

# **SECTION 3**

## Deceased Organ Donor Pathway

## SUMMARY

This section summarises the organ donation pathway in Australia and New Zealand. It includes the data from the known intention to be an organ donor; cause of death and events leading to donation; whether the donation did not proceed or proceeded down a donation after brain death or circulatory death pathway; maintenance and terminal treatment of the donor and the outcome of the retrieval procedure, resulting in transplantation of donated organs.

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## **Suggested Citation**

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## **Registration of Intent to Donate**

The Registry collects the intention to be an organ donor in the form of a decision recorded on a national register.

In Australia the Australian Organ Donor Register\* is the national register for people to record their stated intent about becoming an organ and tissue donor for transplantation after death. This provides a record of a person's donation decision for families and clinicians in the event of their death and can only be verified by authorised medical personnel. The Australian Organ Donor Register (the AODR) is managed by the Services Australia on behalf of the Australian Government.

Only people aged 18 years and over can register a legally valid consent or objection on the Australian Organ Donor Register. People aged less than 16 years can become organ and tissue donors; for this group consent is sought from family/next of kin at the time of death.

Table 3.1 provides a breakdown of the registration status of actual donors. Actual donors are defined as donors consented for organ and tissue donation, who went to the operating theatre where the operation commenced ('skin incision') for the purpose of organ or tissue retrieval for transplantation.

In Australia, only 30% of actual donors had previously registered their decision to be an organ donor on the AODR in 2019.

| Table 3.1 Actual Donors  | Enrolled in the | Australian Organ   | Donor Register* | 2019 (2018) |
|--------------------------|-----------------|--------------------|-----------------|-------------|
| Table 5. TActual Dollors | Emoneu m une    | z Australian Oryan | Dunui Register  | 2019 (2010) |

|                   | NSW       | VIC       | QLD      | SA      | WA      | TAS     | NT    | АСТ     | AUST      |
|-------------------|-----------|-----------|----------|---------|---------|---------|-------|---------|-----------|
| Registered as Yes | 43 (66)   | 41 (48)   | 28 (38)  | 18 (16) | 16 (15) | 9 (5)   | 2 (1) | 7 (8)   | 164 (197) |
| Registered as No  | 0 (0)     | 0 (1)     | 0 (0)    | 0 (0)   | 0 (0)   | 0 (0)   | 0 (0) | 0 (0)   | 0 (1)     |
| Not Registered    | 97 (78)   | 113 (139) | 73 (50)  | 33 (18) | 34 (25) | 8 (7)   | 2 (3) | 3 (13)  | 363 (333) |
| Not Accessed      | 4 (7)     | 8 (5)     | 5 (6)    | 1 (2)   | 2 (1)   | 1 (2)   | 0 (0) | 0 (0)   | 21 (23)   |
| Total             | 144 (151) | 162 (193) | 106 (94) | 52 (36) | 52 (41) | 18 (14) | 4 (4) | 10 (21) | 548 (554) |

\* The Australian Organ Donor Register (the AODR is managed by Services Australia on behalf of the Australian Government, not by ANZOD. The AODR is the only national register for people to record their decision about becoming an organ and tissue donor for transplantation after death. Registering is voluntary and people have complete choice over which organs and tissues they wish to donate. If a person does not want to become an organ and tissue donor, they can register their decision not to donate on the Donor Register which is available at

https://www.servicesaustralia.gov.au/individuals/services/medicare/australian-organ-donor-register

## **Coroner's Cases**

Table 3.2 shows the number of actual donors subject to Coronial inquiry. Around half of donors are subject to coronial inquiry. In Australia, 49% of donors in 2019 and 2018 were subject to Coronial inquiry. In New Zealand, it was 51% for 2019 and 52% in 2018.

#### Table 3.2 Actual donors subject to Coronial inquiry, 2015 - 2019

|       | Australia |      |      |      |      |      | New Zealand |      |      |      |  |
|-------|-----------|------|------|------|------|------|-------------|------|------|------|--|
|       | 2015      | 2016 | 2017 | 2018 | 2019 | 2015 | 2016        | 2017 | 2018 | 2019 |  |
| Yes   | 211       | 235  | 253  | 272  | 268  | 25   | 20          | 21   | 32   | 38   |  |
| No    | 224       | 268  | 257  | 282  | 280  | 28   | 41          | 52   | 30   | 36   |  |
| Total | 435       | 503  | 510  | 554  | 548  | 53   | 61          | 73   | 62   | 74   |  |

Table 3.3 shows the number of actual donors subject to Coronial inquiry by jurisdiction for 2019 compared to 2018.

|       | NSW       | VIC       | QLD      | SA      | WA      | TAS     | NT    | АСТ     | AUST      | NZ      |
|-------|-----------|-----------|----------|---------|---------|---------|-------|---------|-----------|---------|
| Yes   | 62 (68)   | 81 (87)   | 52 (56)  | 33 (20) | 26 (20) | 5 (6)   | 3 (4) | 6 (11)  | 268 (272) | 38 (32) |
| No    | 82 (83)   | 81 (106)  | 54 (38)  | 19 (16) | 26 (21) | 13 (8)  | 1 (0) | 4 (10)  | 280 (282) | 36 (30) |
| Total | 144 (151) | 162 (193) | 106 (94) | 52 (36) | 52 (41) | 18 (14) | 4 (4) | 10 (21) | 548 (554) | 74 (62) |

 Table 3.3 Actual donors subject to Coronial inquiry by State and Country 2019 (2018)

## **Cause of Death – All Donors**

Table 3.4 shows the proportion of deaths for actual donors by cause in Australia, for each Australian State, and New Zealand over the last five years.

