

Donation after Circulatory Death (DCD) – expanding the deceased donor pool



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Global activity in organ transplantation

Estimations 2016

Kidney	Liver	Heart	Lung	Pancreas	S. bowel
89,823	30,352	7,626	5,497	2,342	220

≈ 135,860 solid organ transplants reported in 2016

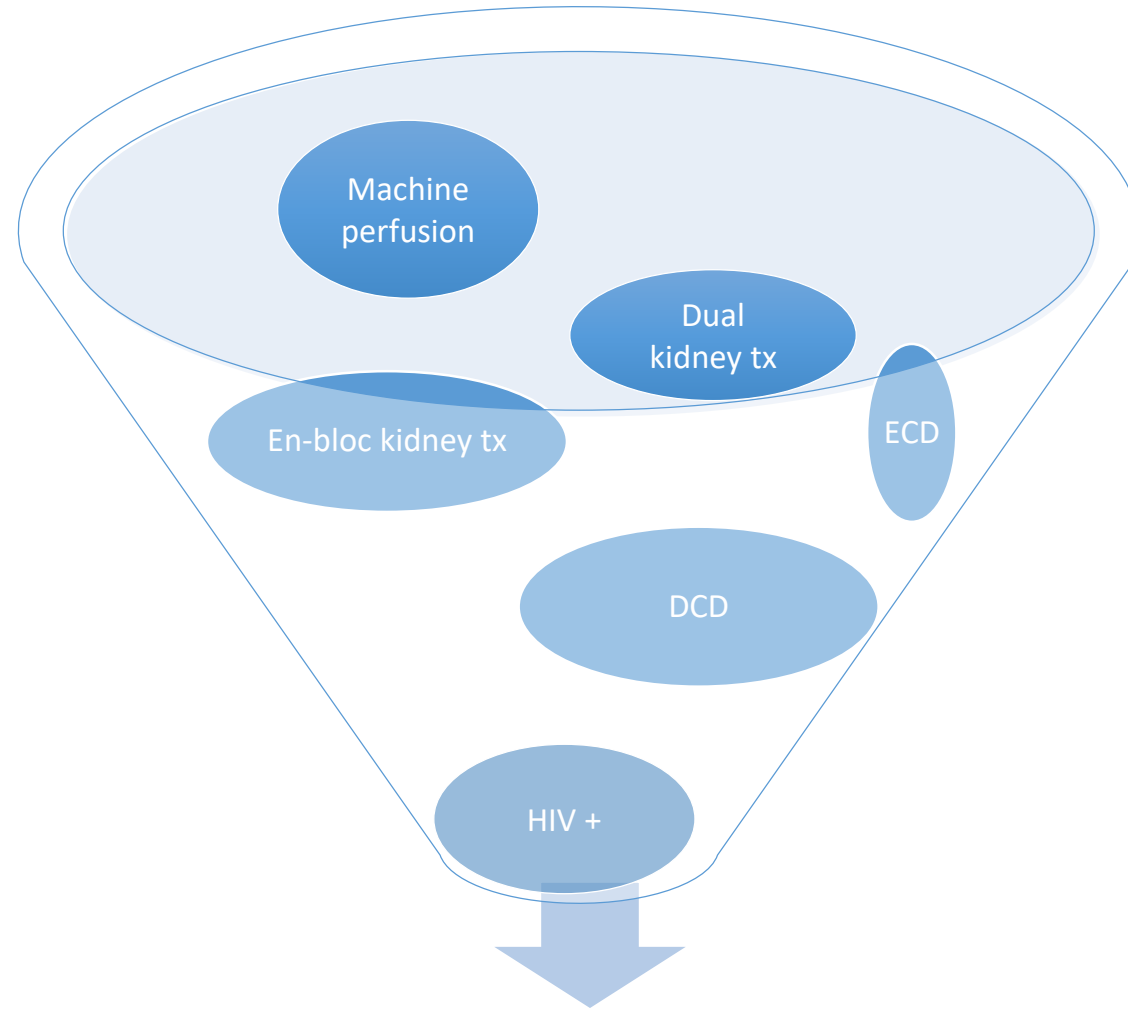
≈ 7.25 % increase vs 2015

≤ 10% of global needs

40.2% living kidney transplants

19.8% living liver transplants

Information of 110 Member States on organ transplantation activities is included in the GODT: 81 of 2016, 11 of 2015, 6 of 2014, 7 of 2013, 2 of 2012 and 3 of 2011.



Expanding the deceased
donor pool

Determination of death. . .

According to:

- Neurological criteria (Donation after Brain Death)
- Circulatory-respiratory criteria (Donation after Circulatory Death)

DCD categories: Maastricht

I – DOA

II – Witnessed cardiac arrest outside hospital with unsuccessful CPR

III – Planned withdraw of care

IV – Cardiac arrest after brain death

V – Cardiac arrest in hospital with unsuccessful CPR

Principles of controlled DCD

Decision to withdraw life supporting therapy (LST)

Process of withdrawal of LST

Death determination

Principles of controlled DCD

Decision to withdraw life supporting therapy (LST)

Futility of care / no longer in patient's best interest

Treating clinician

Independent of eligibility for donation

Transplant Co / team notified, but not involved with any treatment pre-mortem

Principles of controlled DCD

Process of withdrawal of LST

Where?

