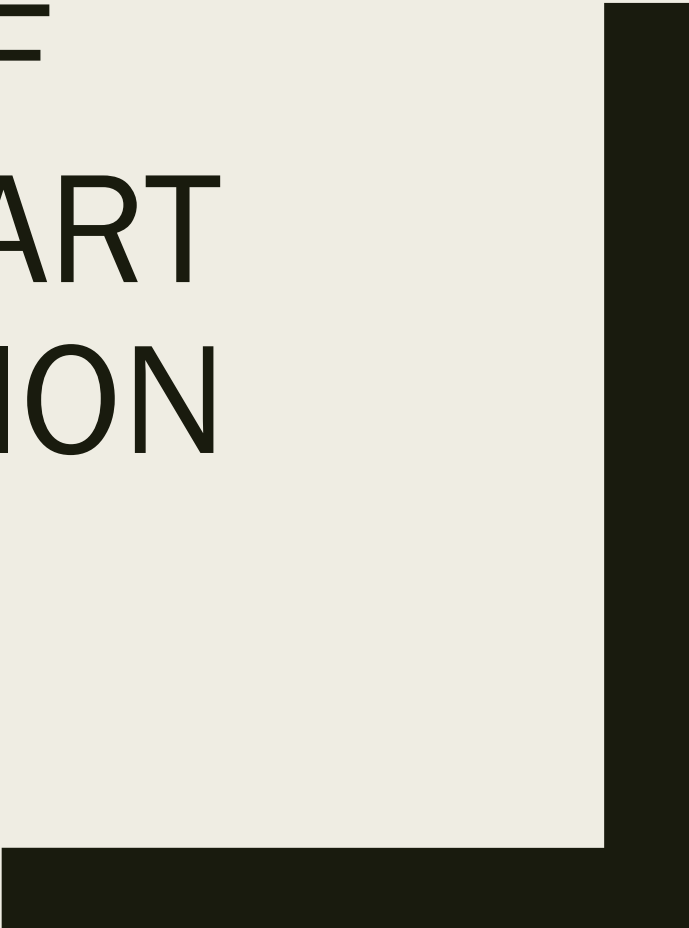




OVERVIEW OF PAEDIATRIC HEART TRANSPLANTATION

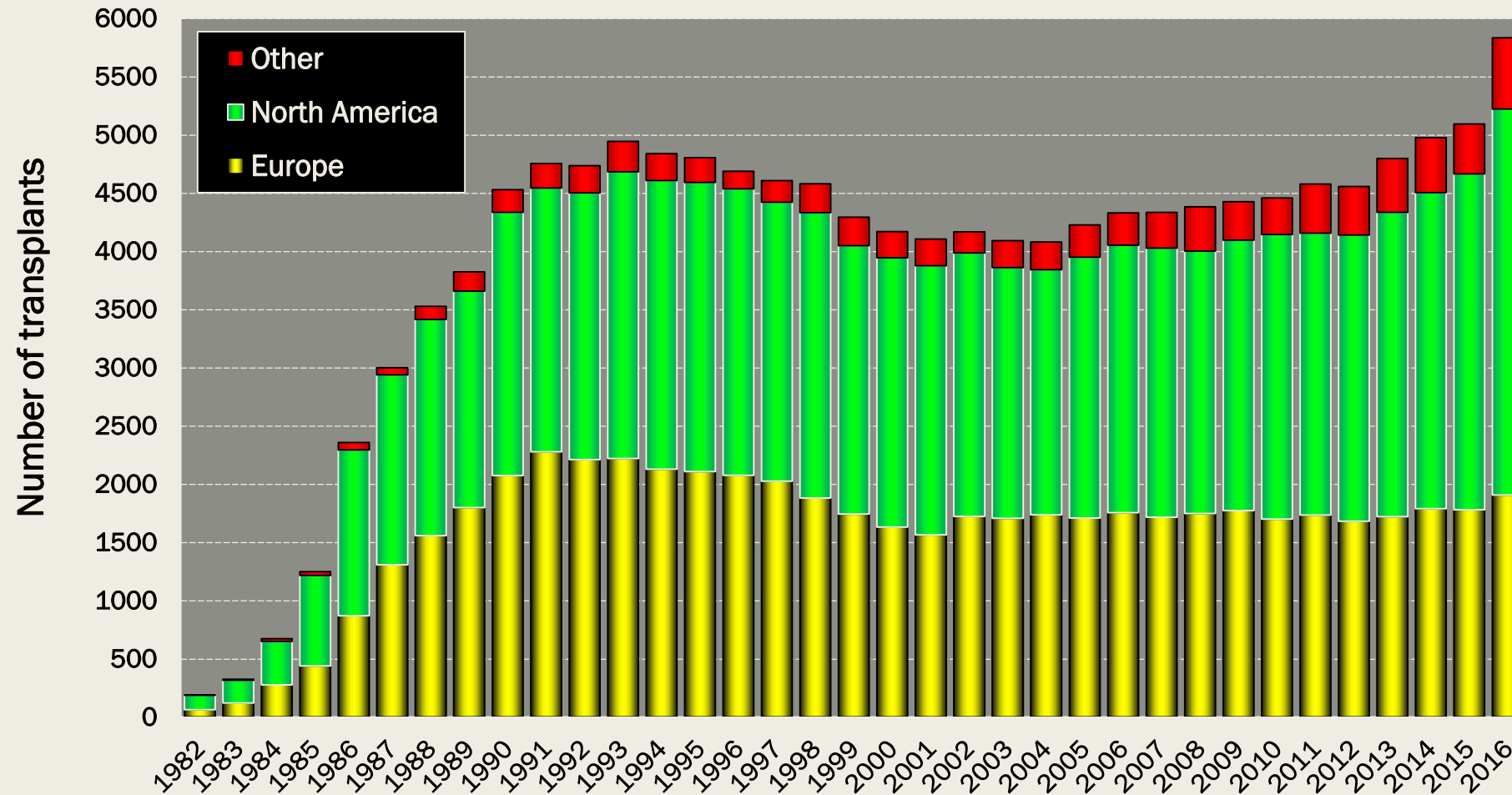
Susan Vosloo
Christiaan Barnard Memorial Hospital
Cape Town, South Africa
SATS, September 2019



THE INTERNATIONAL THORACIC
ORGAN TRANSPLANT (TTX) REGISTRY
OF THE INTERNATIONAL SOCIETY
FOR HEART AND LUNG
TRANSPLANTATION:
32nd ANNUAL REPORT

Adult and Pediatric Heart Transplants

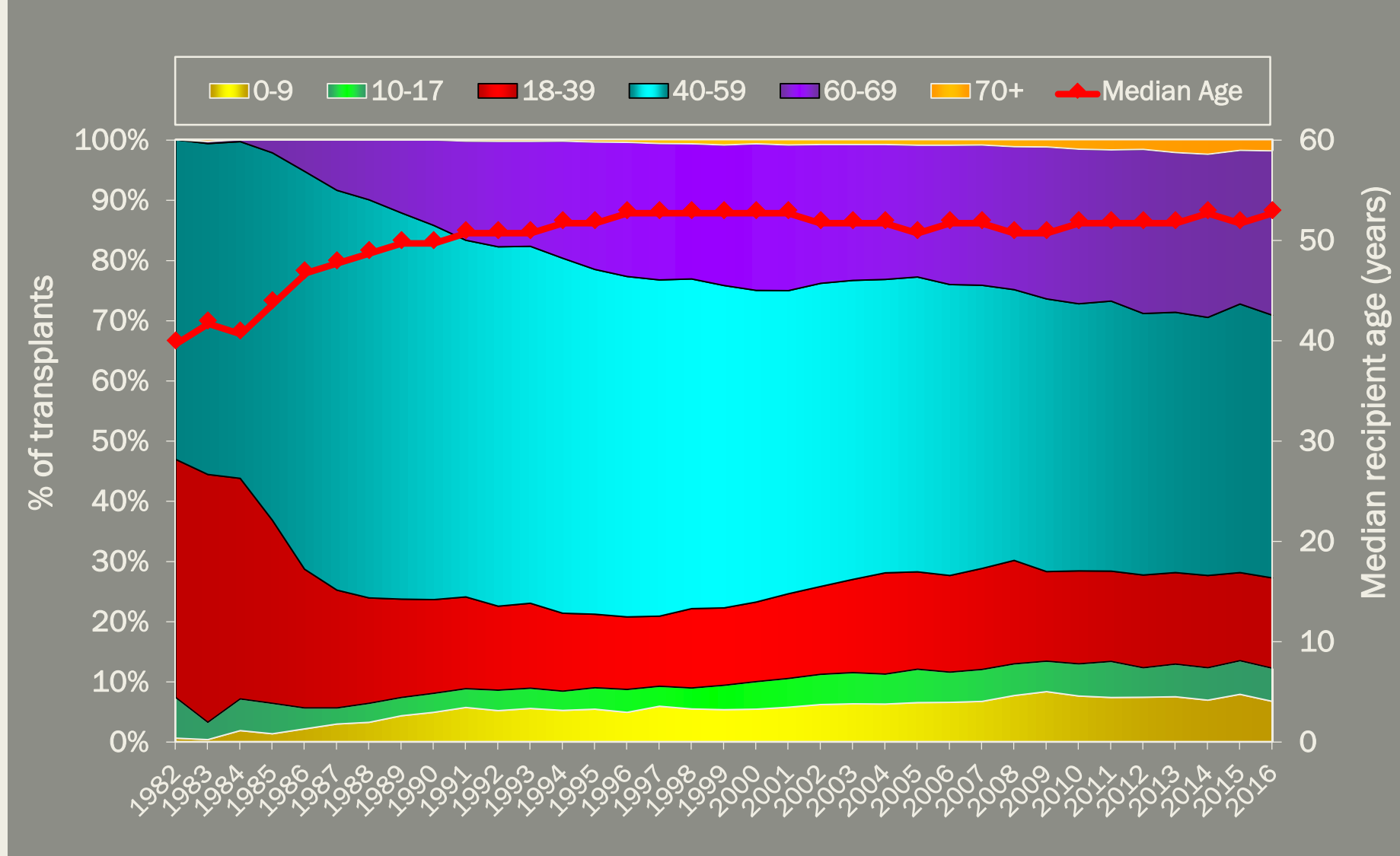
Number of Transplants by Year and Location - 2018



NOTE: This figure includes only the heart transplants that are reported to the ISHLT Transplant Registry. As such, the presented data may not mirror the changes in the number of heart transplants performed worldwide.

