TYPE 2 DIABETES

Model of Care Toolkit

nadc National Association of Diabetes Centres

NDSS national diabetes services scheme

ads Australian Diabetes Society

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Disclaimer: Content within this publication was accurate at the time of publication.

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Introduction

Type 2 diabetes accounts for more than 85% of the 1,273,693 people with diabetes in Australia. To improve access to healthcare services and outcomes in Australia, new models of service delivery for diabetes care and management need to be identified and considered across geographical locations. Literature, including government strategies, has indicated that integrated care is crucial to improve health outcomes of people with chronic diseases such as diabetes. In particular, those whose needs are becoming more complex, such as the elderly, those with multiple morbidities or those with longer duration of diabetes.

There is a critical need to reduce barriers for access to healthcare and "silos" between primary, secondary and tertiary care and the specialist services (e.g. podiatry, ophthalmology, dietetics). Integrating diabetes care across the spectrum of service providers aims to refocus patient-centred care, promoting better health outcomes and fiscal sustainability. The skills and input of healthcare professionals across specialist, community and primary care is essential to ensure high quality, holistic diabetes care, while promoting patient self-management.

Across the spectrum of diabetes management, services should be available that provide adequate support to ensure optimal management and improve the wellbeing of people living with diabetes. Services should be provided in a manner that best suits the needs of the individual and include:

- Individualised assessment to identify physical, social and psychological factors that influence diabetes health
- Support to assist patients to make lifestyle changes that address risk factors
- Support to optimise monitoring of symptoms and self-management
- Support to optimise medication adherence

State government bodies across Australia have established strategies and frameworks to improve delivery of care services to people with diabetes and other chronic diseases. Examples are the Western Australian Framework for Action on Diabetes and Diabetes Service Standards 2014[1], the Western Sydney Diabetes "Taking the Heat Out of Our Diabetes Hotspot" Action Framework[2] and the South Australian Aboriginal Diabetes Strategy 2017-2021[3]. These demonstrate a concerted effort by key organisations to work in partnership and make the case for change, highlighting the need for urgent and coordinated action across the health system and the care continuum. Descriptions of these projects are outlined later in this document and links to their respective websites are provided below[1-3].

Most people with type 2 diabetes are seen in primary care, particularly in the early stages of the disease continuum. It is in this setting that patient-centred care needs to be optimised across the life of a person with diabetes and why the NADC Models of Care (MoC) Toolkit emphasizes a multi-disciplinary approach and the importance of specialist diabetes centres taking a leadership role to enhance the capacity of primary care to better manage diabetes. The toolkit was designed as a resource to assist diabetes centres and primary care to put processes in place that improve the coordination of care for people with type 2 diabetes.

This toolkit showcases examples of MoC for the management of type 2 diabetes and its complications that have been successfully implemented and used in clinical settings across Australia, with the aim that they provide inspiration and a reference point for health services considering implementing new approaches to management of type 2 diabetes in their community. The MoC have been presented in a summarised form identifying individual components that can be considered in part or in total for local implementation. These models also highlight when referral to other services may be required, such when a diabetes-related complication needs a medical specialists opinion and/or hospital care. The majority, if not all, the MoC in this Toolkit are underpinned by elements of the Australian National Diabetes Strategy (ANDS)[4].

What is a Model of Care?

A "Model of Care" broadly defines the way health services are delivered. It outlines best practice care and services for a person, population group or patient cohorts as they progress through the stages of a condition, injury or event. It aims to ensure people get the right care, at the right time, by the right team and in the right place[5]. When designing a new MoC, the aim is to bring about improvements in service delivery through effecting change. As such, creating a MoC must be considered as a change management process. Development of a new MoC does not finish when the model is defined, it must also encompass implementation and evaluation of the model and the change management needed to make that happen[6]. Mitchell *et al*[7], conducted a systematic review identifying outcomes of different models of integrated specialist and primary care, and characteristics of models that delivered favourable clinical outcomes. The authors defined the essential components of an integrated MoC to have the following core ingredients which can be translated for delivery of care in urban, rural and remote areas and Indigenous communities:

- interdisciplinary team work
- communication and information exchange
- use of shared care guidelines or pathways
- training and education
- access and acceptability
- and a viable funding model for its sustainability

1 Western Australia (WA) Framework for Action on Diabetes and Diabetes Service Standards 2014

2 Western Sydney Diabetes Framework and Plan, www.westernsydneydiabetes.com.au

3 South Australian Aboriginal Diabetes Strategy 2017-2021, www.sahmriresearch.org

4 Australian National Diabetes Strategy 2016–2020. (2017). [ebook] Available at: http://www.health.gov.au/internet/main/publishing.nsf/content/3AF935DA210DA043CA257EFB000D0C03/$File/Australian National Diabetes Strategy 2016-2020.pdf [Accessed 3 Aug. 2017].

5 Government of Western Australia, Department of Health (2012) http:"www.agedcare.health.wa.gov.au/home/moc.cfm

6 NSW Agency for Clinical Innovation, Understanding the process to develop a Model of Care: An ACI Framework (2013)

7 Mitchell GK, Burridge L, Zhang J, Donald M, Scott IA, Dart J and Jackson CL. Systematic review of integrated models of health care delivered at the primary-secondary interface: how effective is it and what determines effectiveness? Aust J Primary Health 2015, 21:391-408. http://dx.doi.org/10.1071/PY14172

Context

The aim of the Diabetes Models of Care (MoC) project is to create a practical toolkit of examples of various models of care that may assist health practitioners across Australia review and consider revisions of their own current MoC for managing people with type 2 diabetes. The target audience of health professionals includes general practitioners, endocrinologists, diabetes educators, health services managers and other multidisciplinary practitioners across the spectrum of health-care.

There is strong evidence supporting lifestyle and medical management programmes to improve outcome measures and quality of life for people with diabetes. Many people with diabetes often have other co-morbidities, including (but not limited to) obesity, cardiovascular disease, renal, eye and foot disease, that manifest into a complex array of treatments highlighting the need for a multidisciplinary and comprehensive diabetes management approach. The essential ingredient of effective diabetes management in an interdisciplinary system of care is the empowerment of the person with diabetes to become engaged to actively manage their health. When people with diabetes (and often their carers) are more informed, involved, and empowered, they interact more effectively with healthcare providers and strive to take actions that will promote healthier outcomes[1]

There are many MoC being used within diabetes services across Australia. Many of these models promote the importance of integrated care across health professional disciplines and have been successfully implemented into practice. However, more needs to be done to improve integrated and collaborative care nationally. One such area that needs improving is the collection of outcome measures that could lead to the identification of which primary care attributes support high-quality care for people with diabetes.

This toolkit will focus on MoC for the management of type 2 diabetes, concentrating on integrated care from primary to specialist care, and include models that target diabetes complications, screening and management. The models illustrated in this document are not a complete list and have been included as examples only. It is anticipated that any MoC can be adapted to the local population and workplace.

This toolkit is designed to be a 'living document' and will be added to, edited and revised over time. As such, the document will only be up to date at the time of access or download. Revised versions of this publication will be announced through NADC and NDSS online resources and available on their respective websites: NADC **www.nadc.net.au/moc** , ADS **www.diabetessociety.com.au** and NDSS **www.ndss.com.au/health-professionals-resources**

1 Bodenheimer T, Lorig KR, Holman H & Grumbach K. Patient self-management of chronic disease in primary care. JAMA 2002, 288(19):2469-2475

Rationale

Diabetes is the fastest growing chronic condition in Australia[1]. In June 2019, there were 1,309,070 people with diabetes registered on the Australian National Diabetes Service Scheme (NDSS)[2]. Of those registered, 87% were diagnosed with type 2 diabetes[2] and an additional 500,000 people are estimated to have undiagnosed type 2 diabetes[3]. In addition, it is estimated that more than two million Australians have pre-diabetes where they are at risk of developing type 2 diabetes[4]. Without interventions, approximately 50% of those with pre-diabetes will go on to develop diabetes within 10 years[5].

Why do we need to improve diabetes management?

There is a well-established relationship between better glycaemic control and a reduced risk of microvascular and macrovascular complications[6-8]. Multifactorial interventions that improve glycaemic, blood pressure and lipid control, significantly reduce the risk of premature mortality and cardiovascular disease. Hence, improvements in the proportion of people with diabetes meeting glycaemic, blood pressure and lipid targets would translate into improved outcomes, both for the person with diabetes directly and financial costs to the overall healthcare system. With only 50% of people with diabetes reaching glycaemic targets[9], there is an urgent need to consider our approach to management of diabetes. From a financial perspective, in 2005 the total annual cost of diabetes for Australians with type 2 diabetes aged >30 years was $A10.6 billion, including healthcare costs, the cost of carers and Commonwealth government subsidies[9]. This equated to $A14.6 billion in 2010. The average annual healthcare cost per person with diabetes is $4,025 if there are no associated complications. However, this can rise to as much as $9,645 in people with both micro- and macrovascular complications[9]. These costs highlight the need to consider current management of diabetes care and to support the establishment of new diabetes MoC that will improve the lives of many Australians and provide a significant cost benefit to our society.

Australia has enormous cultural and social diversity and, while diabetes is increasingly common across the country, it is of particular concern in our Indigenous Australians and their families, as rates of type 2 diabetes are three times higher in this population group than for non-Indigenous people[10]. People from South-East Asia, North Africa and the Middle East, Pacific Islands and southern and eastern Europe also have higher rates of diabetes than other Australians. Australia has an aging population that is at higher risk of diabetes which can be associated with greater disability. People with diabetes who live in rural and remote communities have more difficulty accessing health services to manage their diabetes. Those with lower socioeconomic status are also more likely to develop diabetes. This cultural and social diversity needs to be considered when developing MoC as there is not going to be a "one size fits all" approach.

Furthermore, with more than one third of all Australians living outside of major cities and urban hubs (including Indigenous Australians)[11], uniform and accessible healthcare services are vital in managing the burden of diabetes across the nation. It is well established that access to adequately trained health professionals and specialised healthcare services and good health outcomes are poorer in rural and remote compared with metropolitan areas [11]. Approach to improving the management of diabetes also needs to take in to account these geographic areas and consideration of models that utilise enabling technologies such as telehealth and mHealth and a workforce that is working beyond its traditional scope.

The importance of integrated care for people with diabetes

In October 2017, the Australian Government Productivity Commission issued a Report that included a Chapter on "Healthier Australians" [12]. It outlines issues and problems identified within our Health System and provides solutions and suggestions where investments need to be made to improve the identified "gaps". In Summary, the Report identifies the following gaps:

- Integrated care
- Patient-centred care
- Funding for health
- Quality of health
- Using information effectively

Smaller healthcare services are often unable to provide comprehensive specialist diabetes healthcare, forcing residents to access care from larger disconnected urban centres. Achieving equitable, safe, effective and high-quality care for patients across the spectrum of type 2 diabetes (from pre-diagnosis, through progression of disease to palliation) is no small task. It requires a coordinated interaction between patients, healthcare providers and the healthcare system, with a focus on improving the patient's experience and outcomes throughout the continuum of care.

Fragmented health services result in a variation in quality of care, a lack of continuity of care and a lack of outcomes-based service delivery. It has been suggested that optimal management of diabetes in Australia is limited due to a fractured health system, funding and professional "silos"[11]. Moreover, the New South Wales Agency for Clinical Innovation (ACI) have identified a major impediment to optimal management of diabetes is a lack of coordination of the large number of organisations and individuals providing diabetes services[13].

Effective leadership is essential to develop integrated models of care. Clinical champions in specialist diabetes centres need to consider the support of primary care as core business and primary care (including those involved in its corporate governance) need to play an active role in cultivating a culture focused on clinical quality and patient-centred care.

Learnings from historical large scale trials of diabetes care

The Diabetes Care Project (DCP)[14] was a three year pilot programme which analysed new models of health care delivery for adults with type 1 and type 2 diabetes. The Australian Government provided $31.4 million in funding and the Victorian Government contributed $2 million, bringing the total project value to $33.4 million over the period 2011-2014. Following an open tender process in May 2011, a consortium led by international consulting firm McKinsey and Company, were selected to manage the DCP.

The pilot was a cluster randomised controlled trial with two Intervention Groups and a Control Group, where MOC current at the time were tested alongside new care components comprised of:

- an integrated information platform for general practitioners, allied health professionals and patients;
- continuous quality improvement processes informed by data-driven feedback;
- flexible funding, allocated based on patient risk stratification;
- quality improvement support payments linked with a range of patient population outcomes; and
- funding for care facilitation, provided by dedicated Care Facilitators.

The evaluation of the DCP found that improved information technology and continuous quality improvement processes were not on their own sufficient to improve health outcomes. However, combining these changes with a new funding model did make a significant difference. The report concluded the funding model used in the pilot was not cost-effective and would need to be further researched and refined.

The findings of the Evaluation Report of the Diabetes Care Project[15] (written by McKinsey and Company) are being used by the Department of Health to develop policies that will better support chronic disease management in the future. The findings will support primary care researchers and the new Primary Health Networks to develop their own innovative health care approaches. The report was also provided to the National Diabetes Strategy Advisory Group, for consideration in the development of the National Diabetes Strategy.

Highlights of Large-Scale Frameworks, Standards, Strategies and Models of Care for Diabetes in Australia

In recognition of the rising rate of diabetes in Australia, several groups have collaborated and produced frameworks and standards to improve the accessibility and quality of diabetes prevention and care in Australia. The three largest projects are the South Australian Aboriginal Diabetes Strategy 2017-2021[16], the Western Sydney Diabetes Framework and Plan[17] and the Western Australia (WA) Framework for Action on Diabetes and Diabetes Service Standards 2014[18]. Each of these frameworks are comprehensive and updated regularly (see below for their website links). Whilst there is some overlap in elements of their objectives, there are also specific differences.

This toolkit attempts to provide an overview of each of these frameworks and highlight some of their key elements towards the latter pages of this document. It then can be considered within these frameworks how the individual models of care highlighted in the toolkit have addressed specific standards of recommended care along the care continuum from prevention to palliation and across specific cultural, geographic and socioeconomic boundaries.

The South Australian Aboriginal Diabetes Strategy 2017-2021

The South Australian Aboriginal Diabetes Strategy 2017-2021[16] was designed specifically to meet the needs of Aboriginal people in South Australia. The development of this Strategy was governed by a multi-disciplinary, multi-sector Diabetes Steering Committee that included Aboriginal community representatives. The Wardliparingga Aboriginal Research Unit of the South Australian Health and Medical Research Institute coordinated the development and undertook the research that formed the Strategy.

