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# SECTION 8

## Deceased Donor Lung Donation

This section summarises lung donation activity from deceased donors in 2023, compared with previous years. The rate of lungs transplanted in 2023 was 6.2 per million population (pmp) in Australia and 4.8 pmp in New Zealand.

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## EXECUTIVE SUMMARY

Every organ donor provides a precious opportunity for the chance of an improved quality of life and survival through transplantation. It is important to understand the donation and transplant outcomes including the specific organs consented for donation, the organs retrieved and whether they were transplanted or not (non-utilised). This section provides information about the outcomes for lung donation and transplantation from deceased actual organ donors.

## SUGGESTED CITATION

H Opdam, C Davies, K Marshall, G Irish 28<sup>th</sup> Report, Section 8: Deceased Donor Lung Donation. Australia and New Zealand Organ Donation Registry, Adelaide, Australia. 2024. Available at <https://www.anzdata.org.au/anzod/publications-2/annual-reports/>

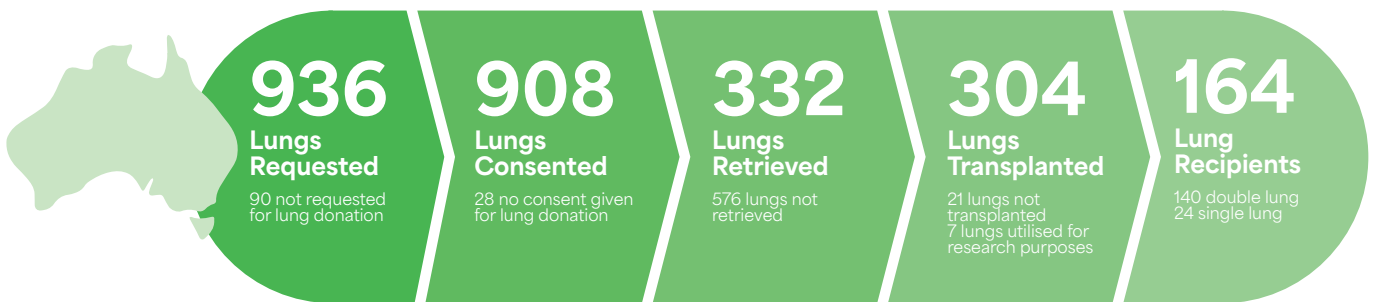
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# LUNG DONATION

Of the 513 deceased actual organ donors in 2023 in Australia, in 454 donors there was consent for lung donation. From these donors, 332 lungs were retrieved with 304 lungs transplanted. There were 164 lung transplant recipients (6.2 pmp), an increase of 15.5% from the previous year. Of these 164 lung transplant recipients, 3 received heart/double lung transplants, 1 received a double lung/liver, 1 received a double lung/liver/pancreas and 1 received a double lung/kidney transplant.

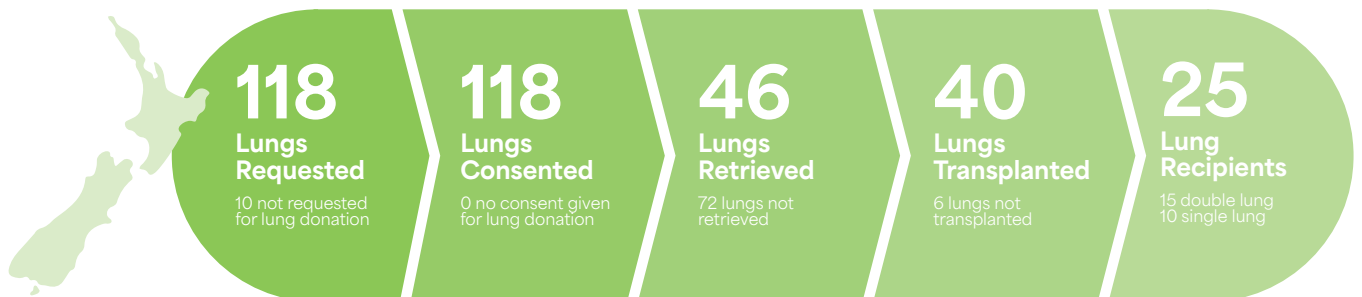
Figure 8.1.1 shows the outcomes of requests for lung donation in Australia for 2023.

