



# NADC Collaborative Interdisciplinary Diabetes High Risk Foot Services (HRFS) Standards



NSW Agency  
for Clinical  
Innovation



Advanced Practicing Podiatrists  
High Risk Foot Group



DiabeticFoot  
Australia



Kellion  
Diabetes  
Foundation

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Further copies of this publication can be obtained from the National Association of Diabetes Centres and Australian Diabetes Society websites at [nadc.net.au](http://nadc.net.au) and [diabetessociety.com.au](http://diabetessociety.com.au).

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The NADC Collaborative Interdisciplinary Diabetes High Risk Foot Service (HRFS) standards were developed by the National Association of Diabetes Centres: Foot Network, consisting of the executive group, working party and consultation committee. The time and expertise provided by each individual has been invaluable in guiding the development and ensuring the collaborative approach of the standards.

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- Australian Diabetes Society (ADS)
- The Kellion Diabetes Foundation (KDF)
- Diabetes Australia
- Wounds Australia
- Advanced Practicing Podiatrists - High Risk Foot Group
- Australian Podiatry Council (APodC)
- Diabetic Foot Australia (DFA)
- Pedorthic Association of Australia (PAA)
- Agency for Clinical Innovation (ACI)
- Australian Diabetes Educators Association (ADEA)
- Australian Primary Care Nurses Association (APNA)
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## EXECUTIVE SUMMARY

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Amongst the complications that can occur in people with diabetes, foot complications are highly feared, yet they are usually preventable. With appropriate, timely interdisciplinary team care the vast majority of foot ulcers that occur in people with diabetes will heal with conservative management, with a small minority only requiring a lesser (below the ankle, often toe) amputation. Moreover, with appropriate care, major (above the ankle) amputations that are uncommon in people with diabetes, can usually be prevented. Australian data indicates that amputation rates in people with diabetes are higher than in other nations with similar developed health care systems such as the United Kingdom (UK). In addition, amputation rates vary by up to 10 fold across Australia, and by 4 fold amongst regional centres, suggesting unacceptable clinical variation in care and outcomes. There is good evidence that interdisciplinary High Risk Foot Services (HRFS) in diabetes can help ulcers to heal in a timely manner, minimising the need for hospital admission and for amputation, especially of extensive type, thus preserving foot function.

Few countries globally have developed national standards for diabetes HRFS. This NADC Collaborative for Interdisciplinary High Risk Foot Services is a highly inclusive process, which under the NADC Foot Network has received formal input from practically all relevant national diabetes foot care organisations, to realise the Interdisciplinary High Risk Foot Services Standards of Care herein, which we now commend to you.

These inaugural national Interdisciplinary High Risk Foot Services Standards can collectively be used as a clinical indicator for sites aspiring to achieve HRFS standards at the Core Standard level and the Standard of Excellence level described. They also help to inform health administrators as to the resources required to establish such a service, and the dynamic interactive nature of the interdisciplinary care required to achieve quality patient care outcomes, as well as providing leadership in the field. Finally, these Standards lend themselves readily to an accreditation process to recognise HRFS across Australia, as well as defining processes to achieve quality improvements in cycles of care and support benchmarking. We expect that these Standards will help to realise and then to maintain a high level of diabetes HRFS care throughout our nation, aiding equity of access, and underpinning more consistent across-service outcomes in diabetes foot care.

## BACKGROUND

Diabetes mellitus is a chronic disease that commonly causes diabetes complications with attendant morbidity and mortality. Up to 25% of people with diabetes will develop foot ulceration at some stage in their lifetime<sup>(1)</sup>. Furthermore, development of a diabetes foot ulcer predicts ulcer recurrence, amputation and premature mortality in a person with diabetes. Other complications of foot disease in diabetes include Charcot neuroarthropathy, and more broadly, peripheral neuropathy, which in some people predisposes to foot ulceration through loss of protective sensation and in some may cause painful neuropathy<sup>(1)</sup>.

In 2005, over 1,000 people with diabetes in Australia died as a direct result of lower limb ulceration, representing 8% of all diabetes-related deaths<sup>(2)</sup>. In terms of health care utilisation, annually in Australia, there are ~10,000 hospital admissions for diabetes-related foot ulcers (DRFUs). Some degree of amputation is not an uncommon outcome with diabetes accounting for the majority of non-traumatic lower limb amputations in Australia<sup>(2,3)</sup>. In 2016, it was reported that more than 4,400 amputations occurred directly due to diabetes, reflecting more than 3 hospitalisations per 1,000 people with diabetes for amputation<sup>(4)</sup>. Aboriginal and Torres Strait Islander Australians have been noted to be five to ten times more likely to be admitted to hospital for diabetes-related foot complications and almost thirty times more likely to have diabetes-related amputation than non-Indigenous people<sup>(5,6)</sup>.

