

Thirty Fourth  
Annual Report



Australia &  
New Zealand Dialysis  
& Transplant Registry

2011

Edited by  
**Stephen McDonald**  
**Kylie Hurst**

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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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The ANZDATA Registry has great pleasure in presenting its 2011 annual report. This is the 34<sup>th</sup> annual report from the Registry and covers data collected until the 31<sup>st</sup> of December 2010.

The Registry acknowledges that the report is a tribute to the commitment and involvement of renal units throughout Australia and New Zealand. This commitment results in an enormous amount of time and work from staff of these units. It has ensured 100% of units in Australia and New Zealand participate and we continue to be confident that all the patients who have received chronic dialysis and transplantation treatments in Australia and New Zealand in this time period are included.

2011 has been a year of significant change in the staffing of the Registry office. After 34 years as Manager of the Registry, Lee Excell retired from that role in December 2010. We are pleased that she has continued in a part time advisory role in 2011 to assist in the transition to new management.

In May 2011, Ms Kylie Hurst was appointed as the new Manager of ANZDATA. Kylie brings to the Registry a wealth of experience in data management in her previous role at the Princess Alexandra Hospital. Her prior knowledge of and experience with ANZDATA in that role has proven to be invaluable in starting her new role.

Brian Livingston has continued as information manager in 2011 and Christina Leitch continues to provide administrative support. Bio-statistical expertise has been provided by Hannah Dent and Nancy Briggs.

Associate Professor Stephen McDonald continues in his role as Executive Officer of the Registry. His intellectual and academic leadership of the Registry has been inspirational and has maximized the dissemination of the data and its analysis both nationally and internationally.

Dr Philip Clayton continues as Amgen Fellow in Epidemiology. Since his appointment to this position in 2010, he has been involved in a number of research projects utilizing the database and has published and presented the results nationally and internationally. He has demonstrated excellent analytical skills and scientific rigor. We are greatly indebted to Amgen who continue to make a commitment to the funding of this position which has proven to be a major stimulus for the academic output of the Registry. Dr Blair Grace has also been active in analysis of the ANZDATA database as part of a collaborative NH&MRC funded project, supervised by A/ Prof McDonald.

The ANZDATA Registry Steering Committee has once again been chaired by Professor Steven Chadban. We thank Steven for his inspired leadership and his ongoing interest in the Registry and its operations and output. Once again involvement of many individuals who have been members of the ANZDATA registry committees and working groups is gratefully acknowledged. The members of these groups are listed on page vii of this report.

Major funding for the Registry has been provided from the Australian Commonwealth Department of Health and Ageing through the Australian Organ and Tissue Donation and Transplant Authority, Kidney Health Australia and the New Zealand Ministry of Health.

We are also grateful to industry for support. In 2011, non-tied grants have been received from Baxter, Genzyme, Novartis and Roche.

**Graeme Russ**

Chair ANZDATA Executive

December 2011

## ANZDATA REGISTRY EXECUTIVE COMMITTEE

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A/Professor Stephen McDonald—Executive Officer  
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## 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](http://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. Patients are entitled to view the information the Registry holds about them, and request alterations if the data is thought to be inaccurate.

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

ANZDATA does not release data identifiable by patient name. Results are published/released in tabular or graphic format only. Requests for data are met using deidentified data only. 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.

## 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 (see opposite), 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 measures.

Tissue Typing Data and Transplant Waiting List data are collected in each Tissue Typing Laboratory and entered into the National Organ Matching System database. These data are transmitted to ANZDATA for inclusion in the ANZDATA database and for this Report.



# ANZDATA REGISTRY

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## 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 twelve 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 Kidney Health Australia 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 Kidney Health Australia.

### 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 e.g. 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 (eg 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](http://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 0949. You may also write to us (ANZDATA Registry, C/- Royal Adelaide Hospital, DX800, Mail Point 117, North Terrace, Adelaide, SA. 5000) or send us an e-mail ([anzdata@anzdata.org.au](mailto: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 (ie data which identifies outcomes of an individual hospital) will only be fulfilled with the explicit consent of the Heads of the relevant Hospital Units. Individual patient identified data (names) is not released.

## 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.

## CONTRIBUTING AUTHORS

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A number of definitions given below are used throughout this report unless otherwise stated.

## 1. Wording

Throughout this report 'treatment' refers to renal replacement therapy, including haemodialysis, peritoneal dialysis and transplantation. In places the word "graft" (or "allograft") is used for kidney transplant.

HD = haemodialysis    CAPD = continuous ambulatory peritoneal dialysis    APD = automated peritoneal dialysis  
ESKD = end stage kidney disease

## 2. Data collection

ANZDATA collects information from all renal units in Australia and New Zealand. Data collection occurs at two time points. Key events (new patients, deaths, transplants) are notified as they occur, with units requested to send this at least monthly. This can occur either via a web-based interface or paper submission. An extensive cross-sectional survey is then performed twelve monthly (for data to 31st December). 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 kidney transplants, HLA matching and panel reactive antibodies are obtained direct from the Tissue Typing laboratories in each State.