**Figure 8.1.1**  
**Outcomes of requests for lung donation in Australia - 2023**



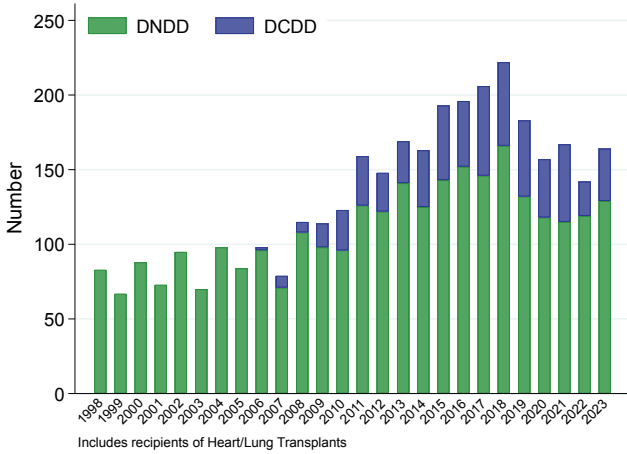
Of the 64 deceased organ donors in New Zealand in 2023, in 59 donors there was consent for lung donation. From these donors, 46 lungs were retrieved and 40 were transplanted. There were 25 lung transplant recipients (4.8 pmp), an increase of 56.2% from the previous year.

**Figure 8.1.2**  
**Outcomes of requests for lung donation in New Zealand - 2023**

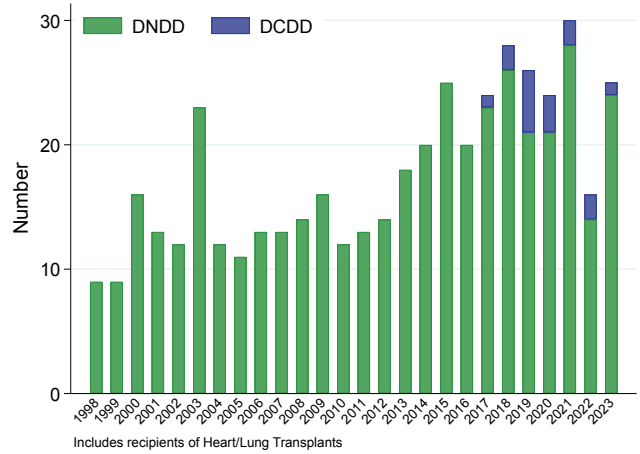


Figures 8.2 and 8.3 show the number of lung recipients by donation pathway and transplant region.

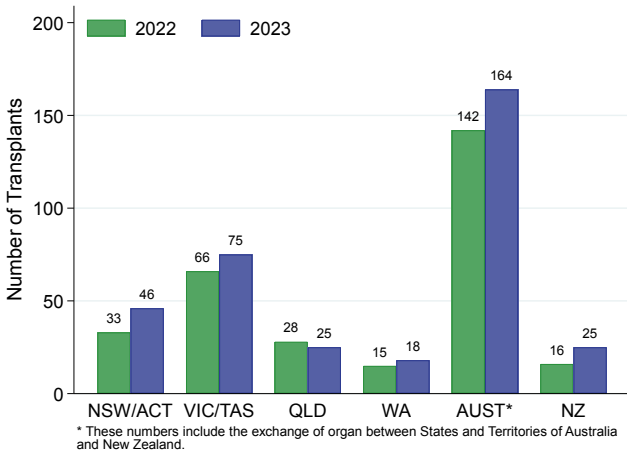
**Figure 8.2.1**  
**Recipients of Lung Transplants by Donor Pathway Australia 1998-2023**



