

1 **Clinical Practice Guideline: X-Ray Guidelines**

2  
3 **Date of Implementation: March 13, 2003**

4  
5 **Product: Specialty**

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7  
8 **Related Policies:**

- CPG 58 (Nasium & Vertex X-Ray Views)
- CPG 102 (Radiographic Quality and Safety Parameters)
- CPG 110 (Medical Record Maintenance and Documentation Practices)

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## 1. GENERAL INDICATIONS FOR RADIOGRAPHIC EXAMINATION

According to the American College of Radiology, radiography is a proven and useful modality that uses differences in X-ray attenuation to evaluate human anatomy and pathology. The goal is to establish the presence or absence and nature of disease by demonstrating normal anatomy or the effects of a disease process on anatomical structures. Radiographic investigation should be performed with the minimal radiation dose necessary to achieve a diagnostic study.

In many circumstances, especially when there is significant risk for spine injury, computed tomography (CT) or magnetic resonance imaging (MRI) are the initial imaging modalities. For patients with clinical suspicion of spinal cord injury or compromise, as well as ligamentous injuries, particularly in the cervical spine, MRI is preferred over CT and radiography (American College of Radiology, 2022).

Proper patient selection involves balancing the established benefits of the clinical information obtainable from a radiograph with the potential for unnecessary harm. Radiographs, like other diagnostic studies, should only be considered if the study is likely to:

1. Yield important information necessary for appropriate management of the patient beyond that obtained from the history and physical examination; and
2. Improve patient outcomes.

To be appropriately applied, radiographs should meet three levels of clinical justification prior to being acquired. First, there should be a general expectation of benefits exceeding harms. Second, radiographs should possess the performance characteristics to be responsible arbiters of the clinical information being sought. Third, the first and second levels should translate into tangible value to the individual patient being evaluated. In other words, clear benefits, should accrue to each individual patient based on value and performance of radiographs for the chosen indication. (Holmberg, 2010)

Avoiding imaging for patients without documented specific clinical indicators supporting the need for imaging (primary diagnosis, secondary diagnosis, or co-morbid condition) can prevent unnecessary harm and unintended consequences to patients. Refer to the Appendix (Quality Indicators Related to Imaging for Low Back Pain – Adults Ages 18-75) of this policy for more information.

## 2. RADIOGRAPHIC QUALITY AND SAFETY

While exposure to ionizing radiation for diagnostic purposes poses a risk to human health, its use can be tailored to produce diagnostically or therapeutically significant information for clinicians while minimizing harm. Scientific evidence clearly supports the medical necessity of appropriate radiographic examination with exposures that are consistent with the “as low as reasonably achievable” (ALARA) principal when the information received

1 from the exam is essential to ascertain the safety and appropriateness of planned treatment  
 2 interventions. Refer to *Radiographic Quality and Safety Parameters (CPG 102 – S)* for  
 3 additional information.

### 4 5 **3. EVIDENCE FOR POTENTIAL REASONS TO OBTAIN SPINAL** 6 **RADIOGRAPHY**

7 Manual manipulation has been shown to provide significant benefit to patients with certain  
 8 types and severity of mechanical disorders. However, manual manipulation can also cause  
 9 harm if the procedure is performed in a manner or location contraindicated by underlying  
 10 pathology or structural deformity. Performing manual manipulation requires a clear  
 11 understanding of the biomechanics of the affected and related structures. In the majority of  
 12 cases, the mechanical characteristics of the patient’s presenting symptoms can be assessed  
 13 through history and clinical examination alone. However, in some cases, it is necessary for  
 14 the physician to request a radiographic examination to augment diagnostic history and  
 15 examination in order to fully understand the risks and benefits of high load manual  
 16 procedures to the osseous structures of the body. The number of views taken to adequately  
 17 assess the osseous structures will be dictated by the various indications identified via the  
 18 history and physical examination (and, on occasion, additional plain imaging views or  
 19 other diagnostic tests such as electrodiagnostic, advanced imaging or laboratory  
 20 examination). This Clinical Practice Guideline provides a description of those evaluation  
 21 factors that may indicate such a need for obtaining radiographs.

22  
 23 Radiography is the most widely used skeletal imaging method. The primary value of plain  
 24 imaging is to show pathologies of bone or joint structures, especially if there is a suspicion  
 25 of inflammatory, neoplastic, metabolic, or traumatic disease. Plain imaging coupled with  
 26 information from thorough history and examination procedures is generally considered  
 27 acceptable for identifying therapeutically significant musculoskeletal pathology. Pathology  
 28 is best ruled out through the appropriate assessment of red flags identified through careful  
 29 history and physical examination combined with appropriate diagnostic triage.

30  
 31 Serious pathology and traumatic injury are rare causes of spinal pain. Various studies have  
 32 found the incidence of serious pathology presenting as low back pain in primary care  
 33 settings to be between 0.2 and 3.1%, and fracture to be between 0.2 and 6.6%. Clear clinical  
 34 and historical indicators generally exist to suggest the potential presence of these  
 35 conditions; therefore, routine use of X-ray imaging to diagnose these conditions is not  
 36 recommended due to the rarity of these presentations in clinical practice. Furthermore,  
 37 recent evidence informed consensus suggests referral for MRI and blood tests, rather than  
 38 X-ray, as the preferred investigation when serious pathology such as cancer or infection is  
 39 suspected. (Jenkins, 2018)

40  
 41 Spinal X-ray imaging may also be used to diagnose more benign spinal findings such as  
 42 degenerative arthritis, spondylolisthesis, and transitional vertebral segments. An important

1 consideration, however, is whether these radiographic findings lead to a change in patient  
2 management. Many of these radiographic findings, although relatively common, show  
3 either no or weak association with symptomatology, making their clinical relevance  
4 questionable. Furthermore, there is no high-quality evidence to demonstrate that patient  
5 management should be modified based on presence of benign radiographic findings that  
6 could not be determined from patient clinical history or exam alone. Current chiropractic  
7 clinical practice guidelines do not differentiate between treatment options based on the  
8 presence or absence of these benign radiographic findings. Therefore, based on the  
9 evidence, the use of X-ray imaging to diagnose benign spinal findings will not improve  
10 patient outcomes or safety. (Jenkins, 2018)

11  
12 A common reason suggested by chiropractors for spinal X-ray imaging is to screen for  
13 anomalies or serious pathology that may contraindicate treatment that were otherwise  
14 unsuspected by the clinical presentation. While some cases of serious pathology, such as  
15 cancer and infection, may not initially present with definitive symptoms, X-ray assessment  
16 at this early stage of the disease process is also likely to be negative, and is not  
17 recommended as a screening tool. The development of symptoms, which would then  
18 indicate the need for imaging referral, often reflects progression of the underlying  
19 pathology, and therefore an increased likelihood of observing related imaging findings.  
20 However, even in symptomatic patients, MRI rather than X-ray is recommended as the  
21 initial imaging modality due to the higher sensitivity of MRI for the detection of  
22 pathological changes. Pathological causes of back and neck pain are rare, and even fewer  
23 cases would be asymptomatic, further reducing the potential benefit of routine imaging.  
24 Furthermore, imaging referral consistent with current imaging guidelines has not been  
25 shown to have an increased risk of missing serious pathology. Therefore, routine imaging  
26 (including spinal X-rays) for unsuspected serious pathology is not supported by evidence.  
27 (Jenkins, 2018)

28  
29 Anatomical anomalies in the upper cervical spine, such as agenesis of the dens and fusion  
30 of the occiput and atlas, have been postulated to be associated with increased upper cervical  
31 instability or neural compromise that may contraindicate manipulative therapy. These  
32 anomalies present with varied symptomatology, and can be difficult to clinically diagnose,  
33 thus X-ray screening has been suggested. However, the contraindication of manipulative  
34 therapy for patients with these anomalies is on a theoretical basis, rather than documented  
35 clinical evidence of harm. A scoping review of risks of manual treatment to the spine did  
36 not identify any reports of harm after manipulative therapy that were attributed to the  
37 presence of upper cervical anatomical anomalies. Prevalence rates of upper cervical  
38 anatomical anomalies are also low (between 2.1 to 3.7%). The low prevalence, combined  
39 with uncertain clinical significance suggests that the use of routine X-ray to screen for  
40 congenital anomalies in asymptomatic patients is not supported by evidence. (Jenkins,  
41 2018)

1 Recent literature reviews conclude there is insufficient evidence for using plain X-rays for  
2 biomechanical analysis or to assess the function or structure of the spine, including but not  
3 limited to the detection and characterization of subluxation(s). Two exceptions exist to this  
4 conclusion. First, radiographs for the initial evaluation of scoliosis or in rare cases where  
5 clinical progression of a scoliosis necessitates additional radiographs for surgical  
6 consultation. Second, radiographs for evaluation of intersegmental instability when  
7 correlated with evidence obtained through a careful history and physical examination.

