



CHAPTER 9

KIDNEY DONATION

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The format of this chapter has been substantially revised this year. It includes new data for deceased donors, with a focus on trends in donor demographics, and now also includes the living donor data that was previously included in chapter 8.

DECEASED KIDNEY DONORS

The data for this section comes from the Australia and New Zealand Organ Donor (ANZOD) Registry. Much more information about deceased organ donors in Australia and New Zealand can be found on the ANZOD website, <http://www.anzdata.org.au/anzod/v1/indexanzod.html>.

Figures 9.1 and 9.2 show the different types of deceased kidney donors in each country over 2002-2011. In Australia there has been a large increase in the number of donors since 2008, driven by an increase in expanded criteria (ECD) and in particular cardiac death (DCD) donors. In New Zealand the donor numbers are steady and the proportion of ECD and DCD donors are much lower than in Australia.

Figure 9.1

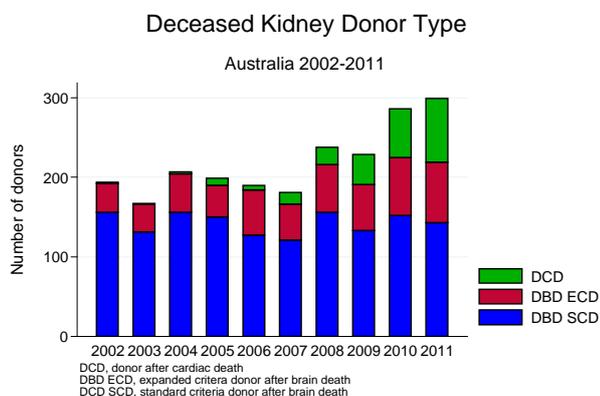
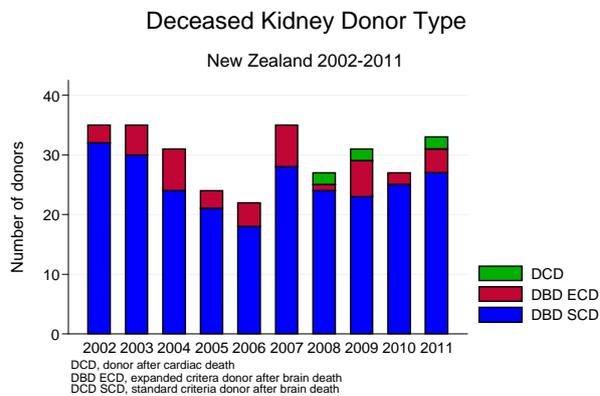


Figure 9.2



The causes of death of deceased donors are shown in Figures 9.3 and 9.4. Stroke remains the most common cause of kidney donor death in both Australia and New Zealand. In Australia there has been a slight reduction in the proportion of deaths due to road trauma, with a corresponding increase in the proportion due to hypoxia/anoxia.

Figure 9.3

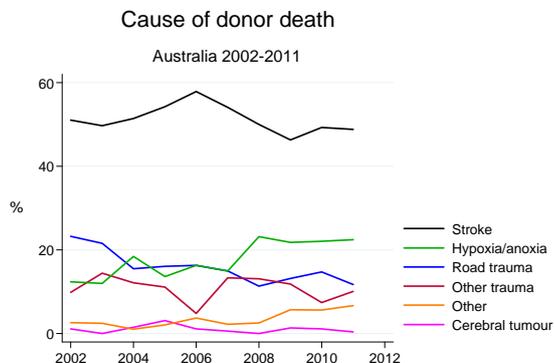
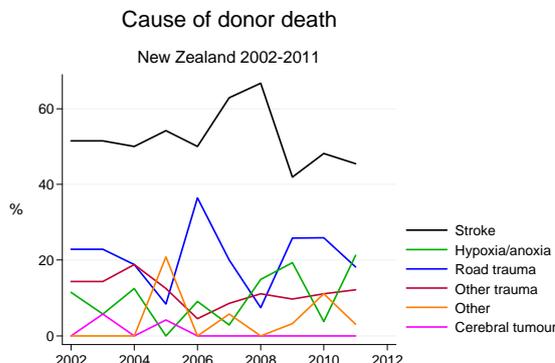


Figure 9.1



Figures 9.5 and 9.6 show the mean age of deceased kidney donors in Australia and New Zealand over the last 20 years. In Australia the mean age has increased steadily from 36 years in 1992 to 47 years in 2011. In New Zealand there is no clear trend, and donors are younger than in Australia; the mean donor age in 2011 was 36 years.

