

The Twenty Seventh Report

**Australia and New Zealand
Dialysis and Transplant Registry**

2004



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**Edited by
Leonie Excell and Stephen McDonald**

FUNDED BY

Commonwealth Department of Health and Ageing
Kidney Health Australia
New Zealand Ministry of Health

SUPPORTED BY

AMGEN Australia Pty Ltd
Novartis Pharmaceuticals Australia Pty Ltd
Janssen-Cilag Pty Ltd
Fresenius Medical Care Australia
Roche Products Pty Ltd
Wyeth Australia Pty Ltd



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.. [Author's name] ..
Peritoneal Dialysis .. [page numbers] ..
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Publications based upon ANZDATA Registry information reported here or supplied upon request, must include the citation as noted above and the following notice:

The data reported here have been supplied by the Australia and New Zealand Dialysis and Transplant Registry. The interpretation and reporting of these data are the responsibility of the Editors and in no way should be seen as an official policy or interpretation of the Australia and New Zealand Dialysis and Transplant Registry.



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This is the 27th Annual Report from the ANZDATA Registry. It is a comprehensive and detailed account of the delivery of dialysis and transplantation services in Australia and New Zealand in the year 2003. Once again all of the Australian and New Zealand Renal Units have contributed their patients' data to this Registry and we remain confident that there is 100% reporting.

This is the first Report for which Dr Stephen McDonald and Mrs Leonie Excell have taken sole responsibility for editing. Dr McDonald continues in his role as AMGEN Fellow in Epidemiology and has also had a major input into the composition and compilation of this Report.

Staff of the Registry, continue to provide dedicated and excellent service. Lee Excell continues in her role as Manager, Brian Livingston provides our Information Technology expertise and data analysis and Lis Steinmetz has provided administrative support. Bianca Byrne has continued in her role as Biostatistician. She has provided statistical and database analysis and has allowed us to respond rapidly to requests to the Registry from Contributors and Others. Unfortunately Bianca resigned her position during 2004 and we wish her well in her future career endeavours.

In 2004, data collection has also begun in a number of new ventures. Data has been collected for the Peritonitis Registry as well as a Living Donor Kidney Registry. Analysis of the donor data has not as yet been performed and we look forward to being able to provide information in the near future. A short report on the peritonitis is contained in this volume.

The major funding for the Registry comes from the Australian Commonwealth Department of Health and Ageing. In addition funds continue to be provided from the Kidney Health Australia and the New Zealand Ministry of Health.

We are also fortunate to receive generous "non tied" Grants from AMGEN Australia Pty Ltd, Novartis Pharmaceuticals Australia Pty Ltd, Janssen-Cilag Pty Ltd, Fresenius Medical Care Australia, Roche

Products, Pty Ltd, and Wyeth Australia Pty Ltd, in 2003 and 2004.

The Internet Based Data Exchange Scheme will become completely operational by January 2005. This will enable data entry from contributing units. A change to the data collection timing for the Registry will also take place in 2005. There will be one annual data collection rather than the two as previously. In addition the Internet Based Data Exchange mechanism will be used for Real Time Data Entry of key events such as the entry of a new patient, transplantation and death.

The ANZDATA Registry Executive and ANZDATA Registry Advisory Committee are Subcommittees of the Dialysis, Nephrology and Transplant Committee of the Australia and New Zealand Society of Nephrology and Kidney Health Australia. The ANZDATA Registry Advisory Committee currently consists of:

A/Prof Rowan Walker (Chair)
Prof Graeme Russ (Chair of ANZDATA Executive)
Dr Stephen McDonald (AMGEN Fellow in Epidemiology)
Mrs Leonie Excell (Registry Manager)
A/Prof Tim Mathew (AKF Representative)
A/Prof Steven Chadban (Manager/Transplantation)
Professor Jeremy Chapman (Manager/Cancer)
Dr Angela Webster (NOVARTIS Cancer Fellow)
A/Prof Jonathan Craig (Manager/Paediatrics)
Dr Mark Marshall (Manager/Haemodialysis)
A/Prof David Johnson (Manager/CAPD)
Dr Ian Dittmer (NZ Representative)
Dr John Agar
Dr Frank Ierino
Dr Grant Luxton
Ms Denise Tomlinson (Nursing Representative)
Ms Mardi Thompson (Client Representative)

In addition small Working Groups continue to work in each of the specialty areas and have been responsible for analysis of data in their specialty as well as the production of manuscripts for publication in this report and in the international literature.

Graeme Russ
Chair ANZDATA Executive



EDITORS' COMMENTS

This report sees the continuation of the evolutionary changes in the report of the last few years. The appendices continue to grow, with an increasing amount of tabular material which we hope will be of interest. There are no extra “chapters” this year; rather the new material has been incorporated into the individual chapters. This includes examination of the trends in mortality over time, use of erythropoietic agents, calcium and phosphate data, trends in BMI, and material from the peritonitis registry. Important changes have also occurred in the cancer chapter, with substantially altered methodology and reference ranges.

PRIVACY

In December 2001 changes to the Commonwealth Privacy Act were introduced which have led to changes to the collection of personal information. Essentially these extend to the private sector a number of changes based around 10 “National Privacy Principles” (NPP’s). A detailed exposition of these can be found at the Privacy Commissioner’s website (www.privacy.gov.au). Briefly, however, health information is treated as “sensitive” information, which must usually be collected and handled with consent of the person, unless certain conditions are met.