Monthly summaries are distributed to the contributing units. Results contained in this (and other reports) are based on a final database locked and prepared after the end of year survey returns are received.

## 3. Inclusion criteria

Included in the Registry are all patients resident in Australia or New Zealand receiving renal replacement therapy where the intention to treat is long-term, ie 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 haemodialysis 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

Death rate is predominantly reported as number of patients died/total number of years of treatment of all patients treated at any time during the year. It is expressed as deaths per 100 patient years (pt yrs) at risk.

## 7. Comorbid conditions

These are recorded by the treating hospital. No formal 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 is based on data from the National Organ Matching Scheme (Australia) and New Zealand Kidney Allocation Scheme, ARCBS Tissue Typing Laboratories, cross-checked with ANZDATA. Waiting list analyses are for patients' status at 31st December 2010.

## 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<sup>[1]</sup>

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

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

### 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<sup>[3]</sup> 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 categories used are : underweight <20 kg/m<sup>2</sup> , normal 20-24.9 kg/m<sup>2</sup>, overweight 25-29.9 kg/m<sup>2</sup> obese >=30 kg/m<sup>2</sup>

### 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 and 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 peritoneal dialysis.

## 10. Rates and 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<sup>st</sup> December 2010.

### 10.3 Population denominator

All populations used in this report were stratified by age and sex, except for the South Eastern Region of NSW, where sex-specific data was not readily available.

Australian populations were taken from the Australian Bureau of Statistics (ABS), except for estimates for South Eastern NSW, some of which were taken from the NSW Department of Planning and Infrastructure.

All populations used were for 30 June of each year, except for total New Zealand populations, where data for 31 December were readily available, and all websites were accessed 22-24 November 2011.

Population data for each Australian state and territory came from ABS 3201.0 series <sup>(1)</sup>

Population data for Indigenous Australians were taken from ABS 3238.0 <sup>(2)</sup>, using series A (the most conservative estimates) for populations after 2006.

Populations serviced by the Greater Southern Area Health Service were estimated by the South Eastern Region of NSW. For 2006 onwards, these estimates were taken from the <sup>(3)</sup> and 2005 estimates were taken from ABS 3235.0 <sup>(4)</sup>

All New Zealand population estimates were taken from Statistics New Zealand (SNZ). Total populations were taken from <sup>(5)</sup> and Maori populations were taken from <sup>(6)</sup>

Estimates of resident Pacific People populations after were taken from <sup>(7)</sup> for years 2006 onwards. Prior to this, populations of Pacific people before 2006 were only available for years 1996, 2001 (and 2006), and we used linear interpolation to estimate populations for each age and sex group for the years 1997-200 and 2002-2005.

### 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 (ie return to dialysis) and patient death.

Rates for patient survival for fixed periods for transplantation are calculated according to the life-table method and thus include an adjustment to the risk-set of ½ of those censored without failure over the interval to create an "average" risk set.

### 10.5 Graft survival

For outcomes of kidney transplants, graft failure includes both loss of graft function (ie return to dialysis) and death of patients (with graft function). Calculations of patient survival for transplant recipients includes all subsequent modalities (i.e. deaths after graft failure are included). Patients transplanted overseas are excluded from calculations.

### 10.6 Dialysis Survival

Patient and technique survivals for haemodialysis and peritoneal dialysis are based on the dialysis modality at 90 days after first treatment for patients not transplanted during that period. Patients are followed up until they are either transplanted (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.

Peritonitis survivals are calculated from first peritoneal dialysis (ignoring all earlier treatments) to date of first peritonitis episode. If there were no episodes of peritonitis then calculation is censored at change of treatment from peritoneal dialysis to haemodialysis or transplantation. Peritoneal dialysis includes automated peritoneal and continuous ambulatory peritoneal dialysis. Excluded are patients who had peritonitis before commencing peritoneal dialysis.

### 10.8 Death and other event rates

Rates are expressed per 100 person years at risk (unless otherwise stated). Some analyses include survival of all patients, others exclude the first 90 days of followup. This is stated in the individual analyses.



### 10.9 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.

### 10.10 Peritonitis rates

Peritonitis rates are present using episodes of peritonitis reported during periods of peritoneal dialysis - episodes reported prior to commencement of peritoneal dialysis (for example between Tenckhoff catheter insertion and commencement of peritoneal dialysis) are not included in these calculations.

## 11. Database

Data is stored on a relational database using ORACLE version 9I.

## 12. Statistics

Statistical analyses were performed using STATA version 11.

