

INTO the HEARTLAND CAMPAIGN

SITE: TOMSK
DISTRICT: SIBERIA
COLLABORATION LAUNCHED: 2006

APRIL 12-24, 2010
SURGICAL-EDUCATIONAL
MISSION 5



On our fifth surgical-educational mission to the Tomsk Cardiology Institute, the joint Heart to Heart-Tomsk team welcomed seven specialists from four other pediatric cardiac centers across Russia. They participated in daily conferences and presented cases from their home institutions. Many of our Russian colleagues have commented that Heart to Heart's missions present invaluable training and networking opportunities – worth traveling across the country for!

PORTRAIT OF PROGRESS

Heart to Heart's 2010 surgical-educational mission to Tomsk was dramatic in two senses. The background drama was provided by the eruption of the Icelandic volcano that affected transportation around the globe. Fortunately, the volcanic ash cast no cloud over the scope or success of our mission. Each year, the strong foundation laid by the joint Heart to Heart-Tomsk team in 2006, has been fortified by steady achievements. This continuity has paved the way for dramatic progress—as evidenced by the line-up of patient cases our Tomsk colleagues presented for our review at the beginning of this, our fifth mission.

As Iceland's volcanic dust hovered over Europe, some members of Heart to Heart's team faced daunting challenges to reach Siberia. A lucky few were already on the ground; several members were en route when the volcano erupted; and, intrepid

anesthesiologist Todd Troshynski defeated great odds by flying from Milwaukee to New York to Moscow to Novosibirsk (130 miles southwest of Tomsk), where his Russian colleagues warmly welcomed him, and then drove him three hours to Tomsk. Unfortunately, on the day Heart to Heart's PCICU team was scheduled to depart from Atlanta (Dr. Janet Simsic, Brenda Jarvis, RN, and Lisa Poppell, RN) nearly all of Europe's airports had been closed. It proved impossible to reroute them in time to join us in Tomsk. They were sorely missed. Tomsk's PCICU doctor, Valery Kiselev, acknowledged:

"This year we had to work without our American teachers in the intensive care unit. But because of what we already have learned from them, I think we did not let the babies down."

HEART TO HEART 2010 TOMSK TEAM: Children's Hospital of Wisconsin: Dr. Stuart Berger, pediatric cardiologist and co-director, Herma Heart Center; Dr. Julie Biller, pulmonologist; Dr. Todd Troshynski, pediatric cardiac anesthesiologist; Dr. James Tweddell, pediatric cardiac surgeon **Loyola University Medical Center:** Lynn Graham, clinical nurse **Mayo Clinic:** Dr. Frank Cetta, pediatric cardiologist **Samara Regional Cardiac Center:** Dr. Anton Avramenko, interpreter **Heart to Heart:** Josie Everett, executive director; Rose Glickman, PhD, writer and interpreter; Lena Traer, assistant to the executive director.



OLGA M.

Olga was born in Siberia in 1984. When she was 6 months old, her local pediatrician noticed a heart murmur and referred the family to the cardiac center in Novosibirsk, Russia's third largest city. There, Olga's mother learned of her daughter's serious diagnosis: "single ventricle with tricuspid valve atresia". More than one quarter of Olga's heart had never developed.

At the age of four, Olga underwent the first procedure of a two-phased surgical approach to restructure her heart. Subsequently, her parents could not find a surgeon in Russia to perform the highly-complex second open-heart surgery, called the Fontan procedure. Finally, 20 years later, Olga got a chance; she underwent a Fontan operation in Novosibirsk. Unfortunately, the surgery did not improve her condition. (The Fontan is usually performed by the time a child reaches age four.)

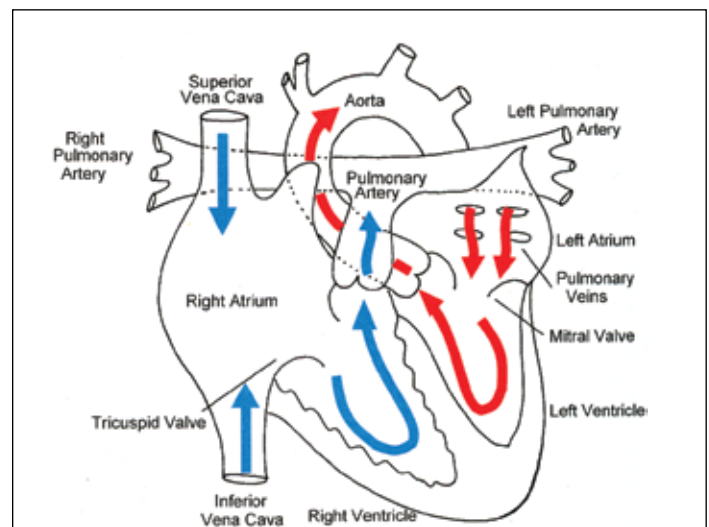
After examining Olga, the Heart to Heart team, with great sadness, had to tell this lively, intelligent, and brave young woman that we could do nothing to prolong her life. As access and awareness increase across the country, a child born with Olga's condition has a far greater chance of receiving timely treatment—allowing for a long and healthy life.