The SA Aboriginal Diabetes Strategy 2017-2021 has six high-level goals:

- Reduce the incidence of type 2 diabetes and gestational diabetes
- Detect type 2 diabetes early
- Improve diabetes care and reduce complications
- Reduce the incidence and impact of diabetes in pregnancy
- Reduce the incidence of and better manage type 2 diabetes among priority groups
- Strengthen research, data usage and population health monitoring

Further information on the SA Aboriginal Diabetes Strategy 2017-2021 can be found on their website **https://www.sahmriresearch.org**

The Western Sydney Diabetes Action Plan

The **Western Sydney Diabetes "Taking the Heat Out of Our Diabetes Hotspot"** document[17], published in 2017, describes the high burden of disease in western Sydney demonstrating the geographic variability associated with social determinants of disease. Western Sydney residents have been identified as being twice likely to develop type 2 diabetes compared with residents living in other parts of Sydney. Diabetes is a whole-of-government and whole-of-community solution and the focus of Western Sydney Diabetes (WSD) is to enable partnerships among key business, government and community organisations to drive the change that is needed to beat diabetes.

The goal of WSD is to increase the proportion of healthy population, slow the progression towards being at risk of diabetes and prevent complications. It is driven by a Strategic Framework for action with 23 interventions. WSD is led by Western Sydney Local Health District (WSLHD), Western Sydney Primary Health Network (WSPHN), Diabetes NSW and ACT, and PricewaterhouseCoopers (PwC). The Alliance of over 100 active members or organisations are committed to helping 'beat diabetes together' in Western Sydney. The Framework for Action contains the following components:

- Leadership by five key partners as listed above
- An Alliance of over 100 partners including all tiers and sectors of government, private sector, community healthcare providers, NGOs, universities and educational institutes
- Primary prevention focused on improving healthy food consumption, increasing physical activity, building a healthy environment and government leading the way
- Secondary Prevention and Management with 18 separate but highly linked interventions from earlier detection of diabetes, through building the community healthcare capacity to better manage diabetes, and finally, improved management in hospitals including public bariatric surgery
- A Place-Based local community engagement initiative bringing all the interventions alive in one location
- Mobilising public awareness through media and events
- Building live ongoing information dashboards for better 'Data for Decision Making'
- Translational research and publication

Further information on the WSD Framework and Strategy can be found on their website **www.westernsydneydiabetes.com.au**

The WA Diabetes Model of Care

The Western Australian (WA) Diabetes and Endocrine Health Network has galvanised the expertise and commitment of clinicians, consumers, carers and other partners in developing a framework and standards to improve the accessibility and quality of diabetes prevention and care services for the Western Australian population. Building on the WA Diabetes Model of Care (2008)[19], the 'Western Australia Framework for Action on Diabetes and Diabetes Service Standards 2014'[18] sets a bold vision to support the delivery of better services for people in WA at risk of or living with diabetes by 2025. It demonstrates a concerted effort by key organisations to work in partnership and makes the case for change, highlighting the need for urgent and co-ordinated action across the health system and the care continuum. The Framework describes the coordinated effort to:

- support diabetes sufferers to self-manage their condition and thus minimise its impact
- reduce the risk of others getting the disease

The **WA Diabetes Model of Care (2008)**[19] is summarised below. This MoC sets out a framework for comprehensive, accessible and efficient provision of coordinated diabetes prevention and management services. The key objective of the Diabetes MoC is to ensure that diabetes services are optimally configured to:

- Prevent or delay the onset of diabetes
- Prevent and slow the progression of diabetes related complications, especially heart disease, renal failure, impaired vision and lower limb amputations
- Improve the quality of life of people who have diabetes, and
- Reduce inequities in diabetes service provision, particularly for Aboriginal people and other disadvantaged groups.

Additional objectives include reduced frequency of diabetes-related presentations to hospital emergency departments, lower rates of hospital admission, shorter length of stay and better outcomes for people with diabetes.

Further information on the WA Diabetes Model of Care (2008) can be found on their website **https://ww2.health.wa.gov.au**

Integrated diabetes models of care on a smaller scale

Implementation of the MoC outlined in this document requires flexible, networked solutions at the local level. Innovative strategies are constantly needed to overcome the challenges posed by service gaps, remote locations, cultural factors, language and the special needs of high risk and vulnerable groups who suffer disproportionately high rates of morbidity and mortality from diabetes, and who account for a substantial proportion of hospital admissions.

To improve access to healthcare services and outcomes for all people with diabetes in Australia, new models of diabetes care, management and service delivery need to be identified and considered.

This toolkit is designed to assist health practitioners to improve their implementation of strategies to deliver best practice care to support people with diabetes. A collection of examples of Diabetes MoC are provided across a spectrum of services, many of which can be implemented in rural or remote settings, as well as in urban medical settings.

Primary care practitioners including GPs and allied health practitioners have key roles in the screening, detection and management of diabetes, with endocrinologists having key roles in particular when the complexity of the condition warrants further treatment and management plans. The progression of diabetes from early diagnosis to diabetes-related complications supports stronger working partnerships between GPs, PHNs, and other private primary health providers and funded services, such as community health services. Wider use of MoC will support people diagnosed with diabetes to better manage their health and avoid or delay disease progression, thereby improving their quality of life.

Currently, there is no one diabetes MoC in Australia that can be adaptable for every person with diabetes and each associated situation. This NADC Diabetes MoC toolkit is based on building the capacity of health care providers to better manage a person with diabetes and, as such, the examples we have included in this toolkit are of diabetes MoC that are currently being used by different practices and organisations across Australia.

1. www.diabetesaustralia.com.au/diabetes-in-australia
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12. Australian Government Productivity Commission Report, www.pc.gov.au
13. NSW Agency for Clinical Innovation. NSW Diabetes Taskforce. https://www.aci.health.nsw.gov.au/networks/diabetes-taskforce
14. Australian Diabetes Care Project, https://www.health.gov.au/internet/main/publishing.nsf/Content/302DF0372F537A43CA257E35000138E8/$File/DCP%20Evaluation%20Report.pdf
15. Evaluation Report of the Diabetes Care Project, http://www.health.gov.au/internet/main/publishing.nsf/Content/eval-rep-dcp
16. South Australian Aboriginal Diabetes Strategy 2017-2021, www.sahmriresearch.org
17. Western Sydney Diabetes Framework and Plan, www.westernsydneydiabetes.com.au
18. Western Australia (WA) Framework for Action on Diabetes and Diabetes Service Standards 2014, https://ww2.health.wa.gov.au/~/media/Files/Corporate/general%20documents/Health%20Networks/Diabetes%20and%20Endocrine/
19. WA Diabetes Model of Care (2008), ww2.health.wa.gov.au

Best Practice Models of Care Structure

Presentation of the Models of Care in the NADC Diabetes Models of Care Toolkit

The following section explores various examples of successful Models of Care currently operating across Australia. The MoC were identified through word of mouth, local knowledge of the steering committee members, and also from investigation of models freely found described on the internet. Further, members of the NADC responded to a survey asking for reports of innovative models of care. For some of these models, reported measures and outcomes may not be publicly available, formally assessed or even measured but they remain working models in Australian healthcare settings. Subheadings have been used in summarising the features of each MoC to allow the reader of this toolkit to easily compare each model. This structure has been partly based on the TIDieR (Template for Intervention Description and Replication) Checklist[1]. Subheadings include:

1. **Name of the Model of Care**
2. **What is the Model of Care**
3. **Key Principles**
4. **Why use the Model of Care Service – Benefits for Stakeholders and Case for Implementation**
5. **Challenges**
6. **What you need to implement the model**
7. **Monitoring measures and Outcomes**
8. **Financial Viability and Sustainability**
9. **Governance Structure and Framework**
10. **More Information**
11. **Resources**

Further, the models outlined in this toolkit are categorised to reflect those that are more likely to be used in various settings and those that are more specific to diabetes-related complications. A diagrammatic model is included in each model for easier understanding of how such a model may work in practice. They are ordered somewhat to reflect the "clinical journey" of a person with diabetes and as appointments with health professionals becomes more frequent and complex, from visits to the GP through to needing more complex care from an endocrinologist or a hospital setting.

This document will remain live as new models of care are made aware to the steering committee and consideration given to their success according to some of the outcome measures of models of care outlined above.

What to Consider when Assessing a Model of Care

A systematic review and meta-analysis of quality improvement (QI) strategies that showed improvements in the management of adult outpatients with diabetes was published by Jeremy Grimshaw and his colleagues[2]. They concluded that patient-mediated QI strategies should be an important component of interventions aimed at improving diabetes management. Such QI strategies include patients' education, promotion of self-management, team changes, case management, clinicians' education, facilitated relay, an electronic patient registry, patient and clinician reminders, audit and feedback as well as financial incentives.

Their findings suggest that QI strategies that aim to optimise the systems of care should (whenever feasible) be included in programmes to improve diabetes management[2]. However, further research is needed to identify which interventions and combinations of QI strategies will optimally improve important outcomes in people with diabetes and which QI strategies are relatively cost-effective for future health-system planning.

Core elements of Successful Models of Integrated Care[3]:

Interdisciplinary team work

- Well-coordinated team with defined roles

Communication and information exchange

- Willingness to share information, supportive managerial and administrative staff
- Trust between GPs and specialists, improved communication between GPs and hospital services
- Shared follow-up supported by electronic reminder systems
- Shared governance that enhances system capacity for effective communication and collaboration
- Regular interdisciplinary team meetings that enables information exchange
- Successful information channels includes case conferences
- Co-located GP and specialist clinics facilitated effective communication and information exchange between GPs and specialists, as well as ongoing access to specialists and shared follow up
- Clinics with easy and ongoing access to specialists/case conferences

Use of shared care guidelines or pathways

- Shared care planning and self management
- Pragmatic, locally agreed care protocols, e.g. for post-discharge care and review, shared care planning, patient goal-setting and self-management, and structured electronic record and recall systems

Training and education

- Initial and continuing education for primary care clinicians
- Patient education

Access and acceptability

- Generally an improved access of care is an objective, ensuring patient satisfaction, ease of access to integrated clinics at a one stop shop
- Delivering a more personal service
- Concerns included patients' lack of confidence in the skills of GPs with a special interest, perceptions that the specialist was less accessible under integrated care, some critical of the quality of care provided
- Concerns included GPs fear of patients being 'poached' from them, suboptimal communication with specialists when part of integrated care clinic

Viable funding models for its sustainability

- Essential for continuation of a program after the pilot work has been completed
- Concerns around funding related to the cost of the clinic model itself, impact of the model on existing services, and the uncertainty of future funding

These principles can also be translated for delivery of care in rural and remote areas and Indigenous communities, where funding resources are available.

How do you assess a model of care?

Health service interventions are generally measured according to their impact on clinical effectiveness, patient and staff satisfaction and cost efficiency. There are also measures of implementation. Effective evaluation of a model of care can guide people to reflect and design improvements in their clinical care service delivery. The ultimate aim of NADC would be to encourage the development of the collection of such data on a national scale to guide future health services delivery for people with diabetes.

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Diabetes Models of Care

The following is a list of all Diabetes Models of Care that will be explored in detail in this version of the toolkit:

The DESMOND NDF
(Diabetes Education and Self-Management for the Ongoing and Newly Diagnosed – Newly Diagnosed and Foundation Model of Care Module)

Diabetes Co-management in General Practice Model of Care

"Stepping Up" Model of Care to Support Insulin Initiation

The Hunter Alliance Diabetes Integration Project

"BEACON" Model of Care

Royal Flying Doctor Service (RFDS) Endocrinology Tele-health Service

Central Australia Diabetes Outreach Service Model of Care

The Queensland Ambulance Service (QAS) Referral Service

CSIRO Tele-health Eye-Screening Model of Care

The Diabetic Foot Unit

Diabetes and Chronic Kidney Disease

Additional information on the larger-scale Strategies and Frameworks for Action:

Western Australia Diabetes Model of Care

The South Australia Aboriginal Diabetes Strategy 2017-2021

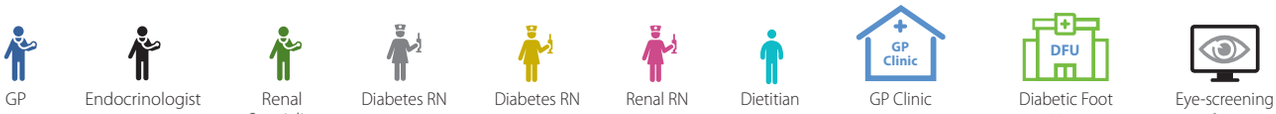
The Western Sydney Diabetes Plan 2018

Summary of Diabetes Models of Care
– explored in more detail in this version of the NADC MoC Toolkit

Name of MoC	Setting of MoC	Workforce	Principles of Intervention[1]	Intended or Reported Outcomes
DESMOND	Delivery of structured education to support people with type 2 diabetes Based on person-centred philosophy of care	6 hour programmes intended to complement individualised visits with CDE Offered programme at NDSS registration, GP can refer patient, or patient can call to enrol	Education of patients Promotion of self-management of patients Reminder systems Continuous QI	Overall aim to engage people to be empowered and proactive in managing their diabetes and to feel less stressed about living with diabetes[8-10]
Diabetes Co-Management in GP MoC	Community general practice clinic Team-based Evidence-based management, identifies patients at increased risk of diabetes-related complications Accessible 	RN-CDE GP	Team changes; RN-CDE integrates into the GP team and supports GP and patients Case management by RN-CDE Education of patients Promotion of self-management of patients Reminder systems Audit and feedback Facilitated relay of information to clinicians	Increases patient's contact and support through GP clinic, home or via 24-h phone support line Cost effective Reduces acute diabetes-related presentations to public hospital system[5] Synergy with Commonwealth reform initiatives
"Stepping Up" MoC to support Insulin Initiation	To support insulin initiation within a primary care diabetes team Enhanced role of practice nurse with support from RN-CDE Team-based Accessible 	PN RN-CDE GP	Team changes; enhanced role for the PN in leading insulin initiation with support from a RN-CDE if needed GPs retain prescribing authority GP education Patient education Promotion of selfmanagement of patients Continuous QI	Increases proportion of patients achieving glucose targets[7] Insulin initiation occurs in GP clinic setting Synergy with Commonwealth initiatives
Diabetes Hunter Alliance	Community general practice clinic Team-based Accessible 	GP PN Endocrinologist CDE	Team changes; multidisciplinary team from primary and tertiary systems come together to develop an integrated diabetes service Clinician education Education of patients Facilitated relay of information to clinicians	Improve patient's knowledge and understanding Cost effective Increase knowledge of GP and practice nurse