8  
9 The use of spinal X-ray imaging has been postulated to be important to help direct  
10 appropriate chiropractic management, where specific X-ray findings would lead to a  
11 change in the type of technique modality selected. However, no studies could be found  
12 assessing the impact of routine imaging on technique modality selection resulting in  
13 improved patient outcomes. While there are many different technique modalities used  
14 within chiropractic practice, there is a lack of high-quality evidence to indicate which  
15 technique modalities are superior for a given condition. Furthermore, spinal X-ray has not  
16 been found to be a useful method to determine the site of spinal manipulation. For usual  
17 medical care of non-specific back or neck pain, studies show no difference in treatment  
18 outcome when routine spinal X-rays have been used, compared to management without X-  
19 rays. Therefore, without any clear evidence of the benefit of using spinal X-ray to direct  
20 treatment modality selection, clinician selection of modality should be made based on the  
21 clinical presentation, and the use of initial X-ray confirmation is not justified. (Jenkins,  
22 2018)

23  
24 The use of imaging to reassure patients that they have no underlying pathology has been  
25 reported as a potential reason for imaging referral. Patients often expect imaging for the  
26 management of back pain, largely because they believe that it will help to diagnose their  
27 pain and direct suitable treatments. However, routine use of imaging has been associated  
28 with a lesser sense of wellbeing, and lower overall health status. Other strategies to reassure  
29 the patient such as education and explanation of evidence about the use of routine imaging  
30 should be used as a first approach. (Jenkins, 2018)

31  
32 Spinal X-rays may lead to the detection of radiographic findings of uncertain clinical  
33 significance, leading to unnecessary diagnosis (overdiagnosis). X-ray findings, such as  
34 osteophytes, reduced disc height, spondylolisthesis, transitional segments, and other  
35 anatomical anomalies are common, but show poor correlation with clinical symptoms. For  
36 patients without indicators of serious pathology, the increase in information available from  
37 X-ray confers little additional benefit to patient health but may unnecessarily increase  
38 patient concern and thus contribute to low value care. Overdiagnosis may create  
39 unwarranted concern for the patient and a misguided belief in a pathoanatomical cause to  
40 their pain. Patients may believe that their pain will not improve until the imaging findings  
41 have resolved, which may increase the risk of developing chronic pain. Overdiagnosis may  
42 also contribute to fear-avoidance behaviors, where patients are less likely to follow

1 management advice (e.g., maintaining exercise and physical activity) for fear of further  
 2 damage. Early imaging of the low back has been associated with resultant increased  
 3 disability, a lesser sense of well-being, and lower health status. (Jenkins, 2018)

4  
 5 Radiographs should **not** be used as a screening procedure or for medicolegal reasons.  
 6 Without specific clinical indications from the history and examination supporting the need  
 7 for imaging (differential diagnoses for which radiographic imaging meets the performance  
 8 thresholds for use are reasonably possible), radiographic imaging is not supported. If prior  
 9 imaging of the area in question has been performed at another facility, all reasonable  
 10 attempts should be made to obtain the results of those studies prior to considering further  
 11 imaging.

#### 12 13 **4. GUIDELINE SUMMARY OF CLINICAL INDICATORS FOR** 14 **RADIOGRAPHY**

15 The written or electronic request for a radiograph should provide sufficient information to  
 16 demonstrate the medical necessity of the examination and allow for its proper performance  
 17 and interpretation. Documentation that satisfies medical necessity includes (1) signs and  
 18 symptoms, and/or (2) relevant history (including known diagnoses). Additional  
 19 information regarding the specific reason for the examination or a provisional diagnosis  
 20 would be helpful and may, at times, be needed to allow for the proper performance and  
 21 interpretation of the examination (American College of Radiology, 2022).

22  
 23 According to the American College of Radiology, there are many indications for  
 24 radiography that relate to the patient’s clinical history, the disease processes, and the  
 25 anatomic areas of concern. There should be sufficient clinical indication(s) to warrant  
 26 performance of a study, and a reasonable anticipation that the results of the radiograph,  
 27 normal or abnormal, will influence the treatment course of the patient. This guideline is  
 28 designed to assist you in the imaging decision process.

29  
 30 Radiographs are an important diagnostic tool in patient management when clinical  
 31 indicators of serious pathologies (red flags) are present. It should be recognized that  
 32 adherence to this guideline will **not** assure an accurate diagnosis or a successful outcome.  
 33 The following discussion of clinical indicators may help inform the decision to obtain  
 34 radiographs; however, the clinical presentation as a whole must be considered.

#### 35 36 **4.1. Red Flag Indicators from History and Physical Examination**

##### 37 38 **4.1.1 Fracture, Dislocation, Ligamentous Incompetence:**

- 39 • Recent injury or trauma (at any age) sufficient to cause fracture such as a motor  
 40 vehicle collision (MVC), blunt trauma, or fall, especially from height. A reasonable  
 41 attempt should be made to obtain previous studies/reports if prior imaging was  
 42 performed in the emergency center;

- 1 • Age over 70 accompanied by historical factors or physical examination findings  
2 that would raise suspicion of fracture;
- 3 • History of osteoporosis or any known disease that could lead to bone loss and minor  
4 trauma such as lifting, accompanied by localized bone pain;
- 5 • History of repetitive stress sufficient to cause a stress fracture (e.g., patients  
6 participating in contact sports, gymnasts, and/or laborers who perform heavy  
7 repetitive lifting);
- 8 • Prolonged use of oral corticosteroid or other medications known to increase bone  
9 fragility accompanied by historical factors and physical examination findings that  
10 would raise suspicion for fracture;
- 11 • Suspicion or known history of spondylolisthesis for which symptoms suggest spinal  
12 stenosis with progressive neurologic deficits;
- 13 • Suspicion of physical abuse (at any age) and exam findings that raise suspicion for  
14 fracture;
- 15 • History of alcohol and/or drug abuse where the abused substances may result in  
16 loss of consciousness or poor recollection of activities or actions that could include  
17 trauma sufficient to cause fracture **and** symptoms or clinical presentation  
18 suggestive of fracture; and
- 19 • Failure to improve with an appropriate trial of care (typically up to 4 weeks),  
20 without prior radiographs and especially when accompanied by historical factors or  
21 physical examination findings that would raise suspicion of fracture or other  
22 suspected pathology explaining causes of the patient’s pain.

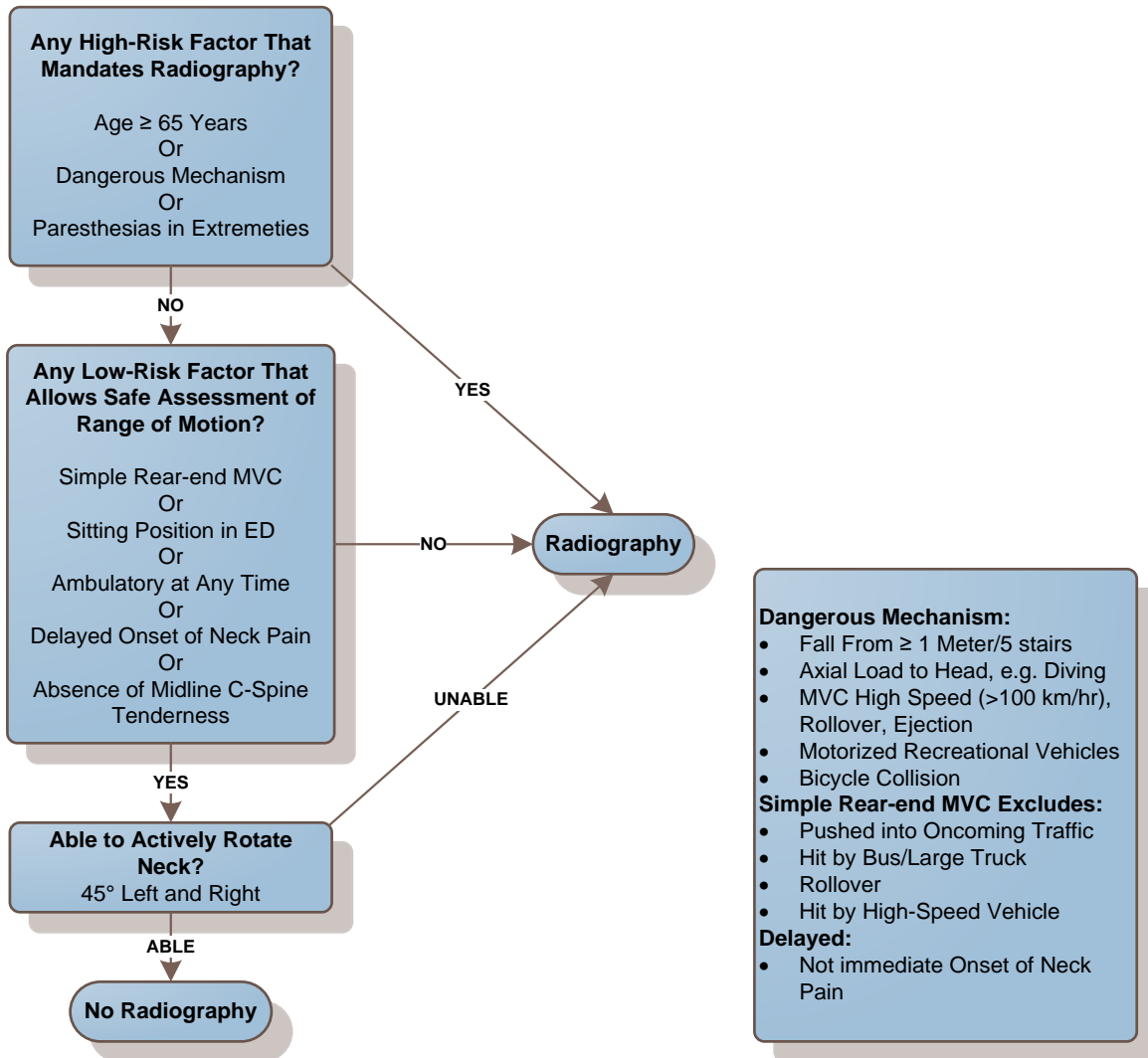
### 24 **Established Clinical Decision Assist Tools for Determining the Medical Necessity of** 25 **Radiographs following Recent Acute Trauma:**

