

INTO *the* HEARTLAND CAMPAIGN

SITE: TOMSK
DISTRICT: SIBERIAN
COLLABORATION LAUNCHED: 2006

APRIL 12-23, 2011
SURGICAL-EDUCATIONAL
MISSION 6



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A team approach to critical thinking: Dr. Frank Cetta discusses how to consider lesion-specific medical and surgical options in order to determine a given patient's best course of treatment. Critical thinking at the team-wide level is crucial for the Tomsk team to achieve self-sustainability.

NEARING SELF-SUSTAINABILITY IN SIBERIA

Heart to Heart's sixth annual surgical-educational mission to the Tomsk Cardiology Institute was a clear testimonial to our Russian colleagues' dramatic progress toward self-sustainability – and to their undiminished eagerness for advanced education and training. In 2010, the Tomsk team performed well over 350 open heart cases, successfully diagnosing and surgically repairing the hearts of children born with very complex defects. Their 2010 case-mix reflects steady and impressive progress according to all three program evaluation metrics: patient volume; patient age at time of surgery; and, complexity of surgical repair. As an example,

in 2010, the Tomsk team successfully treated 164 neonates (< 30 days old) and infants (< 1 year old), representing 44% of their case-mix. By comparison, in 2006, the first year of our collaboration, the Tomsk team treated less than half as many children under the age of 1 year.

Our 2011 Tomsk team included one newcomer, perfusionist Mindy Blackwell, invited by lead pediatric cardiac intensivist Dr. Janet Simsic. All of the other medical volunteers on this year's team are veterans of multiple Heart to Heart surgical-educational missions.

HEART TO HEART 2011 TOMSK TEAM: Berlin Heart Inc: Mindy Blackwell, perfusionist **Children's Hospital of Wisconsin:** Dr. Bert Litwin, pediatric cardiac surgeon **Children's Medical Center of Dallas:** Kimberly Crews, cardiovascular scrub technician **Emory University Hospital/Children's Healthcare of Atlanta:** Brenda Jarvis, senior PICU nurse; Lisa Poppell, PICU nurse **Loyola University Medical Center:** Lynn Graham, clinical nurse **Mayo Clinic:** Dr. Frank Cetta, pediatric cardiologist **Nationwide Children's Hospital:** Dr. Janet Simsic, pediatric cardiac intensivist **Heart to Heart:** Josie Everett*, executive director; Rose Glickman*, PhD, writer and interpreter; Joye Leventhal, photographer; Lena Traer*, assistant to the executive director.

*fluent speaker of Russian



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SYMBAT E. Dr. Frank Cetta (at left) examined four-year-old Symbat E., who travelled 1,350 miles to Tomsk with her mother. Dr. Bert Litwin, after in-depth consultation with the Tomsk team, felt they could conduct Symbat's palliative operation without Heart to Heart. He voiced his confidence in the local team's surgical maturity and their readiness to handle complex cases without external support. On April 27, Dr. Evgeniy Krivoschekov led his team in successfully performing Symbat's surgery, their first Senning procedure.



Master class from an expert: Dr. Bert Litwin (center) diagrams and explains a proposed surgical approach to four Russian pediatric cardiac surgeons from different parts of Siberia, with help from senior interpreter Irma Ozashvili.

Year-round strategic guidance

As part of Heart to Heart's routine data collection and analysis, we review the Tomsk team's surgical outcomes several times each year. This enables us not only to gauge progress but also to identify areas needing improvement. Before Tomsk's 2010 year-end data were available, our colleagues there had made two requests in anticipation of our team's arrival: that we consider performing open heart surgery on specific types of cases, and that we present lectures on particular topics.

Well in advance of our surgical-educational mission, Heart to Heart staff, key medical volunteers, and Tomsk department heads began planning the didactic component via a series of email and conference calls. Pursuant to our analysis of Tomsk's 2010 year-end data, we further refined the list of lecture topics. Certain topics lent themselves to multiple presentations from different perspectives—cardiology, surgery, and post-op. Heart to Heart then requested that the Tomsk team present, in Morbidity & Mortality (M&M) Conference format, selected patient cases from their 2010 case-mix. (We had introduced this best practice in Tomsk several years ago; they now regularly hold M&M conferences.)

