heart to heart
INTERNATIONAL CHILDREN'S MEDICAL ALLIANCE

INTO *the* HEARTLAND CAMPAIGN

THIRD SELF-SUSTAINING SITE
TOMSK
SIBERIA
2012
MISSION ACCOMPLISHED

SITE: TOMSK
DISTRICT: SIBERIAN
COLLABORATION LAUNCHED: 2006

MAR 30-APR 6, 2012
MEDICAL-EDUCATIONAL
MISSION 7

April 2012, Tomsk Cardiology Institute: The Tomsk pediatric cardiac team is made up of over 50 specialists. These physicians and nurses have been trained to diagnose, perform open heart surgery and catheter-based interventions, and provide intensive care to babies born with congenital heart defects. Each year, the Tomsk team now successfully treats nearly 500 children of all ages, including newborns.

ADVANCED PEDIATRIC HEART CARE NOW AN EVERYDAY REALITY IN TOMSK, SIBERIA

In 2004, a foursome of physicians from the Tomsk Cardiology Institute, led by cardiac surgeon Evgeniy Krivoschekov (Dr. K), travelled 2,250 miles to Heart to Heart's flagship site in St. Petersburg to observe Russia's most advanced pediatric cardiac team. The St. Petersburg team was led by Dr. Vadim Lubomudrov, widely considered the best children's heart surgeon in the country. From 1990-1998, Dr. Lubomudrov had been mentored by Heart to Heart Founder & Medical Director Dr. Nilas Young. (Heart to Heart's program in St. Petersburg reached self-sustainability in 1998.)

Eight months later, Dr. K and four colleagues from Tomsk travelled to observe a Heart to Heart surgical-educational team in action in Samara (Volga Federal District) during our third mission there. (Heart to Heart's program in Samara reached self-sustainability in 2009.) While in Samara, the physicians from Tomsk discussed with Heart to Heart medical volunters and staff their strong desire to be able to save the lives of babies and children born with heart defects in the Siberian Federal District. They were eager to learn about Heart to Heart's methodology. Their dream was a perfect match with the mission of our *Into the Heartland Campaign (2002 - 2022).*

In the Spring of 2005, Heart to Heart Executive Director Josie Everett travelled to Siberia for an initial site assessment with Dr. David Teitel, Medical Director, UC San Francisco Pediatric Heart Center. Their visit affirmed that the requisite basic infrastructure and personnel were in place. Later that same year, Ms. Everett returned to the Tomsk Cardiology Institute with Dr. Young. They agreed that Dr. K's vision and passion were shared by his pediatric team and fully supported at the highest levels institution- and region-wide. They

HEART TO HEART 2012 TOMSK TEAM: Children's Healthcare of Atlanta: Brenda Jarvis, senior PCICU nurse; Lisa Poppell, PCICU nurse **Children's Hospital of Wisconsin:** Dr. Stuart Berger, pediatric cardiologist and co-director, Herma Heart Center; Dr. Julie Biller, pulmonologist; Dr. Girija G. Konduri, neonatologist **Loyola University Medical Center:** Lynn Graham, clinical nurse **Mayo Clinic:** Dr. Frank Cetta, pediatric cardiologist; Dr. Nathan Taggart*, cardiology fellow **Heart to Heart:** Josie Everett*, executive director; Rose Glickman*, PhD, writer and interpreter; Lena Traer*, assistant to the executive director.

*fluent speaker of Russian

recommended to the Heart to Heart Board of Directors that our organization enter into a collaboration with Tomsk. The next steps were to negotiate a protocol agreement and secure long-term funding to launch our third pediatric site.

Fast-forward seven remarkable years, and the pediatric cardiac program at the Tomsk Cardiology Institute is widely acknowledged throughout the Russian Federation for providing the most advanced pediatric cardiac surgery available in the country. In this report, we share with you their path to self-sustainability and the ways Heart to Heart measured their progress and success.

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Data Collection & Analysis

To evaluate progress and help determine annual training objectives for the Tomsk team, Heart to Heart's cardiac experts used three key metrics: patient volume; patient age at time of surgery; and complexity of surgical procedures performed.