Australia's performance in managing diabetes-related foot ulceration appears to lag behind many other developed countries<sup>(7)</sup>. In the UK, the amputation rate comparing across publications, is approximately half that of Australia's urban dwelling people with diabetes<sup>(8,9)</sup>. Moreover, diabetes-related foot disease costs the Australian economy around \$875 million every year. At an individual level, the average cost of a diabetes-related amputation is around \$23,555, with an additional annual spend of \$6,065 every year afterwards. Over five years a diabetes-related amputation costs the health system almost \$50,000 and that does not include social costs<sup>(10)</sup>.

In the recently established Australian National Diabetes Strategy 2016-2020<sup>(11)</sup>, one main goal of the seven in the strategy is to: 'Reduce the occurrence of diabetes-related complications and improve quality of life among people with diabetes'.

It is well recognised internationally and according to NHMRC clinical care guidelines, that an interdisciplinary care team, including, through dedicated diabetes high risk foot services (HRFS), prevent many hospital admissions and improve outcomes in people with diabetes foot ulceration<sup>(12)</sup>. Across Australia at present, the healthcare provision of dedicated HRFS is not homogeneous: in many geographic sites, HRFS have not been established. In addition, whilst HRFS standards and accreditation exist in some European-based countries<sup>(13)</sup>, and domestic HRFS key performance indicators have recently been suggested<sup>(14)</sup> until now there has not been a national process for standardisation of the HRFS in Australia, including in HRFS definition, standards-setting and accreditation processes, nor processes for formal recognition of a diabetes High Risk Foot Service Centre of Excellence.

## ABBREVIATIONS

<b>ACI:</b>	Agency for Clinical Innovation
<b>ADS:</b>	Australian Diabetes Society
<b>CCF:</b>	Congestive Cardiac Failure
<b>DRFUs:</b>	Diabetes-Related Foot Ulcers
<b>EBPG:</b>	Evidence-Based Best Practice Guidelines
<b>ED:</b>	Emergency Department
<b>GP:</b>	General Practitioner
<b>HP:</b>	Health Professional
<b>HRFS:</b>	High Risk Foot Service
<b>IV:</b>	Intravenous
<b>NADC:</b>	National Association of Diabetes Centres
<b>NHMRC:</b>	National Health and Medical Research Council
<b>PAD:</b>	Peripheral Artery Disease
<b>PREMS:</b>	Patient Reported Experience Measures
<b>PROMS:</b>	Patient Reported Outcome Measures
<b>UK:</b>	United Kingdom

## DEFINITIONS

**Access to:** Ability to contact directly for opinion and to provide clinical handover, either offsite or onsite. The underlying principle is that a patient/person with diabetes attending the HRFS can expect that the HRFS will be able to coordinate services and to provide on-site the majority of key services required for standard, evidence-based management of their foot problem. While it may not be practical to provide every specific service function on-site, it is anticipated that the service will work closely with other providers to ensure treatment is delivered in a coordinated manner according to agreed treatment protocols. Examples of off-site services would include:

- hospital in the home for IV antibiotics
- specialised total contact casting for Charcot's neuroarthropathy

**Dedicated to:** have allocated time available to provide care for patients/people with diabetes attending the HRFS within their health care professional scope of practice and that this is recognised by their employer/manager as part of their duties/roles and responsibilities. Attends HRFS team meetings.

**Definition of Meeting the Standards:** To be accredited the HRFS needs to meet *each* of the standards, to the appropriate level.

**Diabetes Foot Disease:** Infection, ulceration or destruction of tissues of the foot, associated with neuropathy and/or peripheral artery disease (PAD) in the lower extremity of people with diabetes

**HRFS:** High-Risk Foot Service, reflecting that the foot disease being managed places the patient/person with diabetes at high risk of foot complication such as initial or further, amputation

**On-site:** Located at the geographic physical site dedicated to the HRFS

**\*\*Note the HRFS Standards:** also includes management of people with foot complications who may have similar aetiology but not diabetes such as PAD, Neuropathy of other causes.

