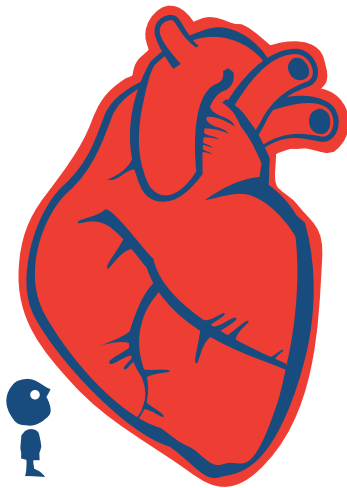


 **MERCK** Presents



THE GIANT HEART

A Healthy Interactive Experience



The Franklin Institute
Science Museum



welcome

Dear Students,

Right now, as you are reading this letter, your heart is hard at work pumping blood throughout your body! In fact, the human heart never stops working. It's an amazing organ that gives us the power needed for life.

The Franklin Institute Science Museum has a long and rich "heart history." More than 50 years ago, the Giant Heart exhibit opened here. It was and still is the largest walkthrough heart in the country. Millions of people have traveled through its chambers to experience the sights and sounds of the heart and to learn just what makes their own hearts beat.

The Giant Heart is now part of a new exhibit, *The Giant Heart: A Healthy Interactive Experience*. When you visit this exhibit with your family, you can exercise with skeletons, have a conversation with a vending machine, measure your own blood, and watch a simulated open-heart surgery!

This supplement was written to help you uncover the mysteries of the heart. It will help you learn about the science behind how the heart works, about the people who have dedicated their lives to heart research, and how the decisions you can make now to keep your heart healthy for a lifetime.

We hope you will complete the activities inside this guide and then visit us at the Franklin Institute. We'll be ready to open our "heart to you!"

Dennis H. Whit



Resources That Can't Be 'Beat'

The Heart: An Online Exploration
<http://www.fi.edu/learn>
 The Franklin Institute's online, interactive heart site.

American Heart Association
www.americanheart.org

Information on warning signs, risk, treatment and prevention of heart disease.

The Healthy Refrigerator
www.healthyfridge.org
 Dedicated to helping families stock their refrigerator with heart-healthy foods.

Heart Information Network
www.heartinfo.org
 Wide range of information and

services for heart patients and others interested in learning about lowering risk factors for heart disease.

Johns Hopkins Heart Health
<http://www.jhbmc.jhu.edu/cardiology/rehab/patientinfo.html>
 In-depth look at medical topics, lifestyle topics, and research as they relate to the heart.

insidethegiantheart

The Giant Heart that beats inside The Franklin Institute has been a Philadelphia icon since 1954. More than 30 million people have learned what their heart looks and sounds like while walking through the chambers of the Giant Heart. Since its most recent “surgery,” the Heart is now the centerpiece of *The Giant Heart: A Healthy Interactive Experience*, the Institute’s new heart-health exhibit. The “revitalized” Heart has new sounds, technologies and interactive devices. Read on to find out just what makes Philadelphia’s most famous organ beat! Then take a trip to The Franklin Institute, and see the Heart for yourself!

Open Heart

- The original Heart, called the Engine of Life, was built as a temporary exhibit in January of 1954. It became so popular that it remained open permanently.
- The first Heart was made with four tons of plaster and paper mache.

Vital Statistics

- The Heart is 15,000 times larger than your human heart. It weighs four tons.
- It would be the right size for a 220-foot tall person (the size of the Statue of Liberty).



- You’ll walk about 200 feet when you go from entrance to exit of the Giant Heart.

Circulation

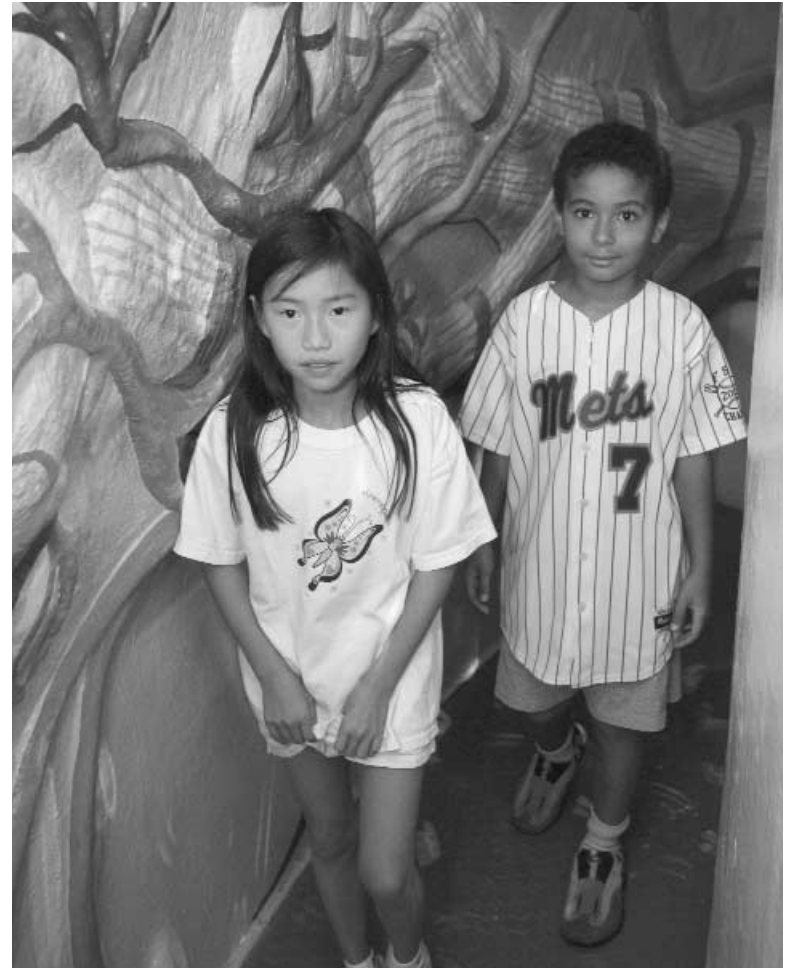
- The first year the Heart was open, it had 250,000 visitors.
- It is estimated that 30 million visitors have walked through its chambers.