By whom?

How?

Principles of controlled DCD

Death determination

According to circulatory-respiratory criteria

Continuous absence of cardio-respiratory function for 5min (“stand-off period”)

The dead donor rule:

. . . requires that:

- (A1) “donors not be killed in order to obtain their organs” and that
- (A2) “organ retrieval cannot cause death”

The dead donor rule:

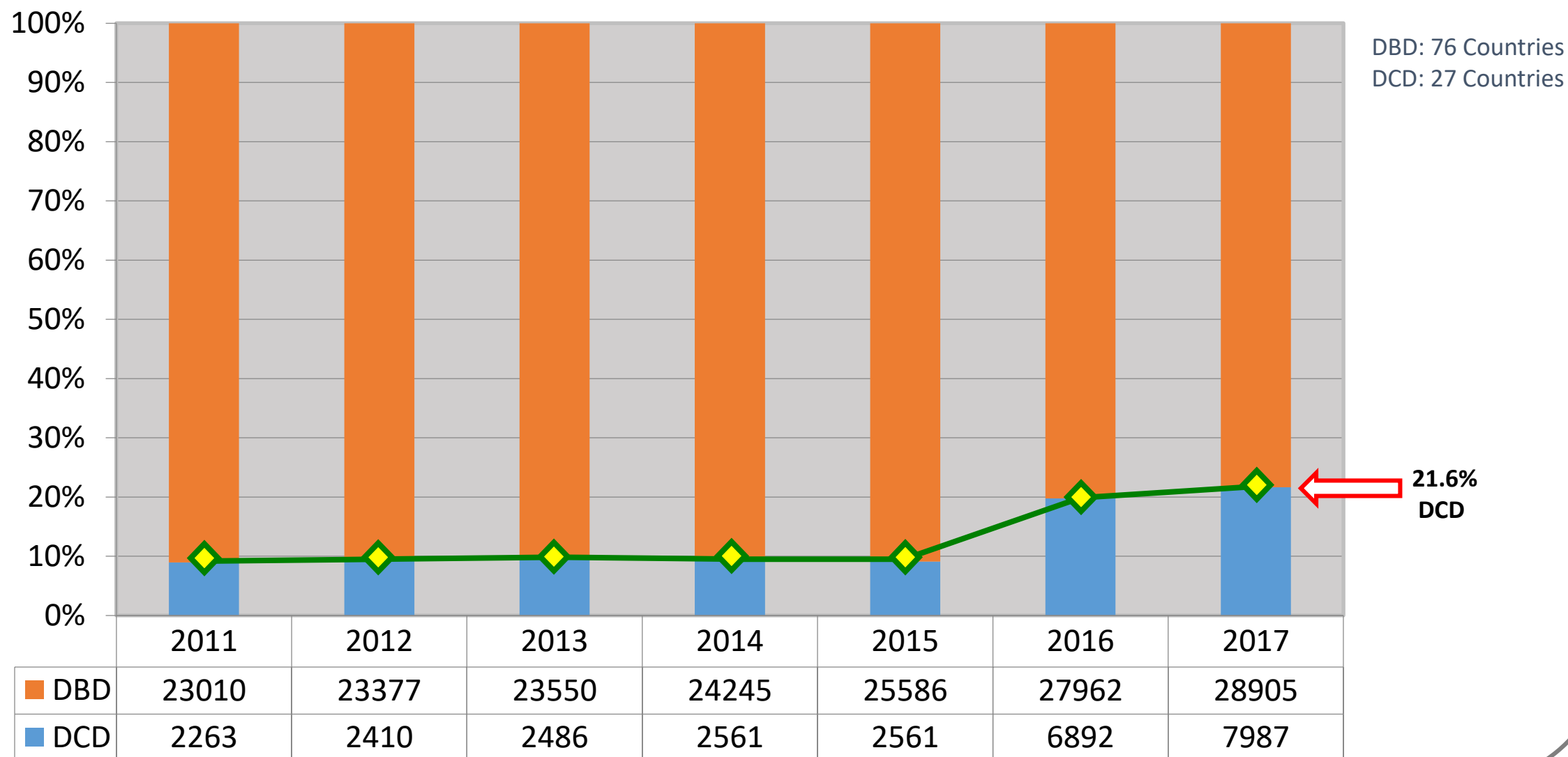
. . . requires that:

- (A1) “donors not be killed in order to obtain their organs” and that
- (A2) “organ retrieval cannot cause death”