## Standard 1: interdisciplinary Approach

CORE SERVICE INDICATORS	Met	Partially met	Not met
<ul style="list-style-type: none"> <li>• Patient management is provided by a co-located interdisciplinary team with experience in the management of diabetes foot disease.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• The minimum Core HRFS staffing is: a senior consulting diabetologist/endocrinologist/physician, a senior podiatrist, and a credentialed diabetes educator. In rural and remote services the minimum core HRFS staffing is a: nurse practitioner with an appropriate advanced scope of practice (who has access to a consulting physician), a senior podiatrist and a credentialed diabetes educator.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• All core HRFS team members have dedicated time allocated to provide care for patients/people with diabetes attending the HRFS within their scope of practice and this is recognised by their employer/manager as part of their duties/roles and responsibilities.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Patients of the HRFS should have access to (or clear documented referral pathway to) a Vascular surgeon with expertise in peripheral arterial disease, and access to peripheral revascularisation procedures.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Patients of the HRFS should have access to an Orthopaedic surgeon with expertise in foot corrective surgery.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• A HRFS interdisciplinary clinic is conducted to a frequency of at least one session (morning or afternoon) per week, where each core member, including the senior consulting physician, has dedicated time allocated to the session.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• HRFS key strategic and planning meetings are attended by all core staff members at least twice per year.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• All relevant members of the HRFS team and the patient/person with diabetes, contribute to the individualised patient management plan.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Interdisciplinary case conferences are held as required for complex cases, with all core staff members and the patient/person with diabetes present and the conference detail is documented within medical records, including short and long-term management plans.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• HRFS staff adopt a person-focused and mutually agreed goal-orientated approach.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Rapid access referral pathways directed to required off-site specialists are documented in the model of care, and are supported by local guidelines and policies and utilised in the management of patients/people with diabetes.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CENTRES OF EXCELLENCE INDICATORS	Met	Partially met	Not met
Meets all Core Service indicators AND:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Dedicated staffing as described in the core standard with <i>access to</i> regular consultation with the following <i>additional</i> health care professionals:               <ul style="list-style-type: none"> <li>○ Endocrinologist</li> <li>○ Infectious diseases specialist</li> <li>○ Orthotist and/or pedorthist</li> <li>○ Wound nurse specialist</li> </ul> </li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• As required for relevant patient care, the <i>additional</i> health care professionals can be physically present at least fortnightly in the interdisciplinary clinic.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• A HRFS maintains a podiatry service 5 days a week in business hours.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• An on-call weekend podiatry service is available for urgent cases (desirable).</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Other health professionals/support services who <i>may make an important contribution to patient care and/or the operation of the service</i> include:               <ul style="list-style-type: none"> <li>○ Diabetes Nurse Practitioner (who may also undertake the role of a consulting physician in rural/regional setting)</li> <li>○ The referring General Practitioner (GP)/primary care service/Health Professional (HP)</li> <li>○ Dietitian</li> <li>○ Psychiatrist</li> <li>○ Social worker/counsellor</li> <li>○ Radiologist</li> <li>○ Rehabilitation/Amputee specialist</li> <li>○ Plastic Surgeon</li> <li>○ Renal Specialist / nephrologist</li> <li>○ Indigenous health worker</li> <li>○ Psychologist</li> <li>○ Exercise Physiologist and/or Physiotherapist</li> <li>○ Neurologist / Chronic Pain Specialist/Team</li> <li>○ Allied health assistant / nurse assistant</li> <li>○ Geriatrician</li> <li>○ Family/carers</li> <li>○ NDSS information and support services</li> </ul> </li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Standard 2: Physical Environment, Coordination and Administration