Our pre-trip planning sessions and the final presentations benefited greatly from pediatric cardiac surgeon Dr. Bert Litwin's phenomenal experience in program development. Dr. Litwin established and then directed for many years the renowned Herma Heart Center at Children's Hospital of Wisconsin. Heart to Heart long ago adopted Dr. Litwin's maxim: "For excellent outcomes, perform the right procedure on the right patient at the right time."

Dr. Litwin's medical leadership was complemented by Dr. Frank Cetta and Dr. Janet Simsic, both of whom have played instrumental roles in providing strategic guidance and advanced on-going education to the Tomsk team since the program's inception in 2006.

The finalized didactic program included lectures and workshops on: Management of Children with Ebstein's Anomaly; Surgical Repair and Post-operative Considerations for Late Presentation of d-TGA; Assessing Programmatic Readiness for Extracorporeal Membranous Oxygenation (ECMO); Eisenmenger Syndrome. Additionally, Dr. Cetta made a presentation to the Russian interpreters: Basic Anatomy & Physiology of the Heart and Congenital Heart Defects.

PROGRESS IN POST-OPERATIVE CARE The following special report is excerpted from Dr. Janet Simsic's presentation at the end-of-trip wrap up conference, attended by an audience of more than 60 pediatric cardiac specialists. Dr. Simsic has provided training and education to PICU doctors and nurses on nine Heart to Heart surgical-educational missions at three of our sponsored sites in Russia.

Progress in post-operative care

From year to year, Heart to Heart medical volunteers have been gratified to witness the effective implementation of specific programmatic recommendations. This year in Tomsk, our entire team observed the powerful cumulative effect of significant, steady improvements in the post-operative care of children with congenital heart disease.

Development of a step-down unit The pediatric ward now includes a step-down unit. Children no longer requiring intensive care, but not yet ready for transfer to the pediatric ward, are cared for by a cardiac intensive care physician 24/7. Cardiac staff can provide cardio-respiratory monitoring, frequent lab draws, and continuous infusion of medications.

Nursing Russian nursing education nationwide is minimal by U.S. medical standards. When Heart to Heart began our collaboration in Tomsk six years ago, their pediatric cardiac intensive care physicians provided both physician care and what would be considered nursing care in the U.S. A dedicated PCICU core team of Heart to Heart physicians and nurses took the initiative to provide education for the Russian nursing staff on the anatomy and physiology of congenital cardiac defects and post-operative management. We also sought to enhance communication between the Russian ICU physicians and nurses, and provided support and education in expanding the nursing role.

Six years later, the increased effectiveness of the PCICU is a testament to our consistent training and to the responsiveness of the Tomsk PCICU team. They have successfully incorporated best practices that are the norm in a modern PCICU, and in the process raised the nursing team's knowledge base. The improvements have been acknowledged by Russian physicians and nurses alike. PCICU nurse Tatiana Prut, speaking for the nursing team, says, "We have learned so much about every facet of heart care from Heart to Heart – the lesions and how to treat them; providing post-op care to younger and younger children; and, a better understanding of the more complex operations."

Vision for the future The Tomsk PCICU team has strong leadership with a clear vision for continuing to enhance the quality of post-operative care for children in the PCICU. Their plan includes continued education for both physicians and nurses on non-cardiac as well as cardiac issues. As they begin to care for a larger volume of neonates and as the overall complexity of cases continues to increase, each patient's post-operative course will be both longer and more complicated. PCICU chief Dr. Alexander Nikolishin has plans for developing best practice models of patient care to reduce variation. His additional plans include providing advanced life support training for the department, with the immediate goal of forming a team of individuals trained to respond to emergent situations on the pediatric ward.



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PCICU nurse Tatiana Prut on the job. The Tomsk nursing staff continues to learn more about pediatric cardiac anatomy and physiology and to assume a greater role in patient care.



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Dr. Janet Simsic is the lead pediatric cardiac intensivist for our newest program, in Rostov-on-Don, as well as for our program in Tomsk, where she has provided consistent medical leadership since its launch in 2006.



In the Tomsk OR: Excellent patient outcomes require great teamwork and communication – among all pediatric cardiac specialists, including cardiologists, surgeons, anesthesiologists, perfusionists, intensive care specialists, and nurses. Every pediatric patient benefits from Tomsk’s teamwork approach.