## 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.
- 1) 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.
- 2) <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3201.0Jun%202010?OpenDocument>
- 3) <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3238.01991%20to%202021?OpenDocument>
- 4) [http://www.planning.nsw.gov.au/population/pdfs/nsw\\_state\\_regional\\_population\\_projections\\_2006\\_2036\\_2008release.xls](http://www.planning.nsw.gov.au/population/pdfs/nsw_state_regional_population_projections_2006_2036_2008release.xls)
- 5) [http://www.abs.gov.au/AUSSTATS/subscriber.nsf/log?penagent&32350ds0002\\_nsw\\_2005\\_2010.xls&3235.0&DataCubes&161D786354496224CA2578E10013A0BB&0&2010&04.08.2011&Latest](http://www.abs.gov.au/AUSSTATS/subscriber.nsf/log?penagent&32350ds0002_nsw_2005_2010.xls&3235.0&DataCubes&161D786354496224CA2578E10013A0BB&0&2010&04.08.2011&Latest)
- 6) <http://www.stats.govt.nz/~media/Statistics/browse-categories/population/estimates-projections/national-pop-estimates/national-pop-estimate-MYE31Dec9110FINAL.xls>
- 7) <http://www.stats.govt.nz/~media/Statistics/browse-categories/population/estimates-projections/national-pop-estimates/Maori-population-estimates-30-June-19912011.xls>
- 8) <http://wdmzpub01.stats.govt.nz/wds/TableViewer/tableView.aspx>
- 9) Australian Bureau of Statistics: Experimental Projections of the Aboriginal and Torres Strait Islander Population. Canberra, ABS Cat. No. 3101.0, 2002.



Parent hospitals are listed below. In some cases, these have combined as part of a regional network and this is also indicated. The definition of a 'parent hospital' is a pragmatic one, and refers to units which offer a full range of dialysis services (i.e. can commence patients on dialysis, have on-site nephrologist presence and can deal with patients of all degrees of complexity).

In contrast, satellite units (see Page xvii) provide haemodialysis treatments to selected patients, usually with lower staff ratios and no on-site nephrologist.

#### QUEENSLAND

Allamanda Private Hospital (Fresenius)  
 Bundaberg Base Hospital  
 Cairns Base Hospital  
 Chermiside Dialysis Unit (Fresenius)  
 Child and Adolescent Renal Service  
 Goldcoast Hospital  
 Henry Dalziel Dialysis Centre (Greenslopes) (Baxter)  
 Hervey Bay Hospital  
 John Flynn Hospital  
 Mackay Base Hospital  
 Princess Alexandra Hospital  
*Queensland Renal Transplant Service*  
 Rockhampton Base Hospital  
 Royal Brisbane Hospital  
 St Andrew's Dialysis Clinic (Diaverum)  
 Sunshine Coast Health District  
*Caloundra Private Hospital*  
*Nambour General Hospital*  
*Nambour Selangor Private Hospital*  
 The Townsville Hospital  
 Toowoomba Hospital  
 Wesley Private Hospital

#### NEW SOUTH WALES

Coffs Harbour Hospital  
 Dubbo Base Hospital  
 East Coast Renal Service  
*Prince of Wales Hospital*  
*St. George Hospital*  
*St. Vincent's Hospital*  
*Sydney Children's Hospital*  
*Wollongong Hospital*  
 Gosford Hospital  
 John Hunter Hospital  
 Lismore Hospital  
 Lismore Private Dialysis Clinic  
 Macleay Dialysis Centre - Kempsey  
 Manning Rural Referral Hospital  
 Mater Misericordiae Hospital  
 Mayo Private - Taree  
 Port Macquarie Base Hospital  
 Port Macquarie Private Hospital  
 Royal North Shore Hospital  
 South West Sydney Renal Services  
*Liverpool Hospital*  
 Statewide Renal Services  
*Concord Hospital*  
*Royal Prince Alfred Hospital*  
 Sydney Adventist Hospital  
 Tamworth Hospital  
 The Children's Hospital at Westmead  
 The Tweed Hospital  
 Western Renal Network  
*Nepean Hospital*  
*Orange Hospital*  
*Westmead Hospital*

#### AUSTRALIAN CAPITAL TERRITORY (ACT)

The Canberra Hospital

#### VICTORIA

Alfred Hospital  
 Austin Health  
 Eastern Health Integrated Renal Services  
 Epworth Hospital  
 Forest Hill Dialysis Centre (Fresenius)  
 Geelong Hospital  
 Kew Private Dialysis Centre  
 Malvern Dialysis Centre (Fresenius)  
 Monash Medical Centre – Adult  
 Monash Medical Centre – Paediatric  
 North West Dialysis Service  
 Royal Melbourne Hospital  
 Royal Children's Hospital  
 St. Vincent's Hospital  
 Western Health

#### 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

Alice Springs Hospital  
 Royal Darwin 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  
 Hawkes Bay Hospital  
 Middlemore Hospital  
 Palmerston North Hospital  
 Taranaki Base Hospital  
 Waikato Hospital  
 Wellington Hospital  
 Whangarei Area Hospital





## QUEENSLAND

Queensland Renal Transplantation Service  
Princess Alexandra Hospital (Adult and Paediatric)  
Director of Transplantation - Dr Tony Griffin  
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  
Director - Professor Bruce Pussell  
Barker Street  
Randwick 2031

