



SECTION 8

Deceased Donor Lung Donation

SUMMARY

This section summarises lung donation activity from deceased donors in 2021, compared with previous years. The rate of lungs transplanted in 2021 was 6.5 pmp in Australia and 5.8 pmp in New Zealand.

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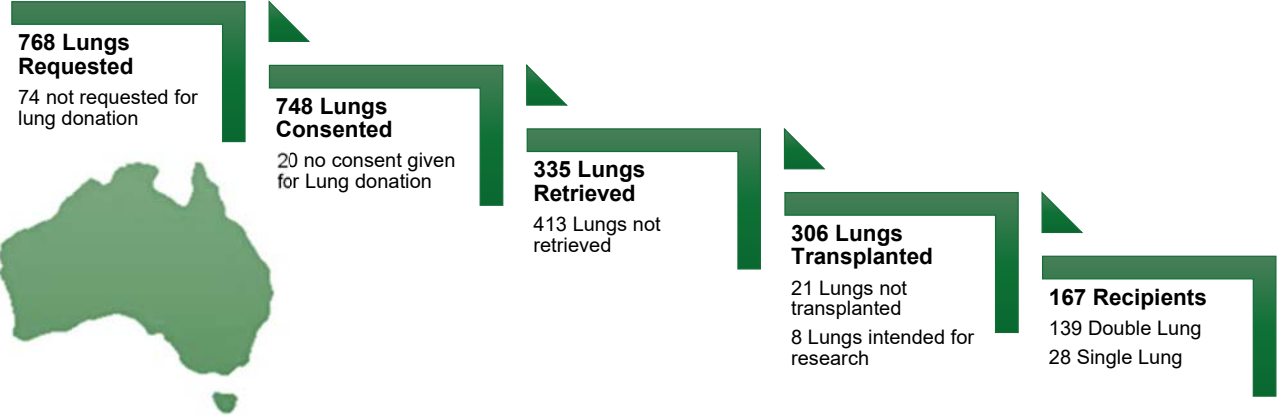
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Lung Donation

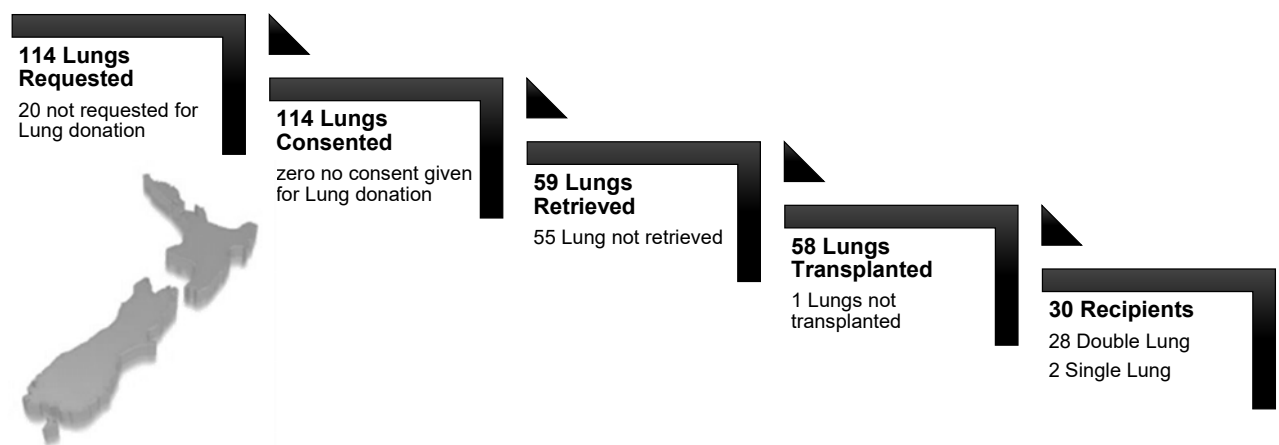
Of the 421 deceased organ donors in 2021 in Australia, 374 donors consented to lung donation. From these donors, 335 lungs were retrieved with 306 lungs transplanted. There were 167 lung transplant recipients (6.5 pmp), an increase of 16.0% on the previous year. Of these 167 lung transplant recipients, four received heart/double lung transplants and two received double lung/liver transplants. Figure 8.1.1 shows the outcomes of requests for lung donation in Australia for 2021.