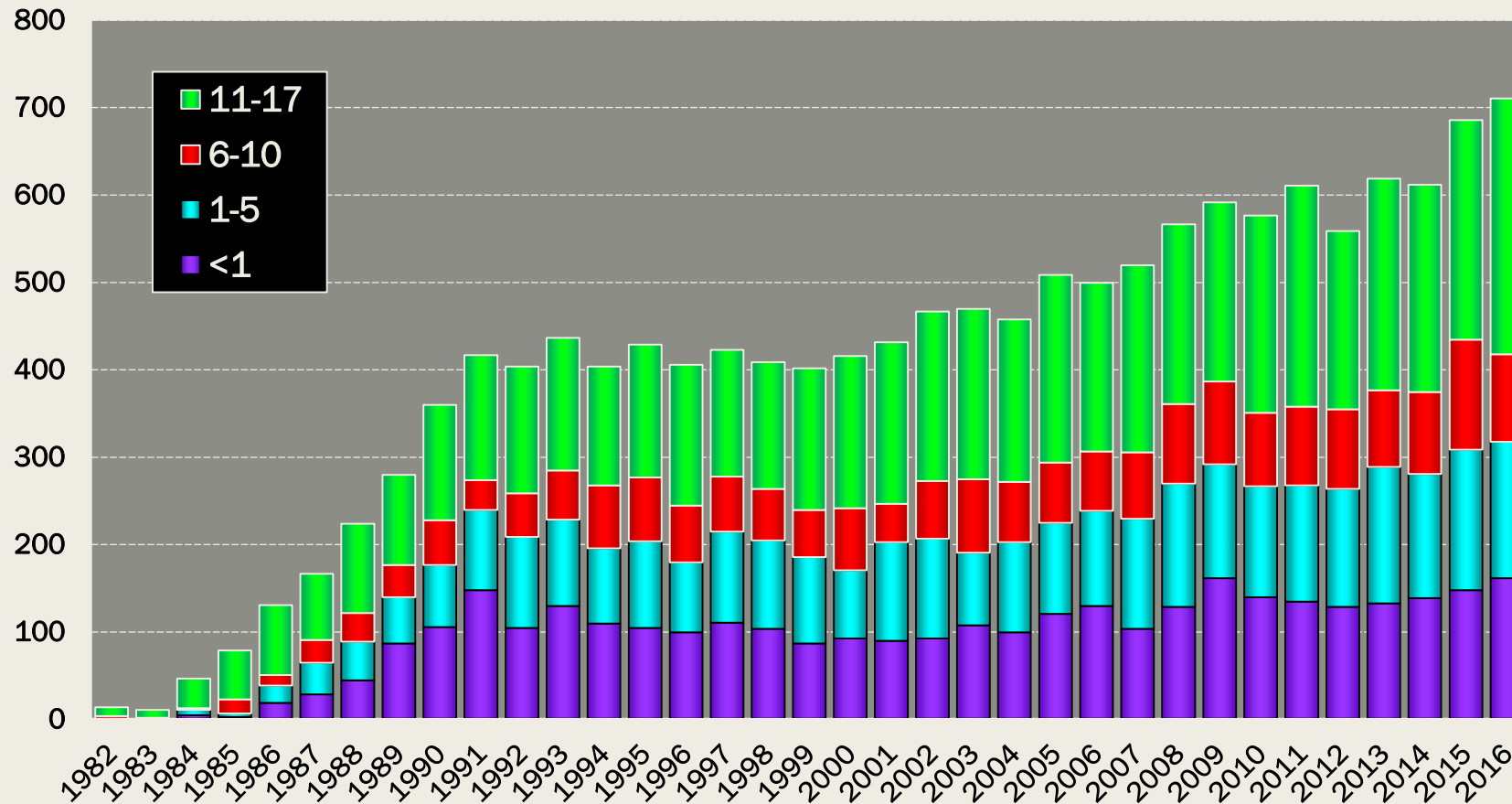
Adult and Pediatric Heart Transplants

Recipient Age by Year of Transplant - 2018



Pediatric Heart Transplants

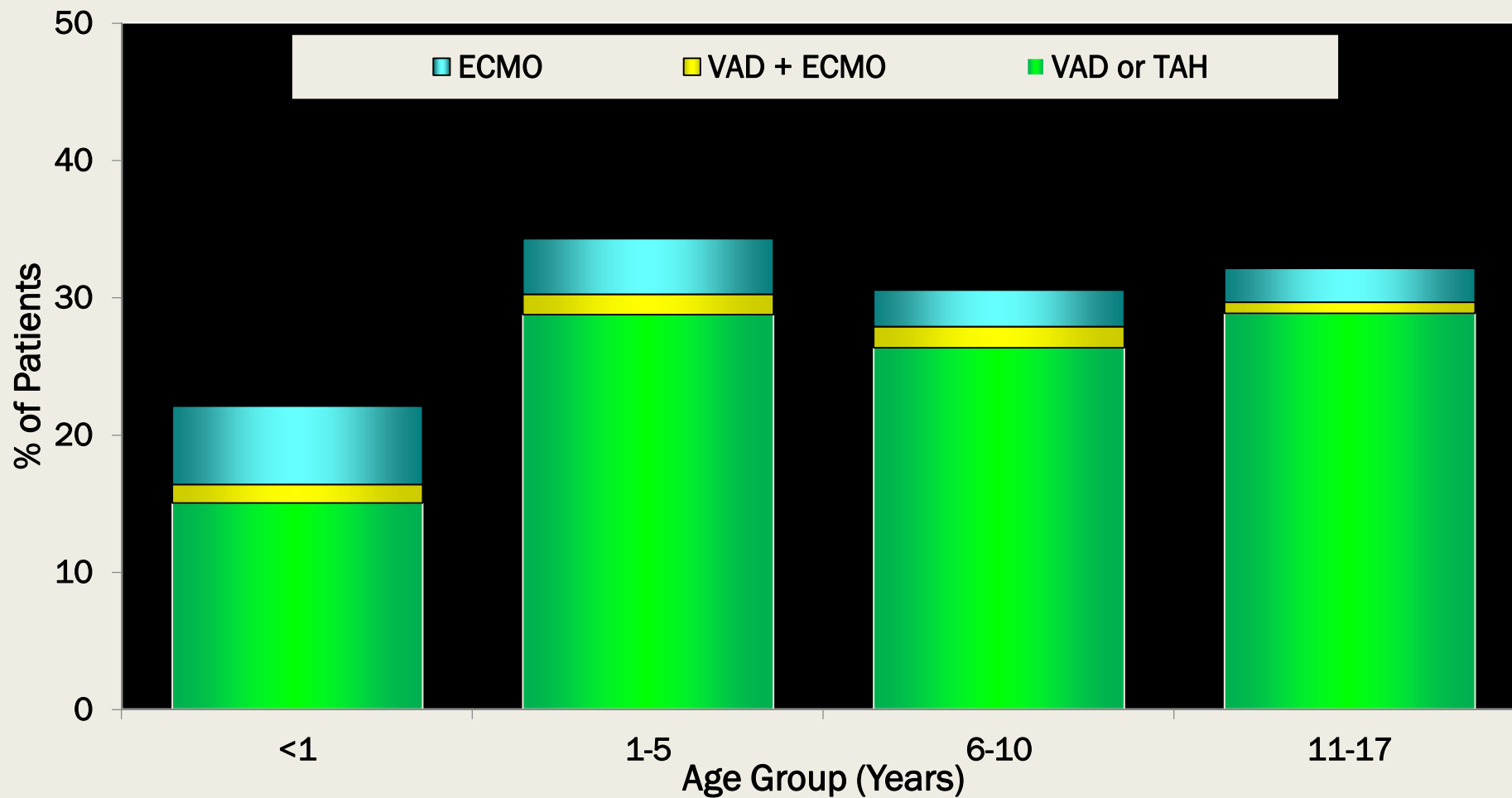
Recipient Age (in Years) Distribution by Year of Transplant - 2018



NOTE: This figure includes only the heart transplants that are reported to the ISHLT Transplant Registry. As such, this should not be construed as evidence that the number of hearts transplanted worldwide has increased and/or decreased in recent years.

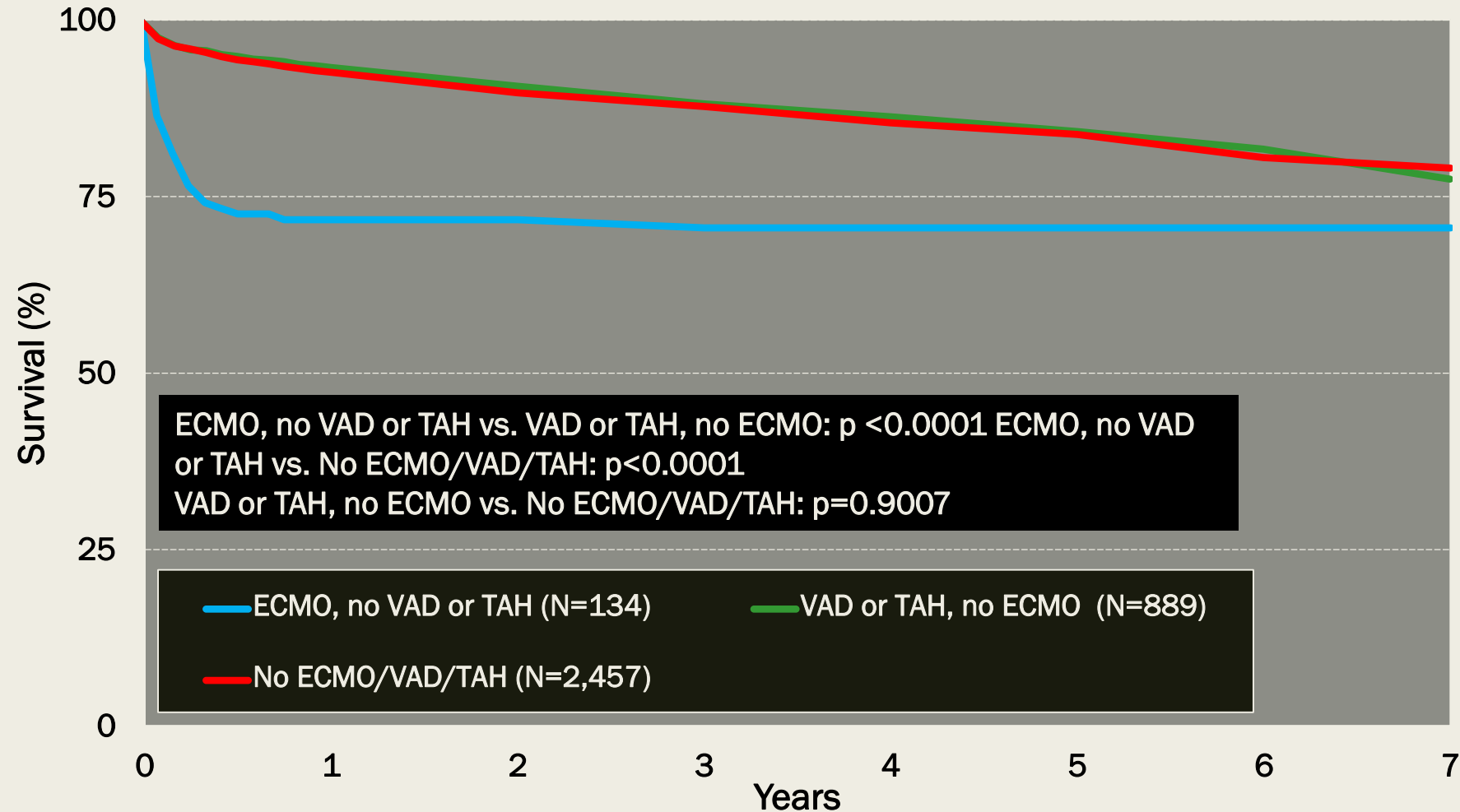
Pediatric Heart Transplants

% of Patients Bridged with Mechanical Circulatory Support*
by Age Group (Transplants: January 2009 – June 2016)



