Throughout this document, the term ‘Aboriginal’ should be taken to include Torres Strait Islander people.
Introduction

The demand for dialysis and transplantation service has increased significantly in the Northern Territory (NT) in the last two decades. Approximately one in seven Australian adults over the age of 25 years is thought to be living with some degree of renal disease. The demand for renal dialysis and transplant services in the Northern Territory is projected to have a continued linear growth without coordinated preventative initiatives and closing the gap between evidence and practice in chronic disease management.

In the Northern Territory Aboriginal and Torres Strait Islander people suffer the greatest burden of disease with high morbidity and mortality. It is well established that Aboriginal and Torres Strait Islander people’s incidence rate of End Stage Kidney Disease (ESKD) is significantly higher than non-Indigenous Australians. The Northern Territory has the highest incidence and prevalence of renal disease in Australia and the rise in the incidence of renal failure continues at nearly four times the national average.

It is timely to review how the Northern Territory continues to deal with the competing priorities of equitable access and the need to manage a specialised service in the face of ever increasing demand and future financial constraints.

The NT Renal Services Framework (2012-2017) recommends strategies to detect and manage people with chronic kidney disease and a continued focus on the delivery of home based therapies. Changes to existing service delivery models will be required to maximise existing and new resources to ensure patient access to timely and effective care.

Targeted disease prevention interventions across the continuum of Chronic Kidney Disease (CKD) have significant potential to reduce service need and cost. This framework will guide the Northern Territory Government and other key service providers toward the appropriate combination of renal services.

The NT Renal Services Framework addresses health service delivery across the renal health continuum but it must be considered in the context of the Northern Territory Chronic Conditions Prevention and Management Strategy 2010-2020 which aims to improve the health and wellbeing of all Territorians by reducing the incidence and impact of chronic disease.
Future Directions and Priorities

The Renal Strategy 2005-2009 was the first specific renal strategy for a government department in Australia and the first strategy for the Department of Health. The strategy was aimed at improving the quality and accessibility of services for all Territorians through the provision of standardised and equitable care and programs. The strategy focused on six priority areas:

1. A coordinated approach
2. Preventing, detecting and managing chronic kidney disease
3. Increasing Aboriginal and Torres Strait Islander participation
4. Treatment closer to home
5. Developing the workforce
6. Staying effective.

These six priorities will form the basis of the Renal Services Framework for 2012-2017 and will be extended to include key principles to guide service development based on priority of need.

Renal Framework Purpose

The purpose of the NT Renal Services Framework is to guide the Northern Territory Government and other key service providers towards the appropriate combination of renal services. The framework will provide:

- A planned structure for development of renal services over the next 5 year period.
- Identification and management of the drivers of the demand for renal services.
- A tool for strategic Territory-wide planning to assist the Hospital Networks and primary health care in delivering renal services.
- A model for ensuring high quality culturally appropriate patient/family centred care to people with CKD and end-stage renal failure.
- Identification of priority service improvement areas.
Approach to the development of the framework

The NT Renal Services Framework (2012-2017) aims to consolidate and extend the work already commenced on six priority areas of the previous Renal Strategy. The development process involved:

- Consultation with stakeholders
- Review of research, policies and relevant literature
- An analysis of service demand.

Key source documents are acknowledged at the end of the document.

The principles which underpin the NT Renal Services Framework

The NT Renal Services Framework (2012-2017) will provide five service delivery principles to guide the development of the NT Renal Service for the next 5 years:

- Continue development of a functional hub and spoke model of governance and service delivery.
- Investment in Chronic Kidney Disease detection management and self-management.
- Ensure treatment options for patients with ESKD are affordable and sustainable, closer to home or home-based.
- Promote a sustainable and multidisciplinary workforce with increased Aboriginal and Torres Strait Islander participation.
- Develop minimum service standards, guidelines and resources for the delivery of renal services.
- Support Aboriginal and Torres Strait Islander participation and self-management.
Demand for the Northern Territory Renal Services

The NT has the highest burden of disease among all jurisdictions in Australia, for most causes, particularly cardiovascular disease, diabetes, and injury. The Burden of Disease and Injury in the Northern Territory 1999-2003 (2009) report determines that in the Northern Territory Aboriginal population for this period the disease burden was 3.6 times the national average. The burden of disease of the NT non-Aboriginal population was also 1.2 times the national average. When combined, the age-adjusted burden of disease in the NT was 1.7 times the national average. ANZDATA registry data (2009) determines that the overall incidence rate (per million populations) of Indigenous people commencing haemodialysis is considerably greater and than for non-Indigenous people and the highest rate of Aboriginal and Torres Strait Island people commencing renal replacement therapy for end stage kidney disease were in the Northern Territory (320 per million).

