ray and pulmonary function tests)

3.2.3.4. Suspected bronchiectasis (after chest x-ray)

3.3. Cardiac Imaging: Limitations and Non-Covered Services

3.3.1. When the purpose of a study is imaging of the heart, including the coronary arteries, a chest CT and a dedicated cardiac/coronary artery CT cannot both be ordered.

3.3.2. Chest/cardiac CT is not a suitable imaging modality for morbidly obese patients.

3.3.3. Cardiac CT is not covered for quantitative evaluation of coronary artery calcification.

3.3.4. Cardiac PET scans are not covered. See PET Policy Statement.

3.3.5. Cardiac MRI is not covered without prior authorization.

4. SPINE (INCLUDING CERVICAL, THORACIC, AND LUMBAR SPINE):

4.1. CT is the preferred imaging technique for:

4.1.1. Suspected fracture or follow-up of known fracture

4.1.2. Osseous tumor evaluation

4.1.3. Congenital or developmental vertebral defects

4.1.4. Myelography or discography procedures

4.2. Other clinical indications include:

4.2.1. Significant acute trauma to the spine
4.2.2. Persistent neck or shoulder pain and increasing neurologic deficits related to the spine (e.g. reflex abnormality, muscle weakness, sensory abnormality)

4.2.3. Signs and symptoms of spinal cord or nerve root compression (for example, due to spinal column narrowing or disc herniation)

4.2.4. Myelopathy

4.2.5. Spinal cord infarct

4.2.6. Post-myelogram, post-operative or following other interventional procedure when new neurologic findings or persistent or recurrent pain occur

4.2.7. Infectious or inflammatory process, such as abscess or osteomyelitis

4.2.8. Evaluation of neoplasm or tumor of vertebrae or spinal cord

4.2.9. Severe scoliosis

4.3. Limitations:

4.3.1. For persistent pain only after following 3 – 4 weeks of conservative therapy and failed or inadequate response to treatment (e.g. further clarification following abnormal spine radiographs (x-ray) or post myelogram), including medications, steroids, and physical therapy.

5. ABDOMEN AND PELVIS (INCLUDING LIVER, GALLBLADDER, BILIARY TRACT, ADRENAL GLANDS, KIDNEYS, URINARY BLADDER, PANCREAS, SPLEEN, STOMACH, SMALL INTESTINE, LARGE INTESTINE, LYMPH NODES, GYNECOLOGIC STRUCTURES, PROSTATE, TESTICLES, BLOOD VESSELS):

5.1. CT Scanning of the abdomen and pelvis is indicated for the following specific diagnoses, or for signs and/or symptoms suggestive of:

5.1.1. Trauma – blunt or penetrating injury to the abdomen or pelvis

5.1.1.1. Limitation: Pelvic trauma or fracture evaluation – X-ray prior to CT

5.1.2. Spontaneous intra-abdominal hemorrhage

5.1.3. Hernia, with suspected complications (incarceration, strangulation and gangrene) or pre-surgical planning

5.1.3.1. Limitation: Uncomplicated hernias – Ultrasound prior to CT

5.1.4. Infectious or inflammatory process (for example, abscess, diffuse inflammation, fistula)

5.1.5. Bowel obstruction

5.1.5.1. Limitation: After evaluation with plain radiographs. Plain radiography, sometimes followed by barium studies, should suffice in most cases. CT may be indicated for suspected complications (incarceration or strangulation of
bowel) or to evaluate for an underlying cause in cases that do not respond to short-term conservative therapy

5.1.6. Inflammatory disease of the intestines (e.g. colitis, diverticulitis, inflammatory bowel disease, Crohn’s disease)

5.1.6.1. Limitation: For symptoms suggestive of peptic ulcer disease – barium examination or endoscopy should be performed first

5.1.7. Suspected appendicitis

5.1.8. Upper or Lower GI Hemorrhage

5.1.8.1. Limitation: Should first be evaluated with endoscopy. CT can be helpful in diagnosis and treatment planning for acute life-threatening GI bleeding and for chronic unexplained GI bleeding