Pediatric Heart Transplants - 2018

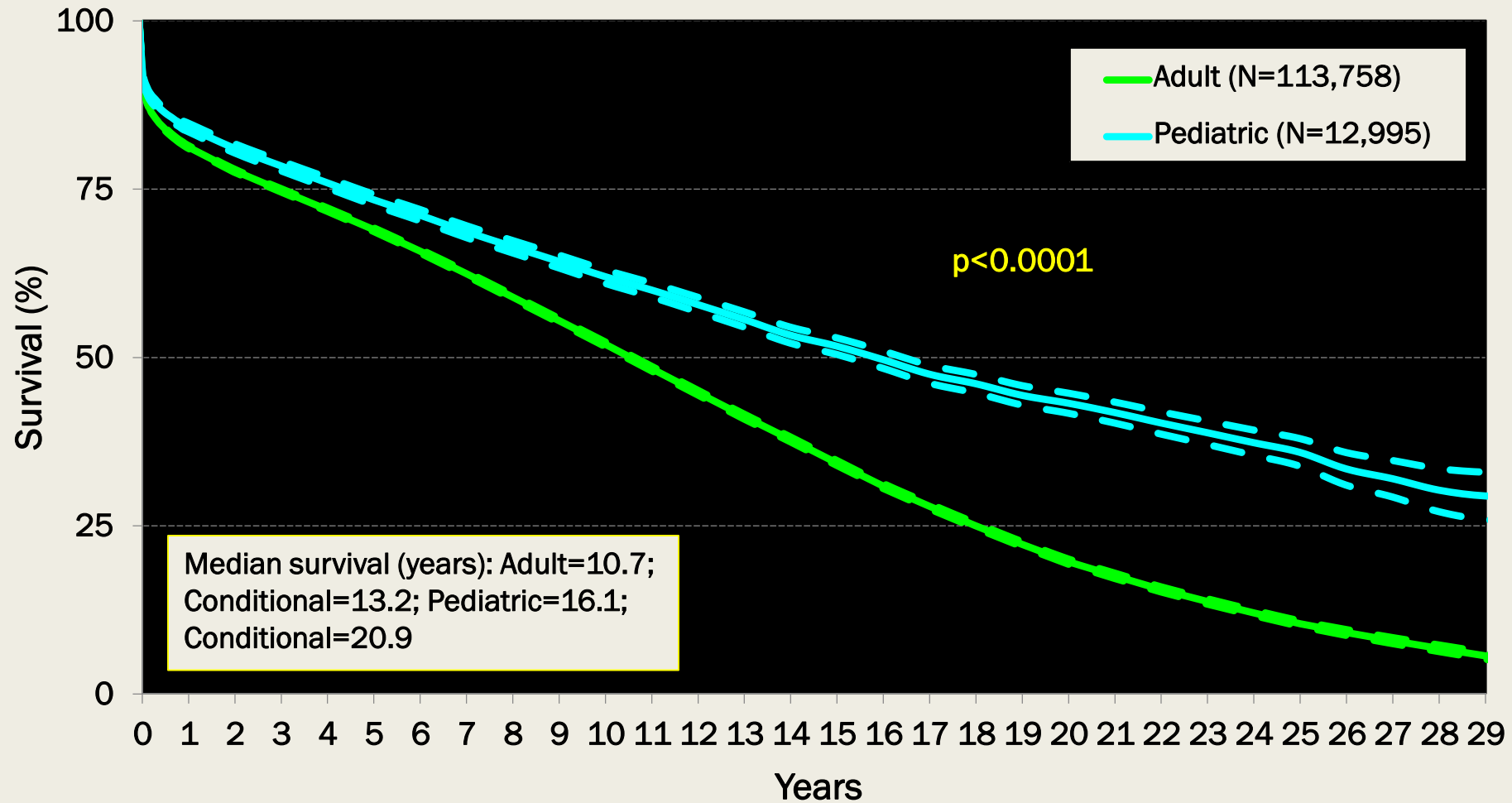
Kaplan-Meier Survival by Mechanical Circulatory Support
Usage* (Transplants: January 2009 – June 2016)



Adult and Pediatric Heart Transplants

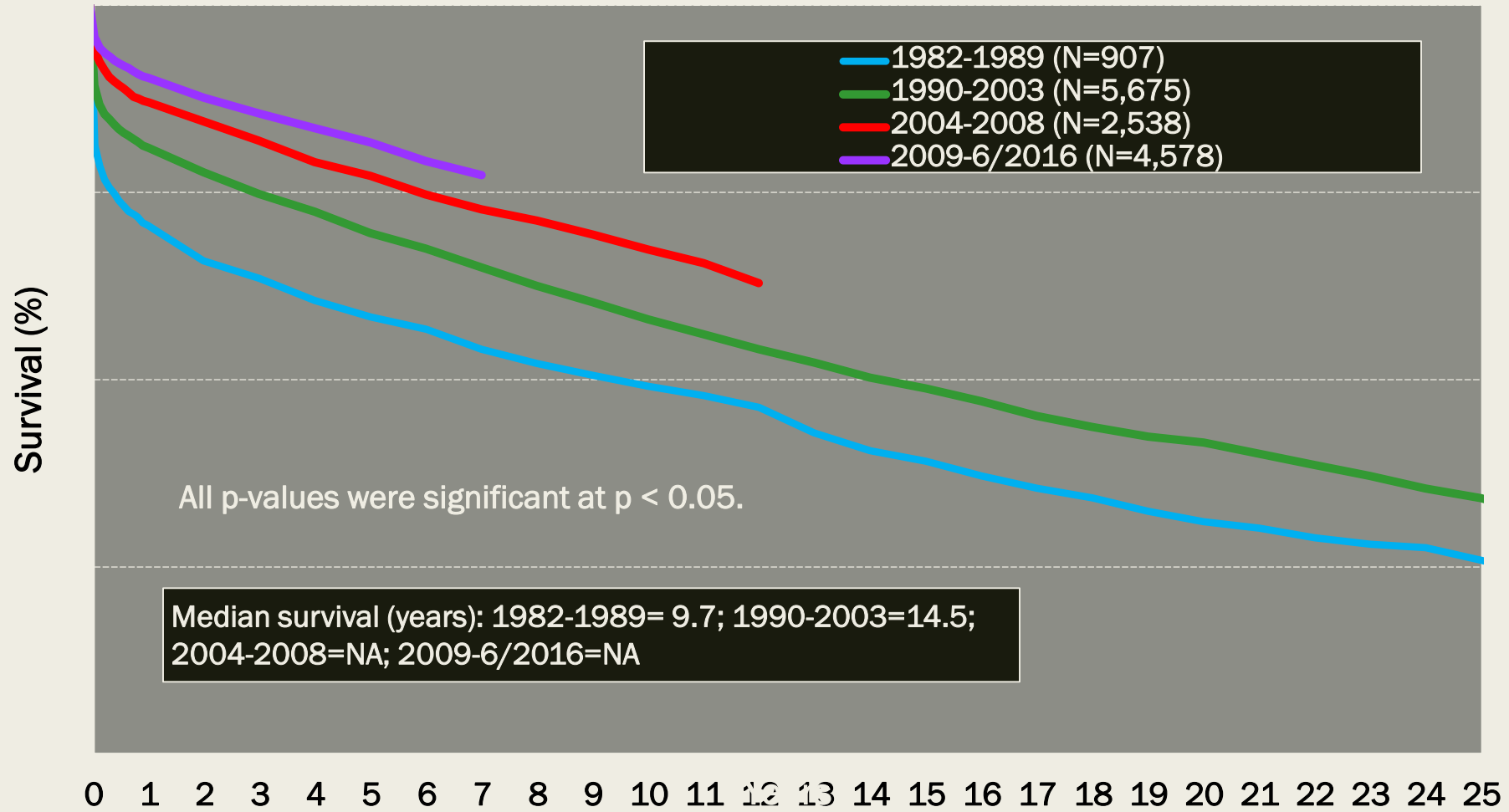
Kaplan-Meier Survival by Age Group

(Transplants: January 1982 – June 2015)



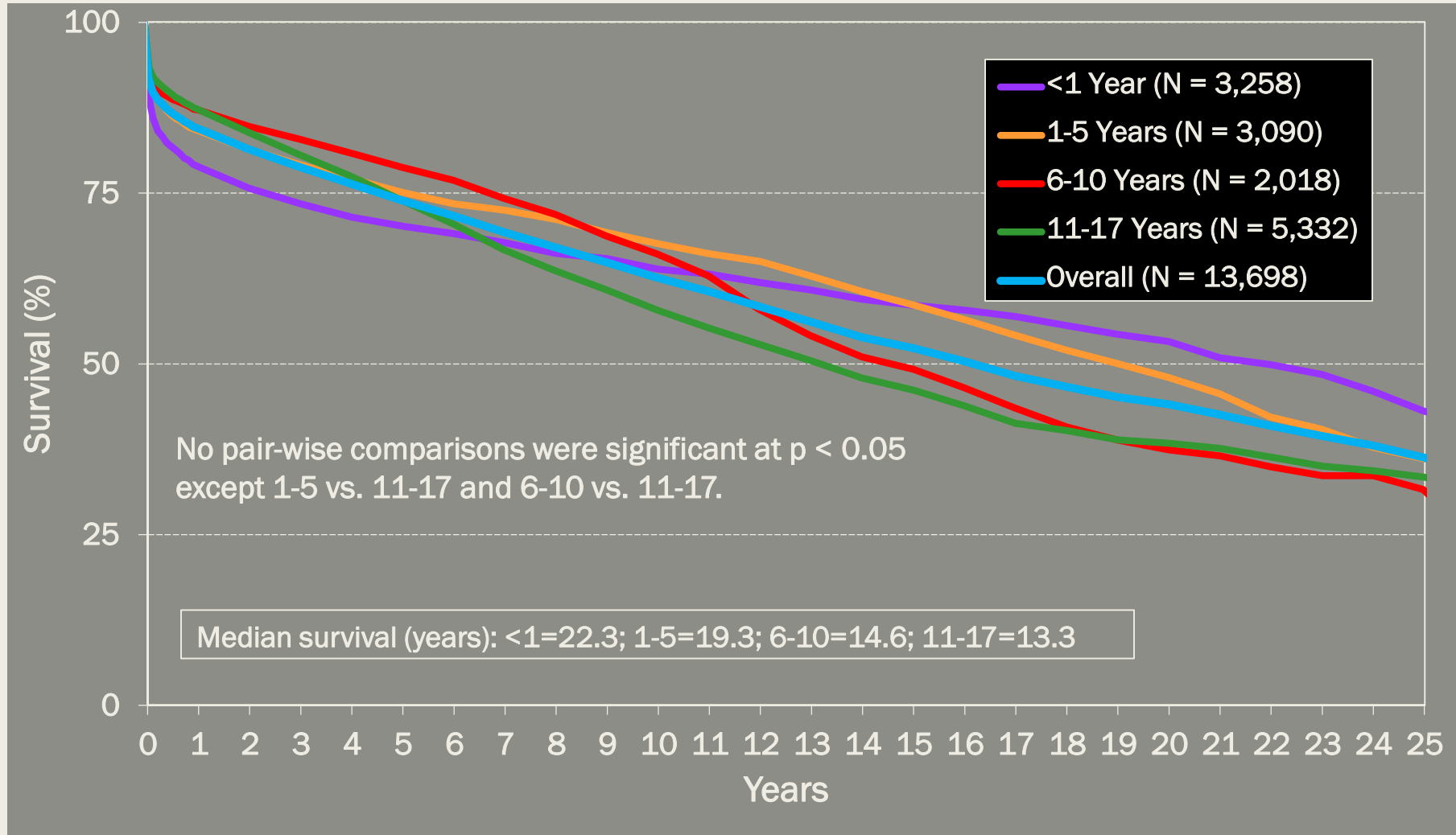
Pediatric Heart Transplants

Survival by Era - 2018 (January 1982 – June 2016)