Each Australian State has also enacted similar provisions which cover practice and patients in public hospitals.

COLLECTION OF DATA

ANZDATA spent some time during 2002 formulating an appropriate response to these issues including seeking advice from a variety of sources. The approach taken has been that of a “opt-out” consent, whereby patients are distributed information outlining the nature and purpose of the information collected, offered an opportunity to view that data and ask questions, and the opportunity to request withdrawal of part or all of their data. This approach is explicitly suggested for Registries by the Privacy Commissioner in his “Guidelines for the Health Sector”. To this end ANZDATA has circulated to all participating hospitals a patient information sheet, for each hospital to use (or a locally modified version if appropriate) to inform patients.

At the time of data collection each unit is asked to certify that they have complied with measures under the relevant privacy act.

USE OF DATA

ANZDATA does not release data identifiable by patient name. Results are published/released in tabular or graphic format. On occasion, when data identifying particular hospitals is involved, consent from the Director of the relevant renal unit is sought prior to the release of information.



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(04 09 02)

Important Privacy Information

As part of routine medical care of people receiving treatment with dialysis or kidney transplantation, your kidney specialist collects certain information about the patients they treat. All kidney specialists throughout Australia and New Zealand report this information every 6 months to the Australia and New Zealand Dialysis and Transplant Registry (ANZDATA). ANZDATA collects the information for the purpose of monitoring treatments and performing analyses to improve quality of care for people with kidney failure.

1. What is ANZDATA ?

ANZDATA is an organization set up by the Australian Kidney Foundation and the Australia and New Zealand Society of Nephrology to monitor dialysis and transplant treatments. ANZDATA is funded by the Australian and New Zealand Governments and the Australian Kidney Foundation.

2. What information is collected about you ?

This information includes your name, age, gender, racial origin, hospital of treatment, some aspects of your medical condition (such as whether you have diabetes) and details about the type of kidney treatment you are receiving (dialysis or transplant).

We **DO NOT** collect details about your address, telephone number, medical insurance, or non-medical matters such as occupation, income, etc

3. Is personal data ever released ?

The identity of people in the database **IS NOT released publicly nor in any reports**. Measures have been put into place to ensure the security of all collected information.

4. What is this information used for ?

The information is used primarily for quality assurance, investigating patterns of kidney disease, and planning appropriate health services. We release reports on a variety of topics, including an Annual Report examining the rates and treatment of kidney failure in Australia and New Zealand. We also have a major role in ensuring the quality of patient care by sending to each kidney unit each year a report outlining their activity. These reports also compare the outcome of the treatment they provide with that of other units throughout the two countries. Reports are also produced at a state and national level, and from time to time analyses are also produced for renal units, government health departments and industry concentrating on particular aspects of renal failure management eg peritoneal dialysis, transplantation, haemodialysis.

5. Can you see what personal information ANZDATA collects and the reports that it produces ?

Individuals are able to view their own information on request. You can request alterations if you believe it is inaccurate. You may also opt not to have your treatment included in this database, and you should let your kidney specialist know if this is the case. You can also choose not to have some information (e.g. racial origin) recorded. However, if your information is not included in the Registry, the ability to compare results in Australia and New Zealand or to analyse the results of different treatment methods and for different patient types (eg diabetics) will be compromised.

The national reports and much other material produced by ANZDATA are available free on the Internet at www.anzdata.org.au, or they can be sent to you on request to the address above. Your kidney specialist will also have copies of many of the reports.

If you wish to discuss any of the issues raised here, please let your doctor know or telephone the ANZDATA Registry direct on 08 8222 6704. You may also write to us (ANZDATA Registry, C/- The Queen Elizabeth Hospital, 28 Woodville Road SA 5011) or send us an e-mail (anzdata@anzdata.org.au).



GUIDELINES FOR DATA RELEASE

The policy for release of data to investigators, renal units and others was revised during 2002 and is summarised on the Website.

ANZDATA encourages the analysis, use and citation of its data, and receives many data requests annually which vary in size and complexity. At times these overwhelm the limited resources within the Registry, and must be prioritised. Generally, formal requests for data are preceded by a period of consultation with a member of the Registry staff. Requests are welcome from Renal Physicians, other staff members of Renal Units, Charitable Bodies, Academic Institutions, Government Departments and Industry. Requests dealing with identifiable Hospital data will only be fulfilled with the explicit consent of the Heads of the relevant Hospital Units.

ATTRIBUTION OF PUBLICATIONS

The policy on attribution of publications which incorporate ANZDATA sourced data was revised during 2002, following a period of consultation with participating physicians.

Where a member of a participating unit has analysed data provided by ANZDATA and subsequently prepared a manuscript, then “ANZDATA Registry” should be acknowledged as a secondary institution in addition to the author’s Hospital or University. This applies whether the primary data analysis is performed by the author or by ANZDATA staff. Where the author is an ANZDATA office holder or staff member then the primary attribution should be “ANZDATA Registry”.

Where ANZDATA data is only a minor portion of the work, then it may be more appropriate to acknowledge the source explicitly in the “Acknowledgements” section.

In both cases the disclaimer on page ii of this report should be included.

In all cases the source and treatment of the data should be made clear in the “Methods” section. Preferably the abstract (and keywords if applicable) should also include “ANZDATA” which would allow for searching Registry publications.



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These definitions apply throughout this report unless otherwise stated.