- The duty to do no harm
- The duty to obtain informed consent

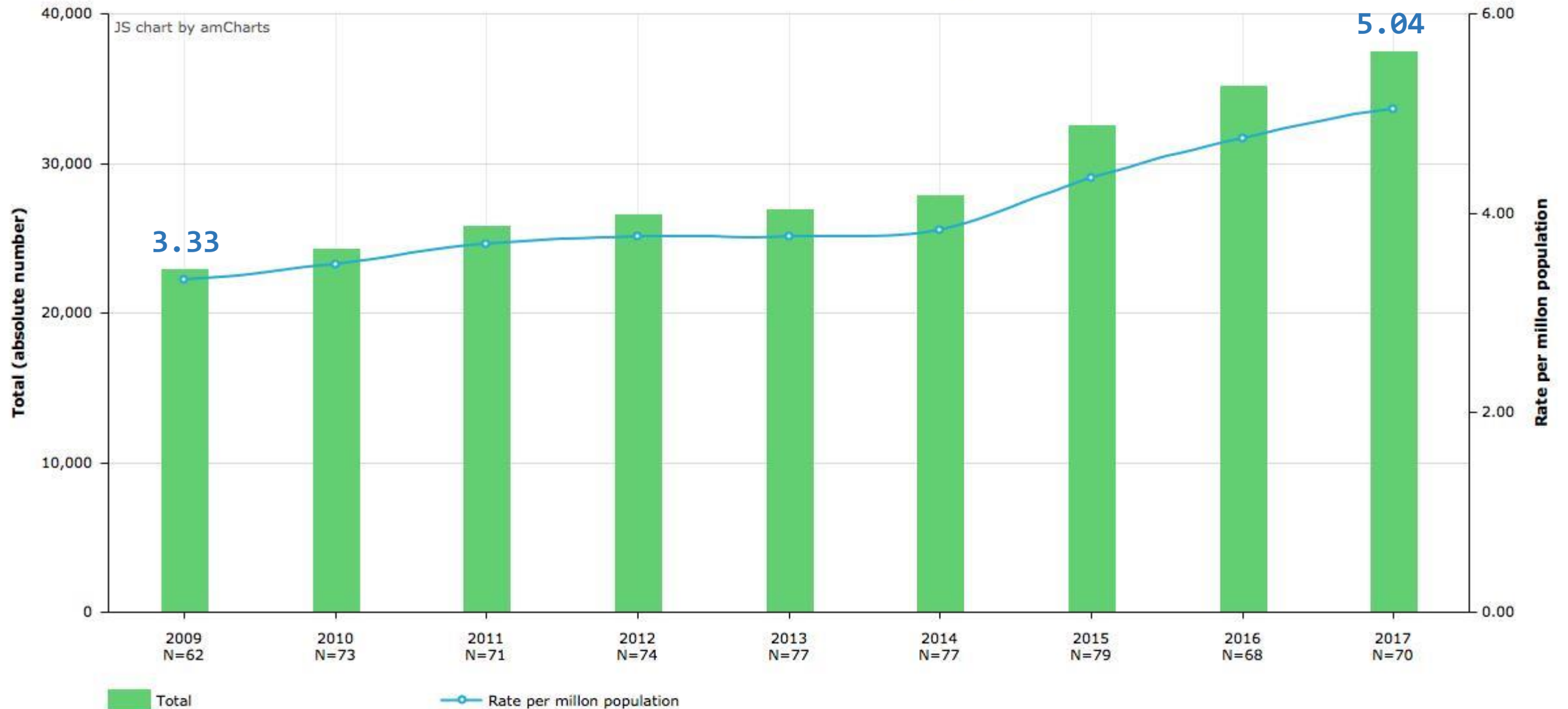
Robertson, J. 1999. The dead donor Rule. Hastings Center Report 29 (6): 6–14