Name of MoC	Setting of MoC	Workforce	Principles of Intervention[1]	Intended or Reported Outcomes
BEACON	Community general practice clinic Team-based Accessible 	Endocrinologist Up-skilled GP (GP with Special Interests) CDE	Team changes; multidisciplinary team in the community – Endocrinologist, GP with Special Interests and CDE Clinical education of GP by specialist Education of patients Promotion of self-management	Improve GP knowledge Improve patient's knowledge and understanding Reduced hospital outpatients Reduced preventable hospitalisation[2] Equivalent clinical outcomes to specialist outpatients[3] Cost effective[4] Synergy with Commonwealth reform initiatives
RFDS Endocrinology Telehealth Service	RFDS telehealth platform can be linked to rural GP clinic, aged care facility or community health service Team-based Accessible for rural Victorian patients 	Endocrinologist linked to Baker Heart and Diabetes Institute in Melbourne Up-skilled GP CDE and/or appointment facilitator	Team changes; partnership between RFDS, local health services and the Baker Heart and Diabetes Institute Case management Electronic patient registry Promotion of self-management of patients Financial incentives Clinician education Audit and feedback Continuous QI	No cost to patient Cost effective Services rural Victorians who otherwise cannot receive specialised Endocrinology care
Central Australia Diabetes Outreach Service MoC	Baker Heart and Diabetes Institute provides outreach service in Alice Springs Multi-disciplinary Reaches more than 12 Aboriginal communities in Central Australia	Endocrinologist and staff from Baker Heart and Diabetes Institute Local RN-CDE works with Endocrinologists in collaboration with primary health care providers at remote health clinics	Team changes; outreach program services Central Australian remote communities Clinician education Audit and feedback Promotion of self management of patients Continuous QI Education of patients	No cost to patient Cost effective Services remote Aboriginal communities Provides patient consultation, staff education, support to local medical health providers in remote medical centres Program's evaluation has shown significant improvements in glucose levels and cholesterol [6]
QAS Referral Service	Patients seen by QAS as a result of a diabetes complication are referred to a CDE, with ongoing care arranged by Toowoomba Hospital Team-based Accessible	QAS paramedic staff CDE	Team changes; interaction between QAS and local clinical care providers Case management Audit and feedback Promotion of self-management of patients Clinician education	Coordinated care through services are delivered to the community Cost effective

Name of MoC	Setting of MoC	Workforce	Principles of Intervention[1]	Intended or Reported Outcomes
CSIRO Tele-health Eye Screening MoC	GP in clinic takes high resolution image of patients eyes which are analysed by technology for signs of diabetic retinopathy Multi-disciplinary Currently available in WA, plans to roll out nationally 	GP  Access to software for analysis of images  Referral to Ophthalmologist when required	Team changes; using artificial intelligence, GP's can screen patients for signs of diabetic retinopathy Clinician education Case management Financial incentives	Can be used in rural and remote settings Minimises travel time for patient to access retinopathy screening Needs agreement between CSIRO and local health service
The Diabetic Foot Unit	DFU provides inter-disciplinary care for people with active foot complications as a result of advanced diabetes within an acute setting 	Diabetic Foot Unit within a Endocrinology and Diabetes Department in Hospital Referral to other specialists when required, eg. surgeon  Assistance with transition of patient back to community health service	Team changes; specialised inter-disciplinary care of patients Promotion of self-management of patients Continuous QI Financial incentives	Key objective is to improve patient outcomes, decrease amputation rates, decrease hospital admissions and ED presentations
Diabetes & Chronic Kidney Disease MoC	Integrated patient-centred model of health-care delivery Delivery of structured, intensive and multi-faceted interventions involving multiple medical disciplines Up-skilling of primary health-care providers Team-based Accessible 	Multi-disciplinary diabetes-kidney service (Endocrinologist and Renal Specialist, diabetes and renal RN's, and a dietitian) complements and integrates with the patient-centred medical home, usually a GP clinic If required, case management by a care facilitator 	Education of patients Promotion of self-management of patients through motivational interviewing, and a diabetes-kidney care plan Contacts of peer and patient support groups provided Phone line service for additional support	Diabetes-kidney service was developed after consultation with patients and health-care staff Bi-directional communication Psychological morbidity is identified and managed Evaluation process leads to modifications of MoC Has evidence-based outcomes published [11] Reduction in the rate and length of hospitalisations Improving medical outcome targets, patient self-efficacy and QoL Integrates with the patient-centred health-care home being rolled out by the Australian Department of Health Cost effective



Name of MoC	Setting of MoC	Workforce	Principles of Intervention[1]	Intended or Reported Outcomes
Western Australia Diabetes MoC[12]	Framework for provision of coordinated diabetes prevention and management services across WA Accessible Delivery of structured education to support people with type 2 diabetes Multi-disciplinary Reaches Aboriginal communities in Western Australia	GP-coordinated multidisciplinary services Efficient interface between general practice and the diversity of community-based diabetes prevention and management services at the local level Specialist team services Health promotion	Keys organisations working in partnership; coordinated action across the health system and the care continuum Education of patients Promotion of self-management Improved accessibility	Prevention or delay the onset of diabetes Prevent or slow the progression of diabetes related complications Improve QoL of people who have diabetes Reduce inequities in diabetes service provision Reduce preventable hospitalisations Synergy with Commonwealth reform initiatives
The South Australia Aboriginal Diabetes Strategy 2017-2021[13]	Designed specifically to meet the needs of the Aboriginal people in SA	Multi-disciplinary services that include Aboriginal community representatives	Integrated, coordinated approach to type 2 diabetes prevention and management of Aboriginal people Establishment of a coordinated plan for the prevention and management of diabetes associated complications with services that manage these complications	Reduce the incidence of diabetes Detect type 2 diabetes early Improve diabetes care and reduce complications among priority groups Strengthen research, data usage and population health monitoring Goals are in line with the National Diabetes Strategy
The Western Sydney Diabetes Plan 2018[14]	Partnerships among key business, government and community organisations to drive the change that's needed to beat diabetes in Western Sydney	An alliance of over 100 active members or oganisations committed to helping 'beat diabetes together' Placed-based local community engagement initiative bringing all the interventions alive in one location	To increase the proportion of the healthy population and reduce the size of the at-risk population	Increase the proportion of healthy population, slow the progression towards being at risk of diabetes and prevent complications Primary prevention to improve healthy food consumption Highly linked interventions for earlier detection and improved management of diabetes

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6. Supporting insulin initiation in type 2 diabetes in primary care: results of the Stepping Up pragmatic cluster randomized controlled clinical trial (BMJ 2017;356:j783)
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The DESMOND NDF

(Diabetes Education and Self-Management for the Ongoing and Newly Diagnosed – Newly Diagnosed and Foundation Model of Care Module)

The DESMOND Suite of Programs and Modules is a proven and evidence-based approach for the delivery of structured education to support people with type 2 diabetes. DESMOND is underpinned by several behavioural theories that align with a person-centred philosophy of care.

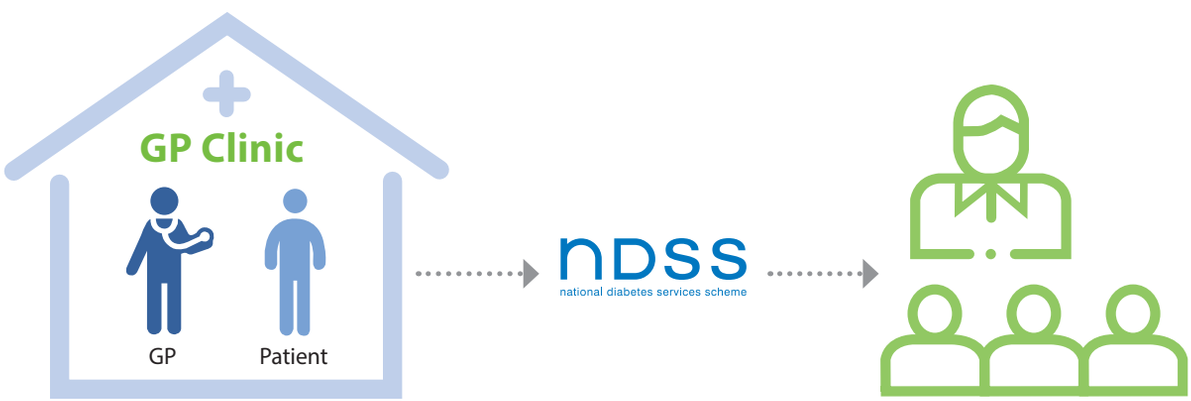
What is the DESMOND NDF Model of Care?

From the original DESMOND concept developed, delivered and evaluated in the UK since 2003 by the Leicester Diabetes Centre and the University of Leicester, Diabetes WA has adapted (2011), rolled out (2012 onwards), capacity built (2015 onwards) and evaluated (2016 onwards) the DESMOND NDF Programme with face to face sessions, firstly in WA, and then across Australia. This has been achieved with great success.

The overall aim of DESMOND is to engage people to be empowered and proactive in managing their diabetes and to feel less distressed about living with diabetes.

All people with Type 2 diabetes are offered the opportunity to attend DESMOND NDF as a central component of their NDSS registration at diagnosis and at critical junctures (eg. life or care transitions, when complications arise, commencing insulin). It is envisaged that Aboriginal DESMOND and culturally and linguistically diverse (CALD) versions of DESMOND will be available to be rolled out in the 2019/2020 financial year, funding permitted.

DESMOND NDF is a 6 hour program (one or two half days), with 10 participants encouraged to attend (a support person may also attend). It is facilitated by two, quality assured and trained Health Professionals. DESMOND NDF is intended to complement (not replace) individualized visits with credentialed diabetes educators.



Key Principles

The success of DESMOND lies not only in its content but crucially in how it is delivered. Trained and accredited DESMOND Educators provide DESMOND 'person-centred' philosophy of care, which is one of 'informed choice' (see website for more details www.desmondaustralia.com.au).

Once patients are registered on the NDSS, GPs are encouraged to complete a state based referral form or encourage the patient to call the National NDSS Helpline 1300 136 588 to book into the nearest programme. Whilst there is a structural curriculum that uses an empowerment approach, there are other 'topic specific' programmes available under the NDSS to increase the potential 'hours' of exposure to diabetes education and increase self-care skills in specific areas such as foot care, carbohydrate counting, commencing insulin and label reading.

Why use the DESMOND Model of Care? – Benefits for Stakeholders and Case for Implementation

The recent American Diabetes Association/European Association for the Study of Diabetes (ADA/EASD) Consensus Report for the Management of Hyperglycaemia in Type 2 Diabetes, 2018 identifies principles of care and consensus recommendations that should underpin MoCs. This report provides guidance on how to achieve a person-centred approach and the engagement with self-care activities that reduce the risk of complications while optimizing quality of life[1]. Diabetes Self-Management Education and Support (DSMES) is identified as a key component of care with the consensus recommendation that: 'All people with Type 2 diabetes should be offered access to ongoing diabetes self-management education and support (DSMES) programmes.'

Evidence for DSMES suggests that the optimal outcomes are achieved with a dose >10 hours, the largest decrease in HbA1c occurs with a combination of group and individual interventions, and that DSMES can significantly reduce risk of all-cause mortality and hospital admissions[2].

The DESMOND Programme offers training and quality assurance for healthcare professionals and educators to deliver any of the DESMOND modules and tookits, and meets National Institute for Health and Care Excellence (NICE) standards and EASD/ADA key components for DSMES being that:

- It is evidence-based[3] and individualised to suite the needs of the person
- It has specific aims and learning objectives and supports the person and their family members and carers in developing attitudes, beliefs, knowledge and skills to self-mange diabetes
- It has a structured curriculum that is theory-driven evidence based and resource-effective, has supporting materials, and is written down.
- It is delivered by trained health professionals who have an understanding of behavioural theories and science appropriate to the age and needs of the persons, and who are trained and competent to deliver the principles and content of the program
- It is quality assured, and reviewed by trained, independent assessors who measure it against standardized criteria that ensure consistency
- The outcomes are audited regularly
- Culturally adapted for the Aboriginal Community
- Currently undergoing research via an NH&MRC partnership grant, with data showing it is a culturally safe programme in metro, rural and remote locations in WA
- Can be adapted for individual CALD communities using a nine step pathway
- MyDESMOND (online version of DESMOND NDF) will be piloted in WA in 2019 with an expected roll out nationally in 2020

Challenges

- Awareness of DESMOND NDF (available under the NDSS) among primary care health professionals is lacking, barriers are unknown
- Referral to DSMES not yet accepted by primary care professionals as standard best practice, is not been included in diabetes referral pathways
- Confusion regarding generic chronic condition programmes offered in primary care that are potentially replacing DSMES and assumed to be achieving best practice care for people with diabetes
- Limited budget within NDSS to market to both consumers and GPs beyond encouraging NDSS registration

What you need to implement the model

- Valuing of DSMES as a key component of best practice in diabetes care in Australia
- Active promotion of DSMES by key diabetes organisations, primary care and allied health professionals
- Integration of DESMOND NDF into a national 'primary care' diabetes MoC that reflects best practice and current guidelines
- Integration of DESMOND NDF into health pathways being developed by PHNs across Australia
- Integration of DESMOND NDF into discharge planning and referral systems from tertiary diabetes centres

Monitoring measures and Outcomes

- DESMOND randomly controlled trial outcomes, including clinical parameters, measures of empowerment and diabetes-related distress
- Real-world evaluation
- Diabetes WA Research and Evaluation, including Patient Activation Measure
- NDSS cyclical evaluation as per the NDSS National Evaluation Framework and Measures

Financial Viability and Sustainability

The DESMOND NDF programme is currently funded under the Commonwealth DoH's NDSS's Continuing Support Programmes. All states have committed to DESMOND NDF as the national programme offering for Type 2 diabetes. The current CoH's NDSS agreement ends 30th June 2020. There has been recent significant investment by the Commonwealth Government in 'MyDESMOND' as the online version of the face to face offering in addition to the NDSS funding.

Financial assistance will be required for the roll out of Aboriginal DESMOND beyond WA to ensure that Northern Territory and rural and remotes areas in other states can ensure equity of access to the programme. This is not expected to be a significant financial burden if shared across states and in partnership with Aboriginal Community Controlled Organisations/Aboriginal Medical Services.

Governance Structure and Framework

University Hospitals of Leicester NHS Trust (UHLNT) hold the intellectual property for the DESMOND family of programmes, which includes DESMOND NDF. Diabetes WA currently holds a five year exclusive license for the DESMOND family of programmes for Australasia to ensure the fidelity of the programmes in this region.

Diabetes WA has sub-license agreements with each state and territory organisation to enable the delivery of the programme in those regions, in accordance with the Commonwealth Department of Health's NDSS Agreement, which is administered by Diabetes Australia. Diabetes WA received no remuneration for these sub-license agreements and bares the full financial burden of maintaining the DESMOND family of programmes in the Australasian region. The purposes of the sub-license agreements are solely to ensure the fidelity of the programme and ensure research outcomes continue to be maintained.

