



Gottsegen Hungarian
Institute of Cardiology
Pediatric Cardiac Centre

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Introduction: Hungarian Institute of Cardiology, Pediatric Heart Centre is the national centre for pediatric cardiology and pediatric cardiac surgery in Hungary. This centre is dedicated to cover the full spectrum of diagnostic and therapeutic modalities for congenital heart disease (CHD) from the newborn period to grown-up congenital age group.

General background: Hungary has a population of 10 millions (June 2002: 10.175.034), there is an average of 95-99.000 (June 2002: 97.047; birth rate: 9.5‰) live births per year. Congenital heart disease comes in about 0.6-0.8% of all deliveries, which makes a rough estimate of cca. 800 new patients with congenital heart problems in every year. According to international surveys two-thirds of that patient population would need a surgical intervention during their lives. The surgery is indicated/necessary within the first six months of life in half of the surgical pool.

- We have around-the-clock access to labs, nuclear medicine laboratory
- Pediatric care cover: two university pediatric departments and the largest pediatric hospital in Budapest are in very close vicinity, offering consultation, CT-scan, MRI, postoperative recovery facilities
- The Centre fosters very strong links with Semmelweis Medical University and participates in all its programmes

Staffing and departmental structure

The faculty structure of the centre consists of three horizontal medical groups: pediatric cardiology, cardiac surgery, anaesthesia and intensive care. The centre is headed by a medical director (at present: **Dr. A Szatmári MD PhD FESC**, Chief of Pediatric Cardiology) who is one of the Deputy Directors of Hungarian Institute of Cardiology (the main institution). The surgical treatment of children with CHD, implies an excellent partnership with teams of pediatric cardiology and anaesthesia.

Pediatric cardiology: (Chief: Dr. A Szatmári MD PhD FESC)

- 8 full-time pediatricians-pediatric cardiologists (the training for pediatric cardiology in Hungary has a two-tier system starting with a full training on pediatrics)
- 1 postgraduate trainee in pediatric cardiology
- 1 pediatrician
- 2 trainee in pediatrics
- 1 postgraduate intern/resident

Pediatric cardiac surgery: (Chief: Dr. L Király MD FETCS)

- The unit is headed by a surgeon certified by the European Board of Thoracic and Cardiovascular Surgery (EBTCS) who also possesses international licensure (UK and Europe)
- 4 fully trained cardiac surgeons with Hungarian certificate on cardiac surgery
- 1 postgraduate trainee in cardiac surgery

Anaesthesia and intensive care: (Chief: Dr. E Sápi MD)

- 6 fully trained cardiac anesthetists one of them with EU recognised certificate on anaesthesia; a PhD doctorate and a specialist in paediatrics and anaesthesia
- 1 postgraduate trainee in cardiac anaesthesia

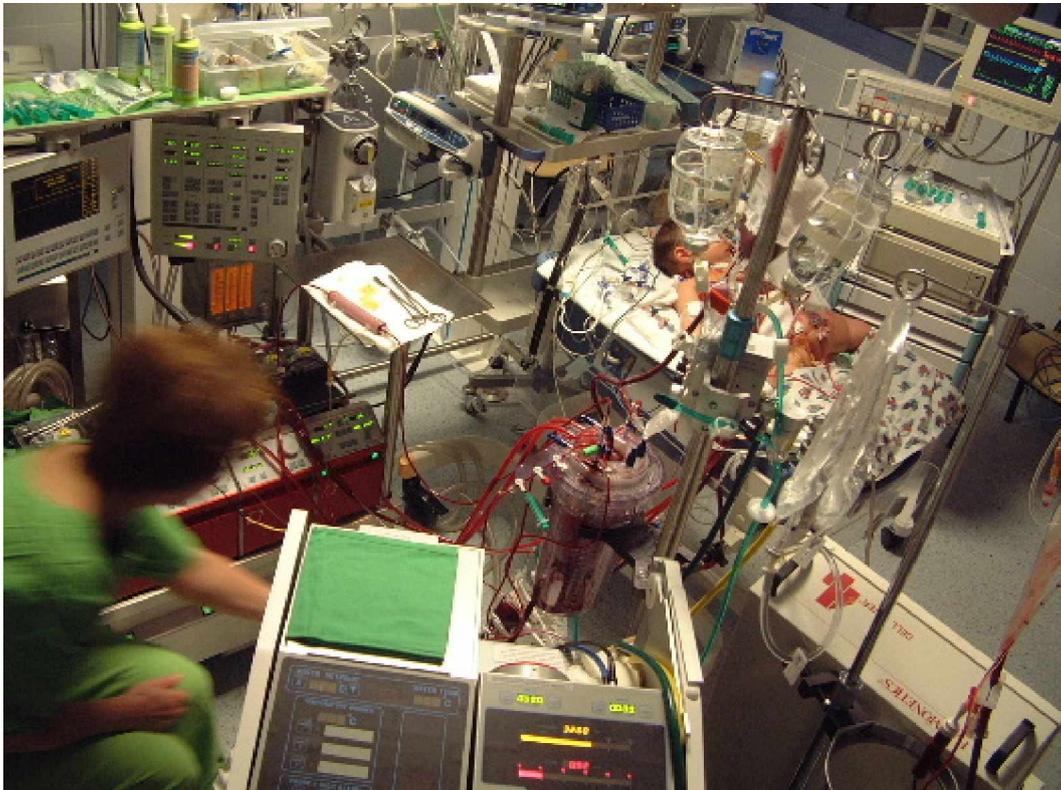
Assistant staff:

- 6 scrub nurses (all of them fully trained)
- 3 anaesthetist's assistants (all of them fully trained)
- 4 perfusionists (all of them fully trained)
- 1 transfusion nurse
- 4 ODAs

Nursing staff:

- ITU nurses
- Staff nurses

- Auxilliary staff: 2 physiotherapist, 3 echocardiography assistants, dietetician, teacher etc.
- Administrative staff, secretaries etc.
- Security and technical staff



Equipment:

- The two operating rooms are fully equipped with the state-of-the-art surgical equipment (including 3 ECC machines). We also have equipment for mechanical circulatory support: ECMO, Biomedicus-pump. IABP is available in sharing with the main Institution (with separate pediatric size balloons, interfaces) 2 cell-savers available
- The Centre uses 2 fully equipped modern echocardiography machines (Acuson Sequoia, HP Sonos 5000), multi-omniplane transeoesophageal echocardiography probes are also available. Outpatient clinics provide Holter, ergometry etc. facilities. A further echo machine is under purchase
- Cardiac catheter/angiography labs, pacemaker and electrophysiology labs are available in sharing with main Institution

Programs:

- Full range of pediatric cardiology and congenital cardiac surgery from neonatal age to 18 years
- Grown-up congenital cardiology and cardiac surgery
- Interventional cardiology
- Invasive arrhythmia/dysrhythmia evaluation (in cooperation with Weser Hospital, Bremen, Germany)
- ECMO and bridging for transplantation circulatory support
- Pediatric cardiac transplantation (to be started in 2003/4)
- Pediatric pacemaker implantation
- Procurement and banking of allograft cardiac valves and conduits
- Museum of cardiac pathology: entertains a unique collection of 400 malformed hearts spanning over a period of more than thirty years
- Undergraduate (with Semmelweis Medical University, Budapest) and postgraduate medical training in cardiology and in (cardiac) surgery in the national CME scheme
- Specialist training in cardiac surgery, pediatric cardiology and for perfusionists in the National Postgraduate Training Scheme

- Postgraduate specialist training for cardiac surgeons, anaesthetists and intensive care nurses in cooperation with Cardiac Centre in Cluj, Romania and Humana Foundation, Ohio, USA (to be started in 2003/4)
- Participation in PedECSUR International Database
- Research activity

**Activity data:**

The Centre admits patients 24-hours a day, 365-days a year. Emergency surgery is carried out whenever it is indicated. Currently, 13.5% of overall surgeries are performed on an emergent basis. On-call team consists of two surgeons (one of them at Consultant level), Consultant pediatric cardiologist and Consultant anaesthetist. In-hospital team involves doctors in charge for postoperative ITU and separately for ITU and pediatric wards plus an anaesthetist assistant, scrub nurse, ODA. All of the investigation and therapeutic modalities are fully available on out-of-hours basis (around the clock).

Full range of pediatric cardiology and pediatric cardiac surgery is performed.