1. Wording

Throughout this report ‘treatment’ refers to renal replacement therapy, including haemodialysis, peritoneal dialysis and transplantation

HD = haemodialysis

CAPD = continuous ambulatory peritoneal dialysis

APD = automated peritoneal dialysis

ESRD = end stage renal disease

2. Data collection

ANZDATA collects information from all renal units in Australia and New Zealand every 6 months. Currently this is by a paper-based system, with manual completion of the form and manual data entry. No formal audit mechanism is in place at this stage.

For transplants, HLA matching and panel reactive antibodies are obtained direct from the Tissue Typing laboratories in each State.

3. Inclusion criteria

Included in the Registry are all patients receiving renal replacement therapy where the intention to treat is long-term, i.e. medical opinion is that renal function will not recover. Cases of acute renal failure are excluded. People who move overseas permanently are censored at date of last treatment (or departure in the case of transplant recipients).

4. Modality attribution

The initial mode of dialysis is determined at 90 days after first treatment, to allow for early changes and maturation of access. Other transfers (between modalities, or from satellite to hospital HD etc.) are not analysed if less than 30 days, except for transfers between dialysis centres to which a 60 day rule is applied to allow for holiday movements.

5. Underlying renal disease

This is recorded by the treating hospital according to a modified EDTA coding system (details on back of survey form).

6. Deaths

Deaths are coded by the treating hospital using a modified EDTA coding system (details on back of survey form). Where a recent change in location or modality preceded death by <30 days, the death is attributed to the modality / location at time of death, although some analyses differ and this is stated for those analyses. All deaths following transplant surgery are attributed to transplantation.

7. Co-morbid conditions

These are recorded by the treating hospital. No definitions are supplied; the treating clinician is asked to record whether the patient has coronary artery disease, chronic lung disease, cerebrovascular disease, peripheral vascular disease or diabetes according to their clinical opinion on a yes / suspected / no basis.

8. Transplant Waiting List

The active transplant waiting list includes listing at any stage during the survey period.

9. Derived measures

9.1 Haemoglobin

Haemoglobin is recorded as the last available measurement before the end of the survey period.

9.2 Erythropoietic agents

Erythropoietin agent use is recorded as “yes” if these agents were used at any time during the survey period.

9.3 Iron Studies

Iron studies are requested within the last three months of the survey period.

9.4 Estimated creatinine clearance

Where creatinine clearance is estimated from serum creatinine at entry or post transplantation, the Cockcroft-Gault equation is used [1].

$$Cl_{Cr} = (140 - \text{age}) * \text{weight} / (814 * Cr_{\text{serum}}) [*0.85 \text{ if female}]$$

The weight term used for this is lean body mass, calculated using the equation $LBW = (0.9 * [\text{height} - 152]) + (50 \text{ if male, } 45.5 \text{ if female})$ [2].

9.5 Urea reduction ratio / Kt/V

Results are requested in one of these formats, using the stop flow method on a mid-week dialysis. Single pool Kt/V is collected, along with the method used.

For conversion of URR to Kt/V urea the formula used [3] is

$$Kt/V = 0.023 * PRU - 0.284 \text{ (note that PRU = percent reduction in urea and not URR).}$$

9.6 Body Mass Index

Body mass index (BMI) is calculated as $\frac{\text{weight (kg)}}{(\text{height (m)})^2}$

The standard NH&MRC categories are used:

underweight	<20 kg/m ²	normal	20-24.9 kg/m ²
overweight	25-29.9 kg/m ²	obese	> 30 kg/m ²

9.7 Peritoneal Dialysis measures

These are the standard measures, often calculated by computerised patient management programs.

9.7.1 Residual renal function

The measure used is the arithmetic mean of urea and creatinine clearance from a 24-hour urine collection and serum creatinine & urea.

9.7.2 Peritoneal equilibration test

The ratio of dialysate to plasma glucose is used, following a 4 hour dwell of a 2 litre 2.5% bag of dialysate, performed within 6 months after initiation of PD.

10. Rates & Measures
10.1 Incidence rates

Except where otherwise stated, quoted incidence rates are per calendar year, and are expressed per million population.

10.2 Prevalence rates

Except where otherwise specified, prevalence rates are point prevalence rates at 31 December 2002.

10.3 Population denominator

The population estimates used are the estimated resident populations (ERP) for the year 2002, released by the Australian Bureau of Statistics and Statistics New Zealand. Figures used are those for the June quarter.

For both countries, the statistics bureaux record indigenous status on a self-identification basis.

For Australia, there has been considerable change in the propensity to self-identify as indigenous, such that a number of estimates are released by the ABS [4]. For this report, the low range projections have been used.

10.4 Survival rates

For transplant recipients, survival rates exclude those who were transplanted overseas or were recipients of multiple organ grafts.

Graft survival (unless otherwise qualified) includes both cessation of graft function (i.e. return to dialysis) and patient death.

Patient survival for transplant recipients - rates for fixed periods are calculated according to the life-table method and include an adjustment to the risk-set of ½ of those censored without failure over the interval to create an “average” risk set.

Patient and technique survivals for Haemodialysis and Peritoneal Dialysis are based on the dialysis modality at 90 days after first treatment for patients not grafted during that period. Patients are followed up until they are either grafted (at which point they are censored) or until they have a ‘permanent’ change of dialysis modality or until death or most recent follow up date. A ‘permanent’ change of dialysis is defined as any change in excess of 30 days.

10.5 Death and other event rates

Rates are expressed per 100 person years at risk (unless otherwise stated).

Come analyses include survival of all patients, others exclude the first 90 days of followup. This is stated in the individual analyses.