TEAMWORK AND ON-GOING EDUCATION: KEYS TO DRAMATIC PROGRESS IN TOMSK

Because great teamwork is essential for excellent patient outcomes, one of Heart to Heart’s strategic priorities is to role model strong teamwork in diagnosing, treating, and providing post-op care. Even in the first few days of this mission, before setting foot in the OR, it was evident to Heart to Heart that our Siberian colleagues have truly learned to function as a team. How incredibly rewarding it was for us to see and experience their teamwork after years of nurturing open communication and healthy collegial relationships among all specialists.

Sharing our modern team approach and other important current U.S. best practices (see box at right) with a Russian team at the inception of the program considerably shortens their learning curve, and enables Heart to Heart to help them develop a self-sustaining pediatric cardiac center of excellence relatively quickly.

Tomsk’s contribution to the network effect

The collaborative spirit at the Tomsk Cardiology Institute extends beyond the pediatric cardiac team to the entire cardiac division and the hospital’s executive management. Their visionary thinking and generosity in welcoming close to 50 visiting specialists to their hospital reflects an institution-wide commitment not only to improve their own children’s heart program but also to support the development of Russia’s emerging pediatric cardiac community.

A vivid example of their dedication to this end is their superb organization of every facet of the surgical-educational mission. Their detailed preparations included a major investment – both in technology and staff time – to support what in essence became a nationwide pediatric cardiac conference. Heart to Heart could not help but consider this an implicit acknow-

ledgment of the value placed on our education-based program model. A conference hall capable of accommodating 60 specialists was made available for case presentations and lectures for 10 working days. A team of 14 Russian/English medical interpreters was coordinated by the hospital’s program liaison. A permanent video monitor in the pediatric cardiac OR streamed open heart surgeries in real time into an adjacent conference room, so that specialists were able to see the operative field (thanks to a tiny camera mounted on Dr. Litwin’s headlamp), and to hear Dr. Evgeniy Krivoschekov describe surgical highlights. Knowledge was shared at every opportunity.

Role modeling U.S. best practices

Heart to Heart medical volunteers are practicing pediatric cardiac specialists, primarily from academic medical centers in the U.S. They are trained to always take into consideration “best practices,” many of which are data driven (evidence-based approaches to care). In a U.S. hospital environment, the team as a whole thoroughly discusses all possible treatment options and all possible outcomes. Everyone is encouraged to research the literature for data to support a given approach.

Heart to Heart pediatric cardiologist Dr. Laura Robertson explains, “Generally speaking, U.S. specialists work in an egalitarian manner, where everyone has a voice. We also tend to practice medicine defensively, that is, we always consider and openly discuss worst case scenarios... always *anticipating*, coming up with a Plan B, C, and even D for as many potential problems in the OR and ICU as we can imagine.” Taking advantage of collective wisdom from years of experience is critical to achieving the best possible outcomes.



Dr. Evgeniy Krivoschekov (far left) recognizes the value of cultivating leadership among his team of specialists: Dr. Alexander Sokolov, Dr. Viktor Varvarenko, Dr. Igor Kovalev. Read their thoughts about teamwork below. (Not shown: Dr. Tamara Kondratieva, department head, pediatric cardiology; Dr. Alexander Nikolishin, PICU chief)

Empowering his team

Dr. Evgeniy Krivoschekov is the lead pediatric cardiac surgeon at the Tomsk Cardiology Institute and the leader of their children's heart program. Since 2004, he has learned from eight Heart to Heart medical teams in action in Russia; he has also observed U.S. best practices firsthand at the home institutions of several of his American colleagues. He is a strong advocate for on-going education for every specialist on his team. He has created a culture of openness that encourages all specialists to voice their opinions in patient care conferences, where lively exchanges of ideas regarding treatment options have become the norm.

Feedback from the Tomsk team

In a series of personal interviews we conducted on this trip, two consistent themes emerged. First, several of our Siberian colleagues underscored the importance of Heart to Heart's having taught them the value of teamwork. They credit their dramatic program progress to recently developed cohesiveness that enables their team to function at an extremely high level. The second theme is how highly they value on-going education for each and every member of their pediatric cardiac team. A poignant example of this priority was their team's decision to forego performing a fifth open heart surgery with the Heart to Heart team, in favor of holding a full-day of lectures and presentations, to take fullest advantage of the cardiac expertise and experience of our medical volunteers. (The Tomsk team successfully operated on the fifth case, Symbat E., the week following Heart to Heart's departure. Read her story, page 2.)