More information

For further information on DESMOND contact Sophie McGough, Health Serviced Operations Manager, Diabetes WA, 1300 001 880. **www.diabeteswa.com.au**, Sophie.McGough@diabeteswa.com.au

Resources

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3. Davies MJ, Heller S, Skinner TC, *et al*. Effectiveness of the diabetes education and self management for oigoing and newly diagnosed (DESMOND) programme for people with newly diagnosed type 2 diabetes: Cluster randomised controlled trial. BMJ 2008; 336(7642):491-795. doi: 10.1136/bmj.39474.922025.BE

Diabetes Co-Management in General Practice Model of Care

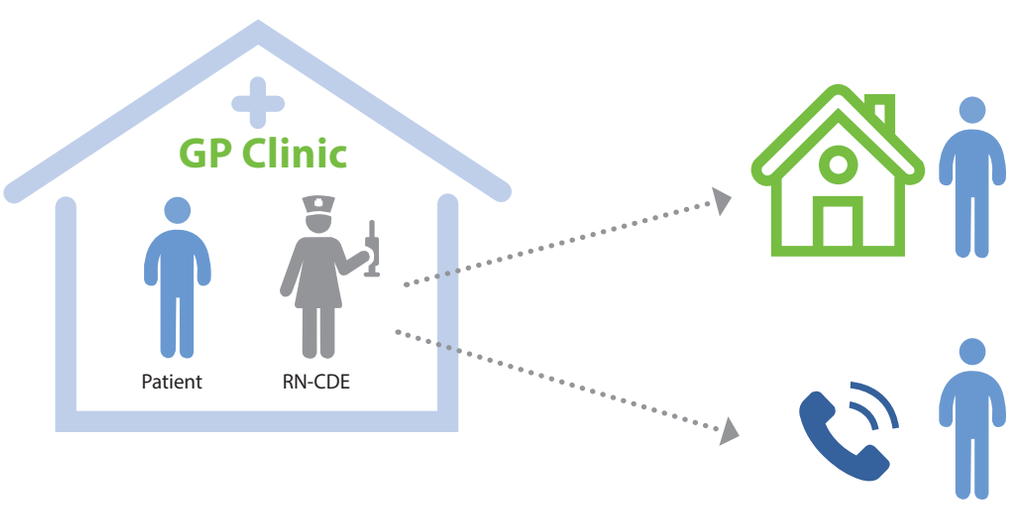
(DCGP) is a regional project being implemented in general practices in areas of Melbourne.

What is the Diabetes Co-management in General Practice Model of Care?

To increase access to coordinated diabetes services and to prevent avoidable diabetes-related hospital admissions through improved care, self-management, education and support, Credentialed Diabetes Educators (RN-CDEs) co-manage care with the patient and general practitioner, using evidence based management, care plans and referrals.

Key Principles

This model of care involves RN-CDEs who may have contact with the person living with diabetes at the general practice clinic, home visits or via 24 hour phone support. The RN-CDE within the general practice may also check databases, target patients not at target, establish recall systems, develop care plans, and offer support to a practice nurse when required in treating patients with diabetes, as well as support to patients and GPs.



Why use the DCGP Model of Care? – Benefits for Stakeholders and Case for Implementation

- This project model can be individualised for each practice to accommodate business style, etc.
- Identifies greater number of patients at risk of developing diabetes-related complications
- Increases access to coordinated diabetes services
- Increases support at the general practice clinic
- Improves health outcomes

- Assists to integrate medical staff within a general practice
- Reduces acute diabetes-related presentations to the public hospital system
- Can reduce the financial imprint of the Australian economy
- Absence of consultation fee with specialist, this is a major benefit for those patients of lower socioeconomic status
- No gender imbalance in terms of participation in DCGP project
- Decreased downtime travel time and appointment waiting times to see a specialist
- Patients more comfortable in their regular/routine GP environment to receive diabetes education and support from RN-CDE

Challenges

- Constraints on interpreter use include limited availability of interpreter when needed, patient preference for using relative/friend to facilitate communication

What you need to implement the model

- Agreement between the general practice and a RN-CDE who provides regular sessions at mutually agreed times
- Agreement from patients to participate in the DCGP project
- Database where RN-DCE can retrieve clinical data relevant to a person living with diabetes

Monitoring measures and outcomes

- Patient attendance rates (for both standard and diabetes education appointments)
- Clinical biochemical markers
- Attendance rates at public hospital emergency departments
- Patient satisfaction survey
- Clinician and medical practice staff satisfaction survey

Financial Viability and Sustainability

This project was considered value for money and has been mainstreamed into the Royal Melbourne Hospital HARP program. Following external review, this DCGP project was deemed to be performing well at a cost of $324 per patient.

Governance Structure and Framework

Individualised structure possible at general practice clinics. Generally, when implemented, structure would consist of GP as Director, Project Manager, half-time support and DCEs.

More information

Details on the (DCGP) project is available from Merri Community Health (details pending).

Resources

T. Aylen, L, Watson and R. Audehm. *Nurse specialists co-managing diabetes within general practice.* European Diabetes Nursing February/May 2006, volume 3, issue 1, pages 28-33.

"Stepping Up" Model of Care to support Insulin Initiation

This novel Model of Care "Stepping Up" can be used to support insulin initiation within a primary care diabetes team.

What is the "Stepping Up" Insulin Initiation Model of Care?

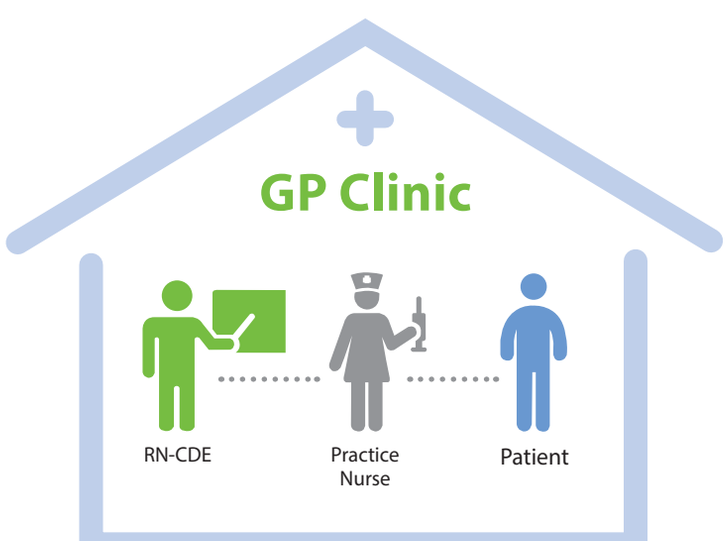
This MoC is designed to support insulin initiation in a primary care setting among people living with type 2 diabetes for whom it is clinically indicated. It involves an enhanced role for the practice nurse in leading insulin initiation and mentoring of a patient by a registered nurse who is a credentialed diabetes educator.

Key Principles

The use of insulin to improve glycaemic control is well supported, however, GPs and patients face challenges in intensifying treatment to achieve glycaemic targets. Some patients are hesitant to commence insulin treatment, whereas some general practices lack support from appropriate workforce to guide a patient through this transition period, especially when insulin titration is required to support good glucose control.

Why use the "Stepping Up" Insulin Initiation Model of Care? – Benefits for Stakeholders and Case for Implementation

- Generally uses existing resources
- Reorientation of the role of the GP to allow the practice nurse to initiate and educate a patient with insulin administration
- To increase the proportion of patients who achieve a target HbA1c and improve overall general health
- Reduction in referrals to costly secondary care
- Can be used in conjunction with tele-health to implement this MoC in more distant rural or remote settings



Challenges

- Transition of patients from GP to practice nurse for insulin initiation
- Concerns about hypoglycaemia risk
- Lack of confidence or skills in insulin initiation or titration in primary care
- Competing priorities in busy, reactive primary care settings
- Patient psychological resistance to insulin administration
- Training and mentoring nurses to enhance their knowledge, skills, and confidence in discussing and implementing insulin initiation within the practice as a part of routine care

What you need to implement the model

- A general practice with access to a practice nurse
- Support of a credentialed diabetes educator
- Patients who are keen to engage in their own health care
- Can be used in conjunction with tele-health to implement this MoC in more distant rural or remote settings

Monitoring measures and Outcomes

- Patient attendance rates
- Clinical biochemical markers
- Rates of hypoglycaemia
- Rates of insulin initiation
- Patient satisfaction survey
- Clinician satisfaction survey
- Weight gain rates

Financial Viability and Sustainability

Embedding insulin initiation for people with type 2 diabetes in routine general practice is necessary given the majority of diabetes care occurs in this setting. This work was based on Normalisation Process Theory (NPT), a sociological theory of implementation, which describes how new practices become incorporated into routine clinical care as a result of individual collective work[1]. This has the potential to improve outcomes while making better use of scarce healthcare resources.

Funding for the published randomised clinical trial was supported by the NHMRC and by an educational/research grant from Roche Diagnostics Australia.

Governance Structure and Framework

This evidence-based intervention was patient-centred in general practices that already had a Practice Nurse (PN) as part of the medical team. Additional mentoring of the PN was provided by a credentialed diabetes nurse educator (CDNE) when needed. The Stepping Up MoC involved a reorientation of existing resources, namely the enhanced, reconfigured role for a practice nurse, and thus has important implication of policymakers, funders, and practitioners seeking innovative ways to provide the best care for people with type 2 diabetes in primary care.

More information

Stepping Up Tele-health – Using tele-health to support a new model of care for type 2 diabetes management in rural and regional primary care, Australian National University.

Resources

Supporting insulin initiation in type 2 diabetes in primary care: results of the Stepping Up pragmatic cluster randomized controlled clinical trial (BMJ 2017;356:j783)

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http://www.normalizationprocess.org/

The Hunter Alliance Diabetes Integration Project

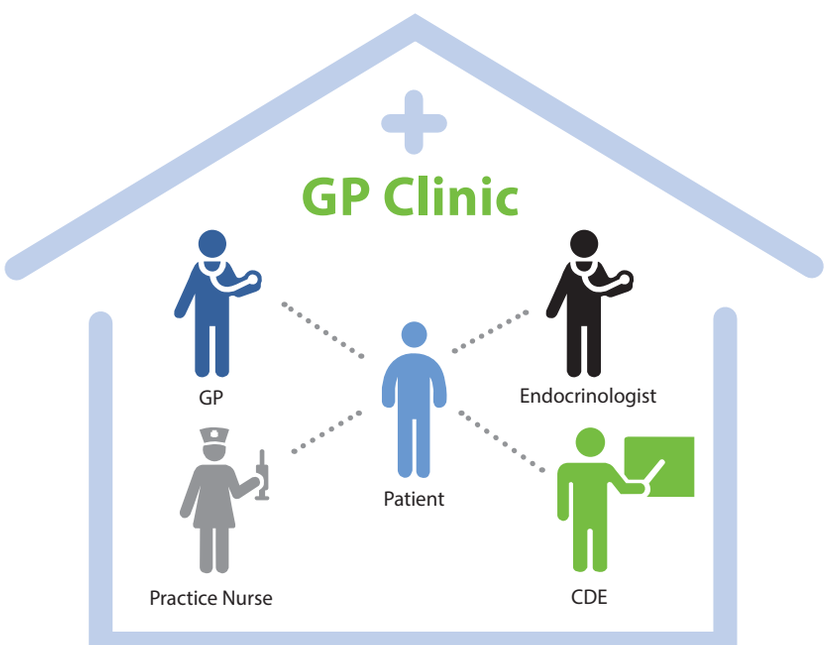
The Diabetes Hunter Alliance is an integrated Model of Care diabetes project in the Hunter New England region.

What is the Diabetes Hunter Alliance?

The Diabetes Hunter Alliance was developed to overcome barriers to providing care in the general practices in the Hunter New England Local Health District. This MoC has 3 arms: (1) Endocrinologists and diabetes educators working with GPs and practice nurses in the GP practice in a case consultation model with the primary objectives of developing an integrated diabetes services that improves the patient experience of care whilst improving the knowledge, confidence and skills of clinicians caring for these patients; (2) whole of practice diabetes data performance feedback; and (3) masterclass education in the Hunter New England region.

Key Principles

Elements of this MoC include clinicians from both the primary (GP and Practice Nurse) and tertiary system (Diabetes educator and Endocrinologist) coming together to see patients in their own familiar general practice environment rather than being seen independently on 2 separate occasions at two venues. This MoC diabetes project provides opportunities for support of primary care teams to work at the top of their scope when caring for patients with type 2 diabetes. The project utilizes software templates, data recording templates, and general educational tools to engage the person living with diabetes. This MoC is economically viable for the general practice and public specialist services.



Why use the Diabetes Hunter Alliance?
– Benefits for Stakeholders and Case for Implementation

Early indications are showing improved patient empowerment and the improved GP and practice nurse levels of knowledge and confidence.

- Improved clinical outcomes, patient empowerment, increased GP & practice nurse levels of knowledge and confidence resulting in high levels of clinicians' professional satisfaction have been reported as a result of this MoC
- To improve clinical outcomes
- To support the development of an integrated team where all clinicians are confident, skilled and supported to work at the top of their scope
- To enhance patient self-management
- To support best evidenced prescribing and monitoring
- To improve patient experience
- To address recognised barriers to implementation
- To reduce time taken by clinicians and patients to initiate or intensify treatment

Challenges

- Availability of specialist clinicians in the workforce

What you need to implement the model

- Established collaboration between the Local Health District and the Primary Health Network
- GP and Practice Nurse in own clinic
- Visiting endocrinologist
- Diabetes educator
- Patient and carer
- Data management system, extraction and analysis mechanism

Monitoring measures and Outcomes

- Clinical parameters
- Greater confidence in pharmacological management
- Importance of applying a more thorough review of patients with diabetes at each visit – not just focusing on their HbA1c
- Clinician and patient satisfaction monitoring
- Patient Activation Measure™ pre and post consultation measures

Financial Viability and Sustainability

An Alliance was formed in 2014 that included both the Local Health District and at the time the Hunter Medicare Local. This Alliance continued with the introduction of the PHN's and the program was piloted as an activity of this Alliance. Following a pilot phase evaluation this program was supported by the executive teams of both the Local Health District and the Primary Health Network as being a sustainable new MoC for patients with Type 2 diabetes in the Hunter New England Region. A shared funding model is supported through a Service Level Agreement between the two organisations to continue the program as 'business as usual'.

Governance Structure and Framework

This programme falls under the governance framework of the Alliance between the Hunter New England Local Health District and the Hunter New England and Central Coast Primary Health Network.