Heart Rate

- The original cost of the Heart was \$40,000, which would equate to \$700,000 today.

After Surgery

- The new Heart has updated anatomical details, such as the tricuspid valve on the heart’s right side; special sound and lighting effects; a 3D monitor; updated lighting and audio systems; and a new coat of paint!
- The Heart is now the centerpiece of a new exhibit called, *The Giant Heart: A Healthy Interactive Experience*, which centers on four themes: heart anatomy and physiology; blood; health and wellness; and diagnosis and treatment. Read through this supplement to learn all about the fun, interactive displays that are part of the new exhibit!



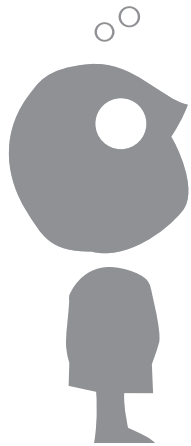
Take The Pulse!

Millions of people have walked through the Giant Heart! Have your parents or grandparents walked through it? How many people in your community have visited the heart? Design a survey for your class to conduct that will give you information about the percentage of people in your town who have visited the heart, and whether age or gender plays a role.

heartbeat

Let's get to the heart of the matter ... the human heart is an amazing organ! From the moment it begins beating until it finally stops, the human heart works without a break. In a life-span of 70 years, the heart beats more than two billion times, without ever stopping to rest. The heart's job is to pump blood throughout your body to give you the oxygen and nutrients you need to live. It also carries away the waste that your body must get rid of. Your heart is about the size of your fist, and it grows as you do. Your heart beats about 100,000 times in one day and about 35 million times in a year.

didyouknow?



- It only takes about 20 seconds to pump blood to every cell in your body.
- If you listen to your heart beat, you'll hear a "lub" and a "dub." These sounds are made by the heart valves as they open and close.
- Your body has about six quarts of blood. In one day, the blood travels about 12,000 miles.
- Humans' blood is red, octopus' blood is blue; caterpillars' blood is green.



Caption xxx

heartivities



Cross Your Heart

Your heart is made up of four different blood-filled chambers (areas). There are two chambers on each side of your heart; one on top and one on bottom. The two chambers on top are the left and right atrium; they fill with blood returning to your heart from your body and lungs. The chambers on the bottom are called the ventricles. They squirt out the blood to the body and lungs. Here's how it works! The atria fill with blood, then dump it into the ventricles. The ventricles then pump blood out of the heart while the atria refill and get ready for the next pump. Four special valves control the blood flow so it all moves forward rather than backward. The arteries are the passageways through which the blood is delivered. The veins carry the deoxygenated blood back to the lungs to pick up more oxygen.

There are many songs and poems written about the heart, but very few about how the heart works. Write a song or poem that explains the form and function of this very special organ!

Pump You Up!

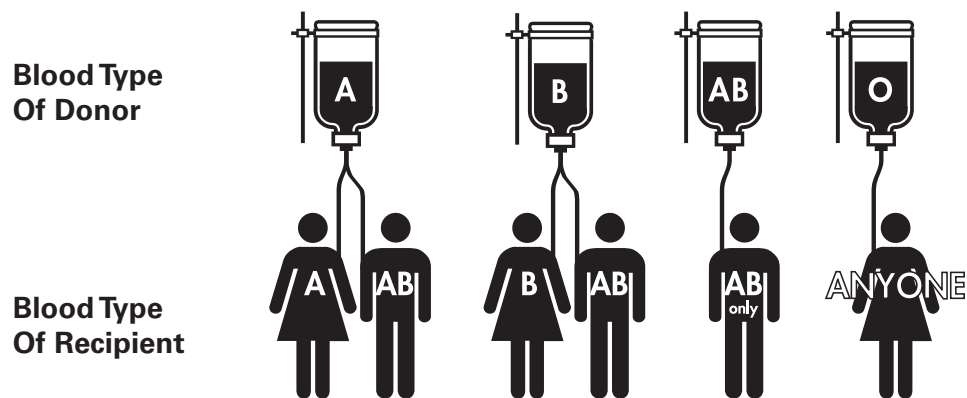
Your heart is like a pump or two pumps in one. The right side of your heart receives blood from the body and pumps it to the lungs. The left side receives blood from the lungs and pumps it out to the body. Before each beat, your heart fills with blood. Then its muscle contracts to squirt the blood along. Your heart pumps all day and all night, all the time. A seven-year-old child's heart beats about 90 times per minute. By the age of 18, the heart rate stabilizes to about 70 beats per minute. The bottom line is that your heart works hard!

Lay your hand palm side up on your desk and count how many times you can open and close your hand for one minute. Can you do it for 90 times during that minute? At what point does your hand start getting tired? What does this tell you about the strength of the heart?



HEARTatHOME

Do you know your blood type or the blood types of your family members? In the early 20th century, an Austrian scientist named Karl Landsteiner observed two distinct chemical molecules present on the surface of red blood cells. He labeled one molecule "A" and other molecule "B." If the red blood cell had only "A" molecules, it was called type A. if it had only "B" molecules, it was called type B. If it had a mixture of both, it was called type AB. If it had neither molecule, it was called type O. If two different blood types are mixed together inside a person's body, the cells may clump together and the person could die. Find out the blood types of everyone in your family. Then refer to the chart below to see who in your family could donate blood to whom.



Caption XXX

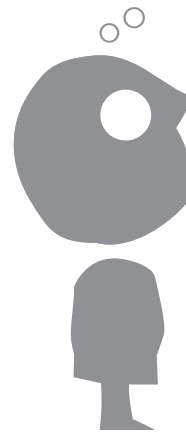
At the Heart of the Franklin

Check out these interactives that relate to the heart's form and function at *The Giant Heart: A Healthy Interactive Experience!*

Pump It Up! – Try to keep pace with the 3-D beating heart!

Spiral Sounds/Stethoscope – Listen to the heartbeats of different animals.