26  
27 The Canadian C-spine Rule (CCR) was developed to help physicians determine which alert  
28 (Glasgow Coma Scale (GCS)=15), stable, trauma patients need cervical spine imaging.

29  
30 CCR Not Applicable if:

- 31 • Non-trauma Patients
- 32 • GCS <15
- 33 • Unstable Vital Signs
- 34 • Age <16 Years
- 35 • Acute Paralysis
- 36 • Known Vertebral Disease
- 37 • Previous C-Spine Surgery

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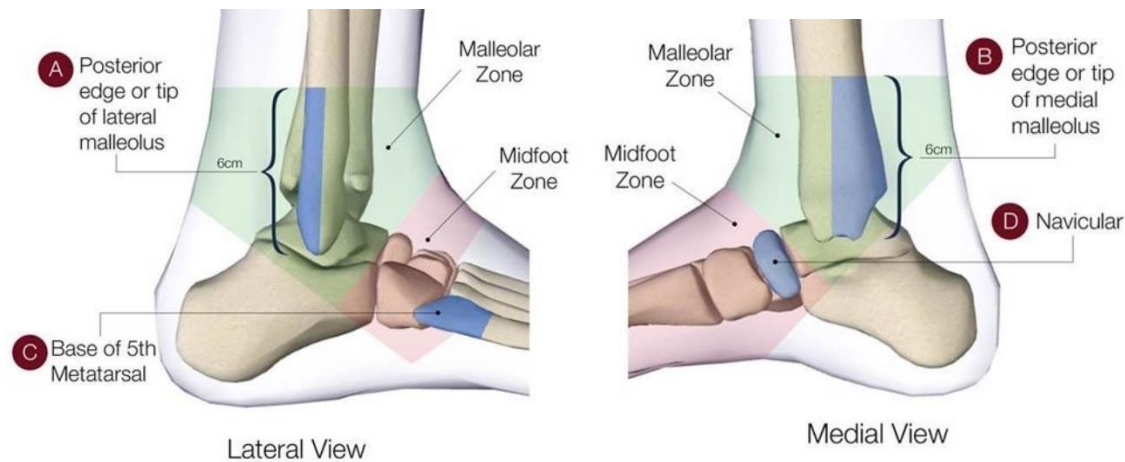
The **National Emergency X-Radiography Utilization Study (NEXUS)** guidelines suggest a low probability of cervical spine injury that will require cervical spine imaging if the patient meets all five of the following criteria:

- They do not have tenderness at the posterior midline of the cervical spine;
- They have no focal neurological deficit;
- They have a normal level of alertness (GCS=15);
- They have no evidence of intoxication; and
- They do not have a clinically apparent, painful injury that might distract them from the pain of cervical-spine injury.



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The **Ottawa ankle rules** are a clinical decision-making strategy for determining which patients require diagnostic imaging for ankle and mid-foot trauma.



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#### Ottawa Ankle and Foot Rules:

An ankle X-ray is required only if there is any pain in a malleolar zone and any of these findings:

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- Bone tenderness at A
- Bone tenderness at B
- Inability to weight bear four steps both immediately and in the emergency department

A foot X-ray is required if there is any pain in the midfoot zone and any of these findings:

15  
16  
17  
18  
19  
20

- Bone tenderness at C
- Bone tenderness at D
- Inability to weight bear four steps both immediately and in the emergency department

Clinical judgement should prevail over the Ottawa Ankle Rules if the patient

21  
22  
23  
24  
25  
26

- Is intoxicated or uncooperative
- Has other distracting painful injuries
- Has diminished sensation in their legs
- Has gross swelling which prevents palpation of the malleolar bone tenderness

Tips relative to the Ottawa Ankle Rules:

27  
28  
29  
30

- Palpate the entire distal 6cm of the fibula and tibia;
- Do not neglect the importance of medial malleolar tenderness;
- “Bearing weight” counts even if the patient limps;

- 1 • Be cautious in patients under age 18;
- 2 • Several studies strongly support the use of the Ottawa Ankle Rules in children over
- 3 6 (98.5% sensitivity); however, their usefulness in younger children (<6 years old)
- 4 has not yet been thoroughly examined;
- 5 • The Ottawa ankle rules should be applied to patients in the setting of acute trauma
- 6 for the evaluation of a potential fracture. Indications for imaging the foot and ankle
- 7 outside the setting of trauma for pathologies other than a fracture may still exist and
- 8 are not addressed by these rules.

9  
10 The **Ottawa knee rules** are a clinical decision-making strategy for determining which  
11 patients require diagnostic imaging for knee trauma.

### 12 13 Ottawa Knee Rules

14 A knee X-ray is only required for knee injury patients with any of these findings:

- 15 • Age 55 or over
- 16 • Isolated tenderness of the patella (no bone tenderness of the knee other than the
- 17 patella)
- 18 • Tenderness at the head of the fibula
- 19 • Inability to flex to 90 degrees
- 20 • Inability to weight bear both immediately and in the emergency department (4
- 21 steps - unable to transfer weight twice onto each lower limb regardless of
- 22 limping)

23  
24 Tips relative to the Ottawa knee rules:

- 25 • Tenderness of the patella is significant only if an isolated finding;
- 26 • Use only for injuries < 7 days;
- 27 • “Bearing weight” counts even if the patient limps;
- 28 • The Ottawa knee rules should be applied to patients in the setting of acute trauma
- 29 for the evaluation of a potential fracture. Indications for imaging the knee outside
- 30 the setting of trauma for pathologies other than a fracture may still exist and are not
- 31 addressed by these rules.

32  
33 The **Pittsburgh knee rules** are a clinical decision-making strategy for determining which  
34 patients require diagnostic imaging for knee trauma.

### 35 36 Pittsburgh Knee Rules

- 37 • Blunt trauma or fall as a mechanism of injury

38  
39 Plus, either of the following:

- 40 • Age <12 years or >50 years
- 41 • Inability to bear weight (4 steps)

1 The Pittsburgh knee rules are often thought of in the context of the Ottawa knee rules.  
2 Some believe the Pittsburgh knee rules offer increased specificity.

3  
4 The Pittsburgh knee rules only count a complete heel/toe plant as a step.

5  
6 The Pittsburgh knee rules do not apply to individuals who present more than 6 days after  
7 injury, those with only superficial lacerations and abrasions, those with a previous history  
8 of knee injury or surgery on the affected knee, and those being reassessed for the same  
9 injury.