**Figure 8.2.2**  
**Recipients of Lung Transplants by Donor Pathway New Zealand 1998-2023**



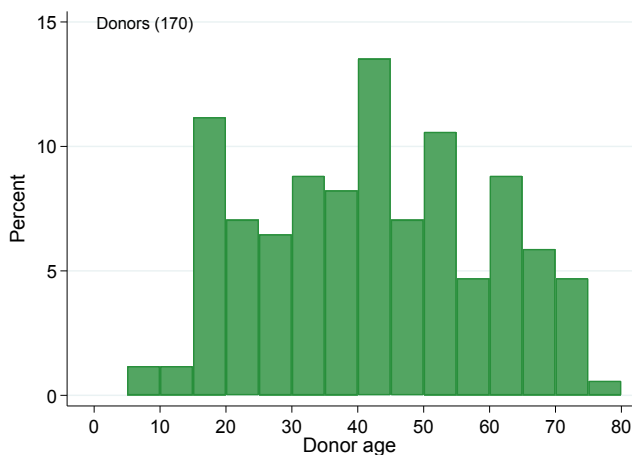
**Figure 8.3**  
**Deceased Donor Lung Transplant Recipients\* by Transplant Region, Australia and New Zealand, 2022-2023**



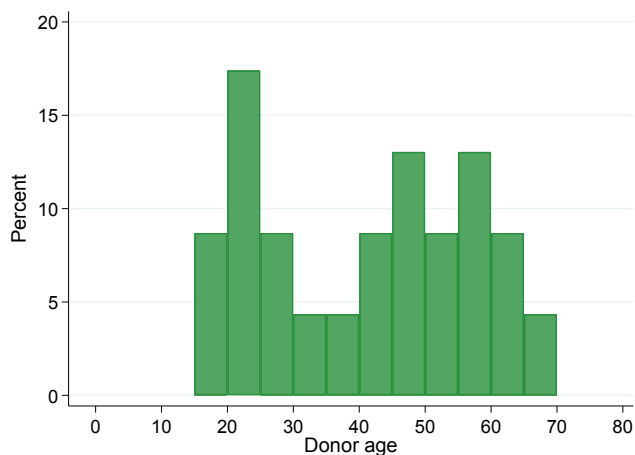
# AGE OF LUNG DONORS

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

**Figure 8.4.1**  
**Age of Donors Providing Retrieved Lungs**  
**Australia 2023**



**Figure 8.4.2**  
**Age of Donors Providing Retrieved Lungs**  
**New Zealand 2023**



# DONOR LUNG FUNCTION

## AUSTRALIA

In Australia, 89 (54.6%) donors with lungs retrieved had a bronchoscopy in 2023. 22 donors had chest trauma; these included chest drains and pneumothoraces.

The arterial blood gases were taken on 100% Fraction of Inspired Oxygen ( $\text{FiO}_2$ ) and Positive End Expiratory Pressure (PEEP) of 5cm for 447 actual donors. 71.6% (320) had a PEEP greater than 5cmH<sub>2</sub>O. Of those donors with lungs retrieved, 69.1% (112) had a PEEP greater than 5cmH<sub>2</sub>O.

The results from the 470 actual donors with a pH measurement show 16.0% to be acidaemic (pH <7.35) and 18.3% to be alkalaemic (pH >7.45). Of those donors with lungs retrieved, 10.5% were acidaemic and 23.5% were alkalaemic.

For the 470 actual donors with measurements, oxygenation measured as Partial Pressure of Oxygen ( $\text{PaO}_2$ ) ranged from 36 to 616 mmHg with a median of 339.5 mmHg. The Partial Pressure of Carbon Dioxide ( $\text{PaCO}_2$ ) ranged from 4 to 90 with a median of 39.7 mmHg. For the 162 donors with lungs retrieved and measurements reported, oxygenation measured as  $\text{PaO}_2$  ranged from 93 to 616 mmHg with a median of 436.5 mmHg.  $\text{PaCO}_2$  ranged from 23 to 53 with a median of 38 mmHg.