10.6 Age standardisation

All rates are crude, not age-standardised. The age distribution of the populations for Australia and New Zealand are given in Appendix I.

11. Database

Data is stored on a relational database using ORACLE version 8I.

12. Statistics

Statistical analyses were performed using SPSS release version 10.0.7 and Stata version 8.2.

13. References

1. Cockcroft DW, Gault MH: Prediction of creatinine clearance from serum creatinine. *Nephron* 1976; 16:31-41.
2. Zasadny KR, Wahl RL: Standardized uptake values of normal tissues at PET with 2-[fluorine-18]-fluoro-2-deoxy-D-glucose: variation with body weight and method for correction. *Radiology* 1993; 189:847-850.
3. Basile C, Casino F, Lopez T: Percent reduction in blood urea concentration during dialysis estimates Kt/V in a simple and accurate way. *Am J Kidney Dis* 1990; 15:40-45.
4. Australian Bureau of Statistics: Experimental estimates of the Aboriginal and Torres Strait Islander Population, Australia, 1998. Canberra, ABS Cat.No. 3230.0, 1998.



AUST. & N.Z. DIALYSIS AND TRANSPLANT SURVEY
THIS SECTION FOR ALL PATIENTS

REGISTRY NUMBER 1 INITIAL HOSPITAL Hospital/State Hosp. Unit No. Hospital/State Hosp. Unit No. **CURRENT PARENT HOSPITAL** Hospital/State Hosp. Unit No. Hospital/State Hosp. Unit No.

2 Surnames Given Names

3 DATE OF BIRTH 4 SEX

5 RACIAL ORIGIN (Record from list) **6** PRIMARY RENAL DISEASE (Record from list) **7** BIOPSY 8 SE. CREATININE **9** COUNTRY OF BIRTH (If Australia or NZ - Tick box) **10** POSTCODE AT ENTRY **11** CO-MORBID CONDITIONS AT ENTRY

12 CENTRE OF TREATMENT Enter geographical location at Death or End of survey

13 ON TRANSPLANT WAITING LIST (Dialysis Patients Only)

14 HEPATITIS C ANTIBODY

15 COURSE OF TREATMENT - COMPLETE ACCORDING TO CODE

16 CANCER EVERY Y/N

17 CAUSE OF DEATH (Record from list)

18 WAS GRAFT SUSTAINING LIFE?

19 PARENTHOOD

20 TYPE OF DIALYSIS

21 DRY WEIGHT AT LAST DIALYSIS

22 UNCORRECTED CALCIUM

23 PHOSPHATE

24 HAEMOGLOBIN

25 EPO AGENT

26 FERRITIN

27 % SATURATION IRON (Transferrin Saturation)