Table 8.1.1 Outcomes of Request for Lung Donation from Actual Donors by Country 2021



Of the sixty-six deceased organ donors in New Zealand in 2021, 56 donors consented to lung donation. From these donors, fifty-nine lungs were retrieved and fifty-eight were transplanted. There were thirty lung transplant recipients (5.8 pmp), an increase of 57.9% on the previous year. Figure 8.1.2 shows the outcomes of requests for lung donation in New Zealand for 2021.

Table 8.1 .2 Outcomes of Request for Lung Donation from Actual Donors by Country 2021



Figures 8.2 and 8.3 show the number of lung recipients by donation pathway and transplant region.

Figure 8.2.1 - Recipients of Lung Transplants by Donor Pathway Australia 1998–2021

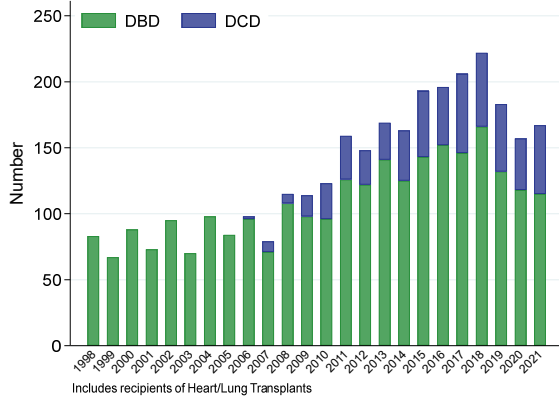


Figure 8.2.2 - Recipients of Lung Transplants by Donor Pathway New Zealand 1998–2021

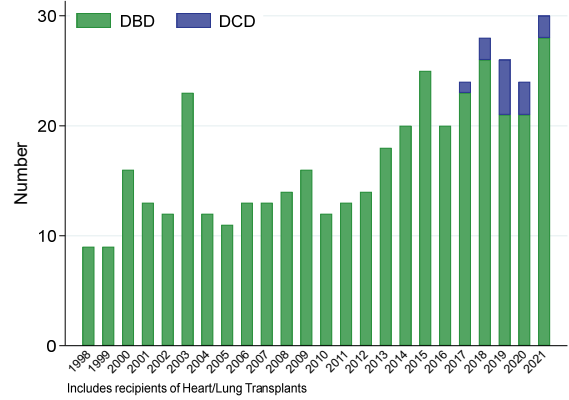
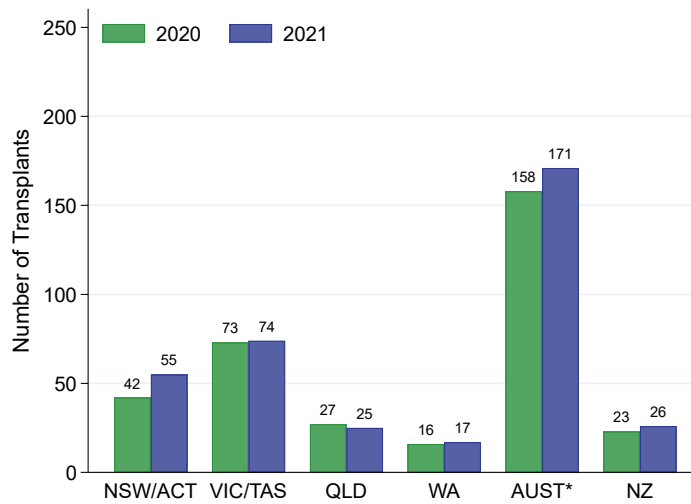


Figure 8.3 - Deceased Donor Lung Transplant Recipients* by Transplant Region, Australia and New Zealand, 2020–2021