Royal North Shore Hospital  
Director - Dr Bruce Cooper  
Pacific Highway  
St Leonards 2065

Statewide Renal Services (Royal Prince Alfred Hospital)  
Director of Transplantation - Professor Steven Chadban  
Missenden Road  
Camperdown 2050

Sydney Children's Hospital  
Director - Dr Andrew Rosenberg  
C/- Department of Nephrology  
Prince of Wales Hospital  
Barker Street  
Randwick 2031

The Children's Hospital at Westmead  
Director - Dr Stephen Alexander  
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 Health  
Director - Dr David Power  
Burgundy Road  
Heidelberg 3084

Monash Medical Centre (Paediatric)  
Director - Dr Amanda Walker  
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Monash Medical Centre (Adult)  
Director - Professor Peter Kerr  
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Clayton 3165

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

## VICTORIA (CONTINUED)

Royal Melbourne Hospital  
Director - Professor Gavin Becker  
Parkville 3052

St. Vincent's Hospital  
Director - Professor Robyn Langham  
41 Victoria Parade  
Fitzroy 3065

## SOUTH AUSTRALIA

Central Northern Adelaide Transplant Service (from Jan 1, 2010)

Royal Adelaide Hospital  
Director - Professor Graeme Russ  
North Terrace  
Adelaide 5000

(formerly ) - The Queen Elizabeth Hospital  
Woodville, South Australia 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  
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Royal Perth Hospital  
Director - Dr Kevin Warr  
Wellington Street  
Perth 6001

Sir Charles Gairdner Hospital  
Director - Dr Harry Moody  
Verdun Street  
Nedlands 6009

## NEW ZEALAND

Auckland City Hospital  
Director - Dr Ian Dittmer  
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Christchurch Hospital  
Director - Dr David McGregor  
Riccarton 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 Private Hospital - Cairns Base Hospital  
 Cairns Home Training Unit - Cairns Base Hospital  
 Cairns Private Hospital Satellite - Cairns Base Hospital  
 Cooktown Satellite - Cairns Base Hospital  
 East Street Self Care Dialysis Unit - Rockhampton Hospital  
 Gympie Satellite - Sunshine Coast Health District  
 Home Hill Satellite - Townsville Hospital  
 Innisfail Hospital - Cairns Base Hospital  
 Ipswich Satellite - Princess Alexandra Hospital  
 Kingaroy Satellite - Toowoomba Hospital  
 Logan Satellite - Princess Alexandra Hospital  
 Mossman Satellite - Cairns Base Hospital  
 Mt. Isa Satellite - Townsville Hospital  
 Noosa Satellite - Sunshine Coast Health District  
 North Lakes Dialysis Unit - Royal Brisbane Hospital  
 North Ward Satellite - Townsville Hospital  
 Palm Island Satellite - Townsville Hospital  
 Redcliffe Satellite - Royal Brisbane Hospital  
 Redlands Satellite - Princess Alexandra Hospital  
 St Vincent's Robina Satellite - Goldcoast Hospital

## NEW SOUTH WALES

Armidale Hospital - Tamworth Hospital  
 Auburn Satellite - Westmead Hospital  
 Ballina Hospital - Lismore Hospital  
 Bankstown Hospital - South West Sydney Renal Services  
 Bathurst Satellite Dialysis Centre - Orange Hospital  
 Bega Satellite - Statewide Renal Services  
 Blacktown Regional Dialysis - Westmead Hospital  
 Bondi Dialysis Unit (Diaverum)  
 Brewarrina Hospital  
 Broken Hill Hospital  
 Campbelltown Satellite - South West Sydney Renal Services  
 Coonamble Hospital  
 Dame Eadith Walker - Statewide Renal Services  
 Eora Satellite - Prince of Wales Hospital  
 Fairfield Satellite - South West Sydney Renal Services  
 Forbes Hospital - New South Wales  
 Gosford Satellite - Gosford Hospital  
 Goulburn Satellite (Fresenius) - Statewide Renal Services  
 Grafton Hospital - Lismore Hospital  
 Griffith Base Hospital - Statewide Renal Services  
 Invarell Satellite - Tamworth Hospital  
 Lakehaven Satellite - Gosford Hospital  
 Lanceley Cottage - Royal North Shore Hospital  
 Lindfield Dialysis Unit (Diaverum)  
 Liverpool Community Centre - South West Sydney Renal Services  
 Maitland Hospital - Hunter New England Health  
 Mona Vale Satellite - Royal North Shore Hospital  
 Moree Satellite - Tamworth Hospital  
 Moruya Satellite (Fresenius) - Statewide Renal Services  
 Muswellbrook - Hunter New England Health  
 Norfolk Island Hospital - Statewide Renal Services  
 Penrith Community Dialysis Centre - Nepean Hospital  
 Shellharbour - Wollongong Hospital  
 Shoalhaven Satellite (Nowra) - Wollongong Hospital  
 Singleton Satellite - Hunter New England Health  
 Sutherland Hospital - St George Hospital  
 Sydney Dialysis Centre - New South Wales  
 Taree Community Dialysis - Hunter New England Health  
 Wagga Wagga Base Hospital  
 Wansey Satellite - Hunter New England Health  
 Wellington Hospital - New South Wales  
 Wollongong Satellite - Wollongong Hospital - New South Wales