The big next step: Pushing the envelope

The success of any pediatric cardiac program is measured by its surgical outcomes. The "gold standard" is to be able to treat babies, including newborns with complex heart disease, while producing excellent surgical outcomes. Over the preceding year, surgeon Evgeniy Krivoschekov has demonstrated his surgical team's advancement in performing increasingly complex operations on younger and younger patients. On this year's surgical-educational mission, the patients presented were born with the extremely challenging cardiac physiology known as "single ventricle defect." This means that only one of the heart's two pumping chambers is capable of pumping blood to the lungs or body.

Because Russia still has so few modern pediatric heart centers, many children born with single ventricle physiology go undiagnosed and untreated. Understanding the surgical approaches for older children with this condition is the first step toward managing the challenge of performing complex open-heart surgery on a single-ventricle baby.

This year's focus, at Dr. Krivoschekov's request, was to help his team understand the treatment options — palliative or corrective — available to children and young adults with only one functioning ventricle. Most of these heart patients have never undergone open-heart surgery. The joint team evaluated eleven such cases and operated on several, including 18-year-old Roman. The surgery improved Roman's quality of life immediately, and will extend it for a number of years. The optimal time to begin treatment for a single ventricle patient is immediately after birth. Thereafter, the "window of opportunity" — for a single ventricle patient to lead a normal and full life — begins to close.



NORMAL VS. THE SINGLE VENTRICLE HEART

A normal heart, as shown above, has two collecting chambers (atria); two pumping chambers (ventricles) separated by muscle; and two "tubes" (great arteries) leading out of the ventricles. One great artery (the pulmonary artery) takes blood from the right ventricle to the lungs; the other great artery (the aorta) takes blood from the left ventricle to the body.

A child born with single ventricle physiology has only one functioning pumping chamber. Consequently, oxygenated and non-oxygenated blood — which in a normal heart circulate separately — mix within the single ventricle. This results in decreased distribution of oxygen to the body. Without intervention, most children with single ventricle defects die within the first months of life.

DIAGRAM: PEDIATRIC HEART SURGERY REFERENCE, L. ELIOT MAY. REPRINTED WITH PERMISSION.

“My experience in Dr. Krivoschekov’s operating room shows me that he’s very skilled, thoughtful and efficient. Additionally, the proficiency of his two junior associates shows me that he is also a very good teacher. The Heart to Heart team felt the same way that Dr. Krivoschekov’s team does — that he is a great leader.”

—DR. JAMES TWEDDELL, PEDIATRIC CARDIAC SURGEON
CHILDREN’S HOSPITAL OF WISCONSIN



Dr. Tweddell (left) and Dr. Krivoschekov (right) work together to perform open-heart surgery on 18-year-old Roman. Without surgical intervention, it is rare for a child born with just one ventricle to live beyond 5-10 years of age.

Elevating and expanding communication

Heart to Heart’s medical volunteers were repeatedly impressed by the high level of communication not only within each subspecialty (diagnostic, surgical, intensive care) but also among members of the entire local pediatric cardiac team. Each patient receives the benefit of more than a dozen specialists collectively analyzing medical data to determine his best course of treatment.

Pediatric cardiac anesthesiologist Todd Troshynski observes, “In the OR, cases start quickly. Everyone understands their roles. They know what they’re supposed to do, and they do it well.”

Pediatric cardiologist Frank Cetta comments, “I am delighted at how well the diagnostic team—cath and echo specialists—have learned to work together. The cardiology unit has also added state-of-the-art diagnostic and interventional equipment, including a bi-plane cath lab.”

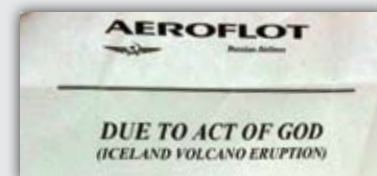
Lynn Graham, RN reports on nursing progress, “The pediatric ward nurses are knowledgeable, compassionate and consistent. Following up on suggestions made last year, they have acquired portable equipment to improve emergency response time. The addition of three fully-monitored beds on the pediatric ward enables them to closely monitor children well enough to leave the PCICU but still requiring continual observation.”

Pulmonologist Julie Biller bravely reminded a roomful of over 30 cardiac specialists, “There *are* other organs in the chest!” emphasizing that the Tomsk team could now greatly benefit by bringing other pediatric and neonatal specialists onto their growing team. On-going communication with them will be invaluable in moving the program to a higher level.

