

Scottish Public Health Network

Healthcare Needs Assessment for Scottish NHS Podiatry Services

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Contents

Tables.....	6
Figures	7
Executive Summary.....	8
1. Aim of Healthcare Needs Assessment.....	16
1.1 Healthcare Needs Assessment methods.....	16
1.2 Scope of Healthcare Needs Assessment.....	16
2. Introduction	17
2.1 Policy context	17
2.2 What is NHS Podiatry?.....	20
3. Foot health needs in NHS Scotland.....	23
3.1 The 4 Tier Model	23
3.2 Partnership and Multidisciplinary care	26
3.3 Service Redesign.....	27
4. Epidemiological Needs Assessment.....	28
4.1 Methods for review of epidemiology literature	28
5. Epidemiology of Foot Problems	29
5.1 What is foot disease?.....	29
5.2 Wound Management	29
5.3. Musculoskeletal Conditions (MSK)	31
5.4 Changes in the prevalence of risk factors - future need.....	34
5.5 Vulnerable groups and inequalities	37
5.6 Literature review summary.....	37
6. Pathway Frameworks	39
6.1 Activity data	39
6.2 Generic podiatry pathway framework.....	40
6.2.1 Referral to Generic Podiatry	41
6.2.2 Podiatry Treatment.....	45
6.2.3 Proportion of Activity by Tier of Podiatry Service.....	46
6.2.4 Generic pathway summary	47

6.3 Specialist Podiatry Pathway Frameworks	47
6.4 Wound Management	47
6.4.1 Wound Management Case Studies	49
6.4.2 Diabetic Wound Management	52
6.4.3 Epidemiology of diabetic foot problems	52
6.4.4 Wound Management Summary	60
6.5 Musculoskeletal Pathway Framework	62
6.5.1 MSK Case Studies	66
6.5.2 Rheumatoid arthritis	69
6.5.3 MSK Summary	74
7. Conclusions of Epidemiological HCNA	75
8. Corporate Needs Assessment – Patient Views	77
Overview of responses	77
Accessing Specialist NHS Podiatric Services	78
Diabetic foot care and wound care	78
Arthritis, mobility help and nail surgery	79
Musculoskeletal lower limb and foot care / Biomechanics	80
Summary	81
9. Comparative Needs Assessment	82
10. Recommendations	86
Appendix 1 - Patient survey	88
Appendix 2 – Group membership	89

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Foreword

Scotland is very much at the forefront of innovation in health-care policy. Against this background, some may be rather surprised to see the Scottish Public Health Network working with the Scottish Podiatry Service Managers Group to produce Scotland's first health care need assessment for NHS specialist podiatry services. However, such surprise is misplaced as over the last few years NHS specialist podiatry services have been undergoing the sort of service redesign that is totally in line with the vision set out in *A National Clinical Strategy for Scotland* and as Scotland has progressed the separation of personal foot care from NHS specialist podiatry services, the link to realising *Realistic Medicine* is clear.

Following on from these developments, this ScotPHN health care need assessment seeks to provide essential support for service commissioners and planners in understanding and valuing the contributions that NHS podiatric services make to a range of clinical pathways for acute care and the management of long-term conditions.

Producing this report has not been without its challenges. For example: the development of service activity data has not kept pace with the speed of service-led change; the international evidence base for models of care is modest; and identifying the contribution of specialist podiatry within pathways for diabetics or those with musculoskeletal problems has required careful reflection. That we have something to report is itself a credit to the team which worked on this health care need assessment.

In this regard I would like to particularly thank Rebecca Walton, who worked with ScotPHN as lead author, John McConway and Allister Kelly from the Scottish Podiatry Service Managers who analysed and drafted significant components of the report, as did Alison McCann and Ann Conacher from ScotPHN. The report was also made possible by the advice and active support of Robert Peat, Cheryl Easton and Lynn Baird from the Scottish Podiatry Service Managers and the ScotPHN team who project managed the work. All of them have made extremely important contributions.

Meeting the specialist podiatric health care needs of people in Scotland is an essential part of achieving a sustainable health and social care system. I hope this health care need assessment helps local service commissioners and planners realise the benefits for patient-centred care that NHS podiatry services offer.



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Tables

Table 1. Range of estimates of prevalence by wound category

Table 2. The annual consultation prevalence and Gender Ratio for the MSK regions

Table 3. To show Annual Consultation Prevalence per 10,000 Registered Population by Gender and Age Group

Table 4. Sources of referral to podiatry (%) 2014-15

Table 5. Podiatry: new attendances (non-in-patients, non-day patients) by NHS Board of treatment financial year 2014-15

Table 6. To show crude rate per 100,000 population (2014-15)

Table 7. To Show Proportion of Activity within Each Tier (Core / Complex / Intensive) For Podiatry Services Across Nine NHS Boards (2015-16)

Table 8. To show the percentage of people on the Scottish Diabetes Register recorded as having active foot disease, a high / moderate / low foot risk score, or no score recorded over the previous 15 months (2015)

Table 9. To show the percentage of people on the Scottish Diabetes Register recorded as ever having had a foot ulcer, or ever having had a lower limb amputation (2015).

Table 10. To show proportion of people with each foot score in a synthesised NHS board, for Type I and Type II Diabetes

Table 11. To show the number of patient contacts for Musculoskeletal Conditions (foot and ankle including RA) and crude rate per 100,000 population 2014-15.

Table 12. New cases of rheumatoid arthritis per 100,000 population, per year.

Table 13. Estimated prevalence of rheumatoid arthritis by age and sex.

Figures

Figure 1. Foot Health Spectrum of Care

Figure 2. Four-tier model of foot health need in NHS Scotland

Figure 3. The Projected percentage change in age structure of Scotland's population, 2010-2035

Figure 4. Projected percentage change in population aged 75+, by NHS Board area, 2010 – 2035

Figure 5. Generic Podiatry Pathway Framework

Figure 6. Podiatry, Referral to 1st Allied Health Practitioners Treatment

Figure 7. Podiatry Specific Problems by Area (Snapshot from 2004)

Figure 8. Complex Wound Pathway Framework

Figure 9. Percentage of in-patients admitted for management of diabetes or a diabetes complication by diabetes type, England and Wales, 2015

Figure 10. Diabetic Foot Risk Stratification and Triage Pathway Framework

Figure 11. Podiatry Pathway Framework for patients with MSK Conditions

Figure 12. Guidelines on the Management of Foot Problems in Rheumatoid Arthritis

Executive Summary

The role of Allied Health Professions is being redefined. The Allied Health Professions workforce, including Podiatrists, will be expected to play a critical role in meeting the challenges facing the health and social care systems. Scottish Government National Clinical Strategy (2016) makes proposals for how clinical services need to change in order to provide sustainable health and social care services for the future. Extending roles and developing the skills of Allied Health Professionals is one element of the strategy. The National Delivery Plan for the Allied Health Professions in Scotland (2012-2015) provides further impetus for Allied Health Professions across health, social care and the third sector to work together, enhancing their engagement, contribution and leadership within a multidisciplinary approach to care.

In her first annual report Scotland's Chief Medical Officer reinvigorated the conversation with health professionals about the shape of future practice. How people (as patients) and professionals can combine their expertise to focus on outcomes that matter to individuals, how unwarranted variation in clinical practice can be reduced to achieve optimal outcomes for patients, and how value for public money and prevention of waste can be ensured. The philosophy of 'realistic medicine' is permeating through to all areas of healthcare, including podiatry.

The recently published document *The Modern Outpatient: A Collaborative Approach 2017-2020*, outlines the Modern Outpatient Programme. This is designed to deliver care closer to the patient's home, providing more person-centred care, utilising new and emerging technologies, whilst maximising the role of clinicians across Primary, Secondary and Community Based services. One of the core principles is to raise the profile and enhance the role of the wider multidisciplinary team, in particular that of Allied Health Practitioners.

There is also a focus on supporting people to manage and maintain their health, to prevent ill health, and to manage ill health as outlined in strategic documents such as *Healthcare Quality Strategy for NHS Scotland (2011)* and the *2020 Vision (2012)*.

Much of the attention is directed towards reshaping the care of older people, prioritising preventative spending, maintenance of independence, recovery, rehabilitation and re-ablement, and utilising community services to reduce emergency admissions for older people as described in *Reshaping Care for Older People; A Programme for Change 2010-2021*. This includes action to prevent and manage falls (*The Prevention and Management of Falls in the Community a Framework for Action for Scotland 2014-2016*).

There is also a focus on keeping people mobile and active as outlined in *Active and Healthy Ageing: An Action Plan for Scotland 2014-16* and *Start Active, Stay Active: A report on physical activity for health from the four home*

countries' Chief Medical Officers (2011). Enabling people to benefit from initiatives such as those described in the National Physical Activity Implementation Plan.