"Heart to Heart has played a major role in unifying us. All our colleagues from other Russian hospitals, who are here to observe, notice how well our pediatric team works together. They tell us they envy our teamwork and our working atmosphere. Now I understand how necessary it is to have real communication among all our specialists — on our own team — who work in different areas of pediatric cardiac care. Each set of our specialists has begun to understand each others' questions and concerns. We see that Heart to Heart teams are made up of people who don't work together in the U.S., but who still work smoothly together as one team in Russia. That is what we strive for."

—ALEXANDER SOKOLOV, MD, PhD, PROFESSOR
DEPARTMENT HEAD, FUNCTIONAL DIAGNOSTICS

"Sometimes when people come here, they are amazed at how cooperatively we work. They've never even dreamed such teamwork could be possible."

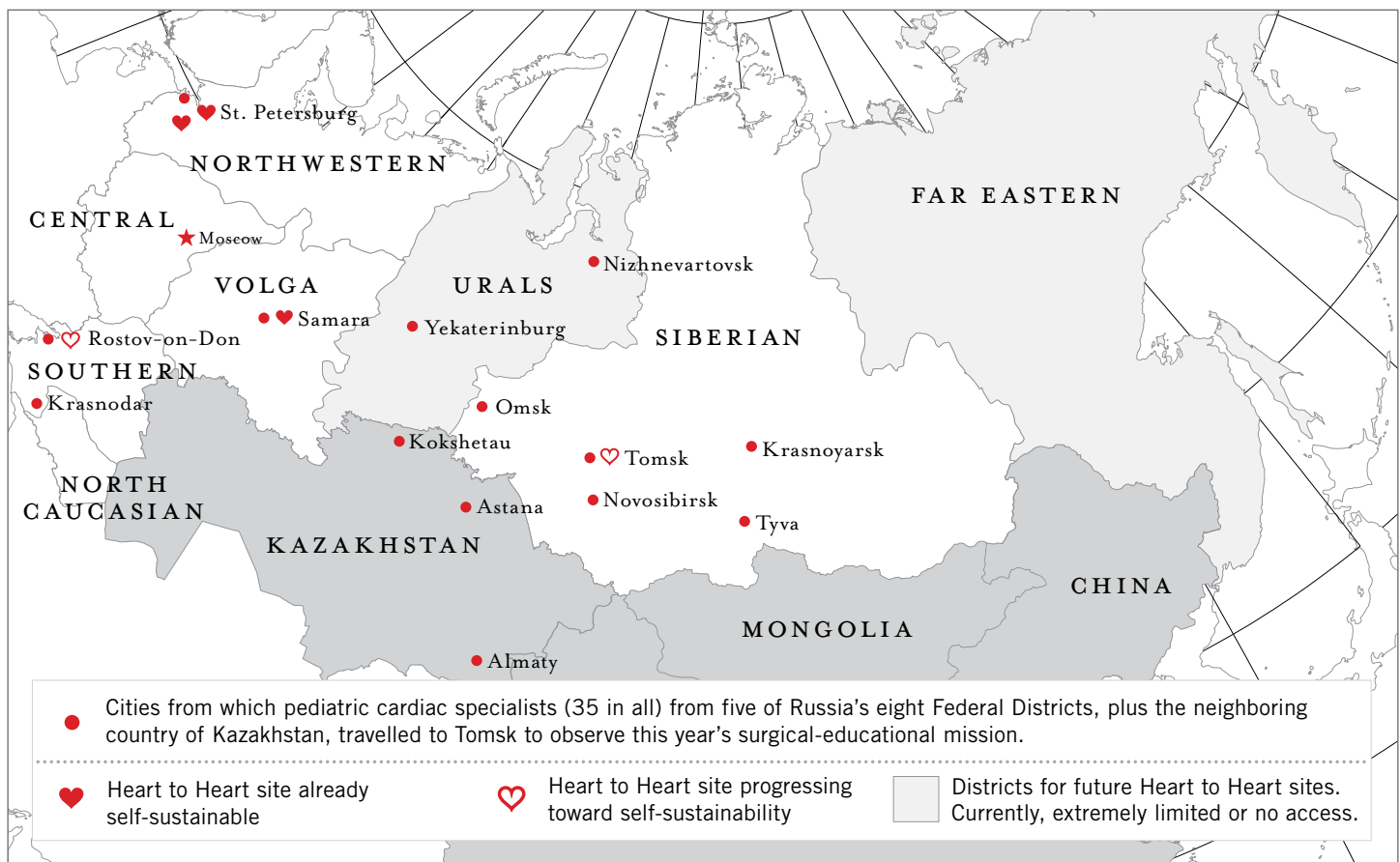
—VIKTOR VARVARENKO, MD
INTERVENTIONAL CARDIOLOGIST

"You need everyone. If you have a great surgeon but your cardiologists are inadequately trained, your patients are in trouble. You can have a great cardiology team, but without a great surgeon you are nowhere. You must have everyone, and everyone must work together."