More information

For further information on the Diabetes Alliance email:
HNELHD-DiabetesAlliance@ @health.nsw.gov.au

Resources

Copies of the presentation and poster presented at the 2016 National GP Conference and 2016 Australian Diabetes Society Annual Scientific Meeting in Perth, https://hneccphn.com.au/programs-resources/hunter-diabetes-alliance/

BEACON Model of Care

The "BEACON" Model of Care was established to support people with complex type 2 diabetes complications in a community setting.

What is the "BEACON" Model of Care?

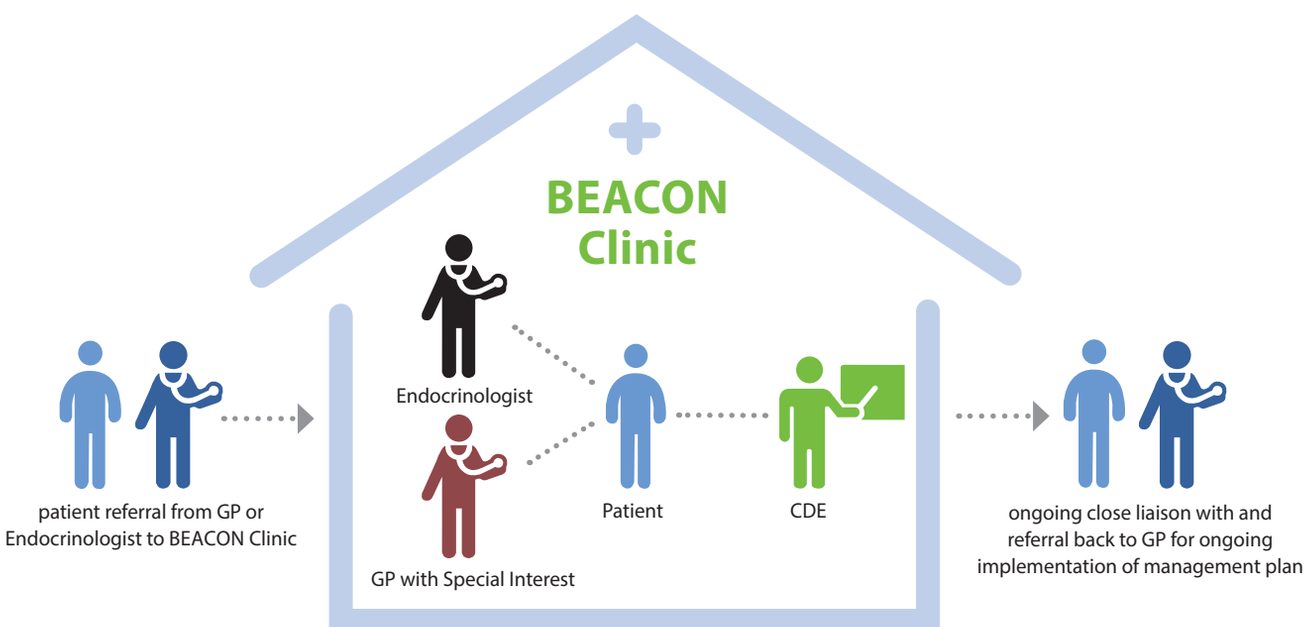
A "BEACON" clinic is a community general practice where a person with diabetes can see an endocrinologist, advanced-skilled GP, and credentialed diabetes educator, rather than attend a hospital out-patient diabetes clinic.

Key Principles

This MoC is based on a partnership between the University of Queensland (UoQ), the Brisbane South PHN (BSPHN) and the Metro South Hospital and Health Service (MSHHS) to provide improved access to specialist care for people with complex Type 2 diabetes complications.

An objective is to refer patients to the BEACON clinic for a defined period of time based on patient needs rather than to a hospital outpatient service. The BEACON clinic liaises with and refers the patient back to the patient's usual GP once their diabetes has been stabilised or after 12 months.

The model trains GPs to manage complicated Type 2 diabetes under the supervision of an endocrinologist, allowing GPs to take these skills back to their usual place of practice, hence amplifying the knowledge learnt.



Why use the "BEACON" Model of Care? – Benefits for Stakeholders and Case for Implementation

A "BEACON" clinic:

- Has evidence based outcomes demonstrated in a non-inferiority randomised control trial – comparable clinical outcomes to a hospital based specialist outpatients but with greater patient satisfaction
- Showed a reduction in preventable hospitalisation and a reduction in outpatient hospital wait lists
- Transfer of knowledge to GPs
- Provides a service which is accessible, welcoming and team-based
- Rapport between team members and patients
- Once referred back to GP, patient may contact the service if they need additional input or advice
- Improves the patients' knowledge and understanding of type 2 diabetes and engages them more in their own health
- Synergy with Commonwealth reform initiatives
- Care is delivered in the community and not tertiary hospital
- Cost effective

Challenges

- Funding crosses boundaries between State and Commonwealth funding
- Good change management in adopting a new MoC
- Engagement of surrounding GPs to understand the model and appreciate patients are not being "poached" by the upskilled GPs conducting the clinic
- Engaging administrative staff to support the operation of the clinic
- Providing regular performance monitoring data
- Ensure adequate patient through put and financial State Government support to ensure a sustainable business model

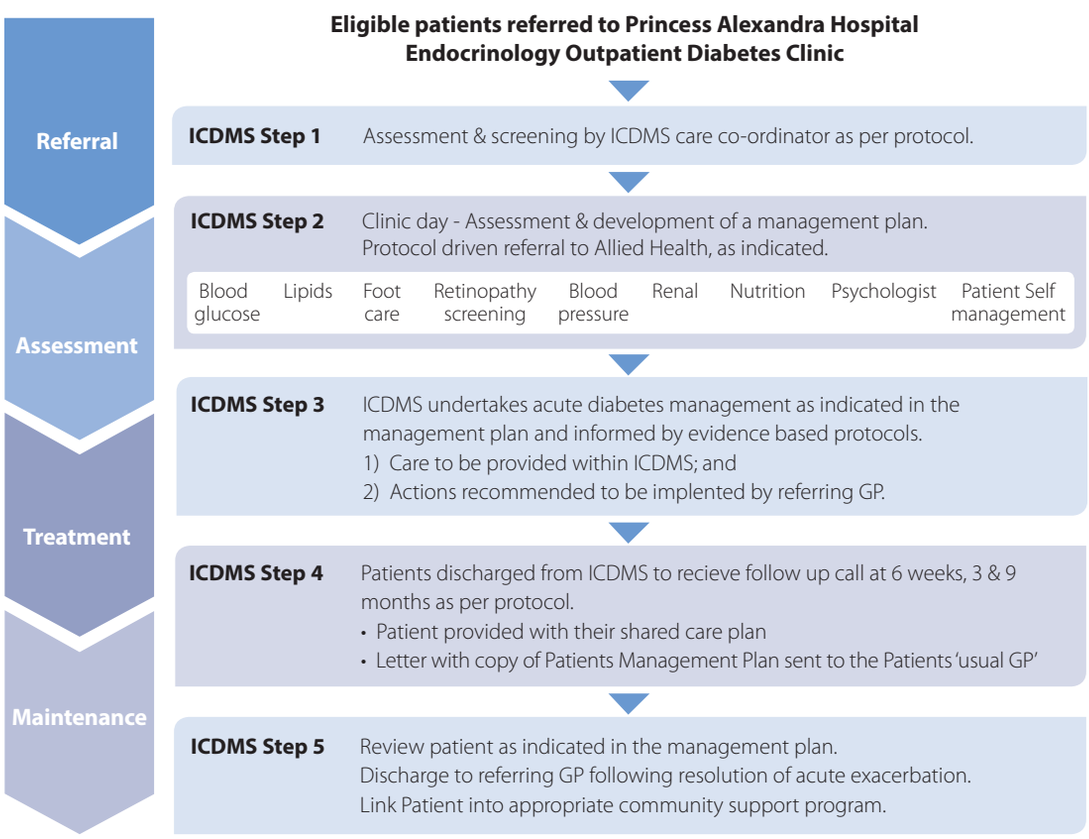
What you need to implement the model

- A minimum of three up-skilled GPs (2 in the clinic and one back-up) with special interests per clinic
- Each clinic is a 4hr clinic seeing at least 7 patients per GP with special interests
- GPs may regularly work in the practice, or may come from other practices
- A community location that can provide consultation spaces, computing services and maintain medical records to support the operation of the "BEACON" clinic
- Engagement of administrative staff to support the operation of the clinic
- Collect and provide regular performance monitoring data
- An Endocrinologist willing to educate and support GPs and be able to delegate responsibility of care to the GP with special interests.
- A diabetes nurse educator with excellent case coordination skills and comfortable in the GP practice team and able to work independently between clinics
- Support of HHS executive and PHN for implementation and sustainability

Monitoring measures and Outcomes

- Improving patient education and self-management
- Measuring treatment targets: HbA1c, BP, lipids, weight
- Measuring rates of hospital admissions
- Measuring reduction in outpatient waiting lists
- Measuring patients' QoL
- Staff satisfaction

Inala Chronic Disease Management Service Model of Care



Financial Viability and Sustainability

The business model works on a combination of State and Federal funding with the GP with Special Interest claiming MBS item numbers and the public hospital employed Endocrinologist claiming activity based funding when the Endocrinologist is directly involved in the care of the patient. Sustainability requires the support of the PHN and HHS.

Governance Structure and Framework

The clinics fall under the Governance structure of the HHS, Division of Medicine.

More Information

A 26 hour online module and workshop is provided to train up a GP with Special Interest before commencing in the BEACON clinic.

Resources

A.W. Russell, M Donald, SJ Borg, J Zhang, LH Burridge, RS Ware, N Begum, HD McIntyre and CL Jackson. Clinical outcomes of an integrated primary-secondary model of care for individuals with complex type 2 diabetes: a non-inferiority randomized controlled trial. *Diabetologia* 2019: 62(1):41-52. doi: 10.1007.s00125-018-4740-x

C.L. Jackson, A.W. Russell, H.D. McIntyre. Establishing a new model of integrated primary and secondary care based around general practice: a case study of lessons learned and challenges. *Australian Health Review* 2017

S.A. Hollingsworth, M. Donald, J. Zhang, B. Vaikuntam, A. Russell, C. Jackson. Impact of a general practitioner-led integrated model of care on the cost of potentially preventable diabetes-related hospitalisations. *Primary Care Diabetes* 2017 http://dx.doi.org/10.1016/j.pcd.2017.03.009J.

J. Zhang, M. Donald, K.A. Baxter, R.S. Ware, L. Burridge, A.W. Russell, C.L. Jackson. Impact of an integrated model of care on potentially preventable hospitalizations for people with Type 2 diabetes mellitus. *Diabetes Med* 2015; 32:872-880

C. Jackson, J. Tsai, C. Brown, D. Askew, A. Russell. GPs with special interests – impacting on complex diabetes care. *Aust Fam Physician* 2010; 39(12):972-974

Royal Flying Doctor Service Endocrinology Tele-health Service

The Royal Flying Doctor Service (RFDS) in Victoria offers a 100% bulk billed tele-health service to those living in rural areas in Victoria to access endocrinologists based at the Baker Heart and Diabetes Institute in Melbourne.

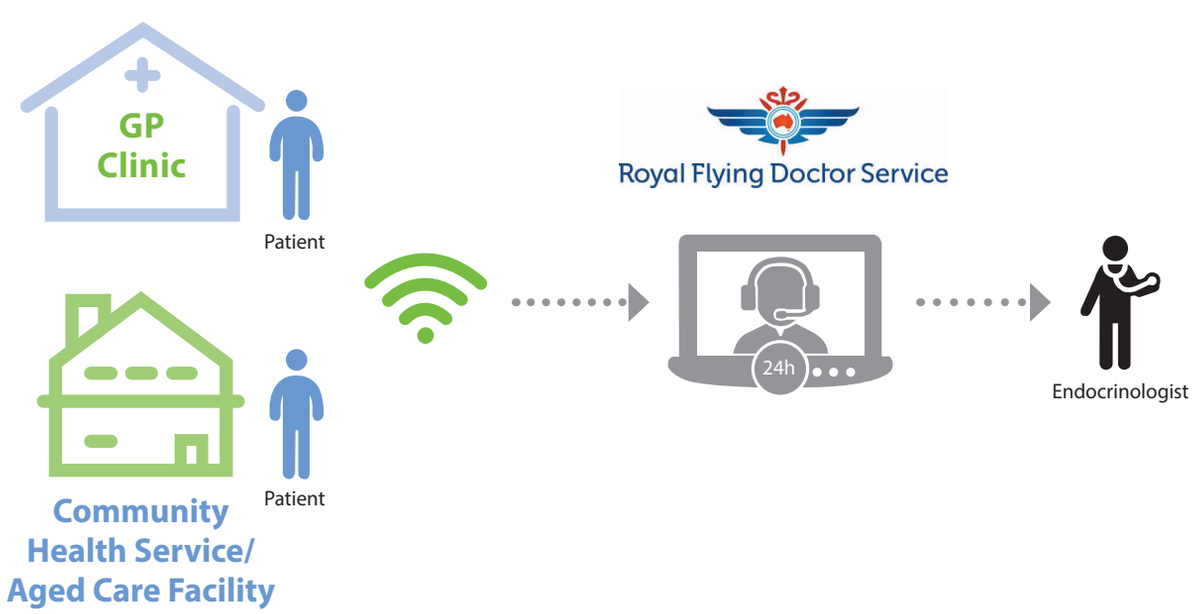
What is the RFDS Tele-health Service?

Specifically, the Endocrinology Tele-health service connects people living with diabetes in rural Victorian communities with endocrinologists in Melbourne, with the support of a diabetes educator or appointment facilitator. Some patients with thyroid issues can also access the service. RFDS has a custom-built platform that allows for online bookings and joining video call appointments, with the added benefits of secure patient file sharing.

Key Principles

This model of care is based on using tele-health to facilitate specialist care for the person living with diabetes in a rural or remote area. A rural based local health service, including a GP clinic, community health service or aged care facility may use their existing computers and IT resources to connect patients to the Flying Doctor Telehealth platform. RFDS can provide one webcam pack to new locations that do not have a web camera available.

This RFDS model relies on a strong partnership between local health services and the Baker Heart and Diabetes Institute. Tertiary hospitals in all major cites of Australia have a Diabetes and Endocrinology Service that may be invited to participate in a Diabetes tele-health service MoC.



