



## GENERAL RADIOGRAPHY

### Brief Coverage Statement

**General Radiology** or **radiography** uses X-ray films (radiographs) to produce images of the internal structures of the body. Radiographs are generated when X-rays are projected through organs or structures of the body onto photographic or digital film. Images are obtained because x-rays are absorbed in different amounts as they pass through structures inside the body. The denser the structures, the more x-rays are absorbed, and these structures such as bone and metal appear white on the x-ray film. The two forms of radiographic images are projection radiography (X-rays) and fluoroscopy.

Some uses of X-rays (projectional radiographs) include fracture evaluation and evaluation of lung pathology. For some types of X-ray tests, contrast medium (dye) such as iodine or barium is introduced into the body to provide a greater detail of the X-ray images and to provide contrast to improve visualization of the internal organs.

Fluoroscopy produces continuous x-ray images on a monitor, much like an x-ray movie. It is used to diagnose or treat patients by displaying the movement of a body part to see how it works, or the contrast medium (dye) through the body. Fluoroscopy is also used in image-guided procedures when constant feedback during a procedure is required.

**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

This policy does not address advanced medical imaging techniques. Refer to specific policies for the following imaging techniques:

1. Computed Tomography (CT) Scans
2. Positron Enhanced Tomography (PET) Scans
3. Magnetic Resonance Imaging (MRI)
4. Angiography
5. Bone Mass Measurement
6. Low Back Pain Imaging
7. Ultrasound
8. Echocardiography

Mammography is a radiologic test and is covered in the Women's Health Services policy.



## Colorado Medicaid Benefit Coverage Standard

### 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). Radiographs must be obtained under the supervision of, and interpreted by, a licensed physician.
3. All providers must be trained and experienced in diagnostic radiography and familiar with the principles of radiation safety and protection.

#### RENDERING PROVIDERS

1. Radiologist
2. Physician with additional training and experience in diagnostic radiography and familiar with principles of radiation safety and protection
3. Medical Physicist
4. Registered Radiologist Assistant
5. ARRT Certified Radiologic Technologist
6. Dental Hygienist

**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. Office
2. Urgent care facility
3. Clinic
4. Rural health center
5. Outpatient Hospital
6. Ambulatory surgery center
7. Skilled nursing facility
8. Free standing radiology center
9. Mobile radiology unit

### Eligible Clients

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

### Covered Services and Limitations

Radiological services are covered when ordered by a physician to diagnose or treat a specific condition based on the client's signs, symptoms, and/or past history as documented in the medical record.

#### 1. Routine Screening Exams:

- 1.1. Mammography: see Women's Health Services Policy
- 1.2. Surveillance chest radiographs for active tuberculosis or occupational lung disease or exposures, or other surveillance studies required by public health law

#### 2. Specific medical indications as follows:

##### 2.1. Extremities:

2.1.1. Radiographic exam is often the exam of initial choice for the following medical indications:

- 2.1.1.1. Trauma
- 2.1.1.2. Pain
- 2.1.1.3. Suspected physical abuse such as in infants and young children
- 2.1.1.4. Suspicion of skeletal changes from metabolic diseases or nutritional deficiencies
- 2.1.1.5. Benign and malignant neoplasms
- 2.1.1.6. Evaluation of joint disease
- 2.1.1.7. Preoperative or postoperative evaluation and/or follow-up
- 2.1.1.8. Some congenital syndromes and developmental disorders
- 2.1.1.9. Evaluation of soft tissues in an extremity (e.g., suspected foreign body)

##### 2.2. Chest:

2.2.1. Evaluation with radiography is often the initial exam of choice for the following medical indications:

- 2.2.1.1. Evaluation of signs and symptoms related to the respiratory, cardiovascular, and upper gastrointestinal systems, and the musculoskeletal system of the thorax
- 2.2.1.2. Follow-up of known thoracic disease processes to assess improvement, resolution, or progression if change in treatment is anticipated
- 2.2.1.3. Monitoring of patients with life-support devices and patients who have undergone cardiac or thoracic surgery or other interventional procedures



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- 2.2.1.4. Preoperative radiographic evaluation when cardiac or respiratory symptoms are present OR when there is a significant history of cardiac or pulmonary disease and when there is a significant potential for compromising the surgical result

### 2.3. Abdomen or Pelvis:

- 2.3.1. Radiographic exam is often the exam of initial choice for the following medical indications:

- 2.3.1.1. Abdominal, flank, or pelvic pain
- 2.3.1.2. Persistent vomiting
- 2.3.1.3. Unexplained abdominal distention, bloating, or increased girth
- 2.3.1.4. Evaluation for and follow-up of bowel obstruction or nonobstructive ileus
- 2.3.1.5. Evaluation for necrotizing enterocolitis in the premature newborn
- 2.3.1.6. Evaluation of congenital abnormalities
- 2.3.1.7. Hematuria or symptoms of obstructive voiding
- 2.3.1.8. Evaluation for and follow-up of urinary tract calculi
- 2.3.1.9. Search for foreign bodies
- 2.3.1.10. Evaluation of the position of internal medical devices
- 2.3.1.11. Evaluation for suspected pneumoperitoneum (the presence of air or gas in the abdominal cavity caused by disease or therapeutic process)

### 2.4. Gastrointestinal (GI): Single or double-contrast exams

#### 2.4.1. Indications for Esophagram:

- 2.4.1.1. History and symptoms of chest pain of noncardiac origin
- 2.4.1.2. Symptomatic or suspected gastroesophageal reflux not responsive to conservative treatment
- 2.4.1.3. Suspected Barrett's
- 2.4.1.4. Functional difficulty swallowing or pain on swallowing
- 2.4.1.5. Suspected or known esophageal disorders, such as:
- 2.4.1.6. Esophagitis
- 2.4.1.7. Strictures
- 2.4.1.8. Neoplasms
- 2.4.1.9. Esophageal obstruction.

#### 2.4.2. Indications for upper GI:

- 2.4.2.1. Persistent and severe symptoms of gastroesophageal reflux
- 2.4.2.2. Abdominal pain or epigastric distress
- 2.4.2.3. Severe dyspepsia
- 2.4.2.4. Nausea and vomiting
- 2.4.2.5. Signs and/or symptoms of upper GI bleeding, including anemia



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- 2.4.2.6. Unexplained weight loss
  - 2.4.2.7. Evaluation of known or suspected:
    - 2.4.2.7.1. Gastritis or duodenitis
    - 2.4.2.7.2. Peptic ulcer disease
    - 2.4.2.7.3. Hiatal hernia
    - 2.4.2.7.4. Varices
    - 2.4.2.7.5. Neoplasms
    - 2.4.2.7.6. Gastric outlet obstruction
  - 2.4.2.8. For postsurgical, post-traumatic evaluation of possible anatomical leaks or fistulas of the esophagus, stomach, or duodenum (Single contrast exam only)
  - 2.4.2.9. In pediatric patients, for exam of the esophagus, stomach, and duodenum in infants and children when specific symptoms and signs suggest abnormal anatomy or function of the upper gastrointestinal tract
- 2.4.3. Indications for Modified Barium Swallow (MBS) with swallowing dysfunction associated with:
- 2.4.3.1. Suspected oropharyngeal dysphagia
  - 2.4.3.2. Coughing, choking, or drooling with swallowing
  - 2.4.3.3. Known or suspected aspiration pneumonia
  - 2.4.3.4. Neurologic disorders likely to affect swallowing
  - 2.4.3.5. Disorders of the muscle involving the pharynx and esophagus
  - 2.4.3.6. Masses of the tongue and throat that may affect swallowing
  - 2.4.3.7. Postoperative and/or post-radiation therapy evaluation of the mouth and throat area
  - 2.4.3.8. Infants and children with suspected swallowing abnormalities
- 2.4.4. Indications for Barium Small Bowel with suspicion or evaluation of:
- 2.4.4.1. Small bowel obstruction
  - 2.4.4.2. Presence of primary or secondary neoplasm(s)
  - 2.4.4.3. Inflammatory bowel disease
  - 2.4.4.4. Malabsorption
  - 2.4.4.5. In pediatric patients, exam for anatomic or functional abnormality of the small bowel indicated by symptoms similar to adults and unique to pediatrics (see below)
  - 2.4.4.6. History and symptoms of:
    - 2.4.4.6.1. Abdominal pain
    - 2.4.4.6.2. Chronic diarrhea
    - 2.4.4.6.3. Unexplained GI bleeding or anemia
    - 2.4.4.6.4. Abdominal masses
    - 2.4.4.6.5. Fever or sepsis



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- 2.4.4.6.6. Pediatric population:
  - 2.4.4.6.6.1. Failure to thrive.
  - 2.4.4.6.6.2. Suspected malrotation or an unclear duodenal-jejunal junction.
  - 2.4.4.6.6.3. Post-operative for congenital or acquired abnormalities, to assess anastomoses, or to detect leakage, strictures, adhesions.