Figure 9.5

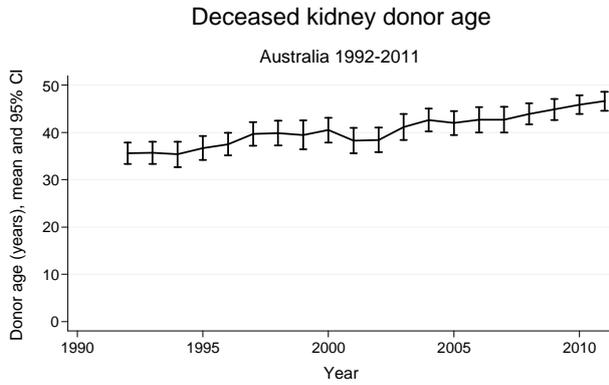
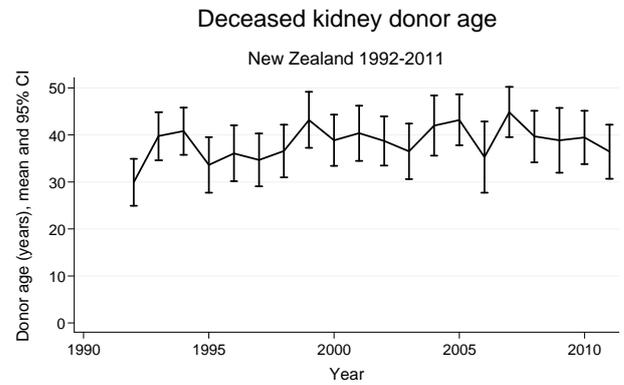


Figure 9.6



Figures 9.7 and 9.8 show the discard rate of retrieved kidneys – the proportion of kidneys that were retrieved for the purpose of transplantation, but not ultimately transplanted into a recipient. Despite the increasing age and complexity of donors in Australia the discard rate has remained steady at around 3% over the last 10 years. In New Zealand discard rates are slightly higher than in Australia (note the different y-axis scales).

Figure 9.7

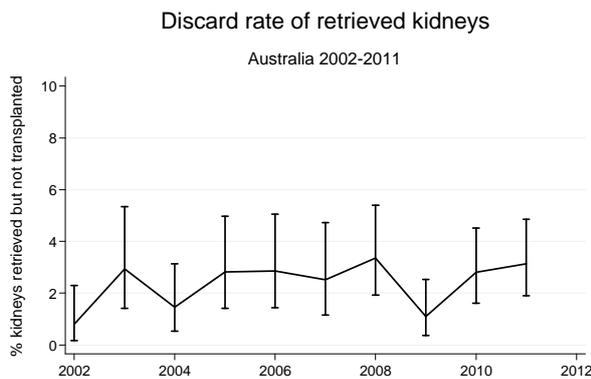
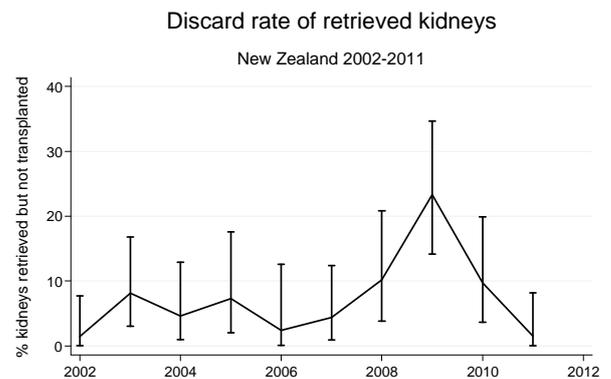


Figure 9.8



LIVING KIDNEY DONORS

Figure 9.9

Living Donor Operations as a Proportion (%) of Annual Transplantation Australia 2006 - 2011

| Recipient Age Groups | Year of Transplantation | | | | | |
|-----------------------|-------------------------|------------|------------|------------|------------|------------|
| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
| 00-04 years | 100% | 89% | 75% | 55% | 60% | 50% |
| 05-14 years | 55% | 56% | 59% | 71% | 60% | 46% |
| 15-24 years | 71% | 65% | 67% | 73% | 76% | 58% |
| 25-34 years | 48% | 57% | 53% | 54% | 44% | 40% |
| 35-44 years | 37% | 38% | 36% | 41% | 41% | 35% |
| 45-54 years | 37% | 43% | 41% | 39% | 26% | 22% |
| 55-64 years | 40% | 35% | 39% | 37% | 31% | 28% |
| 65-74 years | 41% | 45% | 44% | 33% | 18% | 23% |
| 75-84 years | 0% | 0% | 0% | 0% | 67% | 50% |
| All Recipients | 43% | 44% | 44% | 42% | 35% | 31% |

AUSTRALIA

There were 255 living donor kidney transplants performed in 2011 in Australia, representing 31% of all transplant operations (Figure 9.9).