#### 10 **4.1.2 Neoplasia: Cancer/Malignancy/Tumor**

- 12 • History of malignancy with suspicious physical examination findings (e.g., acute  
13 localized bone pain);
- 14 • Age over 50 or under 20 with unexplained localized bone pain;
- 15 • Non-mechanical pain (e.g., severe ongoing pain, especially at night, that is  
16 unrelenting, unrelieved by rest or position and unrelated to movement);
- 17 • Severely restricted lumbar flexion that is not improving when correlated with other  
18 factors from history and physical examination;
- 19 • The presence of a palpable mass or unexplained deformity;
- 20 • Unexplained weight loss (i.e., unintentional weight loss of 4.5 Kg or 10 lbs. or  
21 greater over preceding 6 months);
- 22 • Systemic unwellness;
- 23 • Symptoms of HIV, or other risk factors that may be red flags for tumor; and
- 24 • Failure to improve with an appropriate trial of care (typically up to 4 weeks),  
25 without prior radiographs and especially when accompanied by historical factors or  
26 physical examination findings that would raise suspicion of neoplasia or other  
27 suspected pathology explaining the patient’s pain.

28  
29 Coordinate appropriate co-management when red flags are present for  
30 cancer/malignancy/tumor/pathological fracture, even if radiographs appear to be normal.  
31 Radiography may be appropriate but are usually not sufficient for clinical decision making  
32 without advanced imaging (i.e., MRI, CT) when red flags are present for these conditions.  
33 Co-management must be considered when suspicion for these conditions arises.

#### 34 **4.1.3 Infection (e.g., Discitis, Osteomyelitis)**

- 36 • Presence of bruising, swelling, redness heat, indicating infection especially for  
37 extremity conditions.
- 38 • Non-mechanical pain (e.g., severe ongoing pain, especially at night, that is  
39 unrelenting, unrelieved by rest or position and unrelated to movement);
- 40 • Symptoms of urinary tract infection, IV drug abuse, HIV, or other risk factors that  
41 may be red flags for infection;

- 1 • Constitutional symptoms such as recent fever of unknown origin greater than 101°,  
2 chills, localized bone pain, and lymphadenopathy raising suspicion for  
3 osteomyelitis;
- 4 • Intermittent fever of unknown origin with focal musculoskeletal pain and/or  
5 deformity;
- 6 • Mono-articular inflammatory joint pain that does not have a clear explanation of  
7 origin;
- 8 • Severely restricted lumbar flexion that is not improving when correlated with other  
9 factors from history and physical examination; and
- 10 • Failure to improve with an appropriate trial of care (typically up to 4 weeks),  
11 without prior radiographs and especially when accompanied by historical factors or  
12 physical examination findings that would raise suspicion of infection or other  
13 suspected pathology explaining the patient’s pain.

14  
15 Coordinate appropriate co-management actions when red flags are present for infection,  
16 even if radiographs appear to be normal. Radiography may be appropriate but are usually  
17 not sufficient for clinical decision making without other diagnostic testing (i.e., labs, MRI,  
18 CT). Co-management must be considered when suspicion for infection arises.

#### 19 20 **4.1.4 Other Indicators Requiring Clinical Correlation and Possible Co-management**

21 [Note: Correlation with clinical findings {for example, a true neurological deficit},  
22 suggestive of a condition detectable by a radiographic study is necessary. Also, a  
23 reasonable anticipation that the results of the radiograph, normal or abnormal, will  
24 influence the treatment course and clinical outcomes.]

- 25 • Signs indicating cauda equina syndrome such as saddle dysesthesia (found in 75%  
26 of patients with cauda equina syndrome), urinary frequency, incontinence, or  
27 possible neurological deficit require urgent surgical consultation. Radiographs are  
28 no longer considered as an initial imaging procedure;
- 29 • Focal and progressive neurological deficits (e.g., Abnormal Reflexes [DTRs,  
30 Pathological], Myotomes and/or Dermatomes ) suggestive of compressive lesions  
31 to the spinal cord or nerve roots **if** bony stenosis due to severe degenerative disease  
32 or segmental listhesis is suspected. Other causes of neurologic deficit, such as cord  
33 tumor or herniated nucleus pulposus are more effectively evaluated with advanced  
34 imaging modalities such as MRI;
- 35 • Bilateral radiculopathy;
- 36 • Active or inactive spondylolysis and spondylolisthesis must be considered in  
37 patients under the age of 20 presenting with recurrent spinal pain accompanied by  
38 other key historical factors (participating in sports that cause the patient to perform  
39 repetitive hyperextension of the lumbar spine such as gymnastics, wrestling, diving,  
40 and weightlifting). Special testing (MRI) may be indicated in patients with  
41 suspected spondylolysis and spondylolisthesis when historical and physical  
42 examination findings warrant the need;

- 1 • Recurring pain of unknown origin with no indication by history, treatment, or  
2 examination findings of a mechanical basis for the recurring pain and no  
3 radiographs or reliable reports are available. A reasonable attempt should be made  
4 to obtain previous studies/reports if prior imaging was performed within two (2)  
5 years;
- 6 • Previous history of surgery, fracture, or X-ray abnormality in the area of complaint  
7 as reported by the patient but no radiographs or reliable reports are available. A  
8 reasonable attempt should be made to obtain previous studies/reports if prior  
9 imaging was performed within two (2) years;
- 10 • The presence of historical factors or physical examination findings that would raise  
11 suspicion for traumatic, inflammatory, or degenerative spinal instability sufficient  
12 to be a contraindication to manual manipulative treatment. This is especially a  
13 concern at the Atlas-Axis articulation.
- 14 • History includes complaint(s) of dizziness or impaired consciousness of unknown  
15 origin;
- 16 • For headache complaints, vital signs (to exclude severe hypertension or fever) and  
17 testing of the cranial nerves (to exclude vascular events, space occupying lesions,  
18 etc.) must be considered and when present positive findings mandate further  
19 evaluation and possible co-management. Radiographs (e.g., cervical spine) are not  
20 typically indicated without other red flags that would justify the value of a  
21 radiographic study;
- 22 • Presence of Dysphagia;
- 23 • Poorly controlled diabetes may be associated with bone loss and diffuse idiopathic  
24 skeletal hyperostosis (DISH);
- 25 • Poorly controlled chronic hypertension may be associated with increased risk of  
26 aneurysm. Radiography is not considered an appropriate initial imaging modality.  
27 The presence of a Pulsatile, Abdominal Mass or suspected Abdominal Aortic  
28 Aneurysm would indicate the necessity for co-management and other imaging  
29 (Ultrasound Aorta Abdomen, CTA, MRA) prior to performing spinal manipulation.
- 30 • Clinical suspicion of and/or positive lab findings (if applicable) for arthropathies  
31 such as rheumatoid arthritis ankylosing spondylitis, neuropathic arthropathy,  
32 crystal induced arthropathy or other autoimmune inflammatory arthropathies;
- 33 • Presence of metabolic diseases (e.g., osteoporosis), nutritional deficiencies, and  
34 skeletal changes from systemic disease;
- 35 • Presence of congenital syndromes and developmental disorders;
- 36 • Symptoms and signs that suggest pain or deformity from non-spinal causes such as  
37 soft tissue masses causing bone or articular pain, renal lithiasis, or vascular  
38 abnormalities such as aneurysm;
- 39 • Prolonged drug, smoking and/or alcohol abuse;
- 40 • When evaluation of soft tissues in an extremity is warranted (e.g., suspected foreign  
41 body, myositis ossificans);

- 1 • Evaluation of gross deformities;
- 2 • Immunosuppression;
- 3 • Lymphadenopathy;
- 4 • Evaluation of developmental hip dysplasia in the pediatric population;
- 5 • Evaluation of Leg-Calve-Perthes disease;
- 6 • Evaluation of slipped capital femoral epiphysis in the pediatric population; and
- 7 • Limping or refusal to bear weight, especially in children.

## 9 **4.2. Radiography Studies/Services**

### 11 **4.2.1 Full Spine Radiography**

- 12 • Full spine (14 x 36) radiographs should not be used as a routine screening procedure
- 13 for scoliosis or any other global spinal postural dysfunction;
- 14 • Full spine (14 x 36) radiographs should not be utilized as a substitute for sectional
- 15 views;
- 16 • Full spine (14 x 36) radiographs are rarely indicated for patients who have reached
- 17 skeletal maturity;
- 18 • Full spine (14 x 36) radiographs may be appropriate only for initial evaluation of a
- 19 previously undiagnosed scoliosis when, upon inspection, the patient appears to
- 20 have a significant scoliosis with a rib hump present and Adam’s position confirms
- 21 a structural problem;
- 22 • For children, the number of views required for complete evaluation of scoliosis
- 23 varies with the clinical indications. For scoliosis screening, a posteroanterior (PA)
- 24 radiograph of the spine obtained in the upright position may be sufficient. The field
- 25 of view should extend from the cervicocranial junction to the proximal femurs;
- 26 • For a scoliosis evaluation, erect sectional radiographs provide better detail. Standing
- 27 full-length PA (14 × 36 in) and lateral projections, **or** sectionals may be performed;
- 28 • PA radiographs significantly reduce breast and thyroid dose. Effective doses to the
- 29 digestive and respiratory systems are comparable, but are higher in the bone
- 30 marrow compared to AP views;
- 31 • Full spine radiographs are not recommended for patients with an AP measurement
- 32 > 28 cm or for older patients due to poor image quality. Consider using sectional
- 33 radiographic views instead; and
- 34 • Sectional studies (e.g., cervical spine AP/Lateral and lumbar spine AP/Lateral on
- 35 the same patient) should only be acquired on relevant spinal regions that meet the
- 36 criteria above. Thus, sectional images of all three spinal regions should only be
- 37 obtained if significant indications exist to justify each and every region’s
- 38 acquisition.

