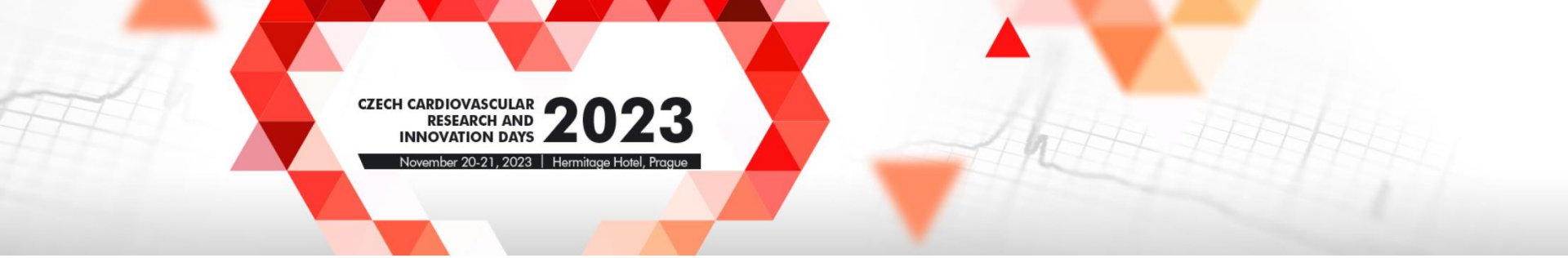

Contemporary characteristics and results of a nationwide paediatric heart transplantation programme

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FN MOTOL

European Reference Network
for rare or low prevalence complex diseases

Network Heart Diseases (ERN GUARD-HEART)
Member Motol University Hospital — Czechia

Introduction and Methods

Pediatric heart transplantation in the Czech Republic

Comprehensive paediatric nationwide HTx programme started in **2014**.

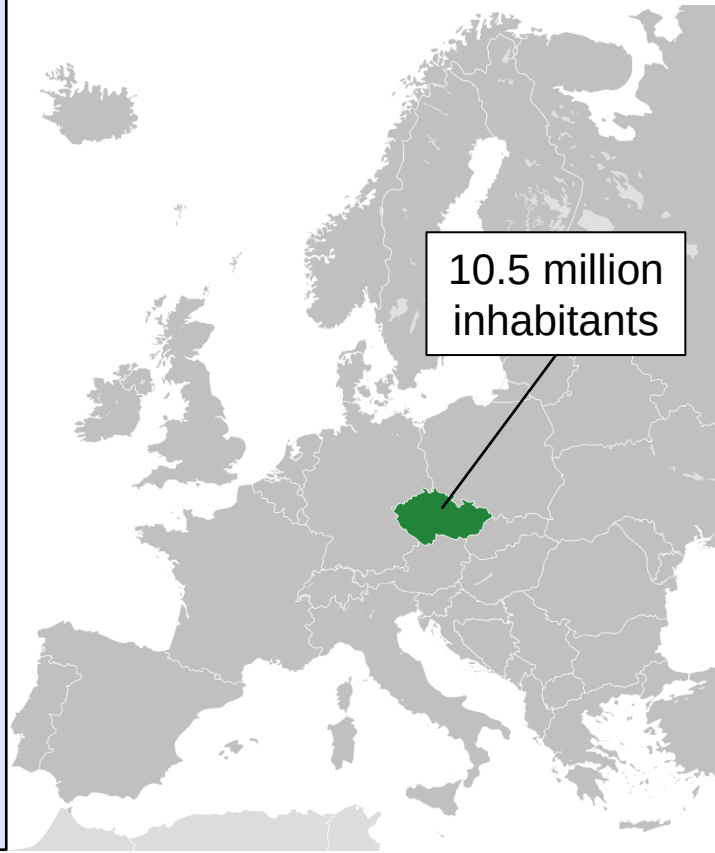
Previously,

- adolescents were transplanted within adult programmes
- paediatric programme focused on cardiomyopathies only (> 90%)