Bucket of Blood – See how much blood is in your body based on your weight!



heartivities

The Pulse

During each heartbeat, the muscles of your heart contract causing a wave of pressure which forces blood through the arteries. This wave of pressure is called a pulse. The normal pulse rate changes with age, exercise level, when you're sick, after eating, and when you're scared or relaxed. Your pulse can be felt at different points on you body. Two common pulse points are on the neck -- beneath the ear and jawbone -- and on the palm side of your wrist.

Place your index and middle finger in one of these points to try to find your pulse. Count the number of beats in 15 seconds and multiply by four to see how many times your heart beats in one minute. This is your resting heart rate. What is the average resting heart rate of students in your class? Collect heart rates of people of different ages, and draw conclusions about how heart rate changes with age.

Heart Beat News

People with a lot of stress in their lives often have higher blood pressure, which causes their hearts to work harder. Find someone in the Inquirer who likely has a great deal of stress in his or her life. Then write your "stressed out" newsmaker an imaginary letter about the negative impact of stress to the heart.

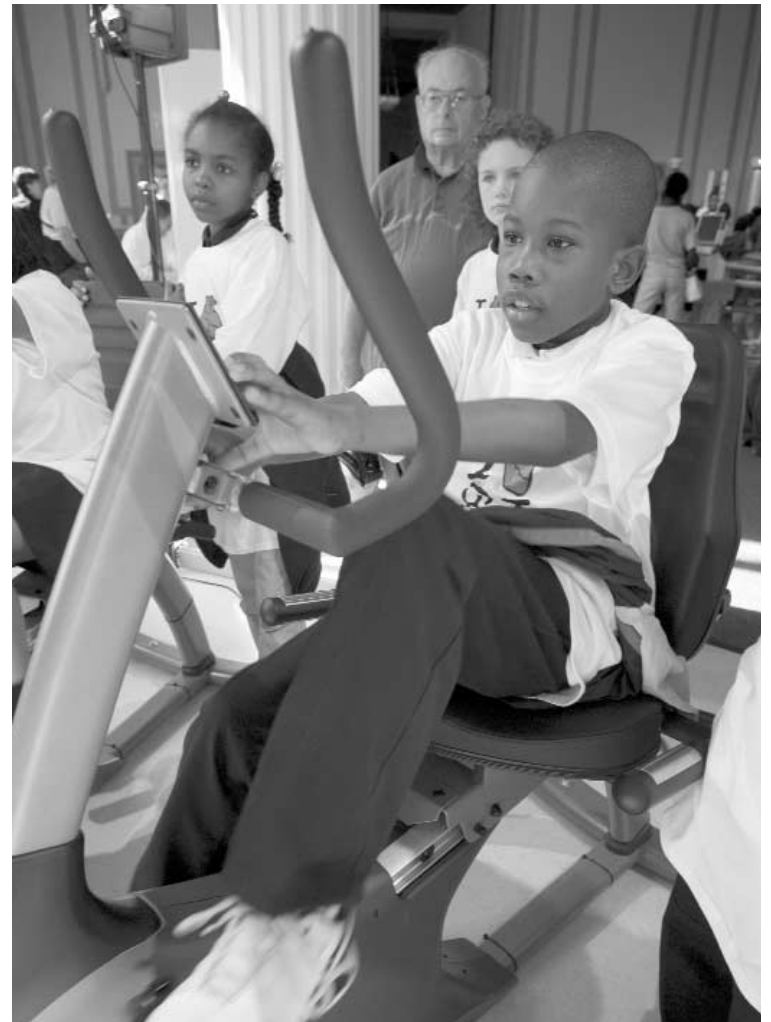
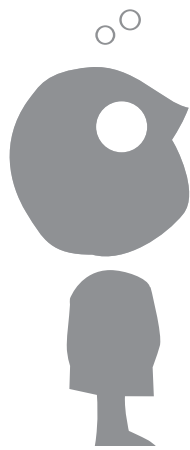


hearthealth

Since your heart is a vital organ, it's very important that you keep it healthy. Unfortunately there are many people whose hearts are not healthy. In fact, heart disease is the number one killer of men and women in the United States. Every 33 seconds someone dies in the U.S. from heart disease. While we can't control some risk factors of heart disease such as genetics, there are many things we can do from a very early age to reduce our risk of heart disease. The habits that you form now will have a direct impact on the health of your heart now and in the future. There really are three basic rules for keeping your heart healthy: eat right, exercise, and stay away from cigarettes, drugs and alcohol!

didyouknow?

- By the age of 12, an estimated 70% of children have developed the beginning stages of hardening of the arteries.
- Each year, over 300,000 Americans die of smoking-related heart disease.
- One in five Americans has high cholesterol.
- Children are less physically fit now than they were when their parents were young.
- You should consume no more than one teaspoon of salt per day. Sodium retains fluid in the body, which makes the heart work harder



Caption xxx

heartivities



Work It!

Your heart is a muscle and, like every other muscle, it needs to be exercised! So, how does exercise help your heart? Exercising increases the number of blood vessels bringing oxygen-rich blood to the heart muscle; it reduces the tendency of the blood to form clots that can trigger heart attacks and strokes; it helps blood vessels relax and improves blood flow; and it strengthens and tones the heart muscle so that it pumps more efficiently. There are two types of exercise: aerobic and anaerobic. Aerobic activities use the arm and leg muscles and give the heart a continuous workout. Anaerobic activities build and tone muscles, but are not as beneficial to the heart and lungs as aerobic activities. Students your age should do 30-60 minutes of aerobic exercise at least four times per week.

Brainstorm a list of aerobic activities that students your age would enjoy. Then create an exercise program, brochure, or video for students your age to follow. Include information about how your program will help the heart.

Lower Your Cholesterol

Have you ever heard someone say they were watching their cholesterol? That's because high cholesterol (a fat-like substance) in the body is a leading risk factor for heart disease. When you have too much cholesterol in your blood, it can cause plaque to build up and block your arteries. If your arteries become too blocked, the blood can't reach your heart and you can suffer a heart attack. This build-up can begin at your age, so it's important that you watch your cholesterol too! You get cholesterol in two ways: your body makes some, and some comes from cholesterol in animal products that you eat. Other foods contain trans-fats or saturated fats that cause your body to make cholesterol. For all of these reasons, you need to watch the amount of cholesterol, trans-fats and saturated fats in the foods you eat. Someone your age should consume no more than 300 mg of cholesterol each day.