CORE SERVICE INDICATORS	Met	Partially met	Not met
<ul style="list-style-type: none"> <li>There is allocated space for the HRFS to operate, that meets infection control and workplace health and safety requirements.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>A HRFS member is appointed as the HRFS Coordinator to provide overall coordination of the HRFS team, ensuring adherence to standards and a coordinated approach to clinical care of the patient/person with diabetes.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>The HRFS Coordinator:               <ul style="list-style-type: none"> <li>has the scope of their authority clearly defined as outlined in a position description and recruited at an appropriate leadership level/grade;</li> <li>has dedicated time to fill this role;</li> <li>organises regular HRFS team meetings and has documented the minutes of such meetings including to facilitate case conferences and dissemination of information to all HRFS team members;</li> <li>ensures processes for patient triage, management, bookings and follow-up are defined and occur;</li> <li>ensures processes for communication with other relevant health professionals are defined.</li> </ul> </li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>HRFS-dedicated administration processes:               <ul style="list-style-type: none"> <li>Adequate administrative time commensurate to clinical load is allocated to support functions including meeting bookings, patient triage and bookings, communication, follow-up care, and continuous quality improvement.</li> <li>Dedicated administrative staff, are included in local business cases and models of care and can be accessed by the entire clinical team to support patient care, as defined by the Coordinator.</li> </ul> </li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CENTRE OF EXCELLENCE INDICATORS	Met	Partially met	Not met
Meets all Core Service indicators AND:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>A HRFS member is appointed as the HRFS Clinical Leader (who may or may not be the HRFS Coordinator), who actively promotes and advocates for the HRFS, its funding, resources, quality improvement and development, research quality, and has a lead role in articulation of the HRFS clinical and strategic direction / plan, plus development of local business cases/models of care as required.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>





## Standard 3: Evidenced-Based Clinical Management

CORE SERVICE INDICATORS	Met	Partially met	Not met
<ul style="list-style-type: none"> <li>Clinical staff have identified and agreed upon treatment guidelines and protocols which are based on published evidence-based best practice guidelines (EBPG) which should include:               <ol style="list-style-type: none"> <li>Holistic assessment of the individual, including psychosocial factors, diabetes management, co-morbidities, and whenever able, documenting patient goals in care.</li> <li>Foot disease assessment and management protocols with specific references to:                   <ol style="list-style-type: none"> <li>neurovascular assessment</li> <li>revascularisation</li> <li>infection management</li> <li>pressure offloading including orthotics and footwear</li> <li>surgery (e.g. debridement, corrective surgery, need for amputation)</li> <li>wound dressings</li> </ol> </li> <li>Patient education - what they know and what they need to know about diabetes and management of their foot complication(s).</li> </ol> </li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>All aspects of patient management are appropriately documented using a standardised approach that is aligned to the minimum dataset. <b>**Note</b> wound severity, infection and perfusion status should each be graded using a validated grading system.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>It is evident in the medical record that clinical staff adhere to the agreed published EBPG for the management of patients with diabetes foot disease.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Formal review and updating of guidelines and protocols according to current research and evidence occurs at least every 2 years, when new high level evidence is published or when relevant EBPG are published.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CENTRE OF EXCELLENCE INDICATORS	Met	Partially met	Not met
Meets all Core Service indicators AND:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>The HRFS leads change in implementation of EBPG through education and development of local policies in their hospital, region or beyond.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>The HRFS has strong communication and connection with the primary health network, GPs and primary care system to maximise early intervention and prevention.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<ul style="list-style-type: none"> <li>The HRFS sets clear goals and monitors its achievement in terms of reducing the number of major amputations and the service focus is saving and preserving limbs.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>The HRFS leads change through research, translational research and quality improvement which is published in peer review journals or reports which are available to other health professionals.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>The HRFS develops and documents hospitalisation avoidance pathways.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Standard 4: Access and Defined Intake Criteria

CORE SERVICE INDICATORS	Met	Partially met	Not met
<ul style="list-style-type: none"> <li>Evidenced-based HRFS intake criteria are clearly defined and articulated to referrers for both urgent and non-urgent referrals.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>The Coordinators have dedicated time and should undertake triage for referrals on the business day of receipt.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Patients/people with diabetes with urgent referrals are assessed on the same day within business hours, that is for patients/people with diabetes where foot ulcers are suspected to be deep (probe to tendon, joint or bone), for those with spreading cellulitis, or with critical limb ischaemia, or patients with known or suspected acute Charcot neuroarthropathy.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>If there is no HRFS capacity to see urgent patient referrals on the same day, the HRFS is to recommend Emergency Department attendance, with subsequent HRFS follow-up as per Standard 5.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Non-urgent referrals for patients/people with diabetes with less acute foot ulcers will receive treatment within 1 week of referral, with optimal management defined as patients being seen within 2 business days of referral and acceptable management defined as patients being seen within 5 business days of referral.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>The HRFS provides culturally appropriate services and has access to interpreter services where required.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CENTRE OF EXCELLENCE INDICATORS	Met	Partially met	Not met
Meets all Core Service indicators AND:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Intake criteria are clearly defined and articulated to referrers including via a web page.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>70% of the patients referred with non-urgent diabetes foot disease are seen in the HRFS within 2 business days of referral.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Target for prevention of major amputations.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>The HRFS has the capacity to, and process for, accepting clinically appropriate referrals from outside their geographical zone when there is no suitable HRFS locally or when the patient's condition is complex and requiring a higher level of service than is available locally.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<ul style="list-style-type: none"> <li>Provides information and general advice as requested by other HRFS and community services, including assessment methods and care protocols and patient educational materials.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Provides consulting telehealth services to outreach areas occurs when necessary and clinically appropriate.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Standard 5: Continuity of Care and Communication