Figure 9.12 shows the age-related proportion of living donor transplants for the years 2002 and 2011. The overall proportion of living donors decreased in most age groups.

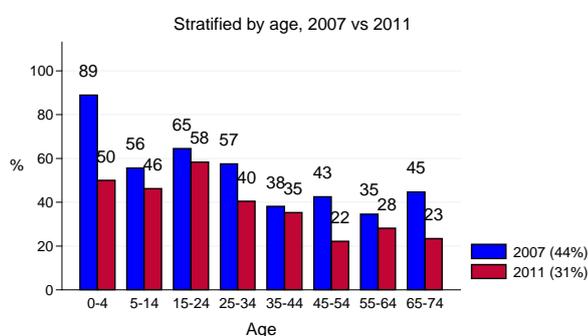
The proportion of living donor transplants for each State and New Zealand for recipients aged 25-44 years is shown for the years 2004-2007 and 2008-2011 in Figure 9.10. Overall there has been an increase in this age group for both countries from 2004-2007 to 2008-2011, the highest in New Zealand in 2011 (60%).

The proportion of genetically unrelated donors was 50% (127 donors) in 2011 compared with 40% (119 donors) in 2010, shown in Figure 9.16. Fifty-seven percent of living unrelated donors were spouses or partners. The age distribution of living donors is shown in Figure 9.12.

The first paired kidney exchange transplants were performed in 2007 in Western Australia and there were a further five in 2008, followed by another two in 2009, eight in 2010 and twenty-five in 2011. There were five non-directed donors in 2011. Thirty five of the living donors in 2011 were blood group incompatible with the recipient, down from 40 in 2010 (Figure 9.15).

Figure 9.10

Percentage Living Donor Grafts - Australia



NEW ZEALAND

The number of living donor transplants decreased by 5% (57 donors) in New Zealand in 2011, as shown in Figure 9.14.

There were 33 genetically unrelated kidney donors in 2011, compared with 23 in 2010.

Forty-eight percent of grafts were from a living donor.

Unrelated donors represented 58% of all living donors in 2011, shown in Figure 9.16. Eighteen of these were from a spouse or partner.

There were three non-directed donors in 2011 (compared with four in 2010).