28 DIALYSER BRAND (Write In)

29 BLOOD FLOW RATE

30 SESSIONS PER WEEK

31 HOURS PER SESSION

32 UREA REDUCTION OR KUV

33 ACCESS IN USE (Functioning only)

34 PET TEST (Once only)

35 CONNECTION SYSTEM

36 PERTONITIS

37 NUMBER OF EPISODES OF PERTONITIS

38 TOTAL VOLUME OF WEEKLY EXCHANGES

39 DIALYSATE CREATININE CLEARANCE

40 DIALYSATE WEEKLY KtV

41 RESIDUAL CREATININE CLEARANCE

42 REASON FOR TRANSFER FROM CAPD / APD

43 GRAFT NUMBER

44 DATE OF THIS TRANSPLANT

45 REFERRING HOSPITAL

46 DONOR HOSPITAL

47 TRANSPLANT HOSPITAL

48 RECIPIENT ANTIBODY STATUS AT GRAFT

49 NUMBER REJECTION EPISODES THIS SURVEY

50 DONOR DETAILS

51 TOTAL ISCHAEMIA IN GRAFT

52 IMMEDIATE FUNCTION

53 DISEASE IN GRAFT

54 DATE FIRST PROVEN

55 CAUSE OF GRAFT FAILURE

56 MONOCLONAL / POLYCLONAL THERAPY (Record from list)

57 TOTAL DAILY DRUG DOSE (mg)

58 CYA SPARING DRUG

59 BODY WEIGHT (kg)

60 SERUM CREATININE

61 HLA TYPING

62 PRA AND CROSSMATCH

1 Graft function (Temporary/Permanent)

2 DATE OF DEATH

3 CAUSE OF DEATH

4 SEX

5 AGE

6 IMMEDIATE FUNCTION

7 DISEASE IN GRAFT

8 DATE FIRST PROVEN

9 CAUSE OF GRAFT FAILURE

10 MONOCLONAL / POLYCLONAL THERAPY

11 TOTAL DAILY DRUG DOSE

12 CYA SPARING DRUG

13 BODY WEIGHT

14 SERUM CREATININE

15 HLA TYPING

16 PRA AND CROSSMATCH

17 CANCER EVERY Y/N

18 WAS GRAFT SUSTAINING LIFE?

19 PARENTHOOD

20 TYPE OF DIALYSIS

21 DRY WEIGHT AT LAST DIALYSIS

22 UNCORRECTED CALCIUM

23 PHOSPHATE

24 HAEMOGLOBIN

25 EPO AGENT

26 FERRITIN

27 % SATURATION IRON

28 DIALYSER BRAND

29 BLOOD FLOW RATE

30 SESSIONS PER WEEK

31 HOURS PER SESSION

32 UREA REDUCTION OR KUV

33 ACCESS IN USE

34 PET TEST

35 CONNECTION SYSTEM

36 PERTONITIS

37 NUMBER OF EPISODES OF PERTONITIS

38 TOTAL VOLUME OF WEEKLY EXCHANGES

39 DIALYSATE CREATININE CLEARANCE

40 DIALYSATE WEEKLY KtV

41 RESIDUAL CREATININE CLEARANCE

42 REASON FOR TRANSFER FROM CAPD / APD

43 GRAFT NUMBER

44 DATE OF THIS TRANSPLANT

45 REFERRING HOSPITAL

46 DONOR HOSPITAL

47 TRANSPLANT HOSPITAL

48 RECIPIENT ANTIBODY STATUS AT GRAFT

49 NUMBER REJECTION EPISODES THIS SURVEY

50 DONOR DETAILS

51 TOTAL ISCHAEMIA IN GRAFT

52 IMMEDIATE FUNCTION

53 DISEASE IN GRAFT

54 DATE FIRST PROVEN

55 CAUSE OF GRAFT FAILURE

56 MONOCLONAL / POLYCLONAL THERAPY

57 TOTAL DAILY DRUG DOSE

58 CYA SPARING DRUG

59 BODY WEIGHT

60 SERUM CREATININE

61 HLA TYPING

62 PRA AND CROSSMATCH

**QUEENSLAND**

Allamanda Private Hospital
 Bundaberg Base Hospital
 Cairns Base Hospital
 Caloundra Private Hospital
 Goldcoast Hospital
 Greenslopes Private Hospital (Baxter)
 Hervey Bay Hospital
 John Flynn Hospital
 Mackay Base Hospital
 Nambour Hospital
 Pine Rivers Private Hospital
 Princess Alexandra Hospital
 Rockhampton Base Hospital
 Royal Brisbane Hospital
 St. Andrew's Private Hospital (Gambro)
 Toowoomba Hospital
 Townsville General Hospital
 Wesley Private Hospital

NEW SOUTH WALES

Children's Hospital at Westmead
 Dubbo Base Hospital
 East Coast Renal Service
 Prince of Wales Hospital
 Sydney Children's Hospital
 St. George Hospital
 St. Vincent's Hospital
 Wollongong Hospital
 Gosford Hospital
 John Hunter Hospital
 Lismore Hospital
 Mater Misericordiae Hospital
 Port Macquarie Community Dialysis Centre
 Port Macquarie Private Hospital
 Royal North Shore Hospital
 South West Sydney Renal Service
 Bankstown Hospital
 Liverpool Hospital
 Statewide Renal Services
 Concord Hospital
 Royal Prince Alfred Hospital
 Sydney Adventist Hospital
 Tamworth Hospital
 Western Renal Network
 Westmead Hospital
 Orange Base Hospital
 Wentworth Hospital

AUSTRALIAN CAPITAL TERRITORY (ACT)

The Canberra Hospital

VICTORIA

Alfred Hospital
 Austin and Repatriation Medical Centre
 Epworth Hospital
 Forest Hill Dialysis Centre (Nephrocare)
 Geelong Hospital
 Kew Private Dialysis Centre (Baxter)
 Monash Medical Centre – Adult
 Monash Medical Centre – Paediatric
 Royal Children's Hospital
 North West Dialysis Service
 Royal Melbourne Hospital
 St. Vincent's Hospital

TASMANIA

Launceston General Hospital
 Royal Hobart Hospital

SOUTH AUSTRALIA

Flinders Medical Centre
 The Queen Elizabeth Hospital
 Royal Adelaide Hospital
 Women's and Children's Hospital

NORTHERN TERRITORY

Royal Darwin Hospital
 Alice Springs Hospital

WESTERN AUSTRALIA

Fremantle Hospital
 Hollywood Private Hospital
 Princess Margaret Hospital for Children
 Royal Perth Hospital
 Sir Charles Gairdner Hospital
 St. John of God Private Hospital

NEW ZEALAND

Auckland City Hospital
 Starship Children's Hospital
 Christchurch Hospital
 Dunedin Hospital
 Middlemore Hospital
 Palmerston North Hospital
 Taranaki Base Hospital
 Waikato Hospital
 Wellington Hospital
 Whangarei Area Hospital

**QUEENSLAND**

Princess Alexandra Hospital (Adult & Paediatric)
Director of Transplantation - Dr David Nicol
Ipswich Road
Woolloongabba 4102

NEW SOUTH WALES

John Hunter Hospital
Director of Transplantation - Professor Adrian Hibberd
Lookout Road
New Lambton Heights
Newcastle 2304

Prince of Wales Hospital (Adult & Paediatric)
Director - Professor John Charlesworth
Barker Street
Randwick 2031

Royal North Shore Hospital
Director - Dr Lloyd Ibels
Pacific Highway
St Leonards 2065

Royal Prince Alfred Hospital
Director - Associate Professor Josette Eris
Missenden Road
Camperdown 2050

St George Hospital
Director of Transplantation - Professor John Kelly
Montgomery Street
Kogarah 2217

St. Vincent's Hospital
Director - Dr Tim Furlong
Victoria Street
Darlinghurst 2010

The New Children's Hospital at Westmead
Director - Dr Elisabeth Hodson
Cnr Hawkesbury and Hainsworth Street
Westmead 2145

Westmead Hospital
Director - Professor Jeremy Chapman
Cnr Hawkesbury and Darcy Road
Westmead 2145

