Counties Manukau District Health Board

Renal Health Services Plan

February 2008

1.0 Current Services

The CMDHB Renal service is well established and is one of the largest dialysis providers in New Zealand. The CMDHB Renal Service includes:

- A multidisciplinary outpatient consultation service that encompasses seeing patients referred by primary care, dialysis review patients, patients post renal transplant, pre-admit surgical patients, and a semi-acute clinic that support patients on home dialysis therapies.
- The acute and elective renal inpatient and day patient service is based on the Middlemore site in a purpose built 20-bed ward that is adjacent to the acute dialysis unit. The inpatient service supports acute admissions as well as those patients who are elective requiring surgery, radiological intervention and procedures. A consult service is also provided throughout the Middlemore Hospital.
- A pre-dialysis service is provided for those patients who are approximately 1 year away from starting dialysis. This service is provided by a multidisciplinary team who work with the patients and their families to educate them regarding their renal disease and assist them to make a decision on the most appropriate dialysis modality for managing their End Stage Renal Disease.
- A full range of dialysis modalities is provided including haemodialysis (acute, in-centre, assisted care, self care, satellite and home haemodialysis) and peritoneal dialysis - including automated peritoneal dialysis i.e. cycler machines. Currently home haemodialysis operates as a regional service but this will change from 1 July 2008 to being a local service only.
- The nephrologists prepare patients for renal transplantation, however transplant surgery is provided by Auckland District Health Board.

The Renal Service is Level 6 (NSW Health, Guide to the Role Delineation of Health Services) with key requirements for a level 6 service being:

- Medical Registrar on site 24 hours.
- Nephrology Department.
- Formal networking with renal transplantation centre.
- A nephrology registrar.
- Experienced RN on most shifts.
- Involved in teaching and research.

Service	Location	Who & Workforce	Volume Information (2006/07)	Service Linkages
Outpatients	Manukau SuperClinic Botany SuperClinic Renal Unit Western Campus Ward 1	SMO, RMO, Dietician Surgeon, Clinical Nurse Specialists Nurses attend Dialysis review clinics	New Patients 691 Follow Up Patients 4195 Follow up of Transplanted patients from 3 months after operation	Scheduling, call centre, module/unit support staff provided Laboratory and Radiology available at both Manukau & MMH Cultural Support Services ADHB staff Transplant
Inpatients Day patients	Ward 1 Middlemore Hospital (MMH)	SMO, RMO, Nurses, Social worker, Dietician, OT, Physio & Clerical	Wies 1596 per Annum	Acute admissions through EC & direct admissions to the ward Laboratory, Radiology, Pharmacy, ICU. CCU Sub specialty referral service
Predialysis	Renal Unit Western Campus MMH site	SMO,MO, Nurse Specialist, Social Worker, Dietician, OT On referral (Health	Approximately 80 patients	Various dialysis units, ADHB Transplant Service Palliative Care GP's

		Psychologist)		
Dialysis Patient Access	Middlemore Hospital & Manukau Surgery Centre	Vascular Surgeons, Radiologists, SMO,RMO, Vascular Access Nurse Specialist	Constructed AV fistula's or grafts Percentage of tunnelled lines (27%) Tenckhoff catheters for PD (40 procedures pa)	Operating theatres and supporting wards on both sites Anaesthetics ICU
Transplantation	ADHB	ADHB SMO, RMO, Nurse Specialist	Limited over the last 3 years – average 7 pa	CMDHB refers patients to ADHB for kidney transplantation
Dialysis				
Acute, Incentre, Assisted Care, Self-care Dialysis	AMC unit adjacent to the ward on the MMH site Western Campus Unit Manukau Unit based on the Superclinic site	SMO, MO, Nurses, Technicians, Social Worker, **On Referral (**OT, Die titan)	Patient FTE 250	Supplier Gambro Auckland District Kidney Society (ADKS) Laboratory Pharmacy Radiology Sub specialty referral service
Peritoneal Dialysis	Renal Unit Western Campus MMH	SMO, MO, Nurses, Technicians, Social Worker, **On Referral** OT, Die titan	Patients 110 Patients Trained pa 40	Supplier – Fresenius Auckland District Kidney Society (ADKS) Laboratory Pharmacy Radiology
Home Haemodialysis	Renal Unit Western Campus MMH & Community Houses – Mangere Unit, Pukekohe Hospital & ADKS house	SMO,MO, Nurses, Technicians, Social Worker, **On Referral** OT, Die titan	ADHB/WDHB 23 patients CMDHB 70 patients Patients Trained pa 27	This is a regional service provided for both Auckland DHB and Waitemata DHB patients by Counties. From 1 July 2008 ADHB will repatriate this service and work with WDHB on a bi lateral service configuration

