



CME Sponsors: American Medical Seminars, Inc.
 Activity Title: Radiology for the Non-Radiologist
 Activity Dates: March 4-8, 2019
 Presenting Faculty: Adam R. Guttentag, M.D.; Ryan K. Lee, M.D., M.B.A.; and Ryan Smith, M.D.

NARRATIVE DESCRIPTION

Following this course, the participant should be able to choose the appropriate ordering of x-rays, CT scans or MRI studies; employ interpretation skills that will improve patient outcomes resulting from recognition of normal vs. abnormal vs. poor technique; identify x-ray pathology that is commonly seen, commonly missed and how to prevent the latter in the clinical setting. This activity is expected to result in improved competence in making appropriate diagnosis and providing effective treatment and referral or follow-up care with the overall goal of improving patient outcomes.

When indicated in the specific objectives, emphasis will be on ACR Appropriateness Criteria and evidence-based medicine with a focus on diagnosis, treatment and when to refer. There is a need for practitioners to maintain their skills in "first-read" x-ray interpretation, which are most needed in emergency rooms and urgent care environments. Since Radiology is one topic in which practice and repeated exposure improves skills and outcomes, this course was designed and intended for all practitioners at the level of a practicing physician.

SPECIFIC OBJECTIVES**Day 1****Basic Chest X-Ray Interpretation.**

Upon completion of this session, the participant should be able to: ^{COMP}

1. Develop a systematic approach to interpreting a chest radiograph.
2. Assess a chest radiograph for technical factors that may hide or simulate disease.
3. Determine whether a chest radiograph demonstrates air space disease and localize it in the lung.

Radiology of the Pleura: Effusion, Pneumothorax and More.

Upon completion of this session, the participant should be able to: ^{COMP}

1. Detect pleural effusion on a chest radiograph in its various manifestations.
2. Analyze a CT scan of the chest for findings that differentiate benign from malignant pleural effusion.
3. Distinguish pneumothorax from other findings that may simulate it on a chest radiograph.

Overview of Skeletal Imaging: Pearls and Pitfalls.

Upon completion of this session, the participant should be able to: ^{COMP}

1. Determine which imaging studies are indicated and which studies are not indicated in the setting of acute trauma.

2. Develop an approach to evaluating skeletal radiographs.
3. Detect radiographic findings in pediatric radiographs.

Upper Extremity Trauma.

Upon completion of this session, the participant should be able to: ^{COMP}

1. Determine the utility of different projections of plain films of the upper extremity.
2. Evaluate radiographic findings of common fractures and dislocations in the shoulder.
3. Interpret common fractures of the wrist on plain radiographs.

Day 2**Lower Extremity Trauma.**

Upon completion of this session, the participant should be able to: ^{COMP}

1. Develop an approach for assessing pelvic fractures.
2. Determine appropriate studies to order in evaluating for hip fractures.
3. Analyze common plain film findings associated with knee fractures.

Brain and Spine Trauma.

Upon completion of this session, the participant should be able to: ^{COMP}

1. Identify appropriate indications for ordering an imaging study in the assessment of neurological trauma.
2. Determine the best study to order when clinically indicated for neurological trauma.
3. Assess the stability or instability of spine fractures.

Pulmonary Nodule: Evaluation and Follow-Up.

Upon completion of this session, the participant should be able to: ^{EBM, GL, COMP}

1. Evaluate pulmonary nodules using a variety of radiographic techniques.
2. Assess pulmonary nodules for features that reliably exclude malignancy.
3. Use evidence-based guidelines regarding appropriate intervals for nodule follow up.

MRI of Large Joints: Knee, Shoulder and Hip.

Upon completion of this session, the participant should be able to: ^{EBM, COMP}

1. Recognize commonly used terminology in radiographic reports related to musculoskeletal MRI.
2. Differentiate when to order shoulder MRI with and without arthrography.
3. Discuss when evidence based guidelines support the use of Ultrasound in rotator cuff evaluation.



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4. Integrate MR imaging appropriately into evaluation of patients with symptoms of large joint pathology.

Day 3

Back Pain Imaging.

Upon completion of this session, the participant should be able to: ^{EBM, COMP}

1. Use evidence based guidelines to help decide which patients require immediate imaging for evaluation of back pain.
2. Discuss the utility of various forms of imaging for specific lumbar pathologies.
3. Analyze a radiologist's report of lumbar imaging with respect to the patient's specific symptoms.