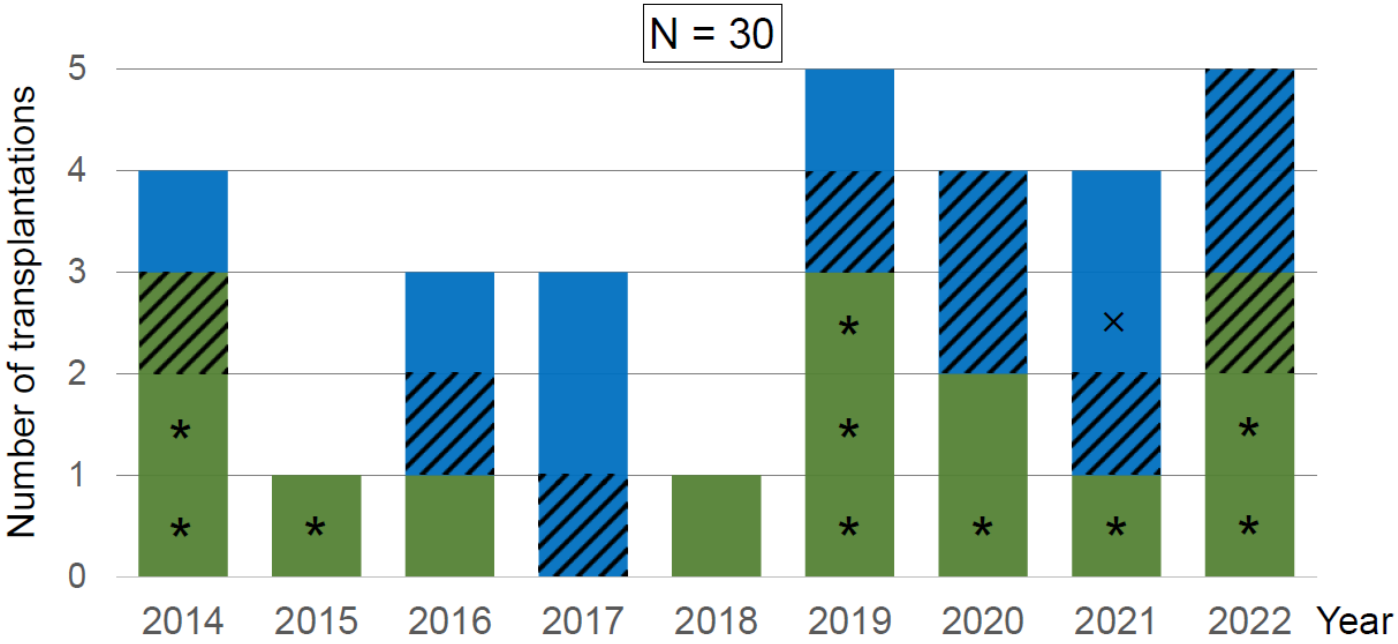
(M. Ošmerová et al, Cor et Vasa 2013)

Aim: To evaluate mid-term characteristics and outcomes of the nationwide paediatric HTx programme in the current treatment era.

Methods: Retrospective observational study including all patients who underwent heart transplantation (June 2014 - December 2022).



Number of Transplantations



Cardiomyopathy (CMP) N=15

Congenital Heart Disease (CHD) N=15

* Single ventricle physiology N=10

Durable left ventricular assist device N=10

× Re-transplantation N=1

Median waiting time: 84 days (IQR 42 – 228)

Left ventricular assist devices (LVADs)

Berlin Heart Excor	N = 3
Heartware	N = 4
HeartMate 3	N = 3

Median support duration: 98 days (IQR 27–150)

Peadiatric Durable Ventricular Assist Devices (VADs)

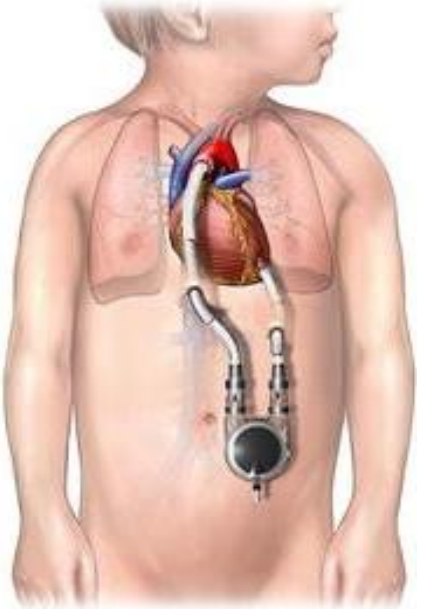
Heartmate 3

~ 20 kg

Heartware

~ 15 kg

Berlin Heart Excor



Intracorporeal – fully implantable
Continuous flow

Paracorporeal
Pulsatile flow

Peadiatric Durable Ventricular Assist Devices (VADs)