## NEW ZEALAND

In New Zealand, there were 8 (34.8%) lung donors who had a bronchoscopy in 2023. 2 donors had chest trauma.

Of the 23 donors with lungs retrieved, all had arterial blood gases were taken on 100%  $\text{FiO}_2$ ; 10 had a PEEP greater than 5cmH<sub>2</sub>O.

The arterial blood gas results from these donors with lungs retrieved show 4.3% (1 donor) to be acidaemic (pH < 7.35) and 3 (13.0%) were alkalaemic (pH > 7.45).

For these donors with lungs retrieved, oxygenation measured as  $\text{PaO}_2$  ranged from 273 to 516 mmHg with a median of 445 mmHg.  $\text{PaCO}_2$  ranged from 27.7 to 47.7 mmHg with a median of 39.0 mmHg.

## LUNGS NOT RETRIEVED

In 2023, there were 576 lungs not retrieved from Australian donors and 72 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 2023**

Reason	Australia	New Zealand
Intraoperative assessment	19	2
Post WCRS* did not die in timeframe	2	0
Cardiac arrest prior to WCRS*/X- Clamp	2	0
Surgical retrieval injury	0	0
Declined in offer process	371	66
Organ not offered - pathway	0	0
Organ not offered - age of donor	6	0
Organ not offered - not medically suitable	158	4
No consent from Coroner	14	0
Family withdrew consent	4	0
<b>Total</b>	<b>576</b>	<b>72</b>

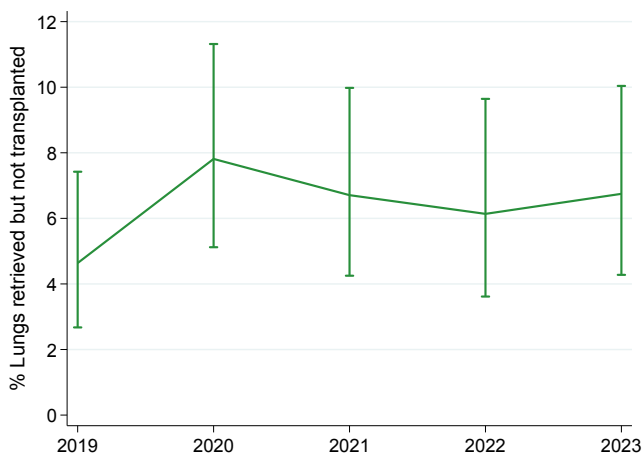
\*WCRS = Withdrawal of cardio-respiratory support



# 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 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 2019-2023**



**Figure 8.5.2**  
**Non-utilisation Rate of Retrieved Lungs - New Zealand 2019-2023**

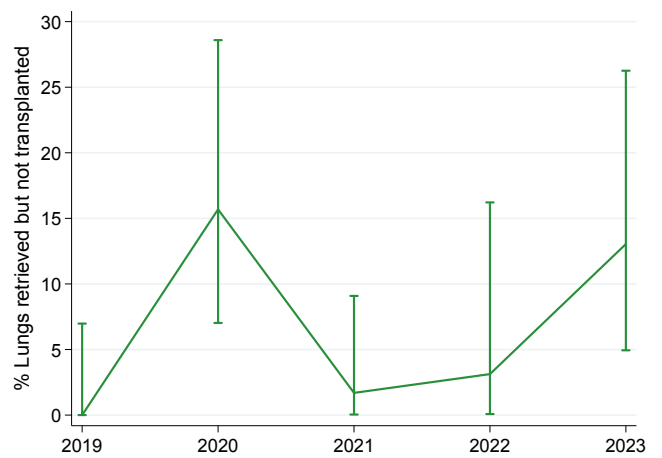


Table 8.2 tabulates the reasons lungs were not used for transplantation after retrieval for that purpose since 2021.