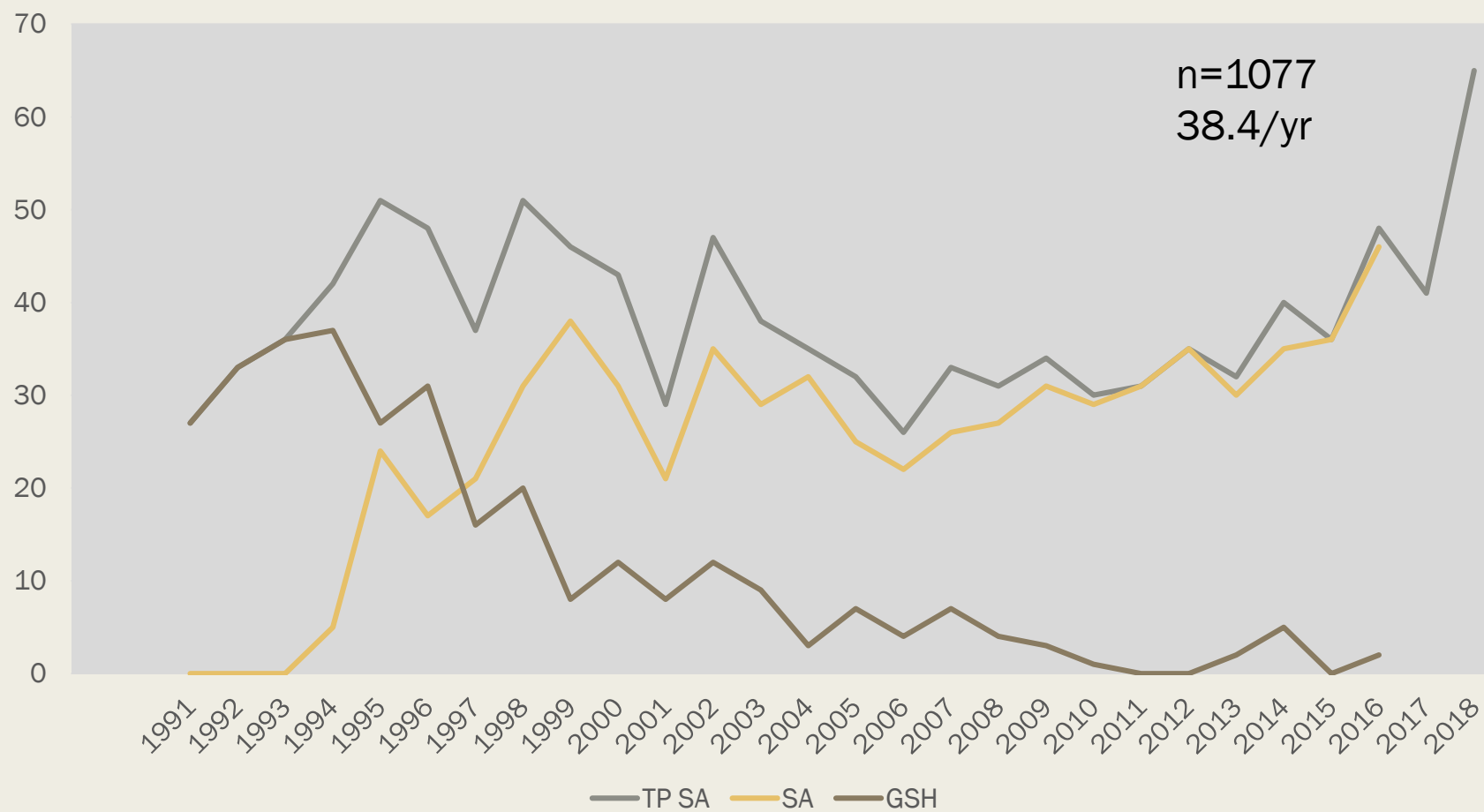
Pediatric Heart Transplants - 2018

Survival transplants Jan 1982 – June 2016



SA All Thoracic Transplant per year (ODF)

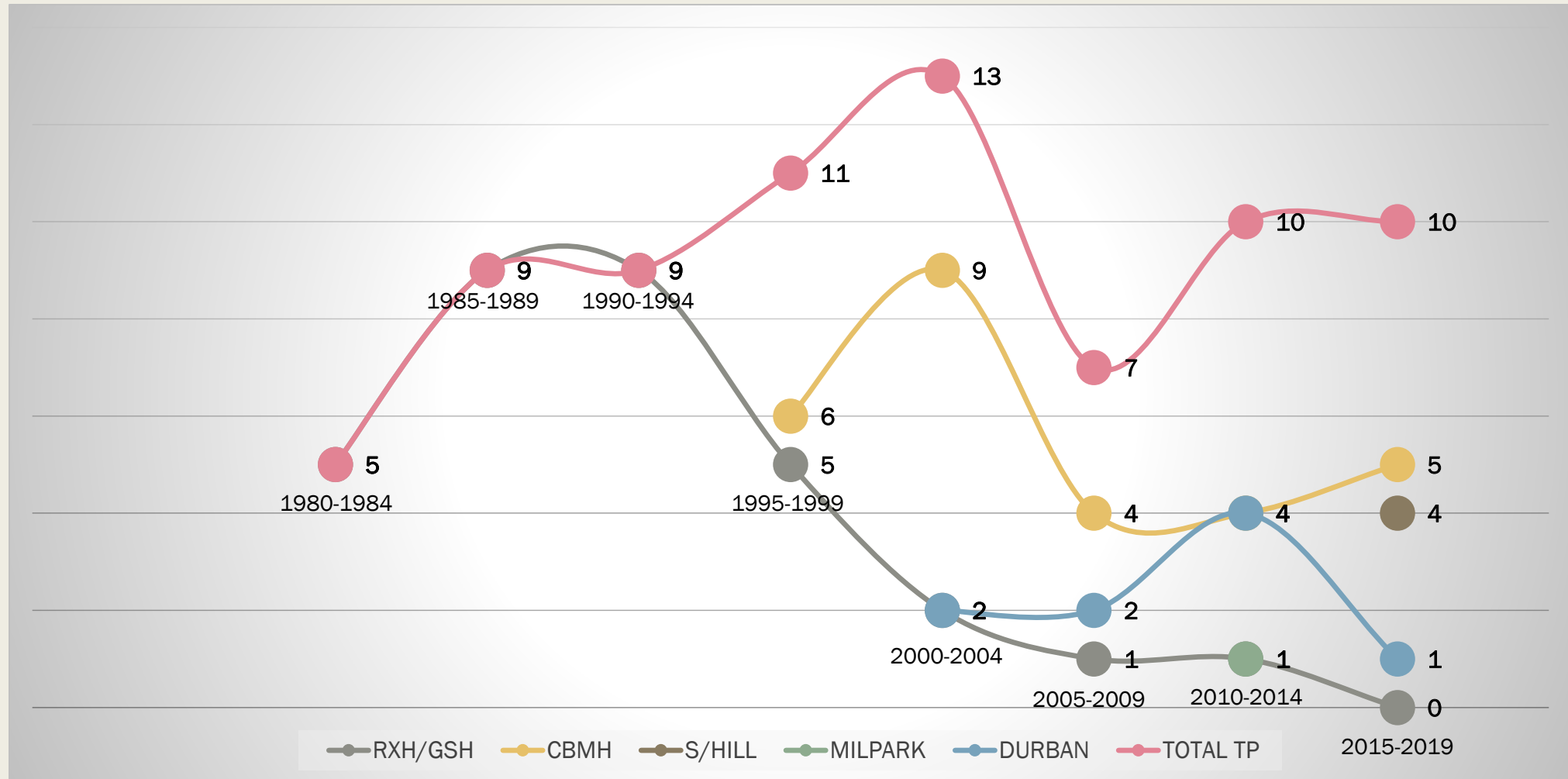
Private vs Public sectors (1991-2016/8)



SA annual heart TP for Paediatric & CHD 1980-8'2019

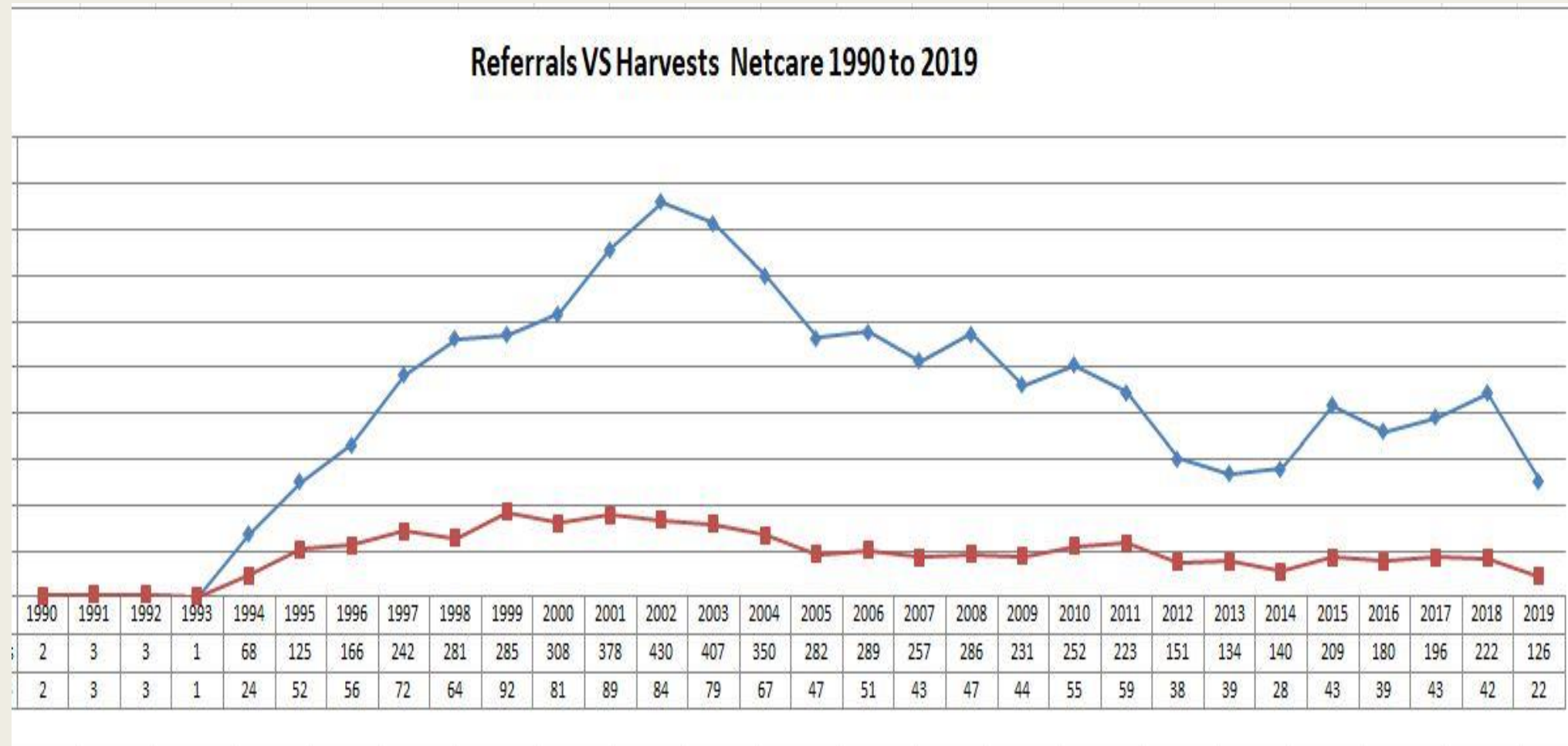
<u>5 yr PERIOD</u>	<u>RXH/GSH</u>	<u>CBMH</u>	<u>S/HILL</u>	<u>MILPARK</u>	<u>DURBAN</u>	<u>TOTAL TP</u>	<u>LVAD</u>	<u>TOTAL TP & LVAD</u>
1980-1984	5					5		5
1985-1989	9					9		9
1990-1994	9					9		9
1995-1999	5	6				11		11
2000-2004	2	9			2	13		13
2005-2009	1	4			2	7		7
2010-2014	1	4		1	4	10		10
2015-2019	0	5	4		1	10	6	16
<u>TOTAL/UNIT</u>	<u>32</u>	<u>28</u>	<u>4</u>	<u>1</u>	<u>9</u>	<u>74</u>	<u>6</u>	<u>80 (2/yr)</u>