5.1.9. Diffuse, unexplained lower extremity edema (for example, pelvic mass causing vascular compression)

5.1.9.1. Limitation: Doppler Ultrasound prior to CT

5.1.10. Suspected abdominal or pelvic lymphadenopathy

5.1.11. Palpable abdominal or pelvic mass

5.1.11.1. Limitation: Ultrasound should be performed first for the evaluation of masses in the pelvis of suspected gynecologic origin (Uterus or Ovaries)

5.1.12. Suspected pancreatic mass

5.1.13. Suspected abnormality of the Adrenal Glands

5.1.14. Hematoma or enlargement of the Spleen

5.1.15. Retroperitoneal fibrosis, inflammation or neoplasm

5.1.16. Complications of acute pancreatitis including pancreatic necrosis, abscess, pseudocyst(s) and effusions

5.1.17. Liver abnormalities, such as cirrhosis, carcinoma, other tumor, abscess, hepatomegaly (worsening enlargement of liver), jaundice, diffuse medical liver disease or biliary obstruction

5.1.17.1. Limitations: For ascites or jaundice – Abdominal ultrasound prior to CT; CT of abdomen for elevated liver enzymes should only be performed after:

5.1.17.1.1. Abnormal or inconclusive abdominal ultrasound, AND

5.1.17.1.2. Medications known to cause liver enzyme elevation have been stopped and liver chemistries repeated, AND

5.1.17.1.3. Other causes for elevated liver enzymes have been evaluated with diagnostic laboratory panels (such as the hepatitis panel)

5.1.18. Gallbladder
5.1.18.1. Limitations: For right upper quadrant pain suspicious for disease of the
gallbladder or biliary tract, ultrasound is preferred as the first exam
5.1.19. Urethral or Urinary Bladder lesion
  5.1.19.1. Limitations: Urinary bladder assessment – Transabdominal pelvic sonography
and cystoscopy prior to CT
5.1.20. Suspected Kidney Stones
5.1.21. Hematuria
  5.1.21.1. Limitations: urine culture and renal ultrasound prior to CT
5.1.22. Aneurysm or dissection of abdominal aorta for:
  5.1.22.1. Initial diagnosis, particularly in obese patients
  5.1.22.2. Pre-operative assessment or prior to stent graft placement
  5.1.22.3. Post-operative surveillance
  5.1.22.4. Urgent complication of an aneurysm, such as rupture or infection
    5.1.22.4.1. Note: Aortic aneurysm or dissection may be evaluated with either
CT or CT Angiography (CTA)
5.2. Other Clinical Indications:
  5.2.1. Persistent, severe, or otherwise unexplained abdominal pain
  5.2.2. Persistent abdominal distention (after plain radiography)
  5.2.3. Pelvic symptoms in females – should only be performed after pelvic ultrasound
  5.2.4. Evaluation of abnormal findings on other imaging exams
  5.2.5. For further evaluation of indeterminate abdominal or pelvic calcifications (after plain
radiography)
  5.2.6. For further evaluation of intra-abdominal foreign bodies (after plain radiography)
  5.2.7. Post-operative evaluation for suspected or known complications of abdominal-pelvic
surgery
  5.2.8. Pre-operative planning for bariatric surgery
  5.2.9. Abdominal or pelvic tumor evaluation for diagnosis, staging, or periodic follow-up
  5.2.10. For colorectal cancer surveillance, annually for 3 years following primary therapy,
for patients with higher risk of recurrence
  5.2.11. Renal tumor diagnosis, initial staging and pre-operative evaluation, re-staging and
treatment monitoring
5.3. Guidance for Abdominal and Pelvic Interventional Procedures
  5.3.1. Biopsy of abdominal, pelvic, or abdominal wall masses
5.3.2. Aspiration of fluid collections in the abdomen, pelvis, or abdominal wall

5.3.3. Drainage of ascites (paracentesis)

5.3.4. Placement of abdominal, pelvic, or abdominal wall drainage catheters

5.4. General Abdomen and Pelvis CT Limitations:

5.4.1. For abdominal symptoms in the pediatric population – abdominal ultrasound is generally preferred as the initial examination due to radiation dose concerns. CT should not be avoided because of radiation concerns if it will clearly provide more accurate diagnostic information