VICTORIA

Alfred Hospital
Director - Professor Napier Thomson
Commercial Road
Prahran 3181

Austin & Repatriation Medical Centre
Director - Dr David Power
Burgundy Road
Heidelberg 3084

Monash Medical Centre Paediatric
Director - Dr Amanda Walker
246 Clayton Road
Clayton 3165

Monash Medical Centre Adult
Director - Professor Robert Atkins
246 Clayton Road
Clayton 3165

VICTORIA cont

Royal Children's Hospital
Director - Dr Colin Jones
Flemington Road
Parkville 3052

Royal Melbourne Hospital
Director - Professor Gavin Becker
Parkville 3052

St. Vincent's Hospital
Director - Dr Brendan Murphy
41 Victoria Parade
Fitzroy 3065

SOUTH AUSTRALIA

The Queen Elizabeth Hospital
Director - Professor Graeme Russ
28 Woodville Road
Woodville 5011

Women's and Children's Hospital
Director - Dr Paul Henning
72 King William Road
North Adelaide 5006

WESTERN AUSTRALIA

Princess Margaret Hospital for Children
Director - Dr Ian Hewitt
Roberts Road
Subiaco 6008

Royal Perth Hospital
Director - Dr Ashley Irish
Wellington Street
Perth 6001

Sir Charles Gairdner Hospital
Director - Dr Brian Hutchison
Verdun Street
Nedlands 6009

NEW ZEALAND

Auckland City Hospital
Director - Dr John Collins
Park Road
Grafton, Auckland

Christchurch Hospital
Director - Dr Richard Robson
Riddiford Avenue
Christchurch

Starship Children's Hospital
Director - Dr William Wong
Park Road
Grafton, Auckland

Wellington Hospital
Director - Dr Grant Pidgeon
Riddiford Street
Newtown, Wellington South



QUEENSLAND

Atherton Satellite - Cairns Base Hospital
 Cairns Private Hospital Satellite - Cairns Base Hospital
 Home Hill Satellite - Townsville General Hospital
 Innisfail Hospital - Cairns Base Hospital
 Ipswich Satellite - Princess Alexandra Hospital
 Logan Satellite - Princess Alexandra Hospital
 Mt Isa Satellite - Townsville General Hospital
 Noosa Satellite - Nambour Hospital
 Palm Island Satellite - Townsville General Hospital
 Redcliffe Satellite - Royal Brisbane Hospital
 Robina Satellite - Goldcoast Hospital
 Vincent Satellite - Townsville General Hospital

NEW SOUTH WALES

Ballina Satellite - Lismore Hospital
 Bankstown Hospital - South West Sydney Renal Service
 Bathurst Hospital - Orange Hospital
 Blacktown Satellite - Westmead Hospital
 Brewarrina Hospital
 Campbelltown Satellite - South West Sydney Renal Serviced
 Coffs Harbour Base Hospital
 Coonamble Hospital
 Dame Eadith Walker - Statewide Renal Services
 Dubbo Base Hospital
 Eora Cottage - Prince of Wales Hospital
 Grafton Hospital - Lismore Hospital
 Lakehaven Satellite - Gosford Hospital
 Lanceley Cottage - Royal North Shore Hospital
 Lindfield Private Dialysis (Gambro)
 Liverpool Community Centre - South West Sydney Renal Service
 Maitland Hospital - John Hunter Hospital
 Muswellbrook - John Hunter Hospital
 Nita Reed House (Taree) - John Hunter Hospital
 Norfolk Island Hospital - Statewide Renal Services
 Orange Base Hospital - Westmead Hospital
 Port Macquarie Community Dialysis Centre
 Port Macquarie Private Hospital
 Shellharbour - Wollongong Hospital
 Shoalhaven Satellite (Nowra) - Wollongong Hospital
 Singleton Satellite - John Hunter Hospital
 Sydney Adventist Hospital
 Sydney Dialysis Centre
 Wagga Wagga Base Hospital
 Wansey Satellite - John Hunter Hospital
 Wentworth Satellite - Westmead Hospital

AUSTRALIAN CAPITAL TERRITORY (ACT)

Canberra Community Dialysis Centre

VICTORIA

Angliss Hospital
 Ararat Hospital
 Austin Training Satellite - Austin & Repatriation Hospital
 Bacchus Marsh Hospital
 Bairnsdale Hospital
 Ballarat Health Services
 Bendigo Hospital
 Berwick Hospital
 Broadmeadows Hospital
 Brunswick Satellite
 Casterton Hospital
 Caulfield Satellite
 Coburg Satellite
 Cohuna Hospital
 Colac Hospital
 Corryong Satellite
 Cranbourne Satellite
 Dandenong Satellite
 Daylesford Hospital
 Echuca Hospital
 Edenhope Hospital
 Epping Dialysis Unit
 Epworth Hospital
 Forest Hill Private Dialysis (Nephrocare)
 Frankston Satellite
 Gambro - Diamond Valley Hospital
 Geelong Hospital
 Goulburn Valley Hospital
 Hamilton Hospital
 Hastings Hospital
 Heidelberg - Austin & Repatriation Hospital
 Horsham Satellite
 Kew Private Dialysis Centre (Baxter)
 Kyneton Hospital
 La Trobe Regional Satellite

VICTORIA CONT...

