

# LIFEline

St. Jude for Life



Winter 2011-2012

## Featured Researchers



Dr. Greg Armstrong is the lead investigator on several studies of the late effects of anthracycline chemotherapy.



Dr. Dan Green is leading an exercise study designed for people with early heart disease who received anthracycline chemotherapy.

St. Jude Life Study  
Toll-Free Number:

1-866-278-5833

St. Jude  
**LIFE**  
St. Jude for Life

  
St. Jude Children's  
Research Hospital  
ALSAC • Danny Thomas, Founder

Dear St. Jude Alumni,

Today, the survival rate for childhood cancer is over 80 percent. Survivors are true pioneers whose participation in research has led to this remarkable success. St. Jude alumni continue to blaze the trail forward by participating in another type of research, the study of late effects and health outcomes in long-term pediatric cancer survivors.



Little was known about the late effects of treatment when the major advances in survival were taking place. At that time, the first priority was saving children's lives. With the increasing number of survivors, new priorities and new areas of research have emerged. By studying the experiences of survivors we are learning to improve cancer treatments so they are less toxic for current and future patients. Also, we are discovering new ways to help survivors deal with late effects and improve their health and quality of life. These range from cutting edge screening practices to help catch health problems early when they may be most easily treated, to lifestyle interventions that empower survivors to take an active role in managing their own health.

St. Jude Life study participants make a valuable contribution to the quest to improve health and quality of life for all survivors. The health screenings that are part of the study also benefit survivors directly, sometimes to a surprising degree. Study participant Nick Dustman says his life was saved when the screenings revealed his heart disease in 2009. Jonathan Batchelor was motivated to start exercising and has kept it up even after his participation in a pilot exercise study ended.

As Nick Dustman says, "Those of us who bumped up the survival rates are now having health issues that need to be studied and understood, so we need to continue to participate in research."

Thank you for your continuing participation, Alumni. With your help we are not only winning the fight to cure childhood cancer, but also enhancing the health and well-being of all survivors.

Sincerely,

A handwritten signature in black ink that reads "Melissa M. Hudson, M.D."

Melissa M. Hudson, MD

*Principal Investigator, St. Jude Lifetime Cohort Study*

# Bicycle as an Aid to Diagnosis?

**N**ick Dustman enjoys riding his bicycle. He doesn't ride competitively, just loves to get on the bike and go. "It's my prayer time," he says. Strangely enough, Nick's bike might also have played a small role in saving his life.

When he was sixteen, Nick developed a fever and swollen glands. His doctor biopsied a suspicious lymph node and sent the tissue to St. Jude for evaluation. There, doctors diagnosed Nick with Hodgkin's disease. Nick and his family went immediately to St. Jude so Nick could receive treatment. The clinical trial he was placed on at St. Jude did not use any chemotherapy drugs but it included high doses of radiation to the chest.

Fortunately, Nick's treatment was a success. He has been cancer-free ever since. Today, he continues to stay in touch with St. Jude by participating in research as a member of the St. Jude Life study. He came back to St. Jude in April 2009 for the study evaluation. At that time, he mentioned to Dr. Tim Folsie that he was having an odd problem while riding his bike. Nick had noticed that he would often feel pain and shortness of breath during the first couple miles of his route. "But I'd cycle through it and by mile five or six I was fine," he notes. This reaction was unusual and raised a red flag for Dr. Folsie.

During the St. Jude Life study evaluation, Nick received a stress test to check for heart damage. At age 40, he might have been on the young side for developing heart problems but the radiation he'd received put him at increased risk of early-onset heart disease.

The stress test confirmed what his odd experience on his bike had foreshadowed. Nick's heart was in trouble. Doctors told him he had already had a heart attack even though, except for being out of breath at the beginning of his rides, he felt just fine. "Unfortunately,

we can't go by how you feel," the doctors at St. Jude told him. They sent Nick home with instructions to see a cardiologist and schedule a cardiac catheterization exam. This test allows doctors to see inside the heart and the coronary arteries. "They restricted me from all exercise," Nick recalls. "They didn't even want me to cut my grass!"

The cath test showed that Nick's left main coronary (heart) artery was over 90 percent blocked. His cardiologist admitted Nick to the intensive care unit immediately. The following morning Nick had open heart surgery to bypass 6 coronary arteries.