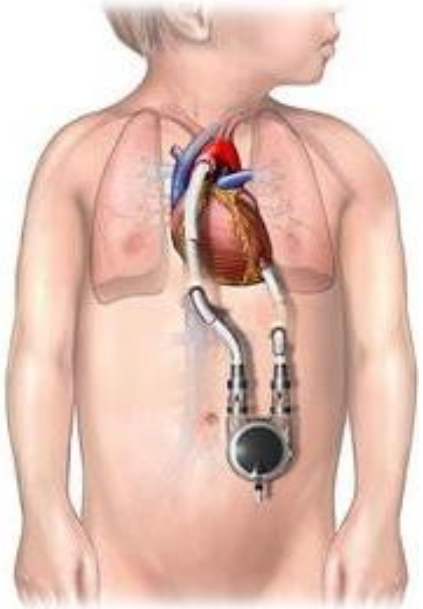
Heartmate 3

~ 20 kg

Heartwar

~ 15 kg

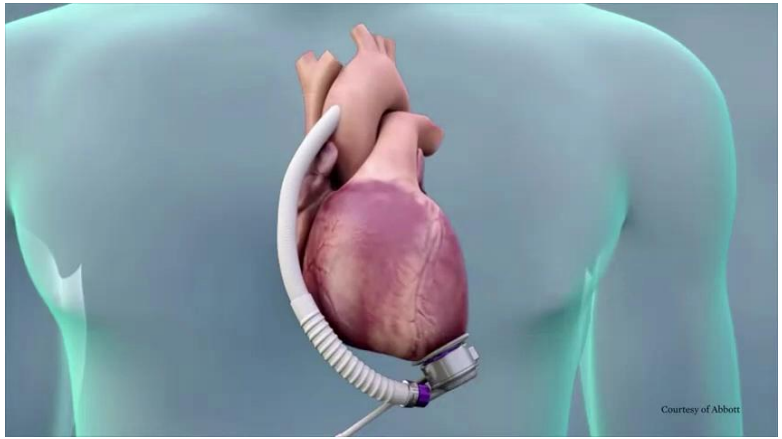
Berlin Heart Excor

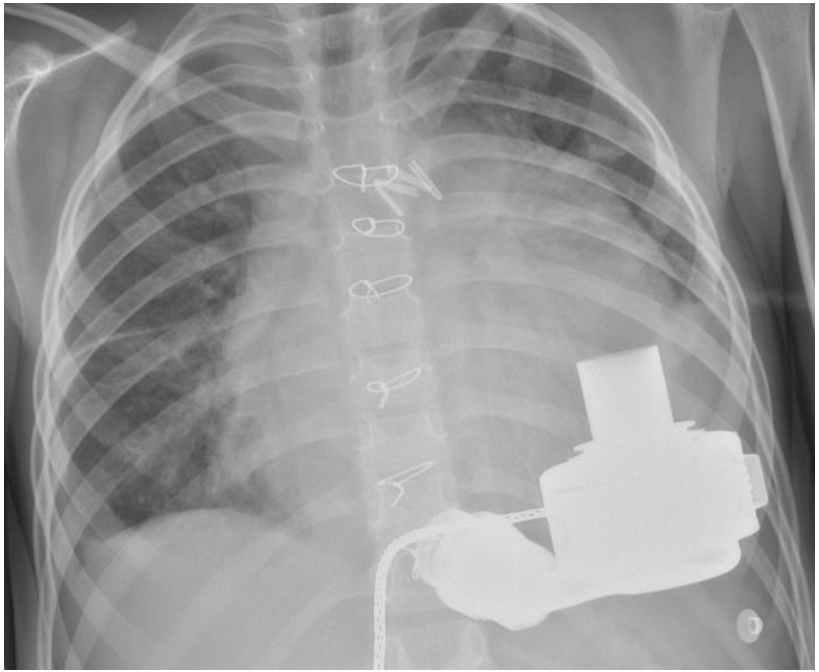


Intracorporeal – fully implantable
Continuous flow

Paracorporeal
Pulsatile flow

Peadiatric Durable VADs – Heartmate 3

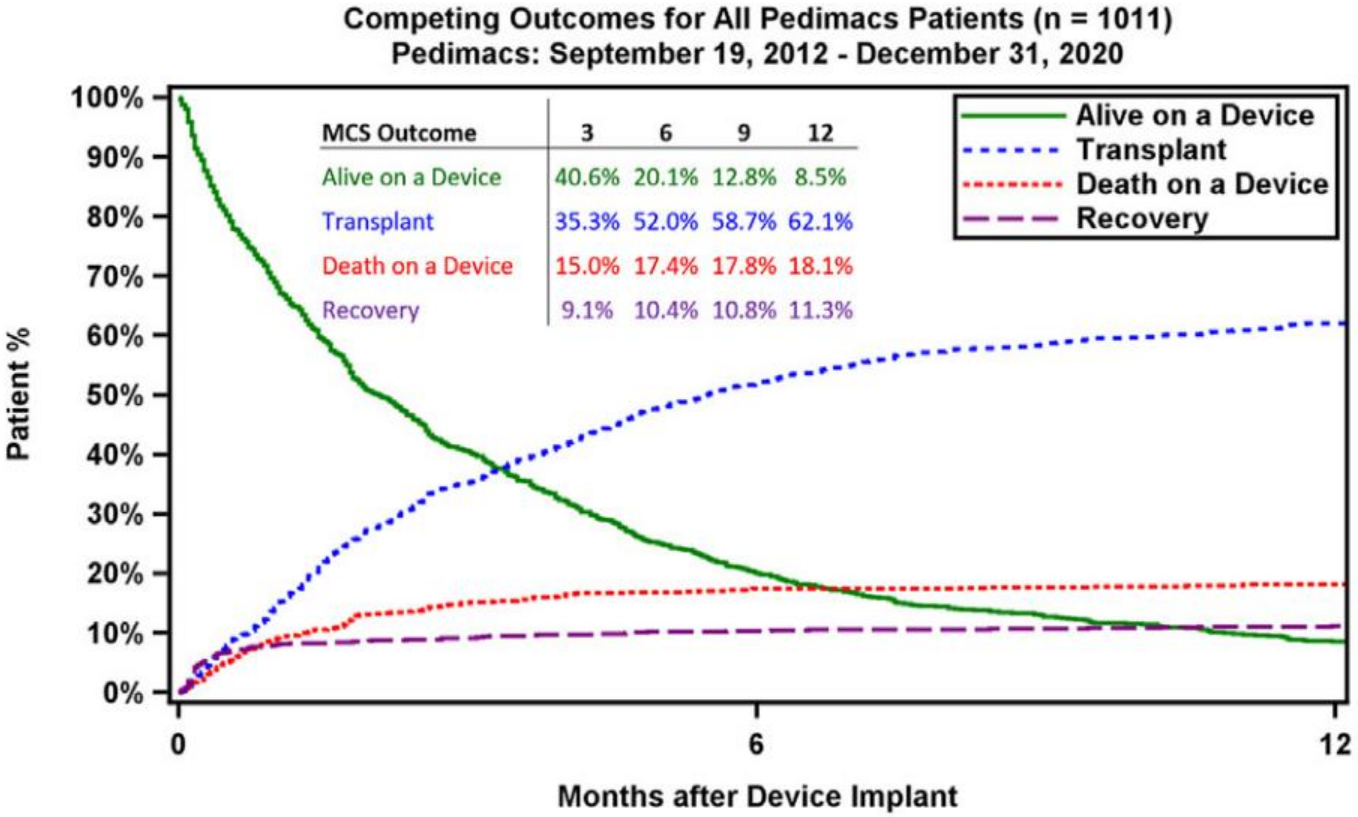




19 kg BSA 0,80 m^2

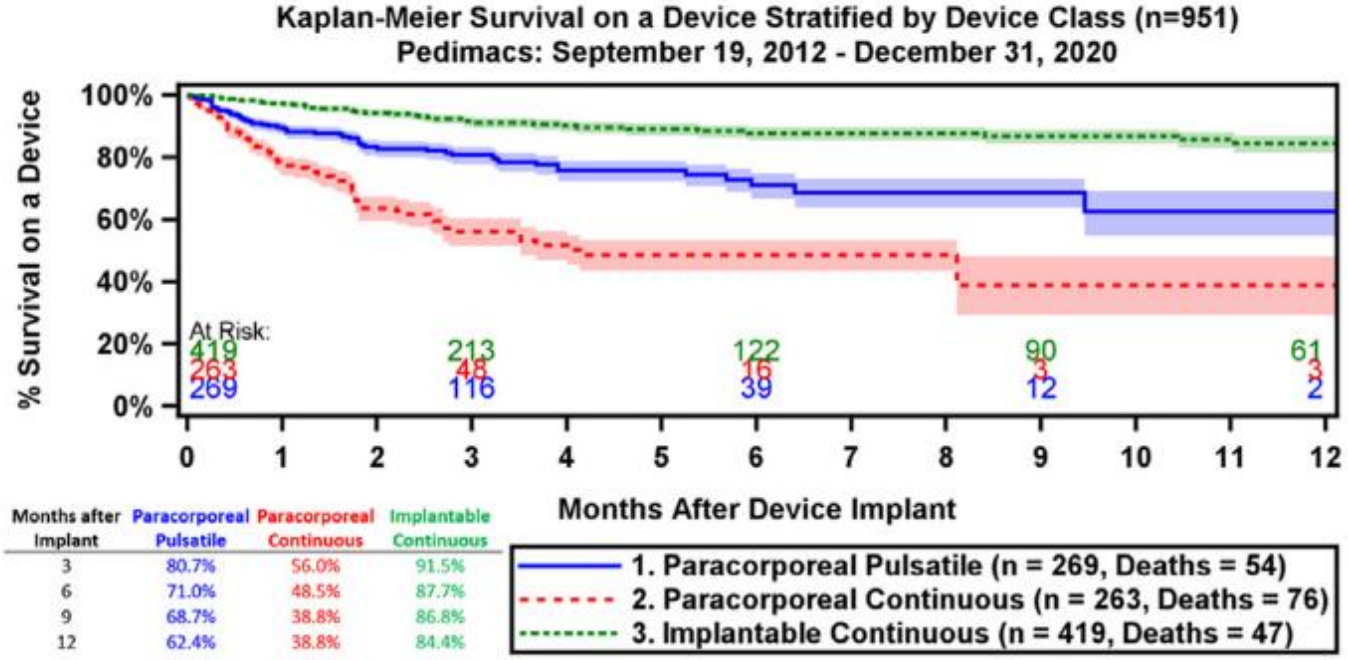
Peadiatric Durable VADs – Berlin Heart Excor

Paediatric VADs – 12-month Outcomes