The NT Renal Service has experienced a cumulative increase of 47% in patient numbers from 2005-2010 and a net increase of 7% is projected each year for the next five years. The recent projections by the Health Gains Unit, using Markov modelling techniques, show there will be close to 700 people accessing renal replacement therapy within the Northern Territory by 2015. There are a number of factors that point to an increase in the incidence of treated ESKD in Australia. These include population growth and ageing, the increasing prevalence of diabetes and the knowledge that currently there are many cases of ESKD not treated with renal replacement therapy (RRT).

Graph 1: Actual and Predicted Mode of Renal Replacement Therapy (current state)

1 Projections of the incidence of treated end stage kidney disease in Australia 2010-2020
Historically the model of care for End Stage Renal Disease in the NT has centred on satellite services. However it is the intention of this service framework to facilitate an increase in the uptake of transplantation, peritoneal dialysis and home-based therapies. A gradual shift to home therapies is likely to achieve more people dialysing closer to home without any increase in expenditure, but recent national renal costing studies indicate that health care savings can accrue from a shift towards home based therapies, when compared to establishing more satellite dialysis facilities (AIHW 2011).

Disease prevention strategies have the potential to reduce service need and cost therefore prevention needs to be considered alongside the development of renal services. The aim is to manage the demand for renal replacement therapy and affect growth with the development of a demand management strategy that understands the capability and capacity of the existing renal services and impact of current prevention strategies. The funding model will be informed through the development of the Activity Based Funding model for the NTG as the cost of providing the service may be different to the reimbursed amount.

Managing Demand

The increased burden of CKD has been attributed to the increased incidence of diabetes and increasing age of the Australian population. Additionally it has been shown that a significant number of people with chronic kidney disease also suffer from other comorbidities such as hypertension, cardiovascular disease and diabetes, thereby increasing the risk of premature death.

Once diagnosed, chronic kidney disease can be managed through changes in lifestyle and modification of risk factors that include cigarette smoking, obesity, inactivity, hypertension and excessive alcohol intake. Early diagnosis, intervention and management can significantly slow the progression of the disease, prevent/minimise associated complications and delay the need for renal replacement therapy (dialysis and transplantation) or death\(^2\).

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\(^2\) Northern Territory Chronic Conditions Prevention and Management Strategy 2010-2020
Identification of renal demand drivers is an integral part of the service planning and development. Service development is informed and a strategy is developed to ensure there is adequate resource to manage the demand. Direction from strategy development will demonstrate how the service will respond to these drivers with a subsequent impact on cost and resource utilisation.

<table>
<thead>
<tr>
<th>Patient Related Drivers</th>
<th>System Related Drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention of disease improves quality of life</td>
<td>Growing demand for renal services</td>
</tr>
<tr>
<td>Late detection of disease limits options for people</td>
<td>Increasing costs</td>
</tr>
<tr>
<td>Variation in access to all options of renal replacement therapy</td>
<td>Service distribution variations</td>
</tr>
<tr>
<td>Current hospital based modalities can reduce health independence</td>
<td>Funding model implications</td>
</tr>
<tr>
<td>Increasing burden of travel and dislocation from community</td>
<td></td>
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<tr>
<td>Limited access to transplant due to patient suitability</td>
<td></td>
</tr>
</tbody>
</table>
Renal or kidney disease is a significant and rapidly growing public health problem and is responsible for substantial burden of illness and premature mortality worldwide\(^3\). When the kidney function loss is gradual and progressive, it is referred to as Chronic Kidney Disease (CKD).