NHS podiatry services are delivering on this agenda and have been involved in major service redesigns as part of this modernisation process. The Scottish Government's Personal Footcare Guidance (2013) endorsed the removal of personal foot care from NHS podiatry provision. The NHS podiatry service now focuses on core podiatry provision and specialist podiatry services. Similarly specialist musculoskeletal conditions (MSK) podiatry services have engaged with The Trauma and Orthopaedics ACCESS programme (Addressing Core Capacity Everywhere in Scotland Sustainably) Allied Health Professional MSK Redesign. A key component of the model is self-referral access to MSK podiatry and other Allied Health Professional MSK services to offer early intervention.

This Health Care Needs Assessment (HCNA) aims to assist NHS Boards by providing analysis to inform further local service development to meet the current and future needs of people with foot disease. The epidemiological component of the HCNA focuses on the need for generic core podiatry and specialist podiatry services provided by the NHS in Scotland. This assessment targets specialist wound management and specialist musculoskeletal conditions which comprise two of the main components of specialist NHS podiatry. The HCNA also sought the views of patients and patient's groups, as well as undertaking a comparative analysis of podiatry services in other healthcare systems.

The purpose of the epidemiological element of this HCNA was to use quantitative data to estimate the size and composition of the population requiring generic podiatry and specialist podiatry services for complex wounds management and musculoskeletal conditions. The aim was to describe the level of need using research literature on the incidence and prevalence of a disease, and routinely available data to describe the current provision of services. We also reviewed the literature to establish the current evidence base.

The review of research literature describing the size and composition of the population requiring podiatry services was complicated by a number of factors. Specifically, the diversity of foot problems included within the provision of NHS podiatry meant that the review could not capture the full picture of the need for podiatry. Despite focusing on specialist podiatry the literature was found to have a lack of agreed definitions around complex wounds and MSK conditions. There were few high quality studies in this area. For these reasons it was not possible to provide a complete picture of population need for podiatry services. The limited findings of the literature review suggest that:

Generic Foot Problems

- The most common foot problems presenting to podiatry services are corns and/or callus, nail pathologies, complex foot wounds and MSK foot problems.
- Foot disease is common amongst the in-patient population. Prevalence is estimated to be 0.01-13.5% for foot wounds, 0.05-6.4% for foot infections and 0.2-11.9% for collective foot disease.

Complex wounds

- The prevalence of foot ulcers in the UK is estimated to be 0.22 (95% CI 0.19-0.26) per 1000 population.
- Of these 0.13 (95% CI 0.10-0.15) per 1,000 are associated with diabetes and 0.09 (95% CI 0.07-0.12%) per 1,000 are non-diabetic.

MSK foot and ankle problems

- The prevalence of foot pain is high; foot pain 24% (CI 22-25%), ankle pain 15% (CI 13-16%) and big toe pain 14% (CI 12-15%).
- The annual GP consultation prevalence of foot and ankle MSK problems was 290 per 10,000 registered population.
- Consultation rates are higher amongst females compared to males and tend to increase with age.
- The proportion of foot and ankle MSK associated with disability is difficult to determine but studies suggest that a large proportion of people with foot pain report that their foot pain is disabling.
- In Great Britain the number of working days lost in 2014-15 due to lower limb MSK was 2,396,000. The proportion attributable to foot problems has not been ascertained.

Whilst there may be some debate about how closely these estimates of prevalence reflect the true level of need, the ageing population together with the 'obesity epidemic' will lead to increasing prevalence of foot disease. Much of the increase is likely to relate to diabetic foot problems but may also be associated with musculoskeletal conditions.

Review of the data to describe current NHS podiatry provision found that there was little nationally available data that could contribute to the analysis. We approached this challenge by developing care pathway frameworks to describe the pathways of care. Where possible data were identified and used to populate the pathway based on a 'synthesised NHS Board' population of 100,000 people. We further refined this by using tracer conditions: diabetic foot care to illustrate specialist podiatry wound care; and rheumatoid arthritis to illustrate specialist MSK podiatry.

The strategic approach to the care of people with diabetic foot disease that has been adopted across Scotland has increased awareness of the need for

involvement of podiatry as part of a multidisciplinary approach to diabetic foot care. This is clearly defined in National Clinical Guidelines. There is also an evidence base for podiatry interventions such as footwear and offloading techniques (although it is recognized that there is continuing uncertainty about the optimal approaches to the general management of wounds).

The epidemiology describing the need for diabetic foot care in Scotland is outlined in the National Diabetes Audit datasets. Estimates suggest that over 250 people per 100,000 population will have active foot ulceration or will be at high risk of developing ulceration, requiring regular care from the specialist NHS podiatry services.

Audit data for the in-patient population in England (2015) found that 5% of all in-patients with diabetes were admitted to hospital because of foot disease. 8.9% of in-patients included in the audit had active diabetic foot disease on admission. Of the patients admitted for management of their diabetes and complications, 49.5% were admitted because of active foot disease. The Scottish in-patient diabetic foot audit (2014) found that 14% of all in-patients with diabetes had a current foot ulcer. A total of 2.4% of the in-patients with diabetes developed a new foot lesion during their hospital admission. In 2014 the Scottish Diabetes Foot Action Group introduced a national in-patient foot care campaign called "CPR for Diabetic Feet". Evaluation of the impact of this initiative is planned.

Measures to assess whether the need for care is being met include structure, process and outcome measures. Some of these indicators are collated as part of the Scottish dataset including endpoints such as presence of foot ulceration and amputation. The percentage of patients with type I diabetes who have ever had a foot ulcer is 8.4% (n=2,537) with 1.2% (n=352) having had a lower limb amputation. The percentage of patients with type II diabetes who have ever had a foot ulcer is 4.3% (n=10,903) with 0.7% (n=1,740) having had a lower limb amputation. The assessment of the contribution that podiatry makes to care is not directly measured from existing data, as it is an integral part of multidisciplinary care.

Work by the Scottish Diabetes Survey to develop their assessment of the care processes and outcomes may provide an opportunity to gain a better understanding of gaps in services provided to these patients. Local audits may also be valuable to help improve the quality of care offered to diabetic patients with foot disease. Meanwhile there is insufficient data to provide a detailed picture of the structure, process and outcomes associated with podiatric foot care for patients with diabetes in Scotland.

Complex foot wounds in non-diabetic patients have not been subject to such a strategic approach. There is little available data to describe current activity. We had access to analysis of activity undertaken by two NHS Boards, and presented these as case studies. One NHS Board found that there were 19,209

patient contacts with specialist wound care podiatry (including diabetic patients) a crude rate of 2,940 contacts per 100,000 population in 2015-16. An analysis of two weeks' activity at another NHS Board found that there were 146 non-diabetic patients accessing podiatry wound services, a crude rate of 40 patients per 100,000 for the two week period. Local analysis such as these will help inform local service planning but further developments in data collection are required to allow more detailed analysis and interpretation.

The role of podiatry is less clearly defined for the care of patients with non-diabetic wounds compared to diabetic patients. Neither SIGN nor NICE Guidelines discuss the need for multidisciplinary teams or identify specific professional groups that should be involved in the care of patients with pressure ulcers or peripheral arterial disease. They do recommend that only appropriately trained individuals should undertake assessments such as Ankle Brachial Pressure Index. The lack of recognition of a role for podiatry may be due to insufficient research to provide an evidence-base rather than podiatry having less of a role to play in the management of non-diabetic wounds.

The MSK service redesign has made significant changes to the process of accessing podiatry care for patients with many different musculoskeletal conditions. As yet we do not have adequate datasets to enable us to describe service provision. The newly established nationally collated referral data showed that for Jan-March 2016 there were 13,658 adults referred to podiatry MSK services across Scotland, a crude rate of 390 per 100,000 population. We had access to local data from two NHS Boards and presented findings as case studies to illustrate elements of the service. Referrals to rheumatology MSK podiatry were 70 and 390 per 100,000 population for the two NHS Board areas studied. The number of patient contacts with MSK podiatry for non-rheumatology patients in one NHS Board was 250 per 100,000 population.

Our review of rheumatoid arthritis as a tracer condition suggests that within a synthesised NHS Board population of 100,000 people, there are estimated to be 40 patients with newly diagnosed rheumatoid arthritis. Evidence-based clinical guidelines advocate for early access to podiatry services for this group of patients. Whilst we do not have data to assess the current situation, we have examples of good practice where rheumatology departments work closely with their podiatry colleagues and other multidisciplinary team members.

This HCNA experienced difficulty sourcing good quality data to describe podiatry services. This resonates with the findings of a report by The Health Foundation and Nuffield Trust which focused on the quality of care provided by Allied Health Professionals in England. They commented that "across AHP groups there is very little consistent nationwide information about either the volume or the quality of care provided." The report also noted that "... there is a shortage of even basic information about activity ... this is especially problematic in areas outside of hospital care".