CORE SERVICE INDICATORS	Met	Partially met	Not met
<ul style="list-style-type: none"> <li>The patient's management plan is to be developed in consultation with the patient/person with diabetes (and, where relevant, their family/carers).</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Management plans, (including wound care plans and updates) are communicated (i.e. via correspondence/letter) in a timely manner (within 5 business days) to the referrer and all relevant health professionals involved in the patient's care including the GP, and the patient/person with diabetes (and their family/carers), to ensure the patient/person with diabetes is also fully informed of their treatment regimen, following:               <ul style="list-style-type: none"> <li>initial consultation</li> <li>any new diagnosis or significant clinical change such as would warrant hospitalisation or significant change in treatment</li> <li>discharge</li> </ul> </li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>In cases where peripheral arterial disease is present, prior to any amputation being undertaken, there is a referral pathway for vascular surgical services consultation, in order to facilitate consideration of revascularisation and/or limb salvage procedures.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>The HRFS must have HRFS discharge criteria and a related healthcare management pathway system with strategies for prevention of ulcer recurrence included.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Defined individualised patient pathways post-HRFS discharge are clearly identified and communicated with the patient, referrer and the patient's GP, with clinical handover processes in place to ensure continuity of care.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>The HRFS team is contacted regarding any patients presenting to ED or admitted into hospital with diabetes foot disease, who meet HRFS referral criteria.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>For inpatients with diabetes foot disease the HRFS team provides recommendations in care for both inpatient and post-hospital care.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>The HRFS team member is contacted in business hours, when non-admitted patients with foot complications present to the Emergency Department, for review and management plan update.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>A formal mechanism exists to identify and refer non-admitted patients with diabetes foot disease that present to the Emergency Department after hours e.g. by phone message, written referral or fax within one business day.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CENTRE OF EXCELLENCE INDICATORS	Met	Partially met	Not met
Meets all Core Service indicators AND:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Patient education is supported with written information, pictorial or digital media and covers key topics such as self-care for their foot, footwear and pressure offloading devices.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Processes are in place for inpatients who present with diabetes and a foot wound to be screened for suitability for HRFS care and the HRFS is to be notified of these patients with HRFS consultation, treatment, management and/or involvement in the discharge process being provided as needed.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Patients presenting to the Emergency Department, who have been screened as suitable for HRFS care, can be directly referred to the outpatient HRFS, avoiding a hospital admission.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• There is a pathway for patients seen in the HRFS for direct admission to inpatient care, avoiding the Emergency Department.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• There is a referral pathway to a pre-amputation clinic/specialist for patients undergoing non-emergent major amputation.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• The HRFS offers a shared care model or step-down clinic post HRFS discharge, with various providers, such as community health services, private podiatrists, or general practices.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Standard 6: Equipment

CORE SERVICE INDICATORS	Met	Partially Met	Not met
<ul style="list-style-type: none"> <li>There is an appropriate chair available for all patients treated in the HRFS which has height adjustment and positioning for the patient's/person with diabetes' legs.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Instruments and equipment essential for the assessment and treatment of patients are available and include, but are not limited to:               <ul style="list-style-type: none"> <li>nail clippers, files, scalpel handles, curettes, forceps, scissors, probes</li> <li>tools for the assessment of vibratory perception and protective sensation including a 10g monofilament, tuning fork and/or biothesiometer</li> <li>hand held Doppler onsite</li> </ul> </li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>On-site pressure offloading modalities including all of the following:               <ul style="list-style-type: none"> <li>removable ankle and knee-high devices (including the capacity to be rendered non-removable)</li> <li>removable ankle-high devices (offloading shoe, cast shoe)</li> <li>post-operative/ healing sandals</li> <li>paddings</li> <li>prefabricated foot orthoses</li> </ul> </li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>A referral pathway exists for on-site or off-site total contact casting.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Written patient education and training is provided for the appropriate use of devices.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>A pathway exists for the timely prescription of footwear and footwear modifications, which may include prescription by either an on-site trained podiatrist or qualified pedorthist or off-site services.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Timely access (within one month of referral) to on site or off site pedorthic services exists.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CENTRE OF EXCELLENCE INDICATORS	Met	Partially Met	Not met
Meets all Core Service indicators AND	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>On site or ready off-site access to in shoe plantar pressure to evaluate pressure offloading.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