Rossano et al 2021

Paediatric VADs – 12-month Outcomes



Months after Implant	Paracorporeal Pulsatile	Paracorporeal Continuous	Implantable Continuous
3	80.7%	56.0%	91.5%
6	71.0%	48.5%	87.7%
9	68.7%	38.8%	86.8%
12	62.4%	38.8%	84.4%

Shaded areas indicate 70% confidence limits
p (log-rank) = <.0001
Event: Death (censored at transplant or cessation of support)
Patients are not censored at device switch

Rossano et al 2021

Children‘s Heart Centre – Transplant Programme 2014 – 2022
Surgery (N = 30)

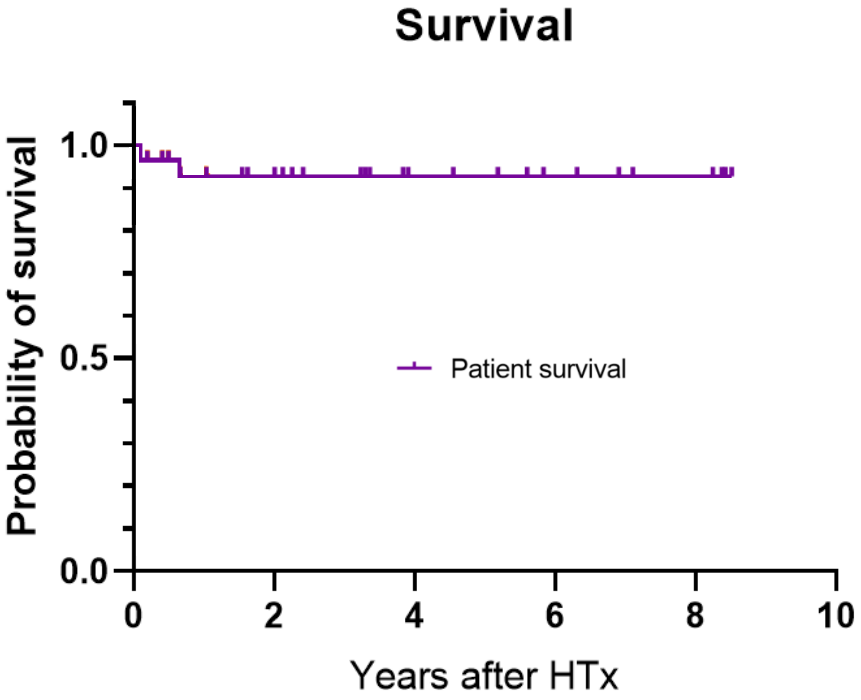
	CMP (N = 15)	**CHD (N = 15)**	**p-value**
Previous surgeries (excluding LVAD)	0 (IQR 0 – 1)	4 (IQR 2 – 5)	**<0.0001**
HTx from LVAD	8 (53%)	2 (13%)	0.05
Total HTx surgery time (min)	**300** (IQR 240 – 360)	**480** (IQR 420 – 570)	**<0.0001**
Cardiopulmonary bypass time (min)	**145** (126 – 178)	**259** (175 – 312)	**<0.0001**
Graft ischemic time (min)	125 (IQR 90 – 158)	136 (IQR 117 – 175)	0.27