Pediatric cardiology:

	2002.	<i>Difference from previous year</i>
Hospital admissions	1198	+5%
• Patients <1y admitted	417	+48%
Outpatients	5731	+12%
• Outpatients <1y	1208	+11%
<i>Echocardiography</i>		
	10278	+5%
Outpatients	4801	+15%
Fetal echo	161	-20%
Transoesophageal echo	397	+74%
Intraoperative	239	+64%
In cathlab	6	
Postop ITU	1201	+17%
ITU/pediatric wards	3261	+0%
<i>Cardiac catheter/angiography</i>		
	447	19%
Interventional cardiology	220	38%
Interventions/caths ratio	49 %	6%
ASD device closure	68	280%
Pulmonary valve ballooning	50	41%
Aortic valve ballooning	24	28%
PDA closures	31	105%
Native and postsurgical coarctation ballooning	31	21%
Rashkind balloon septostomy	15	10%
<i>Holter-monitoring</i>		
	296	
<i>Peripheral vessel Doppler studies</i>		
	115	

Pediatric cardiac surgery:

- **Neonatal corrective surgery for TGA, TAPVD, IAA/VSD** etc. is routinely carried out by our team with very gratifying results. Overall mortality for these operations (even in the complex group) is below 5%. In 2002 32 arterial switch operations were performed for TGA with no mortality.
- **Modified Norwood-stage I** palliation for HLHS patients started in 2001/2. 18 patients have underwent so far this type of intervention with two operative mortality. To date 4 patients have progressed to the second stage (BDG). We utilize moderate hypothermia with the avoidance of total circulatory arrest, and of cardiac arrest for the stage-I operation.
- **Ross-procedures** started in 2001. To date 47 such operations were performed with a single fatality and no major morbidity.
- **Axillary right thoracotomy** has been introduced for cosmetically appealing approach for simple procedures e.g. ASD, VSD closures, SAS resection, AVD repairs etc.
- **Grown-up congenital cardiac surgery (GUCH):** this is a very important program in our department. The number of GUCH patients is expected to rise with staged operations, conduit replacements, pulmonary valve implantation following TAP repair in ToF, etc. This may lead to an upgrade shift in surgical complexity and severity. We are assigned to receive complex GUCH cases. To date over thirty GUCH patients underwent succesful repair.

	2002
ECC procedures	388
Patients <1y	341
• ECC patients <1y	278
Patients <1month	136
• ECC patients <1month	81
Procedures without ECC	190
Total number of procedures	578
Overall mortality	17(2.94%)
Reoperations for complications	9(1.55%)
• Arterial switch for TGA	32(0)*
• TAPVD correction	11(1)*
• Norwood-I for HLHS	6(1)*
• IAA/VSD repair	5(0)*

• Homograft implantation	36
• Pacemaker implantation (no surgical AV block occurred)	11

**operative mortality in brackets*

Scientific and research activity, participation in international societies:

- ∅ President of the Hungarian Society of Pediatric Cardiologists (Dr. Szatmári)
- ∅ Secretary of Interventional Cardiology Working Group, AEPC (Dr. Szatmári)
- ∅ Member of the Council of AEPC, (Dr. Szatmári)
- ∅ President of the AEPC from 2004 (Dr.Szatmári)
- ∅ Fellow of the European Society of Cardiology (FESC) (Dr. Szatmári)
- ∅ Presidential Board Member of Hungarian Society of Cardiologists (Dr. Szatmári)
- ∅ Presidential Board Member of Hungarian Society of Pediatrics (Dr. Szatmári)
- ∅ European Congenital Heart Surgeons' Foundation Member (Dr. Király)
- ∅ Fellow of the European Board of Cardiothoracic Surgeons (FETCS) (Dr. Király)
- ∅ Hungarian Society for Cardiac Surgery, Presidential Board Members (Dr. Király, Dr. Hartyánszky,)

International cooperations

- ∅ *British-Hungarian Intergovernmental Research&Development Cooperation: The Virtual Museum in cooperation with Prof. RH Anderson, Great Ormond Street Hospital, London UK (Dr. Király) R&D numbers 03CC13 and 02CC04, No. GB-41/2003*

International Workshop on catheter interventions for congenital Heart diseases, Milano, faculty

Working co-operation with international hospitals

- ∅ *Birmingham Children's Hospital, Birmingham, UK*
- ∅ *Wessex Cardiothoracic Centre, Southampton, UK*
- ∅ *University Hospital, Hamburg-Eppendorf, Germany*
- ∅ *Centre Chirurgical Marie-Lannelongue, Paris, France*
- ∅ *Groshadern Hospital, München, Germany*
- ∅ *University Hospital Rotterdam, Sophia Children's Hospital, The Netherlands*

National S&D Fund grant winner (dr.Czeilinger, Dr.Szatmári) in cooperation with Hungarian Academy of Science (SZTAKI)

Number of PhD. Degrees: 4

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For further information, please contact:

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