Figure 9.11

Percentage Living Donor Grafts

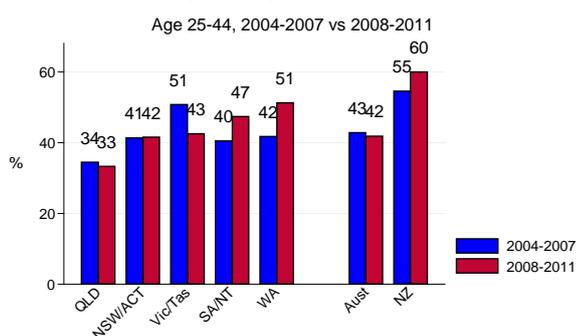


Figure 9.12

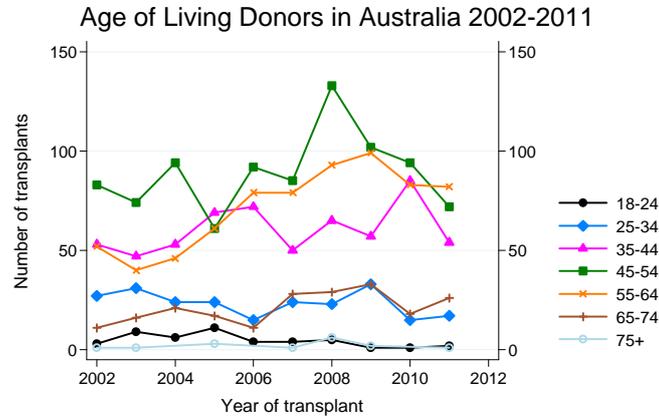


Figure 9.13

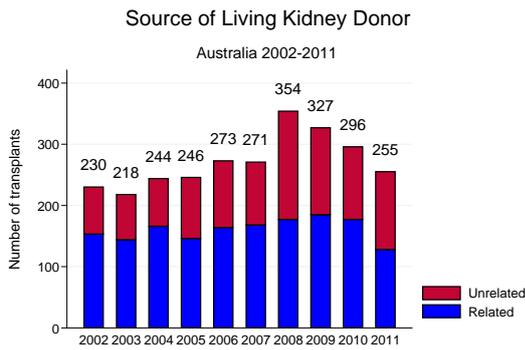


Figure 9.14

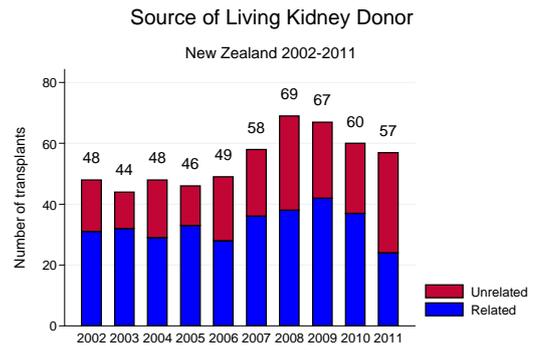


Figure 9.15



Figure 9.16

| Source of Living Donor Kidneys 2007 - 2011 (x = identical twin) (+ = non identical twin) | | | | | | | | | | |
|---|-----------|-------|-------|-------|-------|-------------|------|------|------|------|
| Source | Australia | | | | | New Zealand | | | | |
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2007 | 2008 | 2009 | 2010 | 2011 |
| Total Living Donors | 271 | 354 | 327 | 296 | 255 | 58 | 69 | 67 | 60 | 57 |
| Related | (167) | (175) | (186) | (177) | (128) | 36 | 38 | 41 | 37 | 24 |
| Mother | 60 | 46 | 53 | 48 | 38 | 5 | 6 | 5 | 3 | 0 |
| Father | 37 | 41 | 27 | 37 | 33 | 5 | 9 | 6 | 5 | 3 |
| Sister | 28 | 30 | 41 | 35 | 22 | 11 | 9 | 8 | 6 | 9 |
| Brother | 20 | 33 | 32 | 26 | 18 | 5 | 5 | 11 | 10 | 5 |
| Identical twin sister | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Identical twin brother | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Non-identical twin sister | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Non-identical twin brother | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Daughter | 3 | 6 | 4 | 4 | 5 | 3 | 1 | 4 | 2 | 2 |
| Son | 7 | 3 | 4 | 7 | 1 | 4 | 2 | 3 | 3 | 2 |
| Grandmother | 0 | 2 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grandfather | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Cousin | 7 | 5 | 5 | 4 | 2 | 2 | 2 | 0 | 3 | 1 |
| Niece | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 2 | 1 | 0 |
| Nephew | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Aunt | 1 | 7 | 6 | 7 | 3 | 0 | 1 | 2 | 2 | 0 |
| Uncle | 2 | 1 | 3 | 1 | 2 | 0 | 2 | 0 | 2 | 1 |
| Unrelated | (104) | (179) | (141) | (119) | (127) | 22 | 31 | 26 | 23 | 33 |
| Wife | 40 | 64 | 63 | 47 | 47 | 8 | 5 | 2 | 5 | 10 |
| Husband | 14 | 35 | 33 | 21 | 20 | 5 | 5 | 1 | 2 | 4 |
| Mother-in-law | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Father-in-law | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Stepmother | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Stepfather | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 |
| Stepsister | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Sister-in-law | 2 | 4 | 4 | 0 | 2 | 0 | 1 | 0 | 0 | 0 |
| Brother-in-law | 3 | 1 | 3 | 1 | 0 | 0 | 1 | 0 | 1 | 1 |
| Daughter-in-law | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Son-in-law | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Stepdaughter | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Stepson | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Partner | 6 | 10 | 6 | 6 | 6 | 1 | 0 | 1 | 2 | 4 |
| Friend | 15 | 27 | 18 | 16 | 12 | 6 | 10 | 13 | 7 | 4 |
| Non-directed | 1 | 6 | 4 | 1 | 5 | 1 | 8 | 6 | 4 | 3 |
| Pathological | 16 | 13 | 6 | 11 | 9 | 0 | 0 | 0 | 0 | 0 |
| Paired kidney exchange | 2 | 5 | 2 | 8 | 25 | 0 | 0 | 0 | 0 | 2 |
| Other | 3 | 7 | 0 | 4 | 0 | 0 | 0 | 1 | 1 | 4 |

