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**a2. Lets talk about the Heart**  
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From the moment it begins beating until the moment it stops, the human heart works tirelessly. In an average lifetime, the heart beats more than two and a half billion times, without ever pausing to rest. Like a pumping machine, the heart provides the power needed for the blood to sustain life. A little known fact, the heart rarely, if ever, gets cancer.

**Anatomy of the Heart**

Located inside the human chest, the heart is the most important pump ever made. It starts to pulsate and move blood through the developing tissues months before you are born and it works ceaselessly until death. When a baby is first born the heart is less than 3.75 cm. As you grow, the heart grows.

The heart weighs about 28 grams in the adult and is about the size of your closed fist. It is really two pumps, one beside the other and each of these pumps has two chambers, an upper receiving chamber and a lower pumping chamber. This gives the heart 4 chambers in all.

**Pumping Action of the Heart**

The heart is a single organ that pushes blood through two different circuits. The right upper chamber, the Atrium, gets venous blood from veins in the head, chest, and arms via the Superior Vena Cava, and from the abdomen, pelvic region, and legs via the Inferior Vena Cava. Then the blood goes to the Right Ventricle, which pumps it through the Pulmonary Artery to the lungs.

In the lungs venous blood interacts with inhaled air, picks up oxygen, and gets rid of carbon dioxide. Oxygenated blood is brought back to the Left Atrium, or upper chamber, through the Pulmonary Veins. The Left Atrium passes blood to the Left Ventricle, which is the largest and strongest chamber, and this Ventricle pumps the blood out through the Aorta to the rest of the body.

Fibrous separators keep apart the muscular layers of the Atria from those of the Ventricles. The fibrous separator layers are the thickest and most delicate around the orifice of the aorta, the orifice of the pulmonary artery, and the atrioventricular orifices. These orifices are the passageways in and out of the heart and between the chambers of the heart.

**Blood Vessels**

There are three kinds of vessels. These are Arteries, Veins and Capillaries. An Artery always carries blood away from the heart. Veins do the opposite, they carry blood to the heart. When you cut an artery it spurts but, when you cut a vein it flows steadily until you stop it with direct

pressure. In the body tissues arteries carry bright red oxygenated blood and have thick muscular walls. The veins have dark non oxygenated blood and have thin muscular walls and valves direct the flow.

Capillaries are fine microscopic vessels that connect the Arteries to the Veins in all our tissues. These capillaries have very fine walls that allow fluids to transfer out into the tissues of our body, and allow oxygen and nutrients to go out into the tissues too. Carbon dioxide, a waste product from our cells, goes into the blood from the tissues through these capillary walls.

### **Circulation to the Heart Muscle**

The blood that nourishes the heart itself is supplied through the two coronary arteries. These arise from the aorta. They have lots of branches that come down and spread out to the heart muscle. There is a right and left coronary artery. These are the arteries doctors usually replace, in coronary artery bypass surgery. Veins are often taken from the legs and used for bypass surgery.

Regular exercise will keep your heart and blood vessels in good shape. Mixing good nutritional habits with good exercise habits is good way to prolong your life because heart and vascular disease are the major killers of humans.

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