Incidentalomas: Dealing With Unexpected Abnormal Findings on Radiologic Exams.

Upon completion of this session, the participant should be able to: ^{EBM, COMP}

1. Apply an evidence-based approach to determine the need for further evaluation of abnormalities found incidentally on imaging tests.
2. Distinguish cystic renal masses that need imaging follow up from those that do not.
3. Select appropriate further imaging when needed for small adrenal masses.

Ultrasound Basics.

Upon completion of this session, the participant should be able to: ^{COMP}

1. Discuss commonly used terms in ultrasound.
2. Determine in which clinical settings ultrasound is the most appropriate study to order.
3. Recognize US findings for common diseases/diagnoses.

Stroke and Imaging.

Upon completion of this session, the participant should be able to: ^{COMP}

1. Appraise the different imaging modalities available in the assessment of stroke.
2. Evaluate the benefits and drawbacks of each imaging modality.
3. Determine the appropriate imaging study to order in various clinical scenarios.

Day 4

Abdominal Radiography.

Upon completion of this session, the participant should be able to: ^{COMP}

1. Determine when abdominal radiographs are appropriate in evaluating patients with abdominal pain.
2. Establish a pattern for evaluating plain radiographs of the abdomen.

3. Distinguish normal from abnormal bowel gas patterns.

Site Specific Approach to Abdominal Pain.

Upon completion of this session, the participant should be able to: ^{GL, COMP}

1. Formulate a focused differential diagnosis based on the location of the patient's abdominal pain.
2. Order appropriate radiographic studies based on the location of the patient's presenting symptoms and using the American College of Radiology Appropriateness Criteria.
3. Analyze imaging studies and recognize the findings of common causes of abdominal pain.

Contrast and Radiation Issues in Radiology: What a Clinician Should Know.

Upon completion of this session, the participant should be able to: ^{EBM, GL, COMP}

1. Utilize evidence based guidelines to appropriately order intravenous contrast for CT scans for patients with impaired renal function.
2. Apply evidence based guidelines to decide whether it is safe to order intravenous contrast for MRI examinations.
3. Describe factors leading to increased radiation exposure to patients from medical imaging.
4. Select appropriate tests to order so as to minimize patient radiation dose without sacrificing diagnostic accuracy.

Non-Invasive Vascular Imaging: Aorta, Carotids and More.

Upon completion of this session, the participant should be able to: ^{EBM, COMP}

1. Design an evidence based algorithm for integrating imaging into evaluation of patients with suspected carotid stenosis.
2. Select appropriate tests to order for patients with suspected acute aortic syndromes.
3. Integrate modern non-invasive techniques into evaluation of suspected visceral and peripheral artery disease.

Day 5

Evaluation of Patients with Suspected Pulmonary Embolism.

Upon completion of this session, the participant should be able to: ^{EBM, COMP}

1. Develop an evidence based algorithm for the use of imaging in evaluation of patients with possible thromboembolic disease.
2. Discuss advantages and disadvantages of various imaging techniques in PE evaluation.
3. Integrate d-Dimer testing into evaluation of patients with suspected pulmonary embolism when appropriate.



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Imaging the Mediastinum and Heart.

Upon completion of this session, the participant should be able to: ^{EBM, GL, COMP}

1. Develop an approach to analyzing the mediastinum on chest radiography.
2. Develop an appropriate differential diagnosis for a mediastinal mass based on location.
3. Discuss evidence based guidelines to appropriately order gated cardiac CT in patients with suspected acute coronary syndrome.

Evaluation of Hematuria and Flank Pain.

Upon completion of this session, the participant should be able to: ^{GL, COMP}

1. Determine which studies are most appropriate in evaluating flank pain, utilizing the American College of Radiology Appropriateness Criteria.
2. Determine which studies are most appropriate, in evaluating hematuria, using the American College of Radiology Appropriateness Criteria.
3. Detect abnormalities on ultrasound and computed tomography in patients with flank pain and/or hematuria.

Pelvic Imaging.

Upon completion of this session, the participant should be able to: ^{GL, COMP}

1. Order appropriate radiologic studies for evaluating patients with dysfunctional uterine bleeding, according to the American College of Radiology Appropriateness Criteria.
2. Utilize the most appropriate imaging studies for evaluating female patients with pelvic pain, according to the American College of Radiology Appropriateness Criteria.
3. Determine which studies are most appropriate for evaluating patients with post-menopausal bleeding using the American College of Radiology Appropriateness Criteria.