



## SECTION 8

# Deceased Donor Lung Donation

This section summarises deceased donor lung donation activity from deceased donors in 2017, compared with previous years.

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## Suggested citation

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

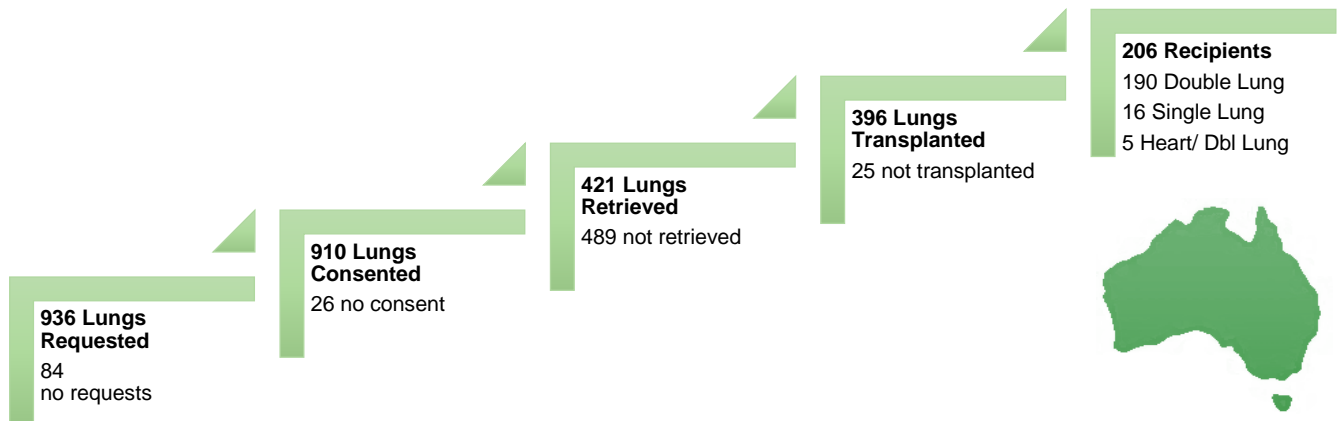
<http://www.anzdata.org.au>

## Lung Donation

Of the 510 deceased organ donors in 2017 in Australia, 936 lungs were requested for donation. Of these, 421 lungs were retrieved with 396 lungs transplanted. There were 206 lung transplant recipients (8.4 pmp) an increase of 5.1%. Of these 206 lung transplant recipients, five received heart/double lung transplants, two received a double lung/liver and one received a double lung kidney transplant.

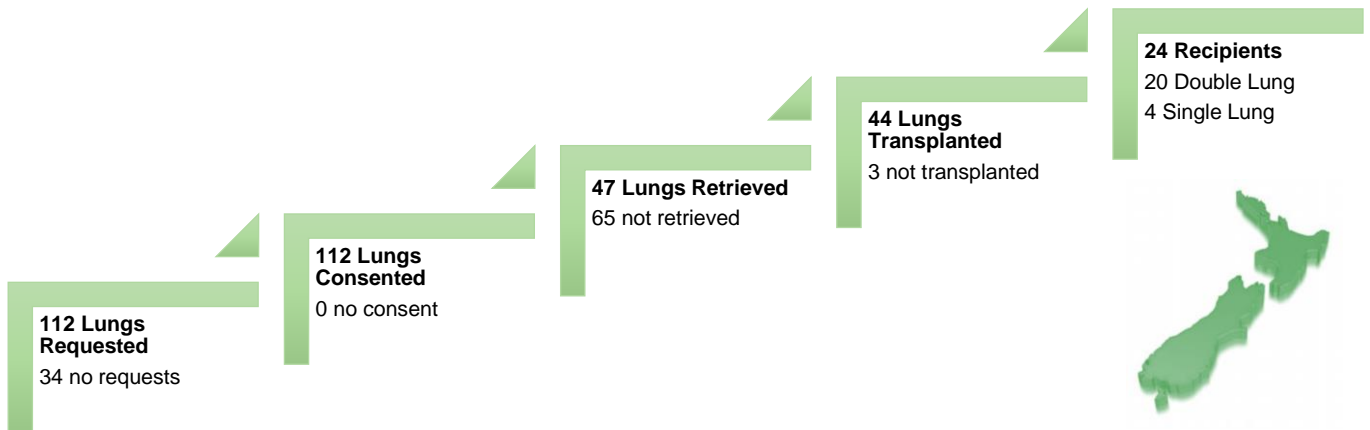
Figures 8.1.1 and 8.1.2 show the outcomes of requests for Lung donation in Australia and New Zealand for 2017 respectively.