A pediatric cardiac program, regardless of its location in the world, is judged by its surgical outcomes. To evaluate surgical outcomes, Heart to Heart closely reviewed data for each patient on an individual (per case) basis, as well as collectively, as part of the annual case mix. Complications and mortalities were also continuously reviewed.

No more backlog: Heart to Heart's teaching methodology ensured that the Tomsk team mastered the fundamentals of pediatric cardiology, cardiac surgery, and post-op care. This enabled them, relatively quickly, to dramatically increase their ability to save the majority of children born with life-threatening heart defects. Today, Tomsk no longer has a backlog of waiting children. Shown here: In 2006, Dr. Janet Simsic examines eleven-year-old Yuri K. after his long-awaited open heart surgery.

In 2011, nearly three times as many children were able to undergo open heart surgery in Tomsk, compared to 2005.

TOMSK: SURGICAL PROCEDURES PERFORMED, by year and patient age at time of surgery

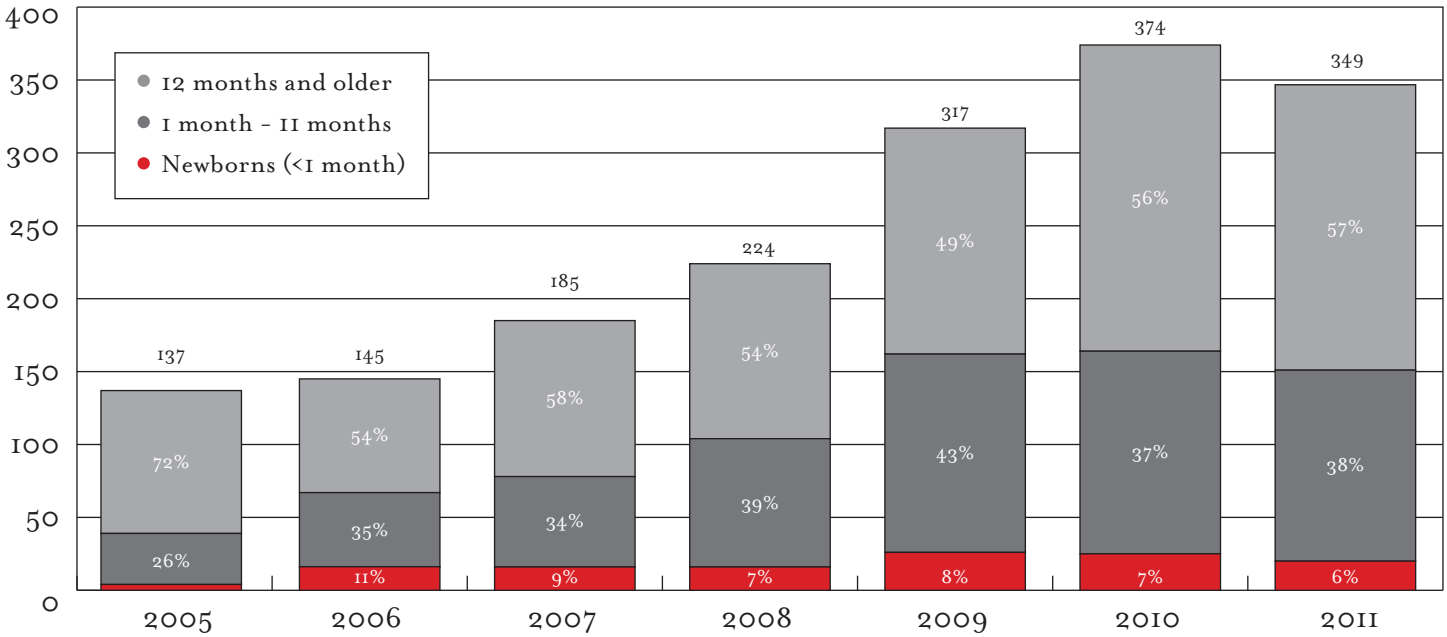


Fig. 1: A comparison of 2011 to 2005 demonstrates an increase of more than 2.5 times in annual patient volume; the percentages of patients in the youngest two categories steadily increased: 11 months or younger, and newborns. Surgery before the age of three years is recommended for most children born with serious heart defects. Shown here: open heart and open chest procedures; interventional procedures not included.