Global deceased organ donors 2011-2017



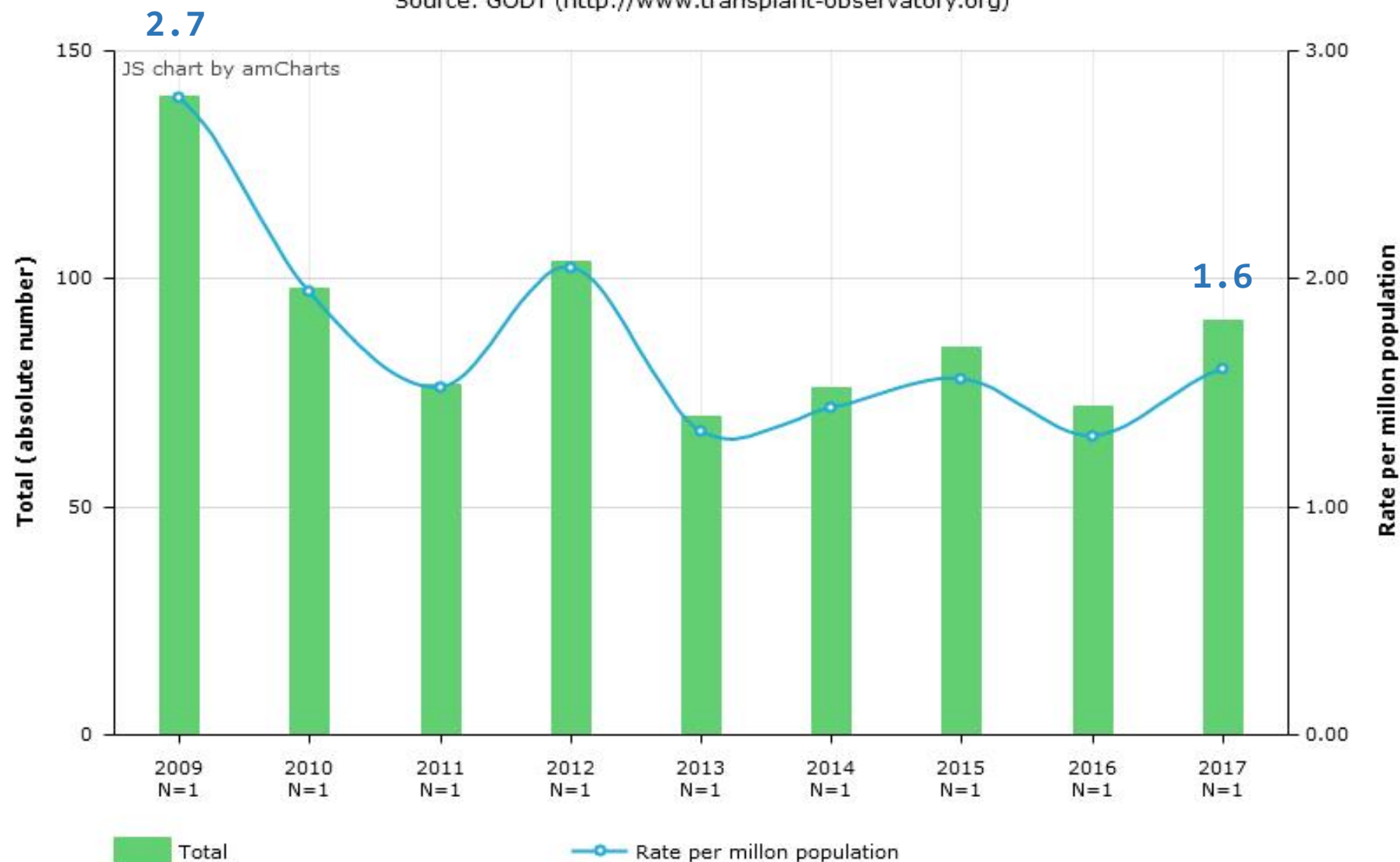
Total Number of Actual deceased organ donors (Global.2009-2017)

Source: GODT (<http://www.transplant-observatory.org>)

