



SECTION 8

Deceased Donor Lung Donation

SUMMARY

This section summarises deceased donor lung donation activity from deceased donors in 2016, compared with previous years.

Contents

Lung Donation.....	2
Age of Lung Donors.....	4
Donor Lung Function.....	4
Lungs Not Retrieved.....	5
Lungs Retrieved and Not utilised.....	6
Outcome of Lung Donation.....	7

Table of Figures

Figure 8.1 Outcomes of Request for Lung Donation from Actual Donors in Australia 2016.....	2
Figure 8.2 Outcomes of Request for Lung Donation from Actual Donors in New Zealand 2016.....	2
Figure 8.3 Lungs Transplanted by Donation Pathway - Australia, 1998 - 2016.....	3
Figure 8.4 Lungs Transplanted by Donation Pathway - New Zealand, 1998 - 2016.....	3
Figure 8.5 Deceased Donor Lung Transplant Recipients by State, Country, 2015 vs 2016.....	3
Figure 8.6 Age of Donors Providing Transplant Lungs, Australia, 2016.....	4
Figure 8.7 Age of Donors Providing Transplant Lungs, New Zealand, 2016.....	4
Figure 8.8 Non-Utilisation Rate of Retrieved Lungs, Australia, 2012-2016.....	6
Figure 8.9 Non-Utilisation Rate of Retrieved Lungs, New Zealand, 2012-2016.....	6

Counting Methodology

A transplanted organ is a solid organ retrieved from a deceased donor and transplanted into a recipient. Each organ is counted individually, regardless of the type of transplantation performed. For reporting purposes, two lungs retrieved from a single donor and later transplanted, are counted as 2 organs transplanted.

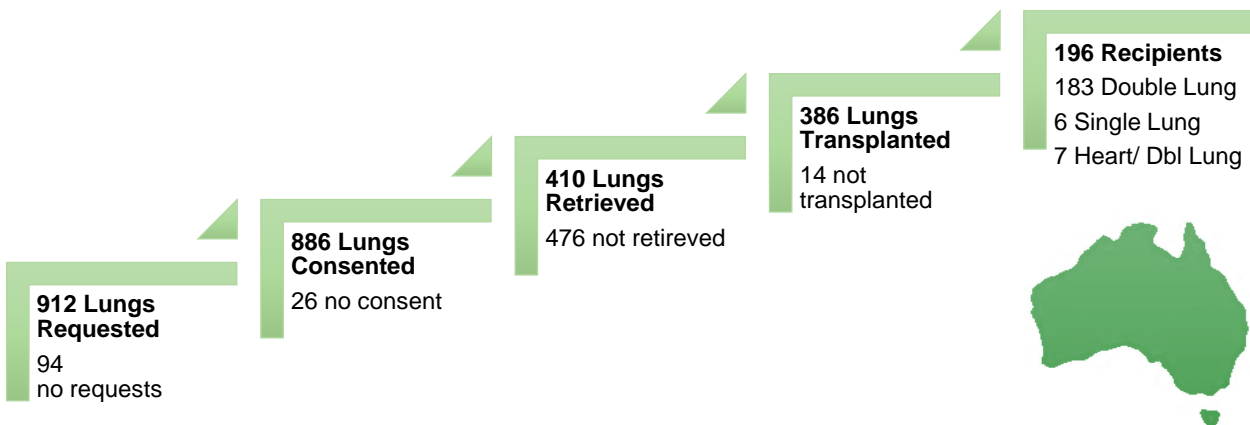
An organ transplantation procedure is the transplantation of one or more solid organ(s) from a deceased donor to a recipient, by organ type. In accordance with this definition, a single lung transplantation procedure or a double lung transplantation procedure, each contribute a count of one. In addition, any simultaneous organ transplant with another organ type is counted as one transplant procedure.

Lung Donation

Of the 503 deceased organ donors in 2016 in Australia, 912 lungs were requested for donation. Of these, 410 lungs were retrieved with 386 lungs transplanted. There were 196 lung transplant recipients (8.1 pmp) an increase of 1.6%. Of these 196 lung transplant recipients, seven received heart/double lung transplants and six received a single lung at transplantation.