By conducting these reviews, experts from Heart to Heart's Medical Advisory Council were able to identify patterns and trends reflecting programmatic strengths and weaknesses. Annual analyses were instrumental in validating program progress and developing educational next steps.

Feedback relevant to the Tomsk team's learning curve was routinely provided to them by members of Heart to Heart's Medical Advisory Council and staff both verbally (in small groups and conferences) and in written form (via email correspondence and annual reporting). Some of these communications were in English, some in Russian, and many in both languages. Most of the Heart to Heart specialists involved in the feedback loop also travelled to Tomsk to participate on annual surgical-educational missions.

Strategic Guidance

To determine our educational objectives from year to year, Heart to Heart used the Risk Adjustment for Congenital Heart Surgery index (RACHS-1 method, referred to herein as RACHS) as a guide. This internationally-recognized evaluative tool categorizes each pediatric open heart procedure according to its complexity and associated risk for mortality. Using RACHS to inform our annual educational focus, Heart to Heart was able to build the local team's knowledge base and skill set in a stepwise fashion.

On the children's ward: Every year, hundreds of children receive life-saving heart care at our Tomsk site. Many of them travel great distances, staying at the hospital for weeks until they can be safely discharged to their hometowns, where follow-up care is often limited. The Tomsk doctors provide compassion and expert care to these out-of-region patients and their families.

Annual review of several hundred individual data profiles painted a picture — year by year — of the Tomsk team's evolving level of proficiency.

TOMSK: SURGICAL PROCEDURES PERFORMED, by year and surgical complexity (RACHS-1 method)