The treatment of Chronic Kidney Disease (CKD) has five recognised stages, Stage 1 is the mildest and usually symptom free and Stage 5 is considered end stage where the kidney function is incompatible with life unless treated. Intervention to avoid or reduce the impact of kidney disease is possible if targeted at Stages 1, 2 or 3. In Stage 4 disease kidney function is severely reduced requiring more intensive intervention and preparation for the next stage of illness which is kidney replacement therapy or transplantation if the patient is to survive. For some people at Stage 4 the preferred option would be conservative care.

The five stages of CKD provide the continuum on which renal care is provided and the responsibility for service provision identified.

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**Fig 2 CKD Continuum of Care: CKD Stages and Treatment**

<table>
<thead>
<tr>
<th>Responsibility</th>
<th>Primary Prevention</th>
<th>Early detection</th>
<th>Secondary Prevention</th>
<th>Specialist Nephrology Services</th>
<th>End stage dialysis and transplant</th>
</tr>
</thead>
<tbody>
<tr>
<td>The well population</td>
<td>Services for people to reduce preventable causes of disease</td>
<td>Population at risk</td>
<td>Minimising progression &amp; consequences of CKD</td>
<td>Coordinated management of the established condition</td>
<td></td>
</tr>
<tr>
<td>Population Health</td>
<td>Services for people at risk of developing CKD</td>
<td></td>
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<tr>
<td>Primary Care</td>
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<tr>
<td>Primary Care +</td>
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<tr>
<td>Chronic Disease Management</td>
<td></td>
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<tr>
<td>+ Tertiary and Secondary Hospital Services</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>STAGE 1</td>
<td>STAGE 2</td>
<td>STAGE 3</td>
<td>STAGE 4</td>
<td>STAGE 5</td>
<td></td>
</tr>
</tbody>
</table>

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\(^3\) World Health Organisation accessed from http://www.who.int/en
The Way Forward

Renal Services Framework 2012-2017
1: A Coordinated Approach to Health Service Direction

Key Considerations

- National and Territory directions emphasise a continuum of approaches from promotion and prevention to treatment and management across chronic disease services.
- Effective links are needed with primary care providers and public health providers.
- Increased home dialysis and patient care management approaches should be fostered.
- Effective service delivery models will be required to maximise existing and new resources to ensure patient access to timely and effective care.
- The primary health sector has well established systems for chronic disease programs.
- Improvement of quality of life while reducing health system costs and infrastructure.

*Principle: Continued development of a functional hub and spoke model of governance and service delivery.*

Goals:

1. Service integration between chronic disease educators, chronic disease nurses and allied health practitioners ensures efficient use of resources and continuity of care.

2. Strengthen shared care models between Renal Physicians and General Practitioners, Nurse Practitioners and Indigenous health workers through communication and eHealth initiatives.

3. Service structures with a defined renal unit capability will ensure a clear and consistent pathway to treatment.

4. Enhance system integration by strengthening links between service levels and improving access to treatment.

5. Public-private partnerships deliver high quality community based satellite services that are cost effective.

6. A continuous improvement programme focused on system improvement ensures the delivery of safe, effective, timely, patient-centred, equitable and efficient service.

7. A research framework is developed to identify partnerships between academic researchers and clinicians to increase opportunities for health service based research.
Impact of Kidney Disease: preventing, detecting and managing chronic kidney disease

Key Considerations

- Increased prevalence of Chronic Kidney Disease in community and growth in demand for renal dialysis for end stage renal disease.
- An ageing Northern Territory population will impact on the demand for CKD services.
- There is a direct relationship between chronic illnesses such as cardiovascular disease, hypertension, and diabetes and kidney disease. These diseases share underlying characteristics and are preventable.
- Forty percent of people living in remote communities have at least two chronic conditions before the age of 50 years and after the age of 60 years 30% had at least three conditions.
- Chronic Kidney Disease disproportionately affects those in low socio-economic circumstances, in particular Aboriginal and Torres Strait Islander people.

Principle: Investment in chronic kidney disease detection and management.

Goals:

1. Strengthen shared care models between all providers including General Practitioners, renal physicians, remote health services, public health nurses and allied health workers. This will support coordinated, quality care and facilitate timely referral between providers.

2. Improve health professionals skills to provide self management support.

3. Nurse Practitioner led programmes concentrate on detection initiatives in high risk populations and case management of patients with established and advanced Chronic Kidney Disease.