For the period 2015 to 2019, cerebral hypoxia/ischaemia accounted for 38% of donor deaths in Australia. In New Zealand intracranial haemorrhage accounted for 44% of donor deaths.

#### Table 3.4 Cause of Donor Death 2015 - 2019 (%)

| Cause of Death               | NSW | VIC | QLD | SA  | WA  | TAS | NT  | АСТ | AUST | NZ  |
|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|
| Intracranial Haemorrhage     | 38% | 36% | 34% | 35% | 35% | 48% | 38% | 29% | 36%  | 44% |
| Traumatic Brain Injury       | 15% | 15% | 20% | 15% | 14% | 14% | 5%  | 21% | 16%  | 20% |
| Cerebral Infarct             | 6%  | 6%  | 4%  | 8%  | 6%  | 7%  | 5%  | 9%  | 6%   | 7%  |
| Cerebral Hypoxia / Ischaemia | 37% | 36% | 39% | 38% | 42% | 27% | 52% | 37% | 38%  | 25% |
| Other Neurological Condition | 2%  | 2%  | 2%  | 1%  | 3%  | 4%  | 0%  | 1%  | 2%   | 3%  |
| Non-Neurological Condition   | 3%  | 5%  | 1%  | 2%  | 1%  | 0%  | 0%  | 3%  | 3%   | 1%  |

Table 3.5 shows the cause of death of donors by age group in 2019 in Australia and New Zealand. In donors aged 55 years and older, intracranial haemorrhage accounted for 50% of deaths in Australia and 52% in New Zealand in 2019, but a diminishing proportion in younger age groups.

Conversely, among donors aged 15-34 years, cerebral hypoxia/ischaemia accounted for 60% of deaths in Australia and 48% in New Zealand in 2019.

| Cause of Death               |      | Australia |       |     |           |      |       | New Zeala | and |          |
|------------------------------|------|-----------|-------|-----|-----------|------|-------|-----------|-----|----------|
| Cause of Death               | 0-14 | 15-34     | 35-54 | 55+ | n (%)     | 0-14 | 15-34 | 35-54     | 55+ | n (%)    |
| Intracranial Haemorrhage     | 1    | 7         | 68    | 112 | 188 (34%) | 1    | 1     | 8         | 17  | 27 (36%) |
| Traumatic Brain Injury       | 1    | 25        | 31    | 28  | 85 (16%)  | 0    | 7     | 3         | 7   | 17 (23%) |
| Cerebral Infarct             | 0    | 1         | 12    | 15  | 28 (5%)   | 0    | 1     | 1         | 0   | 2 (3%)   |
| Cerebral Hypoxia / Ischaemia | 13   | 62        | 81    | 62  | 218 (40%) | 0    | 10    | 7         | 9   | 26 (35%) |
| Other Neurological Condition | 3    | 5         | 3     | 2   | 13 (2%)   | 0    | 2     | 0         | 0   | 2 (3%)   |
| Non-Neurological Condition   | 1    | 3         | 6     | 6   | 16 (3%)   | 0    | 0     | 0         | 0   | 0 (0%)   |
| Total                        | 19   | 103       | 201   | 225 | 548       | 1    | 21    | 19        | 33  | 74       |

