

Pumping Up the Heart

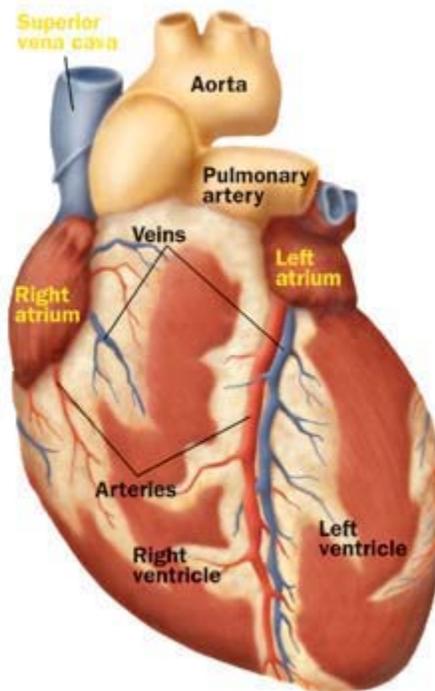
Make a fist with one of your hands. Your fist is about the size of your heart.

Your heart beats between 85 and 90 times per minute. It pumps about 5 quarts of blood through your body's 60,000 miles of blood vessels in one minute!

Even though the heart is a powerful muscle, many people's hearts don't work properly. A study by Dr. Eric Rose indicates that a mechanical pump might help many of those patients.

Pump May Save Lives

Some people's heart muscles are so weak that the heart can't pump enough blood through the body. That condition is called heart failure, and it can be deadly.



Leigh Haeger

The drawing shows some parts of the heart. Look up what each part does.

A report from the American Heart Association says about a little more than 5 million Americans suffered from heart failure in 2013. Another report says that about 400,000 Americans develop it each year.

Powerful drugs or a heart transplant can help many people who suffer from heart failure. But the drugs don't always work, and heart transplants are risky.

For years, doctors have inserted a mechanical pump in the bodies of some patients who were waiting for a heart transplant. The pump helped the heart do its job.

The study by Dr. Rose shows that the pump could be used permanently, instead of a heart transplant. Pumps may be able to save the lives of up to 100,000 Americans a year, the study says.

The VAD

The mechanical pump is known as a VAD, or ventricular assist device. VADs come in several sizes and shapes. The smallest pump sizes can be implanted in a person's heart and belly. A tube goes from the pump through the skin to a control unit placed on the person's waistline. The control unit is connected to at least one battery pack that sits in a strap by the side of the person's body.

"This technology is going to make huge leaps in the next two to three years," heart surgeon Robert Kormos predicted.

Name: _____ Date: _____

1. According to the American Heart Association, about how many Americans suffered from heart failure in 2013?

- A less than 100,000
- B more than 20 million
- C a little more than 5 million
- D 400,000

2. The passage states that a solution to the problem of heart failure is the VAD. How many lives could the pumps save?

- A 5 million a year
- B 100,000 a year
- C 60,000 a year
- D 85 a year

3. Based on the passage, it is likely that

- A heart transplants are very safe
- B more doctors will use mechanical pumps instead of heart transplants
- C powerful drugs are the best treatment for heart failure patients
- D heart failure is not a problem in the U.S.

4. Read these sentences from the text.

"For years, doctors have inserted a mechanical pump in the bodies of some patients who were waiting for a heart transplant.

[. . .]

"The study by Dr. Rose shows that the pump could be used **permanently**, instead of a heart transplant."

What does the word **permanently** mean?

- A a short time
- B forever
- C once in a while
- D never

5. What is the main idea of this passage?

- A the use of a mechanical pump as a solution to heart failure
- B how to live a healthier life to prevent heart failure
- C the different designs of health pumps to choose from
- D how doctors put heart pumps into a body

6. What are two solutions doctors have used to help heart failure patients other than the mechanical pump?

7. Based on the passage, why will pumps most likely be able to save the lives of up to 100,000 Americans a year? Support your answer with evidence from the text.

8. Choose the word that best completes the sentence.

A healthy human heart is a powerful muscle, _____ people with heart failure have hearts with weak muscles that can't pump enough blood through the body.

- A but
- B because
- C so
- D after

9. Answer the following questions based on the sentence below.

Doctors inserted a mechanical pump in bodies of patients because the patients were waiting for a heart transplant.

Who? doctors

What did doctors do? _____

Where? _____

Why? _____

10. Read the vocabulary word and definition below and complete questions 10a and 10b.

Vocabulary Word: risky (risk · y): a situation, activity, or action that is dangerous; something that is more likely to fail than to succeed.

10a. Read the sentences below and underline the word **risky**.

1. Doctors think that heart transplants are risky because sometimes patients do not survive the operation.
2. Cliff jumping is a risky activity because many people can hurt themselves on the rocks.
3. Walking by yourself at night can be risky, so always make sure that you walk with someone else.
4. Driving in a car without a seatbelt is risky, because you never know when an accident might happen.
5. The acrobat liked to do risky things, like walk on a wire between two buildings, in order to shock people.

10b. Use the word "risky" in a sentence.
