



SECTION 8

Deceased Donor Lung Donation

SUMMARY

This section summarises lung donation activity from deceased donors in 2019, compared with previous years. The rate of lungs transplanted in 2019 was 7.2 pmp in Australia and 5.3 pmp in New Zealand.

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Lung Donation

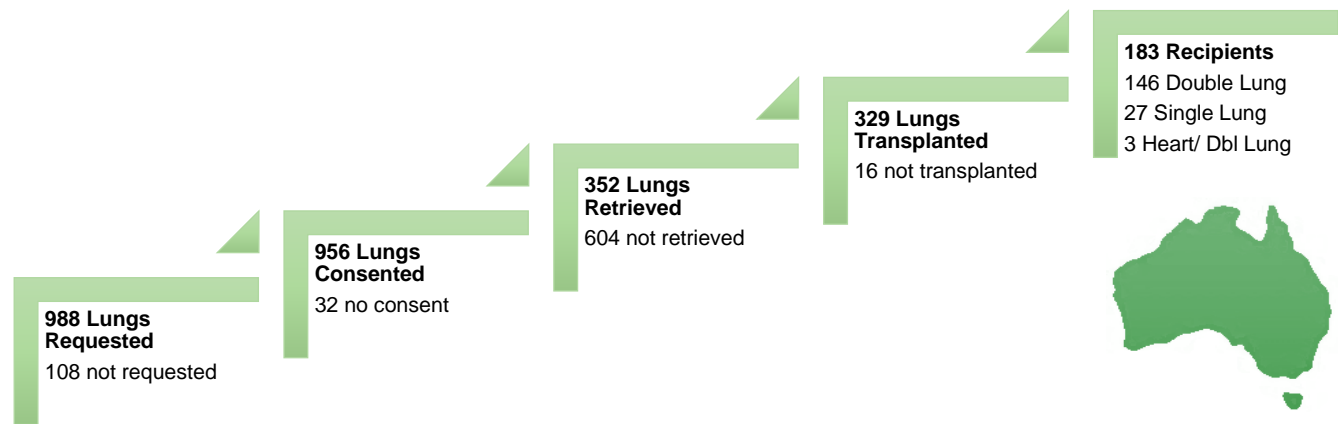
Of the 548 deceased organ donors in 2019 in Australia, 478 donors consented to lung donation. From these donors, 352 lungs were retrieved with 329 lungs transplanted.

There were 183 lung transplant recipients (7.2 pmp), a decrease of -17.6% compared to the previous year.

Of these 183 lung transplant recipients, 2 received heart/double lung transplants, 1 received a double lung/liver and 1 received a double lung/heart/liver transplant.

Figure 8.1 below shows the outcomes of requests for lung donation in Australia and New Zealand for 2019.

Figure 8.1.1 Outcomes of Request for Lung Donation from Actual Donors in Australia 2019



Of the 74 deceased organ donors in New Zealand in 2019, 62 donors consented to lung donation.

From these donors, 51 lungs were retrieved and 51 were transplanted.

There were 26 lung transplant recipients (5.3 pmp), a decrease of -7.1% compared to the previous year.

Figure 8.1.2 Outcomes of Request for Lung Donation from Actual Donors in New Zealand 2019