In Scotland work has been conducted to develop a recommended minimum dataset for Allied Health Professionals. However, as noted on the Information Services Division website, following the devolving of responsibility for eHealth to local NHS boards in 2009 there has been a proliferation of locally defined data sets making national data capture difficult. The Allied Health Professionals National Delivery Plan (NDP) for Scotland 2012-15 which identifies “AHPs as agents of change in health and social care”, reiterated the need for a national minimum dataset. This is currently being addressed by the Information Services Division through the development of Allied Health Professional Operational Measures. Podiatry Managers and Practitioners need to engage with processes set up by Information Services Division to develop the Allied Health Professional Operational Measures. This will allow them to generate meaningful information to help develop Scottish NHS podiatry services.

The corporate element of the HCNA sought the views of patients and patient groups on aspects of the NHS podiatry service. A brief survey was undertaken using a questionnaire to assess views on access to services and awareness about specialist podiatry provision. Overall it was felt that patients could be better informed about their condition and the service provided by specialist NHS podiatry; this related both to general information being available and better communication by health care professionals. It was understood this would be important to preventing deterioration in condition and maintaining mobility. The strongest view expressed was in relation to receiving continuity of care with consecutive appointments being with the same podiatrist. There was also some concern about access to the service.

It is not possible to gauge how views varied between different patients in different NHS Boards and in different age groups. Or how representative the views are of all patients using specialist NHS podiatry. However, the key points resonated with the project group members. Therefore it is likely that addressing these would increase the focus on prevention by specialist services and improve the current service to patients.

This HCNA also conducted a comparative analysis of podiatry services in other healthcare systems. The review found that much research into podiatry is carried out as part of another discipline. For example, foot ulcers as part of diabetes research, musculoskeletal as part of rheumatology, falls as part of gerontology or orthopaedic surgical research. Therefore it was hard to find research or comparative systems looked at from the podiatric point of view. Reviews which describe podiatry in other countries were either informal or were based on private practice which could not adequately be compared with NHS systems.

The comparative research literature is sparse and the evidence base is limited, some studies put this down to the status of Allied Health Professionals compared to the medical profession. However, both New Zealand and Australia

run podiatry services which accept UK podiatric qualifications which allowed some comparison with Scottish podiatry. In both countries the services offered are equivalent to those offered in Scotland, including core podiatry, nail surgery, orthotics, and specialist care for musculoskeletal conditions and diabetes. There was insufficient information to provide any further comparative analysis.

In conclusion, ongoing improvements to the care of patients' foot health problems are being developed by Scottish NHS podiatry services. This HCNA provides a foundation to help inform improvements in the provision of NHS podiatry. However, this process would benefit from advances in epidemiological information, enhanced activity data and more robust evidence based guidance to help identify where podiatry resources can be most effectively targeted and to better inform the quality improvement of services.

Recommendations

1. NHS podiatry services should increase awareness about the service they provide amongst NHS and Social Care leaders within the Integrated Joint Boards, Public Health Directorates, and more widely. Specifically there needs to be increased awareness of:
 - Changes in personal foot care provision;
 - The role of specialist podiatry, particularly in relation to complex wound management and musculoskeletal conditions (MSK);
 - The contribution that podiatry services make to the care of older people including maintaining mobility, enabling people to remain active, as well as contributing to falls prevention; and
 - The contribution that podiatry services can make to prevent ill health and improve health and wellbeing, including signposting for smoking cessation advice for people with peripheral vascular disease.
2. NHS podiatry services need to engage fully with the Service Improvement agenda by having access to good quality data about their service:
 - Podiatry Managers and Practitioners need to be actively involved in the development and rollout of the Allied Health Professional Operational Measures and the ISD National Allied Health Professionals dataset;
 - Opportunities to evaluate specialist podiatry care processes and outcomes should be explored. For example, future developments in the Scottish Diabetes Survey and a National In-patients Audit should consider how to capture the contribution made by Allied Health Professionals including NHS Podiatrists;
 - Where models of good practice have been developed, these should be evaluated and shared with other podiatry services via the NHS Scotland Knowledge Network; and

- Supporting the development of practice improvement should be explored with in-service training developed to support staff to participate fully in redesigning models of care and practice improvement. These should be reflected in the implementation of the Everyone Matters: 2020 Workforce Vision.
3. The role of NHS podiatry in the provision of anticipatory care should be explored to assess the impact on quality of life for individuals and the cost effectiveness for service providers:
- There needs to be better understanding about whether risk-stratification, triage and timely podiatric intervention for patients with diabetic foot disease can improve outcomes for patients and reduce the number of patients requiring admission to hospital;
 - The effectiveness of this approach for patients with non-diabetic wounds should also be considered;
 - The essential role of the third sector in personal foot care needs to be acknowledged; and
 - Effective approaches to managing anticipatory care across the specialist podiatry services should be established and maintained.
4. The evidence-base informing the effective contribution of podiatrists and other Allied Health Professionals should be enhanced:
- When developing evidence-based guidance, consideration should be given to the role of Allied Health Professionals wherever possible. For example, clinical guidelines for the management of complex (non-diabetic) wounds would benefit from considering the role of podiatry.

1. Aim of Healthcare Needs Assessment

Ensuring that patients throughout Scotland receive the best care is the responsibility of NHS Boards. This needs assessment will help inform NHS Boards and assist in developing local services which meet the current and future needs of people with foot disease.

The aim of the health care needs assessment is to:

- Review the epidemiology of foot disease in Scotland (including future trends);
- Identify the views of stakeholders on current and future NHS service provision;
- Identify gaps in service provision and highlight priority areas for change; and
- Make recommendations that will assist NHS Boards to plan and develop services for those with foot disease in their local area.

1.1 Healthcare Needs Assessment methods

ScotPHN uses standard project methodology for health care needs assessments. The general principles of health care needs assessment were used to inform this assessment, incorporating:

- Epidemiological Needs Assessment: describing the incidence and prevalence of the disease and baseline service activity;
- Corporate Needs Assessment: reporting the views of interested parties and stakeholders (including professionals and service users and their carers); and
- Comparative Needs Assessment: comparing and contrasting current services in Scotland with those provided elsewhere.

1.2 Scope of Healthcare Needs Assessment

The HCNA considers podiatry services offered by NHS providers.

2. Introduction

2.1 Policy context

This foot health needs assessment will contribute to delivering the aspirations, aims and outcomes of a number of key national policies, strategies and programmes. These include the documents outlined below.

Health Care Policy:

- The Modern Outpatient: A Collaborative Approach 2017-2020¹. This provides a policy framework for NHS Scotland and informs the development of a strategic plan for the next 5-10 years. The Modern Outpatient Programme is designed to deliver care closer to the patient's home, providing more person-centred care, utilising new and emerging technologies, whilst maximising the role of clinicians across primary, secondary and community based services. One of the core principles is to raise the profile and enhance the role of the wider multidisciplinary team, in particular that of Allied Health Practitioners. Podiatry services already have a significant role in new approaches (for example, as part of the Musculoskeletal Service Redesign) and there will be new opportunities to further develop the service as part of the drive to direct patients to "the right clinician at the right time and in the right place";
- Healthcare Quality Strategy for NHS Scotland (2011) and the 2020 Vision (2012)². These strategies encourage services to focus on prevention, anticipation and supported self-management as part of the quality improvement agenda. To inform and support people to manage and maintain their health, to prevent ill-health, and to manage ill-health;
- The National Delivery Plan for the Allied Health Professions in Scotland (2012-2015)³ provides an opportunity for Allied Health Practitioners across health, social care and the third sector to work together. It is recognised that Allied Health Practitioners constitute a large and growing proportion of the healthcare workforce, often involved in complex care interventions many of which take place in community settings. The National Delivery Plan has enhanced Allied Health Practitioner engagement, contribution and leadership within multidisciplinary approaches;
- Scottish Government National Clinical Strategy (2016) - The Strategy makes proposals for how clinical services need to change in order to provide sustainable health and social care services for the future⁴. The strategy envisages a longer-term cultural and clinical change programme, one aspect of which is to support self-management where appropriate. It also aspires to transform roles including extended roles and developing allied health professionals' skills to deliver professional

care autonomously;

- National Health and Wellbeing Outcomes (2015). A framework for improving the planning and delivery of integrated health and social care services⁵. The national health and wellbeing outcomes provide the mechanism by which the Scottish Ministers will bring together the performance management for health and social care. The focus is on improving the experiences and quality of services for people using those services, carers and their families; and
- Realistic Medicine. The Chief Medical Officer's Annual Report 2014-15⁶ called for doctors to deliver healthcare that focuses on outcomes that have true value to the patient. It emphasised the need to engage patients in decisions about their own care. It also focused on waste in healthcare, not in terms of what might be thrown away, but in interventions that do not add value for patients. This includes avoiding unwarranted variation in clinical practice and resultant outcomes.