### 2.5. Indications for Barium Enema Colon (see Limitations) with suspicion or evaluation of:

- 2.5.1. Diverticular disease
- 2.5.2. Inflammatory bowel disease
- 2.5.3. Colon cancer screening (Colonoscopy preferred)
- 2.5.4. Specific pediatric indications:
  - 2.5.4.1. Intussusception
  - 2.5.4.2. Meconium ileus
  - 2.5.4.3. Hirschsprung's disease
- 2.5.5. History and symptoms of:
  - 2.5.5.1. Abdominal pain
  - 2.5.5.2. Abnormal bowel patterns, such as diarrhea or constipation
  - 2.5.5.3. Evidence of GI bleeding: blood in stools, anemia
  - 2.5.5.4. Abdominal masses
  - 2.5.5.5. Intestinal obstruction
  - 2.5.5.6. Unexplained weight loss
  - 2.5.5.7. Fever or sepsis
  - 2.5.5.8. Previous colon polyp or neoplasm
  - 2.5.5.9. Bowel fistulas
  - 2.5.5.10. Familial inheritance involving diseases of the colon

### 2.6. Genitourinary:

- 2.6.1. Hysterosalpingography (X-ray of the uterus and fallopian tubes) indications include:
- 2.6.2. Pelvic pain
- 2.6.3. Congenital anatomical abnormalities
- 2.6.4. Preoperative tubal surgery
- 2.6.5. Postoperative evaluation of tubal or uterine surgery
- 2.6.6. Postoperative confirmation of sterilization procedure
  - 2.6.6.1. Note: Colorado Medicaid does not cover infertility treatment, counseling, or testing. Therefore, the use of hysterosalpingography for infertility is a non-covered benefit.**

### 2.7. Indications for cystography or urethrography (X-ray exam of bladder or urethra):



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- 2.7.1. Recurrent urinary tract infections
- 2.7.2. Suspicion of urine reflux
- 2.7.3. Bladder or urethral abnormalities, such as diverticula, outlet obstruction, fistula, possible bladder rupture, stricture
- 2.7.4. Incontinence
- 2.7.5. Hematuria
- 2.7.6. Neoplasia
- 2.7.7. Trauma

### 2.8. Spine (cervical or thoracic or lumbar):

- 2.8.1. Indications for initial X-ray of the spine include:
  - 2.8.1.1. Persistent severe pain or limitation of motion lasting over 6 weeks and not responsive to conservative treatment or new back pain in clients aged 50 and over
  - 2.8.1.2. Spinal trauma (especially with neurological symptoms)
  - 2.8.1.3. Surgical planning
  - 2.8.1.4. Suspected malignancy
  - 2.8.1.5. Congenital or alignment abnormalities, such as scoliosis or kyphosis
  - 2.8.1.6. Examination for compression fractures
- 2.8.2. Myelography is an important, long-standing diagnostic tool for disease processes of the spine and skull base (See Limitations). Indications include:
  - 2.8.2.1. To locate the site of a cerebrospinal fluid leak
  - 2.8.2.2. Surgical planning, especially in regard to the spinal nerve
  - 2.8.2.3. Radiation therapy planning
  - 2.8.2.4. Evaluation of spinal or basal skull disease

### 2.9. Indications for use of Fluoroscopy as a guidance modality:

- 2.9.1. Placement of enteric tubes
- 2.9.2. Placement of chest drainage catheters
- 2.9.3. Placement of abdominal drainage catheters (peritoneal, biliary, genito-urinary tract, abscess, other fluid collections)
- 2.9.4. Biopsy of mass
- 2.9.5. Intra-operative guidance for orthopedic procedures
- 2.9.6. Spine and peripheral MSK / nerve block injection procedures
- 2.9.7. Vertebroplasty and Kyphoplasty
- 2.9.8. Endoscopic evaluation of the biliary tree and / or pancreatic duct
- 2.9.9. Intra-operative monitoring of vascular surgery procedures
- 2.9.10. Guidance of arthrograms