Why use the RFDS Tele-health Service?
– Benefits for Stakeholders and Case for Implementation

- No set-up needed on computers/tablets, platform is accessed via web browser Google Chrome
- No cost to patient or health service, cost effectiveness
- Can bill for visit that may not have otherwise occurred
- Small initial training on using booking/consultation tele-health platform provided by the RFDS - training estimated to take 30 minutes, training/support offered free of charge by RFDS
- RFDS provides troubleshooting concierge support during all appointments
- Local GP has the opportunity to sit in on consultations but it is not a requirement
- Health Care Professionals can sit in on consultation and gain valuable knowledge from the specialist
- Can be used in a range of settings such as Community Health Service, GP practice, Aged Care Facility where access to a specialist is difficult
- Decreased travel time and appointment waiting times to see a specialist, thus increasing access
- Booking system and RFDS software is easy to use
- Flexible appointment times to accommodate both doctors and patients

Challenges

- No face-to-face contact which may impede rapport between patient and specialist, however endocrinologist and patient feedback has indicated that this is not a barrier during appointments
- Bandwidth and connectivity using the internet for tele-health calls needs to be reasonable to meet the demands of tele-health and to allow smooth connection between the patient and specialist (RFDS provide connectivity testing as part of new site on-boarding)
- Endocrinologists tend to only be available on certain days, so appointment days/times may be limited
- Security / privacy concerns – RFDS takes security and patient privacy very seriously, thus the custom built tele-health platform meets all privacy standards and uses video call software that is unable to be accessed by intruders
- Lack of physical examination. If a physical examination is needed it may be completed by GP or Diabetes Educator and provided to specialist prior to appointments (all other information needed is as per the RFDS Endocrinology referral pathway)

Support provided by RFDS

- Site connectivity testing/support
- Secure tele-health platform and service
- Comprehensive platform and service training, and ongoing support
- Credentialed tele-health clinicians

What you need to implement the model

- Agreement between RFDS and health service
- Computer or tablet with Google Chrome available

- Suitable staff identified to facilitate booking and/or joining consultations
- Reasonable internet connection. RFDS to provide connectivity testing; video call software is BlueJeans, details of requirements can be found here: **https://support.bluejeans.com/knowledge/system-requirements**
- Internal procedure re: the booking, room set up and attendance of other HCP with the patient during the consultation – consideration should be given to establishing a Tele-health Appointment facilitator and internal protocol
- GP referral to the Specialist (referrals are also valid from Nurse Practitioners or Specialists)
- Appropriate room / space to have the consultations to ensure normal privacy requirements for health information are met (RFDS can assist with location suitability for tele-health)
- Local pathway for referral to the RFDS tele-health program

Monitoring measures and Outcomes

- Patient attendance rates (for both standard appointments and tele-health consultations)
- Clinical biochemical markers
- Number or tele-health consultations required per patient
- Patient satisfaction survey
- Clinician satisfaction survey including clinical learnings through the process
- RFDS evaluation

Financial Viability and Sustainability

- Once partnership has been established, there is no cost to patient or health service
- Tele-health consultation can be billed by local GP service
- RFDS provides free consultation software, initial training and ongoing support

Governance Structure and Framework - RFDS:

- Internal clinical governance framework
- Safety and quality management
- Incident and feedback management system
- Primary Health Care – Credentialing form

More information

Details on the RFDS Endocrinology Tele-health Service in Victoria can be found on their website **https:www.flyingdoctor.org.au/vic/**. To access RFDS Tele-health at your local health service or GP clinic please contact the RFDS tele-health team on (03) 8412 0444 or **telehealth@rfdsvic.gov.au**

Note, for services not eligible for the Victorian RFDS model, it is important to consider contacting the nearest tertiary level Diabetes and Endocrinology Service that may be interested in developing a similar Diabetes MoC. This model could also be adapted for use across local regions with a private Endocrinologist also.

Resources

RFDS tele-health endocrinology referral pathway (https://flyingdoctortelehealth.org.au/endocrinology/)
RFDS tele-health health services brochure (https://www.flyingdoctor.org.au/what-we-do/tele-health/)

Central Australia Diabetes Outreach Service Model of Care

Since January 2011, the Baker Institute has been providing a Diabetes Outreach Service in Alice Springs to more than a dozen remote Aboriginal communities in Central Australia.

What is the Central Australia Diabetes Outreach Service?

Aboriginal people in Central Australia experience a disproportionate burden of diabetes and related complications. The Central Australia Diabetes Outreach Service fills an unmet need for healthcare in a complex environment, being the only diabetes specialist outreach service available to Central Australian remote communities and Alice Springs Hospital.

The Baker Institute's CDEs provide patient consultation and staff education, support specialists during their visit, and monitor patient outcomes. During these visits, they also provide education to remote health clinic staff.

Key Principles

This Service is based on a multidisciplinary MoC where credentialed nurse educators (RN CDEs) work with diabetes specialists in collaboration with primary health care providers at remote health clinics. The Institute's outreach specialists visit communities twice yearly in accordance with best practice diabetes care. During these visits, they also provide education to remote health clinic staff. In this way, remote communities benefit from the most advanced care in diabetes.

Why use the Central Australia Diabetes Outreach Service Model of Care? – Benefits for Stakeholders and Case for Implementation

- This Service can reach remote Aboriginal communities
- Provides advanced care in diabetes to Aboriginal people who otherwise cannot access diabetes care
- Increases education to remote health clinic staff
- Improves health outcomes
- Empowers Indigenous community-controlled health organisations
- Synergy with Commonwealth reform initiatives
- Decreased downtime travel time and appointment waiting times to see a specialist
- Patients more comfortable in their regular community environment to receive diabetes education and support from RN-CDE

Challenges

- Remote locations more difficult to access by health professionals
- Limited availability of allied health professionals

What you need to implement the model

- Agreement between the local Aboriginal community members and the Diabetes Outreach Service
- A RN-CDE who provides in-service training and ongoing support, monitors patient outcomes, and supports specialists during their visit

Monitoring measures and Outcomes

- Patient attendance rates
- Clinical biochemical markers
- Measures of therapy change – insulin commencement, additional oral agents and injectables

Financial Viability and Sustainability

Baker Heart and Diabetes Institute Central Australia, located in Alice Springs, was founded in 2007. They work collaboratively with local stakeholders, particularly Aboriginal community controlled organisations, to address areas of priority. Northern Territory partnerships include Alice Springs Hospital, Central Australian Aboriginal Congress, Aboriginal Medical Services Alliance Northern Territory (AMSANT), Tangentyere Council, and Northern Territory PHN.

Governance Structure and Framework

As a clinical service provider, they provide outreach health services to Central Australian remote communities and Alice Springs Hospital in order to improve access to specialist and multidisciplinary care. The service is made up of five doctors, and two diabetes educators. They visit eight communities in central Australia. The doctors, based in Melbourne and Alice Springs, work closely with the nurse educators based in Alice Springs. The educators frequently visit the communities.

More information

Further information on the Central Australia Diabetes Outreach Service is available from the Baker Institute website: **baker.edu.au**

Resources

The program's evaluation has shown significant improvements in glucose levels and cholesterol in more than 100 patients.

C. Hotu, M. Rémond, G. Maguire, E. Ekinci and N. Cohen. Impact of an integrated diabetes service involving specialist outreach and primary health care on risk factors for micro- and macrovascular diabetes complications in remote Indigenous communities in Australia. Aust J Rural Health June 2018, https://doi.org/10.1111/ajr.12426

The Queensland Ambulance Service (QAS) Referral Service

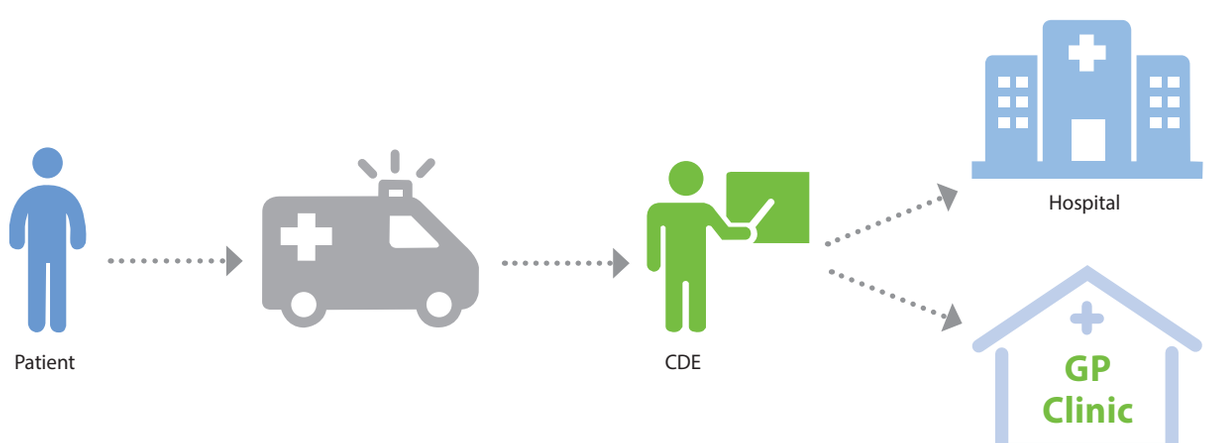
To support people with diabetes in Queensland's Darling Downs region, this Diabetes Model of Care project was developed to increase the efficiency of healthcare delivery and improve patient outcomes. The project provides tailored care for people living with diabetes.

What is the QAS Referral Service?

Darling Downs and West Moreton PHN and Darling Downs Hospital and Health Service (DDHHS) worked with the Queensland Ambulance Service (QAS) to improve the patient experience for people living with diabetes. The Chronic Disease Diabetes project focused on developing an integrated MoC and smooth transition to primary care and community based prevention programmes for people living with diabetes. The Diabetes MoC consists of four key elements: QAS referral pathway, general practitioner led care, a patient journey coordinator for Aboriginal and Torres Strait Islander patients and Tunstall Healthcare home monitoring. Patients seen by the Ambulance Service as a result of a diabetes complication are referred on to a qualified diabetes educator, with ongoing care arranged by Toowoomba Hospital. This helps to reduce repeated presentations to hospital.

Key Principles

GPs are able to refer eligible patients on to the project, based on set referral criteria. They also receive education and support in managing their patients with diabetes. Aboriginal and Torres Strait Islander patients identified by DDHHS are linked with suitable primary healthcare services, to help coordinate and deliver appropriate care. Selected patients are set up with home monitoring of blood sugar and other vitals, alongside regular reporting and escalation protocols.



Why use QAS Referral Service?
– Benefits for Stakeholders and Case for Implementation

- As a result of the service, people have improved access to specialised health information, and a more coordinated and flexible healthcare experience
- In light of an increasing size and age of Queensland's population, the project will continue to expand and develop improved healthcare management for patients, and perhaps provide a MoC for other regions across Australia

Challenges

- Establishing models of patient care and stakeholder partnerships, and cooperation between major services, are vital to the success of this project
- In the face of changing demographics and increased demands on the QAS, maintaining and improving the services delivered to the community through Local Ambulance Service Networks

What you need to implement the model

- Agreement between the QAS and Local Ambulance Health Services and/or Local Ambulance Committees

Monitoring measures and Outcomes

- Hospital admission rates
- Clinical biochemical markers
- Patient satisfaction survey

Financial Viability and Sustainability

In consultation with key stakeholder groups, the QAS has developed a five year Strategy with a focus to ensure their services are aligned to Queensland Government priorities. These lines of services are supported by the organisation's leadership, internal services, and by a small corporate support area providing information technology, finance, human resource, procurement, facilities and planning services within the organization.

Governance Structure and Framework

The QAS operates as a part of the broader system of Queensland Health, which supports the QAS to ensure it meets the needs of the wider community.

More information

The QAS is also continuing to work towards transporting more patients to GP services. Tunstall is also partnering with DDHHS to provide a range of connected TeleHealth and care technologies, systems and services for identified patients to self-manage safely within home environments.

Resources

For further information, please contact the Queensland Ambulance Service via Clinical.Guidelines@ambulance.qld.gov.au or Louise Moran, credentialed Diabetes Educator on 07 4616 6808

CSIRO Tele-health Eye-Screening Model of Care

The CSIRO has developed eye-screening technology which enables GPs to test people living with diabetes for diabetic retinopathy.

What is the CSIRO Tele-health eye-screening MoC?

Artificial intelligence is being used in general practice to aid early diagnosis of diabetic retinopathy and early access to treatment. The GP takes a high-resolution image of the patient's eyes which are then analysed by the technology for signs of diabetic retinopathy. The artificially intelligent grading software, known affectionately as Dr Grader, uses ophthalmologists' grading data to improve its ability to detect various signs of the disease and provides a report for the GP.

Using the technology, GPs are able to screen patients for signs of diabetic retinopathy as part of their diabetes management. If diabetic retinopathy is detected, the GP refers the patient to an ophthalmologist for further investigation, prioritised by the severity of their symptoms.

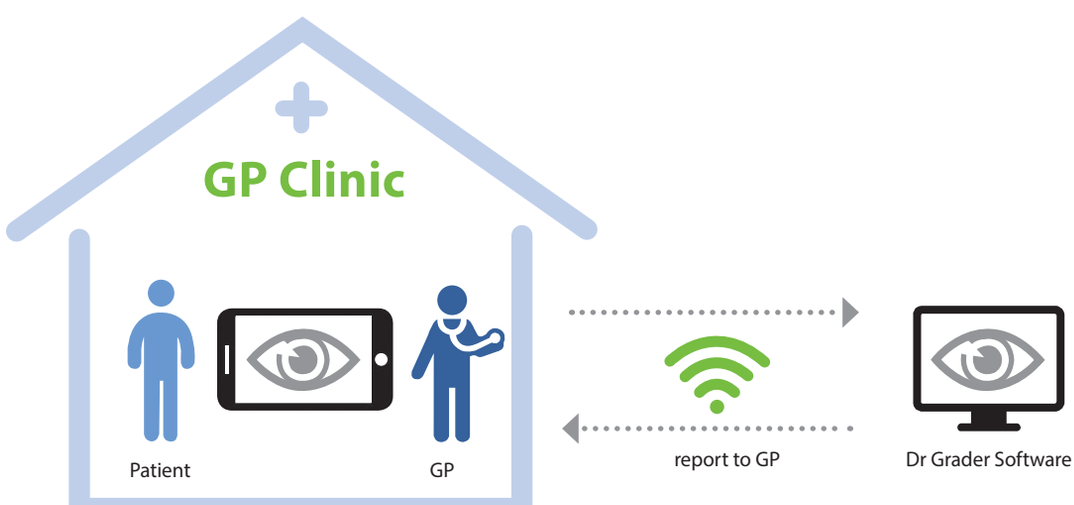
Key Principles

This model of care is based on using artificially intelligent technology to analyse a high resolution image of a patient's eyes for signs of diabetic retinopathy. This technology can be used for patients in rural and remote locations and will lead to people with diabetic retinopathy being diagnosed earlier and receiving treatment faster.

The artificially intelligent grading software was developed by researchers at CSIRO. The software has been licensed by TeleMedC, who will seek to make the technology commercially available – with plans to install in GP clinics across Australia.

