

A BRIEF UPDATE

From the Long-Term Follow-Up Study

April 2014

<http://ltfu.stjude.org>

Topic: CARDIOVASCULAR RISK FACTORS

Why we did this study:

- We know that treatments in childhood, including radiation and chemotherapy, can result in problems with heart health in adulthood.
- We wanted to find out if these treatments are associated with known cardiovascular risk factors, such as obesity, high blood pressure, and excess cholesterol levels.

Who participated in this study?

11,535 Long-Term Follow-Up Study participants who provided information about their health by means of questionnaires

- 8599 survivors and 2936 siblings
- About equal numbers of males and females
- 85 percent white non-Hispanic
- All ages - from less than 19 to over 50 years old

What we studied:

- Cardiovascular risk factors, as reported on LTFU Study questionnaires:
 - Obesity, defined as having a body mass index (BMI) of 30 or higher. BMI is calculated using a person's height and weight measurements.
 - Use of medication to control high blood pressure
 - Use of medication for cholesterol or triglyceride problems
 - Use of pills or insulin for diabetes
- Three or more of the above risk factors in one person – a “**Cardiovascular Risk Factor Cluster**” – indicates the presence of **metabolic syndrome**, which has been associated with increased risk of cardiovascular disease in the general population.

We found that . . .

- Survivors were more likely than siblings to report that they were taking pills or insulin for diabetes, medications to treat high blood pressure, or medications to lower cholesterol or triglycerides.
- Exposure to total body radiation or abdominal plus chest radiation and leading an inactive life-style were associated with having three or more risk factors.
- Survivors who were older at the time they completed the questionnaire were also more likely than those who were younger to have three or more risk factors.

What is metabolic syndrome?

Metabolic syndrome is a cluster of conditions that has been found to increase a person's risk of developing cardiovascular disease. Definitions vary but most include:

- ✓ Obesity (especially central obesity – excess body fat carried around the waist)
- ✓ High blood pressure
- ✓ Abnormal cholesterol and triglyceride levels
- ✓ Insulin resistance

Having more than one of the above conditions significantly increases a person's risk of heart and blood vessel disease. In the LTFU report on cardiovascular risk factors, we looked at associations between specific childhood cancer treatments and having three or more of these conditions.

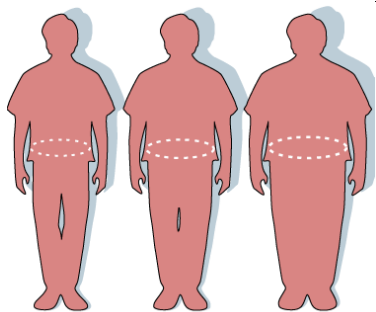
What you need to know:

- Early diagnosis of these risk factors is important to prevent or reduce the likelihood of heart disease. Survivors should be especially careful to have regular check-ups, based on their treatment exposures, so these conditions can be caught and managed as soon as possible.
- All survivors of childhood cancer should practice good health habits that include maintaining a healthy weight, eating a balanced diet and engaging in regular physical exercise (more on other side).

Reference

Meacham LR, Chow EJ, Ness KK, Kamdar KY, Chen Y, Yasui Y, Oeffinger KC, Sklar CA, Robison LL, Mertens AC. Cardiovascular risk factors in adult survivors of pediatric cancer--a report from the childhood cancer survivor study. *Cancer Epidemiol Biomarkers Prev.* 2010 Jan;19(1):170-81.

Heart Health Following Childhood Cancer Treatment



*Central obesity –
a risk factor for heart disease*

“Metabolic syndrome” and childhood cancer treatments

Survivors who were exposed to total body irradiation or abdominal plus chest radiation had an increased likelihood of having three or more of the common cardiovascular risk factors that together are referred to as the metabolic syndrome.

“Metabolic syndrome” and risk of heart problems

People with metabolic syndrome are at increased risk of heart and blood vessel problems, including coronary artery disease (hardening of the arteries), heart attacks, and stroke.

Steps you can take to care for your heart

As people get older, their risk of certain types of heart disease such as heart attacks and hardening of the arteries increases, no matter what treatment they might have received. To ensure your heart remains as healthy as possible:

- Share your treatment history with your healthcare providers and make sure you receive the appropriate follow-up care, based on all your risk factors. Sometimes, a referral to a cardiologist is needed for additional evaluation or treatment.
- Don't smoke – quit smoking if you do smoke. Your doctor can help you find resources for quitting. There are also many resources available at: <http://smokefree.gov/>
- Limit the fat in your diet to no more than 30 percent of calories.
- Exercise regularly for at least 30 minutes on most days of the week.

COG Survivorship Guidelines

COG – The Children's Oncology Group – provides risk-based screening recommendations for survivors of pediatric cancer online at:

<http://www.survivorshipguidelines.org>

More about the study . . .

How we assessed cardiovascular risk factors

Cardiovascular risk factors are usually discovered during a routine medical exam when, for example, a person has his or her cholesterol checked or has a fasting blood sugar test. This type of information was not used for this study, however. Instead, participants reported their height and weight and whether they were currently taking medication for high blood pressure, cholesterol problems, or diabetes. This self-reported information was used to determine the presence of the risk factors for the analysis done for the study.

Terminology – “What does that mean?”

- **Body mass index (BMI)** – a calculation based on the relationship between a person's height and weight. It is used to estimate body fatness. A BMI between 18.5 and 24.9 is considered healthy for adults; between 25 and 29.9 is overweight. Obesity is usually defined as a BMI of more than 30. This is the definition used in the LTFU study of cardiovascular risk factors.
- **Cardiovascular** – relating to the heart and blood vessels
- **Cholesterol** – a substance in the blood that is necessary to many body functions. Excess levels, especially of LDL (“bad cholesterol”) are a risk factor for cardiovascular disease. Triglycerides and cholesterol are known as blood lipids.
- **Insulin** – a hormone that helps regulate carbohydrate and fat metabolism and control the amount of sugar in the blood
- **Insulin resistance** – a condition in which the body becomes less sensitive to the effects of insulin, making it hard for blood sugar to get out of the blood stream and into cells
- **Metabolic** – refers to the process the body uses to break down food and turn it into energy
- **Triglycerides** – the major form of fat stored by the body. High triglycerides are excess levels in the blood, a risk factor for cardiovascular disease.

For more information:

Dietary guidelines at US Department of Agriculture interactive website

<http://www.choosemyplate.gov/>

Additional information about the metabolic syndrome from the American Heart Association

<http://www.americanheart.org/presenter.jhtml?identifier=4756>