SWOT Analysis – Renal Services

Strengths:	**Weaknesses:**
• Experienced Staff • Flexibility • Patient Focused • Multicultural staff • Recruitment & retention strategy in for RN & Techs well established • Strong senior nurse leadership • Haemodialysis training program • Home Haemodialysis & community houses • Full range of dialysis modalities offered • Good relations within DHB (vascular surgery, general surgery etc) • Stable SMO/MO Workforce • RMO's usually advanced trainees in renal medicine	• Communication both internal & external • Models of Care need to be further developed • Attracting trained staff • Develop more research • Ability to adapt systems and processes

Opportunities:	Threats:
• Expanding Clinical Nurse Specialist roles and evolving nurse practitioner roles. • Develop a local transplantation service which links into the tertiary provider – ADHB. • Develop Manukau SuperClinic site & satellites in the future. • Further integration of primary and secondary care. • Develop relationship with external dialysis provider.	• Facilities to meet growth. • Facilities which are not a good fit for purpose. • Workforce to meet demand. • Workforce with the right set of skills. • Corporatized dialysis. • Ineligible patients. • Demand above demographic growth. • Funding to support demand above demographic growth. • Ongoing support from Vascular Surgery for access. • Ageing population. • High number of co morbidities in patient population. • Further reduction in number of transplants as Body Mass Index in CMDHB increases and ADHB will only transplant those patients with BMI < 35.

2.0 Key Issues

Dialysis Demand

Demand for renal dialysis continues to exceed population growth in the Auckland region. Average growth, in the Auckland region ranged between 8 and 9% during the years 1998 to 2004, since then there has been drop down to a regional average of 5.9% with CMDHB experiencing 4.8% in 2005/06. The growth in end stage renal disease (ESRD) is principally driven by the increasing incidence of diabetes, growth in Maaori and Pacific populations (where the prevalence of diabetes is markedly elevated), and the increasing population of elderly who also have a high incidence of kidney disease.

Projections for CMDHB of patients requiring dialysis over the next 20 years averages between 3.5-4% pa (Gary Jackson Model using ANZDATA 2004-2006). This projected percentage of growth in patients requiring dialysis for ESRD represents significant issues in relation to workforce, facilities, vascular access and support services.

Facilities

Based on the current dialysis patient demand projections and the planned mix in-home versus facility dialysis, CMDHB requires additional incentre/assisted care capacity during 2008. A new facility at Manukau has been approved, to replace the existing 12 stations and add an additional 16 stations (providing a total of 28 stations at this site). CMDHB forecasts, using current growth projections and agreed models of care and mix of home versus facility dialysis, that this additional capacity will be fully utilised by 2012.

The existing facilities on the Western Campus are old; however they are suitable to continue to support home therapies and limited self-care dialysis. However the office space and meeting rooms' capacity has been exhausted and environmentally there are issues such as no air conditioning.

The longer term usage of the Western Campus will be considered as part of the CMDHB Facilities Management Plan. Once the additional capacity in the incentre/assisted care facility at Manukau is exhausted our preferred option would be to develop satellite units within the Counties Manukau catchment based on patient demographics. There are a number of options the DHB could explore to provide this additional dialysis capacity e.g. joint ventures with private industry, or wholly privately provided – these options can be facility only, however most have a service component, and are linked into the full service contract.

The planning for facilities will also take into account the increase in proportion of patients who treat themselves either in their homes and/or off site facilities. This should be the first choice for all patients entering a renal replacement programme (excluding transplantation). The target for the CMDHB population set in November 2005 was 40%+ patients would be a home therapy by Year 2. CMDHB is tracking well to this and working on this area of care to ensure we maximise the ability to treat people at home, given their circumstances and their overall clinical profile.

Transplantation

Transplantation, as the preferred method to treat patients with End Stage Renal Disease (ESRD) is globally hampered by the lack of donor organs. Transplantation is not only associated with improved quality of life in younger patients but is also linked with better survival and better quality for the elderly. An upper age limit on transplantation has been abandoned by most centres (Madhan 2004). From a health economic perspective transplantation is also the best treatment option (ADHB-CMDHB-WDHB Regional Renal Review, 2006).