#### 1 **4.2.2 Scoliosis and Related X-Ray Study (CPT Codes 72081, 72082, 72083, 72084)**

2 Scoliosis in children is classified by age: 1.) Infantile (0 to 3 years); 2.) Juvenile (3 to 10  
3 years); and 3.) Adolescent (age 11 and older, or from onset of puberty until skeletal  
4 maturity). (American Association of Neurological Surgeons (AANS). (n.d.) Scoliosis.)

5  
6 Scoliosis that occurs or is diagnosed in adulthood is distinctive from childhood scoliosis,  
7 since the underlying causes and goals of treatment differ in patients who have already  
8 reached skeletal maturity. Most adults with scoliosis can be divided into the following  
9 categories: (1) Adult scoliosis patients who were surgically treated as adolescents; (2)  
10 Adults who did not receive treatment when they were younger; and (3) Adults with a type  
11 of scoliosis called degenerative scoliosis (American Association of Neurological Surgeons  
12 (AANS), (n.d.)).

13  
14 A positive diagnosis of scoliosis is made based on a coronal curvature measured on a  
15 posterior-anterior radiograph of greater than 10 degrees. In general, a curve is considered  
16 significant if it is greater than 25 to 30 degrees. Curves exceeding 45 to 50 degrees are  
17 considered severe and often require more aggressive treatment.

18  
19 The prevalence rate of adult patients with nonpainful and nonprogressive scoliosis in  
20 healthy adults is >30% and may be as high as 68% in the elderly. Untreated adults with  
21 late-onset idiopathic scoliosis (LIS) are productive and functional at a high level at 50-year  
22 follow-up. Untreated LIS causes little physical impairment other than back pain (most only  
23 have minimal or moderate back pain) and cosmetic concerns. Patients with non-painful and  
24 nonprogressive scoliosis are unlikely to benefit from initial radiography as well as repeat  
25 evaluation and radiography.

26  
27 Some patients with known scoliosis may present with significant disability. Back pain is  
28 the most common clinical problem presenting as a multiform mosaic of symptoms.  
29 Constant & nonspecific back pain has a poor prognosis. Other signs and symptoms may be  
30 radicular pain & claudication when standing or walking (from nerve traction or  
31 compression), neurologic deficit may include sphincter dysfunction. Curve progression  
32 and neurological status should be monitored, when indicated. For a patient observed to  
33 have scoliosis, clinical documentation must clearly describe that upon inspection the  
34 patient has a scoliosis with a rib hump present. Signs of scoliosis may include but are not  
35 limited to 1) a tilted head that does not line up over the hips; 2) one hip or shoulder that is  
36 higher than the other; 3) an obvious curve in the spine; 4) a protruding shoulder blade; 5)  
37 leaning more to one side than the other. The presence of a rib hump is detected by the  
38 performance of the Adam's Forward Bend Test and is sensitive to detect trunk asymmetry.  
39 A structural problem is present when the abnormal curve does not correct (goes away,  
40 straightens out) when you bend forward and/or laterally (to the side). Also, a Scoliometer  
41 may be used. A trunk angle of 7°, using a Scoliometer, indicates a structural curve >20°.

1 A neurologic exam including nerve root tension signs, motor power, sensations, deep  
2 tendon reflexes, and pathological reflexes should be performed, when indicated.

3  
4 Multiple studies have shown that there is a decrease in radiation dose with digital imaging  
5 systems compared with conventional radiography. These systems should be preferentially  
6 employed for imaging of known or suspected scoliosis. A scoliosis series consists of  
7 images taken of the involved spinal regions (usually thoracic and/or lumbar spine). Other  
8 areas such as the cervical spine and sacrum/pelvis may be needed if clinically warranted.  
9 Typical views include standing, supine or lying down, and supine views with alternate right  
10 and left flexion. These images are taken to detect any curvature of the spine when scoliosis  
11 or other pathology may be present. A supine view will suffice if the patient is unable to  
12 stand (e.g., the very young child or patient with paralysis). An upright lateral radiograph  
13 facilitates assessment of sagittal deformity (abnormal kyphosis and lordosis), sagittal  
14 balance, and spondylolisthesis. Spondylolysis may be detected, although this is best  
15 evaluated with dedicated images when relevant. Report 72081 for one view; 72082 for two  
16 or three views; 72083 for four or five views; and 72084 for a minimum of six views.  
17 Acquiring these studies at 72 inches SID coupled with P-A positioning should be  
18 considered to reduce radiation exposure to reproductive, breast and thyroid regions.

19  
20 When there is a confirmed diagnosis of scoliosis, there are several issues to assess that can  
21 help determine appropriate Diagnostic Imaging and Treatment options: (American  
22 Association of Neurological Surgeons (AANS), (n.d.) Scoliosis.)

- 23 • Spinal maturity – is the patient's spine still growing and changing?
- 24 • Degree and extent of curvature – how severe is the curve and how does it affect the  
25 patient's lifestyle?
- 26 • Location of curve – according to some experts, thoracic curves are more likely to  
27 progress than curves in other regions of the spine.
- 28 • Possibility of curve progression – patients who have large curves prior to their  
29 adolescent growth spurts are more likely to experience curve progression.

30  
31 As with all X-ray studies, this procedure requires a written report of the findings. The  
32 following information must be clearly described: 1) the method of assessment  
33 (measurement) of the curvature; 2) the magnitude (amount) of the curvature (in degrees);  
34 3) the direction of the curve (right = dextro, left = levo); 4) the vertebrae used to measure  
35 the curvature (ends and apex); 5) assessment of rotation; 6) skeletal maturity of the patient  
36 (Risser's sign); 7) cause; and 8) secondary complications.

### 37 38 **4.2.3 Bone Length Study (CPT Code 77073)**

39 Bone length studies accurately measure the length of the long bones in the skeleton.  
40 Typically, four film exposures are performed during a scanogram; however, there is no  
41 number or type of views specified for this code. Views of the hip, leg, knee, and ankle are  
42 usually taken.



1 ASH considers bone length studies (either plain radiographic or CT scanogram) as  
 2 described by CPT code 77073 to be medically necessary when the following criteria are  
 3 met:

- 4 1. A leg length discrepancy is noted of greater than or equal to 1.5 inches (3.8 cm) as  
 5 measured from ASIS to ipsilateral bottom of medial malleoli AND diagnosis of  
 6 any of the following conditions:
  - 7 a. Congenital anomalies (e.g., phocomelia and dysgenetic syndromes);  
 8 acquired deformities (e.g., dysplasias, Ollier’s disease, slipped epiphysis,  
 9 poliomyelitis, neurofibromatosis, septic arthritis, juvenile OA,  
 10 osteomyelitis, post-fracture/traumatic deformity, pes planus, knee  
 11 valgus/varus and dislocation, surgically induced); growth plate injuries or  
 12 surgery; OR inborn errors of metabolism.

13  
 14 If a CT scanogram or topogram of the lower extremities is all that is performed for leg  
 15 measurement, then this is simply a radiograph performed on a CT scanner and CPT code  
 16 77073 should be reported. The contralateral leg is studied for comparison purposes and  
 17 should not be reported separately.

18  
 19 Due to the extent of variability in specificity and reliability of observation (subjectivity),  
 20 Functional Leg Length Assessment cannot be relied upon for the purpose of validating  
 21 subluxation (segmental joint dysfunction) or postural or mechanical dysfunction that would  
 22 affect treatment decisions. See the *Functional Leg Length Assessment (CPG 88 - S)* and  
 23 *Inserts and Other Shoe Modifications for Individuals without Diabetes (CPG 186 - S)*  
 24 clinical practice guidelines for more information.

#### 25 26 **4.2.4 Stress Radiography**

27 Stress radiography, when indicated, should not be performed until acute instability has  
 28 been ruled out by clinical evaluation and there remains a question about whether undetected  
 29 ligamentous instability exists. The neutral lateral projection should be evaluated, and the  
 30 patient carefully examined before these exposures are taken. If severe instability is  
 31 suspected, advanced imaging studies (MRI or CT) may be indicated prior to obtaining  
 32 stress views.

