

## Investigation

# 3.1B: Pulmonary Embolism

In your role as a busy Family Doctor your patients come to you for many medical problems. Many are within your ability to diagnose and treat confidently using your knowledge and the limited medical equipment in your office. To make the correct diagnosis may require specialized tests, some of which can only be performed in a hospital. Sometimes a problem is complicated enough that you would best serve the patient by sending them to a physician specializing in that area of the body or that particular medical condition. Betsy may well be one of those patients.

One of the conditions that should have worked its way up to near the top of your differential diagnosis is **pulmonary embolism**. Betsy has an acute problem, as she felt fine the day before presenting with difficulty breathing. The tightly wrapped ankle and history of recent injury are clues to the potential origin of her current problem.

So what is a pulmonary embolism and how does it happen? The word **pulmonary** is the medical word referring to the lung. An **embolism** is an obstruction, or blockage, of an artery by an air bubble, fat or a **blood clot**; in Betsy's case a blood clot (the embolus) most likely caused her embolism. A blood clot is a clump of blood cells that have stuck together.

It is possible that the bleeding that occurred internally when Betsy sprained her ankle resulted in some of the blood cells clumping together as the body tried to heal her ankle injury. If the clot broke loose inside the vein taking blood back to the **central circulation** (heart and lungs), it is possible for the embolus to get stuck in a lung and block circulation through part of that lung. That would make it difficult for Betsy to get enough oxygen into her circulation because air is going to portions of the lung that have no blood flow; that would cause Betsy to have a rapid rate of breathing as she tried harder and harder to get more oxygen into her circulation. A blockage in the lung reduces **air exchange** and causes the heart to beat more rapidly as cells throughout the body cry out for more oxygen. Would you consider this a potential emergency situation?

As a Family Doctor you realize this patient needs immediate evaluation, including several tests to confirm the diagnosis. If your hunch proves correct, Betsy will require intensive treatment that a specialist in lung diseases can best provide. You would probably call on a Pulmonologist and have him or her meet Betsy at the hospital, where she would be admitted as a patient.

Treatment of the blood clot might include **thrombolytic** drugs designed to break up the blood clot. That method of treatment is only available for a limited time following the onset of symptoms, so Betsy needs to get to the hospital right away. Following the acute treatment Betsy might be placed on an **anticoagulant** drug, a medicine that lessens the blood's ability to clot. It would be important that Betsy be careful in her lifestyle so she wouldn't accidentally injure herself in a way that might cause her to bleed to death.

In this case you made a good decision to refer Betsy to the pulmonologist so that she could be admitted to the hospital. The final diagnosis was Pulmonary Embolism. The pulmonologist was able to dissolve the clot using a thrombolytic medicine. Betsy was sent home after a few days and continues on anticoagulant medicine.

What would have happened if Betsy had developed pulmonary **emboli** (the plural of embolus) in both lungs? That circumstance probably would not have had such a happy outcome.