**Table 8.2**  
**Reasons Lung Retrieved & Not Utilised for Transplantation, 2021 - 2023**

Country	Reason	2021	2022	2023
Australia	Intraoperative assessment	6	2	7
	Assessment at transplant unit	6	2	4
	Surgical retrieval injury	0	0	0
	Other	3	1	2
	<b>Total</b>	<b>15</b>	<b>5</b>	<b>13</b>
New Zealand	Intraoperative assessment	0	0	0
	Assessment at transplant unit	0	0	0
	Surgical retrieval injury	0	0	0
	Other	1	1	6
	<b>Total</b>	<b>1</b>	<b>1</b>	<b>6</b>

## OUTCOME OF LUNG DONATION

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

**Table 8.3.1**  
**Outcome of Request for Lung Donation in Australia, 2019-2023**

Outcome of Request	2019	2020	2021	2022	2023
Total Donors	548	463	421	454	513
Lungs Requested for Donation	988	852	768	834	936
Lungs Not Requested for Donation	108	74	74	74	90
Lungs with Consent Given	956	826	748	796	908
Lungs with Consent Not Given	32	26	20	38	28
Lungs Retrieved	352	322	335	290	332
Single Lung Retrieved	6	2	5	10	8
Double Lung Retrieved	173	160	165	140	162
Lungs Not Retrieved	604	504	413	506	576
Lungs Transplanted	329	295	306	260	304
Total Lungs Not Used	16	25	21	8	21
Lungs Used for Research*	7	2	0	0	0
Lungs Retrieved for Research**	0	0	7	13	6
Lungs Retrieved for Transplantation and Used for Research***	0	0	1	9	1
Recipient Transplanted	183	157	167	142	164
Double Lung Recipient	146	138	139	118	140
Single Lung (L) Recipients	18	7	11	10	9
Single Lung (R) Recipients	19	12	17	14	15
Heart/Lung Recipients	3	6	4	6	3
Lung Non-Utilisation Rate	4.6%	7.8%	6.7%	6.1%	6.7%
Lung Utilisation Rate	95.4%	92.2%	93.3%	93.9%	93.3%

\*Primary/Secondary Intention not recorded prior to Nov 2020

\*\*Use for research primary intention of retrieval

\*\*\*Use for research secondary intention of retrieval

**Table 8.3.1**  
**Outcome of Request for Lung Donation in Australia, 2019-2023**

Outcome of Request	2019	2020	2021	2022	2023
Total Donors	74	64	66	63	64
Lungs Requested for Donation	124	104	112	112	118
Lungs Not Requested for Donation	24	24	20	14	10
Lungs with Consent Given	124	104	112	112	118
Lungs with Consent Not Given	0	0	0	0	0
Lungs Retrieved	51	51	59	32	46
Single Lung Retrieved	1	1	1	0	0
Double Lung Retrieved	25	25	29	16	23
Lungs Not Retrieved	73	53	53	80	72
Lungs Transplanted	51	43	58	31	40
Total Lungs Not Used	0	8	1	1	6
Lungs Used for Research*	0	0	0	0	0
Lungs Retrieved for Research**	0	0	0	0	0
Lungs Retrieved for Transplantation and Used for Research***	0	0	0	0	0
Recipient Transplanted	26	24	30	16	25
Double Lung Recipient	25	19	28	15	15
Single Lung (L) Recipients	1	1	0	1	4
Single Lung (R) Recipients	0	4	2	0	6
Lung Non-Utilisation Rate	0.0%	15.7%	1.7%	3.1%	13.0%
Lung Utilisation Rate	100.0%	84.3%	98.3%	96.9%	87.0%

\*Primary/Secondary Intention not recorded prior to Nov 2020

\*\*Use for research primary intention of retrieval

\*\*\*Use for research secondary intention of retrieval



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Deceased Donor Lung Donation