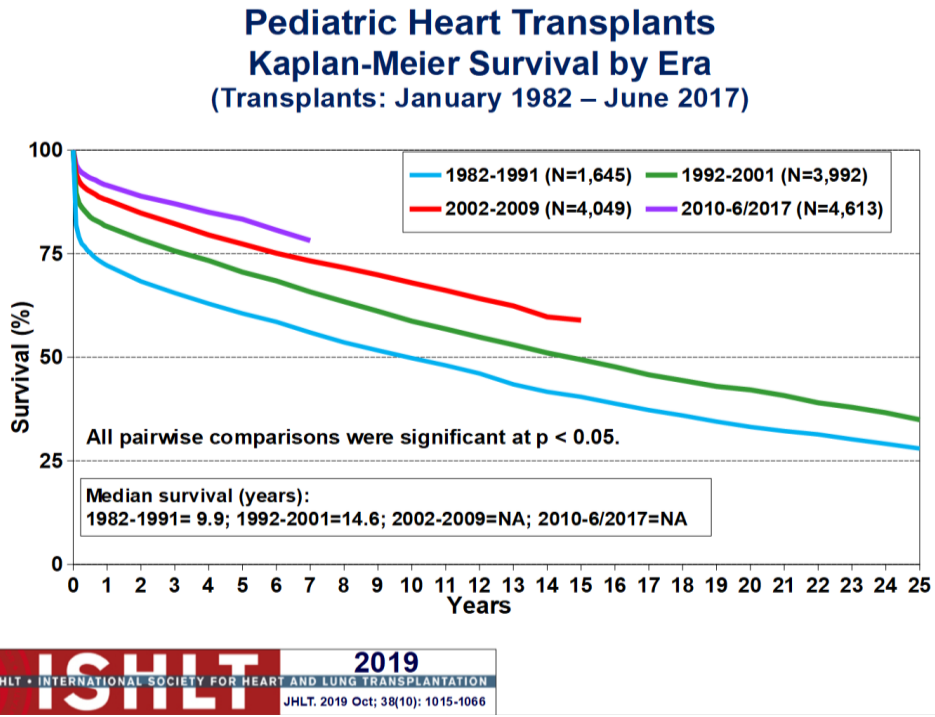
Children‘s Heart Centre – Transplant Programme 2014 – 2022
Postoperative Course (N = 30)

Early mortality: 1 patient

	CMP (N = 15)	**CHD (N = 15)**	**p-value**
ECMO or RVAD after HTx	0	3 (20%)	0.22
Delayed sternal closure	**2** (13%)	**9** (60%)	**0.02**
Renal replacement therapy	**1** (7%)	**6** (40%)	0.08
ICU stay (days)	**8** (IQR 7 – 13)	**12** (IQR 10 – 28)	**0.01**
Hospital stay (days)	20 (IQR 17 – 25)	24 (IQR 18 – 44)	0.18