## AUSTRALIAN CAPITAL TERRITORY (ACT)

Canberra Community Satellite  
 Northside Dialysis Clinic (Fresenius)

## VICTORIA

Angliss Hospital  
 Ararat Hospital  
 Austin Training Satellite - Austin Health  
 Bairnsdale Regional Health  
 Ballarat Health Service  
 Bendigo Hospital  
 Box Hill Satellite - Eastern Health Integrated Renal Services  
 Broadmeadows Satellite  
 Brunswick Satellite  
 Casey Hospital - Berwick  
 Casterton Hospital  
 Caulfield General Medical Centre  
 Coburg Satellite  
 Cohuna Hospital  
 Colac Hospital  
 Craigieburn Satellite  
 Cranbourne Satellite  
 Dandenong Satellite  
 Daylesford Hospital  
 Diamond Valley Dialysis Clinic (Diaverum)  
 Donald Hospital  
 Echuca Hospital  
 Edenhope Hospital  
 Epping Dialysis Unit  
 Frankston Satellite  
 Goulburn Valley Hospital  
 Hamilton Hospital  
 Hastings Hospital  
 Heidelberg Hospital - Austin Health

## VICTORIA (CONTINUED)

Horsham Satellite  
 Kyneton Hospital  
 Latrobe Regional Satellite  
 Mansfield District Hospital  
 Maroondah Satellite  
 Maryborough Hospital  
 Melton Hospital  
 Mildura Hospital  
 Moorabbin Satellite  
 Myrtleford Hospital  
 Newcomb Satellite  
 Nhill Hospital Satellite  
 Northern Hospital Satellite - Royal Melbourne  
 North East Kidney Service - Austin Health  
 North Melbourne Dialysis Clinic (Diaverum)  
 Orbost Hospital  
 Peter James Centre  
 Portland District Health  
 Robinvale Hospital  
 Rosebud Hospital  
 Sale Hospital  
 Sandringham Satellite  
 Seymour Hospital  
 South Geelong Satellite - Geelong Hospital  
 St. George's Hospital  
 Sunshine Satellite Centre - Western Health  
 Swan Hill Hospital  
 Wangaratta Hospital  
 Warrnambool Hospital  
 Werribee Mercy Hospital  
 Western Gippsland Hospital  
 Williamstown Satellite  
 Wodonga Regional Health Service  
 Wonthaggi Hospital  
 Yarawonga District Hospital  
 Yarram Hospital

## TASMANIA

North West Renal Unit, Burnie - Launceston Hospital

## SOUTH AUSTRALIA

Berri Satellite  
 Ceduna Hospital  
 Clare Satellite  
 Hampstead Rehabilitation Satellite  
 Hartley Private Hospital (Fresenius)  
 Lyell McEwin Satellite  
 Millicent Hospital  
 Modbury Satellite (Fresenius)  
 Mount Gambier Satellite  
 Murray Bridge Hospital  
 Noarlunga Satellite  
 Payneham Satellite (Baxter)  
 Port Augusta Hospital  
 Port Lincoln Satellite Centre  
 Wayville Satellite Centre  
 Whyalla Satellite Centre

## WESTERN AUSTRALIA

Albany - John Hortin Dialysis Unit  
 Armadale Satellite  
 Bunbury Satellite  
 Busselton Satellite  
 Cannington Dialysis Clinic (Diaverum)  
 Derby Satellite  
 Geraldton Hospital  
 Joondalup Satellite  
 Kalgoorlie Dialysis Unit  
 Kimberley Dialysis Centre - Royal Perth Hospital  
 Melville Satellite  
 Midland Private Dialysis Centre (Baxter)  
 Peel Health Campus - Mandurah  
 Port Hedland Dialysis Unit (Pilbara) - Royal Perth Hospital  
 Rockingham Satellite  
 Spearwood Satellite  
 Stirling Dialysis Clinic (Diaverum)

## NEW ZEALAND

Auckland Home Training Unit  
 Bay of Islands Hospital - Whangarei Hospital  
 Carrington Satellite - Auckland City Hospital  
 Grafton Training Unit - Auckland City Hospital  
 Greenlane Hospital - Auckland City Hospital  
 Manukau Satellite - Middlemore Hospital  
 Middlemore Satellite - Middlemore Hospital  
 Nephrocare - Auckland  
 Nelson Hospital  
 Porirua Community Dialysis - Wellington Hospital  
 Rotarua Hospital - Waikato Hospital  
 Tauranga Hospital - Waikato Hospital  
 Waitakere Satellite - Auckland City Hospital



Publications in peer-reviewed journals based substantially on data from ANZDATA and released during the period of data covered by this report (2010) and during 2011 are listed below.

