

11 RENAL SERVICES

KEY FINDINGS - WAIKATO AND NEW ZEALAND

The key findings presented below are at the national level, as the Waikato findings are consistent and comparable to the national findings. These findings are extracted from the ANZDATA Registry 2007 Report⁷⁴.

Key Findings are as follows:

- There were 3,224 people (779 per million) receiving renal replacement therapy (RRT) at 31st December 2006. Of these 1,253 (303 per million) had a functioning kidney transplant, and 1,971 (476 per million) received dialysis treatment.
- 484 people (117 per million) commenced RRT in 2006.
- The mean age at commencement was 57.0 years, the median age 58.8 years and the age range 0.4 - 89.7 years.
- Diabetic nephropathy accounted for 42% of new patients, glomerulonephritis 21% and hypertension 12%.
- Of patients < 65 years of age, 22% were on the active kidney transplantation waiting list. 22% of Maori patients and 14% of Pacific People < 65 years of age were on the transplant waiting list.
- The death rate per 100 patient years was 17.2 for dialysis dependent patients (haemodialysis 15.0, peritoneal dialysis 20.8) and 2.5 for those with a functioning kidney transplant (deceased donor 3.3, live donor 0.9).
- Of the 330 deaths among dialysis dependent patients in 2006, 39% were due to cardiovascular causes, 27% to withdrawal from treatment, 15% to infection and 6% from malignancy.
- Of the 31 deaths among patients with a kidney transplant, 48% were due to malignancy, 32% to cardiovascular causes and 13% due to infection.
- The number of patients who were dialysis dependent at 31st December 2006 (1,971) was an increase of 5% over the previous year. 54% of all dialysis dependent patients were receiving home dialysis. 70% of these were on peritoneal dialysis.
- The reported haemoglobin and use of erythropoietic agents has reached a plateau after increasing over recent surveys.
- There were 90 kidney transplant operations performed in 2006, a rate of 22 per million population.
- The percentage of live donors in 2006 was 54% (49 grafts), compared to 49% (46 grafts) in 2005.
- For primary deceased donor grafts performed in 2005-2006, the 12 month patient and graft survival rates were 96% and 90% respectively.
- The five year primary deceased donor recipient and graft survival for operations performed in 2001-2002 were 84% and 77% respectively.
- The 1,253 functioning kidney transplants at 31st December 2006, a prevalence of 303 per million represents a 1% increase from 2005.

Recommendations for Strategic Consideration

Facility planning for increased demand for renal replacement treatments: The on-going increasing demand for renal replacement treatments in a population with high co-morbidities requires a programme for development and upgrading of dialysis facilities at Waikato Hospital and satellite haemodialysis units in the community. Satellite units are needed to ensure equity of patient access to treatment and reduce the travelling time to treatments for the patients.

Unobstructed Clinical Pathway: The increasing trend in renal service in the Waikato will require the effective balancing of demands on the surgical and non-surgical resources. Often the pre-dialysis patients referred for surgical procedures remain on the elective waiting list for a considerable period of time. Leading up to a planned start of dialysis it is essential to implement well defined and co-ordinated clinical pathways that span across surgical and non-surgical resources to remove the current “bottle neck” in elective surgery. This will avoid lengthy inpatient admissions, maximising health outcomes for the patients while minimising disruption to their lives. An electronic booking system should be considered to assist the clinical team to effectively monitor the flow of patients through the pathway.

Shared Strategic Initiatives: As part of chronic care management, it is recommended that a strategic level study is undertaken to improve patient outcomes for the diagnosis and management of Chronic Kidney Disease (CKD) in people with diabetes and cardiovascular illnesses, as the incidence of these two illnesses is increasing, disproportionately affecting Maori population in addition to becoming a major public health issue. The study has to be a combined effort spanning across renal, diabetes and cardiovascular services in order to effectively identify at risk patients and commence intensive treatment of risk factors, particularly hypertension and hyperglycaemia.