Population Specific Policies, Strategies and Programmes:

- Reshaping Care for Older People; A Programme for Change 2010-2021⁷ also prioritises preventative spending, maintenance of independence, recovery, rehabilitation and re-ablement, utilising community services to reduce emergency admissions for older people;
- Improving the Health & Wellbeing of People with Long Term Conditions in Scotland: A National Action Plan (2009)⁸, Improving Complex Care (2009) and The Long Term Conditions Collaborative identify the need for initiatives to improve the quality of care provided for people with long term conditions. These include: empowering people with long term conditions, supporting self-management; an integrated system of care across primary care, hospitals, social work, housing, community and voluntary sectors; providing decision support (evidence base), quality improvement and workforce development supported by standards, guidelines, education, practice development and; communicating and sharing data across the system;
- Co-ordinated, Integrated and Fit for Purpose: the Delivery Framework for Adult Rehabilitation in Scotland (2007)⁹. This emphasises the role that Allied Health Professions, together with other health and social care professionals, have to play in delivering rehabilitation. Moving from a model of "care" to "enablement and rehabilitation" using the expertise of the whole team to best effect;
- Maximising Recovery and Promoting Independence: Intermediate Care's contribution to Reshaping Care: An Intermediate Care

Framework for Scotland (2012)¹⁰. This framework encourages the development of Intermediate Care as part of a range of enabling and preventative services. A key component of this is the ability to draw on multi-professional and multi-agency skills and resources as required to meet complex needs, preventing unnecessary acute hospital admission;

- Gaun Yersel! The self-management strategy for long-term conditions in Scotland (2008)¹¹. Supporting people to successfully manage their condition, helping to ensure that people having access to the right information, education, support and services;
- Caring Together: The Carers Strategy for Scotland 2010-2015¹² states that without the valuable contribution of Scotland's carers, the health and social care system would not be sustained. The strategy identified the need to focus on identifying, assessing and supporting carers in a personalised and outcome-focused way. Measures to help professionals in the health and social care workforce identify carers included "Carer Aware" training is to make the workforce more aware of carers and their needs and to support the early identification of carers and signpost them to relevant support. The strategy recognised that carers may have a valuable role in supporting the move towards the self-care model of supporting people with long term conditions;
- Scotland's National Dementia Strategy 2013-2016¹³. Working to ensure that people with dementia and their families are supported in the best way possible to live well with dementia. In particular, helping to provide acute health care for people with dementia in a way which keeps them at home wherever possible;
- The Prevention and Management of Falls in the Community A Framework For Action For Scotland 2014-2016¹⁴. This Falls Strategy addresses the need for primary prevention of falls, as set out in the 2012 report "Up and About or Falling Short"¹⁵. The supporting literature recognises the importance of foot health and good footwear to help prevent unsteadiness and to increase levels of physical activity. Older people are encouraged to contact their local NHS podiatry service or GP if they are worried about their feet;
- Somewhere to go and something to do. Active and Health Ageing: An Action Plan for Scotland 2014-16¹⁶ aligns with national work to develop an outcomes framework to support the delivery of National Outcomes for older people. Supporting older people to live in good health for longer with reduced health inequalities, and supporting them to live as independently as reasonably practicable in their community; and

- Start Active, Stay Active: A report on physical activity for health from the four home countries' Chief Medical Officers (2011)¹⁷ establishes a UK-wide consensus on the amount and type of physical activity we should all aim to do at each stage of our lives. The document highlights that increasing physical activity has the potential to improve the physical and mental health of the nation, reduce all-cause mortality and improve life expectancy.

NHS Podiatry Strategy:

- The Scottish Government's Personal Footcare Guidance (2013)¹⁸ has moved personal foot care away from NHS podiatry provision. Alternative approaches have been developed to support personal foot care outside podiatry. These include education and support packages, access to voluntary services, supporting carers and family to offer personal foot care and access to information available from the health improvement service.

2.2 What is NHS Podiatry?

Podiatry is one of the twelve diverse professions listed under the Allied Health Practitioner umbrella.

NHS podiatry provides a comprehensive foot health service for conditions affecting the foot and lower limb to all ages of the population.

By undertaking early interventions to identify and mitigate the impact of future foot health demands, podiatry plays a key role in the prevention of lower limb problems through a programme of triage, screening, assessment, diagnosis, treatment and foot health education to patients with a lower limb condition or systemic condition that affects the lower limb. The service is needs-led and person-centred to support and enable self-care where possible to relieve pain, keep the public mobile, and sustain and promote active living.

Patients can have systemic acute or chronic long-term conditions, including diabetes, vascular and or neurological conditions, which give rise to further complications of feet and lower limbs.

Podiatry services offer assessment and management of a range of foot problems arising from multiple aetiologies:

- Wound Care

- Exudate management, debridement, off-loading (podiatry can prescribe prescription medication independently, e.g. analgesic, antibiotics, sedatives);
- Assessment and management of foot problems relating to specific conditions including:
 - Diabetes
 - Vascular disease
 - Systemic arthropathies and other rheumatological conditions
 - Orthopaedic conditions (Podiatrist can undertake steroid injections)
 - Dermatological
 - Biomechanical & musculoskeletal assessment
 - Falls prevention;
- Provision / manufacture of orthoses;
- Nail surgery (Podiatrist can administer local anesthetic to facilitate removal of all or partial aspects of the nail plate);
- Soft tissues disorders including corns, calluses;
- Re-ablement and supporting physical activities in mental health;
- Health education; and
- Group health promotion.

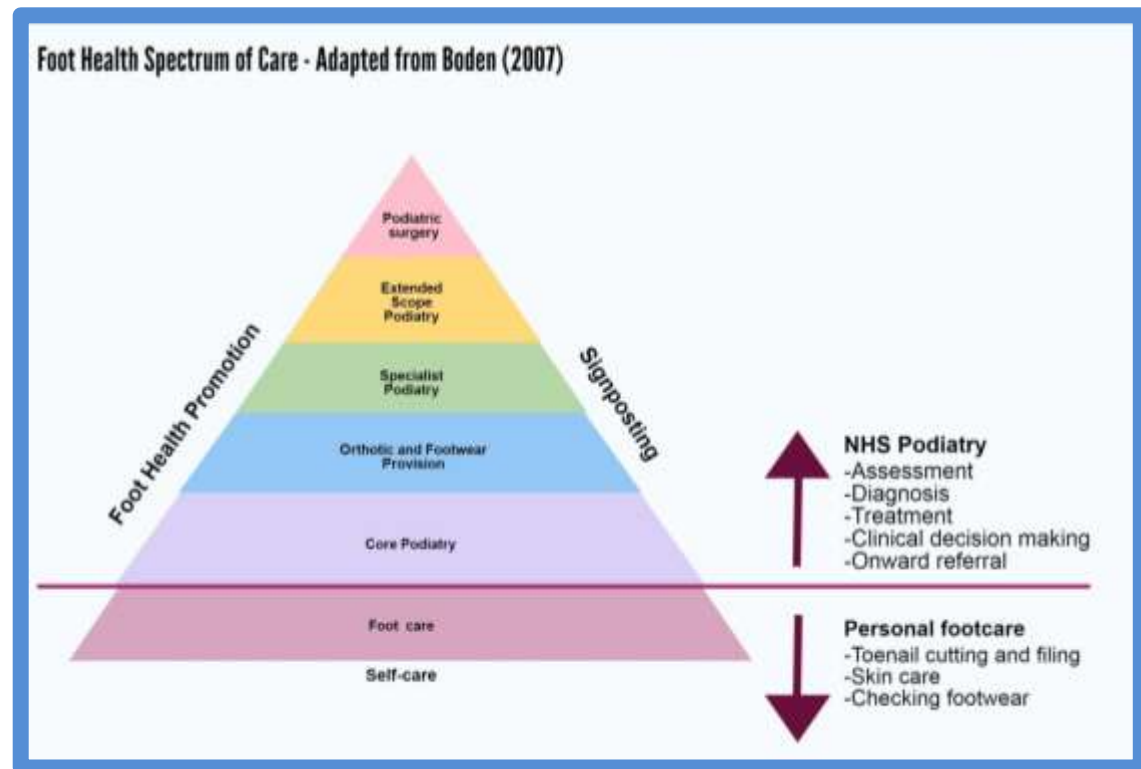
In addition, podiatric surgery (which undertakes foot and ankle surgery as day cases under local anesthetic) can be an extended scope development for post registered Podiatrists who have successfully completed a surgical training programme.

Further details of podiatric services can be found in guidance from the Society of Chiropodists and Podiatrists¹⁹ and the College of Podiatry²⁰.

The foot care needs of the Scottish population range from self-care/personal foot care through to podiatric surgery as illustrated in (Figure 1).

It should be noted that personal foot care is no longer considered to be within the remit of NHS Podiatry (see Section 3.1 The 4 Tier Model).