33  
 34 *Flexion-extension stress study of the cervical spine.* This study should only be performed  
 35 in a fully alert and cooperative patient. According to the American College of Radiology,  
 36 the patient should be able to voluntarily initiate and restrict head movement while these  
 37 views are obtained. If the patient has limited cervical range of motion on physical  
 38 examination, flexion and extension radiographs may be inadequate to exclude instability  
 39 and MRI should be considered. Contraindications to these studies include vertebrobasilar  
 40 ischemia, postural vertigo, fracture-dislocations, odontoid lesions, and significant  
 41 neurological deficits. This study is indicated in the diagnosis of latent instability of the  
 42 upper cervical spine to diagnose laxity or damage of the transverse ligament of the atlas

1 caused by trauma or pathology affecting the ligament. The diagnosis is based on an  
 2 abnormally wide space (greater than 3 mm in adults and 5 mm in children) between the  
 3 posteroinferior margin of the anterior arch of the atlas and the anterior surface of the  
 4 odontoid process. The most frequent causes include trauma, occipitalization, Down's  
 5 syndrome, pharyngeal infections, inflammatory arthropathies (e.g., rheumatoid,  
 6 ankylosing, psoriatic and Reiter's arthropathies). The minimum interspace is 1 mm in  
 7 children and adults. A decreased space is to be expected with advancing age due to  
 8 degenerative joint disease of the atlantodental joint.

9  
 10 *Cervical lateral bending views* are not generally used in the radiographic community and  
 11 are considered to be of limited value.

12  
 13 *Stress radiography of the thoracic and lumbar spine.* Stress studies of the thoraco-lumbar  
 14 spine are not supported by current scientific literature except in limited circumstances.  
 15 Lateral bending studies may be indicated to assess the flexibility of a potentially  
 16 progressive scoliosis. These studies are usually limited to determining fusion levels. On  
 17 rare occasions, they may help differentiate between structural and nonstructural curves and  
 18 help assess primary from secondary scoliotic curves. Lateral bending studies are done  
 19 bilaterally with the patient supine, but the evaluation is primarily made from the radiograph  
 20 taken when the patient is bending toward the side of convexity.

21  
 22 *Flexion–extension views of the lumbar spine* may be considered appropriate in the  
 23 assessment of abnormal motion, such as might be found with an unstable spondylolisthesis.  
 24 The clinical implications usually include failure to respond to conservative treatment and  
 25 the need for consideration of surgical options. Routine use of flexion-extension views in  
 26 the presence of spondylolisthesis is not supported.

## 27 28 **4.2.5 Specifications of the Radiography Examination**

### 29 Miscellaneous Radiography Examination Specifications

- 30 • Only standard projections are generally considered reasonable or necessary.
- 31 • Supplemental views should be obtained only when clinically indicated or when  
 32 abnormal findings are found on an initial study but cannot be adequately  
 33 characterized with standard projections.
- 34 • When imaging a symptomatic bone or joint, routine comparison images of the  
 35 corresponding contralateral bone or joint generally are not indicated; however,  
 36 limited comparison views may be helpful to verify or exclude pathology after initial  
 37 review of the symptomatic extremity in some children. Certain pathologic  
 38 processes may warrant simultaneous evaluation of both the right and left sides. This  
 39 is particularly true for disorders of the hip, for which AP and frog-leg views of the  
 40 entire pelvis are typically indicated.
- 41 • Knee AP weight-bearing views will often be used in the context of orthopedic  
 42 appointments to assess the alignment and degree of arthropathy when weight-

bearing. These views are often used to assess osteoarthritis as non-weight bearing views can underestimate the degree of joint space loss. It is common for the AP view to include both knees (CPT Code 73565) so to use the contralateral side as a comparison.

- The American College of Radiology (ACR) Practice Parameter for the Performance of Radiography of the Extremities provides information summarized within **Table 1**, which lists the minimum recommended extremity views in routine circumstances. In many instances, there is little or no scientific evidence in the literature to determine which views constitute the minimum requirement; thus, the recommendations in those instances reflect the opinions of the authors of the American College of Radiology per their Practice Parameter supported by expert opinion in the literature.

**Minimum Recommended Routine Views of the Upper and Lower Extremities**

<b>Anatomic Area Views of the Upper Extremities:</b>	
Scapula	AP and lateral (sometimes called “Y-view”)
Clavicle	AP and AP angulated view
Acromioclavicular (AC) joint	Upright AP and outlet (lateral) view collimated to the AC joint
Shoulder	Two views, one of which should be AP or Grashey, and additional view(s) as indicated by clinical circumstances
Humerus	AP and lateral
Elbow	AP, lateral and radial head view for trauma patients
Forearm	AP and lateral
Wrist	PA, oblique, and lateral
Hand	PA and oblique
Hand bone age	PA, left hand and wrist
Fingers	PA, oblique, and lateral

15

<b>Anatomic Area Views of the Lower Extremities:</b>	
Hip	AP and lateral (frog-leg, cross-table, or other lateral options)
Pelvis	AP
Femur	AP and lateral
Patella	Lateral and patellar/axial
Knee	AP and lateral (cross-table lateral recommended for trauma patients)
Tibia-fibula	AP and lateral
Ankle	AP, oblique (mortise), and lateral
Calcaneus	Lateral and axial
Foot	AP, oblique, and lateral
Toes	AP, oblique, and lateral

1

2 Cervical Spine Radiography Examination Specifications (Adults)

- 3 • Routine examination consists of anteroposterior (AP) and lateral views. More  
4 limited examinations may be performed for specific indications. Opposing  
5 (orthogonal) views, however, are generally required for a diagnostic assessment  
6 when choosing to image any area; single plane views are usually insufficient.
- 7 • In patients who have had cervical spine trauma, and for whom cervical spine CT is  
8 nondiagnostic or otherwise unavailable, the entire cervical spine from the  
9 craniocervical junction to at least the superior end plate of T1 should be performed  
10 to assess for multiple fractures or associated traumatic listhesis. Upright views are  
11 preferred but may not be possible if the patient’s condition does not permit.
- 12 • In some clinical circumstances, additional evaluation may include some or all of  
13 the following: open mouth view (for assessment of dens and atlantoaxial  
14 association), closed mouth odontoid AP view (Fuchs view), oblique views (for  
15 assessment of the neural foramina), pillar views (for assessment of the facets), and  
16 flexion and extension lateral views (for assessment of cervical instability).

- 1 • A swimmer’s lateral view may be performed, if necessary, to assess the lower  
2 cervical segments and C7/T1 alignment in patients who have had trauma or who  
3 have symptoms in this area that warrant radiography.
- 4 • A Davis series (i.e., A-P open mouth, A-P lower cervical, lateral, oblique, and  
5 flexion and extension views) is only appropriate when history and physical  
6 examination findings such as those that may be present following a significant  
7 whiplash trauma justify the need for the additional views that are included in this  
8 study.
- 9 • Nasium and Vertex X-ray views are unsupported. These are non-standard  
10 projections that are acquired solely for the purpose of detection of chiropractic  
11 subluxation, spinal postural and/or segmental juxtaposition measurements. Refer to  
12 *Nasium and Vertex X-Ray Views (CPG 58 – S)* for additional information.

#### 13 14 Cervical Spine Radiography Examination Specifications (Children)

- 15 • Routine examination includes AP and lateral views. Lateral radiographs should be  
16 obtained in true lateral position with the neck in extension if possible, and  
17 preferably during inspiration. Some pediatric centers omit the frontal view.
- 18 • Oblique views are not recommended due to the added radiation and low diagnostic  
19 yield.
- 20 • Flexion and extension lateral views are often not possible in younger children but  
21 may be useful to assess for ligament laxity in older children.
- 22 • Odontoid views are difficult to acquire in children younger than 5 years because of  
23 their short necks and imposition of the mandible on the spine and are not  
24 recommended.
- 25 • Cervical spine injury in young children (younger than 9 years old) most commonly  
26 occurs from the occiput through C3 and has a propensity for ligamentous or  
27 cartilaginous rather than osseous injury. Normal cervical spine radiographs do not  
28 exclude ligamentous or spinal cord injury.
- 29 • In older children with chronic cervical instability (especially those with Down  
30 syndrome), lateral radiographs of the cervical spine centered at the craniocervical  
31 junction are taken in 3 positions: active flexion, active extension, and the standard  
32 neutral view.