Development of a Regional Renal Service Database: The development of a regional renal services database for the Waikato region is essential to hold all the renal patient information and this development could be an extension of the current Waikato Regional Diabetes Services Database (WRDS). It is recommended that strong links be developed between the proposed renal database and WRDS database in order to track and monitor co-morbid conditions and complications. In addition, the proposed database needs to have dynamic links to primary health information base in order for the health professionals to plan clinical pathways for end to end management of patient health care.

Workforce Planning: The increase in the number of renal patients requiring dialysis, the longer survival rate of dialysis patients, combined with the increase in renal transplantations mean there is an urgent need to reassess and recruit necessary skilled health professionals in the renal services area.

Targeted Programme: Waikato DHB should initiate an additional study that focuses on a target group of population for renal diseases and identifies early intervention and preventative programmes. In addition, the study needs to develop an integrated care pathway between primary and secondary health care providers.

11.1 Introduction

Renal medicine or nephrology includes the care of patients with all forms of renal diseases, with or without impairment of renal function. The Waikato DHB renal service manages conditions involving the kidneys and urinary tract. The renal service is a high cost, low volume service that is facing significant growth and demand. It is estimated end stage renal failure (ESRF) numbers could double in the next five years. This is driven by the epidemic of Type II Diabetes, particularly in Māori populations, and increased acceptance of elderly onto dialysis programmes.

Current renal patients have increasing co-morbidities, particularly cardiovascular disease, and are high users of health services. For patients already diagnosed with cardiovascular diseases and/or diabetes, frequent hospitalisation and possible organ failure are seen as inevitable. While the numbers of patients coming onto dialysis is increasing, the number of kidney transplant operations performed remains static as a proportion.

11.2 Background

During the detailed analyses and assessment of diabetes, respiratory and cardiovascular diseases among the Waikato population, it became apparent that chronic kidney disease (CKD) remains a likely cause of death and morbidity related to these conditions. CKD requires intense resource commitment, with patients requiring dialysis or kidney transplant for survival. The increase in patient survival rate from dialysis consequently increases the burden on health care.

Hence renal service in the Waikato has been identified as one of the top health priorities in the HNA 2008.

11.3 Waikato DHB Regional Renal Services

The Waikato Renal Service is contracted to provide a regional renal service to the adult population in four Midland region District Health Boards: Waikato DHB, Bay of Plenty DHB, Lakes and Tairāwhiti. Taranaki manages its own renal services independently for the Taranaki population.

Currently, the Waikato DHB's renal service provides tertiary services to a population of 812,265 (2006 Census - 2007 population estimates) covered by the Waikato, Bay of Plenty, Lakes and Tairāwhiti DHBs, excluding Taranaki.

Paediatric renal services are provided by Starship Hospital in Auckland. Waikato DHB provides transplantation patient pre-operative work, coordination of the transplant and follow-up services for Midland patients undergoing renal transplant surgery at Auckland Hospital.

Patients are managed by a multidisciplinary team consisting of clinicians, surgeons, interventional radiologists and nephrologists, nursing and allied health professionals.

A project manager has been appointed recently, to operationalise the Regional Renal Services Plan, December 2003.

11.4 Data Sources

The renal services team in the Waikato and the Midland region predominantly rely on manual gathering and collation of patient treatment modality. The current manual processing of information is ineffective, time consuming and error prone, in addition it is focused on “point of time” information, thereby restricting any in depth analyses for long term planning.

11.5 ANZDATA Registry

The primary source of data for the New Zealand renal team is the ANZDATA registry and the report.

ANZDATA is an organisation 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.

ANZDATA Registry (referenced as “Registry”) 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;
- An extensive cross sectional survey is performed annually (for data to 31st December);
- For transplants, Human Leucocyte Antigen (HLA) matching and panel reactive antibodies are obtained direct from the Tissue Typing laboratories in each State.

The information in the Registry includes the patients’ name, age, gender, racial origin, hospital of treatment, some aspects of the patient’s medical condition and the type of kidney treatment. The information does not include the address, telephone number and/or other non medical matters, such as occupation, income etc, to ensure security and confidentiality of information across both the countries.