Figure 1. Foot Health Spectrum of Care



3. Foot health needs in NHS Scotland

3.1 The 4 Tier Model

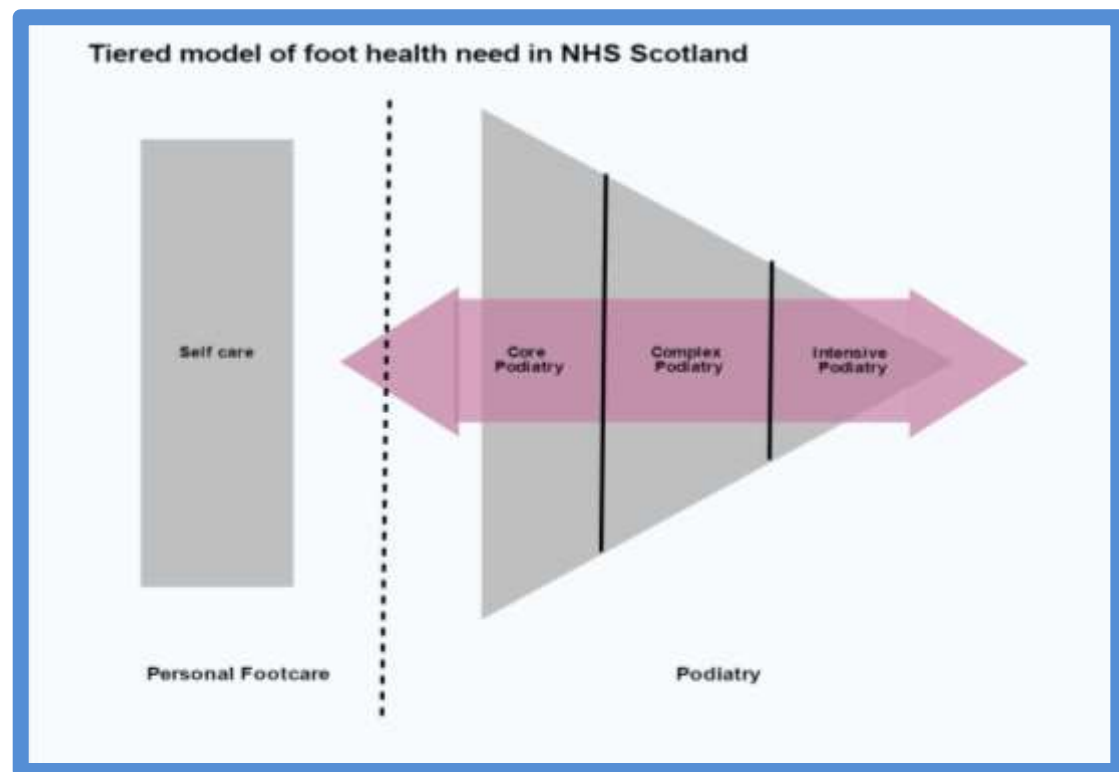
The foot health needs in Scotland can be described within a simplified model (Figure 2). In contrast to describing the elements of the podiatry skill mix shown in Figure 1 or individual services, this approach illustrates the increasing levels of complexity of foot problems. Podiatry services are working to align their case mix descriptors, but currently this figure offers a model rather than identifiable categories of foot problems.

Personal Foot Care

Personal foot care is described as personal hygiene and involves a simple set of tasks such as bathing, moisturising, nail cutting and filing that an adult would normally do for themselves if able. The Scottish Government's Personal Footcare Guidance (2013)¹⁸ has endorsed the removal of personal foot care away from NHS podiatry provision. The reclassification is in line with earlier national publications including 'A Guide to the Benefits of Podiatry to Patient Care' and 'Footcare Services for Older People; A Resource Pack for Commissioners and Service Providers'²¹.

Alternative approaches have been developed to support personal foot care outside podiatry. These include education and support packages (including web pages and on-line resources as well as more traditional leaflets), access to voluntary services, supporting carers and family to offer personal foot care and access to information available from the health improvement service. Podiatrists offer training for care home staff and home carers to support them to fulfill their requirement to provide personal care for residents or clients.

Figure 2. Four-tier model of foot health need in NHS Scotland



Tier 1 Core Podiatry

The Society of Chiropodists and Podiatrists define core podiatry as “the assessment diagnosis and treatment of common and more complex lower limb pathologies associated with toenails, soft tissues and the musculoskeletal system with the purpose of sustaining and improving health”²².

This includes:

- Appropriate triage, assessment and treatment of those identified with foot health problems;
- Treatment of common foot lesions including in-growing toenails, bunions, heel spurs, infections;
- Vascular assessments including Doppler and Ankle Brachial Pressure Index;
- Falls prevention – campaigns and initiatives to prevent falls particularly in older people;
- Dermatology of the foot - prevention of skin infections; and
- Advice, information, education and training.

Core podiatry refers to a system of coordinated interventions within the podiatry service for individuals with long term conditions who require support. Some

people in the first level of care may require a single or a small number of interventions from the podiatry service. For these people, self-management, rehabilitation and enablement play a significant role. This level of care also includes those with complex social circumstances or mental health needs where the podiatrist may utilise the input of multidisciplinary community teams, self-directed support and wider community assets to assist rehabilitation and self-management.

Tier 2 – Complex Podiatry

Foot care at this level is provided for patients with multiple needs who are experiencing a significant loss of function associated with complex foot conditions and tissue viability issues adversely affecting mobility and lower limb viability. They will receive multiple interventions from the podiatry service, and may require coordinated support from a number of other services, including medical, nursing, and Allied Health Practitioner services. Patient care will be managed using a podiatry condition management approach within agreed pathways (e.g. surgery, MSK, diabetes, wound care, rheumatology).

Tier 3 – Intensive Podiatry

Foot care at this level is provided for patients with complex foot pathologies and associated multiple co-morbidities, including a number of long term conditions. A multi-disciplinary and multi-agency approach is employed, with a collaborative approach throughout the process of assessment, intervention and communication in order to meet individuals' foot care needs and to promote cost effective outcomes.

The person will have a significant deterioration of foot function and will require multiple interventions from the podiatry service as part of a multi-disciplinary team approach. They will require an intensive level of care which may require weekly or twice weekly podiatry.

Describing Diabetic Care using the Tiered Model

The care of patients with diabetes can be considered within the four tier model. Patients are reviewed annually to undertake diabetic foot risk stratification to identify those most at risk, and use resources effectively and efficiently.

Individuals with diabetes who are classified as low risk are no more likely to develop serious lower limb complications than the population who do not have diabetes. These individuals do not require their foot health needs to be met by podiatry services, and may be managed by self-care or personal foot care with appropriate advice.

A moderate risk score may be managed within core podiatry but the higher the risk score the more specialised the podiatry input, with active foot disease requiring intensive intervention.

3.2 Partnership and Multidisciplinary care

Partnership models of integrated foot care

Foot health covers all people and all needs and is important to ensure that there is capacity to deliver this across all sectors. NHS Podiatrists work across and within social or health care and are comfortable liaising with relevant services in community or secondary care.

NHS Podiatrists also provide support for voluntary and third sector organisations where opportunities to become involved in delivering elements of foot care and foot health education are increasingly open to exploration.

Care may be offered in a community setting, a person's home, residential care or a prison. Podiatrists within the NHS are able to advise those involved in delivering safe and effective foot care away from clinical settings. With an increasingly frail elderly population, and a variety of foot health providers, this skilled resource can be utilised for a wide range of public foot health issues.

Multidisciplinary service models

Podiatrists across NHS Scotland work as part of larger teams and within integrated pathways. This ranges from services to improve mobility as part of falls prevention strategies, or through increasingly specialised intervention including complex wound management and podiatric surgery. The role of podiatry is being increasingly recognised in national clinical guidelines as part of multidisciplinary teams. Examples of this are described in detail in this report as part of the care for diabetic foot problems and rheumatoid arthritis.

The role of Podiatry in Health Improvement and Health Education

There is increasing emphasis on the need to contribute to the prevention of ill health². The role of podiatry in the prevention of diabetic foot problems is discussed in detail later in this document. But podiatry also plays a role in preventing other problems such as falls.

Strategies to prevent and manage falls in the community advocate the use of multifactorial assessment to identify a patient's individual risk factors for falling. The Scottish Action Plan for the prevention and management of falls in the community²³ and guidance from NICE²⁴ recommend that this includes the management of risk associated with feet and footwear such as the assessment of gait, balance and mobility, and muscle weakness. People who are identified as at risk of falls or people who have had recurrent falls should be considered for individualised, multifactorial intervention.

There are specific difficulties in developing the evidence base for complex interventions such as falls prevention. Podiatry interventions have not been widely evaluated in this context. However, the 2012 Cochrane systematic review of interventions for preventing falls in older people²⁵ identified one study

of podiatry. The study concluded that multifaceted podiatry, including foot and ankle exercises, for people with disabling foot pain, significantly reduced the rate of falls compared to standard podiatry.

