**Research Annotations #5**

Article 1:

People often use these terms interchangeably, but they are not synonyms. A [heart attack](http://www.heart.org/HEARTORG/Conditions/HeartAttack/AboutHeartAttacks/About-Heart-Attacks_UCM_002038_Article.jsp) is when blood flow to the heart is blocked, and sudden [cardiac arrest](http://www.heart.org/HEARTORG/Conditions/More/CardiacArrest/Cardiac-Arrest_UCM_002081_SubHomePage.jsp) is when the heart malfunctions and suddenly stops beating unexpectedly. A heart attack is a “circulation” problem and sudden cardiac arrest is an “electrical” problem.

**What is a heart attack?**

A heart attack occurs when a blocked artery prevents oxygen-rich blood from reaching a section of the heart. If the blocked artery is not reopened quickly, the part of the heart normally nourished by that artery begins to die. The longer a person goes without treatment, the greater the damage. [Symptoms of a heart attack](http://www.heart.org/HEARTORG/Conditions/HeartAttack/DiagnosingaHeartAttack/Diagnosing-a-Heart-Attack_UCM_002041_Article.jsp) may be immediate and intense. More often, though, symptoms start slowly and persist for hours, days or weeks before a heart attack. Unlike with sudden cardiac arrest, the heart usually does not stop beating during a heart attack. The [heart attack symptoms in women](http://www.heart.org/HEARTORG/Conditions/HeartAttack/WarningSignsofaHeartAttack/Heart-Attack-Symptoms-in-Women_UCM_436448_Article.jsp) can be different than men.

**What is cardiac arrest?**

Sudden cardiac arrest occurs suddenly and often without warning. It is triggered by an electrical malfunction in the heart that causes an irregular heartbeat ([arrhythmia](http://www.heart.org/HEARTORG/Conditions/Arrhythmia/AboutArrhythmia/About-Arrhythmia_UCM_002010_Article.jsp)). With its pumping action disrupted, the heart cannot pump blood to the brain, lungs and other organs. Seconds later, a person loses consciousness and has no pulse. Death occurs within minutes if the victim does not receive treatment.



**What is the link?**

These two distinct heart conditions are linked. Sudden cardiac arrest can occur after a heart attack, or during recovery. Heart attacks increase the [risk for sudden cardiac arrest](http://www.heart.org/HEARTORG/Conditions/More/CardiacArrest/Understand-Your-Risk-for-Cardiac-Arrest_UCM_307909_Article.jsp). Most heart attacks do not lead to sudden cardiac arrest. But when sudden cardiac arrest occurs, heart attack is a common cause. Other heart conditions may also disrupt the heart’s rhythm and lead to sudden cardiac arrest. These include a thickened heart muscle ([cardiomyopathy](http://www.heart.org/HEARTORG/Conditions/More/Cardiomyopathy/Cardiomyopathy_UCM_444459_SubHomePage.jsp)), [heart failure](http://www.heart.org/HEARTORG/Conditions/HeartFailure/AboutHeartFailure/What-is-Heart-Failure_UCM_002044_Article.jsp), arrhythmias, particularly [ventricular fibrillation](http://www.heart.org/HEARTORG/Conditions/Arrhythmia/AboutArrhythmia/Ventricular-Fibrillation_UCM_324063_Article.jsp), and [long Q-T syndrome](http://www.heart.org/HEARTORG/Conditions/Arrhythmia/AboutArrhythmia/Conduction-Disorders_UCM_302046_Article.jsp).

**Fast action can save lives. Find out what to do if someone experiences a heart attack or cardiac arrest.**

**What to do: Heart Attack**

Even if you're not sure it's a heart attack, **call 9-1-1** or your emergency response number. Every minute matters! It’s best to call EMS to get to the emergency room right away. Emergency medical services staff can begin treatment when they arrive — up to an hour sooner than if someone gets to the hospital by car. EMS staff are also trained to revive someone whose heart has stopped. Patients with chest pain who arrive by ambulance usually receive faster treatment at the hospital, too.

**What to do: Sudden Cardiac Arrest**

Cardiac arrest is reversible in most victims if it's treated within a few minutes. First, **call 9-1-1** for emergency medical services. Then get an automated external defibrillator if one is available and use it as soon as it arrives. Begin CPR immediately and continue until professional emergency medical services arrive. If two people are available to help, one should begin CPR immediately while the other calls 9-1-1 and finds an AED.

**Sudden cardiac arrest is a leading cause of death** – over 320,000 out-of-hospital cardiac arrests occur annually in the United States. By performing Hands-Only CPR to the beat of the classic disco song “Stayin’ Alive,” you can double or even triple a victim’s chance of survival. Learn the two easy steps to save a life at [heart.org/handsonlycpr](http://www.handsonlycpr.org/).