• Access to negative pressure wound therapy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Access to an orthotic laboratory to make adjustments and repairs to orthoses or pedorthic footwear and access to onsite basic equipment for the manufacture of chairside offloading and modification of devices (such as grinder etc.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Access to an ambulatory care service for administration of intravenous antibiotics exists, thus avoiding hospital admission or expediting discharge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Equipment and staff for application and removal of total contact casts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Use of photography for tracking of wounds, with informed consent of the patient/person with diabetes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Dedicated funding for patients to access medical grade footwear for prevention of ulcer recurrence (for clients where there are gaps in State or Commonwealth funding for the provision of devices).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Onsite ultrasound equipment for the detection of ankle and toe pressure (ankle brachial indices and toe pressures).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## Standard 7: Wound Care

CORE SERVICE INDICATORS	Met	Partially met	Not met
<ul style="list-style-type: none"> <li>• There is access to a variety of consumables to treat wounds, including all of the following:               <ul style="list-style-type: none"> <li>○ Absorbent dressings</li> <li>○ Foam dressings</li> <li>○ Antimicrobial dressings</li> </ul> </li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Local guidelines are in place for the selection of appropriate dressings.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• A documented wound care plan is completed in the patient record for every patient per visit.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• A documented pathway for referral for wound care in between appointments exists for each patient and is communicated to the patient/person with diabetes or their designated carer.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Wound management education is provided to patients or their designated carers to help them to manage their wounds between HRFS appointments.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CENTRE OF EXCELLENCE INDICATORS	Met	Partially met	Not met
Meets all Core Service indicators AND:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Evidenced-based advanced wound healing products and modalities are available, e.g. forms of skin grafting, application of platelet rich plasma, in inpatient and ambulatory care settings.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Standard 8: Quality Improvement