Figures 8.1 and 8.2 show the outcomes of requests for Lung donation in Australia and New Zealand for 2016 respectively.

Figure 8.1 Outcomes of Request for Lung Donation from Actual Donors in Australia 2016



In New Zealand, there donors 110 lungs requested for donation. From these, 40 lungs were retrieved and transplanted as double lungs into 20 recipients in 2016. One double lung recipient also received a combine liver transplant.

Figure 8.2 Outcomes of Request for Lung Donation from Actual Donors in New Zealand 2016

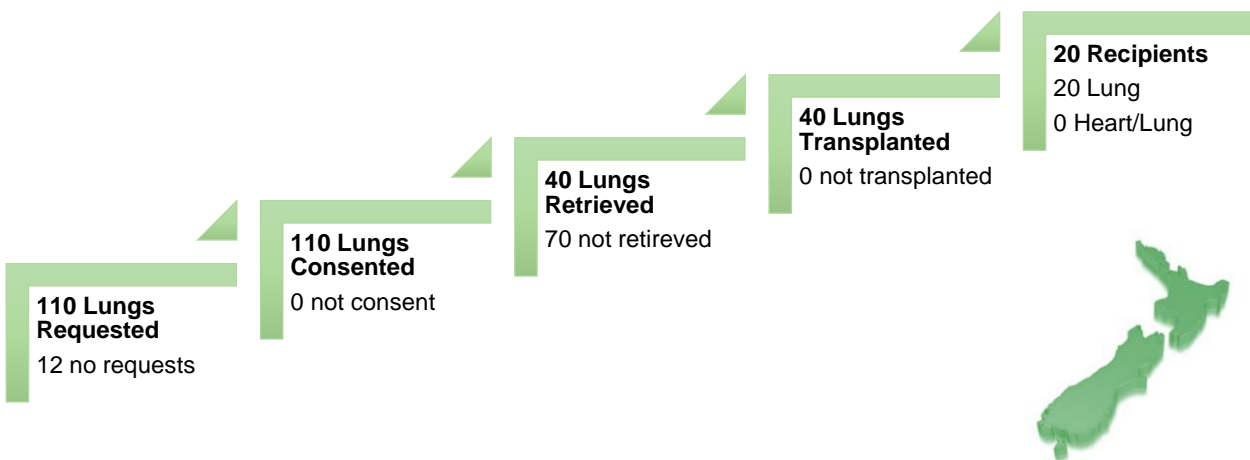


Figure 8.3 to 8.5 show the number of lung transplants by donation pathway and the number of lung recipients by jurisdiction. Figure 8.3 particularly shows an increase in DCD lungs from 2006 to 2016, and DBD lungs from 2010 to 2016 in Australia. There were no lungs donated from DCD donors in New Zealand in 2016 (Figure 8.4)