- 1 Clayton P, McDonald S, Chadban S. Steroids and Recurrent IgA Nephropathy After Kidney Transplantation. *Am J Transplant*. 2011; **11**: 1645-49.
- 2 Dobler CC, McDonald SP, Marks GB. Risk of Tuberculosis in Dialysis Patients: A Nationwide Cohort Study. *PLoS ONE*. 2011; **6**: e29563.
- 3 Lim WH, Boudville N, McDonald SP, Gorham G, Johnson DW, Jose M. Remote indigenous peritoneal dialysis patients have higher risk of peritonitis, technique failure, all-cause and peritonitis-related mortality. *Nephrol Dial Transplant*. 2011; **26**: 3366-72.
- 4 Lim WH, Chadban S, Campbell S, Cohn S, Russ G, McDonald S. A review of utility-based allocation strategies to maximize graft years of deceased donor kidneys. *Nephrology*. 2011; **16**: 368-76.
- 5 Lindsay RM, Suri RS, Moist LM, Garg AX, Cuerden M, Langford S, *et al*. International quotidian dialysis registry: Annual report 2010. *Hemodial Int*. 2011.
- 6 Roberts MA, Polkinghorne KR, McDonald SP, Ierino FL. Secular trends in cardiovascular mortality rates of patients receiving dialysis compared with the general population. *Am J Kidney Dis*. 2011; **58**: 64-72.
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**AUST. & NZ. DIALYSIS AND TRANSPLANT SURVEY**

**THIS SECTION FOR ALL PATIENTS**

1 REGISTRY NUMBER 1 INITIAL HOSPITAL Hospital/State Hosp. Unit No. Hospital/State Hosp. Unit No. CURRENT PARENT HOSPITAL Physician (Optional)

2 Surname 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 AT ENTRY

9 COUNTRY OF BIRTH (If Australia or NZ, Tick box) 10 POSTCODE (Nz Entry) PL postcode at End Survey

11 CO-MORBID CONDITIONS AT ENTRY

LATE REFERRAL (3 Mths) HEIGHT (cms) WEIGHT (kg) UJAHEIL : SMOKING (Please tick) (N=No) (Y=Yes)

DISEASE AT ENTRY AND DURING CURRENT SURVEY

CHRONIC LUNG DISEASE Y/N

CARDIAC DISEASE Y/N

PERIPHERAL VASCULAR DISEASE Y/N

CEREBROVASCULAR DISEASE Y/N

DIABETES (N=No) (Y=Yes) 1-Insulin dependent 2-Type 2 (non insulin requiring) 3-Type 1 (insulin requiring)

OTHER CO-MORBID CONDITIONS (Write in)

AT ENTRY LAST CURRENT

AT ENTRY PREVIOUS ENTRIES CURRENT

12 CENTRE OF TREATMENT HOSPITAL / CENTRE NAME (Write in or Tick (same)) CENTRE CODE DATE TRANSFER

ENTER (in regular block for 2009 or Death or Shock entry)

13 COURSE OF TREATMENT (COMPLETE ACCORDING TO CODE)

REASON FOR DIALYSIS MODALITY CHANGE FROM CAPD to APD / APD to CAPD / Any to HD / HD to any PD / Other Reason for Change (Please Tick) 20-Current (mainly) 21-Previous (mainly)

MO	REASON	DAY	MONTH	YEAR	REASON	DAY	MONTH	YEAR
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								

14 HEPATITIS C ANTIBODY

1-Positive 2-Indeterminate 3-Negative

15 CANCER EVER? (Y/N) (If Yes, please complete a separate form) 16 CAUSE OF DEATH (Record from list) 17 WAS GRAFT SUSTAINING LIFE? (Without dialysis at time of death) (Y=Yes) (N=No)

18 PAR ENTHESIS (Y/N) (If Yes, please complete a separate form) 19 HAS THIS PATIENT BECOME PREGNANT OR FATHERED A CHILD DURING THIS SURVEY

**THIS SECTION FOR ALL PATIENTS DIALYSED AT ANY TIME DURING THE SURVEY PERIOD**

19 TYPE OF DIALYSIS 20 DRY WEIGHT AT LAST DIALYSIS 21 UNCORRECTED CALCULUM 22 PHOSPHATE 23 HAEMOGLOBIN 24 EPO A UNIT 25 FERRITIN 26 % SATURATION IRON (Mean in last 30 days)

27 DAILY SEBRAND (Write in) 28 BLOOD FLOW RATE 29 HOURS PER WEEK 30 HOURS PER WEEK 31 UREA REDUCTION OR Kt/V VALUE

32 ACCESS IN USE (Functioning only) Enter for ALL PATIENTS ON HAEMODIALYSIS AT ANY TIME DURING THIS SURVEY PERIOD FOR FISTULAS AND SHUNTS ONLY

33 PFT TEST (once only) 34 CONNECTION SYSTEM 35 FERRITIN'S DATE OF FIRST EPOC 36 NUMBER OF EPISODES OF PERITONITIS 37 TOTAL VOLUME OF WEEKLY CHANGES (litres/week)