The information from ANZDATA is used primarily for quality assurance, investigating patterns of kidney disease, and planning appropriate health services. It also enables comparative analysis of outcomes of treatment provided by various units within Australia and New Zealand.

The registry includes 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 failures are excluded. People who move overseas permanently are censored at date of last treatment (or departure in the case of transplant recipients).

Death rate is 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 death per 100 patient years at risk. Co-morbidity conditions are recorded by the treating hospital.

For the transplant waiting list, data from Tissue Typing Laboratories are cross-checked with ANZDATA.

The information presented in this section of the HNA 2008 is extracted from the ANZDATA Registry 2007 Report.

11.6 Trends in Kidney Disease over Time

Australia and New Zealand

For both Australia and New Zealand, the incidence rates increased steadily since the commencement of renal replacement therapy (RRT = dialysis and transplantation). Although this increase in numbers attributable to the changes in population, the age specific rates showed that the changes have not been constant across all age groups. Another major trend over the previous 20 years has been the rapid increase in the rates of kidney disease in Maori and in other minority population group in New Zealand.

In New Zealand, over the period since 1990, the number of people receiving RRT has increased by 6.9% (Australia by 5.9%) per year. Over the same period the proportion of people receiving RRT who had a functioning kidney transplant has steadily fallen in both countries.

Patterns of treatment have also changed over time. The treatment modality in use at 90 days is a commonly acceptable surrogate for the planned longer term method of dialysis. There is a steady trend towards haemodialysis (HD) and away from peritoneal dialysis (PD) over the past 15 years.

The success rates of kidney transplantation have been steadily improving over many years, the number of kidney transplants is a key limiting factor. The number of transplants performed from the deceased kidney donors has been static for ten years. There has been an increasing number of kidneys from living donors, particularly living unrelated donors in very recent years, however a lower proportion of people are reaching transplantation. This is not related to the ageing of the patients entering replacement therapy as it is true even for the younger age groups for whom transplantation would be the option if available.

It is a major challenge for both Australia and New Zealand to focus their financial and human resources towards the provision and funding of appropriate RRT services.

11.7 New Renal Patients - New Zealand Perspective

In New Zealand, the volume of new patients entering renal failure programs was 484, a rate of 117 per million of population, an increase of 6.9% from 2005. This was the highest ever recorded.

Table 164: Volume of new patients entering renal failure programs - 2002-2006 for New Zealand and Australia

Countries	Annual Intake of New Patients 2002 -2006				
	(Number Per Million Population)				
	2002	2003	2004	2005	2006
New Zealand	466 (188)	463 (115)	457 (113)	457 (112)	484 (117)
Australia	1892 (96)	1983 (100)	1955 (97)	2283 (112)	2378 (115)
<i>Source: ANZDATA Registry 2007 Report</i>					

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The mean age of patients entering was 57 years and the median 63.2 years⁷⁴.

The age specific rates of acceptance increased in the following three age groups:

Table 165: Age specific rate of acceptance into renal programme

Age Group	Age Specific Rates 2001-2006 (Per million population)
20-44 years	43 to 56
75-84 years	211 to 296
85+ years	88 to 100

The age specific rate among 00-19 year olds remained the same as the previous year at 13 patients per million.

There were decreases in the 45-64 age group from (236 to 228 per million) and the 65-74 age group (from 414 to 379 per million).

With regards to the acceptance of elderly new patients, in New Zealand there were decreases in the 60-64, 65-69 and 70-74 age groups. Rates of new patients aged 85+ increased from 88 per million in 2005 to 100 per million in 2006.

Diabetes nephropathy (42%) was the most common cause of End Stage Renal Disease (ESRD), followed by glomerulonephritis (21%) and hypertension (12%). Diabetes Type II (non-insulin and insulin requiring) represented 94% of diabetes nephropathy.

11.8 New Renal Patients - Waikato Perspective

In 2006, there were 84 new renal patients beginning treatment at Waikato hospital (includes patients domiciled in the Midland region, excluding Taranaki). There were 59 deaths of patients undergoing dialysis and 2 deaths of patients with transplant.