Read the food labels for the foods you eat for one day. Write down the amount of cholesterol for each food item. Did you stay within the recommended guidelines?



HEARTatHOME

Another way to improve the health of your heart is to find ways to relax and reduce stress in your life. Stress and anxiety can lead to high blood pressure, which causes your heart to work harder. Talk with family members about how you can all find time to relax more. Ideas include listening to music, exercising, meditating, talking long walks, and reading.

At the Heart of the Franklin

Check out these interactives that relate to the heart's form and function at *The Giant Heart: A Healthy Interactive Experience!*

Skeleton Icon – Exercise on a cross-training machine with a human skeleton!

Day in the Life – Watch your heart rate change as you experience the sounds of everyday life.

Talking Vending Machine – Interact with a talking vending machine and its healthy and not-so-healthy food choices.

heartivities

Smokeout

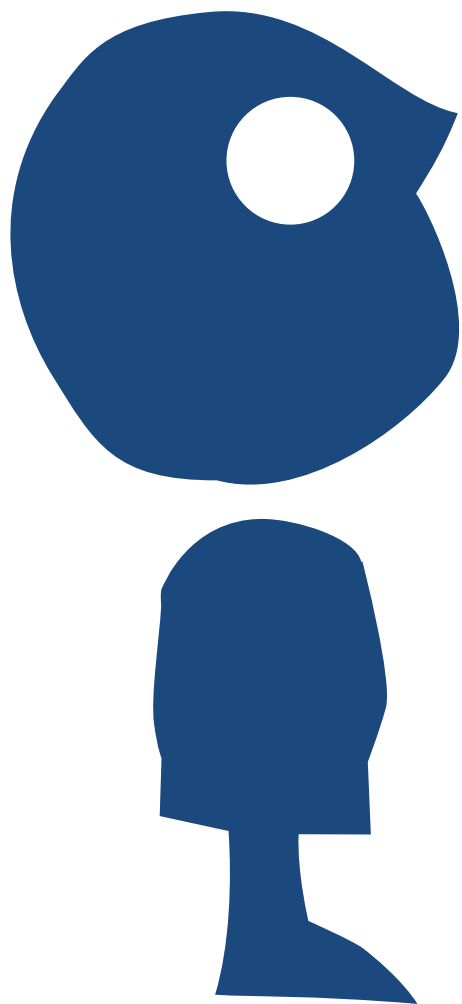
Smoking is the most important preventable risk factor for coronary heart disease. In fact, smokers' risk of heart attack is more than twice that of non-smokers. There are several reasons for this:

- Cigarettes contain nicotine, which causes blood vessels to narrow, temporarily increasing your blood pressure.
- Nicotine produces adrenaline which makes the heart beat faster, causing the heart to work harder.
- Nicotine makes the blood "sticky" and more likely to clot and block the blood vessels.
- Carbon monoxide found in cigarettes is a poisonous gas (also present in car exhaust fumes) and is picked up by the blood more readily than oxygen, leaving less 'room' for oxygen in the blood. The oxygen-carrying capacity of a smoker's blood can be cut by up to 15%. This means that the heart has to work much harder to get enough oxygen all around the body.
- Write someone you care about a letter telling them why they should stop smoking. Include specific information on the impact of smoking on their heart.

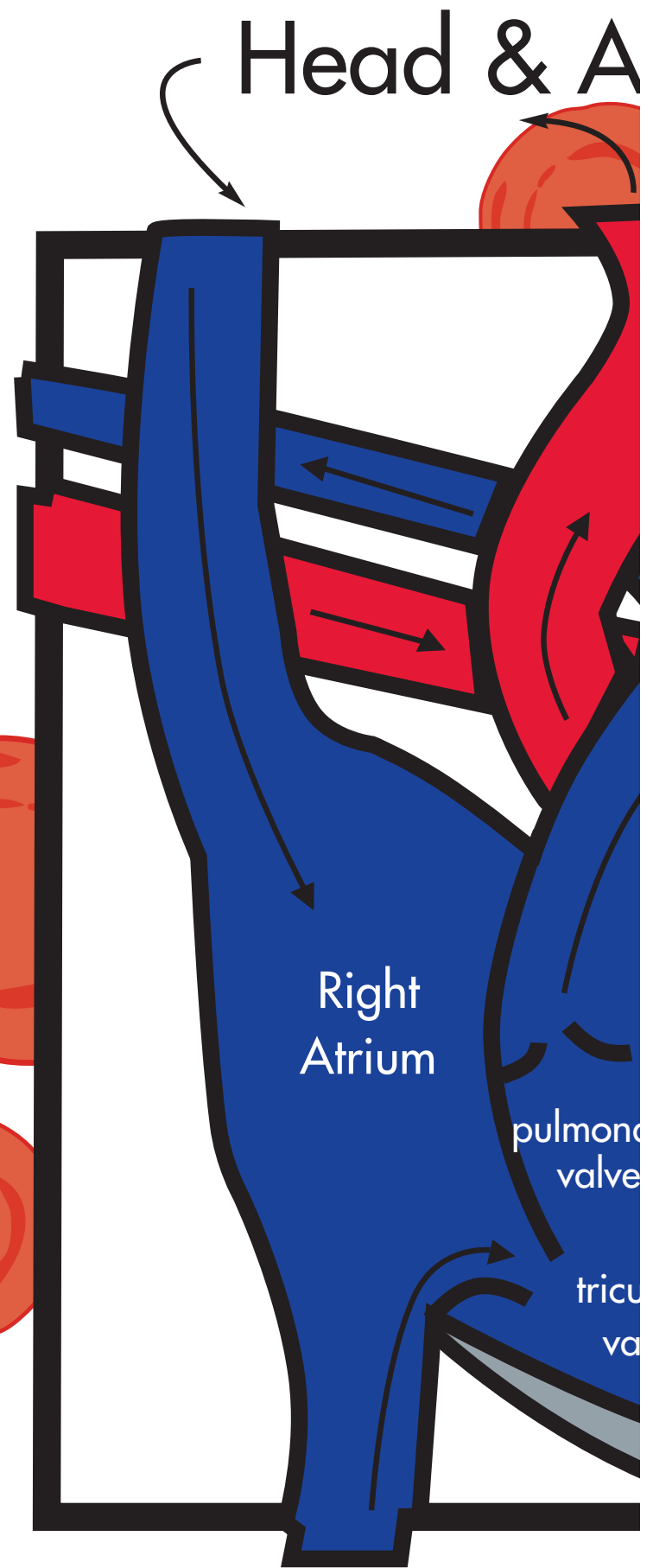
Heart Health News

Young people are the chief source of new consumers for the tobacco industry, which each year, must replace the many consumers who quit smoking and those who die from smoking-related diseases. Design an *Inquirer*-style advertisement to persuade young people NOT to smoke.