4. Aboriginal Health Workers are part of the multidisciplinary team for the management of chronic kidney disease.


6. Future planning includes provision for an integrated model for chronic disease clinics and disease services where patients can access multidisciplinary teams and treatment in remote areas.

7. Identify key clinicians involved in the management of CKD patients.
3: Supporting Aboriginal and Torres Strait Islander Participation

Key Considerations

- Increased prevalence of Chronic Kidney Disease in community and growth in demand for renal dialysis for end stage renal disease.

- An ageing Northern Territory population will impact on the demand for CKD services.

- The Northern Territory Aboriginal people are particularly affected by chronic illness. Territorians suffer the greatest burden of disease with high morbidity and mortality.

- The Northern Territory has the highest incidence and prevalence of renal disease per head of population in Australia in addition to having the highest rates of known chronic disease.

- Chronic Kidney Disease is linked to modifiable socio environmental risk factors such as unemployment, low income and poverty, low education attainment, early life factors, overcrowding and poor access to health care.
**Principle:** Support Aboriginal and Torres Strait Islander participation and shared responsibility.

**Goals:**

1. Identify and utilise local systems and structures and cultural practices to facilitate community involvement in managing outcomes.

2. Shared responsibility and self management principles are incorporated into renal policy and guidelines.

3. Support training and education of health professionals to gain knowledge and skills to support self management and encourage shared responsibility of care.

4. Key groups of staff for targeted education on shared responsibility are identified and these include home haemodialysis and CKD staff.

5. Ensure that self-management philosophy is an integral part of clinical practice and influences multi-disciplinary care planning decisions.
4: Treatment closer to home

Key Considerations

- Treatment needs to be provided closer to home to meet cultural requirements and align with NT Government strategies.
- There has been an underutilisation of transplant and peritoneal dialysis when compared to national averages.
- Minimum service standards and guidelines for renal service delivery need to be developed to ensure the most effective use is being made of all existing resources.
- Direction and modelling of service patterns in renal replacement therapy is provided to guide service direction.
- Utilisation of interventional nephrology will provide improved dialysis access and management.
- Enhance system integration for palliative care patients by strengthening links between service levels and improving access to treatment.
- Dialysis efficiency strategies need to include a focus on compliance with environmental standards for disposal of waste and conservation of natural resources.
- Home therapies provide significant improvement to quality of life and are cost effective.

*Principle:* Ensure treatment options for patients with ESKD are affordable and sustainable, closer to home or home based.

Goals:

**(a) Dialysis** – Acute Renal Services and Satellite Dialysis.

1. Future service development informed by modelling of treatment options to ensure there is maximum utilisation of existing infrastructure and equipment.
2. Admission protocols for acute and non-acute dialysis guide service utilisation.
3. Satellite dialysis facility utilisation levels determined and drive maximisation of unit capacity.
4. Key Performance Indicators monitor the provision of safe cost effective care. There will be evidence of clear standards, protocols and patient pathways.
5. Sourcing accommodation for patients and families is a priority.
6. Explore initiatives to reduce energy consumption and waste generated by dialysis.
(b) Home based Therapies – Haemodialysis and Peritoneal Dialysis

1. “Home Therapies First Policy” in the Northern Territory is implemented and agreed home therapy targets established.

2. Home therapies is developed and managed as a sub service of renal services.

3. Patient training programmes and care coordination ensure safe effective dialysis in the remote dialysis environment.

4. Improvement of support programs for home dialysis through the use of technology for example video conferencing.

5. Key Performance Indicators monitor utilisation of remote dialysis facilities against target occupancy.

6. Investigate options for urban self care community dialysis used where the home environment is not suitable for dialysis.

7. Staff are trained to use self management strategies for patient training and support.

8. Service innovation is supported to enhance home dialysis, exploration of different service models and the enhancement of quality of life for people on dialysis.

(c) Transplantation

1. The scope of the Transplant Nurse practice is extended to Nurse Practitioner to encompass innovative and flexible health care delivery that complements other health care providers.

2. Evaluate the impact of transplant initiatives against national service guidelines and identify future strategies to increase the proportion of functioning transplants.