*Figure 8.1.1 Outcomes of Request for Lung Donation from Actual Donors in Australia 2017*



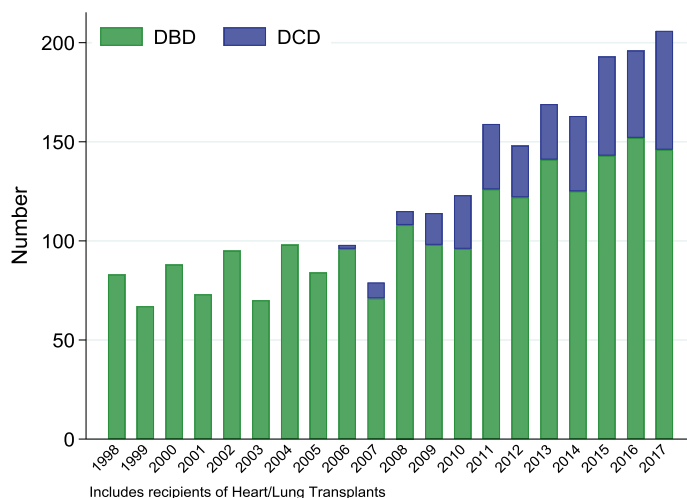
In New Zealand in 2017, 112 lungs were requested for donation. From these, 47 lungs were retrieved and 44 were transplanted into 24 recipients (5.0 pmp).

*Figure 8.1.2 Outcomes of Request for Lung Donation from Actual Donors in New Zealand 2017*

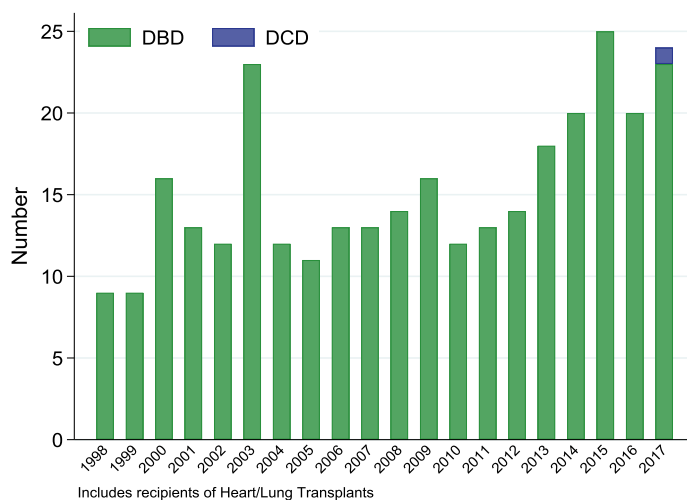


Figures 8.2 to 8.3 show the number of lung transplants by donation pathway and the number of lung recipients by jurisdiction. Figure 8.3 particularly shows an increase in DCD lungs from 2006 to 2017, and DBD lungs from 2010 to 2017 in Australia.