Figure 8.3 Lungs Transplanted by Donation Pathway - Australia, 1998 - 2016

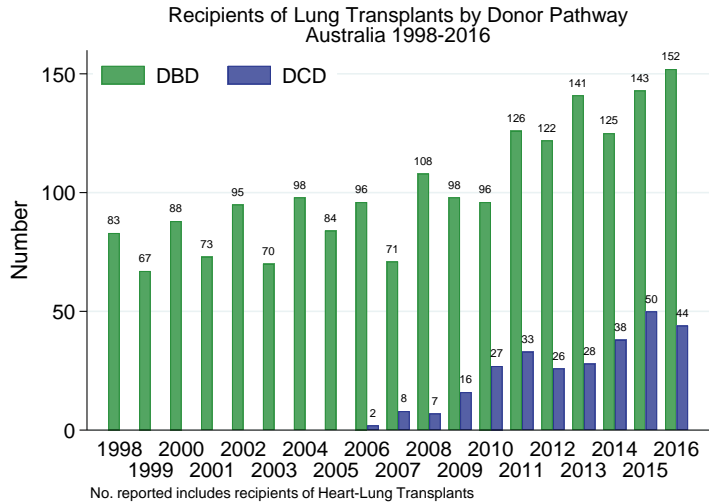


Figure 8.4 Lungs Transplanted by Donation Pathway - New Zealand, 1998 - 2016

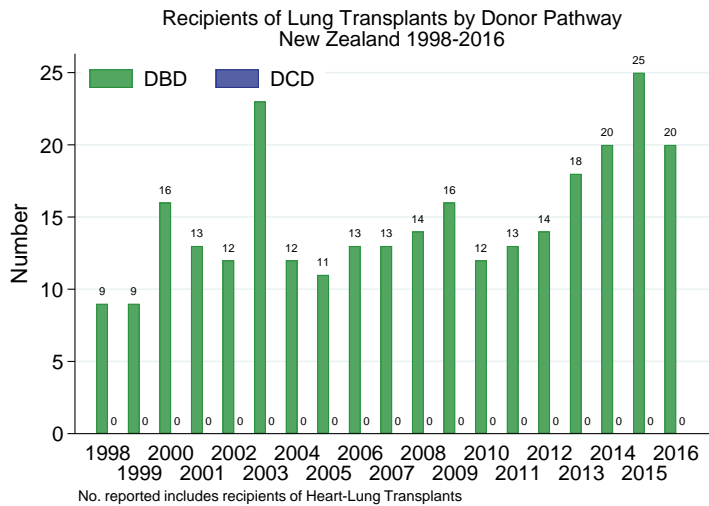
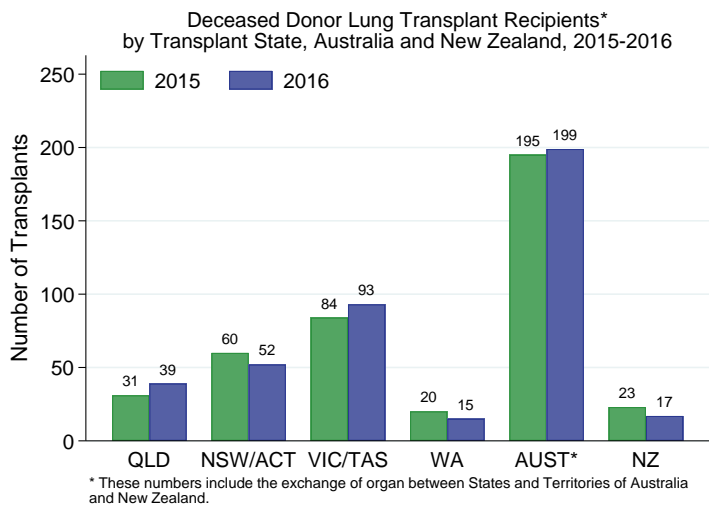


Figure 8.5 Deceased Donor Lung Transplant Recipients by State, Australia & New Zealand, 2015 vs 2016



Age of Lung Donors

The age distribution of donors providing transplanted lungs for Australia and New Zealand is shown in Figures 8.6 and 8.7 respectively.

Figure 8.6 Age of Donors Providing Transplant Lungs, Australia, 2016

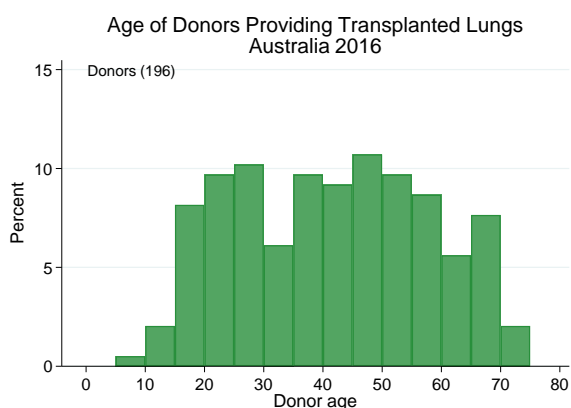
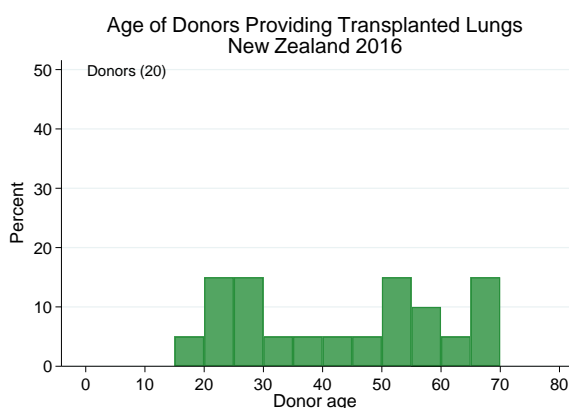


