How Do Chest X-rays Diagnose COPD?

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A COPD X-ray Overview

COPD is a group of lung diseases (emphysema and chronic bronchitis) that makes it difficult to breathe and worsens over time. COPD affects 16 million Americans and it is estimated that there are millions more who do not know they have it. The American Lung Association thinks there may be upwards of 24 million Americans who have COPD. One of the ways this condition can be diagnosed is with a COPD x-ray. Let's take a look at what that involves.

What Is COPD?

COPD is comprised of two chronic lung conditions:

- **Emphysema:** causes damage to the air sacs of the lungs (the alveoli); they become less elastic.
- **Chronic bronchitis:** causes irritation to the airways, which causes inflammation. This inflammation causes mucus production.

Generally, our airways and alveoli are elastic and stretchy. This allows for air to flow in and out easily. As this occurs, the air sacs inflate and deflate. When you have COPD, the air sacs become less elastic or become destroyed, the airways become clogged with mucus, and the airways become inflamed.

What Is a COPD Chest X-ray?

A chest x-ray is a noninvasive imaging tool that is quick and painless. Though your healthcare provider may use several tests to help diagnose COPD, a chest x-ray can be quite revealing.

This type of imaging uses electromagnetic rays. These rays help to create images of the heart, lungs, diaphragm and ribcage. Using these images, as well as other diagnostic tools, your provider may be able to determine if you have COPD.

How Is a Chest X-ray Useful as a Diagnostic Tool?

Typically, a chest x-ray is performed from the front and the side. You may hear the x-ray technician say you are getting a "P/A and lat chest x-ray". This is in reference to the posterior (back), anterior (front) and lateral (side) surfaces of your body.

Typically, a chest x-ray of someone with COPD reveals someone with hyperinflated lungs. "Hyperinflated" means that the lungs look larger than normal. Due to the hyperinflation of the lungs, the heart also tends to look longer. The diaphragm also is lower and flatter than normal.

However, there may be differences in the chest x-ray depending on the lung conditions. If chronic bronchitis is

more present, there may be minimal visible changes on the chest x-ray, meaning that COPD is not extremely evident on the x-ray. If emphysema is more present, an x-ray may reveal bullae, which are pockets of air at the surface of the lungs.

Pros and Cons for Chest X-rays

There are various reasons why a chest x-ray is advantageous for a person who is suspected of having COPD:

- Less costly than other diagnostic imaging
- Noninvasive
- A quick test compared to other testing that may be performed
- Can rule out other conditions that may be mimicking COPD

Unfortunately, chest x-rays do have several downsides:

- X-rays often do not reveal COPD until later stages of the diagnosis
- Chest x-rays are not as detailed as other testing, such as CT scans (occasionally, both tests will be required)

When the chest x-ray does not pick up enough detail, a CT scan is typically ordered. While the chest x-ray is able to pick up one-dimensional images, a CT scan can pick up three-dimensional images. This allows healthcare providers the ability to pick up finer details, better visualizing the patient's COPD.

Other Tests Used to Diagnose COPD

Your healthcare provider may use the chest x-ray and CT scan, coupled with the following tests, to reach a diagnosis of COPD:

- **Arterial blood gases:** measure how much oxygen and carbon dioxide (CO_2) is in the blood.
- **AAT deficiency screening:** a blood test that helps to reveal if there is a lack of alpha-1 anti-trypsin (AAT) protein; AAT helps to protect the lungs and the liver. It has been found that those with AAT deficiency are more likely to develop COPD.
- **Pulmonary function tests:** measure the strength of inhalations and exhalations and how efficiently our lungs exchange oxygen.
- **Bronchoscopy:** uses a bronchoscope (a lit scope) to examine the lungs.
- **Six-minute walk test:** assesses how well the respiratory system responds to exercise.
- **Pulse oximetry:** measures oxygen saturation of the blood.

Once a diagnosis of COPD has been achieved, your healthcare provider then needs to stage your COPD and create a treatment plan. Creating the right treatment plan helps to stem the progression of your COPD, as well as mitigate symptoms from worsening.

The Bottom Line…

A chest x-ray is used frequently as a diagnostic tool to diagnose asthma because it is a simple, cost-effective exam that is also non-invasive. It is often used with other diagnostic procedures.