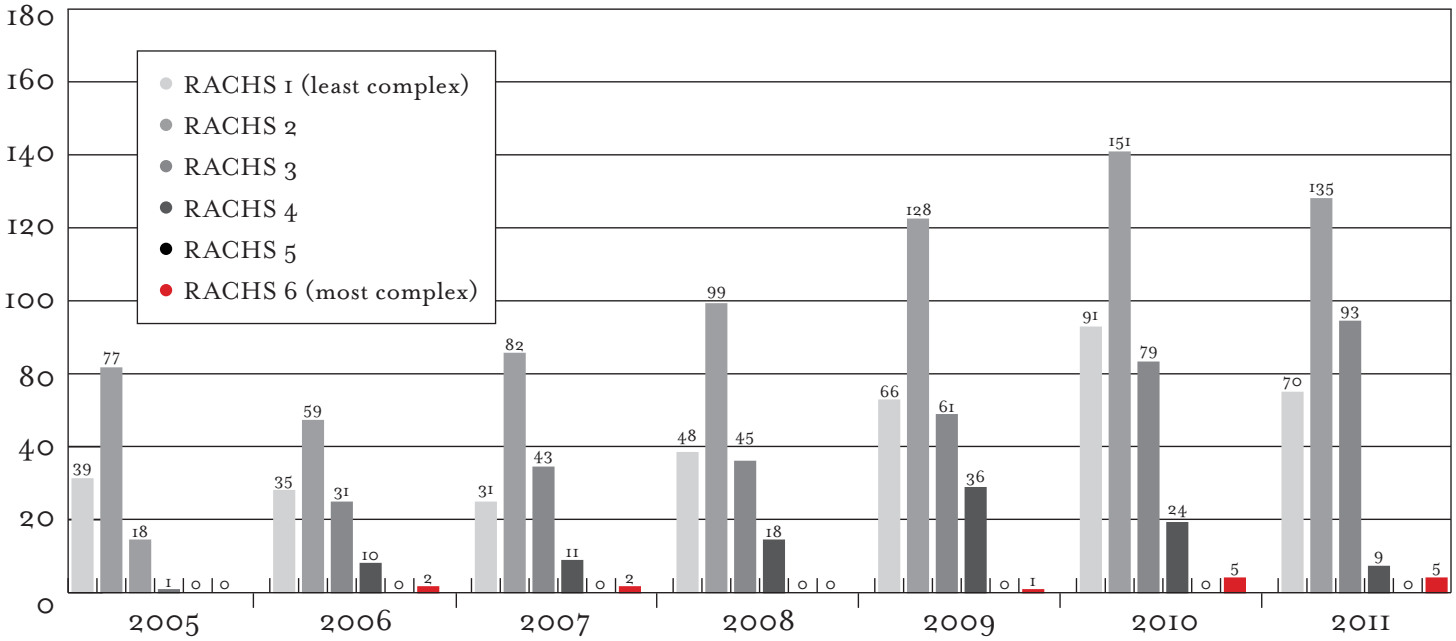


Fig. 2: A comparison of 2011 to 2005 demonstrates an increase in the complexity of surgical procedures. By 2011, 34% of the Tomsk team's case mix was comprised of RACHS 3–6 cases; in 2005, such cases made up only 14%. Worldwide, the most prevalent congenital heart defects fall into categories 1–4. Shown here: open heart and open chest procedures; interventional procedures not included. Not all procedures could be assigned RACHS scores.

Experiential learning in Tomsk and the U.S.: (Left photo, r. to l.) Lynn Graham, RN; Dr. Frank Cetta; and Dr. Janet Simsic – the three Heart to Heart volunteers shown here – collectively traveled to Tomsk a total of 17 times to work side-by-side with their Tomsk colleagues. Dr. Cetta hosted four Tomsk colleagues at Mayo Clinic as well as in his home. (Right photo) Drs. Ginko, Cetta, and Krivoschekov in the Mayo Clinic CICU with Tomsk patient Akbota A. following her open heart surgery.

Annual surgical-educational missions

Heart to Heart provided year-round assistance to advance program development in Tomsk. Everyone – on both sides of the Atlantic – agrees that the highlight of each year was Heart to Heart's annual mission to Tomsk. For seven consecutive years, for two weeks on the ground, Heart to Heart moved forward using a two-pronged educational approach: (1) patient-centered experiential learning gained by U.S. and Tomsk specialists working side-by-side to provide direct patient care to children – diagnosing, performing open heart surgery, and providing post-op care; and (2) didactic learning, knowledge imparted through Heart to Heart presentations – in case conferences, lectures, and workshops – on topics tailored to match the Tomsk team's place along the learning curve as they moved toward self-sustainability.

Extended experiential learning in the U.S.

In addition to patient-centered experiential learning during annual missions, several of our colleagues from Tomsk had the opportunity to travel to leading pediatric cardiac centers in the U.S. They were invited by Heart to Heart medical colleagues – with whom they had already worked side-by-side at the Tomsk Cardiology Institute – to experience "behind the scenes," day-to-day interactions at high-volume, well-established pediatric cardiac programs. Physicians from Tomsk observed best practices of advanced teams at four centers in the U.S. – paying special attention to the roles of communication and teamwork. They were able to job-shadow their Heart to Heart colleagues, joining specific working groups and attending morning rounds as well as the full range of daily and weekly conferences. Heart to Heart medical volunteers opened their homes, providing food and lodging – as well as the unique opportunity to discuss concrete ideas for integrating U.S. best practices in Tomsk.

Dr. K, head of Tomsk's pediatric cardiac team, benefited from a total of six months of experiential learning through Heart to Heart: 13 weeks in Tomsk; 3 weeks in St. Petersburg and Samara; and 9 weeks in the U.S. at three different hospitals.

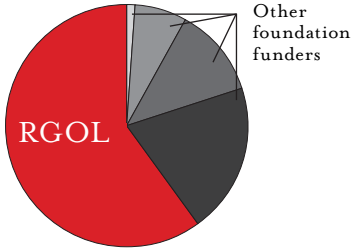
Strong working relationships

The continuity and consistency of Heart to Heart's medical volunteers greatly facilitated building trusting relationships between the U.S. and Russian teams. Consequently, it was easier to ascertain and address the Tomsk team's knowledge gaps. Heart to Heart customized its surgical focus and didactic material to capitalize on strengths and overcome systemic weaknesses. As patient age (at time of surgery) decreased, and surgery became increasingly complex, the working relationships between Heart to Heart volunteers and their Tomsk colleagues grew stronger and stronger.

A total of 28 U.S. pediatric cardiac specialists worked as Heart to Heart medical volunteers in Tomsk. Fourteen of them participated on multiple surgical-educational missions. Their efforts accounted for 75% of the teaching required to develop the Tomsk pediatric cardiac center of excellence using Heart to Heart's program model.