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 2021

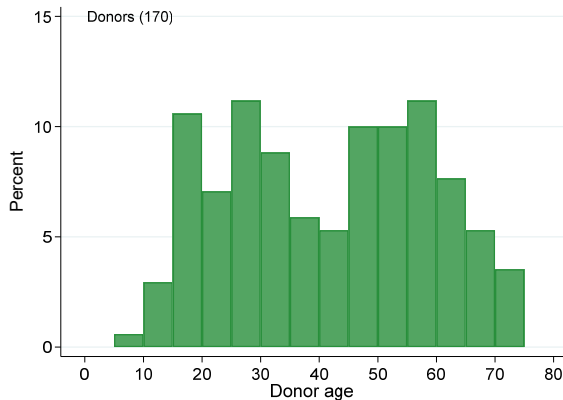
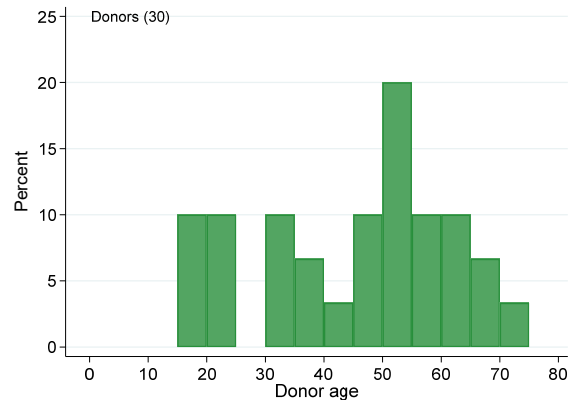


Figure 8.4.2 - Age of Donors Providing Retrieved Lungs New Zealand 2021



Donor Lung Function

Australia

In Australia, 70 (41.9%) donors with lungs retrieved had a bronchoscopy in 2021. Twenty-six donors had chest trauma; these included chest drains and pneumothoraces.

The arterial blood gases were taken on 100% FiO₂ and PEEP of 5cm for 421 actual donors. 60.8% (256) had a PEEP greater than 5cm. Of those donors with lungs retrieved, 64.1% (107) had a PEEP greater than 5cm.

The results from the 421 actual donors with a pH measurement show 12.4% to be acidotic (pH <7.35) and 18.8% to be alkalotic (pH >7.45). Of those donors with lungs retrieved, 10.8% were acidotic and 24.0% were alkalotic.

For the 382 actual donors with measurements, oxygenation measured as PaO₂ ranged from 39 to 647mmHg with a median of 357.5mmHg. PaCO₂ ranged from 23.5 to 92 with a median of 39.1mmHg. For donors with lungs retrieved, oxygenation measured as PaO₂ ranged from 80 to 647 mmHg with a median of 432 mmHg. PaCO₂ ranged from 23.5 to 55.6 with a median of 39.1mmHg.

New Zealand

In New Zealand, there were 12 (40.0%) lung donors who had a bronchoscopy in 2021. One donor had chest trauma.

All thirty donors with lungs retrieved had 100% FiO₂; twenty had a PEEP greater than 5cm.

The arterial blood gas results from these donors with lungs retrieved show 3.3% (1 donors) to be acidotic (pH < 7.35) and 6 (20.0%) were alkalotic (pH > 7.45).

For these donors with lungs retrieved, oxygenation measured as PaO₂ ranged from 35 to 606 mmHg with a median of 382.5 mmHg. PaCO₂ ranged from 23.6 to 480 mmHg with a median of 39.7 mmHg.

Lungs Not Retrieved

In 2021, there were 413 lungs not retrieved from Australian donors and fifty-three not retrieved from New Zealand donors. The reasons why lungs were not retrieved for organ transplantation are presented in Table 8.1.

Table 8.1 Reasons for Lungs Not Retrieved in 2021

Reason	Australia	New Zealand
Logistics	0	0
Not Medically Suitable	133	21
Surgically Unsuitable	0	0
Trauma to Organ	0	2
No Suitable Recipients	256	30
Age of Donor	6	0
DCD Donor	6	0
Consent Withdrawn	12	0
Others	0	0
Total	413	53

Lungs Retrieved and Not Utilised for Transplantation

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). 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 2017–2021