—IGOR KOVALEV, MD, PhD, PROFESSOR
DEPARTMENT HEAD, PEDIATRIC CARDIOLOGY

Excerpted from personal interviews conducted in Tomsk, in Russian, by Heart to Heart volunteer Rose Glickman, PhD.

HEART TO HEART'S 2011 MISSION TO TOMSK DRAWS A NATIONWIDE AUDIENCE TO SIBERIA



Patient outreach within Siberia

The Siberian Federal District comprises almost 2 million square miles, approximately half the size of the entire United States. In much of the District, the winter is extremely long and bitter, making travel difficult. Siberia is bordered by China to the southeast; Mongolia to the south; Kazakhstan to the southwest; and the Arctic Ocean to the north. The District is home to 20 million people, about three times the population of New York City.

Serving this vast, sparsely-populated territory poses specific challenges for the pediatric cardiac team at the Tomsk Cardiology Institute. Far more of their patients come from rural areas, somewhat removed from the "information age" and the many modern conveniences that are the norm in metropolitan areas. Ensuring that patients are properly screened presents an obstacle, given that doctors in these remote areas tend to be less medically advanced than their colleagues in Russia's larger cities, such as Tomsk. The team from Tomsk faces a three-fold challenge in reaching children throughout their District:

(1) Coordinating outreach clinics in a vast rural territory where physically getting to the patients for screening is, in and of itself, a major undertaking.

- (2) Building relationships and trust among rural doctors, maternity hospitals, and local clinics is essential to develop an effective referral system within the Siberian District's medical community.
- (3) Raising awareness and hope among isolated patient families who don't yet know that, with timely medical intervention, children born with heart disease are highly treatable.

The Tomsk team has done an impressive job of addressing all three challenges. Several years ago, they were able to identify these issues and took the initiative to develop outreach clinics as far as 2,000 miles away from Tomsk. Their outreach teams have been so effective, that during Heart to Heart's mission this year, we examined patients from all over Siberia. In fact, two of the children we operated on were identified through outreach clinics. The outreach programs have succeeded in expanding access to state-of-the-art heart care to children throughout the Siberian Federal District.

VISITING SPECIALISTS
attending Heart to Heart's 2011
Mission at the Tomsk Cardiology
Institute, by specialty and location

	Total by specialty	Southern Federal District		Northwestern Federal District		Volga Federal District		Urals Federal District		Siberian Federal District		Kazakhstan			
		Krasnodar (2,135 mi)	Rostov-on-Don (1,870 mi)	St. Petersburg (2,250 mi)	Samara (1,200 mi)	Yekaterinburg (920 mi)	Nizhnevartovsk (370 mi)	Omsk (400 mi)	Novosibirsk (130 mi)	Tomsk Children's Hospital	Krasnoyarsk (320 mi)	Tyva (600 mi)	Kokshetau (570 mi)	Astana (700 mi)	Almaty (970 mi)
Specialists															
Anesthesiologist / Intensivist	7		1	2		2			1	1					
Neonatologist	1													1	
OR Nurse	1									1					
Pediatric Cardiac Surgeon	8		1	1				1	2		2				
Pediatric Cardiologist	16	1	1	2	2	1		3	3		1	1			1
Pediatrician	1						1								
Radiologist	1												1		
Total by District	35	4		5	2	6		15				3			

(Distance in parentheses indicates number of miles from Tomsk.)

THE NETWORK EFFECT IN ACTION THROUGHOUT RUSSIA

The reputation of the advanced children's heart program in Tomsk has spread far beyond Siberia. This year, 35 specialists from 14 different pediatric hospitals (see map opposite) came to Tomsk to take advantage of the opportunity to:

- (1) gain advanced knowledge through lectures and workshops in a highly-concentrated timeframe;
- (2) observe in real-time patient examinations and open heart surgeries, and participate in all pre- and post-op Q & A conferences;
- (3) network with colleagues on topics ranging from patient consultations to program development issues.