38 CREATININE CLEARANCE 39 WEEKLY Kt/V 40 RESIDUAL RENAL FUNCTION 41 PD SOLUTIONS : % Yes % No (Please fill in all boxes)

42 DRAFT NUMBER 43 DATE OF THIS TRANSPLANT HOSPITAL 44 REFERRING DONOR HOSPITAL 45 RECIPIENT ANTIBODY STATUS AT GRAFT 46 NUMBER OF EPISODES THIS SURVEY (Complete acute only - not for each episode) (at any time)

47 DONOR DETAILS 48 DONOR AGE 49 DONOR SEX 50 TOTAL ISCHAEMIA 51 IM MEDIATE ISCHAEMIA 52 DISEASE IN GRAFT 53 DATE FIRST PROCEN 54 CAUSE OF GRAFT FAILURE (Record from list)

55 MONODIAL / POLYDIAL THERAPY (Record from list)

56 TOTAL DAILY DRUG DOSE (mg)

DRUG	1 MTH	2 MTH	3 MTH	6 MTH	1 YR	2 YR	3 YR	4 YR	7 YR	10 YR	15 YR	20 YR	25 YR	30 YR	35 YR
CA															
ASA															
PCPD															
PCPD															
BUF															
SIBOL															
OTHER															

57 67A SPARING DRUG (If NOT GIVEN, % GIVEN leg DILTIAZEM - NETIDOMIZOLE - VERAPAMIL)

58 BODY WEIGHT (kg)

59 SERUM CREATININE (µmol/L)

60 HLA TYPING RECIPIENT DONOR

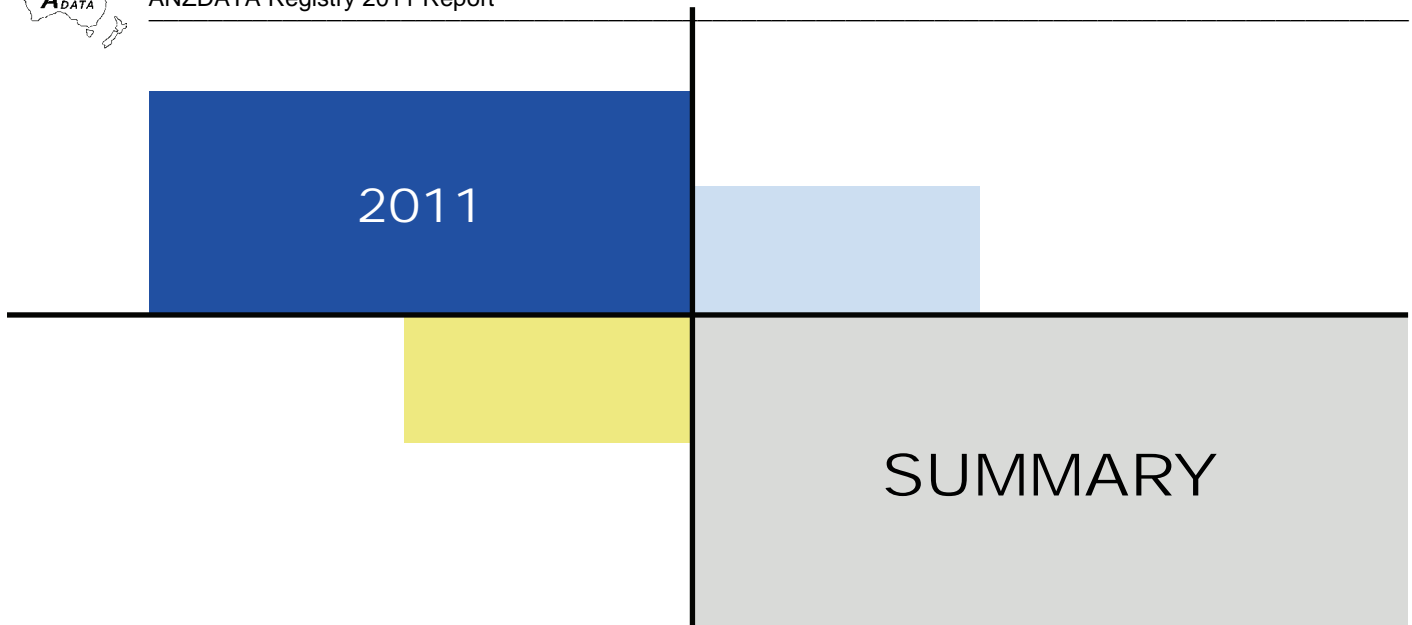
FOR OFFICE USE ONLY	A	B	DR	DQ
RECIPIENT				
DONOR				