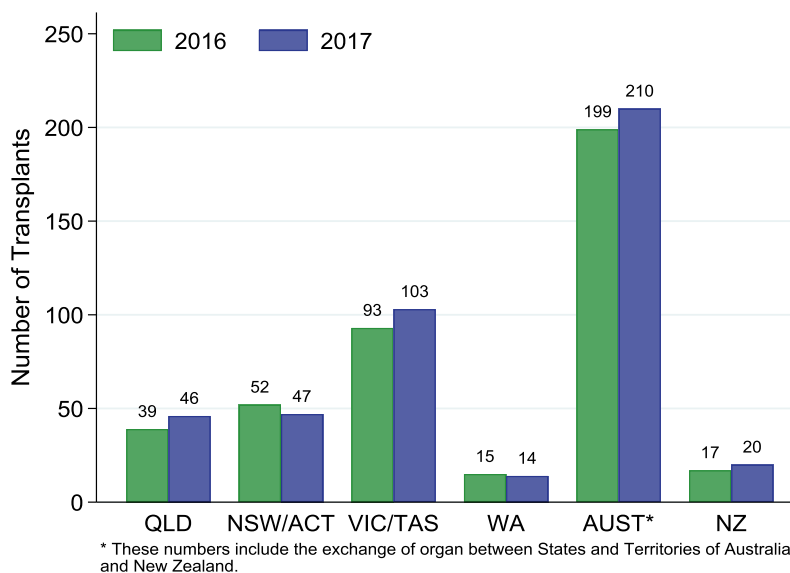
**Figure 8.2.1 - Recipients of Lung Transplants by Donor Pathway Australia 1998-2017**



**Figure 8.2.2 - Recipients of Lung Transplants by Donor Pathway New Zealand 1998-2017**



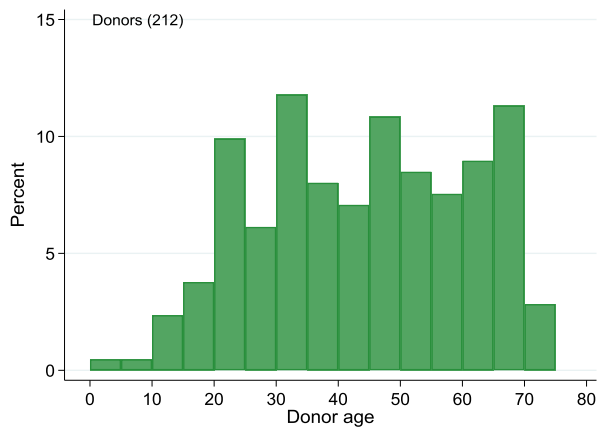
**Figure 8.3 - Deceased Donor Lung Transplant Recipients\* by Transplant State, Australia and New Zealand, 2016-2017**



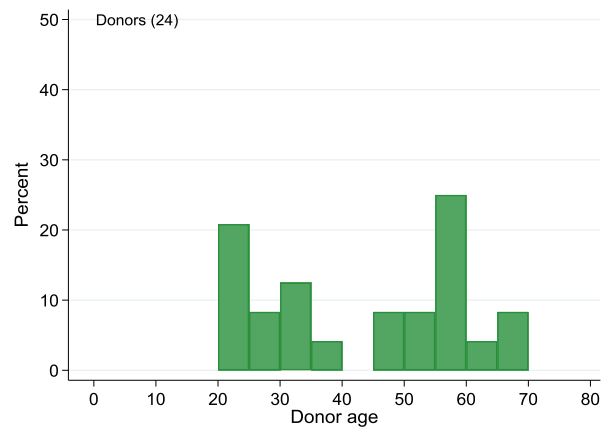
## Age of Lung Donors

The age distribution of donors providing retrieved lungs for Australia and New Zealand is shown in Figure 8.4.

**Figure 8.4.1 - Age of Donors Providing Retrieved Lungs Australia 2017**



**Figure 8.4.2 - Age of Donors Providing Retrieved Lungs New Zealand 2017**



## Donor Lung Function

In Australia, 118 (55.7%) donors with lungs retrieved had a bronchoscopy in 2017. 19 donors had chest trauma; these included chest drains, pneumothoraces, fractures and haemopneumothorax.

In Australian donors, the arterial blood gases were taken on 100% FiO<sub>2</sub> and PEEP 5cm for 475 actual donors. Sixty-one percent (291) had a PEEP greater than 5cm. Of those donors with lungs retrieved, 59.9% (127) had a PEEP greater than 5cm.

The results from 485 donors with a pH measurement show 19.8 % to be acidotic (pH <7.35) and 19.8 % to be alkalotic (pH>7.45). Of those donors with lungs retrieved, 12.7% were acidotic and 22.6% were alkalotic.