Strengthening the medical community within the Siberian Federal District

Tomsk's successful outreach efforts provide two additional invaluable benefits.

Firstly, they serve to raise the level of awareness of congenital heart disease all over Siberia. They achieve this by teaching rural doctors about the prevalence and treatability of childhood heart disease, including how to properly screen children locally, to ensure that urgent cases are quickly referred and transported to surgery in Tomsk.

Secondly, the outreach programs rely on sophisticated collaborations with doctors at multiple and varied medical institutions. Forming these collaborative relationships leads to a more cohesive District-wide pediatric cardiac care infrastructure. The best evidence of this is the collaboration

between the Tomsk Cardiology Institute's state-of-the-art pediatric program and the well-established children's heart center in Novosibirsk (the only other high-volume children's heart program in the District). The joining of these two forces is dramatically improving access to high-quality open heart surgery for children in this part of Russia's heartland.

TOMSK 6 SURGICAL-EDUCATIONAL MISSION, APRIL 2011: FINANCIAL REPORT

FINANCIAL OVERVIEW

FINANCIAL SUPPORT

Russian Gift of Life, USA	50,000
The Estate of Nika Thayer	41,424
The Edwards Lifesciences Fund	25,000
The Medtronic Foundation	15,000
Total Financial Support	\$131,424

IN-KIND SUPPORT

Donated Medical Services	236,200
Non-medical In-kind (See Expenses below)	29,481
Total In-kind Support	\$265,681

TOTAL PROGRAM VALUE

In-kind Medical Services	236,200
Expenses (excluding Non-med. In-kind)	131,424
Non-medical In-kind Donations (Russian)	29,481
Total Program Value	\$397,105

EXPENSES

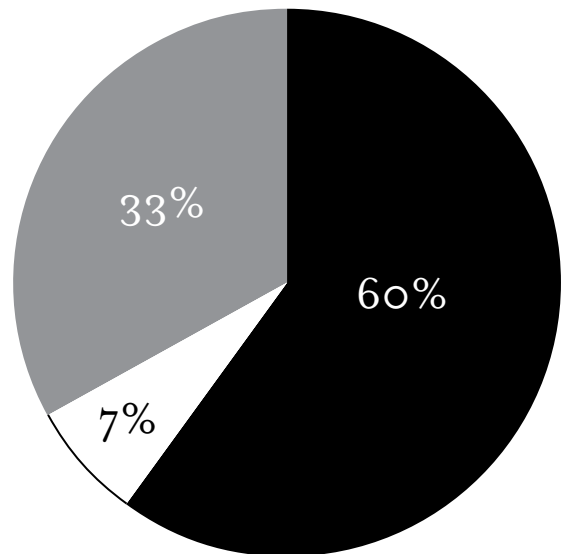
Ground Transportation, In-kind	1,400
Interpreters, In-kind	12,600
Lodging, In-kind	10,800
Meals, In-kind	1,800
Program Supplies	1,713
Team Coordination + Logistics	75,480
Travel	35,381
Travel Insurance, In-kind	1,440
Visas, In-kind	1,441
Year-round Program Support	18,850
Total Expenses	\$160,905

PROCEDURES PERFORMED

Patient Exams (30)	17,850
Echo Studies (3)	2,343
Echo Readings + Data Review (33)	58,245
Pediatric Open Heart Surgeries (4)	83,490
Other Surgical Procedures (1)	11,000
Perfusion (4)	10,504
Intraoperative TEE Studies + Readings (4)	4,800
Post-Op Exams / Readings (1)	781
ICU Post-Op Care, MD (5)	10,740
RN/Tech Support (OR + ICU)	13,947
Professional Consulting + Lectures	22,500
Total In-kind Medical Services	\$236,200

Data compilation as of June 10, 2011.

TOMSK 6, APRIL 2011 TOTAL PROGRAM VALUE: \$397,105



- Heart to Heart In-kind Medical Services \$236,200
- Expenses (excluding Non-med. In-kind) \$131,424
- Non-medical In-kind Donations (Russian) \$29,481

TOMSK 6 TOTAL PROGRAM VALUE:

67% of Tomsk 6 total program value consisted of services and products donated to Heart to Heart.

FINANCIAL SUPPORTERS

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



The Estate of
NIKA PLESHKOVA THAYER



Edwards Lifesciences



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