CORE SERVICE INDICATORS	Met	Partially Met	Not met
• The HRFS undertakes an annual clinical audit.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• The HRFS collects minimum data and develops key performance indicators used to assess safety and efficacy of the clinical service, assist with the allocation of resources and service improvement.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• The HRFS undertakes an annual audit that includes the indicators (on at least 30% of all patients seen annually).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Key data are reported and shared with the clinical team and the NADC annually, and areas of improvement identified, with a plan to address developed, documented strategies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• There is a quality improvement cycle in place at least annually that occurs and responds to audit outcomes, including for serious adverse events.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Routine and ongoing education and professional development in high-risk foot care is provided for all HRFS staff.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Data on audit cases recorded should include the following:</u>			
<b>1. Demographics</b>			
a. DOB, gender, ethnicity, residential postcode	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Private health cover status	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Indigenous status: Aboriginal, Torres Strait Islander, neither	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2. Clinical/Biomedical</b>			
a. Diabetes duration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Diabetes type: type 1, type 2, other, no diabetes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Smoking Status: current, past, never	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Other diabetes organ complications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Presence of chronic co-morbid conditions (eg clinical depression, CCF, dementia)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Kidney Function: eGFR	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. HbA1c level within the last 3 months	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Capability to self-manage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3. Service</b>			
a. Date of first presentation to HRFS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Time to presentation from referral, referrer type and postcode	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Approximate date of wound occurrence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>4. Foot history</b>			
a. Any past amputation history: Y/N, including extent (major/minor)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Any past ulcer history: Y/N; number	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5. Assessment</b>			
a. Grading and staging using a standardised validated system/tool (preferably WiFi), for			
i. Wound (nil, superficial, deep, extensive, not stated)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii. Perfusion/ischaemia (nil, mild, moderate, severe, not-stated)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii. Infection (nil, mild, moderate, severe, not stated)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Ulcer type: i.e. vascular, neuropathic, neurovascular	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Ulcer location: i.e. plantar yes/no; which foot; forefoot, midfoot, hindfoot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Ulcer: initial size/area in cm <sup>2</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Ulcer recurrence or new ulcer?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Ulcer precipitant: tight shoes, burn, trauma, unknown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Peripheral neuropathy presence: yes or no or not stated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6. Management</b>			
a. Interdisciplinary input (indicate all that apply): physician, podiatrist, nurse, surgical, other allied health, infectious disease, pedorthist, other health care professional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. If systemic antibiotic therapy prescribed: nil, oral, ambulatory parenteral, inpatient parenteral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. If wound culture undertaken and sample type: yes or no and type	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Pressure offloading type instituted (indicate all that apply): removable knee-high device, removable ankle-high device, therapeutic foot-wear; other offloading	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. If hospitalisation has been required for the wound treatment: yes or no	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Inpatient or hospital in the home?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii. If amputation required: no or yes (major, or minor and type) and date	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii. If revascularisation has been required to treat this ulcer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• If yes – open versus endovascular and date	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv. If foot surgery (other than amputation) been required to treat this ulcer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• If yes – type (eg osteotomy, tendon lengthening) and date	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>7. Outcome</b>			
<b>a.</b> Outcome with relevant date: wound/ulcer: healed, amputation, ongoing, deceased	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>b.</b> Patient status: discharged from HRFS: yes or no	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>c.</b> If patient discharged: by HRFS or self-discharge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>i.</b> Referral to: another HRFS, inpatient hospital, community podiatry, private podiatry, other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>d.</b> Charcot neuroarthropathy cases to also include date when inflammation resolved	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b><u>A HRFS audit should include:</u></b>			
• Number of patients treated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Casemix (wound severity, infection, PAD, age)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• The HRFS monitors (in at least 30% of patients):			
○ time from referral to appointment being offered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
○ time from ulcer occurrence to HRFS consultation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
○ the appropriateness of referrals based on the HRFS intake criteria	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
○ time to healing of all (or a % of) ulcers presenting during the 12 months	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
○ proportion of all wounds healed at 12 and 20 weeks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
○ rate and time to ulcer recurrence within 12 months	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
○ % of patients seen in 12 months, admitted during their episode of care and % readmitted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
○ amputations including level (major vs minor) of all (or a % of) patients presenting during the 12 months.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Process outcomes (feedback to primary care)			
○ % of patients with documented care plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
○ % of patients with PAD who have received vascular consultation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Patient reported experience measures			
○ Number of patients who provided patient reported experience measures (PREMs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
○ Number of patients who provided patient reported outcome measures (PROMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• System process outcomes			
○ % of inpatients with foot complications who were provided with inpatient HRFS consultation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>CENTRE OF EXCELLENCE INDICATORS</b>	<b>Met</b>	<b>Partially met</b>	<b>Not met</b>
Meets all Core Service indicators AND:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<ul style="list-style-type: none"> <li>Evidence of attendance at continuing education and scientific / conference meetings for HRFS staff.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Audits undertaken on individual patients seen in the HRFS includes all patients seen in the HRFS with diabetes-related foot ulcers and all patients seen with Charcot neuroarthropathy.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>The HRFS uses electronic methods to collect the same data as other like services so that data can be aggregated or compared for benchmarking through the national HRFS audit.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>The HRFS is involved in research studies of the diabetes foot.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>The HRFS routinely audits inpatient data to identify number of referrals to the HRFS and the number of non-HRFS patients admitted with a foot ulcer.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## ACCREDITATION

In response to the development of the NADC Collaborative Interdisciplinary Diabetes HRFS Standards the NADC, with the collaborative support of the Kellion Diabetes Foundation (KDF), have commenced a pilot NADC Collaborative Interdisciplinary Diabetes High Risk Foot Service (HRFS) Accreditation Program.

The accreditation process for HRFS will aim to:

- Improve HRFS nation-wide by promoting standards of excellence within HRFS
- Improve outcomes for people at high risk of foot disease
- Promote knowledge sharing, with HRFS able to leverage knowledge from other accredited centres to improve service delivery
- Provide opportunity for HRFS to benchmark performance against peer centres
- Encourage HRFS improvement – with the service having the opportunity to utilise the evidence gained from the accreditation process to lobby for increased funding and resourcing in areas where the service can be enhanced, to promote better health outcomes for consumers

On completion and evaluation of the pilot the accreditation program will become available to all HRFS within Australia and further information can be found at <https://nadc.net.au/hrfs-accreditation/>.

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