



EXPERT REPORT

The Burden of Congenital heart disease in China

Based on presentation by Andreas Petropoulos (Merezi Klinika, Baku)
on April 12th at MITERA hospital Athens- 3rd EuroAsian symposium on pediatric cardiology and surgery

The first message is that patient flow is more than a prevalence number. With a prevalence number of 0.8 – 1.2 % there is still a tremendous burden on the Chinese medical system. Now also the one child policy (1979- 2015) is now left up to a 3 + children number, with paying more tax if number of children is over two.

Table 1: Absolute numbers of new CHD cases in various parts of the world

Continent/country	New cases/annum
Europe	46.296
USA	40.000
China	216.140

Some numbers on CHD worldwide (new cases/year, conservative estimate; 0.8 % prevalence).

During the years in the cultural revolution, cardiac surgery was completely stopped between 1966 and 1971. In 1972 and 1974 the first procedures (resection of aneurism and bypass graft) were performed by Gao Jia-Chang.

The real new time started in 1979 and onwards. The first aortic valve repair was done in 1976. TOF repair has meanwhile decreased from 32 % mortality to 3.7 % and total treated cases increased from 6000 to 15.000 in 1990. The first use of a valvular conduit was in 1979 in DORV repair.

Since 2000 the number of cardiac centers has exploded with 600 new centers between 2000 and 2010 and another 50 between 2011 and 2016. Of those 650 centers, 70 are dedicated to Congenital Heart diseases. All centers together perform 145.000 surgical operations per year. *Data from Wan,Yim (2003) Ann Thorac Surgery 76: 2145-55*

The current burden of CHD in China is described best by the following numbers:

- » With a prevalence of 1.19 % there are 216.000 new cases (Tobe et al, 2017;Medicine 96:46).
- » New studies (Zhao et al, Lancet, 2014) show a prevalence of 1.61 % which mounts up to 291.752 new cases/year.
- » On an absolute number thus is 7 times more than Europe and USA.

- » 70 medical centers present that are specialized in the surgical treatment of CHD.
- » Surgical need is 175.000 cases per year.
- » Catheter interventions are estimated at 50.000 cases/year
- » The delivery of the procedures is 82 (Surgery) and 70 % (interventions) respectively.
- » Significant differences between rural and urban patients.

Table 2: A short summary of patient care for CHD in China

Parameter	Quantative estimate
Patient flow	300.000/year plus 2 million RHD patients
Centres offering CVS/CHD	650/70
Mixed CHD/CVD without ped card	500 delivering 250 mixed cases/year 130 delivering 500 mixed cases/year
Clear dedicated CHD centres	20: each delivering > 1000 cases/year
Coverage of clinical need	82 % (surgery), 70 % (interventions)

Socio-economic data in China demonstrate that there is a disbalance between insurance, salary and costs of procedures. The basic salary is between 185 and 350 USD. Social health care insurance covers 50 % of the costs of surgery and/or interventions. The costs for procedures are high as demonstrated in the Table below (based on Liu et al, Lancet 2012, Vol 397), plus 10-15 % other medical costs. Costs are 7-42 times higher than basic wages.

Table 3: Average costs for different surgical procedures for CHD in China.

Procedure	Costs (USD) range
ASD	1.850- 6.150
VSD	4.500 -4.900
AVSD	4.800
PDA	3.300 – 6.500
TOF	7.000
CoA	8.000

ASD, Atrial septal defect; VSD, Ventricular septal defect. ASVD, atrial-ventricular septal defect; CoA, Coarctation.

Cooperation projects in China on CHD with USA and European Centers offering Equipment, medical missions, training and focused at 1) collaboration, 2) education, 3) sustainability, and 4) innovation.

1. Shanghai Children's Medical Centre/Harvard Medical School

- » Started in June 1998 by Hilary Clinton
- » 410,00 square foot pediatric hospital with 350 beds
- » CHD service to patients of all ages

2. Project HOPE (Record setting Heart Surgery on Newborn)

- » SCMC: one of the world's premier pediatric health centers (3,500 procedures/ys)
- » Project HOPE developed the facility (37 MM medical equipment)
- » Opened in 1998
- » Training programs for health care workers, safety, and medical equipment support

3. Little Hearts Medical

- » Started with medical missions to China in 2012 and 2013
- » Cardiac file assessments in Orphan homes
- » Donation of equipment and Education programs
- » Dew Drops Cardiac Care Home established in 2016 consisting of Orphan Care Center for complex CHD, 20 beds in Beijing medical center and 80 beds in Inner Mongolia to reach every child in stable conditions.

4. Nationwide Children's Hospital China Program

- » Started in 2005, projects centered in 3 hospitals
- » Shanghai Children's hospital, Pudong District Hospital and Wuhan Children's Hospital
- » Training programme for physicians in interventional cardiology, surgery, intensive care, echocardiology and cardiopulmonary perfusion.

5. International Children's Health Foundation (ICHF)

- » ICHF multiple medical missions since 1993
- » Volunteer medical teams to perform pediatric surgery, train local medical teams
- » Donate medical supplies to partner hospitals
- » Up to date 480 surgeries in China

6. GlobalHeart-Kalangos Foundation(Connected to Mitera)

- » Building network with hospitals around the world providing low-cost CHD
- » Education programs
- » Humanitarian missions