(d) Vascular Access

1. Vascular access surgery for dialysis coordination is efficient and effective.

2. Surgical access for renal vascular access procedures is increased at regional hospitals.

3. The scope of Renal Access Nurse practice is extended to Nurse Practitioner to provide increased input into interventional nephrology procedures and prescription of radiological procedures.

(e) End of Life Care

1. There is a consistent approach to conservative care and provider and community understanding and acceptance of end of life care options are increased.

2. Integration of maximum medical conservative treatment with existing palliative care services and networks is evident.

3. Advanced care plans are integrated for people with severe renal failure where appropriate and usage is monitored.
5: Developing the workforce, promoting and sustaining services

Key Considerations

- High turnover of clinical staff in the rural and remote communities requires the renal service to increase support for patient management.
- Aboriginal and Torres Strait Islander participation in renal health care needs to increase and align with NT Government strategies for workforce development.
- A sustainable and multidisciplinary workforce is required.

*Principle: Promote a sustainable and multidisciplinary workforce with increased Aboriginal and Torres Strait Islander participation.*

Goals:

Development of a multidisciplinary workforce plan includes:

1. Strategies to improving recruitment and retention.
2. Opportunities for Aboriginal people to work in renal services.
3. Ongoing access to education and training for renal staff with development of training packages for across the region.
4. Development of linkages with the tertiary education sector, universities and colleges to develop alternative models of workforce planning.
2 Indigenous renal health worker model supports home therapy patients in remote communities congruent with in NTG Growth Town initiatives.

3 A structured training program is available for Indigenous health workers wishing to specialise in renal health, in partnership with vocational and education training sectors.

4 Comprehensive cultural competence training programme is accessed by all staff and cultural awareness is embedded in practice.

5 Training is provided for Renal Physicians in interventional nephrology and PD catheter insertion.

6 Renal Physicians and nurses have the opportunity to increase knowledge and skills in palliative care philosophy and approach to care. Education opportunity to include training in Program of Experience in the Palliative Approach (PEPA).

7 Renal nurse practitioner roles are developed with scopes of practice in transplantation, CKD and access management.

8 Improved support and involvement of Chronic Diseases Co-ordinators and Rural Health Physicians to increase capacity and quality of care.
6: Staying Effective

Key Considerations

- Demographic and climatic factors will have an influence on the management and support needed to provide Territory-wide renal services.

- Renal Services in the NT have experienced considerable growth in the last five years and the demand on services is expected to continue.

- Patient growth will increase the demand of providing renal services in the Northern Territory.

- The capability of current service delivery is constrained due to absence of demand management strategies and planning.

- The cost of providing the service maybe different to the reimbursed amount per service i.e. the funded amount.

*Principle: Develop minimum service standards, guidelines and resources for the delivery of renal services.*
Goals:

1. Develop a renal service planning model to support the provision of coordinated, area based planning.

2. Service targets and Key Performance Indicators (KPI) based on national benchmarks are established and monitored.

3. Data collected is outcome focused and aligned with service targets.

4. Data and KPI review quarterly to ensure continuous improvement and early identification of service gaps.

5. Service capability framework is updated and will guide patient admission and resourcing.

6. Renal units are resourced according to a patient dependency categorising tool and national benchmarks.

7. Actual costs for dialysis services are available for planning as part of the activity based funding initiatives.
Supporting Documents

Northern Territory Department of Health Corporate Plan 2009-2012.


Northern Territory Palliative Care Service Plan 2010-2020.

Northern Territory Government – Territory 2030 Strategic plan.


Department of Health and Families. 2008-2011 Aboriginal and Torres Strait Islander Strategic Workforce Plan Northern Territory Government.

Department of Health and Families Central Australia Regional Plan 2010-2012.

Department of Health and Families East Arnhem Regional Plan 2010-2012.

Department of Health and Families Katherine Regional Plan 2010-2012.


A National Health and Hospitals Network for Australia’s future: Delivering better Health and better hospitals 2010.

CARI – Caring for Australians with Renal Impairment.

Australian and New Zealand Dialysis and Transplant Registry 2009.

ISPD – International Society for Peritoneal Dialysis.

Photography

Images supplied by the Department of Health Renal Services and Kara Burns.