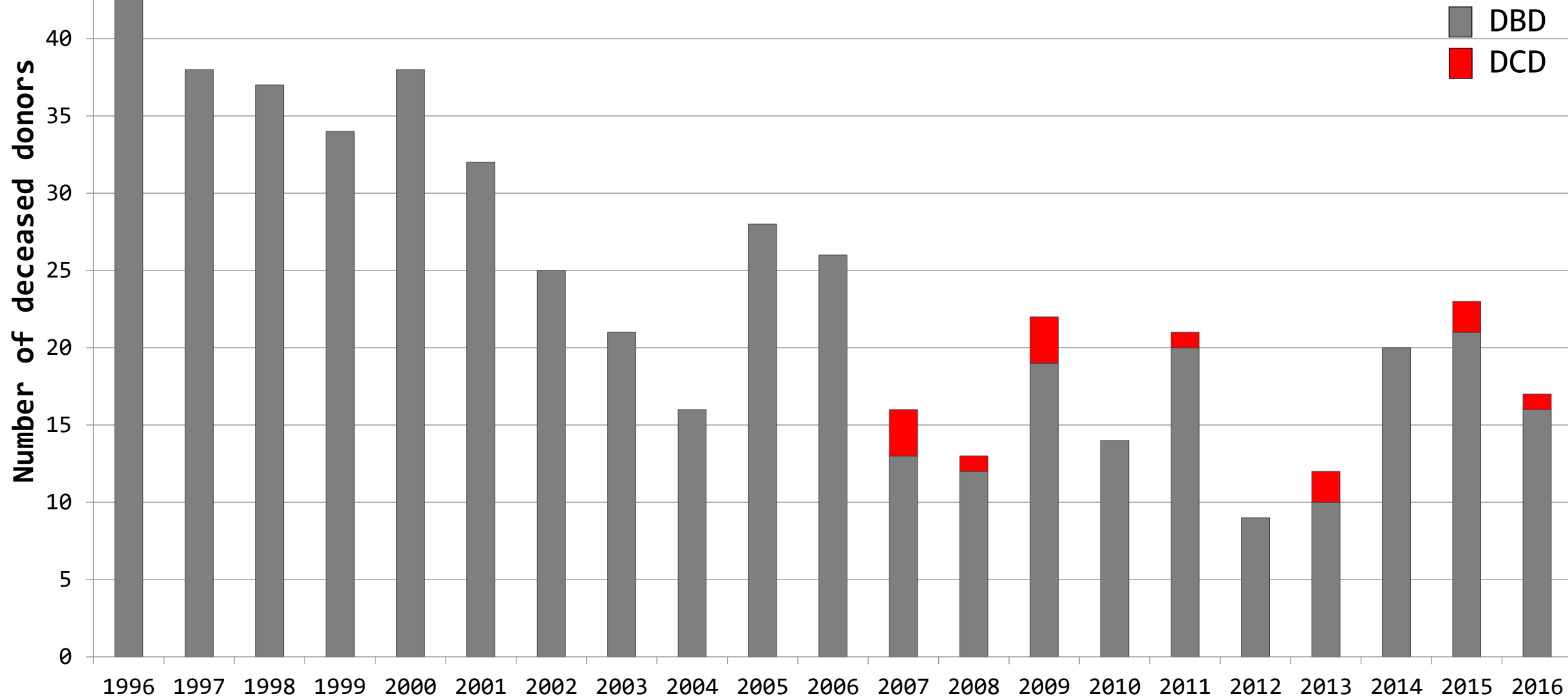


Total Number of Actual deceased organ donors (South Africa.2009-2017)

Source: GODT (<http://www.transplant-observatory.org>)