There has been a reduction in the number of deceased donors due to improvement in the management of hypertension and due to improved road safety with lower numbers of road deaths. Global campaigns to increase donations of post-mortem kidney have only been moderately successful. The rate of deceased donor kidneys retrieved for transplantation in New Zealand has decreased since 1999 i.e. 70 to 57 in 2004. Almost 50% of current transplantations are done with living (usually related) donors.

The transplantation rate for Maaori and Pacific people is proportionally lower than the average for all New Zealand patients and lower than that for Caucasoid. This is due to the associated clinical risks, particularly cardiac, and the drugs that they are required to have to prevent rejection. Maaori may also experience problems with the clinical criteria of matching a donated body part to another person of the same tissue 'type'. Tissue types of different ethnic groups differ in many ways and for this reason Maaori are more likely to obtain a suitable donated body part from a Maaori donor. Removal of body parts is also a complex and sensitive issue to Maaori who believe the mind, body and soul influence physical well being. This is a spiritual, cultural and social issue for Maaori. Under common law Maaori have rights of possession to keep the body intact for burial.

Transplantation rates for CMDHB residents have decreased over the last 4 years:

- 13 transplants
- 13 transplants
- 6 transplants
- 3 (to October 2007)

There are both national and regional initiatives underway to increase current low transplant rates. Locally we have an opportunity to improve the processes that support work-up for potentially suitable patients and raise the profile of donor transplantation as a viable option for our patients. The option of receiving a renal transplant is particularly limited due to the high prevalence of diabetes in CMDHB and diabetes being the most common cause of ESRD. Diabetes comes with significant co-morbidities, often negatively impacting on transplantability (cardiovascular, cerebrovascular and peripheral vascular disease). In addition CMDHB patients are also frequently obese and a BMI over 35 is a contraindication to transplant in ADHB.

The drive towards donation and transplantation in New Zealand has been focussed on deceased kidney transplantation. The working being undertaken within the Northern Region currently is looking to alter the focus of promotion to live kidney donation. This has been based on an analysis of the current situation (as described above) both nationally and internationally, and experiences in some European countries of successful campaigns to increase donations of live kidneys. This is work in progress and forecast volumes have not been attempted. The project team is constructing a business case for submission through the regional processes in mid-2008.

Patient Population

We are now seeing older and "sicker" patients being placed on dialysis. This is partly due to the improved technology/knowledge enabling them to do so, but is also related to society's expectation that chronic renal failure should be treated by dialysis. Therefore we see an increased acceptance of patients to dialysis programmes in New Zealand, particularly in the older age group (55 and over).

Given this trend it is proposed a major project be undertaken nationally with direct involvement from CMDHB to investigate the outcomes for older people who are on dialysis. It is expected this would be a 2-3 year project but the outcome would inform the parameters for clinically appropriate care in the elderly for patients with End Stage Renal Disease (ESRD).

In New Zealand age does not exist as an overt criterion for rationing. Madhan (2004) takes this theme and explains that in common with all countries that provide comprehensive Renal Replacement Therapy (RRT) programmes, New Zealand is experiencing substantial and sustained growth in demand for RRT with disproportionate increase in new patients accepted who are 65+ years. Madhan suggests that reasons for this in New Zealand include:

- The ageing of the population in general.
- The removal of any age criterion for restricting access to medical services.
- The perceived greater ability of dialysis systems to provide acceptable quality of life in the 65+ age group.
- Improved outcomes of transplantation and the ability of health professionals to transplant in the 65+ year age group.

CMDHB population based on ANZDATA 2000 & 2006 age distribution:

	15-24 yrs	25-34 yrs	35-44 yrs	45-54 yrs	**55-64 yrs**	**65-74 yrs**	**75-84 yrs**	**85+ yrs**
2000	5%	9%	15%	23%	**28%**	**14%**	**6%**	**0.3%**
2006	3%	7.%	10.%	23%	**29%**	**22%**	**5%**	**0.5%**

Vascular Access

Patients, for whom haemodialysis (HD) is the preferred option, need to have an access created. There are three different ways to create access with all three methods involving a surgical procedure that is carried out by general/vascular surgeons. For reliable enduring access for HD, an arterio-venous (AV) fistula is required to provide access for HD needles. When veins are unsuitable for an AV fistula then a synthetic graft can be inserted between the artery and the vein. This method has a shorter survival in comparison to AV fistula and is associated with more infection and thrombosis. The third option is a permacath, (carried out by Renal Physician or Radiologist) which uses a synthetic catheter inserted into a large vein in the neck; these are intended as an interim intervention on patients requiring urgent dialysis and insertion of temporary access.