⁷⁴ ANZDATA Registry 2007 Report, New Patients Commencing Treatment in 2006, Stephen McDonald, Sean Chang, Leonie Excell. Document available from: www.Anzdata.org.au

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Table 166: Number of new renal and transplant patients in Waikato and other hospitals in New Zealand

	Patient Flow From 1-Jan-2006 to 31-Dec-2006					Total Patient Flow
	New Patients	New Transplantation		Deaths		
		Deceased Donor	Live Donor	Dialysis	Transplantation	
New Zealand	484	41	49	330	31	3577
Auckland City	118	29	24	65	3	740
Starship Children	4			1		39
Christchurch	31	8	13	18	6	370
Dunedin	18			14	1	174
Middlemore	82			55	4	604
Palmerston North	32			21	5	199
Taranaki Base	18			13	1	100
Waikato	84			59	2	563
Wellington	59	4	12	65	8	596
Whangarei	38			19	1	192

11.9 Dialysis Patient Survival - Waikato

In the Waikato, the number of patients for renal dialysis is increasing at a rate of 6% year on year. In 2006, there were 441 (196 female and 245 male) dialysis patients at 90 days from first treatment.

Note: Patient's details are entered into the ANZDATA Registry, at 90 days from first treatment, allowing for any mortality over that period.

The age breakdown of first dialysis patient shows that most dialysis occurred among 25-74 age groups.

Table 167: Age breakdown of Dialysis patients at first treatment - Waikato 2006

Age Group	Dialysis Patients	Percentage
00-14	1	0%
15-24	17	4%
25-54	150	34%
55-74	240	54%
>=75	33	7%
Total	441	100%

The survival rates of dialysis patients are increasing, especially in the 15-24 year olds (3 months into dialysis at 94% and 88% in the 4th year of dialysis). Among the 25-54 year olds the rates were 99%, at 3 months into dialysis and 59% in the 4th year of dialysis.

In around 48% (114) of the total dialysis patients (441), Type 1 and Type 2 diabetes (including Type 2 requiring insulin) was recorded as the primary renal disease, followed by glomerulonephritis (GN) at 22%.

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The ethnic proportion of dialysis showed a significantly high rate among Waikato Maori (59% in 2006), a possible explanation could be the epidemic of Type II diabetes particularly in Maori population.

Table 168: Ethnic composition of dialysis patients in Waikato - 2006

Ethnic Group	No. of Dialysis Patients	Percentage
Asian	7	2%
Caucasoid	157	36%
Maori	259	59%
Pacific People	18	4%

In the Waikato, around 63% of the dialysis patients were either current (20%) or former (43%) smokers. Around 83% (368) of total dialysis patients required treatment for hypertension.

Of the total dialysis patients, 31% (137 patients) required haemodialysis and 69% (304) required peritoneal dialysis. In New Zealand and Waikato, the Maori population is at a higher risk of dialysis than other ethnic groups.

Table 169: Number of haemodialysis and peritoneal dialysis patients in Waikato by Ethnicity - 2006

Dialysis Treatment at 90 Days - 2006	Ethnic Group	No. of Dialysis Patients	Percentage
Haemodialysis	Caucasoid	51	37%
	Māori	79	58%
	Other	2	1%
	Pacific People	5	4%
	Total	137	100%
Peritoneal Dialysis	Caucasoid	106	35%
	Māori	180	59%
	Other	5	2%
	Pacific People	13	4%
	Total	304	100%

The age proportion of dialysis shows that around 90% of the haemodialysis and peritoneal dialysis patients are in 25-54 and 55-74 years of age.