Lorne Hospital
 Maryborough District Health Service
 Mildura Hospital
 Mitcham Hospital
 Moorabbin Satellite
 Myrtleford Hospital
 Nauru (overseas) - Alfred Hospital
 Nauru (overseas) - Monash Medical Centre Adult
 Newcomb Satellite
 North East Kidney Service - Austin & Repatriation Hospital
 Northern Hospital Satellite
 Omeo District Hospital
 Orbost Hospital
 Peter James Centre
 Portland Hospital
 Robinvale Hospital
 Rosebud Hospital
 Sale Hospital
 Sandringham Satellite
 Seymour Hospital
 St. Arnaud Hospital
 St. George's Hospital
 Sunshine Satellite
 Swan Hill Hospital
 Terang Satellite
 Timboon Hospital
 Wangaratta Hospital
 Warrnambool Hospital
 Werribee Mercy Hospital
 Western Gippsland Hospital
 Williamstown Satellite
 Wodonga Hospital
 Wonthaggi Hospital
 Yarawonga District Hospital
 Yarram Hospital

TASMANIA

North West Renal Unit, Burnie - Launceston Hospital

SOUTH AUSTRALIA

Berri Hospital
 Ceduna Satellite
 Hartley Private Hospital (Fresenius)
 Lyell McEwin Satellite
 Modbury Private Dialysis (Fresenius)
 Murray Bridge Hospital
 Noarlunga Satellite Centre
 Payneham Private Dialysis (Baxter)
 Port Augusta Hospital
 Port Lincoln Satellite Centre
 Wayville Satellite Centre

NORTHERN TERRITORY

Bathurst Island Hospital - Royal Darwin Hospital
 Community Health Centre - Alice Springs Hospital
 Katherine Dialysis Unit - Royal Darwin Hospital
 Nightcliff Community Centre - Royal Darwin Hospital
 Tennant Creek Hospital - Alice Springs Hospital

WESTERN AUSTRALIA

Albany Satellite
 Armadale Satellite
 Bunbury Satellite
 Geraldton Hospital
 Joondalup Satellite Unit
 Kalgoorlie Dialysis Unit
 Kimberley Dialysis Centre - Royal Perth Hospital
 Melville Satellite
 Midland Private Satellite Dialysis Centre (Baxter)
 Peel Health Campus - Mandurah
 Pilbara Dialysis Unit [Port Hedland] - Royal Perth Hospital
 Royal Perth Rehabilitation Hospital - Royal Perth Hospital

NEW ZEALAND

Bay of Islands Hospital - Whangarei Hospital
 Carrington Satellite - Auckland City Hospital
 Greenlane Hospital - Auckland City Hospital
 Manukau Satellite - Middlemore Hospital
 Middlemore Hospital
 Porirui Satellite - Wellington Hospital

During the calendar year 2003 (the period covered by this Report), the following manuscripts based on ANZDATA material appeared in peer-reviewed journals.

Polkinghorne KR, McDonald SP, Marshall MR, Atkins RC, Kerr PG.
Vascular access practice patterns in the New Zealand haemodialysis population.
Am J Kid Dis. 2003; 43:696-704.

Polkinghorne KR, McDonald SP, Atkins RC, Kerr PG.
Epidemiology of vascular access in the Australian haemodialysis population.
Kidney Int. 2003; 64:1893-1902.

Cass A, Cunningham J, Snelling P, Wang Z, Hoy W.
Urban disadvantage and delayed nephrology referral in Australia.
Health Place. 2003; 9:175-182.

Cass A, Cunningham J, Snelling P, Ayanian JZ.
Late referral to a nephrologist reduces access to renal transplantation.
Am J Kidney Dis. 2003; 42:1043-1049.

Chapman J, Russ G.
Geographic variance in access to renal transplantation in Australia.
Transplantation 2003; 76:1403-6.

Li SQ, Cass A, Cunningham J.
Cause of death in patients with end-stage renal disease: assessing concordance of death certificates with registry reports.
Aust N Z J Public Health. 2003; 27:419-424.

McDonald SP, Collins J, Johnson DW.
Obesity is associated with worse peritoneal dialysis outcomes in the Australian and New Zealand patient populations.
J Am Soc Nephrol. 2003; 14:2894-2901.

McDonald SP, Russ GR.
Current incidence, treatment patterns and outcome of end-stage renal disease among indigenous groups in Australia and New Zealand.
Nephrology. 2003; 8:42-48. *Kidney Int.* 2003; 63:s123-s127.

Stewart JH, Buccianti G, Agodoa L, et al.
Cancers of the kidney and urinary tract in patients on dialysis for end-stage renal disease: analysis of data from the United States, Europe, and Australia and New Zealand.
J Am Soc Nephrol 2003; 14:197-207.



A number of further manuscripts have been published in 2004 and are listed below.

Lim WH.

Is there a role for peritoneal dialysis in remote aboriginal patients with end-stage renal disease in Australia?

Nephrology (Carlton) 2004; 9:S126-8.

McDonald S, Collins J, Rumpsfeld M, Johnson D.

Obesity is a risk factor for peritonitis in the Australian and New Zealand peritoneal dialysis patient populations.

Perit Dial Int 2004; 24:340-346.

McDonald S.

Indigenous transplant outcomes in Australia: What the ANZDATA Registry tells us.

Nephrology (Carlton) 2004; 9 Suppl 4:S138-43.

McDonald SP, Craig JC.

Long term survival of children with end-stage renal disease.

N Engl J Med 2004; 350:2654-2662.

McDonald SP, Marshall MR, Kerr PG, Russ GR.

Erythropoietic agents, iron and hemoglobin - What happens beyond the trial setting: Observational data from the ANZDATA Registry.