Timely treatment now available in Tomsk: For a child born with a serious heart defect, timely treatment is literally a matter of life and death. Heart to Heart develops teams of local specialists skilled at determining the right time and the right procedure to treat each individual child. The Tomsk team is now capable of treating any baby or child within his "window of opportunity."

RUSSIAN GIFT OF LIFE, USA
СПАСИБО ВАМ БОЛЬШОЕ!



RGOL, USA contributed over half of the financial support for Heart to Heart to develop the children's heart program in Tomsk. The Tomsk team can now perform open heart surgery on children of all ages, including newborns.

RGOL also sponsored airfare for six children to travel to the Mayo Clinic for life-saving surgery not available in Tomsk at the time, and co-sponsored several physicians to visit leading U.S. children's heart programs.

Now that the Tomsk team has achieved self-sustainability, RGOL's investment in our program model creates a "gift of life" legacy: Each year the lives of hundreds of children will continue to be saved in perpetuity.

With financial help from RGOL between 2006-2012, 1,775 children were given the gift of life *at the Tomsk Pediatric Heart Center.*

TOMSK PEDIATRIC HEART CENTER, OFFICIALLY ESTABLISHED 2010

For the Tomsk team, the most tangible symbol of their achievement is the official recognition of their program as its own entity within the Tomsk Cardiology Institute. At this year's press conference, Dr. Rostislav Karpov, Director of the Tomsk Cardiology Institute, and Dr. Vladimir Shipulin, Chief of Cardiac Surgery, publicly acknowledged Heart to Heart's contributions to this accomplishment over the past seven years.

New national leaders in the Russian Federation

The Tomsk team's leaders place enormous value on education, not only for their team members and local colleagues, but for all pediatric cardiac specialists striving to provide advanced care for children with congenital heart defects. Their commitment and organizational strengths enabled them to host, during Heart to Heart's 2011 surgical-educational mission, 35 visiting specialists from across Russia. The schedule they orchestrated amounted to a nationwide 10-day meeting, complete with high-level case reviews and live video streaming of advanced open heart procedures. Daily case conferences ran smoothly; professionally-coordinated top-notch medical interpreting made for an extremely efficient use of time and maximum learning opportunities.

Word has spread throughout Russia's cardiac community about the remarkable knowledge-sharing the Tomsk team and institutional management are enthusiastically offering. During Heart to Heart's 2012 mission, we were not surprised to meet even more pediatric cardiac physicians from different programs throughout the Russian Federation. Heart to Heart is immensely gratified that in addition to becoming a true center of excellence, the Tomsk Pediatric Heart Center has essentially become a national training site – a valuable resource serving all of Russia.

