6th Grade Activity 4: “Heart Parts”

Learning goals:
After completing this exercise students should be able to:
- Identify the chambers, major blood vessels and valves of the heart.
- Accurately describe the flow of blood through the heart.
- Understand that the heart’s nodes of electrical conductivity are responsible for maintaining a regular heart rate.

In order to understand the heart, it is important to understand the heart’s structure. The heart is a very muscular organ. It is about the size of your fist, and it is located in about the center of your chest, behind your sternum or breastbone.

The heart has four chambers:
- Right atrium
- Left atrium
- Right ventricle
- Left ventricle

The heart has several blood vessels that lead to it and from it:
- Vena cava – takes blood into the right atrium
- Pulmonary artery – takes blood away from the right ventricle and into the lungs
- Pulmonary vein – takes blood into the left atrium from lungs
- Aorta – takes blood away from the left ventricle to the rest of body
Another important group of structures in the heart are the valves. Valves only allow blood to flow in one direction. They prevent blood from flowing backwards through the heart.

The heart has four valves:
- Tricuspid valve – controls flow of blood from the right atrium to the right ventricle
- Pulmonary valve – controls flow of blood from the right ventricle to the pulmonary artery
- Mitral valve – controls flow of blood from the left atrium to the left ventricle
- Aortic valve – controls flow of blood from the left ventricle to the aorta

Blood follows a regular route as it travels through the heart, the lungs, and the rest of the body.

Blood that has traveled through the body returns to the heart through the vena cava. The blood empties into the right atrium of the heart. It then passes through the tricuspid valve and into the right ventricle. From the right ventricle, the blood is pumped through the pulmonary valve into the pulmonary artery. The pulmonary artery takes the blood to the lungs where it picks up oxygen. Blood returns to heart through the pulmonary vein. It empties into the left atrium. From the left atrium, the blood travels through the mitral valve into the left ventricle. Blood is pumped out of the left ventricle, through the aortic valve into the aorta. The aorta takes blood back to the rest of the body.
DISSECTION PROCEDURE:

A. Frontal View of Heart:
1.) Orient heart so the **apex** (bottom of “V”) of the heart points down and to your right.
2.) You should notice a whitish (fat deposits) line that runs diagonally across the heart.

B. Dividing Heart into Front and Back Halves:
1.) Turn the heart so that the apex is pointing up.
2.) Using scissors, start cutting at the apex and carefully cut through the heart just as if you were slicing a bagel in half.

C. View Interior of Sheep Heart (front view):
1.) Again, orient heart with the apex pointing down.
2.) Find the following structures or regions.
   a. **Right and Left Atria** – small thin-walled cavities at the top of the heart.
   b. **Right and Left Ventricles** – large thick-walled cavities that make up most of the heart.
   c. **Any of the Valves** – thin flaps of tissue with long stringy-white tendons attached.
   d. **Blood Vessels** – gently insert a probe through the blood vessel openings at the top of the heart. You can then determine which blood vessel the probe is in based on where it exits into the heart. You may not be able to find all of the blood vessels because they may have been removed from the heart you are dissecting. Try to find the aorta.

<table>
<thead>
<tr>
<th>If it exits into the:</th>
<th>The blood vessel is the:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right Atrium</td>
<td>Superior Vena Cava</td>
</tr>
<tr>
<td>Right Ventricle</td>
<td>Pulmonary Artery</td>
</tr>
<tr>
<td>Left Atrium</td>
<td>Pulmonary Vein(s)</td>
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<tr>
<td>Left Ventricle</td>
<td>Aorta</td>
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