5.4.2. When the focus of the evaluation is the hip or pelvic bones (for trauma, osteonecrosis, metastatic disease, primary tumors, or infection of the bone (osteomyelitis) then CT should be performed (to clarify findings) after evaluation with a different primary modality (such as plain film, MRI or radionuclide bone scanning)

5.5. Virtual Colonoscopy (CT of the Colon) is covered only in the following circumstances:

5.5.1. Failure to complete fiberoptic colonoscopy due to spasm, obstruction, anatomical abnormality, or other reason

5.5.2. Long-term anticoagulation

5.5.3. Complications from prior fiberoptic colonoscopy

5.5.4. Diverticulitis, with increased risk of perforation

5.5.5. Sedation risk (COPD or previous adverse reaction to anesthesia)

5.5.6. Covered only at a frequency of every 5 years

6. CT SCANNING OF THE UPPER OR LOWER EXTREMITIES:

6.1. CT is the preferred modality for evaluation of displaced fractures and subluxations to define extent of fracture, position of bone fragments, or to assess fracture healing

6.1.1. Limitation: Stress fractures and non-displaced fractures are better imaged with MRI or radionuclide bone scan

6.2. Other clinical indications include:

6.2.1. Evaluation of primary or metastatic tumor of bone

6.2.2. Significant extremity trauma

6.2.3. Palpable mass

6.2.3.1. Limitation: MRI is preferred over CT for evaluation of musculoskeletal tumors

6.2.4. Infectious or inflammatory processes, including abscess, septic arthritis

6.2.4.1. Limitation: MRI is generally preferred over CT for Osteonecrosis
6.2.5. CT for bone density evaluation using quantitative computed tomography (QCT) may be appropriate to screen for osteoporosis in:

6.2.6. An individual presenting with a fragility or pathologic fracture
6.2.7. An individual with a disease or condition associated with development of osteoporosis
6.2.8. An individual on a medication associated with development of osteoporosis
6.2.9. An individual who is being considered for therapy for osteoporosis

6.3. Limitations for CT Scanning of the Upper or Lower Extremities

6.3.1. Dual X-ray absorptiometry (DXA), also referred to as dual-energy X-ray absorptiometry (DEXA), is considered the technology of choice for bone density evaluation. QCT incurs higher radiation exposure, is more expensive, and often less readily available. (See Bone Mass Measurement Policy)

6.3.2. Other Limitations for CT Scanning of the Upper and Lower Extremities:

6.3.2.1. CT of the upper or lower extremities should be done only after conventional radiography. Specific examples include:

6.3.2.2. Significant trauma
6.3.2.3. Displaced fracture evaluation
6.3.2.4. Osteonecrosis
6.3.2.5. Persistent pain of extremities
6.3.2.6. Tarsal bone (foot) abnormalities
6.3.2.7. A complete CT of the extremity includes imaging of the entire arm or entire leg. When imaging is requested for the right and left extremity, a maximum of two CT exams is allowed
6.3.2.8. CT evaluation of persistent lower or upper extremity pain is indicated only after pain is unresponsive to conservative treatment
6.3.2.9. CT for pre- and post-operative evaluation must be ordered by a specialty consultant (such as an orthopedic surgeon, sports medicine doctor, or podiatrist)

7. OTHER LIMITATIONS

7.1. MRI and CT are often interchangeable exams for similar clinical indications. Duplicative testing of the same anatomic area with MRI and CT is subject to review for evaluation of medical necessity

7.2. CT is appropriate for detection of a foreign body only after initial conventional radiography, which will detect the majority of radiopaque foreign bodies
7.3. Because of the radiation exposure issues, careful consideration should be given to the use of CT in pregnant women.

7.4. For the pediatric population, ultrasound frequently provides diagnostic information without incurring radiation exposure from CT.

Prior Authorization Requirements

1. All non-emergent, outpatient computerized tomography (CT) exams require prior authorization. Emergency room and inpatient imaging procedures do not require prior authorization.