Figure 8.7 Age of Donors Providing Transplant Lungs, New Zealand, 2016



Donor Lung Function

In Australia, 162 (78.6%) donors with lungs retrieved had a bronchoscopy in 2016. Four donors had chest trauma; these included bruising, penetration and rib fractures.

The arterial blood gases were taken on 100% FiO₂ and PEP 5cm of 470 donors. Fifty-three had a PEEP greater than 5cm.

The results from donors of 480 lungs show 20.1 % to be acidotic (pH <7.35) and 16.9 % to be alkalotic (pH>7.45).

Oxygenation measured as PaO₂ ranged from 26 to 610 mmHg with a median of 341.5 mmHg. PaCO₂ ranged from 22 to 375 with a median of 39.5 mmHg.

In New Zealand, there were three (15%) lung donors who had a bronchoscopy in 2016. No donors had chest trauma.

All 20 lung donors had 100% FiO₂; 10 had a PEEP greater than 5cm.

The arterial blood gas results from these lung donors show 38% (8) to be acidotic (pH < 7.35) and three (14.3%) were alkalotic (pH > 7.45).

Oxygenation measured as PaO₂ ranged from 219 - 543 mmHg with a median of 414 mmHg. PaCO₂ ranged from 29 - 52 mmHg with a median of 417 mmHg.

Lungs Not Retrieved

In 2016, there were 476 Lungs not retrieved from Australian donors and 70 not retrieved from New Zealand donors.

For Australia, the main reason was due to the Lung not being medically suitable (309), followed by no suitable recipient for the lung (107).

In New Zealand, there were 35 non-retrieved Lungs due to not being medically suitable and 4 due to donation after cardiac death.

Table 8.1 Reasons for Lung Not Retrieved in 2016

Reason	Australia	New Zealand
Logistics	20	2
Not Medically Suitable	309	35
Surgically Unsuitable	0	0
Trauma to Organ	12	2
No Suitable Recipients	107	21
Age of Donor	14	4
DCD Donor	0	4
Consent Withdrawn	8	0
Others	6	2
Total	476	70

Lungs Retrieved and Not utilised

Table 8.3 tabulates the reasons Lungs were not used after retrieval for the purpose of transplantation, since 2012.

Table 8.2 Reasons Lung Retrieved and Not Utilised for Organ Transplantation in Australia (New Zealand), 2012 - 2016

	Logistics	Not Medically Suitable	Not Surgically Suitable	No Suitable Recipients	Other	Total
2012	0 (0)	0 (0)	0 (0)	0 (0)	3 (0)	3 (0)
2013	0 (0)	4 (0)	0 (0)	0 (0)	0 (0)	4 (0)
2014	0 (0)	10 (1)	0 (0)	2 (0)	0 (0)	12 (1)
2015	0 (0)	3 (0)	0 (0)	0 (0)	0 (0)	3 (0)
2016	0 (0)	13 (0)	0 (0)	0 (0)	1 (0)	14 (0)

Figures 8.8 and 8.9 show the non-utilisation rate of retrieved Lungs - the proportion of Lungs that were retrieved for the purpose of solid organ transplantation, but not ultimately transplanted into a recipient (either due to absence of suitable recipients, or the Lung being found to be medically or surgically unsuitable after retrieval).

In Australia, the non-utilisation rate of Lungs has decreased from 0.5% in 2011 to 8.9% in 2014. In 2015, this fell to just under 6.5%.

In new Zealand, all Lungs retrieved for transplantation have been successfully transplanted.