3.3 Service Redesign

There has been significant redesign of podiatry services across Scotland. The removal of personal foot care (see section 3.1 the 4 - Tier Model) has enabled podiatry services to disinvest resources and redirect their skills to provide specialist care. This reinvestment has included the redesign of podiatry services for people with musculoskeletal problems, as part of a wider Allied Health Professional MSK Redesign (see section

6.5 Musculoskeletal Pathway Framework).

We do not have data to evaluate the impact of these service redesigns but the removal of personal foot care has freed up capacity to focus on increasing demands for more complex podiatry interventions. Podiatry services report that the redesign has allowed the level of skill and expertise to be directed more appropriately, and patients are more likely to be seen by the right clinician at the right time and in the most appropriate environment.

4. Epidemiological Needs Assessment

An Epidemiological Healthcare Needs Assessment (HCNA) uses quantitative data to estimate the size and composition of the population of interest, the level of need (as indicated by the incidence and prevalence of a disease) and the current provision of services.

The purpose of the epidemiological element of this HCNA is to estimate the need for NHS podiatry services in Scotland, including future scenarios. NHS podiatry services offer input for a range of conditions, and as such the population is not easily defined.

This epidemiological healthcare needs assessment focuses on the need for:

- Generic NHS podiatry;
- Specialist NHS podiatry services including;
 - Wound management, using diabetes as a tracer condition; and
 - Musculoskeletal conditions (MSK), using rheumatoid arthritis as a tracer condition.

This assessment uses two approaches. The first uses traditional epidemiological studies to describe the incidence and prevalence of foot disease, including wounds and musculoskeletal conditions.

The second uses pathway frameworks to outline activity for generic podiatry and for two of the specialist podiatry services; wound management and MSK. Owing to the challenges of identifying robust data, we focused on tracer conditions to describe the podiatry healthcare needs for patients with diabetic foot problems and patients with rheumatoid arthritis.

4.1 Methods for review of epidemiology literature

A review of the literature was undertaken to identify epidemiological studies describing the population need for podiatry services. Specifically, the incidence and prevalence of foot disease, lower limb wounds associated with peripheral arterial disease, peripheral neuropathy, injury, pressure ulcers (including pressure resulting from abnormalities of the musculoskeletal system of the foot) and tissue viability issues, and musculoskeletal foot and ankle conditions.

A search of Medline, Embase, Proquest Public Health, Web of Science, CINAHL and AMED was undertaken to identify studies of incidence and prevalence of foot disease. Reference lists were hand searched to identify further literature. A search of grey literature was also undertaken.

A brief review of literature describing future trends in key risk factors for foot disease was also undertaken. A review of the evidence base supporting podiatry interventions was conducted for specialist podiatry MSK and wound management, which is outlined within the pathway framework section.

5. Epidemiology of Foot Problems

5.1 What is foot disease?

Foot disease is a commonly used general term that includes foot wounds, foot infections and foot pain. Foot disease is associated with a number of chronic conditions including rheumatological disease, diabetes, peripheral vascular disease and chronic renal disease. Some of these conditions are highly prevalent, such as diabetes, others are very rare, for example, epidermolysis bullosa. These varied conditions are associated with a number of underlying pathologies that can contribute to foot disease including vasculopathy, neuropathy and foot deformity.

The epidemiology of foot disease

There were no high-quality prevalence surveys estimating foot disease in the general population. Most studies are weak in terms of design and reporting.

A review of 26 surveys of foot disease published between 1967-2004 reported that the most common conditions in the general population were problem nails, corns, callus and toe deformities²⁶. This is consistent with a recent survey of podiatrists in the UK which reported that the main foot conditions presenting to podiatry services were corns and/or callus, nail pathologies, foot ulcers and MSK foot problems (with many patients being treated for more than one problem)²⁷.

Foot disease is common in the in-patient population. The prevalence of foot disease in general in-patient populations has been examined in a systematic review²⁸. Although the original studies were highly heterogeneous the review suggested that the prevalence of foot disorders amongst in-patients ranges from 0.01-13.5% for foot wounds, 0.05-6.4% for foot infections and 0.2-11.9% for collective foot disease.

5.2 Wound Management

What do we mean by wound management?

A wound is an interruption to skin integrity caused by physical trauma or disease. For the majority of the population wound healing is straightforward. However, for a significant minority their wounds are difficult to heal, often because of underlying co-morbidities. These can be described as 'complex wounds'. Complex wounds can be considered long-term conditions (conditions that last a year or longer, impact on a person's life, and may require ongoing care and support).

The most common types of complex wound are vascular leg ulcers (mainly ischaemic ulceration but also venous insufficiency or less commonly, vasculitis), pressure ulcers (caused by unrelieved pressure as a result of

immobility) and diabetic foot ulcers (caused by vascular and neurological complications of diabetes). These types of wound have superficial, partial or full-thickness skin loss and heal by secondary intention.

The epidemiology of wounds

The morbidity associated with complex wounds is significant but there has been a surprising lack of high-quality data to describe the epidemiology and economic implications associated with this condition. In recognition of the need for robust information a 5-year research programme was conducted into complex wounds, supported by the Programme Grants for Applied Research (PGfAR), part of the National Institute for Health Research (NIHR)²⁹.

Their systematic literature review provided a range of estimates of prevalence of complex wounds by category (see Table 1.) Only one study was found which estimated the prevalence of non-diabetic foot wounds. This prospective observational study, based in one health service district in the UK, found the prevalence of non-diabetic foot wounds was 0.02% (95% CI 0.02-0.03%). A second study examined the prevalence of foot wounds in people with rheumatoid arthritis who attended tertiary care at a UK teaching hospital. The prevalence in this group was 3.45 (95% CI 2.4 – 4.8%).

Table 1. Range of estimates of prevalence by wound category

Wound category	Prevalence Estimates (%)	
	Minimum	Maximum
All Complex wounds	0.24	1.4
Leg ulcers	0.039	0.48
Leg and foot ulcers	0.1	12.8
Diabetic foot ulcers	1.3	5.9
Non-diabetic foot ulcers	0.02	3.39
Pressure ulcers	0.056	23

The prevalence of diabetic foot ulcers was reported in six studies, with the lowest rate of 1.3% in a sample of diabetic patients accessing primary and secondary care in the North West of England, and highest rates of 5.9% in patients attending diabetic clinics in Bahrain.

The research programme report commented that the high cost of wound care and large patient and family impact of complex wounds are served by a weak evidence base and low-quality research. The literature was characterised by

huge variability in study design and wound definitions plus common deficiencies in the design and reporting of studies. These issues are likely to affect the validity of the prevalence estimates and make interpretation of the findings presented in Table 1 extremely difficult.

Responding to the need for high quality epidemiology the research team undertook a detailed prevalence survey of complex wounds in Leeds. They estimated that the prevalence of foot ulcers in the general population was 0.22 per 1000 people (95% CI 0.19 – 0.26). Of these 0.13 per 1000 (95% CI 0.10 – 0.15) were associated with diabetes and 0.09 per 1000 people (95% CI 0.07 – 0.12) were associated with non-diabetic causes.

5.3. Musculoskeletal Conditions (MSK)

What are Musculoskeletal Conditions (MSK)?

The umbrella term “Musculoskeletal Conditions” (MSK) includes both chronic conditions, which carry a specific diagnosis such as rheumatoid arthritis / osteoarthritis, and also spectrum-type conditions such as joint pain and soft tissue disorders. Problems in the foot may be either primary, for example, those arising directly from joint/soft tissue disease such as rheumatoid arthritis, or may be secondary to change in structure or function where musculoskeletal conditions lead indirectly to an increase in the prevalence or severity of associated conditions.

The Allied Health Practitioners MSK Redesign³⁰ uses the term musculoskeletal (MSK) problems to include “a diversity of complaints and diseases localised in joints, bones, cartilage, ligaments, tendons, tendon sheaths, bursa and muscles. MSK problems also include out-patient pre or post orthopaedic surgery, peripheral nerve lesions or complication of fracture/dislocation/trauma”.

Patients with musculoskeletal conditions were traditionally referred from General Practice to Orthopaedic Consultants or Rheumatology Consultants. Now there is increasing emphasis on widening access and enhancing the role of Allied Health Professionals in the triage and management of these conditions.

The epidemiology of foot and ankle pain, and MSK

Foot and ankle pain is common in the general population. Factors associated with foot and ankle pain include increasing age, female gender and obesity.

A systematic review of cross-sectional surveys taken from general populations estimated the population prevalence of foot/ankle/toe pain to be 20% (95% CI 15%-25%)³¹. However, the results were highly heterogeneous and further subgroup analysis suggested that the prevalence of foot pain was 24% (95%

confidence interval 22-25%), ankle pain was 15% (95% confidence interval 13-16%) and big toe pain 14% (95% confidence interval 12-15%).

The toe and forefoot were the most common location of pain for the majority of population groups, followed by arch and ball pain. Heel and hind-foot pain were the least common locations.

The data suggested that prevalence tends to be higher amongst females compared to males. The association between foot and ankle pain, and age was inconsistent but tends to increase with age.

