Organ Registries

Stephen McDonald PhD FRACP
ANZDATA Registry
Queen Elizabeth Hospital Adelaide
What to talk about?

- ANZOD Registry
  - Summary deceased organ donor activity
  - Looking at the denominator
- Outcome Registries
  - Recent trends in outcomes
- ANZDATA transplantation potpourri

www.anzdata.org.au
Organ Registries in Australasia

- Organ donor Registries
  - ANZOD
  - ANZLKDR
  - ANZLTR

- Outcome Registries
  - ANZDATA
  - ANZCOTR
  - ANZLTR
  - Pancreas Registry
  - Australian Cornea Transplant Registry

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Australia and New Zealand Organ Donation Registry (ANZOD)

- A collaborative effort of ANZDATA and the Australasian Transplant Coordinators Association (ATCA) since 1989
- Data is collected by survey form for each deceased donor at monthly interval

Publications
- Monthly donor statistics on the Web (unrestricted)
- Annual Report is published both in hard copy and on the Web (unrestricted)
- Unrestricted web site

- All deceased donors in Australia since 1989 and NZ since 1993
- Funded by Commonwealth Dept of Health, Kidney Health Australia and NZ Ministry of Health
International Donor Statistics 2008

Donors PMP

Source: IRODaT
(International Registry of Organ Donation and Transplantation)
Deceased organ donors
Donor rates

Trends: -1.0% per year [-1.5% to -0.4%]
Donor rates pmp for Australia, 1989-2008
Which denominator?
Resident population, Australia and annual deaths reported, Australia. ABS.
Population death rates

Deaths per 1000 per year

Males
Females

Population deaths rates, standardised to 2001 population, ABS 3302.0
Deaths in Australia

Deaths, Australia, by age at death. ABS 3302.0
Changes in age

ANZOD, organ donors by cause and country of death
Age at death-specific rates

Organ donors, age-specific rates, Australia

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Donor numbers

ANZOD, organ donors by cause and country of death
Cause-specific deaths pmp

Age and gender standardised deceased donor rates per million populations

Cerebrovascular death: -0.1% per year [-0.9% to +0.8%]

Non-Cerebrovascular Death: -4.5% per year [-5.4% to -3.6%]
Cause-specific deaths & donors

Crude number of deaths and crude number of deceased donor by number of cause-specific death
Rates by 10,000 cause-specific deaths

Cerebrovascular deaths:
+3.8% per year [+3.6% to +4.1%]

Accident/violent deaths:
-2.1% per year [-2.4% to -1.8%]
Age-specific cerebrovascular deaths

Cerebrovascular death

Rate of organ donor per 10,000 cause-specific deaths stratified by age

Age <60:
+2.5% per year [+2.2% to +2.7%]

Age 60-79
+9.7% per year [9.1% to 10.3%], P<0.0001
Number of Organs Per Donor Transplanted

Mean number of organs transplanted per donor, ANZOD Registry
Box plots (median, 25th 75th centiles) of age of donors by type of organ donated.
Liver
Age at Primary Transplant by Era

Age Group
- Children (n=550)
- Adult (n=2516)

Median = 46.6y
Range 24d - 73.1y

P<0.001

Era
- 1985 - 1989
- 1990 - 1994
- 1995 - 1999
- 2000 - 2004
- 2005 - 2008

Age at transplant
- 43.9y
- 45.7y
- 48.1y
- 50.2y
- 51.8y

P=ns
Patient Survival by Year of Transplant

Adults n= 2332

Era
- 1985-89 (n=131)
- 1990-94 (n=416)
- 1995-99 (n=584)
- 2000-04 (n=749)
- 2005-07 (n=452)

Time Post-transplant (years)

Patient Survival (%)

p < 0.001
Heart & lungs
Cardiothoracic activity

Grafts per year, Australia and New Zealand (ANZCOTR).
ACTUARIAL SURVIVAL HEARTS

84-89 v 90-99    p = ns
84-89 v 00-08    p = < .01
90-99 v 00-08    p = < .005

ANZCOTR 2009
ACTUARIAL SURVIVAL LUNG PERIOD COMPARISON 1990-1999 v 2000-2008

p = <.005

ANZCOTR 2009
Corneal Graft Registry

**FIGURE 1.** Kaplan-Meier survival of all penetrating corneal grafts. Of 18,686 records of graft, archival follow-up was available for 14,622. The numbers at risk (n) at 1, 5, 10, and 15 years post graft are shown above the plot.

Multivariate HR for corneal graft survival over time, Australian corneal grafts Williams et al, Transplantation, Dec 2008
Pancreas
Pancreas utilisation

* Includes 23 Pancreas Islets transplanted from 2002-2007

Acceptance of Pancreas for Transplantation and Research, Australia. 2008 data
How are we treating DM1 with ESKD?

Grafts to recipients with DM1

Pancreas alone – 3 in 2007, 0 in 2008
Pancreas Graft Survival by Donor Age Groups 1987 - 2007
Kidneys
Kidney transplant source

ANZDATA, kidney transplants by graft source
Living Kidney Donor Registry

- Now operating since 2004
- 1853 records (to 31 May 2009) at time of donation
  - Followup less complete...