For the 485 donors with measurements, oxygenation measured as PaO<sub>2</sub> ranged from 52 to 627 mmHg with a median of 359 mmHg. PaCO<sub>2</sub> ranged from 18.5 to 150 with a median of 39.3 mmHg. For donors with lungs retrieved, oxygenation measured as PaO<sub>2</sub> ranged from 75 to 605 mmHg with a median of 431 mmHg. PaCO<sub>2</sub> ranged from 19 to 62.1 with a median of 39 mmHg.

In New Zealand, there were six (25%) lung donors who had a bronchoscopy in 2017. Two donors had chest trauma.

All 24 donors with lung retrieved had 100% FiO<sub>2</sub>; 9 had a PEEP greater than 5cm.

The arterial blood gas results from these donors with lung retrieved show 4.2% (1) to be acidotic (pH < 7.35) and six (24%) were alkalotic (pH > 7.45).

Oxygenation measured as PaO<sub>2</sub> ranged from 255 - 538 mmHg with a median of 429 mmHg. PaCO<sub>2</sub> ranged from 26.8 – 56.2 mmHg with a median of 38.5 mmHg.

## Lungs Not Retrieved

In 2017, there were 489 Lungs not retrieved from Australian donors and 65 not retrieved from New Zealand donors.

For Australia, the main reason was due to the Lung not being medically suitable (372), followed by no suitable recipient for the lung (63).

In New Zealand, there were 50 non-retrieved Lungs due to not being medically suitable and 13 due to no suitable recipient.

**Table 8.1 Reasons for Lung Not Retrieved in 2017**

Reason	Australia	New Zealand
Logistics	14	0
Not Medically Suitable	372	50
Surgically Unsuitable	0	0
Trauma to Organ	14	2
No Suitable Recipients	63	13
Age of Donor	14	0
DCD Donor	2	0
Consent Withdrawn	10	0
Others	0	0
<b>Total</b>	<b>489</b>	<b>65</b>

## Lungs Retrieved and Not Utilised for Transplantation

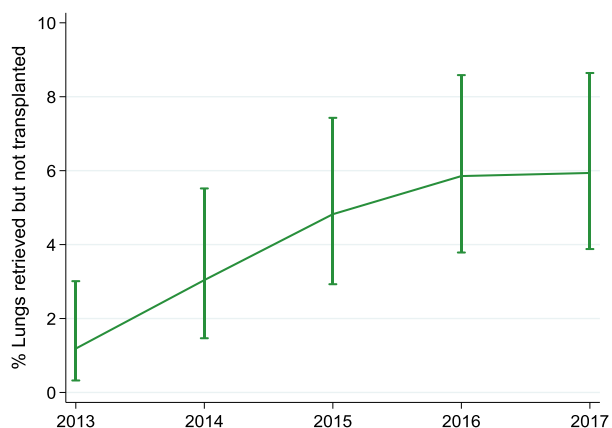
Table 8.2 tabulates the reasons lungs were not used after retrieval for the purpose of transplantation since 2013.

**Table 8.2 Reasons Lung Retrieved & Not Utilised for Transplantation, Australia (New Zealand) 2013 – 2017**

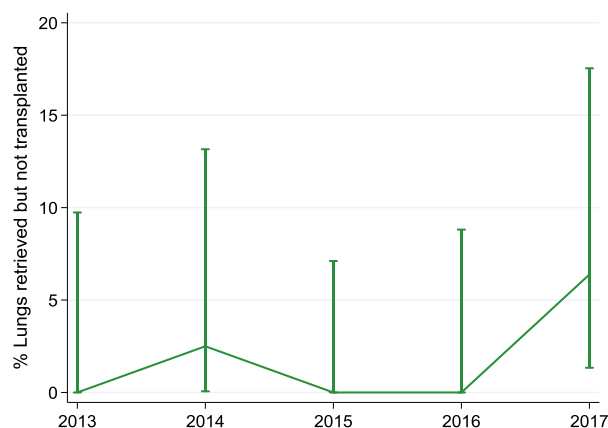
Reason	2013	2014	2015	2016	2017
Logistics	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Not Medically Suitable	4 (0)	10 (1)	3 (0)	13 (0)	15 (0)
Not Surgically Suitable	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)
Trauma to Organ	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)
No Suitable Recipients	0 (0)	2 (0)	0 (0)	0 (0)	1 (0)
Recipient Issue	0 (0)	0 (0)	0 (0)	1 (0)	3 (2)
Research	0 (0)	0 (0)	16 (0)	10 (0)	4 (0)
Other	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
<b>Total</b>	<b>4 (0)</b>	<b>12 (1)</b>	<b>19 (0)</b>	<b>24 (0)</b>	<b>25 (3)</b>

Figure 8.5 shows 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 an absence of suitable recipients, or the lung being found to be medically or surgically unsuitable after retrieval).