#### Table 3.5 Cause of Donor Death by Age Group 2019

| State of Donation | Cause of Death               | 0-14     | 15-34 | 35-54  | 55+ | Total |
|-------------------|------------------------------|----------|-------|--------|-----|-------|
|                   | Intracranial Haemorrhage     | 0        | 2     | 17     | 33  | 52    |
|                   | Traumatic Brain Injury       | 0        | 5     | 9      | 8   | 22    |
|                   | Cerebral Infarct             | 0        | 0     | 4      | 3   | 7     |
| NSW               | Cerebral Hypoxia / Ischaemia | 3        | 16    | 24     | 13  | 56    |
|                   | Other                        | 1        | 4     | 2      | 0   | 7     |
|                   | Total                        | 4        | 27    | 56     | 57  | 144   |
|                   | Intracranial Haemorrhage     | 1        | 3     | 23     | 32  | 59    |
|                   | Traumatic Brain Injury       | 0        | 10    | 8      | 7   | 25    |
|                   | Cerebral Infarct             | 0        | 0     | 2      | 4   | 6     |
| VIC               | Cerebral Hypoxia / Ischaemia | 3        | 19    | 23     | 19  | 64    |
|                   | Other                        | 1        | 1     | 3      | 3   | 8     |
|                   | Total                        | 5        | 33    | 59     | 65  | 162   |
|                   | Intracranial Haemorrhage     | 0        | 1     | 16     | 24  | 41    |
|                   | Traumatic Brain Injury       | 0        | 4     | 4      | 7   | 15    |
|                   | Cerebral Infarct             | 0        | 0     | 2      | 2   | 4     |
| QLD               | Cerebral Hypoxia / Ischaemia | 3        | 14    | 13     | 9   | 39    |
|                   | Other                        | 0        | 2     | 3      | 2   | 7     |
|                   | Total                        | 3        | 21    | 38     | 44  | 106   |
|                   | Intracranial Haemorrhage     | 0        | 0     | 4      | 8   | 12    |
|                   | Traumatic Brain Injury       | 0        | 3     | 4      | 2   | 9     |
|                   | Cerebral Infarct             | 0        | 1     | 3      | 3   | 7     |
| SA                | Cerebral Hypoxia / Ischaemia | 1        | 4     | 8      | 10  | 23    |
|                   | Other                        | 0        | 0     | 0      | 10  | 1     |
|                   | Total                        | 1        | 8     | 19     | 24  | 52    |
|                   | Intracranial Haemorrhage     | 0        | 1     | 5      | 8   | 14    |
|                   | Traumatic Brain Injury       | 1        | 2     | 3      | 4   | 10    |
|                   | Cerebral Infarct             | 0        | 0     | 0      | 4   | 1     |
| WA                | Cerebral Hypoxia / Ischaemia | 3        | 4     | 5      | 10  | 22    |
|                   | Other                        | 1        | 4     | 5<br>1 | 2   | 5     |
|                   |                              | <b>I</b> |       | 1      | 2   | 5     |
|                   |                              | 0        | 0     |        | 0   | 0     |
|                   | Intracranial Haemorrhage     | 0        | 0     | 2      | 6   | 8     |
|                   | Traumatic Brain Injury       | 0        | 0     |        | 0   | · ·   |
| TAS               | Cerebral Infarct             | 0        | 0     | 1      | 1   | 2     |
|                   | Cerebral Hypoxia / Ischaemia | 0        | 1     | 4      | 1   | 6     |
|                   | Other                        | 1        | 0     | 0      | 0   | 1     |
|                   | Total                        | 1        | 1     | 8      | 8   | 18    |
|                   | Intracranial Haemorrhage     | 0        | 0     | 0      | 1   | 1     |
|                   | Traumatic Brain Injury       | 0        | 0     | 1      | 0   | 1     |
| NT                | Cerebral Infarct             | 0        | 0     | 0      | 0   | 0     |
|                   | Cerebral Hypoxia / Ischaemia | 0        | 1     | 1      | 0   | 2     |
|                   | Other                        | 0        | 0     | 0      | 0   | 0     |
|                   | Total                        | 0        | 1     | 2      | 1   | 4     |
|                   | Intracranial Haemorrhage     | 0        | 0     | 1      | 0   | 1     |
|                   | Traumatic Brain Injury       | 0        | 1     | 1      | 0   | 2     |
| АСТ               | Cerebral Infarct             | 0        | 0     | 0      | 1   | 1     |
|                   | Cerebral Hypoxia / Ischaemia | 0        | 3     | 3      | 0   | 6     |
|                   | Other                        | 0        | 0     | 0      | 0   | 0     |
|                   | Total                        | 0        | 4     | 5      | 1   | 10    |

## **Cardiopulmonary Resuscitation**

Cardiopulmonary resuscitation is recorded in the period leading up to the admission and during hospital stay for the patient prior to organ donation. Table 3.7 shows the number of donors that underwent cardiopulmonary resuscitation for Australia and New Zealand donors from 2015 to 2019.

|                       |                               |                                      | Australia             |                                 |                             | New Zealand |                          |                   |             |              |  |
|-----------------------|-------------------------------|--------------------------------------|-----------------------|---------------------------------|-----------------------------|-------------|--------------------------|-------------------|-------------|--------------|--|
|                       | 2015                          | 2016                                 | 2017                  | 2018                            | 2019                        | 2015        | 2016                     | 2017              | 2018        | 2019         |  |
| Yes                   | 212                           | 236                                  | 239                   | 262                             | 274                         | 25          | 23                       | 27                | 19          | 31           |  |
| No                    | 223                           | 266                                  | 271                   | 292                             | 274                         | 28          | 38                       | 46                | 42          | 43           |  |
| Unknown               | 0                             | 1                                    | 0                     | 0                               | 0                           | 0           | 0                        | 0                 | 1           | 0            |  |
| Tatal                 |                               |                                      |                       |                                 |                             |             |                          |                   |             |              |  |
| Total                 | 435                           | 503                                  | 510                   | 554                             | 548                         | 53          | 61                       | 73                | 62          | 74           |  |
|                       | 435<br>iopulmonary R          |                                      |                       |                                 |                             | 53          | 61                       | 73                | 62          | 74           |  |
|                       |                               |                                      | n by Austra           |                                 |                             | 53<br>WA    | 61<br>TA                 |                   | 62<br>NT    | 74<br>ACT    |  |
|                       | iopulmonary R                 | esuscitatio<br>VI                    | n by Austra           | lian State 20                   | 019 (2018)                  |             | ТА                       |                   |             |              |  |
| Table 3.8 Card        | iopulmonary R<br>NSW          | esuscitation<br>VIC<br>4) 80         | n by Austra<br>C      | lian State 20<br>QLD            | 019 (2018)<br>SA            | WA          | <b>TA</b><br>7)          | S                 | NT          | АСТ          |  |
| Table 3.8 Card<br>Yes | iopulmonary R<br>NSW<br>71 (7 | esuscitation<br>VI<br>4) 80<br>7) 82 | n by Austra<br>C (93) | lian State 20<br>QLD<br>54 (49) | 219 (2018)<br>SA<br>28 (14) | WA<br>24 (1 | <b>TA</b><br>7)<br>4) 1( | <b>S</b><br>8 (3) | NT<br>2 (3) | ACT<br>7 (9) |  |