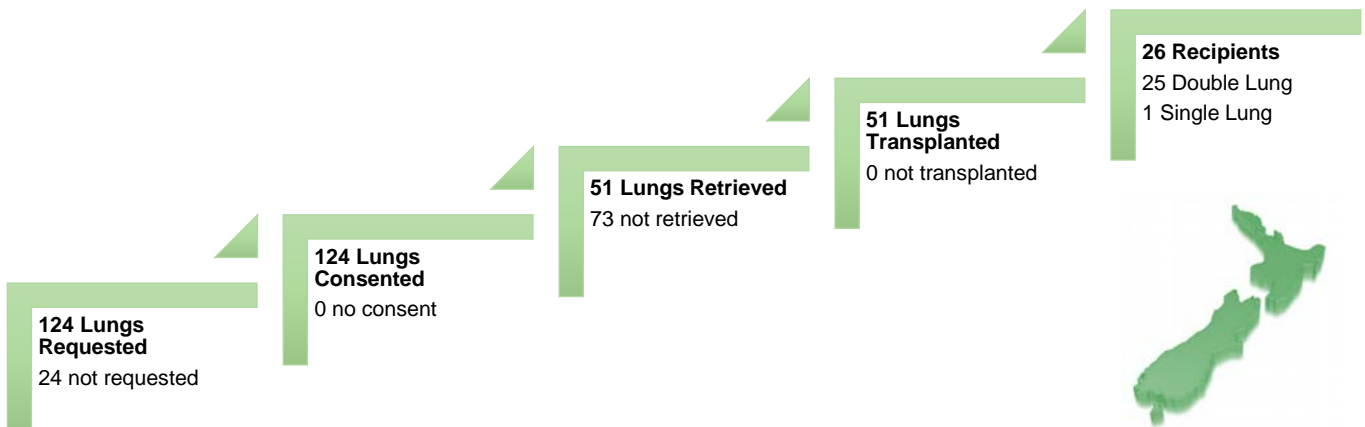


Figure 8.2 below shows the number of lung recipients in Australia and New Zealand by donation pathway, and figure 8.3 shows the number of lung recipients in Australia and New Zealand by transplant State/Territory/Country.

Figure 8.2.1 - Recipients of Lung Transplants by Donor Pathway Australia 1998-2019

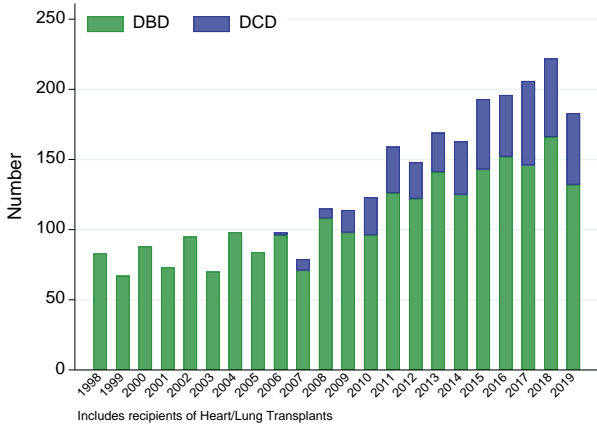


Figure 8.2.2 - Recipients of Lung Transplants by Donor Pathway New Zealand 1998-2019

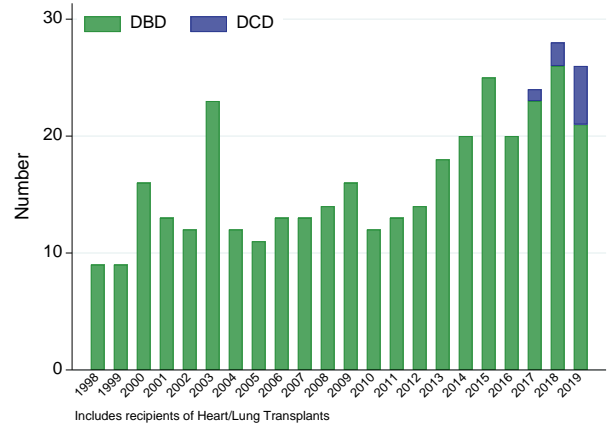
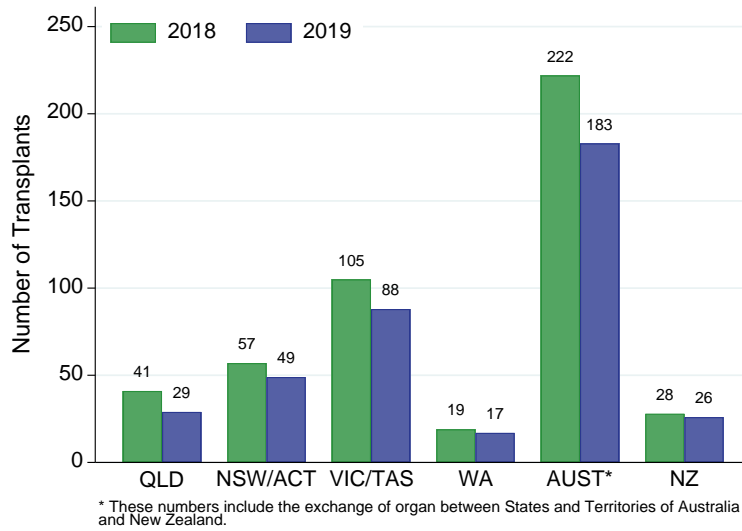