Figure 8.8 Non-Utilisation Rate of Retrieved Lungs, Australia, 2012-2016

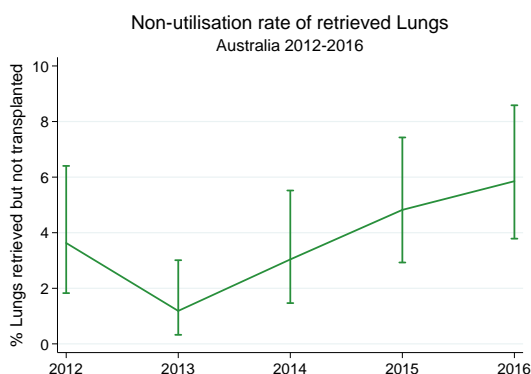
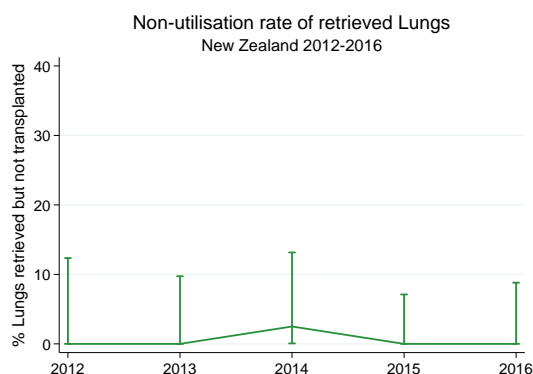


Figure 8.9 Non-Utilisation Rate of Retrieved Lungs, New Zealand, 2012-2016



Outcome of Lung Donation

The outcome of Lung donation activity in Australia and New Zealand throughout the donation pathway is shown in tables 8.3 and 8.4 respectively.

Table 8.3 Outcome of Request for Lung Donation in Australia, 2012-2016

	2012	2013	2014	2015	2016
Total Donors	354	391	378	435	503
Lungs with No Request for Donation	86	92	72	86	94
Lungs with Request for Donation	622	690	684	784	912
Lungs with Consent Not Given for Donation	12	30	24	32	26
Lungs with Consent Given for Donation	610	660	660	752	886
Lung Not Retrieved	307	323	331	358	476
Lung Retrieved	303	337	329	394	410
(Single Lung Retrieved)	1	1	3	2	2
(Double Lung Retrieved)	151	168	163	196	204
Total Lungs Not Used	3	4	10	3	14
Lungs used for Research	8	0	0	16	10
Lungs Transplanted	292	333	319	375	386
Recipient Transplanted	148	169	163	193	196
Double Lung Recipient	144	164	156	182	190
Single Lung(L) Recipients	2	3	4	6	5
Single Lung(R) Recipients	2	2	3	5	1
(Heart/Lung Recipients)	4	2	4	2	7
Lung Non-Utilisation Rate	3.63%	1.19%	3.04%	4.82%	5.85%
Lung Utilised Rate	96.37%	98.81%	96.96%	95.18%	94.15%

Table 8.4 Outcome of Request for Lung Donation in New Zealand, 2012-2016

	2012	2013	2014	2015	2016
Total Donors	38	36	46	53	61
Lungs with No Request for Donation	10	18	26	14	12
Lungs with Request for Donation	66	54	66	92	110
Lungs with Consent Not Given for Donation	4	0	0	0	0
Lungs with Consent Given for Donation	62	54	66	92	110
Lung Not Retrieved	34	18	26	42	70
Lung Retrieved	28	36	40	50	40
(Single Lung Retrieved)	0	0	0	0	0
(Double Lung Retrieved)	14	18	20	25	20
Total Lungs Not Used	0	0	1	0	0
Lungs used for Research	0	0	0	0	0
Lungs Transplanted	28	36	39	50	40
Recipient Transplanted	14	18	20	25	20
Double Lung Recipient	14	18	19	25	20
Single Lung(L) Recipients	0	0	1	0	0
Single Lung(R) Recipients	0	0	0	0	0
(Heart/Lung Recipients)	0	0	1	0	0
Lung Non-Utilisation Rate	0%	0%	2.50%	0%	0%
Lung Utilised Rate	100%	100%	97.50%	100%	100%

Suggested Citation:

ANZOD Registry, 2017 Annual Report, Section 8: Deceased Donor Lung Donation. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2018. Available at www.anzdata.org.au