62 PRA AND CROSSMATCH

RECIPIENT	DONOR	MAXIMUM	CURRENT







**Phil Clayton**  
**Stephen McDonald**  
**Kylie Hurst**



*Australia &  
New Zealand Dialysis  
& Transplant Registry*



## KEY SUMMARY POINTS

### AUSTRALIA

- There were 18,999 people (850 per million population) receiving renal replacement therapy (RRT) at 31<sup>st</sup> December 2010. Of these, 8,409 (376 per million) had a functioning kidney transplant and 10,590 (474 per million) were receiving dialysis treatment.
- 2,257 people commenced RRT in Australia in 2010 (101 per million per year). The incidence rate varied from 279 per million population per year in the Northern Territory to 92 per million per year in the Australian Capital Territory (ACT).
- The mean age at commencement was 60.7 years, the median 62.9 years and the age range < 1 months - 93.2 years.
- 35% of new patients had diabetic nephropathy attributed as their cause of end stage renal failure, 22% had glomerulonephritis and 14% hypertension.
- The mortality rate per 100 patient years was 13.42 for dialysis dependent patients and 1.11 for those with a functioning kidney transplant.
- Of the 1,401 deaths among dialysis dependent patients in 2010, 35% were due to withdrawal from treatment, 43% were due to cardiovascular causes, 11% to infection and 6% from malignancy.
- Of the 160 deaths among patients with kidney transplants, 32% were due to malignancy, 23% to cardiovascular causes and 23% to infection.
- There has been a 2% increase in the total number of prevalent dialysis patients from 10,425 in December 2009 to 10,590 in December 2010.
- There were 846 kidney transplant operations performed in 2010, (a transplant rate of 38 per million population). This was the highest number ever of transplants performed.
- Of these, 35% (296 grafts; 177 related and 119 non related) were from living donors, compared with 42% (327 grafts; 185 related and 142 non related) in 2009. 35% of primary live donor operations were performed without the recipient receiving prior dialysis therapy ("pre-emptive" transplants).
- For primary deceased donor grafts performed in 2009-2010, the 12 month patient and graft survival rates were 98% and 95% respectively.
- The five year primary deceased donor recipient and graft survival for operations performed in Australia and new Zealand 2005-2009 were 90% and 82% respectively.
- 
- In 2010, 1208 patients (87%) of Aboriginal/TSI ethnicity were dialysis dependent and 177 patients (13%) had a functioning transplant. There were 198 patients that commenced renal replacement therapy.
- The proportion of haemodialysis patients with a haemoglobin value >120 g/l has fallen consistently over the past three years (presumably in response to evidence about the adverse effects of higher Hgb targets in some groups).
- There has been a stabilisation in the proportion of people with serum phosphate >1.8 mmol/L over the last few years.
- Among people receiving haemodialysis as their initial treatment modality, and referred to a nephrologist more than three months prior to starting dialysis, only 51% of people had a usable permanent access (AV fistula or graft) at the time of initial haemodialysis.



## KEY SUMMARY POINTS

### NEW ZEALAND

- There were 3,793 people (868 per million) receiving renal replacement therapy (RRT) at 31<sup>st</sup> December 2010. Of these, 1,415 (324 per million) had a functioning kidney transplant, and 2,378 (544 per million) were receiving dialysis treatment.
- 503 people (115 per million per year) commenced RRT in New Zealand in 2010.
- The mean age at commencement was 58.3 years, the median age 60.3 years and the age range 9.2 months - 86.5 years.
- Diabetic nephropathy accounted for 51% of new patients, glomerulonephritis 22% and hypertension 12%.
- Of the incident diabetic patients, 113 patients (44%) were Maori, 73 patients (29%) were Pacific People, 49 patients (19%) were Caucasoid and 21 patients (8%) were of other ethnicity.
- Of patients < 60 years of age, 29% were on the active kidney transplantation waiting list at 31<sup>st</sup> December 2010. 21% of Maoris, 16% of Pacific People and 13% of Asians < 65 years of age were on the transplant waiting list.
- The mortality rate per 100 patient years was 13.68 for dialysis dependent patients and 1.36 for those with a functioning kidney transplant.
- Of the 319 deaths among dialysis dependent patients in 2010, 55% were due to cardiovascular causes, 21% to withdrawal from treatment, 17% to infection and 3% from malignancy.
- Of the 34 deaths among patients with a kidney transplant, 32% were due to malignancy, 32% to cardiovascular causes and 12% due to infection.
- The number of patients who were dialysis dependent at 31<sup>st</sup> December 2010 (2,378) was an increase of 4% (2,280 patients) the previous year. 53% of all dialysis dependent patients were receiving home dialysis, of whom 66.1% were having peritoneal dialysis.
- There were 110 kidney transplant operations performed in 2010, a rate of 25 per million population.
- The percentage of live donors in 2010 was 55% (60 grafts),
- For primary deceased donor grafts performed in 2009-2010, the 12 month patient and graft survival rates were 98% and 96% respectively.
- The five year primary deceased donor recipient and graft survival for operations performed in Australia and New Zealand 2005-2009 were 90% and 82% respectively.
- Among people receiving haemodialysis as their initial treatment modality, and referred to a nephrologist more than three months prior to starting dialysis, only 32% of people had a usable permanent access (AV fistula or graft) at the time of first treatment.