**S**ince recovering from surgery, Nick has seen a cardiologist every year. After a recent stress test he was allowed to start exercising again. He's back on his bike, riding most days in good weather, lifting weights when the weather is cool.

Nick is now 43 years old and lives in Jacksonville, Florida, with his wife Teresa and their two daughters. He refers to the girls as his 'miracle babies' because he was not sure he would be able to have children after cancer. "I received fertility counseling at St. Jude but we didn't need to use any assisted reproduction technologies—both pregnancies were spontaneous," he says with delight.

Nick is happy to participate in research to give back to St. Jude for curing his cancer. And, he has received lifesaving benefits as a research study participant. "St. Jude has twice diagnosed a problem I should have died from," Nick observes, "first the Hodgkin's, then the heart disease. Research has saved my life twice. I'll do anything I can to help St. Jude."

Nick on his bike . . .



. . . and with his family

# St. Jude Research—For Life!

Doctors at St. Jude are continually working to improve health outcomes for childhood cancer survivors. This area of research is increasingly important as more and more people become long-term survivors. Our researchers are investigating everything from screening techniques to lifestyle factors that can affect survivors' health and well-being.

**Measuring heart function.** Almost half of childhood cancer survivors received anthracycline chemotherapy or chest radiation, therapies that are toxic to the heart. This fact adds urgency to Dr. Greg Armstrong's research efforts. Dr. Armstrong is looking at ways to improve screening methods to detect heart problems that can occur after cancer treatment. Current methods depend on ejection fraction (EF). EF is one of the measurements taken during an echocardiogram, or ECHO test. It is a measure of the heart's efficiency at pumping blood.

A reduced EF is a sign that there is already a problem with heart health. Dr. Armstrong and his colleagues are looking for ways to detect problems earlier, when they may be easier to treat. In one study, they looked at a measurement known as myocardial strain (*see box at right*), which has been associated with a reduced capacity for exercise. They observed that reductions in exercise capacity appeared to show up before reductions in ejection fraction. Since EF is not able to detect reduced exercise capacity, the cardiac strain test could be an important tool for detecting heart problems at an early stage.

In another study, Dr. Armstrong and colleagues compared echocardiography to cardiac MRI (magnetic resonance imaging). Cardiac MRI is considered the gold standard, or best measure, for testing EF in childhood cancer survivors. However, it is expensive and not as widely available as echocardiography. For these reasons, the ECHO test is recommended by current screening guidelines. A small number of individuals in Dr. Armstrong's study who tested in the normal range for EF on the ECHO had abnormal results on the cardiac MRI. The researchers concluded that people who have EF scores between 50-65 percent on an ECHO may benefit from additional screening using cardiac MRI. Pinpointing the group that can benefit from additional screening can help ensure that survivors are appropriately screened and any potential problems are detected early.

**Testing the safety of exercise.** Dr. Dan Green and his team are doing an exercise study for people who received anthracycline chemotherapy and who have very early cardiomyopathy. Cardiomyopathy is a serious disease in which the heart muscle becomes weakened and doesn't work as well as it should. Participants in the study have an EF in the 40-55 percent range. They take part in a 12-week program of strength training and aerobic exercise. The exercises gradually increase in intensity. The aim of the study is to test the safety of exercise for people with cardiomyopathy. The team also wants to find out if people will stick with such an exercise routine.

**A "change of heart."** Jonathan Batchelor was the first person to complete Dr. Green's study. Jonathan, age 36, is from St. Louis, Missouri. He is a school principal and the proud father of one son. Jonathan was diagnosed with Ewing sarcoma at age 12. He was treated with doxorubicin, a type of anthracycline.

Even though he missed one week of the study when he sprained his ankle, Jonathan successfully completed the program. He says it has changed him in many ways. "You feel better about yourself when you exercise," he says. "There's a hump you have to get over but, if you keep going, it gets better after the hump." Jonathan did not exercise regularly before starting the study, but he has not stopped since! "St. Louis winters are not forgiving," Jonathan notes, so he joined a gym where he can work out indoors. He also runs four times a week. "I ran a five-mile race a couple of months after I finished the program," he reports. "My motivation to start was fear for my health," Jonathan says. "but now I love exercising!"