Figure 8.3 - Deceased Donor Lung Transplant Recipients* State/Territory/Country, Australia and New Zealand, 2018-2019



Age of Lung Donors

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

Figure 8.4.1 - Age of Donors Providing Retrieved Lungs Australia 2019

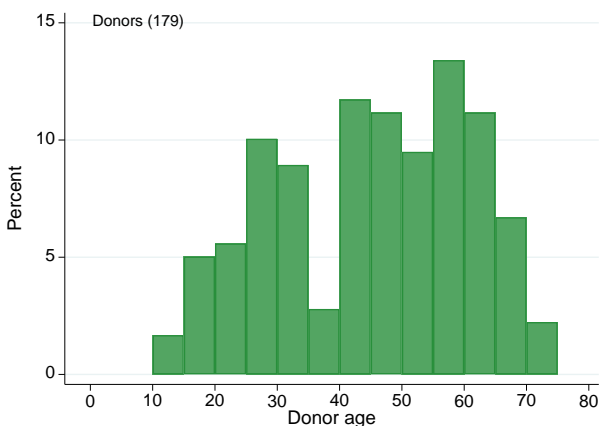
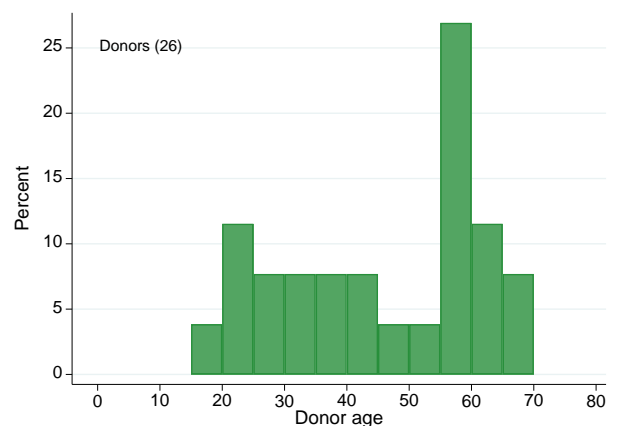


Figure 8.4.2 - Age of Donors Providing Retrieved Lungs New Zealand 2019



Donor Lung Function

Australia

In Australia 92 (51.4%) donors with lungs retrieved had a bronchoscopy in 2019. 25 donors had chest trauma, including chest drains and pneumothoraces (air between the lung and the wall of the chest).

The arterial blood gases were taken on 100% FiO₂ and positive end-expiratory pressure (PEEP) of 5cm for 492 actual donors. 67.1% (330) had a PEEP greater than 5cm. Of those donors with lungs retrieved, 63.1% (113) had a PEEP greater than 5cm.

The results from the 500 actual donors with a pH measurement show 19.0% to be acidotic (pH <7.35) and 20.6% to be alkalotic (pH>7.45). Of those donors with lungs retrieved, 16.2% were acidotic and 24.0% were alkalotic.