Why use the CSIRO Tele-health eye-screening service? – Benefits for Stakeholders and Case for Implementation

- Early diagnosis and treatment of diabetic retinopathy likely to prevent blindness due to diabetes
- Can reduce the financial imprint of the Australian economy
- Minimises waiting time for eye screening with ophthalmologist



- Avoids unnecessary referrals to public hospitals
- No additional travel to medical specialist for routine screening
- Can bill for visit that may not have otherwise occurred
- Small initial training on using software and technology provided by CSIRO
- Can be used in a range of settings such as Community Health Service, GP practice, Aged Care Facility where patient mobility is limited
- Decreased downtime travel time and appointment waiting times to see a specialist
- Technology was found to be as effective as the specialist in detecting signs of diabetic retinopathy and grading its severity

Challenges

- Technology not readily available as yet across Australia, currently only in Western Australia (WA)

What you need to implement the model

- Agreement between the CSIRO and health service
- Access to Dr Grader software and equipment to take eye photos
- Training for staff involved in conducting the eye screening
- Reasonable internet connection (4G network or NBN)
- GP referral to an ophthalmologist for further treatment if retinopathy detected

Monitoring measures and Outcomes

- Patient attendance rates (for standard appointments and tele-health eye screening consultations)
- Clinical biochemical markers
- Number of tele-health consultations required per patient
- Patient satisfaction survey
- Clinician satisfaction survey including clinical learnings through the process

Financial Viability and Sustainability

TeleMedC, the Silicon Valley company that recently acquired the rights to Australian-developed diabetic retinopathy (DR) scanning technology, is funding this research, in particular, in providing the fundus cameras across many GP clinics in WA.

Governance Structure and Framework

Manufacturing of the eye screening technology is to be based in Perth. The eye-screening device and its related software is unique, insofar as it is able to not only automatically screen at-risk patients for diabetic retinopathy, but also provide a grading of the severity of the condition. Its effectiveness was tested on thousands of images, before being put to work at a GP clinic in WA, where it was found to be as effective as specialists in both detecting signs of diabetic retinopathy and measuring its severity.

More information

Details on the CSIRO tele-health eye-screening service is available from their website:
www.csiro.au/en/Research/BF/Areas/Digital-health/Improving-access/Diabetic-retinopathy

Resources

www.telemedc.com

The Diabetic Foot Unit

The Diabetic Foot Unit (DFU) cares for people with diabetes-related foot problems.

What is the DFU Model of Care?

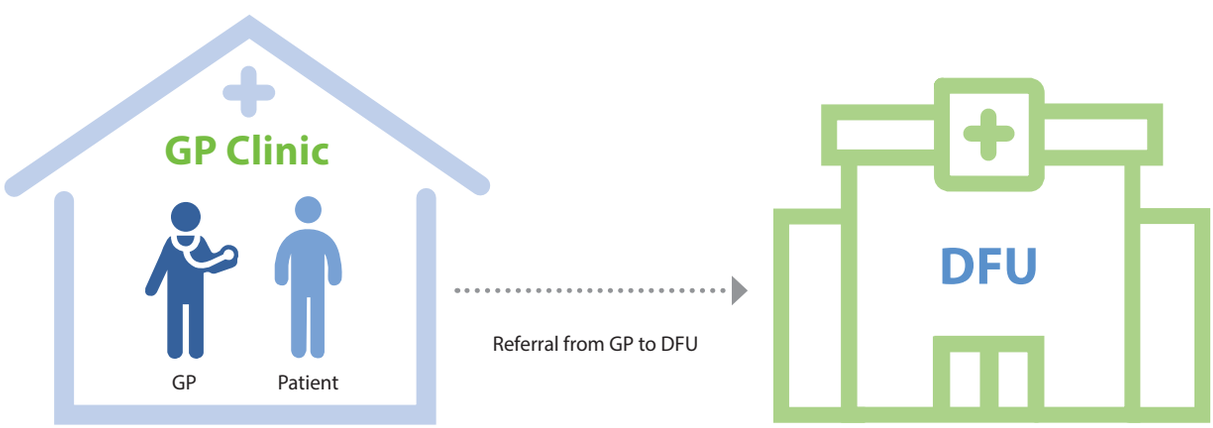
The DFU provides specialised inter-disciplinary care for people with active foot complications as a result of advanced diabetes within an acute setting.

Key Principles

This particular MoC described is a Hospital Admission Risk Program (HARP) Partnerships in Health (PIH) service representing a partnership between Royal Melbourne Hospital (RMH), Merri Community Health Service (MCHS), cohealth, Bolton Clarke (formerly Royal District Nursing Service) and the Inner North West Melbourne Medicare Local (INWMML). The DFU implements evidence-based assessment and management of patients with diabetes-related problems. The DFU comprises acute and community based services with integrated staffing. The key objectives of the HARP PIH program are to improve patient outcomes, provide integrated seamless care within and across hospital and community sectors, to reduce avoidable hospital admissions and ED presentations and to ensure equitable access to health care.

Why use the DFU Model of Care? – Benefits for Stakeholders and Case for Implementation

- To improve patient outcomes and reduce amputation rates
- To reduce avoidable hospital admissions and ED presentations
- The DFU comprises acute and community based services with integrated staffing
- Service is accessible, welcoming, team-based
- Once a referral has been received, a HARP clinician will phone the patient to discuss their needs and organise appropriate services
- Synergy with Commonwealth reform initiatives
- This is a short term service which will transition a patient to a suitable community or private service
- Cost effective and appropriate use of hospital investigations



Challenges

- DFU requires referral via Direct Access Unit before service can be implemented

What you need to implement the model

- Completed referral to DFU
- Encourage patient to participate in appointments, both in hospital, outpatients and community care settings
- Fax and email communication with Direct Access Unit

Monitoring measures and Outcomes

- Improving patient education and self-management
- Measuring treatment targets, HbA1c, BP, lipids, weight
- Rates of hospital admissions
- Measuring reduction in foot complications
- Measuring patients' QoL

Financial Viability and Sustainability

Funding has been provided by the mainstream funding of hospital and is expected to be continued given the success in achieving outcomes such as reducing admissions and amputation rates.

Governance Structure and Framework

DFU comes under the Department of Diabetes and Endocrinology, with the head of the unit being an Endocrinologist. All patients are managed with an interdisciplinary team, including representatives from: Endocrinology, Vascular surgery, rehabilitation, radiology, podiatry, dietetics, physiotherapy, occupational therapy, orthotist and clinical psychology.

In ambulatory care, all patients are co-consulted with a podiatrist and doctor always being present. Other team members can be called upon as required for the individual. As the patient's condition improves, especially if not further medial input is required, they can be stepped down to podiatry ambulatory clinic at RMH or podiatry ambulatory clinic at one of three community sites.

More information

Referral forms for the RMH Diabetic Foot Clinic can be downloaded from the RMH website:
www.thermh.org.au/health-professionals/clinical-services/podiatry/diabetic-foot-unit

Resources

Patient information can be downloaded from the RMH website (www.thermh.org.au/health-professionals/clinical-services/podiatry/diabetic-foot-unit).

Diabetes and Chronic Kidney Disease Model of Care

The Diabetes and Chronic Kidney Disease (CKD) Model of Care was established in 2016 at Monash Health to improve the health-care delivery to people with co-morbid type 2 diabetes and CKD.

What is the Diabetes and CKD Model of Care?

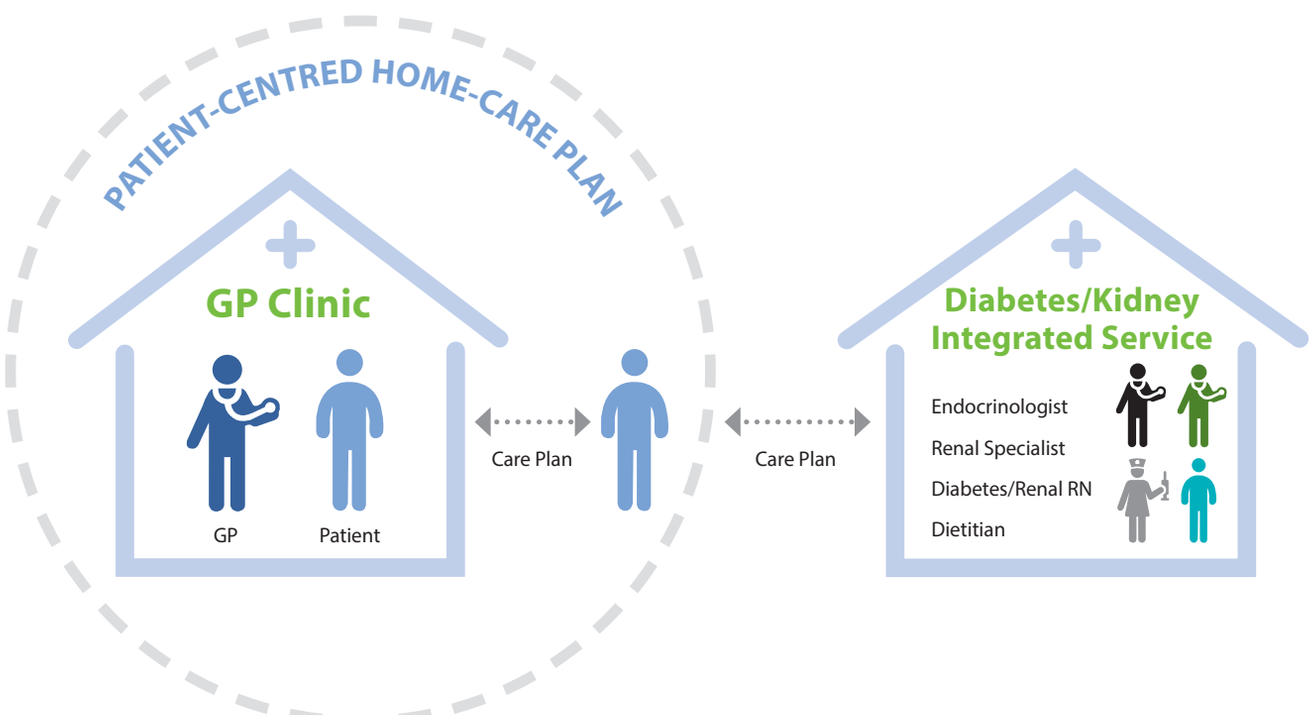
This is an integrated patient-centred model of health-care delivery incorporating structured, intensive and multi-faceted interventions involving multiple medical disciplines, improving self-management by the patient and upskilling of primary health-care providers.

Key Principles

This MoC is co-designed with specialist health-professionals, general practitioners and Diabetes Australia and Kidney Health Australia. A multi-disciplinary diabetes-kidney service complements and integrates with the patient-centred medical home, usually a GP clinic.

The diabetes-kidney service is patient-centred, focusing on patient and carer empowerment to encourage self-management of their diabetes and kidney disease. Self-management is encouraged through motivational interviewing, education, and a diabetes-kidney care plan. Furthermore, patients are provided with contacts of peer and patient support groups, e.g. Diabetes Australia and Kidney Health Australia, and a phone line service for additional support.

The diabetes-kidney service interfaces with the patient's primary care home team/GP to provide a care plan and to support the patient's primary care home team/GP clinic through education sessions, specialist outreach services and, if required, case management by a care facilitator.



Why use the Diabetes and CKD Model of Care? – Benefits for Stakeholders and Case for Implementation

A diabetes-kidney service:

- Was developed after consultation with both end-users (patients and their carers) and health-care staff currently devering health care
- Was co-designed with key stakeholders, consumer advocacy groups and health-care professionals
- Psychological morbidity is identified and appropriately managed
- This MoC has established bi-directional communication pathways
- The whole MoC is underpinned by quality improvement activities, and modification of the model after an embedded evaluation process
- Primary health-care is supported through educational sessions, telehealth, and a specialised outreach service
- Has evidence-based outcomes published
- Showed a reduction in the rate and length of hospitalisations and improving medical outcome targets, patient self-efficacy and quality of life
- Provides a service which is accessible, welcoming and team-based
- Rapport between team members and patients
- Improves the patients' knowledge and understanding of type 2 diabetes and kidney disease and engages them more in their own health
- MoC integrates with the patient-centred health-care home being rolled out by the Australian Department of Health
- Cost-effective

Challenges

- Integration of care within a service may often lead to lengthy patient waiting room times and interruptions during their medical review
- Limited physical spaces for such a service
- Engaging administrative staff to support the operation of the clinic
- Access to both diabetes and kidney disease management expertise
- Communication between diabetes-kidney service and the primary care health care team/GP clinic
- Education sessions for staff, patients/carers
- Providing regular performance monitoring data

What you need to implement the model

- Cooperation from the patient-centred health-care home (PCHCH), usually the patient's GP and GP clinic
- A multi-disciplinary, integrated diabetes-kidney service consisting of diabetes and renal physicians, nurse practitioners and a dietitian
- Each patient completes a pre-consultation assessment tool to screen for psychological co-morbidity

- Care is structured according to an electronic history proforma
- To facilitate multi-disciplinary input into each patient's management plan, all patients are discussed at the end of the clinic
- A community location that can provide consultation spaces, computing services and maintain medical records to support the operation of the diabetes-kidney service
- Engagement of administrative staff to support the operation of the service
- Collect and provide regular performance monitoring data
- Support of HHS executive and PHN for implementation and sustainability

Monitoring Measures and Outcomes

- Improving patient education and self-management
- Measuring treatment targets, HbA1c, BP, lipids, weight
- Reducing the number of clinic visits for patients with both diabetes and CKD
- Measuring rates of hospital admissions
- Measuring reduction in outpatient waiting lists
- Measuring patients' self-efficacy QoL
- Measuring patients' and health professionals' satisfaction
- Evaluation of the accessibility of the diabetes-kidney service
- Measuring health economics and cost-effectiveness of the model

Financial Viability and Sustainability

Development of the MoC was supported by a National Health and Medical Research Council, Australia Partnership Grant between a large group of health services, research institutes and national consumer stakeholder groups. Patient consultation may be billed using the fee for specialist services item numbers

Governance Structure and Framework

This new MoC for patients with both diabetes and CKD was developed as part of a research collaboration between groups of tertiary hospitals, academic organisations in Melbourne and Sydney and national consumer advocacy organisations.