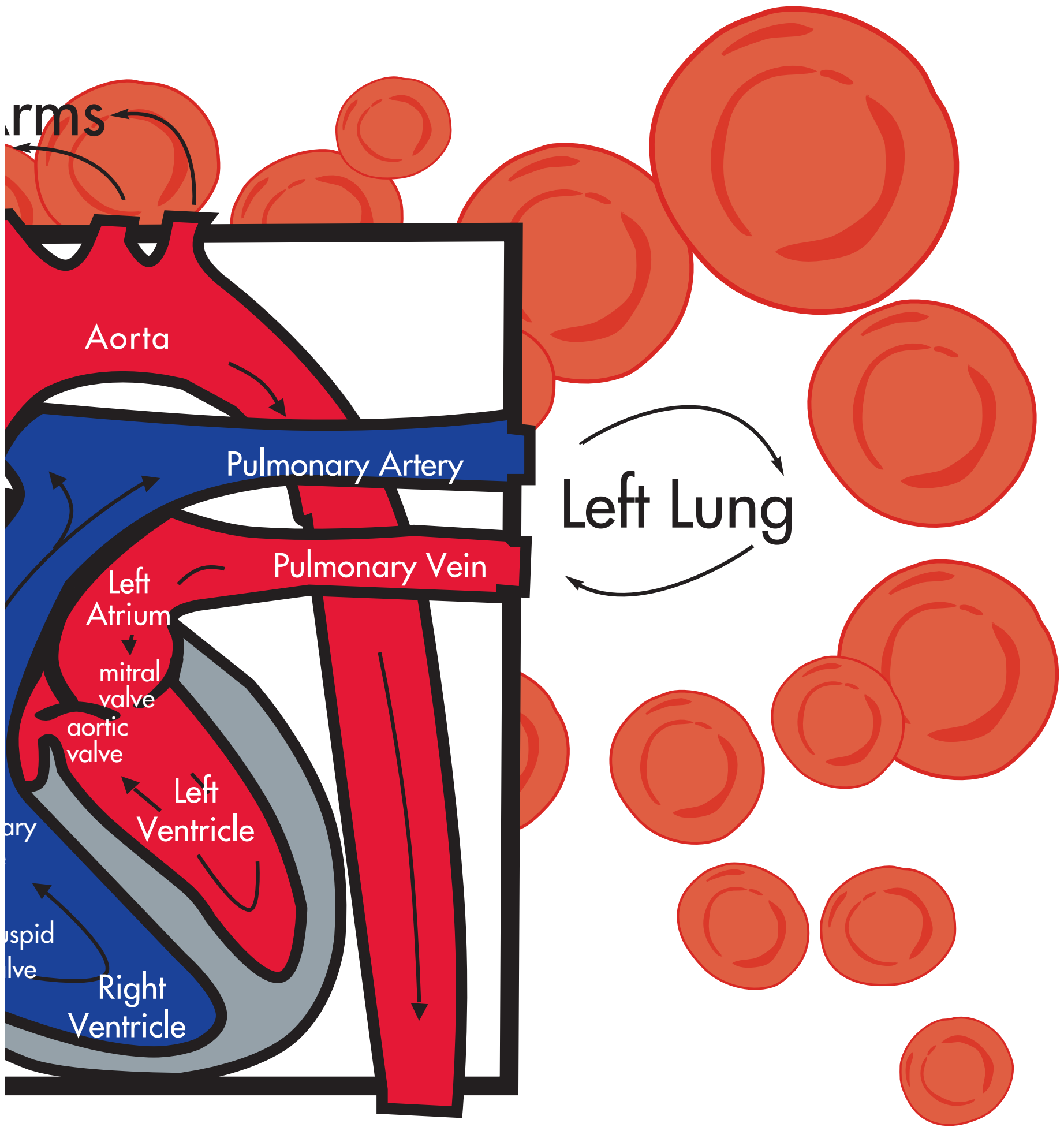
THE HEART AND HOW IT WORKS



Right
Lung



Tru



Arms

Aorta

Pulmonary Artery

Pulmonary Vein

Left Atrium

mitral valve

aortic valve

Left Ventricle

Right Ventricle

ary

tricuspid valve

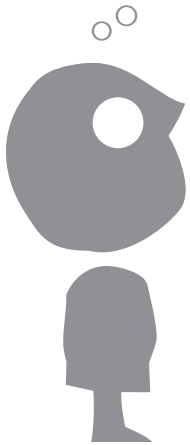
Left Lung

Tunk & Legs

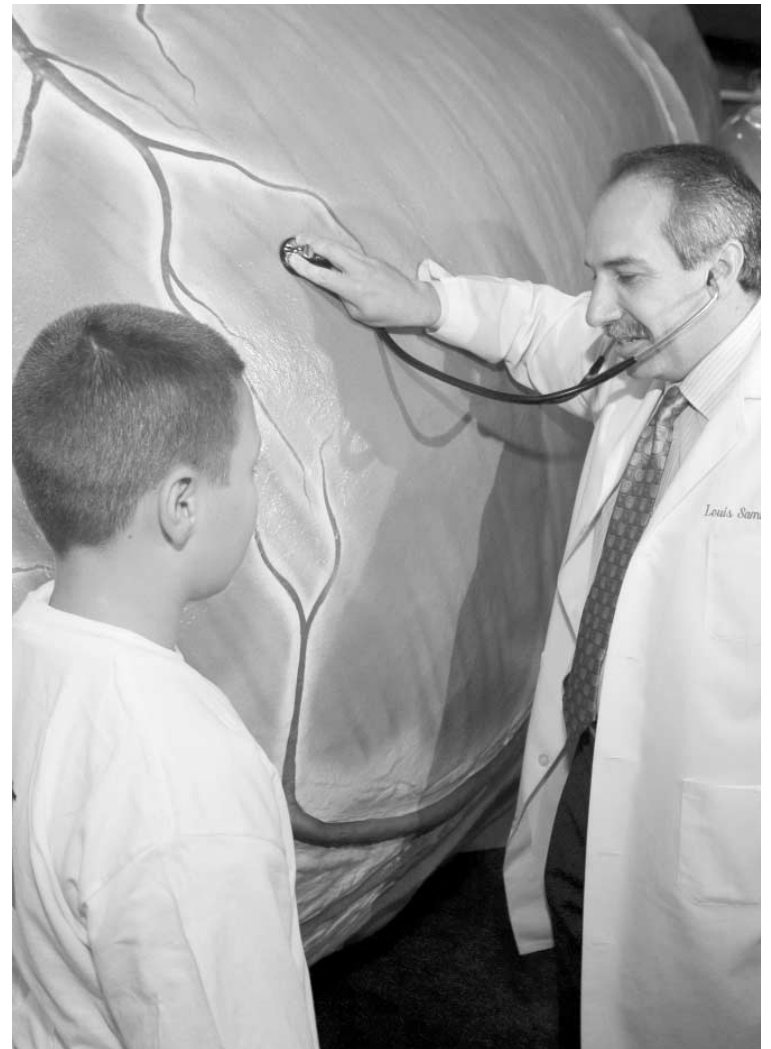
diagnosisandtreatment

It's very important to make sure that your heart is working right. That's why your doctor always listens to your heart with a stethoscope and checks your blood pressure and pulse. If your doctor sees something in your heart that needs to be checked more carefully, he might refer you to a cardiologist. Cardiologists specialize in preventing and treating heart disease. Cardiologists are helped by scientists and researchers who study the heart to learn as much as they can about how the heart works and the causes and cures of heart disease. In the last century, we have learned a lot about how to best check the heart and how to prevent and treat heart disease.

didyouknow?



- Before the stethoscope was invented, doctors used to put their ears to patients' chests to listen to the heart.
- The average pulse rate of a newborn is up to 140 beats per minute, and the average pulse rate of an elderly person is 50 to 65 beats per minute.
- At least eight out of every 1,000 infants born each year have a heart defect.
- The first open heart surgery patient was cooled by a special blanket until her body reached 81 degrees F; at this temperature, she could survive without a pumping heart for 10 minutes.
- High blood pressure has no symptoms.



Caption xxx



Make a stethoscope

A stethoscope is an instrument that a doctor places on your chest to listen to the sound of your heart. The first stethoscope, made of stacked paper rolled into a cylinder shape, was invented in 1816 by a French physician named Rene' Laennec. You've probably seen a stethoscope when you go to your doctor. The normal heart sounds, lub and dub, can be heard. Any unusual sounds can also be heard, such as heart arrhythmias and heart murmurs. This can tell your doctor a lot about how your heart is working.

Think of materials you could use to make your own stethoscope. You may want to use an empty paper towel roll to model an early stethoscope or two funnels and some rubber tubing to make a modern version. Use these materials to make your stethoscope. Then, with a partner, listen to the sounds of the heart. What do the sounds tell you?

Online Cardiologist

The Franklin Institute's Web site has many tools to help you "check out" the sights and sounds of your heart.

Listen to hearts beating at different rates at

<http://sln.fi.edu/biosci/monitor/heartbeat.html>.

Hear a heart murmur at <http://www.fi.edu/biosci/healthy/disease.html>.