Deceased donor numbers at Groote Schuur Hospital over a 21 year period



179 Referrals

132 (73.7%) Trauma etiology

59 Eligible

15 Consented

2 Failed to arrest < 2 hours

13 Procured

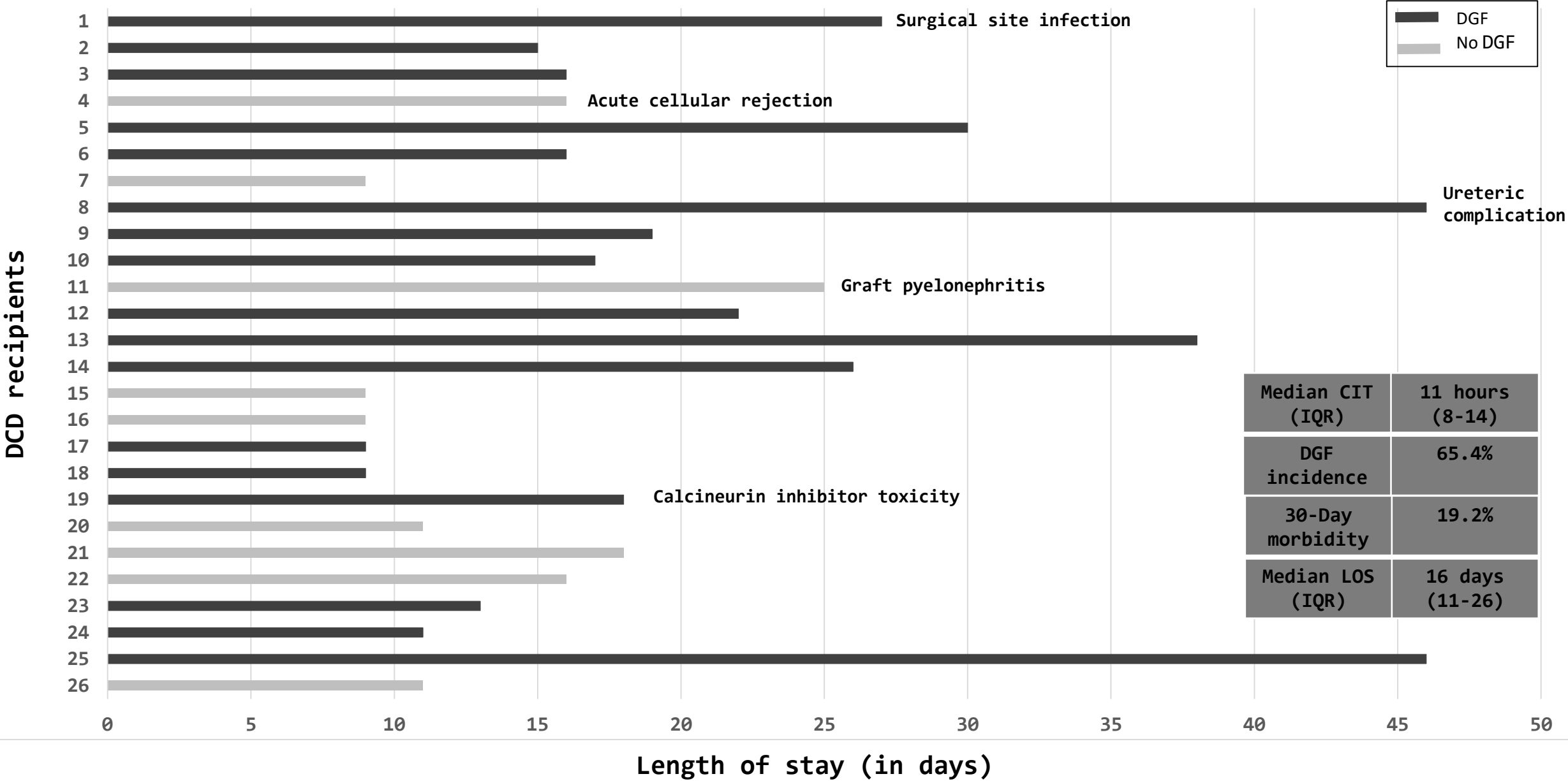
No kidneys discarded



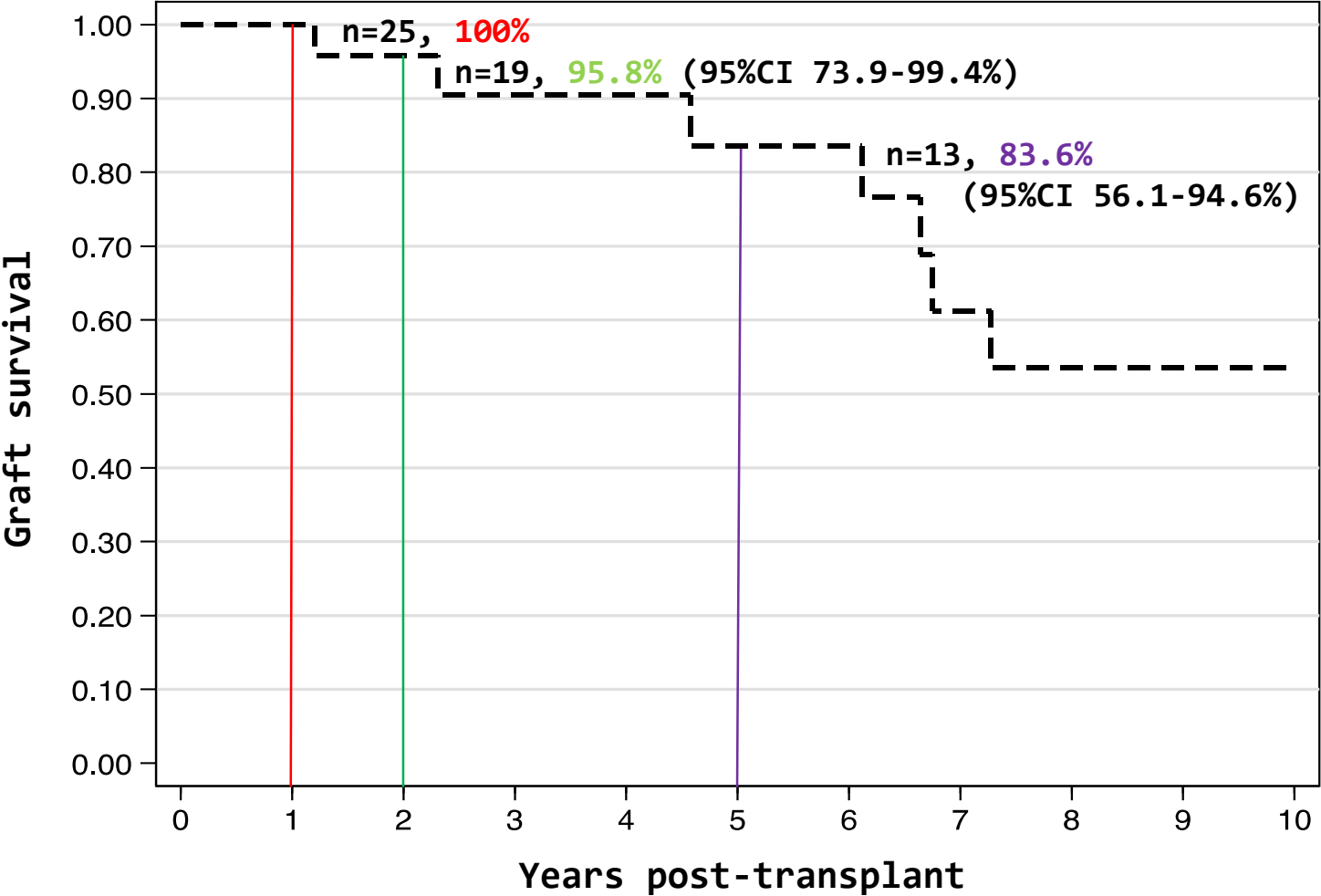
Utilised donor characteristics

Utilised DCD	13
Referral centre	GSH 12, RXH 1
Median age (IQR)	22 (21-32)
Trauma:Medical	5.5 : 1
Extended criteria	0
Vasopressor dependant	46.2%
Median terminal s-Cr (IQR)	86 (73-181)
Discard rate	0