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Table 170: Number and percentage of haemodialysis patients by gender and age breakdown at first treatment - Waikato

Haemodialysis	Total	Percentage
Female	62	45%
Male	75	55%
Total	137	100%
Age at First treatment	Total	Percentage
00-14	0	0%
15-24	9	7%
25-54	61	45%
55-74	61	45%
>=75	6	4%
Total	137	100%

Table 171: Number and percentage of peritoneal dialysis patients by gender and age breakdown at first treatment - Waikato

Peritoneal dialysis	Total	Percentage
Female	134	44%
Male	170	56%
Total	304	100%
Age at First treatment	Total	Percentage
00-14	1	0%
15-24	8	3%
25-54	89	29%
55-74	179	59%
>=75	27	9%
Total	304	100%

11.10 Co-morbid Conditions - Waikato

In 2006, co-morbid conditions at entry to program were:

- Chronic lung disease
- Coronary artery disease
- Peripheral vascular disease
- Cerebro-vascular disease
- Smoking
- Diabetes

The proportion of people with Type II diabetes continues to be more common in New Zealand (39% of new patients) than in Australia (29% of new patients).

In the Waikato, among dialysis patients, diabetes is the main leading co-morbid condition at 52%, followed by coronary artery diseases at 44%.

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Table 172: Co-morbidity of dialysis patients in Waikato - 2006

Comorbidities of dialysis patients Waikato 2006					
Comorbid Condition (at first treatment)		No	Suspected	Yes	Total
Chronic Lung disease	Patients	348	19	74	441
	Percentage	79%	4%	17%	
Coronary Artery disease	Patients	274	59	108	441
	Percentage	62%	13%	24%	
Peripheral Vascular disease	Patients	349	19	73	441
	Percentage	79%	4%	17%	
Cerebro-vascular disease	Patients	394	4	43	441
	Percentage	89%	1%	10%	
Diabetes	Patients	214		227	441
	Percentage	49%	0%	51%	
Co-morbid Conditions at 2006		No	Suspected	Yes	Total
Chronic Lung disease	Patients	322	25	94	441
	Percentage	73%	6%	21%	
Coronary Artery disease	Patients	169	76	196	441
	Percentage	38%	17%	44%	
Peripheral Vascular disease	Patients	269	40	132	441
	Percentage	61%	9%	30%	
Cerebro-vascular disease	Patients	360	8	73	441
	Percentage	82%	2%	17%	
Diabetes	Patients	213		228	441
	Percentage	48%	0%	52%	

11.11 Transplant Waiting List - New Zealand

In New Zealand there were 1,971 patients dialysing at 31st December 2006, with 327 (17%) on the transplant waiting list, (compared to 13% in 2005). 81% (265) of patients on the transplant list were waiting for their first transplant (13% of all patients on dialysis).

Of the total patients, the waiting list by age breakdown was:

Table 173: Number of patients in transplant waiting list - New Zealand

Age Group	# of Patients on Waiting List For Transplant	Percentage	Total Number of Patients dialysis
<55 years	193	25%	772
<65 years	282	22%	1,294
65+ year	45	7%	677

The ethnic composition of patients <65 years old, on waiting list for transplant is:

- 22% (61) Maori patients

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- 14% (40) Pacific People
- 6% (18) Asians
- 57% Other (Caucasoid)

11.12 Transplantation - New Zealand

There were 90 transplantations performed in 2006, representing a transplant rate of 22 per million population per year (a decrease of 3% from 2005) and the lowest number since 1994.

The percentage of live donors increased from 49% to 54% of all operations in 2006. Of the grafts performed in 2006, 89% were to primary recipients (94% in 2005). The median age of transplant recipients in 2006 was 47.2 years compared to 48.7 in 2005. Recipients aged between 35 and 54 years comprised 49% of the total. Twenty nine percent of recipients were over 54 years of age in 2006.

Amongst the 15-59 year age group, the proportion of Maori and Pacific People who received a renal transplant in 2006 was 1.7% and 1.2% respectively, compared with 12.3% for Other and 6% for Asian dialysis patients.

The majority of donors were males and the racial distribution was Other (78%), Maori (9%), Pacific People (6%) and Asian (7%). Majority of the functioning grafts were in the 35-64 age group and the mean and median ages were 48.9 and 50.3 years respectively.