#### Table 3.7 Cardiopulmonary Resuscitation 2015 – 2019

### **Initial Mention of Organ Donation**

In 2019, organ donation was predominantly raised by Intensive Care Consultant and Registrars; 43% of cases in Australia and 88% in New Zealand, as shown in Table 3.9. In Australia, organ donation was raised by a Donor Specialist on 130 (24%) occasions which is a decrease from 26% in 2018. Organ donation in New Zealand was initially mentioned by a Donor Specialist in zero cases. In 2019, 30% of families raised the subject of organ donation in Australia, compared to 28% in 2018. In New Zealand, 11% of families raised donation in 2019 (18% in 2018).

#### Table 3.9 Initial Mention of Organ Donation 2015 – 2019

|                              |      | 4    | Australia | 1    |      | Ne   | w Zealar | nd   |      |      |
|------------------------------|------|------|-----------|------|------|------|----------|------|------|------|
|                              | 2015 | 2016 | 2017      | 2018 | 2019 | 2015 | 2016     | 2017 | 2018 | 2019 |
| Donor Specialist             | 29   | 51   | 76        | 144  | 130  | 0    | 1        | 1    | 4    | 0    |
| ICU Consultant               | 228  | 247  | 241       | 217  | 219  | 37   | 50       | 60   | 44   | 65   |
| ICU Trainee (E.g. Registrar) | 25   | 20   | 25        | 22   | 19   | 3    | 2        | 0    | 0    | 0    |
| Social Worker                | 0    | 0    | 1         | 1    | 0    | 0    | 0        | 0    | 0    | 0    |
| Emergency Clinician          | 8    | 7    | 9         | 10   | 10   | 0    | 0        | 0    | 0    | 0    |
| Family                       | 142  | 169  | 148       | 153  | 164  | 8    | 5        | 6    | 11   | 8    |
| Nursing Staff                | 1    | 1    | 3         | 5    | 3    | 2    | 1        | 3    | 0    | 1    |
| Other                        | 2    | 8    | 7         | 2    | 3    | 3    | 2        | 3    | 3    | 0    |
| TOTAL                        | 435  | 503  | 510       | 554  | 548  | 53   | 61       | 73   | 62   | 74   |

Table 3.10 shows the category of person who initially mentioned organ donation for Australian states and territories in 2018 and 2019.

|                              | NSW       | VIC          | QLD      | SA      | WA         | TAS        | NT    | АСТ     |
|------------------------------|-----------|--------------|----------|---------|------------|------------|-------|---------|
| Donor Specialist             | 39 (29)   | 49 (91)      | 22 (9)   | 3 (4)   | 5 (2)      | 9 (5)      | 3 (0) | 0 (4)   |
| ICU Consultant               | 61 (70)   | 52 (42)      | 44 (45)  | 33 (27) | 23<br>(19) | 1 (3)      | 0 (3) | 5 (8)   |
| ICU Trainee (E.g. Registrar) | 5 (8)     | 7 (8)        | 2 (3)    | 4 (1)   | 1 (1)      | 0 (0)      | 0 (0) | 0 (1)   |
| Social Worker                | 0 (1)     | 0 (0)        | 0 (0)    | 0 (0)   | 0 (0)      | 0 (0)      | 0 (0) | 0 (0)   |
| Emergency Clinician          | 5 (2)     | 3 (0)        | 1 (3)    | 0 (0)   | 0 (4)      | 1 (1)      | 0 (0) | 0 (0)   |
| Family                       | 31 (39)   | 48 (50)      | 37 (33)  | 12 (4)  | 23<br>(13) | 7 (5)      | 1 (1) | 5 (8)   |
| Nursing Staff                | 0 (1)     | 3 (2)        | 0 (1)    | 0 (0)   | 0 (1)      | 0 (0)      | 0 (0) | 0 (0)   |
| Other                        | 3 (1)     | 0 (0)        | 0 (0)    | 0 (0)   | 0 (1)      | 0 (0)      | 0 (0) | 0 (0)   |
| TOTAL                        | 144 (151) | 162<br>(193) | 106 (94) | 52 (36) | 52<br>(41) | 18<br>(14) | 4 (4) | 10 (21) |