#### 33 34 Thoracic Spine Radiography Examination Specifications (Adults)

- 35 • A standard routine examination includes AP and lateral views. Lower cervical or  
36 upper lumbar anatomy should be visualized to assure accurate numbering of  
37 thoracic levels. Collimation to reduce exposure to lateral-peripheral soft tissues in  
38 the abdomen to reduce radiation exposure and scatter formation should be present.
- 39 • Additional evaluation may be needed in some clinical circumstances and may  
40 include some or all of the following: swimmer’s lateral view of the upper thoracic

1 region, oblique views, flexion-extension lateral views, lateral bending views, and  
 2 spot view of the thoracolumbar junction.

3

#### 4 Thoracic Spine Radiography Examination Specifications (Children)

- 5 • Routine examination includes AP and lateral views. Collimation to reduce exposure  
 6 to lateral-peripheral soft tissues in the abdomen to reduce radiation exposure and  
 7 scatter formation should be present.
- 8 • Additional views may be obtained for specific clinical indications.

9

#### 10 Lumbosacral Spine Radiography Examination Specifications (Adults)

- 11 • A Standard examination includes AP and lateral views. Collimation to reduce  
 12 exposure to lateral-peripheral soft tissues in the abdomen to reduce radiation  
 13 exposure and scatter formation should be present. Some may choose a  
 14 posterior/anterior (PA) view instead of an AP view to reduce radiation dosage.
- 15 • In many adults and occasionally in older children, additional evaluation may be  
 16 needed and may include some or all of the following: Both oblique views, spot  
 17 lateral view of the lumbosacral junction, angled AP view of the lumbosacral  
 18 junction, and upright flexion and extension lateral views may be particularly helpful  
 19 to assess for abnormal motion.
- 20 • The upper part of the sacrum is included in the standard lumbosacral examination.  
 21 When a more complete evaluation of the sacrum, coccyx, or sacroiliac joints is  
 22 needed, a cephalad-angled AP (Ferguson) view of the sacrum and bilateral  
 23 oblique/sacroiliac views may be obtained. In select patients, dynamic coccygeal  
 24 views or lateral seated position radiographs may demonstrate hypermobility or  
 25 ligament laxity.

26

#### 27 Lumbosacral Spine Radiography Examination Specifications (Children)

- 28 • Standard examination includes AP and lateral views. Collimation to reduce  
 29 exposure to lateral-peripheral soft tissues in the abdomen to reduce radiation  
 30 exposure and scatter formation should be present. A PA view may be used to reduce  
 31 radiation dose.
- 32 • Oblique views are generally not recommended because of the added radiation and  
 33 low diagnostic yield. A special dispensation for evaluation of acute pars  
 34 interarticularis fractures should be considered as a useful indication for lumbar  
 35 spine oblique projections in children.
- 36 • Additional evaluation may be obtained for specific clinical indications.

37

#### 38 Examination of Neonates and Infants

- 39 • Usually evaluated with ultrasound (see the ACR–AIUM–SPR–SRU Practice  
 40 Parameter for the Performance of an Ultrasound Examination of the Neonatal and  
 41 Infant Spine) or MRI if congenital abnormality or trauma is highly suspected  
 42 clinically or based on other imaging.

- 1 • Interpretation of cervical spine radiography is difficult in infants because of  
2 epiphyseal variants, incomplete ossification of synchondroses including the apex  
3 of the odontoid, normal ligamentous laxity resulting in pseudosubluxation of C2 on  
4 C3, and the propensity of ligamentous rather than osseous injury. Normal lack of  
5 ossification of the anterior arch of C1 precludes radiographic evaluation of the  
6 atlantodental interval. MRI should be considered if there is concern for cervical  
7 spine injury.
- 8 • Frontal and lateral views of the cervical spine, and combined frontal and lateral  
9 views of the thoracic and lumbar spine may be performed. These views are most  
10 frequently used in the setting of a skeletal survey for nonaccidental trauma or in the  
11 evaluation of skeletal dysplasia or congenital vertebral anomalies.

#### 12 13 **4.2.6 Comparative, Post-Treatment, and/or X-Rays to Monitor Patient Progress**

14 Follow-up studies and/or exit films are not necessary unless specific indications are  
15 observed. The practitioner must have a clear clinical rationale to explain the benefit and  
16 necessity of the repeat radiographic series considering the known health risks associated  
17 with the additional radiation exposure. Indications may include monitoring healing of a  
18 fracture, monitoring aggressive bone/joint diseases (e.g., various inflammatory arthritic  
19 disorders), or a potentially progressive idiopathic scoliosis. In the absence of clinical  
20 progression, scoliosis radiography examinations are not needed on a scoliosis patient, who  
21 has not reached skeletal maturity and is supported by examination, more frequently than  
22 once a year. However, when the risk of progression is highest (e.g., during puberty), more  
23 frequent imaging may be needed, but not more than every six months. If prior imaging has  
24 been performed at another facility for a patient presenting with a condition including  
25 indicators for imaging, then all reasonable attempts must be made to obtain the results of  
26 those studies prior to repeating the study.

27  
28 The association between cervical lordosis (sagittal alignment) and neck pain is  
29 controversial. Further, it is unclear whether spinal manipulative therapy can change  
30 cervical lordosis. Shilton et al. (2015), found no difference in cervical lordosis (sagittal  
31 alignment) between patients with mild non-specific neck pain and matched healthy  
32 volunteers. Furthermore, there was no significant change in cervical lordosis in patients  
33 after 4 weeks of cervical spinal manipulation. Frauenfelder et al. (2007), concluded that  
34 the presence of such structural abnormalities (global cervical curvature or segmental  
35 angles) in the patient with neck pain must be considered coincidental, i.e., not necessarily  
36 indicative of the cause of pain.

#### 37 38 **4.2.7 Skeletal and Joint Surveys**

39 A skeletal survey is a systematically performed series of radiographic images that  
40 encompasses the entire skeleton or those anatomic regions appropriate for the clinical  
41 indications. Radiographic skeletal surveys are used for a variety of clinical problems in  
42 infants and children. The goal of the skeletal survey is to accurately identify focal and

1 diffuse abnormalities of the skeleton, including acute or healing fractures, bone lesions,  
 2 evidence of metabolic bone disease, or characteristics of skeletal dysplasia, and to  
 3 differentiate them from developmental changes and other anatomic variants that may occur  
 4 in infants and children.

5  
 6 **According to the American College of Radiology, skeletal surveys are primarily used  
 7 for (but not exclusively) to evaluate:**

- 8 1. Known or suspected physical abuse in infants and young children
- 9 2. Known or suspected skeletal dysplasias, syndromes, and metabolic disorders
- 10 3. Known or suspected neoplasia and related disorders

11  
 12 For additional information regarding Skeletal Surveys (e.g., Specification of the  
 13 Examination), go to ACR–SPR Practice Parameter for the Performance and Interpretation  
 14 of Skeletal Surveys in Children (Revised 2021 -Resolution 37) at [https://www.acr.org/-](https://www.acr.org/-/media/ACR/Files/Practice-Parameters/Skeletal-Survey.pdf)  
 15 [/media/ACR/Files/Practice-Parameters/Skeletal-Survey.pdf](https://www.acr.org/-/media/ACR/Files/Practice-Parameters/Skeletal-Survey.pdf)

16  
 17 Radiographic joint surveys should be limited to scenarios where there is clinical suspicion  
 18 for polyarticular arthropathies or conditions that have a high probability to affect multiple  
 19 joints (e.g., rheumatoid arthritis, psoriatic arthritis, hemophilia, sickle cell anemia) as a  
 20 method of establishing baseline joint changes. It should be noted that the sensitivity for  
 21 radiographs to detect early joint changes such as synovitis or even subchondral erosions is  
 22 poor compared to other imaging modalities such as ultrasound or MRI and these would be  
 23 the preferred modalities of evaluation if available.

#### 24 25 **4.2.8 Chest Radiography**

26 Chest radiography is a proven and useful imaging tool in the evaluation of the airways,  
 27 lungs, pulmonary vessels, mediastinum, heart, pleura, and chest wall. The routine and  
 28 accepted practice consists of posteroanterior (PA) and left lateral radiographic images  
 29 obtained in the upright position.

30  
 31 A standard chest examination should include an erect PA and left lateral projection made  
 32 during full inspiration. The examination may be modified by the physician or qualified  
 33 technologist depending on the clinical circumstances. In some instances, additional views  
 34 may be clinically useful. Decubitus views can aid in detecting pneumothoraces and  
 35 establishing mobile versus loculated pleural effusions. Reverse apical lordotic and oblique  
 36 views help in localizing abnormalities to the lung or bones. Views in expiration or bilateral  
 37 decubitus views may also be useful in the assessment of air trapping, such as in the setting  
 38 of radiolucent endobronchial foreign bodies in pediatric patients. Expiration views have  
 39 limited utility in the detection of pneumothorax. Radiograph with nipple markers can be  
 40 helpful in evaluating nodular opacities in the expected location of the nipple. At times, as



1 in the case of a pregnant or pediatric patient, a single frontal view may be appropriate. In  
 2 young pediatric patients who are not able to stand for appropriate positioning, supine or  
 3 sitting anteroposterior (AP) radiographs are routinely performed. Cross-table lateral  
 4 radiographs may be done with the patient supine and the arms raised above the head, which  
 5 facilitates proper positioning. In adults unable to stand or known to be at risk for a fall, a  
 6 sitting AP view may be substituted for a PA view.

