

## Acute Respiratory Illness in Immunocompetent Patients

Acute respiratory illness (ARI) is one of the most common reasons for individuals to seek medical treatment. A person with ARI will have one or more of the following symptoms: cough, phlegm production, chest pain, or trouble breathing. Most cases of ARI are caused by infection that will clear up without treatment. ARI cases caused by bacterial pneumonia (<https://www.radiologyinfo.org/en/info/pneumonia>) require treatment. Imaging is used to determine if there is pneumonia.

A chest x-ray (<https://www.radiologyinfo.org/en/info/chestrad>) is usually the initial imaging test used for a person with a healthy immune system and no other risk factors.

In individuals with other risk factors, such as abnormal vital signs, a chest x-ray is usually appropriate. Chest ultrasound (<https://www.radiologyinfo.org/en/info/genus>) may be appropriate. If the initial chest x-ray is negative or inconclusive, chest CT (<https://www.radiologyinfo.org/en/info/chestct>) without intravenous (IV) contrast is usually appropriate as the next imaging test. In a person with pneumonia and suspected abscess or fluid around the lung on the chest x-ray, chest CT either with or without IV contrast is usually appropriate.

In individuals with acute worsening asthma and no suspected pneumonia or pneumothorax (air around the lung), a chest x-ray may be appropriate. If pneumonia or pneumothorax is suspected, then a chest x-ray is usually appropriate.

In individuals with acute worsening of chronic obstructive pulmonary disease (<https://www.radiologyinfo.org/en/info/copd>), a chest x-ray is usually appropriate for the initial imaging. Chest CT with or without IV contrast may be appropriate. In people who have symptoms such as chest pain or a history of heart disease, an ultrasound examination may be appropriate.

For more information, see the *Pneumonia* (<https://www.radiologyinfo.org/en/info/pneumonia>) page.

— By Ryan Lockhart and Nina S. Vincoff, MD. This information originally appeared in the *Journal of the American College of Radiology*.

### Disclaimer

This information is copied from the RadiologyInfo Web site (<http://www.radiologyinfo.org>) which is dedicated to providing the highest quality information. To ensure that, each section is reviewed by a physician with expertise in the area presented. All information contained in the Web site is further reviewed by an ACR (American College of Radiology) - RSNA (Radiological Society of North America) committee, comprising physicians with expertise in several radiologic areas.

However, it is not possible to assure that this Web site contains complete, up-to-date information on any particular subject. Therefore, ACR and RSNA make no representations or warranties about the suitability of this information for use for any particular purpose. All information is provided "as is" without express or implied warranty.

Please visit the RadiologyInfo Web site at <http://www.radiologyinfo.org> to view or download the latest information.

**Note:** Images may be shown for illustrative purposes. Do not attempt to draw conclusions or make diagnoses by comparing these images to other medical images, particularly your own. Only qualified physicians should interpret images; the radiologist is the physician expert trained in medical imaging.

### Copyright

This material is copyrighted by either the Radiological Society of North America (RSNA), 820 Jorie Boulevard, Oak Brook, IL 60523-2251 or the American College of Radiology (ACR), 1891 Preston White Drive, Reston, VA 20191-4397. Commercial reproduction or multiple

distribution by any traditional or electronically based reproduction/publication method is prohibited.

Copyright © 2025 Radiological Society of North America, Inc.