SA Paediatric & CHD transplants 1980-2019

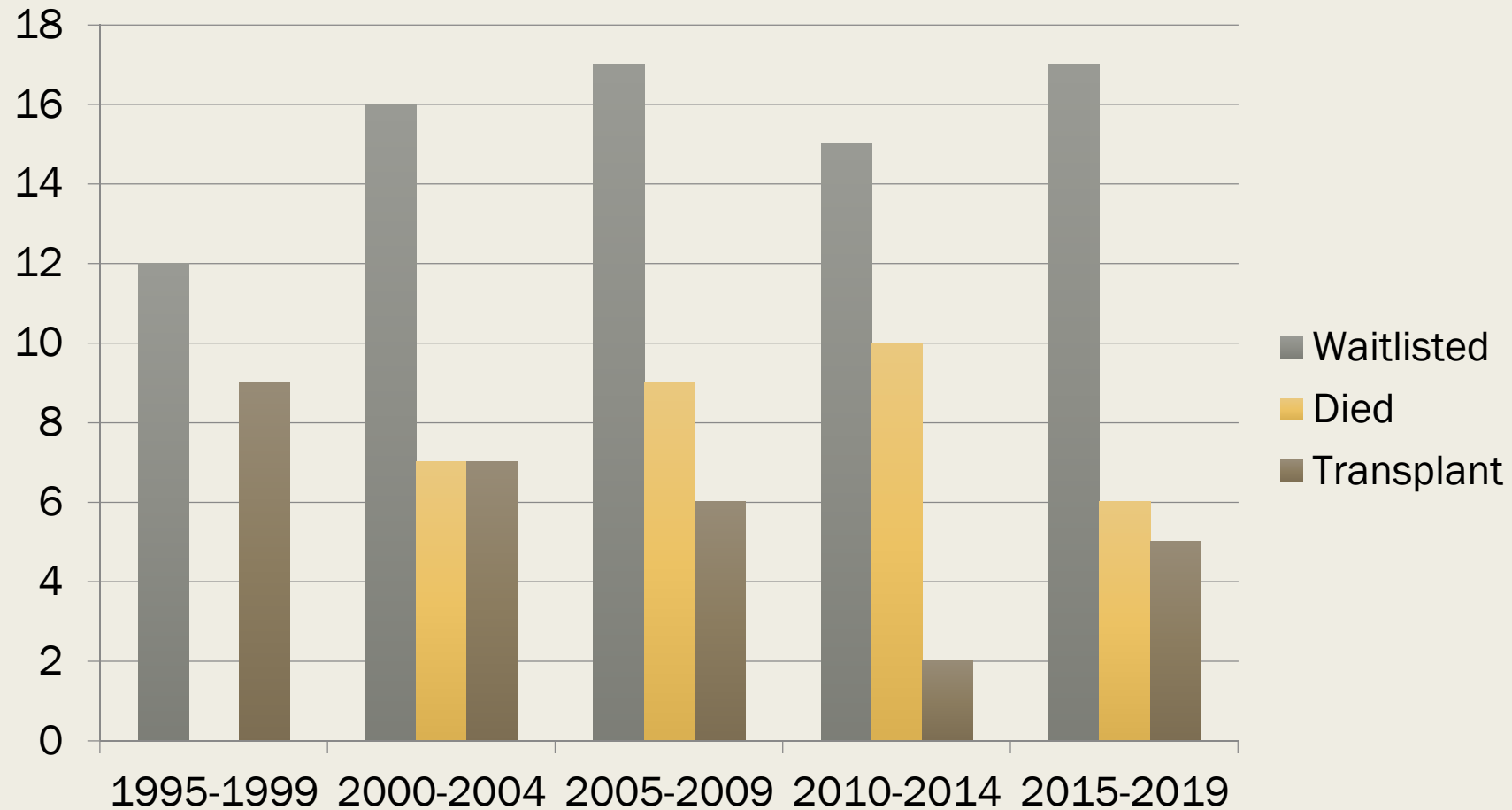


Referrals vs Retrievals 1990 – 8'2019

(courtesy of Alexia Michaelides)



CBMH - Paed/CHD Death/TP on waiting list per 5 year periods (1995 - 8'2019)





3 December 1967 – 1st successful human heart transplant
 Groote Schuur Hospital, Cape Town, South Africa



1984: Baby Fae lives 20 days with a baboon heart

ODF Memorial service CB foundation CHD baby



2001

Dr. Chris Barnard's last interview



Last event hosted by ODF attended by Prof Barnard before he died

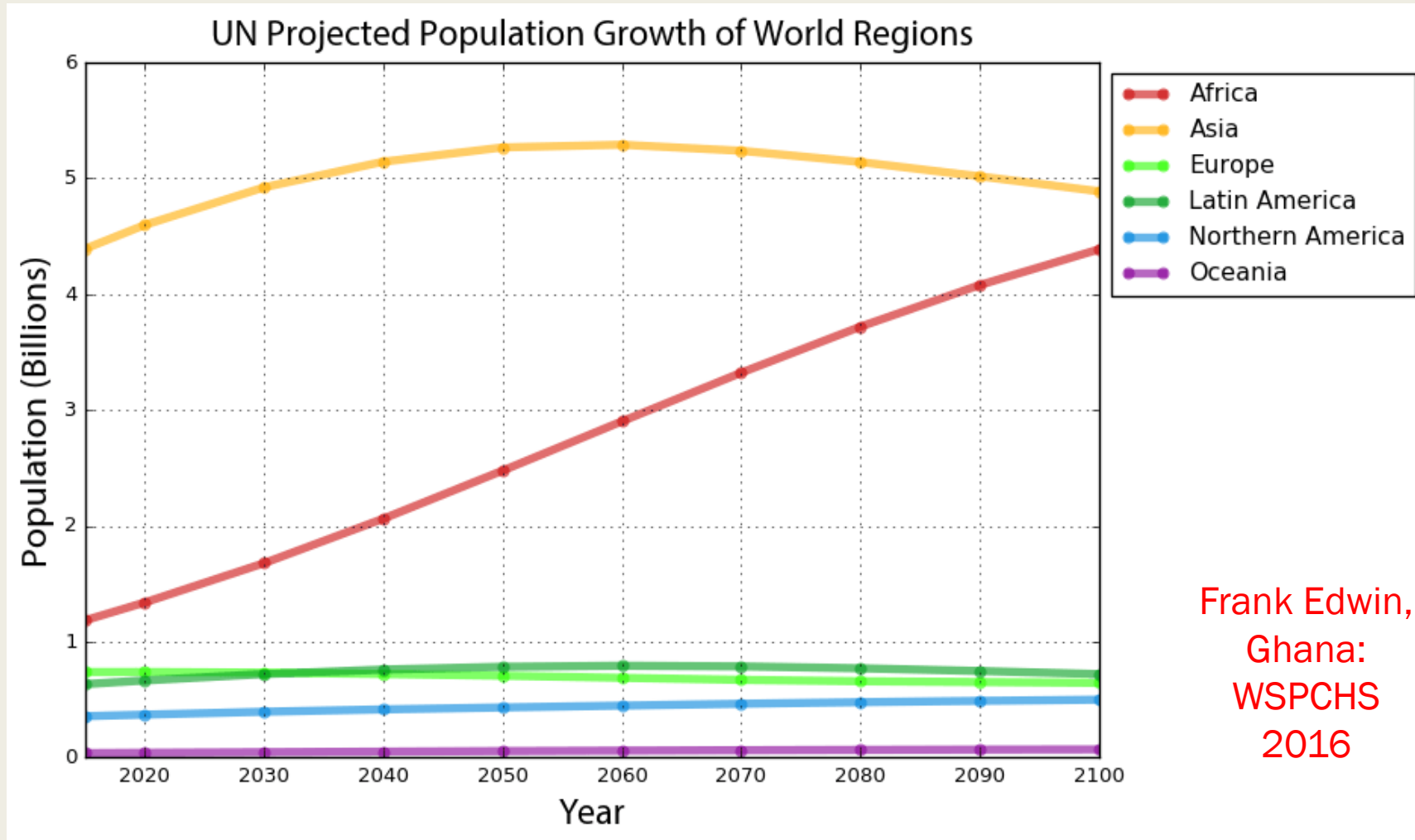




OPENING EVENT 9 NOVEMBER 2001 CHRISTIAAN BARNARD MEMORIAL HOSPITAL

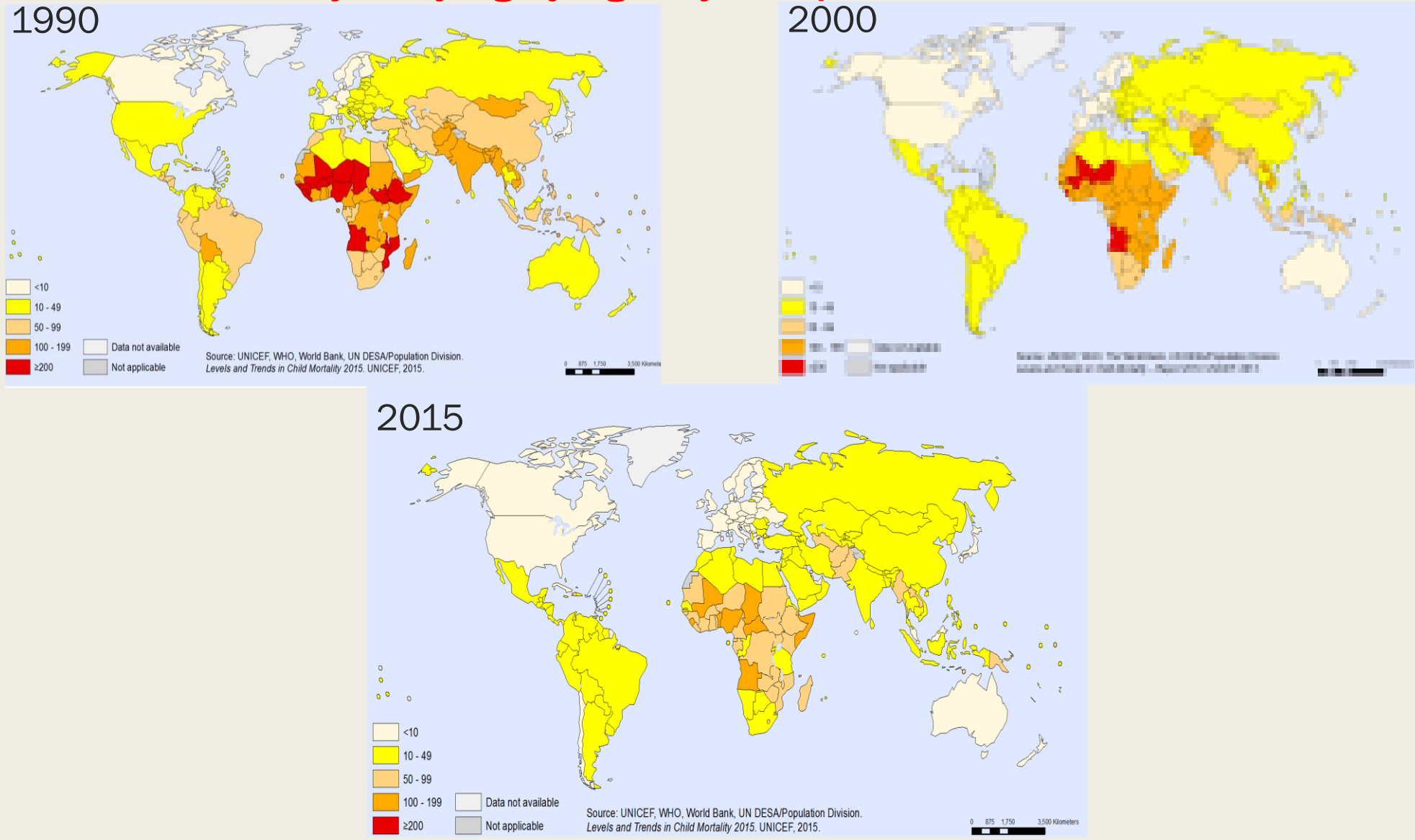
The Christiaan Barnard Memorial Hospital will continue the partnership started over the last few years, to be a living memory of a most remarkable person, dedicating this to his life's work and his legacy to children worldwide.

Congenital Heart Disease: a growing challenge in Africa?