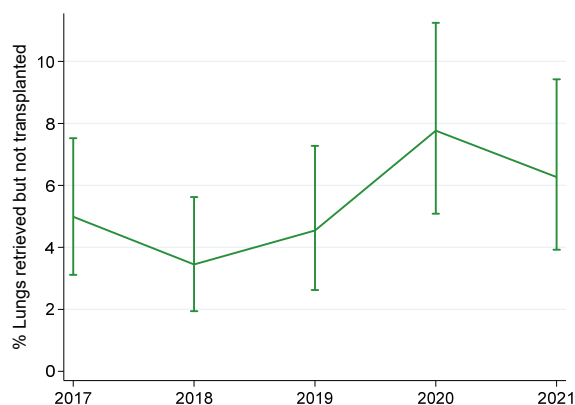


Figure 8.5.2 - Non-utilisation Rate of Retrieved Lungs - New Zealand 2017–2021

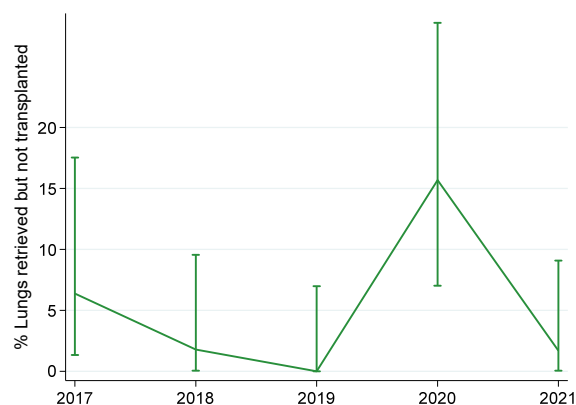


Table 8.2 tabulates the reasons lungs were not used for transplantation after retrieval for that purpose since 2017.

Table 8.2 Reasons Lung Retrieved & Not Utilised for Transplantation, Australia (New Zealand) 2017 – 2021

Reason	2017	2018	2019	2020	2021
Logistics	0 (0)	0 (0)	0 (0)	0 (1)	0 (0)
Not Medically Suitable	9 (0)	7 (0)	5 (0)	10 (5)	12 (0)
Not Surgically Suitable	1 (1)	0 (0)	1 (0)	3 (0)	1 (0)
Trauma to Organ	1 (0)	1 (1)	0 (0)	0 (0)	0 (0)
No Suitable Recipients	1 (0)	1 (0)	5 (0)	3 (1)	1 (1)
Recipient Issue	2 (1)	0 (0)	0 (0)	1 (0)	1 (0)
Other	0 (0)	1 (0)	1 (0)	0 (0)	0 (0)
Total	14 (2)	10 (1)	12 (0)	17 (7)	15 (1)

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. 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, 2017–2021

Outcome of Request	2017	2018	2019	2020	2021
Total Donors	510	554	548	463	421
Lungs Requested for Donation	936	1008	988	852	768
Lungs Not Requested for Donation	84	100	108	74	74
Lungs with Consent Given	910	966	956	826	748
Lungs with Consent Not Given	26	42	32	26	20
Lungs Retrieved	421	435	352	322	335
Single Lung Retrieved	3	7	6	2	5
Double Lung Retrieved	209	214	173	160	165
Lungs Not Retrieved	489	531	604	504	413
Lungs Transplanted	396	420	329	295	306
Total Lungs Not Used	21	15	16	25	21
Lungs Retrieved for Research and Not for Transplantation	4	0	7	2	8
Recipient Transplanted	206	222	183	157	167
Double Lung Recipient	190	198	146	138	139
Single Lung (L) Recipients	5	12	18	7	11
Single Lung (R) Recipients	11	12	19	12	17
Heart/Lung Recipients	5	7	3	6	4
Lung Non-Utilisation Rate	5.0%	3.4%	4.5%	7.8%	6.3%
Lung Utilisation Rate	94.1%	96.6%	93.5%	91.6%	91.3%

Table 8.3.2 Outcome of Request for Lung Donation in New Zealand, 2017–2021

Outcome of Request	2017	2018	2019	2020	2021
Total Donors	73	62	74	64	66
Lungs Requested for Donation	112	110	124	104	114
Lungs Not Requested for Donation	34	14	24	24	20
Lungs with Consent Given	112	110	124	104	114
Lungs with Consent Not Given	0	0	0	0	0
Lungs Retrieved	47	56	51	51	59
Single Lung Retrieved	1	0	1	1	1
Double Lung Retrieved	23	28	25	25	29
Lungs Not Retrieved	65	54	73	53	55
Lungs Transplanted	44	55	51	43	58
Total Lungs Not Used	3	1	0	8	1
Lungs Retrieved for Research and Not for Transplantation	0	0	0	0	0
Recipient Transplanted	24	28	26	24	30
Double Lung Recipient	20	27	25	19	28
Single Lung (L) Recipients	3	1	1	1	0
Single Lung (R) Recipients	1	0	0	4	2
Lung Non-Utilisation Rate	6.4%	1.8%	0.0%	15.7%	1.7%
Lung Utilisation Rate	93.6%	98.2%	100.0%	84.3%	98.3%