For the 501 actual donors with measurements, oxygenation (measured as PaO₂) ranged from 38 to 586 mmHg with a median of 320 mmHg. PaCO₂ ranged from 21.6 to 491 with a median of 39.95 mmHg. For donors with lungs retrieved, oxygenation measured as PaO₂ ranged from 80 to 576 mmHg with a median of 415 mmHg. PaCO₂ ranged from 26 to 491 with a median of 38.8 mmHg.

New Zealand

In New Zealand there were 9 (34.6%) lung donors who had a bronchoscopy and 2 donors had chest trauma in 2019.

24 of the 26 donors with lungs retrieved had 100% FiO₂, 2 of 26 lung donors had FiO₂ reported as 5 rather than 100. 14 had a PEEP greater than 5cm.

The arterial blood gas results from these donors with lungs retrieved show 26.9% (7 donors) to be acidotic (pH < 7.35) and 4 (15.4%) were alkalotic (pH > 7.45).

For these donors with lungs retrieved, oxygenation measured as PaO₂ ranged from 179 to 546 mmHg with a median of 420.5 mmHg. PaCO₂ ranged from 28.7 to 466 mmHg with a median of 40.3 mmHg.

Lungs Not Retrieved

In 2019 there were 604 lungs not retrieved from Australian donors and 73 not retrieved from New Zealand donors. The reasons why lungs were not retrieved for organ transplantation for Australia and New Zealand are presented below in Table 8.1.

Table 8.1 Reasons for Lungs Not Retrieved in Australia and New Zealand 2019

Reason	Australia	New Zealand
Logistics	24	0
Not Medically Suitable	415	42
Surgically Unsuitable	2	0
Trauma to Organ	13	6
No Suitable Recipients	112	23
Age of Donor	28	0
DCD Donor	0	0
Consent Withdrawn	10	2
Others	0	0
Total	604	73

Lungs Retrieved and Not Utilised for Transplantation

Figure 8.5 below shows the non-utilisation rate of retrieved lungs in Australia and New Zealand. This includes 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).

Note: Organ donation for the purpose of research is excluded when calculating a specific organ's non-utilisation rate for transplantation.

Figure 8.5.1 - Non-utilisation Rate of Retrieved Lungs - Australia 2015-2019

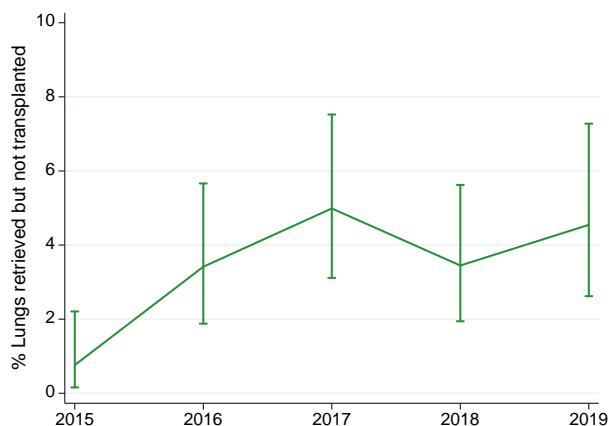


Figure 8.5.2 - Non-utilisation Rate of Retrieved Lungs - New Zealand 2015-2019

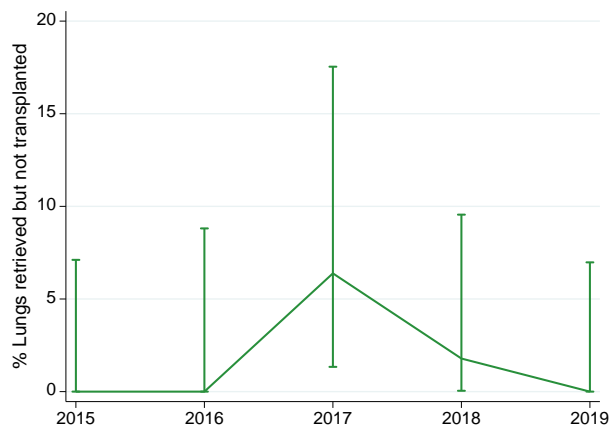


Table 8.2 tabulates the reasons lungs were not used for transplantation after retrieval for that purpose in Australia and New Zealand since 2015.