7  
 8 The goals of the chest radiographic examination are to help identify or exclude disease  
 9 processes that may involve the thorax, determine the etiology of symptoms, and potentially  
 10 follow its course.

11  
 12 **According to the American College of Radiology, indications for chest radiography**  
 13 **include but are not limited to:**

- 14 • Evaluation of signs and symptoms potentially related to the respiratory,  
 15 cardiovascular, upper gastrointestinal, and thoracic musculoskeletal systems. The  
 16 chest radiograph may also help to evaluate disease processes, including systemic  
 17 and extra thoracic diseases that secondarily involve the chest. Because the lungs  
 18 and bony thorax are frequent sites of metastases, chest radiography may be useful  
 19 in staging neoplasms. However, chest radiography should not replace chest CT  
 20 (computed tomography) as part of routine restaging or when there is clinical  
 21 suspicion for disease recurrence or progression.
- 22 • Follow-up of known thoracic disease processes when clinically indicated. Routine  
 23 chest radiographs are not necessary in children to ensure resolution, such as in  
 24 uncomplicated pneumonia.
- 25 • Monitoring patients with life-support devices and patients who have undergone  
 26 cardiac or thoracic surgery or other interventional procedures. A clinical restricted  
 27 approach should limit daily chest radiographs in those patients who have not had  
 28 clinical change or movement in their support devices.
- 29 • Compliance with government regulations that may mandate chest radiography.  
 30 Examples include surveillance PA chest radiographs for active tuberculosis or  
 31 occupational lung disease or exposures, or other surveillance studies required by  
 32 public health law.
- 33 • Preoperative radiographic evaluation when cardiac or respiratory symptoms are  
 34 present and there is a significant potential for thoracic pathology that may influence  
 35 anesthesia or the surgical result or lead to increased perioperative morbidity or  
 36 mortality. Routine preoperative chest X-rays are not appropriate.

37  
 38 For additional information (e.g., Specification of the Examination) regarding Chest  
 39 Radiography, go to ACR–SPR–STR Practice Parameter For The Performance Of Chest  
 40 Radiography (Revised 2022 -Resolution 11) at <https://www.acr.org/-/media/ACR/Files/Practice-Parameters/ChestRad.pdf>  
 41  
 42

1 **4.2.9 Consultation on X-Ray examination made elsewhere, written report (CPT Code**  
 2 **76140)**

3 Consultation on X-ray examination made elsewhere, written report (CPT Code 76140) is  
 4 **not** billable as a separate service by a treating health care provider. The medical decision  
 5 making (MDM) component of an E/M service includes ordering and/or reviewing of data,  
 6 which includes a review and interpretation of medical records and reports (e.g., X-ray, lab,  
 7 etc.). Even if the images are taken in another facility, the work involved in reviewing the  
 8 radiograph itself along with any reports is considered bundled into the MDM portion of the  
 9 E/M service and is not separately payable. The consultation request **MUST** be initiated by  
 10 another physician (Not the patient), or an appropriate source as defined by CPT guidelines  
 11 (e.g., healthcare agency, attorney, insurance company, other healthcare provider). This  
 12 service code is typically utilized by a radiologist or other provider of higher qualification  
 13 than the primary interpretation and is initiated because of uncertainty of the primary  
 14 evaluator.

15  
 16 If a patient presents to an office for a new patient visit and brings to the practitioner (e.g.,  
 17 physician, chiropractor) his or her medical records, including radiographs, the practitioner  
 18 should **not** report CPT Code 76140. Although the radiographs may have been taken  
 19 elsewhere, the practitioner does not perform a consultation as intended by CPT Code  
 20 76140. Rather, the review or re-read of the radiographs would be considered part of the  
 21 face-to-face E/M service provided to the patient. The E/M codes include work done before,  
 22 during, or after the E/M visit. Review of radiographs is part of the E/M service. CPT Code  
 23 76140 represents a consultation, in which a radiologist or other consultant only renders an  
 24 opinion or gives advice regarding the film in the form of a written report. In general, when  
 25 reporting CPT Code 76140, the consultant is not concurrently providing an E/M face-to-  
 26 face service to the patient.

27  
 28 **5. APPENDIX A: QUALITY INDICATORS RELATED TO IMAGING FOR**  
 29 **LOW BACK PAIN (ADULTS AGED 18-75)**

30 National and regional health plans are collecting Healthcare Effectiveness Data and  
 31 Information Set (HEDIS) quality measures in support of their quality improvement  
 32 initiatives and their National Committee for Quality Assurance (NCQA) accreditation.  
 33 Low back pain imaging is one of the measures HEDIS uses to assess appropriateness of  
 34 patient management and treatment. NCQA/HEDIS implemented this measure to identify  
 35 unnecessary imaging of patients where the clinical evaluation does not support the medical  
 36 necessity of lumbar spine plain radiography.

37  
 38 Chiropractic and Medical providers may be flagged on audit for unnecessary low back  
 39 radiographs when a claim is submitted, and the claim does not document the medical  
 40 necessity of the radiology service. If a claim is submitted with any of the 85-triggering low  
 41 back pain (LBP) inclusive diagnosis codes as a primary diagnosis code, and a qualified

1 excluding diagnosis code is not added, the claim can be flagged during an audit as not  
2 meeting the quality measure.

3  
4 Some examples from the HEDIS list of 85 LBP triggering ICD-10 codes include:

- 5 • M54.16 Radiculopathy lumbar region
- 6 • M54.30 Sciatica, unspecified site
- 7 • M54.50 LBP, unspecified
- 8 • M54.51 Vertebrogenic back pain
- 9 • M54.59 Other low back pain

10  
11 Some examples of Qualified Exclusion codes include:

- 12 • G89.11 Acute pain due to trauma
- 13 • R26.2 Difficulty walking
- 14 • R29.2 Abnormal reflex

15  
16 There are thousands of conditions and services that fall under the qualified exclusionary  
17 code set:

- 18 • Cancer – active now or personal history of cancer any time during member’s  
19 lifetime
- 20 • Recent Trauma and/or Fragility Fracture – anytime 90 days prior to diagnosis
- 21 • Inflammatory arthritis
- 22 • Neurologic impairment – any time during 12 months prior to the diagnosis
- 23 • Spinal Infection – any time during 12 months prior to diagnosis.
- 24 • Lumbar Surgery and/or Spondylopathy – any time during members history
- 25 • Osteoporosis – osteoporosis therapy or prescriptions to treat osteoporosis any time  
26 during the members history.
- 27 • Prolonged Use of Corticosteroids – 90 consecutive days of corticosteroid treatment  
28 during a 365-day time period.
- 29 • Intravenous drug abuse – IV Drug use any time during 12 months prior to diagnosis
- 30 • HIV and/or Major Organ transplant – any time during the members history
- 31 • Palliative care or hospice services – any time during the measurement year

32  
33 While healthcare practitioners generally document past-history and/or concurrent  
34 conditions or complications within their medical records, it is not as routine to document  
35 these on submitted claims. Because claims data is frequently used to evaluate quality  
36 measures, practitioners should remember to include, when appropriate and applicable for  
37 the patient, a qualified exclusionary ICD-10 code on the submitted claim. Some patients  
38 may have multiple exclusionary diagnosis codes. If there is documentation of a qualified  
39 exclusionary code validating the medical necessity to perform imaging, the radiology  
40 service would not be included in the HEDIS calculation, and a practitioner can avoid  
41 triggering a claims audit.

1 In summary, if the claim documents any of the 85 LBP triggering ICD-10 Codes from the  
 2 HEDIS value set as a primary diagnosis, then the practitioner can keep the primary LBP  
 3 diagnosis and add to the claim the clinically documented qualified exclusion code(s) such  
 4 as cancer codes appropriate for that patient. In addition to the HEDIS measures, any X-ray  
 5 code(s) used on the claim form must be supported by the documentation in the patient’s  
 6 medical record and meet medical necessity criteria as outlined in this Clinical Practice  
 7 Guideline.

8  
 9 Discover additional information regarding HEDIS Measures and Technical Resources at:

- 10 • <https://www.ncqa.org/hedis/measures/>
- 11 • <https://www.ncqa.org/hedis/measures/use-of-imaging-studies-for-low-back-pain/>

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