

2.2 CHEST RADIOGRAPH INTERPRETATION

Chest radiograph (or chest x-ray; CXR) uses low-level radiation to form an image of the chest anatomy. It is a noninvasive and readily available radiologic study that is an integral part of the initial evaluation of patients with known or suspected cardiopulmonary pathology. It is also a valuable tool to monitor treatment response or to determine interval change for a variety of cardiopulmonary disorders. The CXR is the most common diagnostic x-ray examination, and more than 20 million CXRs are performed annually in US emergency departments.^{1,2} Hospitalists interpret the results of CXRs, often before radiologists, to diagnose, assess disease severity, and develop treatment plans in hospitalized patients.

KNOWLEDGE

Hospitalists should be able to:

- Explain the normal anatomy of the thorax with particular attention to spatial relationships.
- Describe the patterns seen on CXR, including those of bone and soft tissue structures, airway, lungs, cardiac structure and silhouette, aorta, and diaphragm.
- Explain the indications, limitations, alternatives, and potential adverse effects of CXR.
- Compare the indications and limitations of a portable CXR study with those of a standard study.
- Explain the indications for ordering CXR with special views or patient position.
- Describe the effects of film exposure, inspiratory effort, and patient position on the CXR image.
- Explain the effects of various abnormal processes on the CXR image.
- Explain the limitations of various CXR findings.

SKILLS

Hospitalists should be able to:

- Identify normal variants on CXR.
- Identify abnormalities on CXR and, when possible, cor-

relate the results with the patient's clinical presentation and findings.

- Synthesize CXR findings with other clinical and diagnostic information to diagnose disease and develop a clinical plan.
- Communicate with patients and families to explain results of CXRs and how the findings influence the care plan.

ATTITUDES

Hospitalists should be able to:

- Prioritize prompt interpretation of CXRs.
- Recognize the value of comparing the current CXR with historical CXR images, when available.
- Adopt a standardized and consistent approach to interpreting CXR images.
- Consult and work collaboratively with radiologists in interpreting complex CXRs and in ordering further diagnostic studies or procedures on the basis of CXR interpretation.

SYSTEM ORGANIZATION AND IMPROVEMENT

To improve quality and efficiency within their organizations, hospitalists should:

- Lead, coordinate, and/or participate in multidisciplinary initiatives to optimize resource use.
- Lead, coordinate, and/or participate in efforts directed towards system improvements related to the acquisition and interpretation of CXR for hospitalized patients.
- Lead, coordinate, and/or participate in patient safety programs designed to coordinate care transition and the handoff of pending study results at the time of hospital discharge.

References

1. McCaig LF, Burt CW. National Hospital Ambulatory Medical Care Survey: 2002 emergency department summary. *Adv Data*. 2004;340:1-34.
2. National Heart, Lung, and Blood Institute. What Is a Chest X-Ray? Available at: www.nhlbi.nih.gov/health/health-topics/topics/cxr. Accessed May 2015.