The demand for all three types of vascular access and for repairs/replacement is increasing in line with the growth in patients commencing treatment and with numbers on programmes. There are a range of agreed national standards for the management of vascular access for haemodialysis patients. While CMDHB outcomes are understood to be improving following the appointment of a vascular access nurse specialist and a vascular surgeon with an interest in renal patients, further progress is required before key indicators can be met. It is important to ensure a close relationship with Vascular and General Surgery is maintained to ensure sound workforce and capacity planning in line with ongoing demand for dialysis.

Indicator	Target	CMDHB Actual
HD Patients with temporary access	<10%	Jun 06 – Sep 07 average 28%
8 weeks from referral to waiting list to surgery	8 weeks	Jun 06 – Sep 07 average 14 weeks

Workforce

The nature, complexity and variety of needs of patients with ESRF emphasises the need for strong multidisciplinary care and decision making. In order to optimise clinical outcomes and enhance quality of life for these patients, multidisciplinary teams require a balanced perspective on management and care issues, underpinned by recognition of the varied professional skills and the need to work collaboratively. To support the growth in workforce the Renal Service links into a wide range of professional groups and workforce plans locally, regionally and nationally. The renal service specifically needs to develop an in-house training scheme for technicians who are an important part of the dialysis workforce – ideally training local people who reflect the ethnicity of CMDHB patients.

3.0 Trends and Future Directions

One of the most important developments science has to offer renal care is screening and prevention to reduce the incidence of ESRD and its associated co-morbidities. The National Renal Guidelines have had a major revision to reflect the need for early diagnosis and referral utilising chronic kidney disease categories and EGFR reporting. Patients with mild to moderate renal impairment, if detected early enough will benefit from focussed and early management to prevent progression of renal disease and limit comorbidity.

At CMDHB a module within the Chronic Care Management framework could be developed to address the management of early to moderate-renal disease i.e. Chronic Kidney Disease rating of up to CKD 3. CKD 4 represents advanced kidney disease not requiring dialysis and CKD 5 is End Stage Renal Disease requiring dialysis.

Integration in the current CCM programme would however come with a significant expense and would probably suffer from lack of manpower. A tool was developed in collaboration with Dr. Gary Sinclair, GP liaison, to enhance the contribution of the GP in the ambulatory treatment of patients with early to moderate renal failure. A module was developed by Dr. Sinclair that becomes part of the GP practice suite (MedTech 32). The Renal Failure module is populated with laboratory data and clinical parameters already stored in the GP system and provide alerts and propose treatment changes where appropriate. This tool is pivotal in order to be able to cope with the surge in demand for outpatient reviews that is currently experienced.

In the shorter term, technological advances in the treatment of kidney failure arise from equipment design, materials science, and information technology. These advances have been promoted with the aim of improving quality of life and life expectancy for patients living on renal replacement therapy. There have been significant and ongoing developments of Peritoneal Dialysis technology and the most immediate technological issue that needs to be addressed is the provision of biocompatible fluids to improve peritoneal dialysis (PD) survival and minimise morbidity of patients. Further technological advance has been seen in the improvement in Haemodialysis machines and artificial kidneys.

Home dialysis machines now available overseas, use new technology that is considerably simpler to use, requires less setup and completion. When introduced to New Zealand, this technology will enable more people to transfer onto home Haemodialysis.

In the long term Hoenich *et al*, forecast that the advancement in molecular science of renal replacement therapy and organ cloning, could well lead to a complete revision in the science of renal replacement therapy. However this is a longer timeframe and at this point not well defined.

Over the last 3 years, CMDHB has played an important role in the shaping of a regional renal failure program. A regional renal review was performed involving all three Auckland DHB's and recommendations from that review are currently being addressed in CMDHB with changing models of care and infrastructural adjustments. ADHB and WDHB also are working on their recommendations from the review and there is ongoing participation in the regional platform group that was established after the regional renal review. Significant changes come up mid-2008 when ADHB and WDHB will become the provider of Home Haemodialysis services for their own residents – currently these 23 patients receive full treatment by CMDHB.

4.0 Key Directions

- ✓ *Responding to growth in dialysis numbers across all treatment modalities through the development of further services and serviced facilities.*
- ✓ *Implementation of early prevention strategies including medications that avoid or delay demand for dialysis.*
- ✓ *Incorporation of new technologies and practices to more effectively manage dialysis therapies.*
- ✓ *Reduce the work-up time for transplantation and increase live donor transplantation rates.*
- ✓ *Develop in-house training program for haemodialysis technicians.*