Table 8.2 Reasons Lung Retrieved & Not Utilised for Transplantation, Australia and New Zealand 2015 – 2019

Reason	2015	2016	2017	2018	2019
Logistics	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Not Medically Suitable	3 (0)	13 (0)	15 (0)	12 (0)	9 (0)
Not Surgically Suitable	0 (0)	0 (0)	1 (1)	0 (0)	1 (0)
Trauma to Organ	0 (0)	0 (0)	1 (0)	1 (1)	0 (0)
No Suitable Recipients	0 (0)	0 (0)	1 (0)	1 (0)	5 (0)
Recipient Issue	0 (0)	1 (0)	3 (2)	0 (0)	0 (0)
Other	0 (0)	0 (0)	0 (0)	1 (0)	1 (0)
Total	3 (0)	14 (0)	21 (3)	15 (1)	16 (0)

Outcome of Lung Donation

The outcomes of lung donation activity in Australia and New Zealand throughout the donation pathway are shown in table 8.3 below.

Note: Organ donation for the purpose of research is excluded when calculating a specific organ's non-utilisation rate for transplantation

Table 8.3.1 Outcome of Request for Lung Donation in Australia, 2015-2019

Outcome of Request	2015	2016	2017	2018	2019
Total Donors	435	503	510	554	548
Lungs Requested for Donation	784	912	936	1008	988
Lungs Not Requested for Donation	86	94	84	100	108
Lungs with Consent Given	752	886	910	966	956
Lungs with Consent Not Given	32	26	26	42	32
Lungs Retrieved	394	410	421	435	352
Single Lung Retrieved	2	2	3	7	6
Double Lung Retrieved	196	204	209	214	173
Lungs Not Retrieved	358	476	489	531	604
Lungs Transplanted	375	386	396	420	329
Total Lungs Not Used	3	14	21	15	16
Lungs Retrieved for Research and Not for Transplantation	16	10	4	0	7
Recipient Transplanted	193	196	206	222	183
Double Lung Recipient	182	190	190	198	146
Single Lung (L) Recipients	6	5	5	12	18
Single Lung (R) Recipients	5	1	11	12	19
Heart/Lung Recipients	2	7	5	7	3
Lung Non-Utilisation Rate	0.8%	3.4%	5.0%	3.4%	4.5%
Lung Utilisation Rate	95.2%	94.1%	94.1%	96.6%	93.5%

Table 8.3.2 Outcome of Request for Lung Donation in New Zealand, 2015-2019

Outcome of Request	2015	2016	2017	2018	2019
Total Donors	53	61	73	62	74
Lungs Requested for Donation	92	110	112	110	124
Lungs Not Requested for Donation	14	12	34	14	24
Lungs with Consent Given	92	110	112	110	124
Lungs with Consent Not Given	0	0	0	0	0
Lungs Retrieved	50	40	47	56	51
Single Lung Retrieved	0	0	1	0	1
Double Lung Retrieved	25	20	23	28	25
Lungs Not Retrieved	42	70	65	54	73
Lungs Transplanted	50	40	44	55	51
Total Lungs Not Used	0	0	3	1	0
Lungs Retrieved for Research and Not for Transplantation	0	0	0	0	0
Recipient Transplanted	25	20	24	28	26
Double Lung Recipient	25	20	20	27	25
Single Lung (L) Recipients	0	0	3	1	1
Single Lung (R) Recipients	0	0	1	0	0
Lung Non-Utilisation Rate	0.0%	0.0%	6.4%	1.8%	0.0%
Lung Utilisation Rate	100.0%	100.0%	93.6%	98.2%	100.0%