**Figure 8.5.1 - Non-utilisation Rate of Retrieved Lungs - Australia 2013-2017**



**Figure 8.5.2 - Non-utilisation Rate of Retrieved Lungs - New Zealand 2013-2017**



## Outcome of Lung Donation

The outcome of lung donation activity in Australia and New Zealand throughout the donation pathway is shown in table 8.3.

**Table 8.3.1 Outcome of Request for Lung Donation in Australia, 2013-2017**

Outcome of Request	2013	2014	2015	2016	2017
<b>Total Donors</b>	<b>391</b>	<b>378</b>	<b>435</b>	<b>503</b>	<b>510</b>
Lungs Requested for Donation	690	684	784	912	936
Lungs Not Requested for Donation	92	72	86	94	84
Lungs with Consent Given	660	660	752	886	910
Lungs with Consent Not Given	30	24	32	26	26
<b>Lungs Retrieved</b>	<b>337</b>	<b>329</b>	<b>394</b>	<b>410</b>	<b>421</b>
(Single Lung Retrieved)	1	3	2	2	3
(Double Lung Retrieved)	168	163	196	204	209
Lungs Not Retrieved	323	331	358	476	489
<b>Lungs Transplanted</b>	<b>333</b>	<b>319</b>	<b>375</b>	<b>386</b>	<b>396</b>
Total Lungs Not Used for Transplantation	4	10	19	24	25
<b>Recipient Transplanted</b>	<b>169</b>	<b>163</b>	<b>193</b>	<b>196</b>	<b>206</b>
Double Lung Recipient	164	156	182	190	190
Single Lung(L) Recipients	3	4	6	5	5
Single Lung(R) Recipients	2	3	5	1	11
(Heart/Lung Recipients)	2	4	2	7	5
<b>Lung Non-Utilisation Rate</b>	<b>1.19%</b>	<b>3.04%</b>	<b>4.82%</b>	<b>5.85%</b>	<b>5.94%</b>
<b>Lung Utilised Rate</b>	<b>98.81%</b>	<b>96.96%</b>	<b>95.18%</b>	<b>94.15%</b>	<b>94.06%</b>

**Table 8.3.2 Outcome of Request for Lung Donation in New Zealand, 2013-2017**

Outcome of Request	2013	2014	2015	2016	2017
<b>Total Donors</b>	<b>36</b>	<b>46</b>	<b>53</b>	<b>61</b>	<b>73</b>
Lungs Requested for Donation	54	66	92	110	112
Lungs Not Requested for Donation	18	26	14	12	34
Lungs with Consent Given	54	66	92	110	112
Lungs with Consent Not Given	0	0	0	0	0
<b>Lungs Retrieved</b>	<b>36</b>	<b>40</b>	<b>50</b>	<b>40</b>	<b>47</b>
(Single Lung Retrieved)	0	0	0	0	1
(Double Lung Retrieved)	18	20	25	20	23
Lungs Not Retrieved	18	26	42	70	65
<b>Lungs Transplanted</b>	<b>36</b>	<b>39</b>	<b>50</b>	<b>40</b>	<b>44</b>
Total Lungs Not Used for Transplantation	0	1	0	0	3
<b>Recipient Transplanted</b>	<b>18</b>	<b>20</b>	<b>25</b>	<b>20</b>	<b>24</b>
Double Lung Recipient	18	19	25	20	20
Single Lung(L) Recipients	0	1	0	0	3
Single Lung(R) Recipients	0	0	0	0	1
(Heart/Lung Recipients)	0	1	0	0	0
<b>Lung Non-Utilisation Rate</b>	<b>0.00%</b>	<b>2.50%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>6.38%</b>
<b>Lung Utilised Rate</b>	<b>100.00%</b>	<b>97.50%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>93.62%</b>