These observations show how far the Tomsk team has come and what their current and future challenges are. Any newborn baby — whose heart is the size of a walnut — is extremely fragile. A newborn with a congenital heart defect is a very vulnerable patient, requiring a team of highly-specialized pediatricians. Success brings new challenges!

Communication in the broader sense

Heart to Heart’s four sponsored sites are located in key population centers across Russia. They serve tens of millions of families living in an area covering more than 3 million square miles, and spanning four time zones. All over Russia, patient families and the general medical community benefit from the combination of: (1) new cardiac outreach programs, (2) use of the internet, and (3) Heart to Heart’s growing community of pediatric cardiac specialists. Across the country, awareness of childhood heart disease — and the fact that it is highly treatable — is spreading more quickly than ever before.



Five team members were unable to travel to Tomsk due to cancelled flights. **Children’s Hospital of Wisconsin:** Leslie Thomas, OR technician **Emory University Hospital/Children’s Hospital of Atlanta:** Brenda Jarvis, senior PCICU nurse; Lisa Poppell, PCICU nurse; Dr. Janet Simsic, pediatric cardiac intensivist **University of California San Francisco:** Clinton Jones, perfusionist.

FINANCIAL OVERVIEW

FINANCIAL SUPPORT

Russian Gift of Life, USA	50,000
Edwards Lifesciences Fund	20,186
Medtronic Foundation	20,186
Total Financial Support	\$90,372

IN-KIND SUPPORT

Donated Medical Services	356,626
Non-medical In-kind {See Expenses below}	27,119
Total In-kind Support	\$383,745

TOTAL PROGRAM VALUE

In-kind Medical Services	356,626
Non-medical In-kind Donations	27,119
Expenses {excluding Non-med. In-kind}	90,372
Total Program Value	\$474,117

EXPENSES {detail}

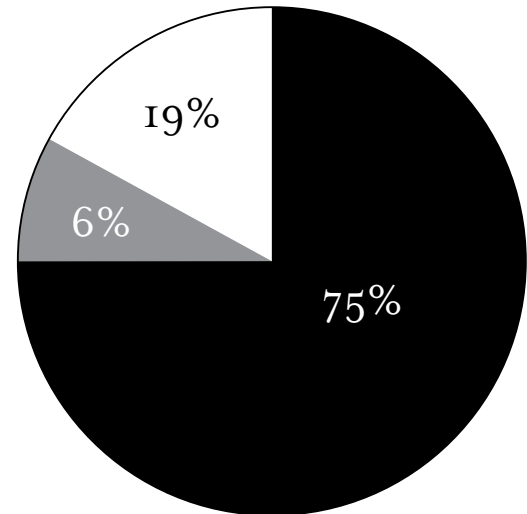
Airfare	17,634
Airfare (In-kind discount)	1,940
Lodging (In-kind)	9,960
Meals (In-kind)	1,660
Interpreters (In-kind)	9,900
Ground Transportation (In-kind)	1,400
Travel Insurance (In-kind)	1,080
Visa Support (In-kind)	1,179
Incidentals	416
Program Admin + Coordination	72,322
Total Expenses	\$117,491

PROCEDURES PERFORMED

CathLab - Diagnostic (10)	80,640
CathLab - Interventional (3)	51,442
Patient Exams (47)	27,965
Echo Studies (4)	3,124
Echo Readings + Data Review (47)	82,955
Pediatric Open-Heart Surgeries (6)	44,000
Other Surgical Procedures (1)	11,000
Anesthesia (4)	10,500
Intraoperative TEE Studies + Readings (3)	3,600
RN/Tech Support	6,400
Professional Consulting / Didactic	35,000
Total In-kind Medical Services	\$356,626

Data compilation as of June 15, 2010.

TOMSK 5, APRIL 2010




- Heart to Heart In-kind Medical Services \$356,626 {75%}
 - Non-medical In-kind Donations \$27,119 {6%}
 - Expenses {excluding Non-med. In-kind} \$90,372 {19%}
- Total Program Value \$474,117**

TOMSK 5 TOTAL PROGRAM VALUE:
81% of Tomsk 5 total program value consisted of services and products donated to Heart to Heart.

FINANCIAL SUPPORTERS

Our heartfelt gratitude to the Edwards Lifesciences Fund, The Estate of Nika Thayer, Joey's Corner, Medtronic Foundation, and Russian Gift of Life, USA for their generous support of our journey *Into the Heartland*. We are honored to have them as partners.

 Edwards Lifesciences *The Estate of*
 NIKA PLESHKOVA THAYER


Joey's
CORNER
 Design That Matters

 **Medtronic**
 FOUNDATION