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Blood pressure among donors

BP reported pre donations: 6% DBP>90, 8% SBP 140-149, 4% SBP>=150 mmHg. 173 (10%) of donors reported as requiring BP treatment with a mean of 1.3 drugs.
Renal function measurement

- 44% measured GFR
Renal function among donors

Graphs by GFR method

GFR category

- 40-
- 60-
- 80-
- 100-
- 120-

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LUD vs LRD

Graft survival
by donor source, adjusted for age (but not HLA mismatches)

Donor source
- DD
- LRD
- LUD

ANZDATA, all Australia & NZ primary kidney only grafts, 1/1/97 to 31/12/2007
Kidney graft survival by era

Graft survival
by year of transplant, DD1 grafts, adjusted for age and HLA mismatches

ANZDATA, all Australia & NZ deceased donor grafts, to 12/2007
Graft failure over time

ANZDATA, all Australia & NZ DD1 grafts, to 12/2007
Challenges 4: Death with graft function

Death-censored graft failure

Death with functioning graft

Recipient age (years)

Cumulative Incidence

Years post-transplant

Graphs by gloss

Lim, Chang, et al, 2008
Challenges 1: Keeping up with demand

Time to transplantation (any type), Australia only

Era of transplantation
- 1965-74
- 1975-84
- 1985-94
- 1995-2004

Kaplan-Meier failure estimates

Age 0-39

Age 40-59
Challenges 2: Equity

Kaplan-Meier failure estimates
Age 0-39, non-indigenous

Kaplan-Meier failure estimates
Age 40-59, non-indigenous

Time to kidney transplantation (any type), Australia & NZ
All kidney tx from 1/1/2000
Challenges 3: Indigenous transplants

Kaplan-Meier failure estimates
Age 0-39, Aboriginal

Kaplan-Meier failure estimates
Age 40-59, Aboriginal

Transplant region
- NSW/ACT
- Vic/Tas
- Qld
- SA
- WA

Time to kidney transplantation (any type), Australia & NZ
All kidney tx from 1/1/2000
Proportions of Indigenous and white patients (18-64, started RRT 1995-2005) receiving renal transplant by country within 5 years after onset of renal replacement therapy. Yeates et al, KI, In Press
Patient Survival - Following First Transplant
Australia 1991 - 2000

Adjusted for Age, Diabetic PRD, Race, Gender and Comorbidities

Patient Survival Following First Transplant - Australia 1991-2000

Adjusted for Age, Diabetic PRD, Race, Gender and Comorbidities

ANZDATA 2008 Report
Patient Survival - Following First Transplant
Australia 2001 - 2007

Adjusted for Age, Diabetic PRD, Race, Gender and Comorbidities

ANZDATA 2008 Report
Challenges 4: Cancer

SIR and absolute cancer rates, cancers post transplantation, by age at transplant and gender
Post transplantation site-specific SIR

SIR for all cancers post transplantation by site. Vajdic et al, JAMA 2006
Potpourri 1: International comparisons

- **Aim:** Compare graft failure and mortality rates after kidney transplantation in the United States, the United Kingdom, and Australia/New Zealand using a commonly agreed cohort and definitions and patient-level data in a shared dataset.
  
  
Adjusted Relative Risk of Living Donor Graft Failure
UK and ANZ vs. US

Hazard Ratio

0-1 Years 1-2 Years 2-5 Years 5+ Years

Time Post-Transplant

U.S. HR=1.00 (Reference)

* P<0.008 vs. US
** P<0.03 UK vs. ANZ
Adjusted Relative Risk of Deceased Donor Kidney Graft Failure, UK and ANZ vs. US

Merion et al,
FIGURE 1. Kaplan-Meier survival estimates for deceased donor kidney transplants, 1991 to 2005. (A) Graft survival by donor age and expanded criteria donor (ECD) status; (B) death-censored graft survival by donor age and ECD status; and (C) patient survival censored for GFR by donor age and ECD status.

Collins et al, Transplantation 2009
Potpourri 3: Rejection

Impact of acute rejection on Graft survival, K-M plot for grafts surviving 6 months, adjusted for graft source, graft number & vintage. McDonald et al AJT 2007
Which type of rejection matters?

Impact of rejection type on graft survival, McDonald et al AJT 2007
Impact of response to rejection on graft survival, “Good response”= creatinine returned to baseline after the episode, “poor response”= all other responses. McDonald et al AJT 2007
Conclusion

• Role of Registries
  – Ongoing provision of key data
  – Hypothesis generation
  – Studies which can’t be done any other way...
  – Monitoring access and outcomes of therapy

• Cheap at the price
  – Thanks to enormous unfunded portion from data contributors
Welcome to the ANZDATA and ANZOD website
please select one of the sites below

ANZDATA collects a wide range of statistics which relate to the outcomes of treatment of those with end stage renal failure.

The ANZOD Registry collects and records data on all organ donors after death.

Registered Users, Connect to the Real Time Web Data Entry System – Obtain Reports direct from your Data: CLICK HERE to log on.