View an x-ray of a normal and enlarged heart at <http://www.fi.edu/biosci2/monitor/images/xray.jpg>.

Watch open heart surgery at <http://sln.fi.edu/biosci/healthy/openheart.html>.



HEARTatHOME

Blood pressure is a measure of the force of blood against the walls of the arteries. Your blood pressure rises each time your heart beats and falls when your heart relaxes between beats. There are two numbers in a blood pressure reading: systolic and diastolic. A typical blood pressure reading is 120/80 (one hundred twenty over 80). Blood pressure is taken using a sphygmomanometer (sfgm-m-nm-tr). The doctor puts a cuff around your arm and pumps it up, cutting the blood flow. As the pressure in the cuff is released, blood starts flowing again and your doctor can hear the flow in the stethoscope. The number on the mercury in the sphygmomanometer when the blood starts flowing again is the systolic reading (120). As the pressure on the cuff is released even more, there is no sound and the heart is relaxed. That number on the mercury is the diastolic reading (80). If the numbers are too high, the heart is working too hard. This can cause your heart to fail. Many supermarkets have blood pressure machines where you can measure your own blood pressure. Take a family trip to the supermarket and measure person's blood pressure. Record the readings below, and compare it to the averages listed.



Caption XXX

At the Heart of the Franklin

Check out these interactives that relate to the heart's form and function at *The Giant Heart: A Healthy Interactive Experience!*

Blood Pressure – Measure your own blood pressure and learn what the numbers mean.

Surgical Theater – Watch a simulated open-heart surgery.

Stack It Up – Look at five “slices” of the human body with images of cross-sections on both sides to see what the inside of your body looks like!



Diagnosis and Treatment News

Track the Inquirer for a two week period and collect all articles that relates to the heart. This can include articles about exercise, eating right, diagnosis and treatment of heart disease, people with heart disease, and new technologies. Determine how each article impacts children your age, and generate a list of important age-specific information and tips that relate to the heart.

heartivities

Heart Pioneers Mix & Match

For much of history, the human heart was regarded as a mysterious organ too delicate to tamper with. But many physicians, scientists and researchers around the world have dedicated their lives to developing technologies and diagnostics that help us better understand our heart and what can help it. Match these “heart pioneers” to the technologies for which they are known. You may need to do a little research!

