### Notes:
In this lesson, you will meet 8 patients who are suffering from edema. After reviewing the information for each patient you will have an opportunity to identify the underlying pathophysiologic process that led to the edema.

### Notes:
Think back to what you learned about the pressures that cause movement between the capillaries and interstitial spaces. Remember that these pressures can push or pull fluids and solutes in and out of the capillaries, and the ability of a solute to move through the capillary wall depends on the wall’s permeability.

### Notes:
Edema occurs when capillaries leak fluid into the surrounding tissue. In other words, it is the presence of excess interstitial fluid. This can occur due to damage or increased pressure in the capillaries. When fluid leaks from the intravascular space (capillary) your body senses that loss and the kidneys retain increased sodium and water to compensate. This raises the amount of fluid circulating in the body, causing the capillaries to leak even more.
3 major mechanisms lead to the formation of edema.

- Decreased plasma oncotic pressure
- Increased capillary permeability
- Increased capillary hydrostatic pressure

Notes:
With that in mind, the 3 mechanisms that lead to the formation of edema are as follows:

1. Decreased plasma oncotic pressure. This is often related to some sort of a protein deficit.
2. Increased capillary permeability. This is due to an inflammatory response to illness or trauma.
3. Increased capillary hydrostatic pressure. This is seen when the body undergoes changes in venous pressure or experiences something other than a protein deficit or inflammatory response to illness or trauma.

Notes:
Hay Fever is an allergic reaction to airborne plant pollen.
Symptoms include itchy eyes, runny nose, nasal congestion, sore throat and sneezing.

Notes:
This patient suffers from Hay Fever. What is happening in her body to cause her nasal congestion?
What caused the edema?

- Decreased plasma oncotic pressure
- Increased capillary hydrostatic pressure
- Increased capillary permeability

Notes:
Mr. Garcia, a 76 year old retired accountant, fell going down the steps in his home.

During your physical assessment you note swelling in his right knee and ankle. What is the pathological mechanism underlying this finding?
What caused the edema?

- [ ] Decreased plasma oncotic pressure
- [ ] Increased capillary hydrostatic pressure
- [ ] Increased capillary permeability

Notes:
Your patient has a diagnosis of chronic liver disease related to hepatitis.

Notes:
The liver is responsible for the production of albumin. Why is this significant?
What caused the edema?

- Decreased plasma oncotic pressure
- Increased capillary hydrostatic pressure
- Increased capillary permeability

Notes:

This patient suffered multiple mosquito bites while hiking.

What caused this reaction?

Notes:

What caused this reaction?
What caused the edema?

- Decreased plasma oncotic pressure
- Increased capillary hydrostatic pressure
- Increased capillary permeability

Notes:
Your next patient is 7 months pregnant.

She wants to know exactly why her ankles are frequently so puffy.
What caused the edema?

- Decreased plasma oncotic pressure
- Increased capillary hydrostatic pressure
- Increased capillary permeability

Notes:
During your assessment of this 3 year old who has a recent history of malnourishment from neglect, you notice that her abdomen is distended.

What might be an explanation of this distention?
### What caused the edema?

- [ ] Decreased plasma oncotic pressure
- [ ] Increased capillary hydrostatic pressure
- [ ] Increased capillary permeability

### Notes:
This woman was burned on her face, right arm, shoulder and neck. You notice that the burned area is very edematous.

### Notes:
You understand the reason for her edema to be related to what pathophysiologic process?
What caused the edema?

- Decreased plasma oncotic pressure
- Increased capillary hydrostatic pressure
- Increased capillary permeability

Notes:
Your patient complains of frequent shortness of breath that is exacerbated during even modest physical activity. In reviewing his chart, you learn that he has been diagnosed with heart failure.

Notes:
When the heart is unable to pump and eject well, fluid is forced out of the pulmonary capillaries and into the alveoli (air sacs surrounding the lungs), resulting in what is known as pulmonary edema. Given what you know about pressures, what do you think is the underlying cause of his edema?
What caused the edema?

- Decreased plasma oncotic pressure
- Increased capillary hydrostatic pressure
- Increased capillary permeability

Review:

Notes:
In this lesson, you learned that edema is a common phenomenon in a variety of patients. Understanding the pathophysiologic mechanisms of its development will assist in identifying its cause and subsequent treatment.