WHO - 2015 – under 5 years mortality rates

Probability of dying by age 5 years per 1000 live births



Number of Adults vs Children with CHD in European Union



Helmut Baumgartner MD
Director, Adult Congenital &
Valvular Heart Disease Center
University Hospital Münster, Germany
Helmut.Baumgartner@ukmuenster.de

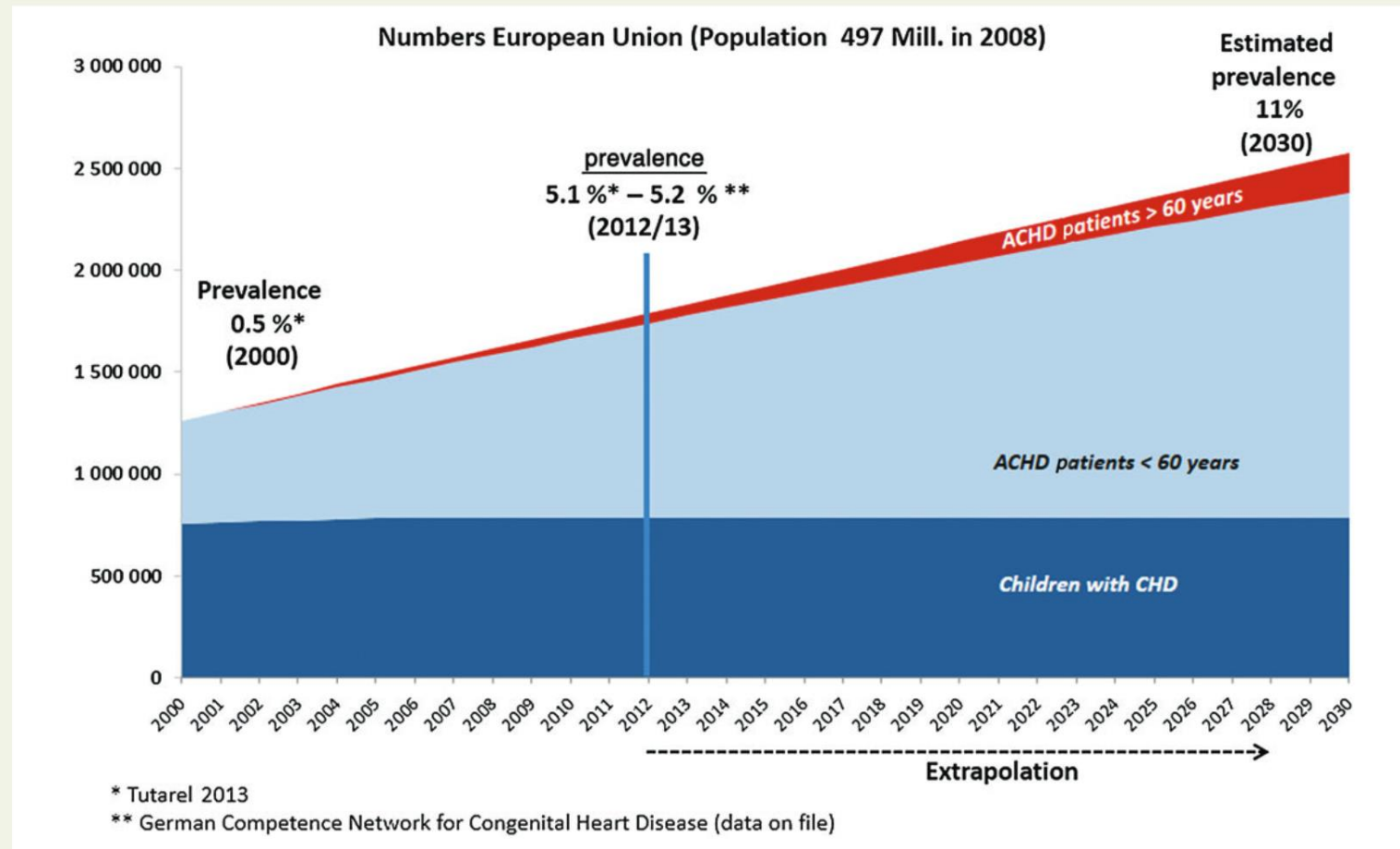


Figure 1 Changing prevalence of congenital heart disease in the European Union by age groups (reproduced from Baumgartner¹).

Heart Transplantation in ACHD

- Uncorrected defects
- Previous reparative surgery with deteriorating ventricular function
- Previous palliative surgery not sustaining normal circulation in adult hood

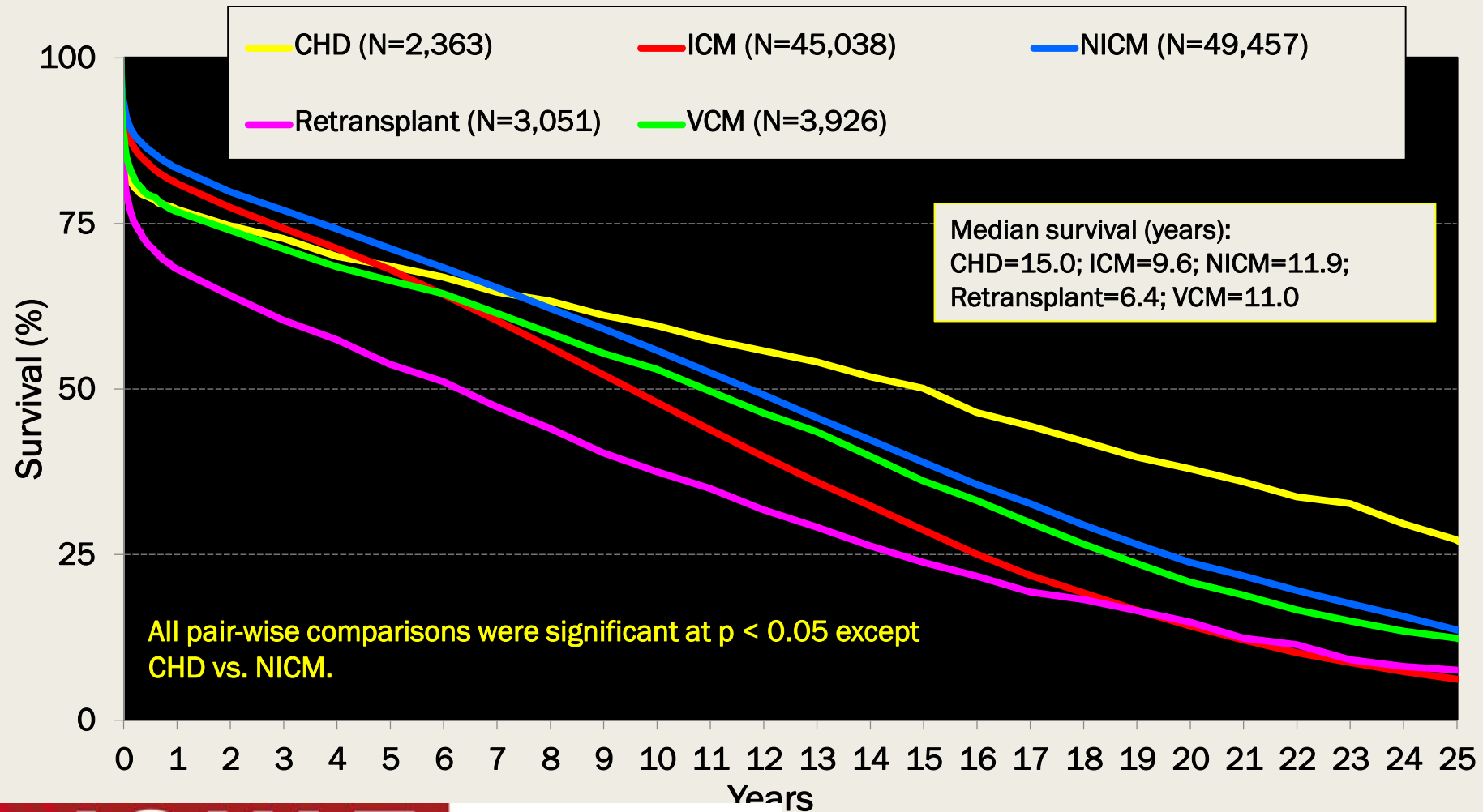
Transplantation for adults with congenital heart disease FREE

Amir-Reza Hosseinpour, Shay Cullen, Victor T. Tsang ✉

European Journal of Cardio-Thoracic Surgery, Volume 30, Issue 3, 1 September 2006, Pages 508–514, <https://doi.org/10.1016/j.ejcts.2006.06.007>

Adult Heart Transplants

Kaplan-Meier Survival by Diagnosis
(Transplants: January 1982 – June 2015)





Asif Hasan, FRCS

Pediatric and Adult
Congenital Heart Disease Surgeon
Freeman Hospital
Newcastle, UK

**More than 130 ACHD
transplants: triumphs,
mistakes, and what I've
learned**

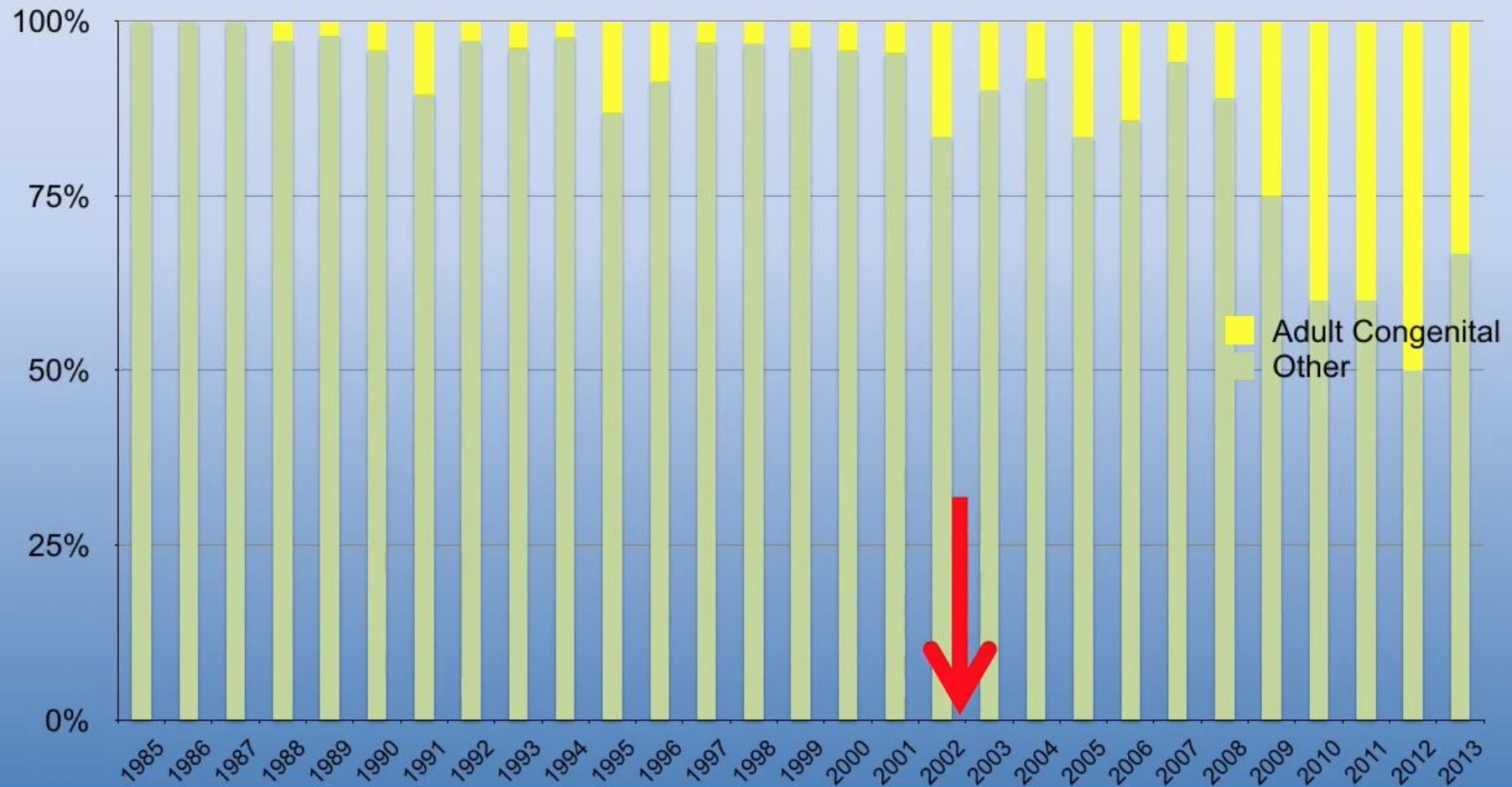
More than 130 ACHD transplants: Triumphs, mistakes and what I've learned



Adult Heart Transplant

Freeman Hospital 1985 – 2013

Total : 752 (79 for Adult Congenital Heart Disease)