HEART TO HEART–TOMSK COLLABORATION 2006–2012: TOTAL PROGRAM VALUE $3,348,308

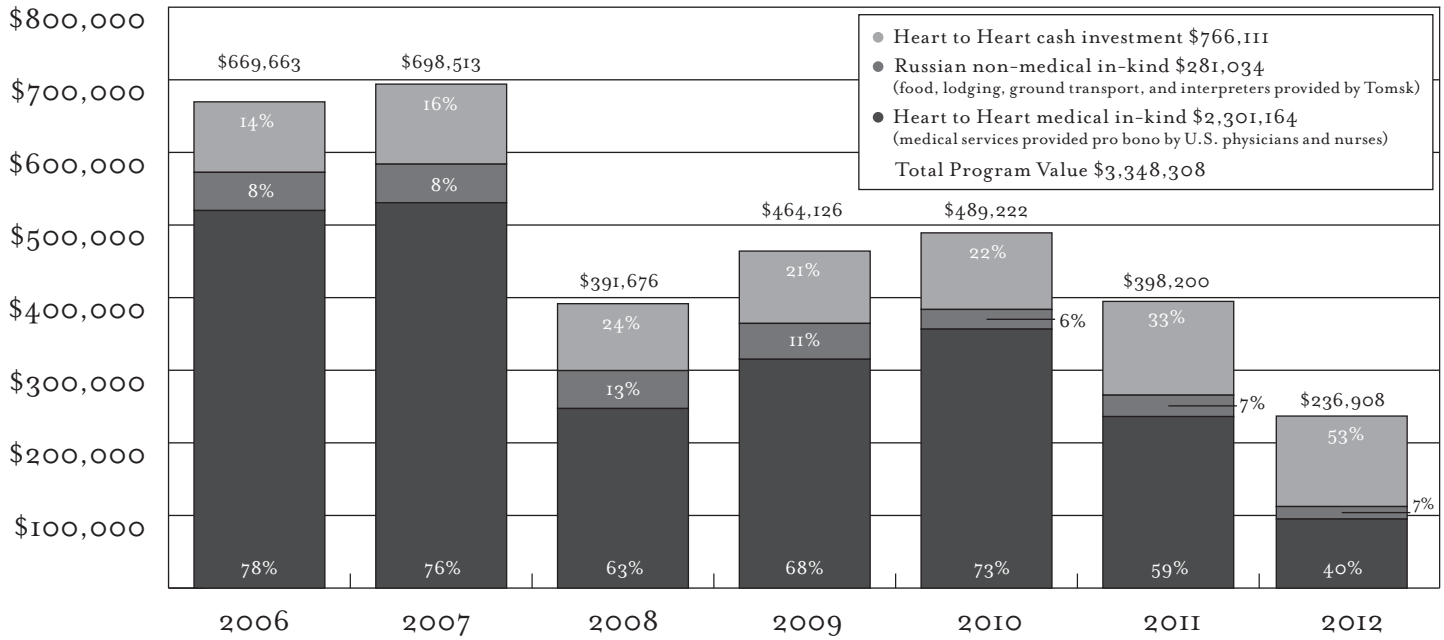


Fig. 3: Total Program Value is the sum of (1) Heart to Heart's cash investment toward the program development collaboration; (2) non-medical in-kind contributions made by our partners in Tomsk; and (3) in-kind medical services provided by Heart to Heart volunteers. (Does not include cost of patient services or local overhead expenses borne by the Tomsk Cardiology Institute during the collaboration. Actual figures through May 2012; estimated figures used for June 2012.)

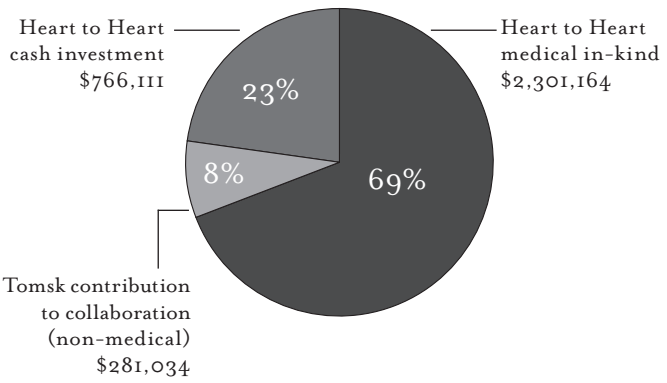
Efficacious and cost effective program model

Twenty-five years ago, Heart to Heart pioneered a model for international humanitarian aid focused on pediatric cardiac care. Our program model is based on the transfer of medical knowledge: how to save children born with heart defects. The program in Tomsk is our third sponsored site to achieve self-sustainability.

Now that the Tomsk program is self-sustaining, Heart to Heart's investment at this site is complete. Figures on this page demonstrate both the relatively modest cash investment to reach self-sustainability in Tomsk and our organization's ability to leverage dollars donated to Heart to Heart.

During our seven-year involvement in Tomsk, Heart to Heart's "cash investment" per child saved was $432. Our colleagues have already saved 1,775 children. Moving forward they will save more than 350 children each year in perpetuity, with no further investment from Heart to Heart.

HEART TO HEART–TOMSK COLLABORATION CASH vs. IN-KIND INVESTMENT



TOTAL PROGRAM VALUE

From 2006-2012,

77% of Tomsk program value consisted of services donated to Heart to Heart

MAJOR CONTRIBUTORS

Russian Gift of Life, USA

Medtronic Foundation

The Estate of Nika Pleshkova Thayer

Edwards Lifesciences

Joey's Corner Design That Matters

Center for Citizen Initiatives

St. Jude Medical Foundation

Design: Joey's Corner | www.joeyscorner.org

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