A. Daniel Hale Williams

B. Maude Abbott

C. James Herrick

D. John H. Gibbon

E. Christian Barnard

F. William DeVries

G. William Einthoven

H. Stephen Hales

1. Dutch physician who developed the electrocardiograph, also known as the EKG (1903)
2. English scientist who first measured blood pressure. (1733)
3. American physician who first described heart disease resulting from hardening of the arteries. (1912)
4. American physician who completed first successful open heart surgery. (1893)
5. American surgeon who first used a mechanical heart. (1953)
6. South African surgeon who performed the first whole heart transplant from one person to another. (1967)
7. American surgeon who implanted the first permanent artificial heart into a patient. (1982)
8. Canadian physician and researcher who invented an international classification system for congenital heart disease. (1936)

heartnews

Current issues relating to the heart, heart disease, and the prevention of heart disease are frequently part of the day's news. We often read about famous and not-so-famous people suffering from heart disease and heart attacks, or scientists working to improve early detection of heart disease and the best methods for treating it.

Following are excerpts from three recent articles from *The Philadelphia Inquirer* that give us insight into our heart. One chronicles a former president as he undergoes heart bypass surgery. A second follows a heart researcher as he studies the heart. And the third shares research on how to add years to your life.



Clinton to have heart bypass

Kevin Rivoli (AP), September 4, 2004.

The coronary bypass surgery that President Clinton (has undergone) has become an extremely common and successful way to fix blocked arteries.

Clinton, 58, checked into a Manhattan hospital after complaining of chest pains and shortness of breath, according to his office.

Doctors at New York Presbyterian Hospital-Columbia performed an angiogram – taking X-ray images of Clinton's coronary arteries after dye was injected – that revealed the problem.

Bypass surgery is recommended when blockages are too numerous and severe for less invasive procedures, notably angioplasty, to clear and prop open the arteries.

During bypass surgery, which takes about four hours, surgeons take a segment of healthy blood vessels from another part of the body – a leg, the chest, or an arm – and microsurgically attach it to carry blood around the obstruction. The use of three, four, or even five bypasses is now routine, cardiac surgeons say.

The former president blamed the blockage in part on genetics, but also said he “may have done some damage in those years when I was too careless about what I ate.”

The operation is technologically sophisticated and invasive, typically involving cutting open the chest and temporarily putting the patient on a heart-lung machine. Infection, bleeding and stroke are risks, as with all major surgery.

Even so, an estimated 516,000 Americans underwent the operation in 2001, with mortality rates below 2 percent, according to the American Heart Association.

New York Presbyterian, one of the nation's top cardiac hospitals, has been a pioneer in the use of minimally invasive robot-assisted heart surgery, including the nation's first robot-assisted bypass in January 2002. The surgery requires making three pencil-size holes between the ribs; then, two robotic arms and a tiny camera that gains access to the heart, making opening the chest unnecessary.

In January, Clinton said he had gone on the South Beach diet and was working out. Even so, he could have been building up fatty plaque in his blood vessels for decades. There is a lot of reserve in the arteries,” said Dr. Michael Acker, “An artery that is 20 or 30 percent obstructed – even 40 or 50 percent – may not cause any symptoms.”

While Clinton cited genetics, he does not have some of the classic risk factors for heart disease, namely high blood pressure, diabetes, and a sedentary lifestyle.

Surgery will not cure his underlying heart disease, cardiologists say. He may need to take a cholesterol-lowering drug, a blood thinner, and modify his diet.

Complications of the Heart

Weight and cholesterol are only two of a table of factors that cause cardiovascular disease, a Penn researcher finds

Faye Flam (Inquirer Staff Writer), June 7, 2004.

Four days a week, Daniel Rader works in his lab at the University of Pennsylvania, pushing back the boundaries of heart disease research. His aim is to discover new ways to protect people from the country's number-one killer. But on Tuesday mornings, the much-in-demand Rader, 44, sees the people his research is trying to help. Most have problems that often defy standard treatment or explanation.

The emerging picture of heart disease is murkier and more complicated than ever – and Rader's career has carried him into the thick of it. In addition to weight and cholesterol, a host of other risk factors are beginning to explain why some people build up plaque and why every year, half a million Americans die of heart attacks. Rader, director of Penn's Preventive Cardiovascular Medicine and Lipid Center, is gathering clues from people with unusual genetic profiles – those who can't make any cholesterol, for instance, and children with such high cholesterol they need bypass surgery before age 10.

Rader has the respect of heart experts around the country who acknowledge his knack for betting on the right thing. Rader's patients, who get the benefit of his up-to-the minute knowledge, often help him by participating in clinical studies.

Rader's fascination with cholesterol began when he was a medical student at the Medical College of Pennsylvania. There wasn't much evidence that lowering cholesterol would be beneficial, nor were there good methods for going about it.



Now everything has changed. No single test can predict heart disease risk – only a careful examination of many substances in the blood. Diet is complicated, too. Rader said some patients could benefit from the now popular low-carb diets while others would need to eat low-fat foods.

Meanwhile, the picture of heart attacks has become more complicated.

In his office, Rader pulled up an image of an artery. All but a pinhole is filled with lard-like yellowish gunk. "This is what we're trying to avoid."

But you don't have to be clogged to die from heart disease. The old paradigm was what Rader calls the plumbing model – the plaque builds up gradually until it finally clogs the pipe. Now it's clear that most heart attacks happen in people with 30 percent to 50 percent blockage. Such people often feel healthy, their plaque held fast to the artery walls by a fibrous shell. Then one day that shell ruptures and the softer part of the plaque inside erupts. That's why otherwise healthy people so often die.

"The reality is it's complicated," Rader said. Whether it's diet or drugs, "we're going to be tailoring specific recommendations to individuals."



Healthy Lifestyle, Longer Life

People who don't smoke and keep low cholesterol and blood pressure levels add years

Paul Recer (AP), December 1, 1999.

What's a healthful lifestyle worth? Maybe six to nine extra years of life, new research suggests.