Article #2

## What are heart valves?

The heart consists of four chambers--two atria (upper chambers) and two ventricles (lower chambers). There is a valve through which blood passes before leaving each chamber of the heart. The valves prevent the backward flow of blood. They act as one-way inlets of blood on one side of a ventricle and one-way outlets of blood on the other side of a ventricle. The four heart valves include the following:

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| Click image to enlarge |

* **Tricuspid valve.** Located between the right atrium and the right ventricle.
* **Pulmonary valve.** Located between the right ventricle and the pulmonary artery.
* **Mitral valve.** Located between the left atrium and the left ventricle.
* **Aortic valve.** Located between the left ventricle and the aorta.

## How do the heart valves function?

As the heart muscle contracts and relaxes, the valves open and close, letting blood flow into the ventricles and out to the body at alternate times. The following is a step-by-step illustration of how the valves function normally in the left ventricle:

* After the left ventricle contracts, the aortic valve closes and the mitral valve opens to allow blood to flow from the left atrium into the left ventricle.
* The left atrium contracts and more blood flows into the left ventricle.
* When the left ventricle contracts, the mitral valve closes and the aortic valve opens so blood flows into the aorta and out into the systemic circulation to the rest of the body.

## What is heart valve disease?

Heart valve disorders can arise from two main types of malfunctions:

* **Regurgitation (or leakage of the valve).** The valve(s) does not close completely, causing the blood to flow backward through the valve. The heart is forced to pump more blood on the next beat, making it work harder.
* **Stenosis (or narrowing of the valve).** The valve(s) opening becomes narrowed, limiting the flow of blood out of the ventricles or atria. The heart is forced to pump blood with increased force in order to move blood through the narrowed or stiff (stenotic) valve(s).

Heart valves can develop both malfunctions at the same time (regurgitation and stenosis). Also, more than one heart valve can be affected at the same time. When heart valves fail to open and close properly, the implications for the heart can be serious, possibly hampering the heart's ability to pump blood adequately through the body. Heart valve problems are one cause of heart failure.

## What are the symptoms of heart valve disease?

Mild heart valve disease may not cause any symptoms. The following are the most common symptoms of heart valve disease. However, each individual may experience symptoms differently. Symptoms may vary depending on the type of heart valve disease present and may include:

* Chest pain
* Palpitations caused by irregular heartbeats
* Fatigue
* Dizziness
* Low or high blood pressure, depending on which valve disease is present
* Shortness of breath
* Abdominal pain due to an enlarged liver (if there is tricuspid valve malfunction)

Symptoms of heart valve disease may resemble other medical conditions and problems. Always consult your doctor for a diagnosis.

**Research Assessment #5**

**Date:** October 21, 2016

**Subject:** Cardiology

**MLA Source(s):**

"Heart Attack or Sudden Cardiac Arrest: How Are They Different?" *Heart Attack or Sudden Cardiac Arrest: How Are They Different?* Web. 21 Oct. 2016.

"Heart Valve Diseases." *Johns Hopkins Medicine, Based in Baltimore, Maryland*. N.p., n.d. Web. 21 Oct. 2016.

**Assessment:**

 As a result of my topic of study of cardiology, it is important for me to know the main types of diseases that haunt the human body, more specifically the heart. Because the heart is a major muscle in the body, it creates an ample amount of damage to the person; however, it can be easily spotted through symptoms and easily treated through the experience of the doctor. It is important to be able to recognize the different disorders and procedures in the matter of seconds to save a life. From the web articles I researched, I had gathered information about the heart muscle that will benefit me in the future.

 The first article I researched explained the often confused differences between the major heart disorders, including a heart attack and cardiac arrest. The conditions are linked; however, they have quite a contrast because each condition causes the other. I must be aware of the procedures that my team will need to act upon to save the patient's life. The causes of both conditions are severe when considering the heart attack with blood blockages and cardiac arrest with sudden heart failure. However, it is very easy to recognize through the symptoms that are displayed by the patient. These are truly what determine life or death because they may occur weeks or even days before the attack. This will help me in the medical field to save people's lives based on their care and need, assessed mainly by their symptoms. These are the signs of the heart attack which will allow me time to treat patients. Cardiac arrest is quite similar to heart attacks in the sense of symptoms and predetermined procedures. To treat patients on spot will entail me to be efficient in CPR/ AED to jumpstart the heart from shock. Overall, these two types of diseases will be my main focus in the field of cardiology.

 Additionally, my second web article explained the severity of diseases in the heart valves. From my observation of the topic thus far, it is important to be able to know the anatomy and physiology of the muscle to be able to practice on it. This will require me to be extremely familiar with the study of the heart. Due to sudden abnormalities of the valves, it makes sense that this entails heart failure. However, I will need to be prepared to realize the different disorders of the heart valves to be able to treat it with the appropriate equipment and skill. In addition, symptoms are the precursors to determining the right care for the patient, so I need to be aware of these symptoms to treat the patient effectively.

 Overall, the goal of cardiology is preventive and has room for success; however, to attain success, I must be comprehend what my job title will require of me, which are my duties and responsibilities to the patient, my knowledge about the heart, and my understanding of the disorders that will help me save not only one life, but many. In the future, I wish to take with me the drive and expectations I implement on myself today to be able to treat patients effectively by pursuing my passion for cardiology.