#### Table 3.10 Initial Mention of Organ Donation by Australian State 2019 (2018)

## **Donation Not Proceeding**

An intended donor is a person for whom authority had been given, but organ donation did not proceed. A donation may not proceed due to positive virology tests, cardiac arrest or further investigations (for example, discovery of a cancer or infection). Donations after Circulatory Death (DCD) may also not proceed if the time between withdrawal of cardiorespiratory support and cessation of circulation exceeded the limits set. This was the main reason donors did not proceed to organ donation in 2019.

Table 3.11 presents the number of non-proceeding Donation after Brain Death (DBD) and DCD donors for each State/Territory and overall for Australia and New Zealand, compared to the number of actual donors who proceeded to theatre for organ donation. In Australia, there were 208 donors who did not proceed to solid organ donation, of which 47 (23%) were DBD and 158 (76%) were DCD. In New Zealand there was one DCD intended donor and four DBD intended donors.

|             | DBI       | )        | DCI       | כ         | Total     |           |  |
|-------------|-----------|----------|-----------|-----------|-----------|-----------|--|
|             | Actual    | Intended | Actual    | Intended  | Actual    | Intended  |  |
| NSW         | 103 (85%) | 18 (15%) | 41 (59%)  | 28 (41%)  | 144 (76%) | 46 (24%)  |  |
| VIC         | 103 (91%) | 10 (9%)  | 59 (45%)  | 72 (55%)  | 162 (66%) | 82 (34%)  |  |
| QLD         | 83 (92%)  | 7 (8%)   | 23 (42%)  | 32 (58%)  | 106 (73%) | 39 (27%)  |  |
| SA          | 36 (88%)  | 5 (12%)  | 16 (52%)  | 15 (48%)  | 52 (71%)  | 21 (29%)  |  |
| WA          | 28 (90%)  | 3 (10%)  | 24 (73%)  | 9 (27%)   | 52 (80%)  | 13 (20%)  |  |
| TAS         | 17 (85%)  | 3 (15%)  | 1 (100%)  | -         | 18 (82%)  | 4 (18%)   |  |
| NT          | 1 (50%)   | 1 (50%)  | 3 (100%)  | -         | 4 (80%)   | 1 (20%)   |  |
| ACT         | 5 (100%)  | -        | 5 (71%)   | 2 (29%)   | 10 (83%)  | 2 (17%)   |  |
| AUSTRALIA   | 376 (89%) | 47 (11%) | 172 (52%) | 158 (48%) | 548 (72%) | 208 (28%) |  |
| NEW ZEALAND | 61 (98%)  | 1 (2%)   | 13 (76%)  | 4 (24%)   | 74 (94%)  | 5 (6%)    |  |

Table 3.11 Actual vs Intended (Non-Proceeding) Donors 2019

The reasons for donations not proceeding in Australia in 2019 are shown by donation pathway in Table 3.12.

| Reason  | Planned<br>DBD | Planned<br>DCD | Not<br>Determined | Total |
|---|----------------|----------------|-------------------|-------|
| Medical Contraindication Discovered During Consideration for Donation | 31             | 55             | 1                 | 87    |
| Planned Donation After Circulatory Death Who Died Outside Time Limit  | 0              | 71             | 0                 | 71    |
| No Suitable Recipients  | 5              | 16             | 0                 | 21    |
| Declined by Family After Initially Giving Consent                     | 5              | 8              | 1                 | 14    |
| Failed Physiological Support  | 1              | 4              | 0                 | 5     |
| Patient Improved  | 0              | 4              | 0                 | 4     |
| Refusal by Coroner / Pathologist                                      | 3              | 0              | 0                 | 3     |
| Did Not Progress to Brain Death                                       | 2              | 0              | 1                 | 3     |
| TOTAL   | 47             | 158            | 3                 | 208   |

Table 3.12 Reasons Why Donation Did Not Proceed 2019, Australia

## **Donation After Circulatory Death**

The majority of organs are donated by the Donation after Brain Death (DBD) pathway. After certification of brain death, the donor remains on the ventilator and the removal of organs occurs later. The Donation after Circulatory Death (DCD) pathway is defined by patients with irreversible cessation of circulation, typically after withdrawal of cardiorespiratory support in an intensive care setting. As soon as cessation of circulation is confirmed, the retrieval procedure is commenced in order to minimise warm ischaemic time.

The number of DCD donors since 1989 has risen to 1281 donors for Australia and 62 DCD donors for New Zealand. In Australia, in 2019, there were 172 DCD donors and in New Zealand there were 13 DCD donors.