Figure 9.17

| Gender of Living Donor Kidneys 2007 - 2011 | | | | | | | | | | | | | | | |
|--|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Source and State/ Country of Transplant | 2007 | | | 2008 | | | 2009 | | | 2010 | | | 2011 | | |
| | Male | Female | Total |
| Related | | | | | | | | | | | | | | | |
| NSW/ACT | 41% | 59% | 58 | 57% | 43% | 63 | 48% | 52% | 66 | 37% | 63% | 46 | 41% | 59% | 46 |
| VIC/TAS | 39% | 61% | 61 | 39% | 61% | 56 | 26% | 74% | 58 | 42% | 58% | 66 | 50% | 50% | 44 |
| QLD | 41% | 59% | 22 | 35% | 65% | 17 | 31% | 69% | 26 | 57% | 43% | 21 | 45% | 55% | 20 |
| SA/NT | 42% | 58% | 19 | 45% | 55% | 22 | 44% | 56% | 16 | 40% | 60% | 20 | 30% | 70% | 10 |
| WA | 57% | 43% | 7 | 41% | 59% | 17 | 55% | 45% | 20 | 42% | 58% | 24 | 50% | 50% | 8 |
| AUSTRALIA | 41% | 59% | 167 | 46% | 54% | 175 | 39% | 61% | 186 | 42% | 58% | 177 | 45% | 55% | 128 |
| NEW ZEALAND | 42% | 58% | 36 | 47% | 53% | 38 | 49% | 51% | 41 | 57% | 43% | 37 | 50% | 50% | 24 |
| Unrelated | | | | | | | | | | | | | | | |
| NSW/ACT | 44% | 56% | 32 | 31% | 69% | 51 | 37% | 63% | 41 | 41% | 59% | 37 | 43% | 57% | 42 |
| VIC/TAS | 34% | 66% | 29 | 52% | 48% | 60 | 35% | 65% | 40 | 41% | 59% | 39 | 43% | 58% | 40 |
| QLD | 45% | 55% | 22 | 33% | 67% | 27 | 41% | 59% | 29 | 36% | 64% | 22 | 25% | 75% | 16 |
| SA/NT | 14% | 86% | 7 | 37% | 63% | 19 | 86% | 14% | 7 | 38% | 63% | 8 | 50% | 50% | 6 |
| WA | 36% | 64% | 14 | 32% | 68% | 22 | 38% | 63% | 24 | 23% | 77% | 13 | 43% | 52% | 23 |
| AUSTRALIA | 38% | 62% | 104 | 39% | 61% | 179 | 40% | 60% | 141 | 38% | 62% | 119 | 41% | 58% | 127 |
| NEW ZEALAND | 45% | 55% | 22 | 39% | 61% | 31 | 42% | 58% | 26 | 43% | 57% | 23 | 42% | 58% | 33 |

TIMING OF LIVING DONOR TRANSPLANTS

The timing of living donor transplants relative to the start of dialysis is shown in Figure 9.18.

The proportion of all primary living donor transplants performed “pre-emptively” in Australia was 37%, compared with 35% in 2010. This continues a broader trend of increasing use of pre-emptive transplantation (Figure 9.19). Thirty-one percent had received dialysis treatment for twelve months or longer prior to a first living donor graft.

The proportion of pre-emptive primary living donor transplants in New Zealand was 23% in 2011, compared with 25% in 2010 (Figure 9.18). Fifty-four percent received dialysis for twelve months or longer prior to being transplanted.

Figure 9.18

Timing of Living Donor Transplantation
for Primary Grafts in Relation to Date of Dialysis Start
by Year of Transplant 2007 - 2011

| | | 2007 | 2008 | 2009 | 2010 | 2011 |
|-------------|----------------------------------|-----------|-----------|-----------|-----------|----------|
| Aust | Pre-emptive | 62 (26%) | 94 (30%) | 108 (36%) | 92 (35%) | 87 (37%) |
| | <1 month post dialysis | 7 (3%) | 5 (2%) | 10 (3%) | 6 (2%) | 7 (3%) |
| | 1 month to <1 year post dialysis | 55 (23%) | 77 (24%) | 81 (27%) | 62 (23%) | 66 (28%) |
| | >=1 year post dialysis | 116 (48%) | 141 (44%) | 99 (33%) | 106 (40%) | 73 (31%) |
| NZ | Pre-emptive | 23 (43%) | 20 (30%) | 18 (31%) | 15 (25%) | 12 (23%) |
| | <1 month post dialysis | 1 (2%) | 2 (3%) | 1 (2%) | 1 (2%) | 1 (2%) |
| | 1 month to <1 year post dialysis | 9 (17%) | 14 (21%) | 8 (14%) | 10 (17%) | 11 (21%) |
| | >=1 year post dialysis | 21 (39%) | 30 (45%) | 32 (54%) | 33 (56%) | 28 (54%) |

Figure 9.19