Hemodialysis Int 2004; 8:257-264.

Polkinghorne KR, McDonald SP, Atkins RC, Kerr PG.

Vascular access and all-cause mortality: a propensity score analysis.

J Am Soc Nephrol 2004; 15:477-86.

Rumpsfeld M, McDonald SP, Purdie DM, Collins J, Johnson DW.

Predictors of baseline peritoneal transport status in Australian and New Zealand peritoneal dialysis patients.

Am J Kidney Dis 2004; 43:492-501.

Stewart JH, McCredie MR, McDonald SP.

Incidence of end-stage renal disease in overseas-born, compared with Australian-born, non-indigenous Australians.

Nephrology 2004; 9:247-252.

Stewart JH, McCredie MR, Williams SM, McDonald SP.

Interpreting incidence trends for treated end-stage renal disease: Implications for evaluating disease control in Australia.

Nephrology 2004; 9:238-246.

Stewart JH, McCredie MRE, McDonald SP.

The incidence of treated end-stage renal disease in New Zealand Maori and Pacific Island people and in Indigenous Australians.

Nephrol Dial Transplant 2004; 19:678-85.



SUMMARY



KEY SUMMARY POINTS FROM THE REPORT

AUSTRALIA

- There were 13,625 patients (685 per million) receiving renal replacement therapy (RRT) at 31 December 2003. Of these, 5,951 (299 per million) had a functioning kidney transplant and 7,674 (386 per million) received dialysis treatment.
- 1,953 patients commenced RRT in Australia in 2003 (98 per million). The intake varied from 262 per million population in the Northern Territory to 75 per million in Tasmania.
- The mean age at commencement was 59.3 years.
- 27% of new patients had glomerulonephritis attributed as their cause of end stage renal failure, 26% diabetic nephropathy, and 15% hypertension.
- Of patients <65 years of age and receiving dialysis treatment, 35% were on the active kidney transplantation waiting list. This proportion varied between 14% in the Northern Territory and 50% in the Australian Capital Territory. Only 7% of Aboriginal/Torres Strait Islander patients <65 years were on the transplant waiting list.
- For the first time, access in use at first dialysis, and calcium and phosphate data are reported.
- The death rate per 100 patient years was 15.0 for dialysis dependent patients (haemodialysis 14.7, peritoneal dialysis 15.9) and 2.4 for those with a functioning kidney transplant (cadaver donor 3.0, live donor 0.8).
- Of the 1,121 deaths among dialysis dependent patients in 2003, 40% were due to cardiovascular causes, 13% to infection, 22% to withdrawal from treatment and 7% from malignancy.
- Of the 139 deaths among patients with kidney transplants, 23% were due to cardiovascular causes, 30% due to malignancy and 17% to infection.
- There has been a 6% increase in the total number of dialysis dependent patients, and the number of patients increased in all States.
- The numbers of peritoneal dialysis dependent patients increased 2% from 1,785 to 1,823 in 2003.
- There were 543 kidney transplant operations performed in 2003, a transplant rate of 27 per million population.
- Of these, 40% (218 grafts) were from live donors, compared to 38% (230 grafts) in 2002. 22% of live donor operations were performed without the recipient receiving prior dialysis therapy.
- For primary cadaver grafts performed in 2002, the 12 month patient and graft survival rates were 97% and 94% respectively.
- The five year primary cadaver recipient and graft survival for operations performed in 1998 were 88% and 78% respectively.
- There were 5,951 functioning kidney transplants in Australia at 31 December 2003, a prevalence of 299 patients per million (a 4% increase over 2002).

KEY SUMMARY POINTS FROM THE REPORT

NEW ZEALAND

- There were 2,865 patients (715 per million) receiving renal replacement therapy (RRT) at 31 December 2003. Of these, 1,166 (291 per million) had a functioning kidney transplant, and 1,699 (424 per million) received dialysis treatment.
- 449 patients (112 per million) commenced RRT in 2003.
- The mean age at commencement was 56.7 years.
- Diabetic nephropathy accounted for 40% of new patients and glomerulonephritis 26%.
- Of patients <65 years of age, 25% were on the active kidney transplantation waiting list. 23% of Maoris and 13% of Pacific Islanders <65 years of age were on the transplant waiting list.
- The death rate per 100 patient years was 15.8 for dialysis dependent patients (haemodialysis 15.0, peritoneal dialysis 16.9) and 2.3 for those with a functioning kidney transplant (cadaver donor 2.4, live donor 2.0).
- Of the 263 deaths among dialysis dependent patients in 2003, 40% were due to cardiovascular causes, 11% to infection, 26% to withdrawal from treatment and 5% from malignancy.
- Of the 26 deaths among patients with a kidney transplant, 3% were due to cardiovascular causes and 38% due to malignancy.
- The number of patients who were dialysis dependent at 31 December 2003 (1,699) was an increase of 6% over the previous year. 59% of all dialysis dependent patients were receiving home dialysis. 77% of these were on peritoneal dialysis.
- The reported haemoglobin and use of erythropoietic agents have both increased over recent surveys.
- There were 111 kidney transplant operations performed in 2003, a rate of 28 per million population.
- The percentage of live donors in 2003 was 40%.
- For primary cadaver grafts performed in 2002, the 12 month patient and graft survival rates were 97% and 92% respectively.
- The five year primary cadaver recipient and graft survival for operations performed in 1998 were 82% and 73% respectively.