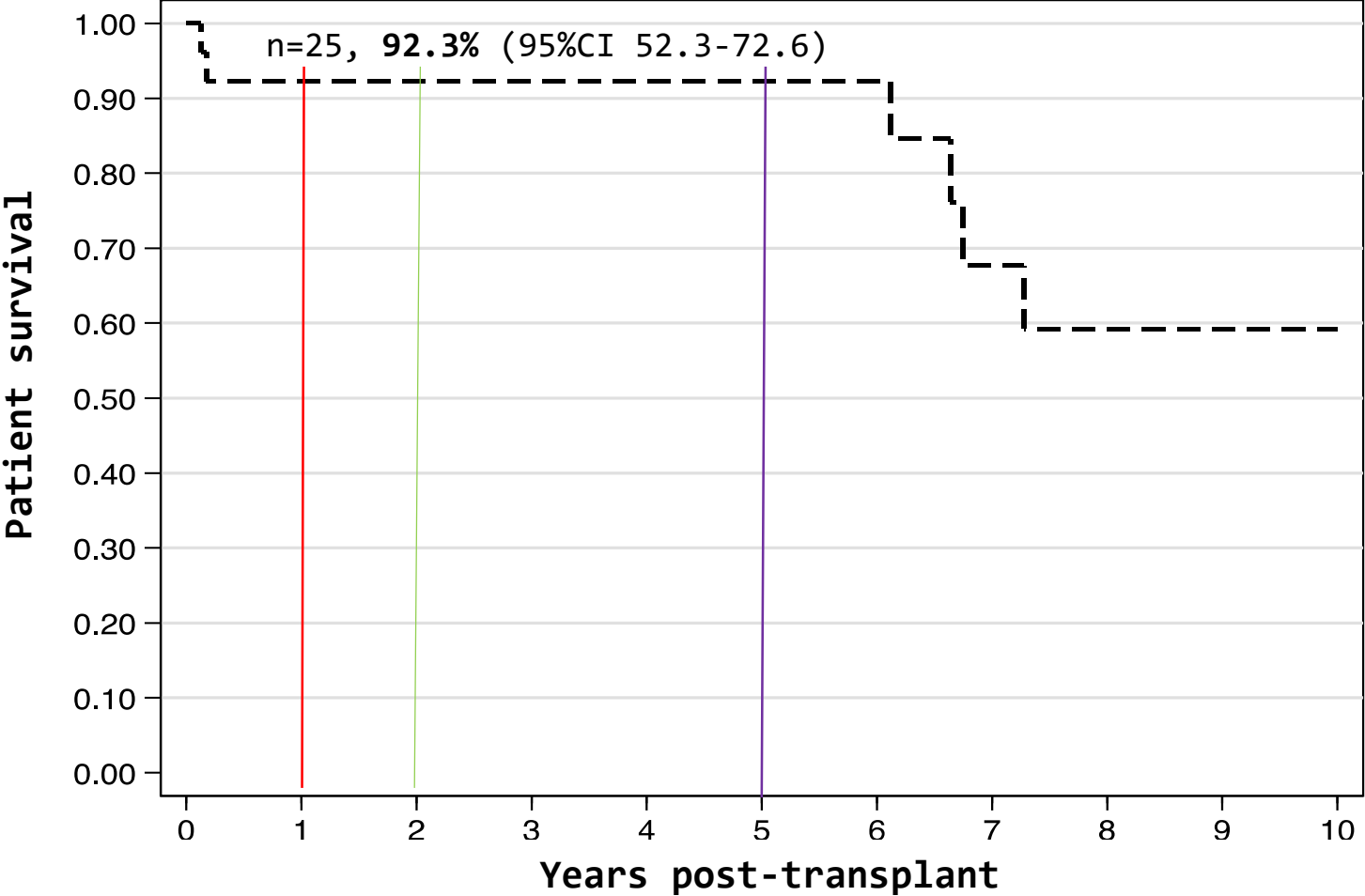
30-Day morbidities and the association with length of stay



Graft survival



Patient survival



Graft outcome

Trend towards higher PNF, but not statistically significant

UK registry 4 vs 3 %

Summers et al. Effect of donor age and cold storage on outcome in recipients of kidneys donated after circulatory death in the UK. Lancet 2013; 381: 727-734

US registry 0.9 vs 0.7% (SCD)

Singh et al. Does ECD status modify the outcomes of kidney transplantation from DCD? Am J Transplant 2013; 13: 329-336

DGF x 2 vs DBD

Summers et al. Effect of donor age and cold storage on outcome in recipients of kidneys donated after circulatory death in the UK. Lancet 2013; 381: 727-734

Summer et al. Analysis of factors that affect outcome after transplantation of DCD kidneys. Lancet 2010; 376: 1303-1311