## TERMS TO KNOW

### ■ Echocardiogram (ECHO):

An ultrasound test of the heart - one of the most widely used tests for detecting heart disease.

### ■ Stress ECHO:

Ultrasound imaging of the heart that tests the heart's response to physical stress while a person walks on a treadmill.

### ■ Ejection fraction (EF):

The amount (fraction) of blood pumped out by the left ventricle, the main pumping chamber of the heart, with each heart beat. EF measures the heart's efficiency at pumping blood. It is part of the ECHO test. An EF between 50% and 70% is considered normal.

### ■ Myocardial strain:

A measure of how much the heart muscle fibers stretch when the heart beats. Myocardial strain is also part of the ECHO test. Myocardial strain may be a more sensitive sign of heart disease than EF and may possibly allow doctors to detect it at earlier stages.



Jonathan Batchelor

# Screenings for Heart Health

The ECHO Lab and the Human Performance Lab are destinations for St. Jude Life study participants who were treated with anthracycline chemotherapy, or who had radiation to the

chest, spine, abdomen, or total body radiation. These treatments can damage the heart, though most people who received them do not

## Anthracycline-Like Drugs Can Affect the Heart

- Doxorubicin (Adriamycin®)
- Daunorubicin (daunomycin, Cerubidine®)
- Idarubicin (Idamycin®)
- Mitoxantrone (Novantrone®)
- Epirubicin

develop heart problems.

We don't know why some survivors get heart problems and others don't, even though they received the same treatments. It's important for people who received these "cardiotoxic" therapies to have a yearly check-up and regular heart screenings. That way, if a problem does develop, it can be detected and treated early.

**Editor's note:** The information above was adapted from the Children's Oncology Group Survivorship Guidelines Health Link. You can find additional information about heart health and ways to keep *your* heart healthy online at:

<http://www.survivorshipguidelines.org/>

The two main types of cardiac screening that are done during the St. Jude Life evaluation are the echocardiogram (ECHO), which takes place in the ECHO Lab, and the exercise stress test. The ECHO is used to test the muscle function of the heart and how the heart pumps. The person lies on a table and has jelly applied to their chest. Then, the ultrasound machine uses sound waves to create various views of the heart. The results are digitally recorded and photographed for the doctor to study later.

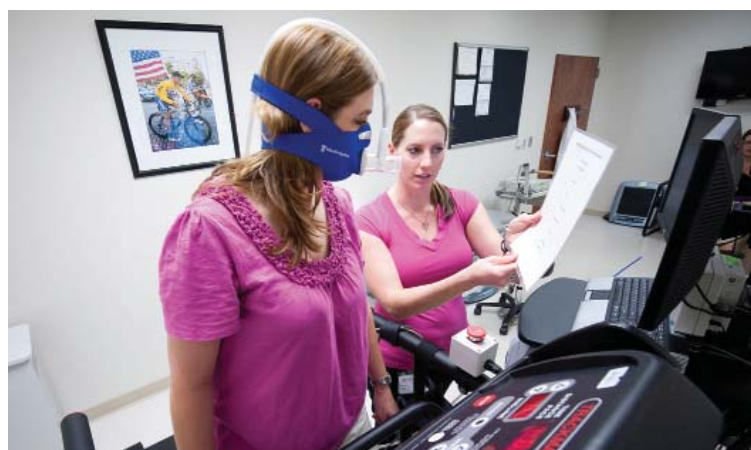
The stress test measures heart and lung function while the person walks on a treadmill. People who cannot use their legs may exercise by biking with their arms. Heart rate and blood pressure are usually monitored while the person is exercising. The stress test is done in the Human Performance Lab.



Participant Jermaine Moore undergoes an echocardiogram. This ultrasound test measures how efficiently the heart pumps and the condition of the heart valves.



Participant Pedro Neme is being monitored during an exercise stress test. His responses are graphed on the computer screen. Should there be changes in his heart rhythm as a result of exercise, the test will be stopped and further evaluations will be conducted by one of our doctors.



St. Jude Life study participant April Hobson prepares to walk on a treadmill for an exercise stress test. Exercise Specialist Robyn Karlage administers the test.

## LIFELine

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