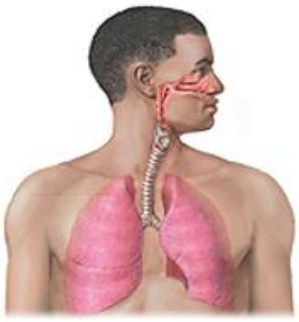
Appendix 3

Pulmonary Embolism: Patient Education

You have been diagnosed with a pulmonary embolism. Here is some basic information pulmonary embolism and how it is treated.

What is a pulmonary embolism?

Pulmonary embolism (or "PE") is a blockage in one or more of the blood vessels that supply blood to the lungs. Most often these blockages are caused by blood clots that form elsewhere and then travel to the lungs.



Why are blood clots dangerous?

If a blood clot forms or gets stuck inside a blood vessel, it can clog the vessel and keep blood from getting where it needs to go. When that happens in the lungs, the lungs can get damaged and the heart can struggle to pump the blood through the lungs. Having blocked arteries in the lung can make it hard to breathe and can even lead to death. Most blood clots that end up in the lungs form in the legs or pelvic area (where the legs connect to the body) and then travel to the lungs.

How are blood clots in the lungs treated?

Most people being treated for a blood clot in the lung are treated first in the hospital. Blood clots in the lungs are treated with medicines that keep clots from getting bigger or dissolve clots. Some of these medicines are injected directly into a vein, while others come in shots or pills. Anti-clotting medicines do not dissolve existing blood clots, but they do keep them from getting bigger. They also help keep new blood clots from forming. The body is able to dissolve clots on its own over days to weeks.

Most cases of pulmonary embolism are considered "low risk", that is the chance of dying from them is low and the treatment is relatively simple. In

some cases, a person has a clot that is severe enough to cause low blood pressure and even shock. *(Shock is when blood pressure gets too low, and not enough blood can get to the body's organs and tissues.)* This condition is called **"massive pulmonary embolism"** and when this happens it is not safe to wait for the body to dissolve clots on its own. With massive pulmonary embolism doctors can give a medicine to dissolve the clot. The medical term for this is "thrombolysis", while a more common term is "clot busting." This treatment is usually given through a vein. This treatment can help to break up clots and reduce the strain on the heart, but it can also cause bleeding elsewhere in the body. In some cases doctors may insert a catheter through the veins of the leg into the lungs and deliver the clot busting medicine directly into the lungs (this is called catheter directed therapy or CDT).

Some blood clots force the heart to work harder than normal but do not cause low pressure. This condition is called **"submassive pulmonary embolism."** Treatment for this condition must be determined on a case by case basis, weighing the benefits of various therapies against the risks of those therapies.

People who cannot take medicines to treat clots, or who fail to benefit from the medicines, can get a different treatment. This is called an "inferior vena cava filter" (also called an IVC filter). The inferior vena cava is the large vein that carries blood from your legs and the lower half of your body back up to your heart. IVC filters go inside the inferior vena cava. They filter and trap any large clots that form below the location of the filter. Your doctor might suggest one of these filters for you if:

- You cannot safely take warfarin or another anti-clotting medicine
- You form clots even while on warfarin or another anti-clotting medicine
- You have a dangerous bleeding problem while on warfarin or another anti-clotting medicine
- You are so sick that another pulmonary embolism could kill you

Risk of dying from pulmonary embolism (ranges from different studies):

- Low risk pulmonary embolism: 1%
- Submassive pulmonary embolism: 4-30%, depending on the severity or right heart impairment.

- Massive pulmonary embolism: 15% with hypotension, 30% with cardiogenic shock, 70% when associated with cardiac arrest.

Risk of bleeding from blood thinning and clot dissolving therapies:

- Heparin blood thinning: less than 1% chance of serious bleeding.

- Clot dissolving medication given into a vein: 2-3% chance of bleeding in the head, 6% chance of bleeding elsewhere.

Clot dissolving medication given through a catheter into the lungs: less than 1% chance of serious bleeding (this therapy requires placement of a catheter through the groin veins into the lungs).