Prevalence of foot and ankle MSK in the general practice population based on consultation rates provides the best estimate of morbidity where population surveys are limited. MSK are one of the most common reasons for seeking primary care, with foot and ankle problems accounting for a substantial number of these consultations.

Analysis of the Consultations in Primary Care Archive (CiPCA) found that foot and ankle problems accounted for 8% of all musculoskeletal consultations and the annual consultation prevalence for foot and ankle problems was 290 per 10,000 registered population³². Further analysis examined the ratio of consultations for females compared to males (Table 2) and age distribution (Table 3).³³ These data suggest that consultation rates are slightly higher amongst females compared to males, and they tend to increase with age.

Table 2. The Annual Consultation Prevalence and Gender Ratio for the MSK regions.

Region	Rate per 10,000 persons	(95% CI)	Female:Male Ratio (95% CI)
Back	591	(577-606)	1.22 (1.14-1.31)
Lower back	417	(405-429)	1.20 (1.13-1.28)
Knee	324	(313-334)	1.03 (0.93-1.15)
Chest	280	(270-290)	1.04 (0.97-1.12)
Neck	228	(219-237)	1.44 (1.28-1.63)
Foot	208	(200-217)	1.18 (1.05-1.33)
Shoulder	199	(191-207)	1.11 (1.02-1.21)
Hand	132	(125-139)	1.05 (0.86-1.28)
Hip	115	(108-121)	1.64 (1.46-1.85)

Pelvis	100	(94-106)	1.17 (0.98-1.41)
Ankle	88	(82-94)	1.10 (0.94-1.29)
Head	86	(81-92)	1.29 (1.08-1.55)
Elbow	78	(73-84)	0.75 (0.55-1.01)
Wrist	58	(53-62)	1.59 (1.34-1.88)

Table 3. To show Annual Consultation Prevalence per 10,000 Registered Population by Gender and Age Group.

	Age Group					
Region	0-14	15-24	25-44	45-64	65-74	75+
Foot (Males)	107	90	163	239	315	329
Foot (Females)	90	132	194	356	341	316
Ankle (Males)	36	69	103	94	90	110
Ankle (Females)	27	77	85	135	122	117

Age-gender standardisation based on population figures for England and Wales in 2006

Impact of Musculoskeletal Conditions

Although foot and ankle pain is common, the proportion of cases associated with disability or functional limitation is difficult to establish.

The systematic review of the prevalence of foot or ankle pain in the general population by Thomas *et al*¹ also analysed the prevalence of associated disability or interference with activities of daily living. The review found two studies reporting the prevalence of disabling foot pain (based on the Manchester Foot Pain and Disability Index) but the response rates for these studies were not recorded. A further study reported the prevalence of foot/ankle pain interfering with activities of daily living (but response rate was only 46%).

The first study reported disabling foot pain to be 11.7% in those over 45 years of age (based on respondents with current foot pain plus disabling foot pain on “some days” or “most/every day”). The second study found the proportion of disabling foot pain to be 64% in adults over 50 years of age (“most/every day”). The third study reported that the proportion of foot /ankle pain interfering with activities of daily living ranged from 16%-50% in adults over 50 years of age.

A cross-sectional study of older adults in the USA³⁴ found that common conditions such as hallux valgus and toe deformities had little relationship with foot pain or function limitations after controlling for confounding variables. Of the conditions included in the study only plantar fasciitis and pes cavus were related to functional limitation. However, foot symptoms have been found to be independently and significantly associated with poorer physical function, for example, as measured by chair standing times and walking times^{35,36}.

The National Clinical Strategy for Scotland 2016⁴ highlights that just under half of all community disability is caused by musculoskeletal conditions, much of it chronic and potentially reversible, particularly in the least well off communities.

There is known to be a significant impact of musculoskeletal disorders on people's ability to work. Statistics are collated annually for work related musculoskeletal disorders in Great Britain³⁷. Musculoskeletal disorders account for 44% of all work related ill-health. Data from 2014-15 show that the prevalence rate of work related lower limb disorders (WRLLDs) (including hip and knee) was 310 cases per 100,000 people employed and equated to a total case number of 97,000. The number of working days lost in 2014-15 was 2,396,000 days lost at a rate of 24.6 days lost per case. Examining the prevalence in terms of age and gender, the overall rate for males is higher than females and the age ranges 45-54 and 55+ tend to have the highest rates for both genders.

5.4 Changes in the prevalence of risk factors - future need

The risk factors associated with developing foot disease include older age obesity.

A brief review of the literature was undertaken to identify key documents that outline projected changes to the epidemiology of these risk factors in the Scottish population.

Population projections

The demographic changes facing Scotland have been well documented elsewhere but will be briefly summarised here.

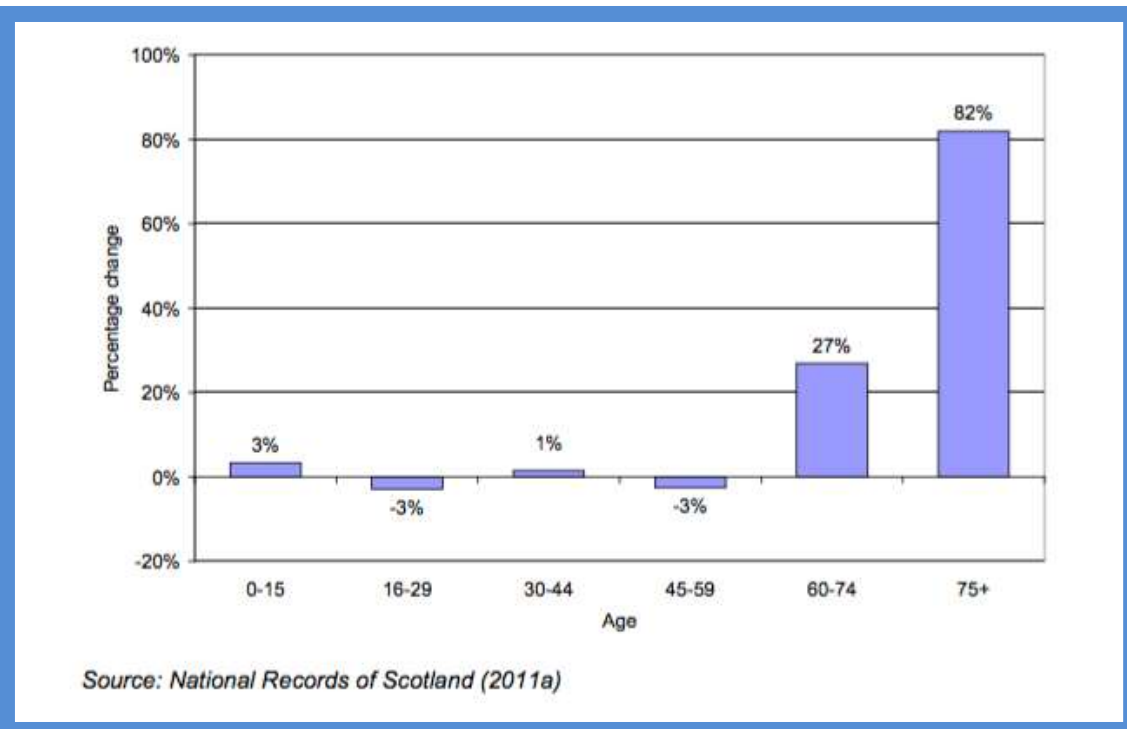
Population size is driven by a combination of factors: the number of births, deaths, immigrants and emigrants. There may be unexpected variations in any of these factors which would affect the reliability of the projections, but it is widely accepted that the population of older people in Scotland is likely to continue to increase.

ScotPHN reviewed population projections as part of their assessment of health and social care needs of older people in Scotland³⁸. The assessment included recent population projections which predict that the total population of Scotland will increase by 8% during the 20 year period from 2012 to 2032. However, the

population aged 65 years and over is expected to increase by 49% during the same period.