Table 3.13 shows the number of DCD Donors by jurisdiction for 2015 to 2019.

| Year | NSW | VIC | QLD | SA | WA | TAS | NT | ACT | AUST | NZ |
|------|-----|-----|-----|----|----|-----|----|-----|------|----|
| 2015 | 40  | 47  | 19  | 5  | 5  | 0   | 0  | 4   | 120  | 5  |
| 2016 | 36  | 56  | 17  | 6  | 5  | 1   | 2  | 5   | 128  | 6  |
| 2017 | 32  | 62  | 34  | 7  | 7  | 2   | 0  | 7   | 151  | 12 |
| 2018 | 46  | 63  | 21  | 10 | 4  | 3   | 1  | 6   | 154  | 9  |
| 2019 | 41  | 59  | 23  | 16 | 24 | 1   | 3  | 5   | 172  | 13 |

Table 3.13 Donation After Circulatory Death by Jurisdiction 2015 – 2019

In 2019 in Australia, the mean age for a DCD donor was 47.5 years and the ages ranged from 0.3 to 71.5 years. In New Zealand, the mean age of DCD was 43.7 years and the ages ranged from 21.0 to 69.0 years.

Causes of death leading to DCD in Australia in 2019 were intracranial haemorrhage (38), cerebral hypoxia/ischaemia (83), traumatic brain injury (22), cerebral infarct (12), other neurological conditions (2) and non-neurological conditions (15).

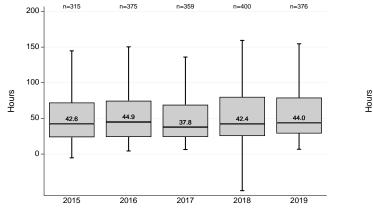
Causes of death leading to DCD in New Zealand in 2019 were intracranial haemorrhage (1), cerebral hypoxia/ischaemia (11), traumatic brain injury (1)

## Time from Admission to Brain Death

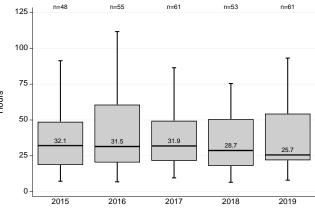
In 2019, 18% of Australian donors were declared brain dead within 24 hours of hospital admission; 69% of donors were declared brain dead between 1–5 days of hospital admission; 13% of donors (47) were in hospital for more than five days before brain death was declared.

In 2019, 10% of New Zealand donors were declared brain dead within 24 hours of hospital admission; 38% of donors were declared brain dead between 1–5 days of hospital admission; 52% of donors (32) were in hospital for more than five days before being declared brain dead below.





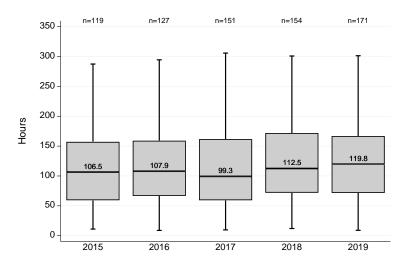




## **Time from Admission to Circulatory Death**

As shown in Figure 3.2, in 2019, 5% of Australian DCD donors died within 24 hours of hospital admission; 45% of DCD donors died between 1–5 days of hospital admission. 49% of DCD donors (84) were in hospital for more than five days prior to death. In New Zealand, 54% of DCD donors died between 1–5 days of hospital admission; 46% of DCD donors (6) were in hospital for more than five days prior to death.

Figure 3.2 - Time from Admission to Circulatory Death (hours) DCD Donors - Australia 2015 – 2019

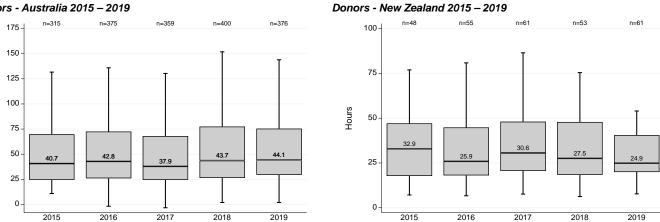


## Time from Ventilation to Brain Death

Hours

Figure 3.3 shows the time from commencement of ventilation to brain death in Australia and New Zealand for 2015 to 2019.

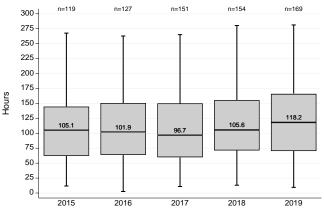
Figure 3.3.1 - Time from Ventilation to Brain Death (hours) DBD Donors - Australia 2015 – 2019



## Time from Ventilation to Circulatory Death

Figure 3.4 shows the time from commencement of ventilation to circulatory death in Australia for 2015 to 2019. The median time in New Zealand in 2019 from ventilation to circulatory death was 95.8 hours.





## Time from Brain Death to Donation

Figure 3.5 below shows the time from ventilation to brain death in Australia and New Zealand for 2015 to 2019.