Dramatic benefits are shown for people who do not smoke and who maintain low cholesterol and blood-pressure levels. The research found life-extending benefits for adults of all ages who have low risk factors for heart disease, including not smoking cigarettes.

The study's lead author, Dr. Jeremiah Stamler of Northwestern University, said it evaluated more than 366,000 people over many years and determined the healthy outcome for people considered at low risk of heart disease.

The results, he said, show that an American lifestyle that includes smoking, obesity, poor diet and little exercise "creates havoc in the cardiovascular system," while healthy habits can extend life substantially.

"Low-risk people in our country are rare birds," Stamler said.

Ending what some people call an

epidemic of coronary and cardiovascular diseases will require a greater effort to get people to adopt healthy life habits.

The report analyzes health outcomes from a group of women and four groups of men who participated in two long-term studies. The health of two groups was monitored for 16 years and the three others for 22 years.

For anyone in the groups who died, researchers determined the cause of death, then related this to basic health measurements taken at the beginning of the studies.

The researchers found that death from all causes and from cardiovascular disease was substantially reduced among those with low heart disease risk factors, defined as those who did not smoke and who had (low) cholesterol readings and (low) blood pressure readings.

Another study, called the Chicago Heart Association Detection Project, or CHA, evaluated health outcomes for 10,025 men ages 18 to 39; 7,490 men ages 40 to 59; and 6,229 women ages 40 to 59.

It found that the younger men in the "low-risk" category had a life expectancy 9 7 years longer than other men in the group their same age. For men ages 40 to 59, life expectancy was extended six years, the study found. For women in the "low risk" category, life was extended 5.8 years.

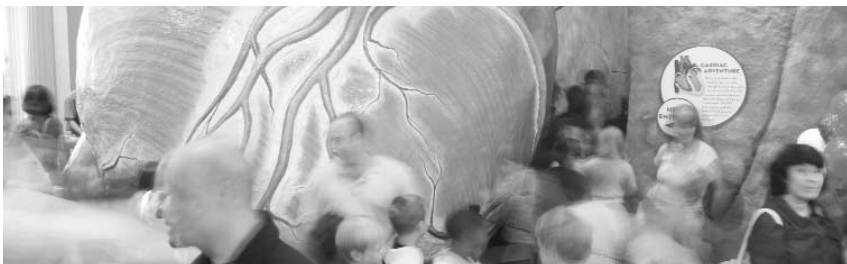
are you at risk?

Studies have shown that signs of heart disease begin developing in childhood, so it's important to develop healthy habits and to monitor your heart's health even at your age. There are two types of risk factors for heart disease: those you can control and those you can't control. You can control what you eat and how much you exercise. You can't control your family's history of heart disease. However, all of these factor into whether or not you will get heart disease later in life.

The tools below will help you learn more about whether or not you are at risk for heart disease. This information will hopefully help you make smart decisions about your heart-healthy lifestyle.

family history

If someone in your biological family has a history of heart disease or high blood pressure, this increases your likelihood of heart disease or high blood pressure. While this does not mean you will get heart disease, you have inherited some risk factors. Ask a parent if anyone in your family has a history of heart disease or high blood pressure. Record that information below.



RESTING heart RATE

Heart Rate after
strenuous exercise

Heart Rate after
one minute _____
after two minutes _____
after three minutes _____
after four minutes _____
after five minutes _____



Children learn about the heart.

your blood pressure

High blood pressure means that your heart is working harder than it should to push blood through the blood vessels. You can control your blood pressure by eating right, exercising, and reducing stress in your life. Have someone take your blood pressure or use the reading from your latest physical (your local supermarket may have a blood pressure machine). The average blood pressure for a teenager should be 100/60 (one hundred over sixty). Record your blood pressure number below.

heart rate

You learned about heart rate on Page 5. Take your pulse and record your resting heart rate in the space at left. (The average heart rate for someone your age is about 70 beats per minute). Then do something physical for one minute such as jumping jacks, jumping rope, or running. Take your pulse again and record your heart rate. When you are finished, take your pulse again every minute for five minutes and see how long it takes for your heart rate to get back to its resting state.



EXERCISE LOG

Exercise is one way to keep your heart healthy. At your age, you should engage in some type of exercise or physical activity each day and aerobic activity (see Page 6) for at least 30 minutes three or four times per week. Record your physical activity for one week in the chart below.

Date	Exercise	Aerobic/ Anaerobic	Length of Time

food/cholesterol record

Good nutrition is a critical part of preventing heart disease. The American Heart Association encourages a diet that is low in total fat, saturated fat and cholesterol; rich in fruits, vegetables and whole grains; and moderate in sugar, salt and sodium.

The average healthy teenager needs between 2,000 and 2,200 calories daily (this varies based on age, gender and activity level). Less than 30% of your caloric intake should be from fats, and less than 10% should be from saturated fats or trans fats. You should consume less than 300 milligrams of cholesterol each day.

Record what you eat for one week on a separate sheet of paper. For each food, read the label and record the number of calories, the number of fat calories (one gram of fat contains 9 calories), the number of saturated fat calories, and the amount of cholesterol. Then record your weekly totals in the chart below.

To find out more about each kind of fat, check out <http://health.howstuffworks.com/fat.htm>.

Date	Total Calories	Fat Calories	% of Fat Calories	Saturated or Transfat Calories	% of Saturated or Transfat Calories	Total Cholesterol
1						
2						
3						
4						
5						
6						
7						

Based on the information provided, draw conclusions about your heart health and list at least two specific things you can do to keep your heart healthy.

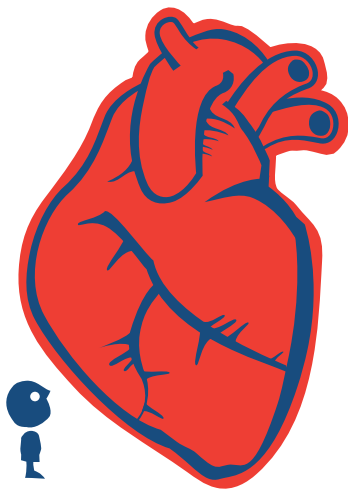
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