DGF has no impact on long term graft survival

Locke et al. Outcomes of kidneys from donors after cardiac death. Am J Transplant 2007; 7: 1797-1807

Brook et al. Non-heart beating donor kidneys with delayed graft function have superior graft survival compared with DBD kidneys with delayed graft function. Am J Transplant 2013; 13: 329-336

Patient outcome

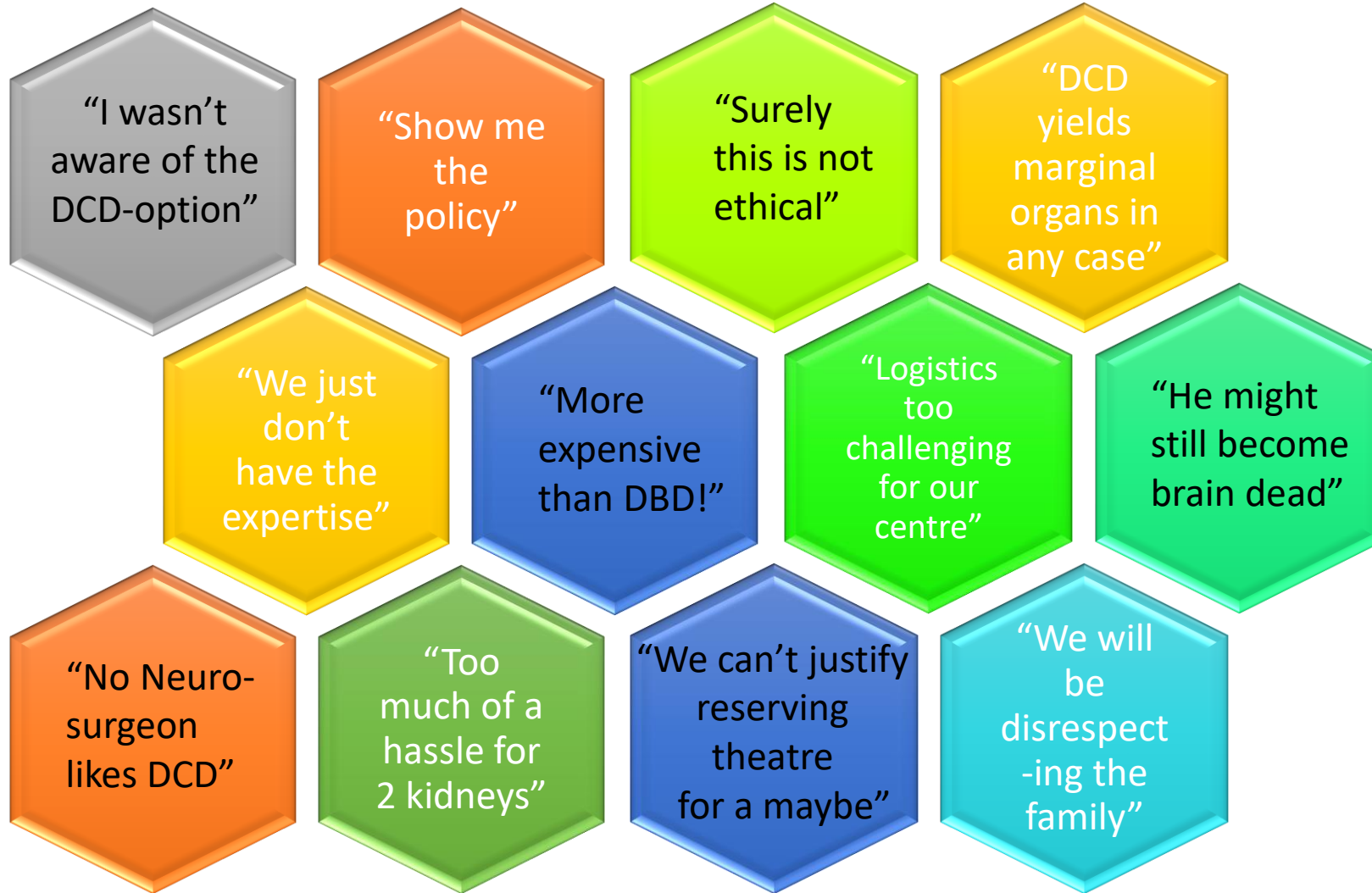
1, 5 and 10 year patient survival comparable to DBD

Survival benefit vs waiting on dialysis for a transplant from a DBD

Weber et al. Kidney transplantation from donors without a heartbeat. N Engl J Med 2002; 347:248

Snoeijs et al. Kidneys from donors after cardiac death provide survival benefit. J Am Soc Nephrol 2010;
21: 1015

Why so few DCDs in SA?



In conclusion

- Controlled DCD (after planned WLT) most appropriate for SA
- Kidneys the gateway organ
- Understand role and implement according to ethical principles
- Education

Acknowledgements

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