Figure 3.5.1 - Time from Brain Death to Donation (hours) DBD Donors - Australia 2015 – 2019

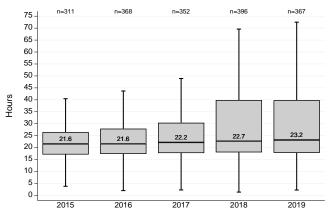
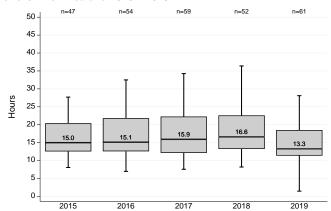


Figure 3.5.2 - Time from Brain Death to Donation (hours) DBD Donors - New Zealand 2015 – 2019

Figure 3.3.2 - Time from Ventilation to Brain Death (hours) DBD



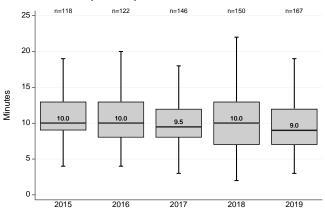
In 2019, 10% (36) of Australian DBD donors underwent aortic cross clamp within twelve hours of the certification of brain death. Cross clamp did not proceed in nine Australian donors.

In 2019, 44% (27) of New Zealand DBD donors underwent aortic cross clamp within twelve hours of the certification of brain death.

## **Time from Circulatory Death to Donation**

As shown in Figure 3.6, in 2019, 62% (107) of Australian DCD donors underwent cold perfusion within ten minutes of the certification of circulatory death. Cold perfusion did not proceed in five Australian donors.

Figure 3.6 - Time from Circulatory Death to Donation (minutes) DCD Donors - Australia 2015 – 2019



In 2019, 31% (4) of New Zealand DCD donors underwent cold perfusion within ten minutes of the certification of circulatory death. Cold perfusion did not proceed for one New Zealand donor. The median time was 12 minutes.

## Summary – Organs Requested, Consent Given, Retrieved and Transplanted

Table 3.14 shows the outcome of organs requested in 2019 (2018). The information on request for organ donation, refers only to those patients who become actual donors. The reasons for organs not requested, not retrieved or not transplanted are documented for each of the specific organs in their sections later in this report.

| Country     |                                      | Kidneys <sup>1</sup> | Liver     | Heart     | Lungs <sup>1</sup> | Pancreas  | Intestines |
|-------------|--------------------------------------|----------------------|-----------|-----------|--------------------|-----------|------------|
|             | Organs for donation                  | 1096 (1108)          | 548 (554) | 548 (554) | 1096 (1108)        | 548 (554) | 548 (554)  |
|             | Organs Requested                     | 1076 (1090)          | 499 (497) | 398 (421) | 988 (1008)         | 407 (443) | 273 (267)  |
| AUSTRALIA   | Organs Consented                     | 1072 (1086)          | 491 (493) | 367 (390) | 956 (966)          | 391 (416) | 233 (218)  |
| AUSTRALIA   | Organs Retrieved                     | 974 (985)            | 304 (312) | 123 (134) | 352 (435)          | 82 (96)   | 0 (1)      |
|             | Utilised organs for transplantation  | 872 (922)            | 283 (297) | 113 (129) | 329 (421)          | 40 (51)   | 0 (1)      |
|             | Recipients transplanted <sup>2</sup> | 857 (897)            | 308 (318) | 113 (129) | 183 (223)          | 40 (51)   | 0 (1)      |
|             | Organs for donation                  | 148 (124)            | 74 (62)   | 74 (62)   | 148 (124)          | 74 (62)   | 74 (62)    |
|             | Organs Requested                     | 142 (122)            | 72 (61)   | 49 (42)   | 124 (110)          | 42 (44)   | 0 (0)      |
| NEW ZEALAND | Organs Consented                     | 142 (122)            | 72 (61)   | 49 (41)   | 124 (110)          | 42 (43)   | 0 (0)      |
| NEW ZEALAND | Organs Retrieved                     | 135 (104)            | 54 (46)   | 17 (20)   | 51 (56)            | 4 (8)     | 0 (0)      |
|             | Utilised organs for transplantation  | 133 (99)             | 52 (44)   | 17 (19)   | 51 (55)            | 4 (6)     | 0 (0)      |
|             | Recipients transplanted <sup>3</sup> | 130 (98)             | 56 (49)   | 17 (19)   | 26 (28)            | 4 (6)     | 0 (0)      |

Table 3.14 Summary for Organ Donation Pathway by Organ Type 2019 (2018)

<sup>1</sup> Kidneys and Lungs are counted as two separate organs (i.e. left and right).

<sup>2</sup> For Australia 2019 (2018), includes 15 (25) Double adult/Enbloc Kidneys, 50 (42) Split Livers, 5 (6) Reduced Size Livers, 37 (25) Single Lung and 146 (198) Double Lung Transplants. <sup>3</sup> For New Zealand 2019 (2018), includes 3 (1) Double-adult/Enbloc Kidneys, 8 (10) Split Livers, 1 (0) Reduced Size Livers, 1

(1) Single Lung and 25 (27) Double Lung Transplants.