Comorbidities

1985

Contraindications to heart transplantation

Age > 50 years

Inotropic support

Multiple thoracic operations

High PVR

High PRA

Renal failure

Hepatic failure



Comorbidities

1995

Contraindications to heart transplantation

Age > 50 years

Inotropic support

Multiple thoracic operations

High PVR

High PRA

Renal failure

Hepatic failure



Comorbidities

2015

Contraindications to heart transplantation

Age > 50 years

Inotropic support

Multiple thoracic operations

High PVR

High PRA

Renal failure

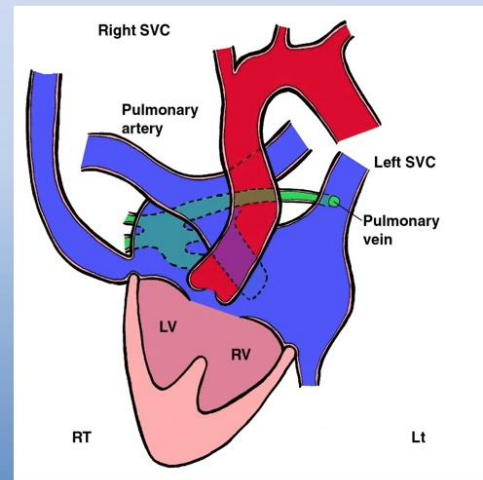
Hepatic failure

Challenges – anatomy and multiple previous operations

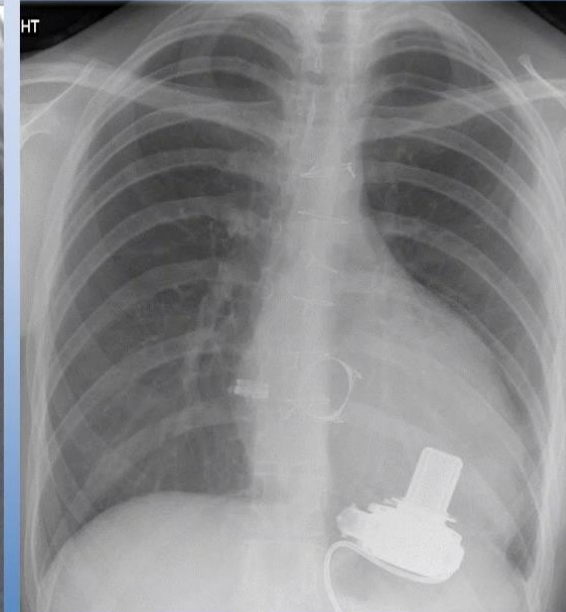
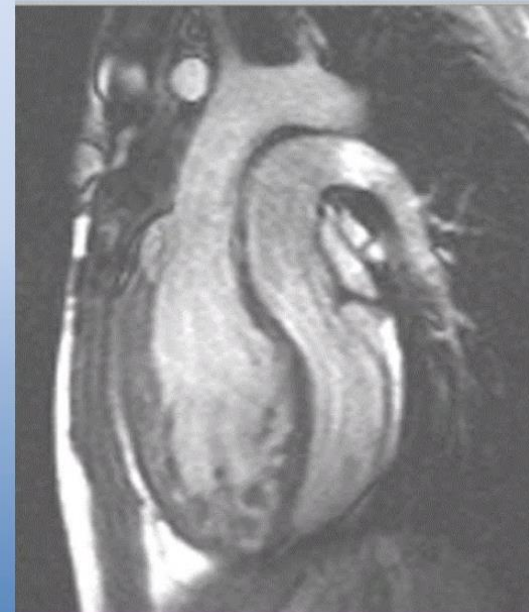
More than 130 ACHD transplants: Triumphs, mistakes and what I've learned



Freeman Hospital, Newcastle upon Tyne, UK



More than 130 ACHD transplants: Triumphs, mistakes and what I've learned



Anatomical surgical challenges in CHD

Surgical technique for heart transplantation: a strategy for congenital heart disease FREE

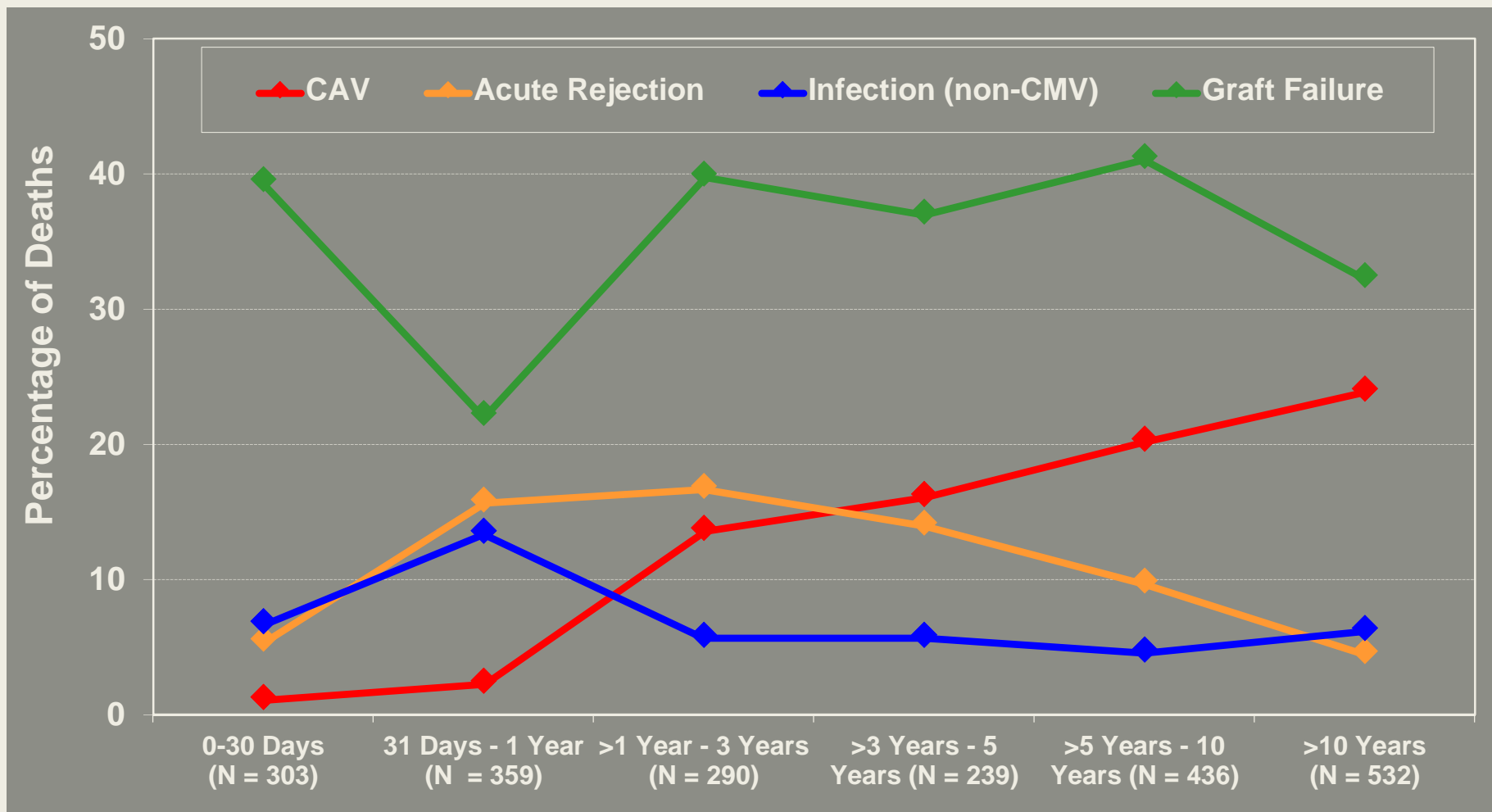
Amir-Reza Hosseinpour ✉, Antonio González-Calle, Alejandro Adsuar-Gómez, Gregorio Cuerpo, Rubén Greco, José Miguel Borrego-Domínguez, Antonio Ordoñez, John Wallwork

European Journal of Cardio-Thoracic Surgery, Volume 44, Issue 4, 1 October 2013, Pages 598–604, <https://doi.org/10.1093/ejcts/ezt089>

Published: 27 February 2013 **Article history** ▼

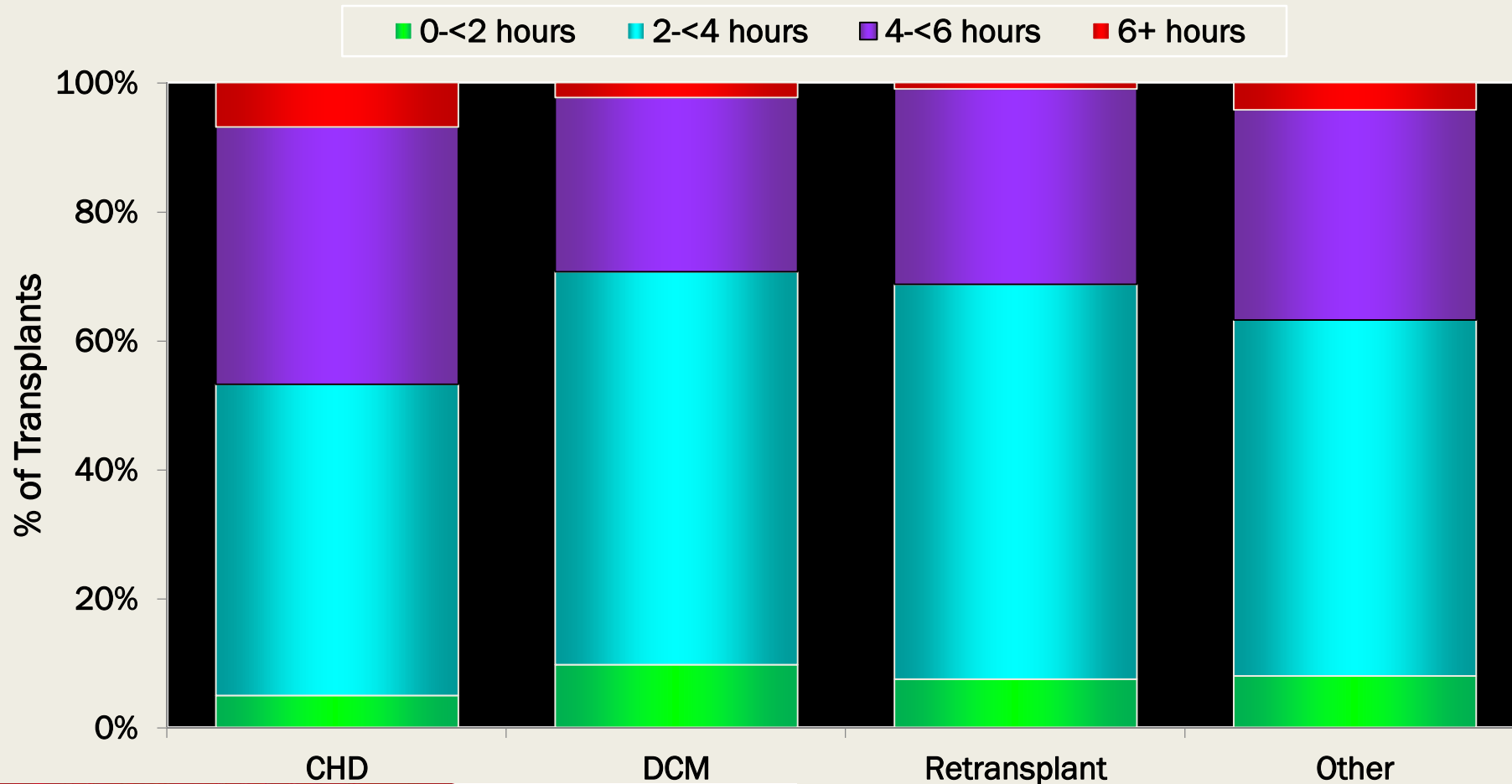
Pediatric Heart Transplants – 2018

Relative Incidence of Leading Causes of Death (January 2004 – June 2017)