More Information

The development of this Diabetes and CKD MoC is described in greater detail in the *Nephrology* review article (C. Lo, E. Zimbudzi, H. Teede, *et al*. *Nephrology* 23 (8):711-17, 2018. Models of care for co-morbid diabetes and chronic kidney disease.) **https://doi.org/10.1111/nep.13232**

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Western Australia Diabetes Model of Care 2008

The Western Australian (WA) Diabetes and Endocrine Health Network has galvanised the expertise and commitment of clinicians, consumers, carers and other partners in developing a framework and standards to improve the accessibility and quality of diabetes prevention and care services for the Western Australian population. Building on the WA Diabetes Model of Care (2008)[1], the 'Western Australia Framework for Action on Diabetes and Diabetes Service Standards 2014'[2] sets a bold vision to support the delivery of better services for people in WA at risk of or living with diabetes by 2025. It demonstrates a concerted effort by key organisations to work in partnership and makes the case for change, highlighting the need for urgent and co-ordinated action across the health system and the care continuum. The Framework describes the coordinated effort to:

c) support diabetes sufferers to self-manage their condition and thus minimise its impact

d) reduce the risk of others getting the disease

The WA Diabetes Model of Care (2008) is summarized below. This MoC sets out a framework for comprehensive, accessible and efficient provision of coordinated diabetes prevention and management services. The key objective of the Diabetes MoC is to ensure that diabetes services are optimally configured to:

- Prevent or delay the onset of diabetes
- Prevent and slow progression of diabetes related complications, especially heart disease, renal failure, impaired vision and lower limb amputations
- Improve the quality of life of people who have diabetes, and
- Reduce inequities in diabetes service provision, particularly for Aboriginal people and other disadvantaged groups.

Additional objectives include reduced frequency of diabetes-related presentations to hospital emergency departments, lower rates of hospital admission, shorter length of stay and better outcomes for people with diabetes.

Implementation of the Diabetes Model of Care is designed to assist service delivery, namely the integration of diabetes services across WA in the following ways:

- Increase the capacity of GP-coordinated multidisciplinary services to prevent and manage diabetes and its complications;
- Develop an efficient interface between general practice and the diversity of community-based diabetes prevention and management services at the local level, especially in under-resourced and high need locations;
- Improve accessibility and quality of diabetes self-management education;
- Enhance service quality by increasing the use of guidelines, local protocols, service directories, registers, recall systems and patient-held management plans to ensure that all people with diabetes receive comprehensive, ongoing care;
- Improve local service coordination and increasing knowledge of available resources by health care providers and people with diabetes;
- Improve access to and effectiveness of specialist services to address specific problems and refer back to general practice for long-term management.

The WA Diabetes MoC addresses the following stages of diabetes prevention and management:

- Community awareness and prevention
- Prevention and early diagnosis in high-risk groups
- Optimal initial and long term management
- Early detection and optimal management of complications
- Coordinated prevention and management of acute episodes.

The Model of Care for each stage of diabetes consists of the following components:

- Health promotion
- GP-coordinated multidisciplinary prevention and management, including targeted programs for high risk and vulnerable groups
- Specialist team services.

The roles of these services for each stage of diabetes are summarised in Table 1.

Key Priorities for Implemention of The WA Diabetes Model of Care

Critical issues which apply across multiple stages of the WA Diabetes MoC are detailed as eight key priorities. Each key priority should be seen as a specific project for implementation.

- Enhance community-wide and targeted promotion of healthy environment and lifestyle to prevent diabetes and increase awareness of the health impact of diabetes and its complications.
- Improve coordination of community based diabetes prevention and management services, including patient self-management.
- Reconfigure specialist services for optimal effectiveness.
- Ensure ready access to guidelines, protocols, decision aids and service directories for diabetes service providers and consumers.
- Develop systems of information and communication technology support to improve communication and data sharing between GP's and other service providers, improve service quality and to monitor services and outcomes.
- Increase investment in workforce training and development.
- Ensure ready availability of new technology for diabetes.
- Foster and support basic and clinical research in diabetes.

1. WA Diabetes Model of Care (2008), ww2.health.wa.gov.au
2. Western Australia (WA) Framework for Action on Diabetes and Diabetes Service Standards 2014, https://ww2.health.wa.gov.au/~/media/Files/Corporate/general%20documents/Health%20Networks/Diabetes%20and%20Endocrine/WA-Framework-for-Action-on-Diabetes-and-Diabetes-Service-Standards.pdfWestern Sydney Diabetes Framework and Plan, www.westernsydneydiabetes.com.au

Table 1: WA Model of Care (2008)

Community Awareness & Prevention	Prevention & Early Diagnosis in High Risk Groups	Optimal Initial & Longterm Management	Early Detection & Optimal Management of Complications	Prevention & management of Acute Episodes	Support Service Coordination
General population ▶	At risk of diabetes ▶	Newly diagnosed diabetes ▶	Established complications ▶	Acute episodes	
Health Promotion					
Awareness Promotion of health environment & lifestyle (WAHPSF 2007 – 2011)	Awareness of risk How to reduce risk Importance of early diagnosis	Importance of weight loss, diet exercise Need for complications screening	Awareness of complications Need for early detection	Awareness of potential acute changes	WA Guidelines Decision Aids Local Protocols Local Resource Directories Diabetes Care Groups Care plans Commonwealth quality initiatives
GP – Coordinated Multidisciplinary Prevention & Management					
Awareness Promotion of health lifestyle Targeted programs for high risk, vulnerable groups Targeted diabetes detection programs	Patient information Risk assessment Community based risk reduction activities: diet exercise, weight loss	Patient information Initial assessment Personal plan, targets for weight, exercise, BP, lipids, smoking cessation Self-management education & support Medication - Glucose control - Reduce CV risk Regular complications screening Specialist referral of complex, difficult cases Targeted services for high risk groups	Regular complications screening & monitoring Intensified diabetes treatment - Behavioural change - Glucose - Lipids - BP smoking Specialist referral Targeted complications screening & management for high risk groups	Patient information, action plan for acute problems Local management - Protocols for GP care - Specialist team advice - Accessible general & specialist podiatry	
Specialist Team Services		Type 1 care Assessment of complex cases, intensified treatment Complications screening Insulin stabilisation Paediatric service Pregnancy services Outreach services Service planning, coordination Research	Complications screening & monitoring Intensified diabetes treatment, cardiovascular risk reduction	Accessible advice Clinical review Inpatient diabetes management Management of advanced complications Outreach services	Care plans Commonwealth quality initiatives ICT data sharing, communication & resources Local & statewide registers Recall systems Audit

The South Australian Aboriginal Diabetes Strategy 2017-2021

The Strategy was designed to specifically meet the needs of Aboriginal people in South Australia. It was developed by Aboriginal people and people in policy and service provision positions.

What is the South Australian Aboriginal Diabetes Strategy?

The development of this Strategy was governed by a multi-disciplinary, multi-sector Diabetes Steering Committee that included Aboriginal community representatives. The Wardliparingga Aboriginal Research Unit of the South Australian Health and Medical Research Institute coordinated the development and undertook the research that formed the Strategy. Since the Strategy development, the South Australian Aboriginal Chronic Disease Consortium (SA ACDC) has been established whose function is it to implement the Strategy.

The recommendations in this Strategy prioritise a state-wide response to diabetes and guide potential health care reform for diabetes and related conditions, with a focus on improving its ability to service the Aboriginal population.

Key Principles

This Strategy recommends enhanced use of existing infrastructure, systems and initiatives, complete implementation of evidence-based guidelines, and strengthening of enablers to achieving these.

The Strategy has six high-level goals:

- Reduce the incidence of type 2 diabetes and gestational diabetes
- Detect type 2 diabetes early
- Improve diabetes care and reduce complications
- Reduce the incidence and impact of diabetes in pregnancy
- Reduce the incidence of and better manage type 2 diabetes among priority groups
- Strengthen research, data usage and population health monitoring

Why use the South Australian Aboriginal Diabetes Strategy? – Benefits for Stakeholders and Case for Implementation

Successful implementation of this Strategy will require a responsible governance structure and people who are committed and demonstrate the will to make a positive difference in the lives of Aboriginal people in South Australia.

Challenges

- Remote locations can make it difficult for people with diabetes to reach the health services they need
- An integrated, coordinated approach to type 2 diabetes prevention and management for Aboriginal people

- Establishing a coordinated plan for the prevention and management of associated diabetes complications with services that manage these complications, such as foot, cardiovascular, renal, retinal, oral and mental health conditions.

What you need to implement the model

- Support from the local Aboriginal communities
- Service governance structures
- Linkages with organisations, community engagement and partnerships

Monitoring measures and Outcomes

The Wardliparingga Aboriginal Research Unit of the South Australian Health and Medical Research Institute has been collecting data for a baseline from which Aboriginal people themselves can monitor its implementation and progress in collaboration with key health service and community stakeholders.

Financial Viability and Sustainability

The SA Aboriginal Diabetes Strategy has six high-level goals, 23 recommendations with suggested pathways to achieve them and nine enablers. The six goals are aligned with the National Diabetes Strategy and the pathways to achieve these goals have been informed by scientific and cultural evidence and knowledge, the SA Aboriginal community and service providers.

Governance Structure and Framework

A coordinated approach across the South Australian Department for Health and Aging, the Aboriginal community controlled health sector, the peak body of which is the Aboriginal Health Council of South Australia, Adelaide and Country SA Primary Health Networks, and non-government organisations, particularly Diabetes SA. Success will require building and maintaining relationships with the Aboriginal community in South Australia and partnering with them to implement this Strategy. The implementation will be diverse, reflective of the Aboriginal population. Since the Strategy development, the SA ACDC has been established whose function it is to implement the Strategy.

More information

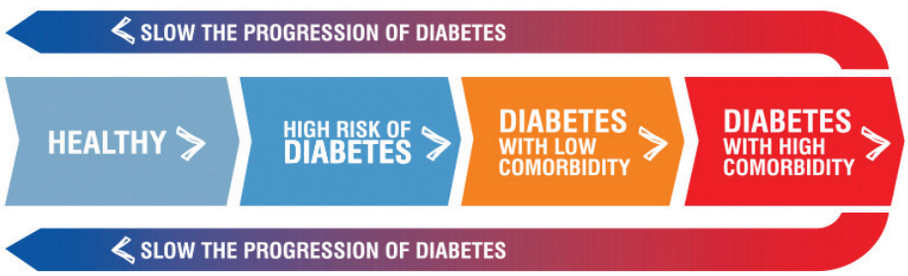
Details on the SA Diabetes Strategy or the SA ACDC can be obtained by contacting Wendy Keech, Executive Officer, South Australian Chronic Disease Consortium **Wendy.Keech@sahmri.com**

Resources

For a more comprehensive description of the SA Diabetes Strategy, please refer to the website:
https://www.sahmriresearch.org/our-research/themes/aboriginal-healh/theme-overview

The Western Sydney Diabetes 2019 Plan

"The goal of Western Sydney Diabetes (WSD) is to increase the proportion of the healthy population and reduce the size of the at-risk population."



The WSD 2018 Year-in-Review (YIR) sets the stage for the 2019 calendar year. They have not yet reached the tipping point in 'taking the heat out of their hotspot'. In fact they have documented that the burden of diabetes is larger than has been traditionally reported. Opportunistic testing to detect diabetes and pre-diabetes in Emergency Departments and in General Practices continue to affirm that 17% of adults have diabetes and 30% have pre-diabetes. In Blacktown and Mt Druitt hospitals (BMDH), 22% of admitted patients have diabetes and this is steadily growing at 1% each year.

Their strategic Framework for Action is adapted in this 2019 plan to include a more focused place-based mobilisation component. With such limited resources we are not in a position to roll out interventions evenly across the 1 million people in our District. Last year, they adopted a concentrated approach in Toongabbie and Mt Druitt, with some ongoing and enhanced efforts in Blacktown CBD and Parramatta. Each of these place-based efforts take on a different character and are tailored to suit the needs of the particular local community in which they operate. They were pleasantly surprised at the local interest and responsiveness of local leaders and consumers to the diabetes challenge and willingness to form a grassroots response and own and support this effort in their local community. They will continue to foster the approach this year.

What is the Western Sydney Diabetes Framework for Action?

The WSD Framework for Action comprises of two major areas including Primary Prevention and Secondary Prevention and Management, with key interventions or elements under each area. This is supported by enabling mechanisms under the Framework including place-based mobilisation, public awareness, data for decision making and research and publications.

To see all the elements, please see the graphic above, or please refer to the full plan published on WSD website at **https://www.westernsydneydiabetes.com.au/**

More information

For more information **www.westernsydneydiabetes.com.au** or contact the Western Sydney Diabetes programme manager Sumathy Ravi via email at Sumathy.Ravi@health.nsw.gov.au

Resources

For Western Sydney Diabetes documents, see www.westernsydneydiabetes.com.au/resources

Abbreviations

ACI	Agency for Clinical Innovation
ADA	American Diabetes Association
ADS	Australian Diabetes Society
AMSANT	Aboriginal Medical Services Alliance Northern Territory
ANDS	Australian National Diabetes Strategy
BP	blood pressure
BSPHN	Brisbane South Primary Health Network
CALD	Culturally and Linguistically Diverse
CDE	Credentialed Diabetes Educator
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DCP	Diabetes Care Project
DCGP	Diabetes Care in General Practice
DDHHS	Darling Downs Hospital and Health Service
DESMOND	Diabetes Education and Self-Management for the Ongoing and Newly Diagnosed
DFU	Diabetic Foot Unit
DR	Diabetic Retinopathy
DSMES	Diabetes Self-Management Education and Support
EASD	European Association for the Study of Diabetes
ED	Emergency Department
GP	General Practitioner
HARP	Hospital Admission Risk Program
HbA1c	Haemoglobin A1c (glycosylated haemoglobin)
HCP	Health Care Professional
HHS	Hospital and Health Service
ICDMS	Inala Chronic Disease Management Service
INWMML	Inner North West Melbourne Medicare Local
MCHS	Merri Community Health Service
MDT	Multidisciplinary Team
MoC	Model of Care
MSHHS	Metro South Hospital and Health Service
NADC	National Association of Diabetes Centres
NDF	Newly Diagnosed and Foundation
NDSS	National Diabetes Services Scheme
NHMRC	National Health and Medical Research Council
NICE	National Institute for Health and Care Excellence
NPT	Normalisation Process Theory
OPD	Outpatient Diabetes
PAH	Princess Alexandra Hospital
PHN	Primary Health Network
PIH	Partnerships in Health
PN	Practice Nurse
QAS	Queensland Ambulance Service
QI	Quality Improvement
QLD	Queensland
QoL	Quality of Life
RFDS	Royal Flying Doctor Service
RMH	Royal Melbourne Hospital
RN-CDE	Registered Nurse – Certified Diabetes Educator
SA	South Australia
SA ACDC	South Australian Aboriginal Chronic Disease Consortium
SAHMRI	South Australian Health and Medical Research Institute
TIDieR	Template for Intervention Description and Replication
TM	Trademark
UK	United Kingdom
UoQ	University of Queensland
WA	Western Australian
WSD	Western Sydney Diabetes
WSLHD	Western Sydney Local Health District

Notes

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Promoting Excellence in Diabetes Care