## **Multiple Organ Retrieval**

For Australia, there were 548 actual deceased organ donors in 2019. Of those donors, 532 donors had at least one organ retrieved; and 511 resulted in at least one organ transplanted. There were 186 (34%) Australian donors in 2019 who had a single organ retrieved: kidney only donation occurred in 154 cases, 22 donating a liver, five donating a heart and five donating lungs. In 2019, 346 (63%) donors had two or more organs retrieved for the purpose of transplantation. (Table 3.15)

Similarly, for New Zealand, there were 74 actual deceased organ donors in 2019. Of those donors, 73 had at least one organ retrieved; and 73 resulted in at least one organ transplanted. There were 16 (22%) single organ donors in 2019: 12 donating kidneys, one donating a liver, one donating a heart and two donating lungs. In 2019, 57 (77%) of donors had two or more organs retrieved for the purpose of transplantation. (Table 3.15)

| Organs     |           | Australia |           |           |           |         |          | New Zealand |          |          |  |  |
|------------|-----------|-----------|-----------|-----------|-----------|---------|----------|-------------|----------|----------|--|--|
| Retrieved* | 2015      | 2016      | 2017      | 2018      | 2019      | 2015    | 2016     | 2017        | 2018     | 2019     |  |  |
| 0          | 8 (2%)    | 14 (3%)   | 15 (3%)   | 14 (3%)   | 16 (3%)   | 3 (6%   | 2 (3%)   | 4 (5%)      | 2 (3%)   | 1 (1%)   |  |  |
| 1          | 118 (27%) | 123 (24%) | 155 (30%) | 168 (30%) | 186 (34%) | 11 (21% | 13 (21%) | 18 (25%)    | 16 (26%) | 16 (22%) |  |  |
| 2          | 114 (26%) | 166 (33%) | 141 (28%) | 161 (29%) | 155 (28%) | 14 (26% | 25 (41%) | 21 (29%)    | 14 (23%) | 31 (42%) |  |  |
| 3          | 95 (22%)  | 99 (20%)  | 116 (23%) | 107 (19%) | 112 (20%) | 19 (36% | 13 (21%) | 18 (25%)    | 14 (23%) | 16 (22%) |  |  |
| 4          | 62 (14%)  | 62 (12%)  | 60 (12%)  | 67 (12%)  | 49 (9%)   | 5 (9%   | 6 (10%)  | 10 (14%)    | 12 (19%) | 7 (9%)   |  |  |
| 5          | 37 (9%)   | 39 (8%)   | 23 (5%)   | 36 (6%)   | 30 (5%)   | 1 (2%   | 2 (3%)   | 2 (3%)      | 4 (6%)   | 3 (4%)   |  |  |
| 6          | 1 (0%)    | 0 (0%)    | 0 (0%)    | 1 (0%)    | 0 (0%)    | 0 (0%   | 0 (0%)   | 0 (0%)      | 0 (0%)   | 0 (0%)   |  |  |

#### Table 3.15 Multiple Organs Retrieved per donor 2015 – 2019

\* The organ types retrieved from a donor are: Kidney, Liver, Lung, Heart, Pancreas and Intestine.

| Organs<br>Retrieved* | NSW      | VIC      | QLD      | SA       | WA       | TAS     | NT      | АСТ     | AUST      | NZ       |
|----------------------|----------|----------|----------|----------|----------|---------|---------|---------|-----------|----------|
| 0                    | 4 (3%)   | 5 (3%)   | 2 (2%)   | 4 (8%)   | 1 (2%)   | 0 (0%)  | 0 (0%)  | 0 (0%)  | 16 (3%)   | 1 (1%)   |
| 1                    | 41 (28%) | 60 (37%) | 32 (30%) | 21 (40%) | 23 (44%) | 4 (22%) | 2 (50%) | 3 (30%) | 186 (34%) | 16 (22%) |
| 2                    | 46 (32%) | 42 (26%) | 33 (31%) | 11 (21%) | 14 (27%) | 6 (33%) | 1 (25%) | 2 (20%) | 155 (28%) | 31 (42%) |
| 3                    | 26 (18%) | 28 (17%) | 29 (27%) | 9 (17%)  | 10 (19%) | 6 (33%) | 1 (25%) | 3 (30%) | 112 (20%) | 16 (22%) |
| 4                    | 17 (12%) | 16 (10%) | 8 (8%)   | 4 (8%)   | 2 (4%)   | 1 (6%)  | 0 (0%)  | 1 (10%) | 49 (9%)   | 7 (9%)   |
| 5                    | 10 (7%)  | 11 (7%)  | 2 (2%)   | 3 (6%)   | 2 (4%)   | 1 (6%)  | 0 (0%)  | 1 (10%) | 30 (5%)   | 3 (4%)   |
| 6                    | 0 (0%)   | 0 (0%)   | 0 (0%)   | 0 (0%)   | 0 (0%)   | 0 (0%)  | 0 (0%)  | 0 (0%)  | 0 (0%)    | 0 (0%)   |

#### Table 3.16 Multiple Organs Retrieved per Donor by Jurisdiction 2019

\* The organ types retrieved from a donor are: Kidney, Liver, Lung, Heart, Pancreas and Intestine.