## 3. Limitations



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- 3.1. Do not perform diagnostic imaging unless the anticipated result will influence the client's medical treatment course
- 3.2. Colonoscopy is an alternative to barium enema and preferred test in many conditions of the colon
- 3.3. Pediatric procedures should be as limited as possible due to the X-ray radiation exposure. In infants and children, the objective is to establish the presence or absence, and the nature of disease by a quality diagnostic study with the minimum radiation dose necessary
- 3.4. MRI is the preferred test for diagnosis of spinal disease processes. For patients with contraindications to MRI or inconclusive findings on a MRI, myelography is an alternative for the symptoms and conditions listed in the Covered Services section
- 3.5. Use ultrasound before radiography to evaluate pyloric stenosis in infants, due to its lack of ionizing radiation
- 3.6. Pregnancy:
  - 3.6.1. Abdominal or pelvic radiographs should not be performed in patients who are pregnant or potentially pregnant, and when the need for the examination is not critically urgent. All radiologic X-ray tests that involve direct exposure of the female pelvis require pregnancy status as part of the history
  - 3.6.2. For diagnostic radiologic procedures outside the abdomen and pelvis, including the head and neck, the chest, and all extremities, fetal exposure is limited to scattered radiation. Because this is such a low dose of radiation, pregnancy status does not need to be considered as part of the decision to proceed with a medically indicated examination
  - 3.6.3. If the radiologic exam is performed, the abdomen and pelvis should be shielded with a lead apron or similar device

### Prior Authorization Requirements

All outpatient, non-emergent radiographic exams that are not associated with the documented signs, symptoms, or disease processes outlined in Covered Services require prior authorization.

### Non-Covered Services and General Limitations

#### Non-Covered Services

1. Routine preoperative or pre-admission chest X-ray will be limited to one view only
2. Hysterosalpingography for infertility
3. Routine screening exams, except for those defined in Covered Services
4. Simultaneous ordering of multiple tests for the same anatomical site will be subject to post-payment review for medical necessity
  - 4.1. **Note: There are many alternative imaging studies to choose from for evaluation of the medical indications listed above, such as endoscopy, enteroclysis, ultrasound,**



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**computerized tomography (CT), magnetic resonance imaging (MRI). Results of the chosen lead study will often provide guidance regarding medical necessity and choice of any required additional tests. For this reason, sequential ordering of tests is recommended.**

### General Limitations

1. The following services are not usually considered medically necessary, nor are supported by best practices and may be subject to post-payment review:
  - 1.1. X-rays for soft tissue diagnosis (except for foreign body detection).
2. Bilateral x-rays for a unilateral condition (except when performed on the pediatric population or for arthritis, clavicles, or congenital anomalies evaluations)
3. **Any medically unnecessary tests identified in post-payment review will be denied**



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### References

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–SPR PRACTICE GUIDELINE FOR GENERAL RADIOGRAPHY Revised 2008 (Res. 31)\*

ACR PRACTICE GUIDELINE FOR THE PERFORMANCE OF ABDOMINAL RADIOGRAPHY Revised 2006 (Res. 48,17,35)\*

ACR–SPR–SSR PRACTICE GUIDELINE FOR THE PERFORMANCE OF RADIOGRAPHY OF THE EXTREMITIES IN ADULTS AND CHILDREN Revised 2008 (Res. 30)\*

ACR PRACTICE GUIDELINE FOR SKELETAL SURVEYS IN CHILDREN Revised 2006 (Res. 47,17,35)\*

<http://www.cms.gov/manuals/downloads/clm104c13.pdf> (CMS Manual)

[http://www.americanimaging.net/education/clinicalguidelines.html?utm\\_source=CorporateSite&utm\\_medium=HomeSideNav&utm\\_content=ClinicalGuidelines](http://www.americanimaging.net/education/clinicalguidelines.html?utm_source=CorporateSite&utm_medium=HomeSideNav&utm_content=ClinicalGuidelines) (American Imaging Utilization)

[http://www.acr.org/SecondaryMainMenuCategories/quality\\_safety/guidelines/dx](http://www.acr.org/SecondaryMainMenuCategories/quality_safety/guidelines/dx) (American College of Radiology)

Food and Drug Administration. “Radiation Emitting Products and Procedures – Medical X-Rays.” <<http://www.fda.gov/radiation-emittingproducts/radiationemittingproductsandprocedures/medicalimaging/medicalx-rays/ucm115354.htm>>

Mayo Clinic. “X-ray.” <http://www.mayoclinic.com/health/x-ray/MY00307>

Medicaid Director Signature

Date