2. CT scanning is appropriately used for numerous clinical indications. However, CT may not be the imaging modality of first choice in some clinical circumstances due to:
   2.1. The level of exposure to ionizing radiation is many times higher than conventional radiography.
   2.2. Magnetic resonance imaging (MRI) and CT are often interchangeable exams for similar clinical indications.
   2.3. Less expensive exams should be used for initial evaluation prior to CT when indicated.

3. The request for CT should contain enough information to show the medical necessity of the examination. Documentation that satisfies medical necessity includes signs, symptoms, and relevant history (including known diagnoses).

Non-Covered Services

1. Multiple CT scans of the same anatomic region performed on the same day are not allowed except in one of the following circumstances: There are circumstances in which it is appropriate to perform “Multiple CT Scans” at the same time (e.g. sequential scans of the chest, abdomen, and pelvis). Examples would include cancer staging and trauma. The “same anatomic region” insertion above will clarify this limitation.
   1.1. If done at different times of the day, or
   1.2. If modifiers LT or RT are attached, or
   1.3. If performed on different areas of the body.

2. Request for re-imaging due to technically limited exams is the responsibility of the imaging providers and is not covered.

3. CT is not covered when used as a screening study.

4. Head (including eye, ear, jaw, sinus):
   4.1. CT of the head and CT of the orbits are mutually exclusive studies.
   4.2. Imaging studies of the head are inherently bilateral. Duplicate requests for bilateral studies to image the right and left side of the head are inappropriate.
   4.3. CT of sinuses for acute, uncomplicated rhinosinusitis is not covered.
5. Neck:
   5.1. CT soft tissue neck is inherently a bilateral study. Separate requests to image both sides of the neck are not allowed

6. Chest/ Cardiac:
   6.1. Chest CT imaging may not be used for lung cancer screening
   6.2. When the purpose of the study is imaging of the heart, including the coronary arteries, a chest CT and a dedicated cardiac/coronary artery CT cannot both be ordered
   6.3. Cardiac CT is not covered for quantitative evaluation of coronary artery calcification

7. Spine:
   7.1. CT of the cervical, thoracic, and lumbar spine is not covered except as outlined in Covered Services. MRI is the preferred modality

8. Abdominal:
   8.1. CT is unnecessary for mild uncomplicated pancreatitis

9. Upper or Lower Extremity:
   9.1. Quantitative computed tomography (QCT) is not covered as a screening exam in patients at low risk for osteoporosis
References

ACR appropriateness criteria, <http://acsearch.acr.org>
42 CFR 440.230 - Amount, scope, and duration
42 CFR 493 – Laboratory Requirements
CRS 25.5-5-102(2) and 25.5-5-202(3) - Amount, scope, and duration
10 CCR 2505-10 § 8.600 – Laboratory and X-ray

ACR PRACTICE GUIDELINE FOR THE PERFORMANCE OF COMPUTED TOMOGRAPHY (CT) OF THE ABDOMEN AND COMPUTED TOMOGRAPHY (CT) OF THE PELVIS Revised 2006 (Res. 13,17,35)*

ACR–ASNR PRACTICE GUIDELINE FOR THE PERFORMANCE OF COMPUTED TOMOGRAPHY (CT) OF THE BRAIN Revised 2010 (Res. 12)*

ACR PRACTICE GUIDELINE FOR THE PERFORMANCE OF PEDIATRIC AND ADULT THORACIC COMPUTED TOMOGRAPHY (CT) Revised 2008 (Res. 23)*

ACR PRACTICE GUIDELINE FOR THE PERFORMANCE OF COMPUTED TOMOGRAPHY (CT) OF THE EXTRACRANIAL HEAD AND NECK IN ADULTS AND CHILDREN Revised 2006 (Res. 12,17,35)*

ACR PRACTICE GUIDELINE FOR THE PERFORMANCE AND INTERPRETATION OF COMPUTED TOMOGRAPHY ANGIOGRAPHY (CTA) 2005 (Res. 30)*

ACR–ASNR PRACTICE GUIDELINE FOR THE PERFORMANCE AND INTERPRETATION OF CERVICOCEBRAL COMPUTED TOMOGRAPHY ANGIOGRAPHY (CTA) 2010 (Res. 20)*

CMS Manual