Survival – Comparison to ISHLT Registry





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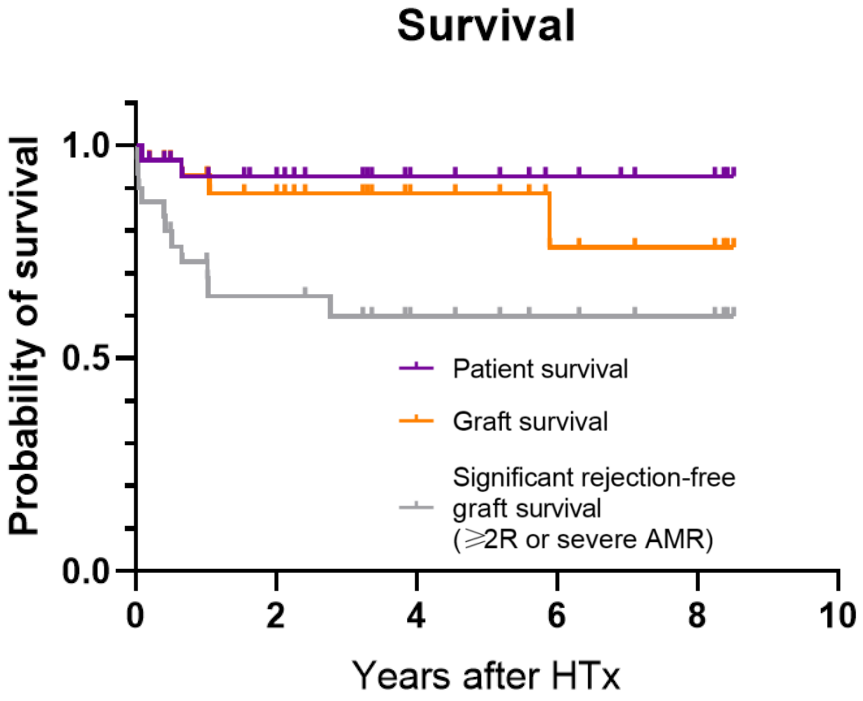
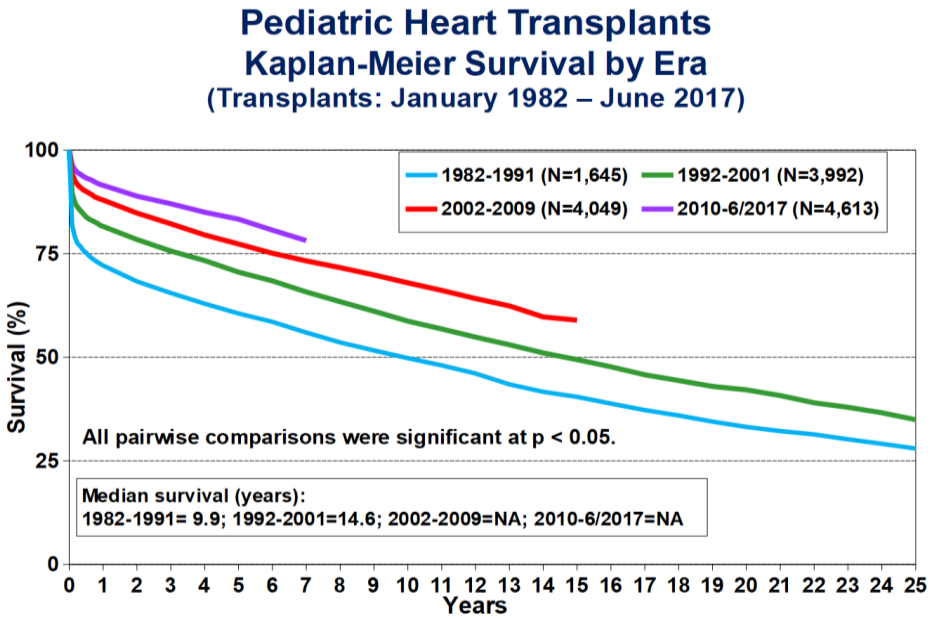
JHLT. 2019 Oct; 38(10): 1015-1066

Survival – Comparison to ISHLT Registry





ISHLT 2019
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JHLT. 2019 Oct; 38(10): 1015-1066

Late mortality: 1 patient

Conclusions

Paediatric HTx programme reflects the complexity of the treated population with:

- 1/2 of the cohort having complex congenital heart disease
- 1/3 of the cohort having univentricular hearts
- 1/3 of the cohort being bridged by LVADs

Mid-term results are comparable to worldwide data.

The data confirm the possibility of **establishing a successful nationwide paediatric HTx programme in a relatively small-population country** with well-developed paediatric cardiovascular care.