Pediatric Heart Transplantation

Ischemic Time Distribution by Diagnosis (Jan 2004 – June 2016)



CBMH 1995 – Sep 2019

(27 procedures/13 CHD pts; 1-4/patient)

1. TA (3)	PA Band, Glenn
2. ARVD (8)	VSD closure
3. ARVD (15)	AICD
4. TA & PA (16)	LBTS, RBTS, Central shunt, Glenn
5. CA, CAVV, DIRV, PA, LPA occl(26)	RCBTS
6. TOF (8)	TOF, RPA re-implantation
7. TA (13)	PA Band, MVR, Glenn, TCPC
8. ARVD (21)	Glenn, TV repair
9. ARVD (17)	PPM, AICD, Ablation
10. ASD (13)	ASD, PPM, Berlin HEART
11. PREV TP (1)	OHT
12. HLHS (11)	Norwood, Glenn, Viral Myocarditis, TCPC
13. DCM (9)	LVAD HeartWare device

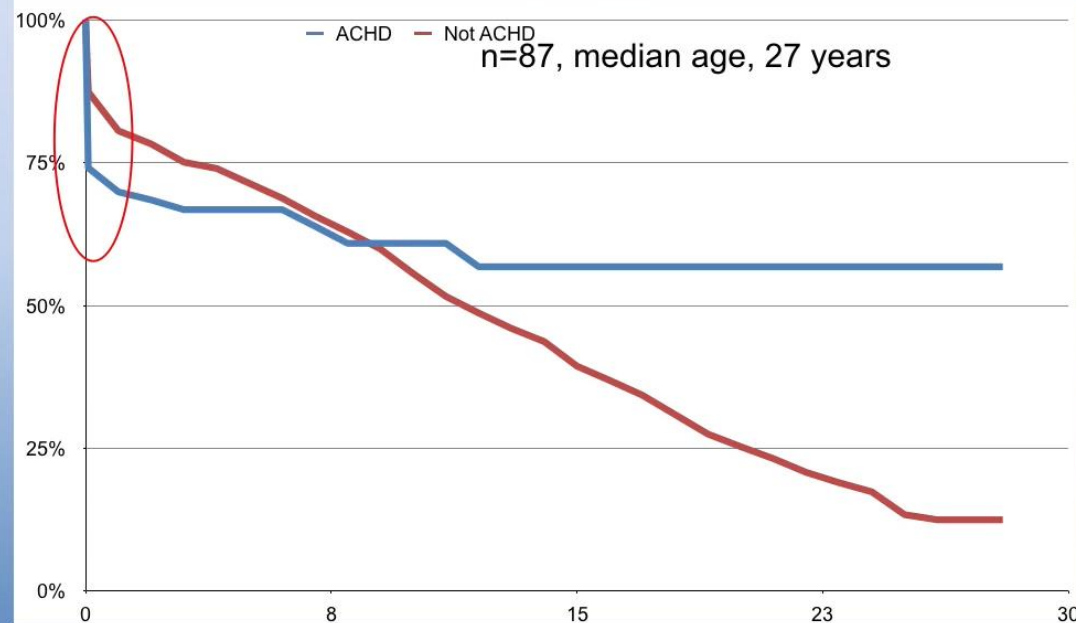
Results – ACHD vs non ACHD

More than 130 ACHD transplants: Triumphs, mistakes and what I've learned



Heart Transplants 1985-2015

n=685, median age, 50 years

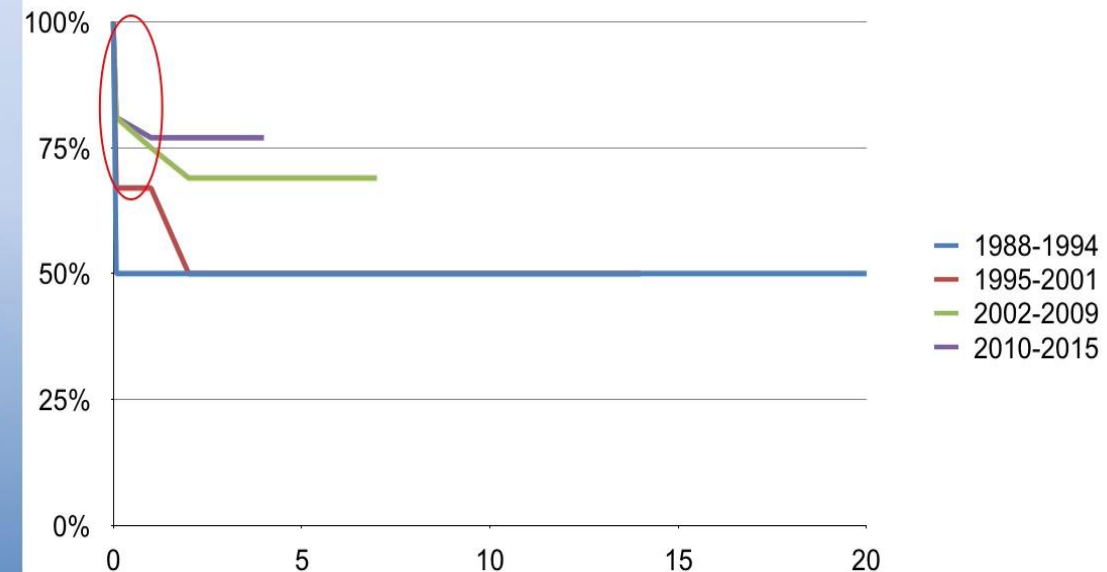


More than 130 ACHD transplants: Triumphs, mistakes and what I've learned

Congenital heart disease

Cardiac transplantation in adults with congenital heart disease

C Irving, G Parry, J O'Sullivan, J H Dark, R Kirk, D S Crossland, M Chaudhari, M Griselli, J R L Hamilton, A Hasan
Heart 2010;96:1217e1222.



SA-TP survivors CHD vs non-CHD

	<u>CHD</u>	<u>NON-CHD</u>	<u>TOTAL/UNIT</u>
GSH/RXH (1980-2019)	2	1	2/3
CBMH (1995-2019)	6	2	6/8
DURBAN (2000-2019)	2	0	2/2
S'HILL JHB (2015-2019)	0	3	0/3
TOTAL PATIENTS	10	6	10/16 = 62.5%

Era of Erosion of Professionalism

Prof S Benatar – Medical ethics presentation

Three `logics` drive human behavior:

Each can be described in a pure form

None play out in an exact manner

All have a major impact on behavior

- Market/Financial Logic ↑
- Logic of Rational/Legal Bureaucracy ↑
- Logic of Professionalism ↓

E Freidson. Professionalism: the third logic <https://books.google.co.za/books/about/Professionalism.>

Three Logics/Ideologies

Market

'Rational' choices
Freedom
Competition
Consumerism
Economics

Bureaucracy

Standardization
Planning
Efficiency
Laws
Control

Professionalism

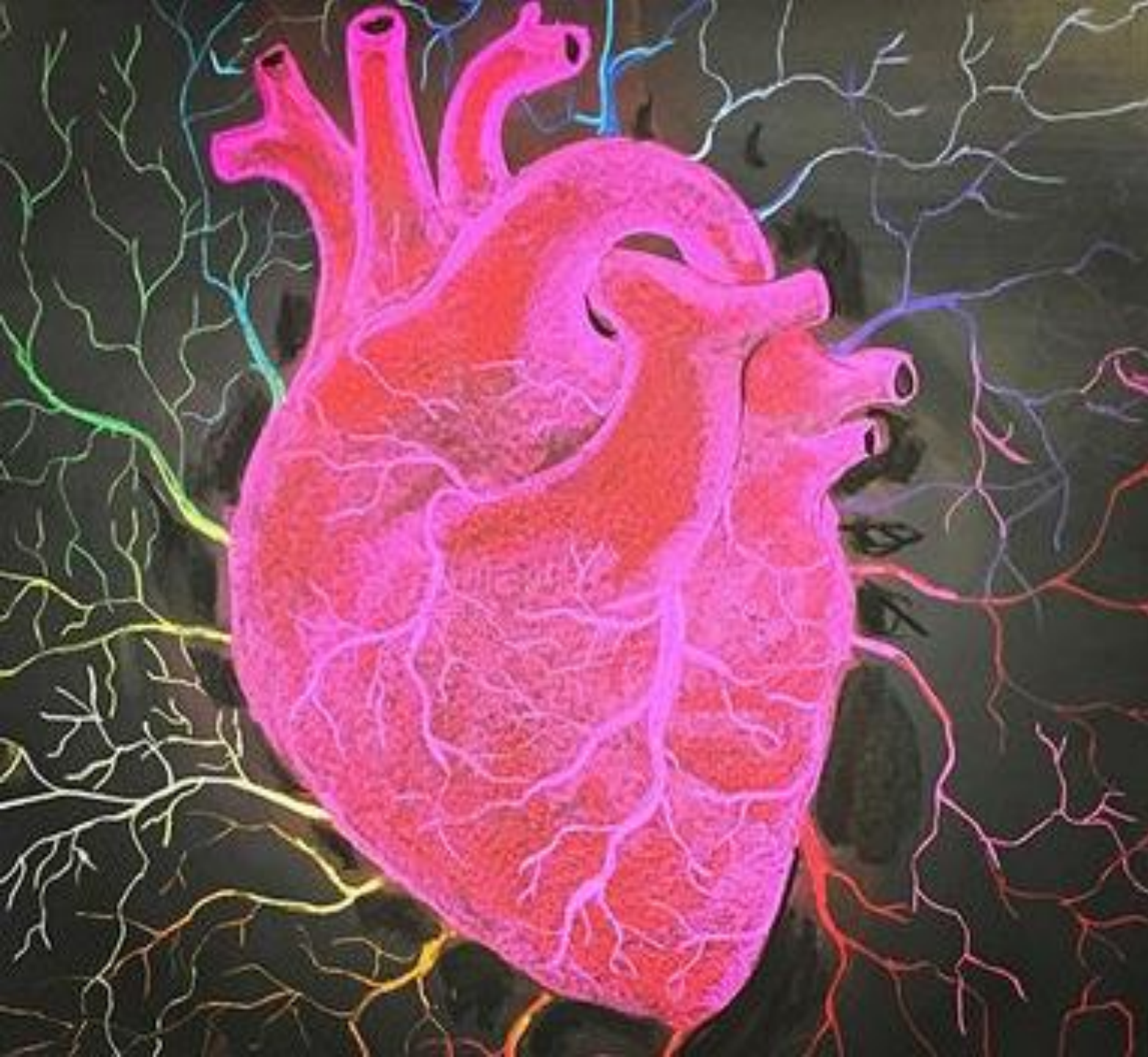
Knowledge
Dedication
Self-regulation
Ethics
Trust

What does the future hold for transplantation in Africa?

- More African babies will be born with CHD and survive.
- The ACHD population will increase, with subsequent potential increased requirements for heart transplantation
- Will we as professionals be able to manage this population with proven better outcomes compared to others heart transplantation and continue the worthy legacy of Christiaan Barnard?
- Do we continue to be undermined by market and bureaucratic dominance or should we attempt to restore professional initiative in the interest of best care of our patients?

Acknowledgements

- Alexia Michaelides, Netcare transplant coordinator CBMH
- Dene Friedman, Retired Perfusionist, part of 1967 transplant team
- Cindy Goldie, Busamed transplant coordinator
- Robert Kleinloog, Cardio-Thoracic Surgeon, Durban
- Tim Pennel, Cardio-Thoracic Surgeon, GSH
- Graham Cassel, Cardiologist, Milpark Hospital
- Mignon McCullough, Paediatric Nephrologist, RXH
- Helena Williams, CBMH
- Willie Koen, CBMH
- Maryn Reyneke, Statistics at SATS, 9'2019



*Medicine is magical and magical is art
Thinking of the Boy in the Bubble
And the baby with the baboon heart*

*The Boy In The Bubble
(Paul Simon Graceland)*

THANK YOU