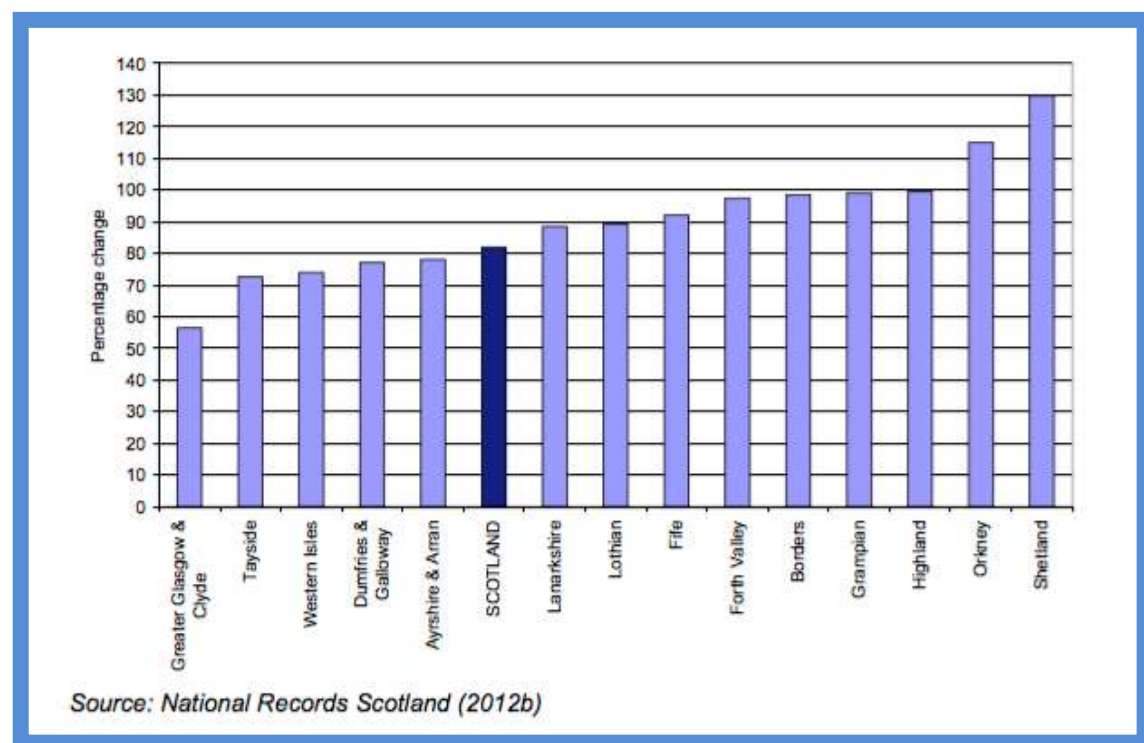
As shown in Figure 3, the population aged under 60 is projected to remain fairly constant whilst the number of older people is projected to increase significantly.

Figure 3. The projected percentage change in age structure of Scotland's population, 2010-2035



The current age structure of the population varies geographically across Scotland, with more rural areas tending to have older populations. There may be considerable variation in the size of future increases by geographical area (Figure 4).

Figure 4. Projected percentage change in population aged 75+, by NHS Board area, 2010-2035



Obesity

Obesity is a major risk factor for a range of diseases and long-term conditions some of which have direct and indirect impacts on foot health. The physical consequences of obesity include the development of musculoskeletal conditions, and metabolic consequences include type II diabetes and cardiovascular disease, both of which are associated with an increased risk of complex wounds.

The Scottish Parliament briefing, Obesity in Scotland³⁹, highlights the fact that Scotland does not compare favourably in international measures. Scotland ranks 5th highest for overweight (including obesity) compared to other Organisation for Economic Co-operation and Development (OECD) member states.

The prevalence of people who are overweight or obese in Scotland remains high with over 65% of the adult population in 2015 overweight or obese (36% overweight, 29% obese)⁴⁰. Levels of obesity are similar for both men (28%) and women (30%). Overweight and obesity remain significantly associated with age. In 2015, 38% of men aged 16-24 were overweight or obese, rising to 82% of men aged 65-74. There was a similar pattern for women, with 46-47% of women aged 16-34 overweight or obese, compared with 75% of those aged 75 and over. Although the increases appear to be leveling off, the underlying trend in body fat accumulation with age is still upwards. More extreme obesity is linked to socio-economic inequalities, particularly for women and children⁴¹.

5.5 Vulnerable groups and inequalities

There are clear links between long term conditions, deprivation, lifestyle factors and the wider determinants of health. People living with a long term condition are likely to be more disadvantaged across a range of social indicators, including employment, educational opportunities, home ownership and income. A large proportion of people who access NHS podiatry services will have long term conditions. For some this will be directly associated with the need for podiatry intervention (rheumatoid arthritis and diabetes are good examples).

There is very little literature around the need for podiatry care amongst vulnerable groups. The homeless population (especially rough sleepers) are likely to have foot health needs⁴² and are known to have a higher risk of skin problems, including wounds and infections, and musculoskeletal conditions⁴³. A number of commentaries have noted that people with mental health issues and learning disabilities may have a higher prevalence of foot health problems compared to the general population.

The impact of regular health checks for people with learning disabilities has been the subject of a systematic review⁴⁴. The most common outcome measure was whether health checks identified previously undetected health needs. Most commonly, health checks identified a substantial proportion of participants with minor health conditions, such as impacted earwax. Foot problems were also identified by routine health checks, but it was not clear if these relate to personal foot care or podiatric care.

5.6 Literature review summary

It has not been possible to identify a complete picture of population need for podiatry services given the wide range of conditions that may be associated with foot problems and the limited published research in this area. The review focused on three key areas. To summarise, this literature review suggests that:

Generic foot problems

- The most common foot problems presenting to podiatry services are corns and/or callus, nail pathologies, complex foot wounds and MSK foot problems.
- Foot disease is common amongst the in-patient population. Prevalence is estimated to be 0.01-13.5% for foot wounds, 0.05-6.4% for foot infections and 0.2-11.9% for collective foot disease.

Complex wounds

- The prevalence of foot ulcers in the UK is estimated to be 0.22 (95% CI 0.19-0.26) per 1000 population.

- Of these 0.13 (95% CI 0.10-0.15) per 1000 are associated with diabetes and 0.09 (95% CI 0.07-0.12%) per 1000 are non-diabetic.

MSK foot and ankle problems

- The prevalence of foot pain is high; foot pain 24% (CI 22-25%), ankle pain 15% (CI 13-16%) and big toe pain 14% (CI 12-15%);
- The annual GP consultation prevalence of foot and ankle MSK problems was 290 per 10,000 registered population;
- Consultation rates are higher amongst females compared to males and tend to increase with age;
- The proportion of foot and ankle MSK associated with disability is difficult to determine but studies suggest that a large proportion of people with foot pain report that their foot pain is disabling; and
- In Great Britain the number of working days lost in 2014-15 due to lower limb MSK was 2,396,000. The proportion attributable to foot problems has not been ascertained.

Much of the available literature focuses on epidemiological cross-sectional surveys. These need to ensure the accuracy of the numerator (the number of cases of clearly defined foot disease) and the quality of the denominator (the population identified as being at risk) as they are both crucial factors in estimating prevalence. Many of the studies did not account for measures to help ensure the accuracy of the numerator, often with limited validation processes for identifying cases and establishing underlying pathology. A number of studies focused on population subgroups, for example, much of the literature on complex wounds relates to people with diabetes, rather than examining prevalence in the wider population.

In addition, cross-sectional surveys are prone to a number of biases such as responder bias. For example, response rates for postal surveys were low in a number of studies making it difficult to determine if the responses are representative of the population being studied.

The proportion of in-patients with foot problems was higher than anticipated and the literature may warrant more detailed investigation. It would be useful to have a better understanding of the proportion of in-patients where foot disease was the primary cause of admission to hospital, the proportion that would be amenable to intervention from Podiatry services, and the potential to provide appropriate care out-side the acute hospital setting.

Whilst there may be some debate about how closely these estimates of prevalence reflect the true level of need, the aging population together with the 'obesity epidemic' will lead to increasing prevalence of foot disease. Much of the increase will relate to diabetic foot problems but will also be associated with other areas such as wound management and musculoskeletal conditions.

6. Pathway Frameworks

We explored the data available to outline the epidemiology in terms of a synthesised NHS Board population of 100,000 using pathways to illustrate patient flows.

The term framework is used because each health board will have variation in their own clinical pathway depending on historical investment in services, management structures, skill mix, facilities, geography, socioeconomic factors and variation in local specialties and links with tertiary services.

Pathway frameworks were developed to outline the generic podiatry service and specialist podiatry services focusing on:

- Wound management using diabetes as a tracer condition; and
- Musculoskeletal conditions (MSK), with rheumatoid arthritis as a tracer condition.

Discussion and agreement with the Podiatrists on the project group (following discussions with their clinical leads) led to the development of podiatry pathway frameworks to illustrate the epidemiology of podiatry for a synthesised NHS Board population of 100,000 adults.

Activity data were reviewed to identify if there were good quality data on which to base estimates of activity across the Scottish NHS Podiatry Service.

6.1 Activity data

Review of the data held by the Information Services Division of NHS National Services Scotland identified two sources of nationally collated data, podiatry referrals for the financial year 2014-15, and Allied Health Professional Waiting Times Census 2012.

In acknowledgement of the fact that there is little nationally collated podiatry data we undertook a survey of activity for each NHS Board (using a basic template) for the financial year 2014-2015. Review of the returns identified that there were significant data quality issues. There is no single dataset for podiatry, resulting in inconsistencies of coding, a lack of data definitions and incomplete data. Service redesign and changes to IT infrastructure also hindered accurate data collection. It was concluded that although the data can be used to provide a simple outline of service provision, direct comparison between areas, and across time-periods is not recommended because of data quality issues and ongoing extensive service redesign.

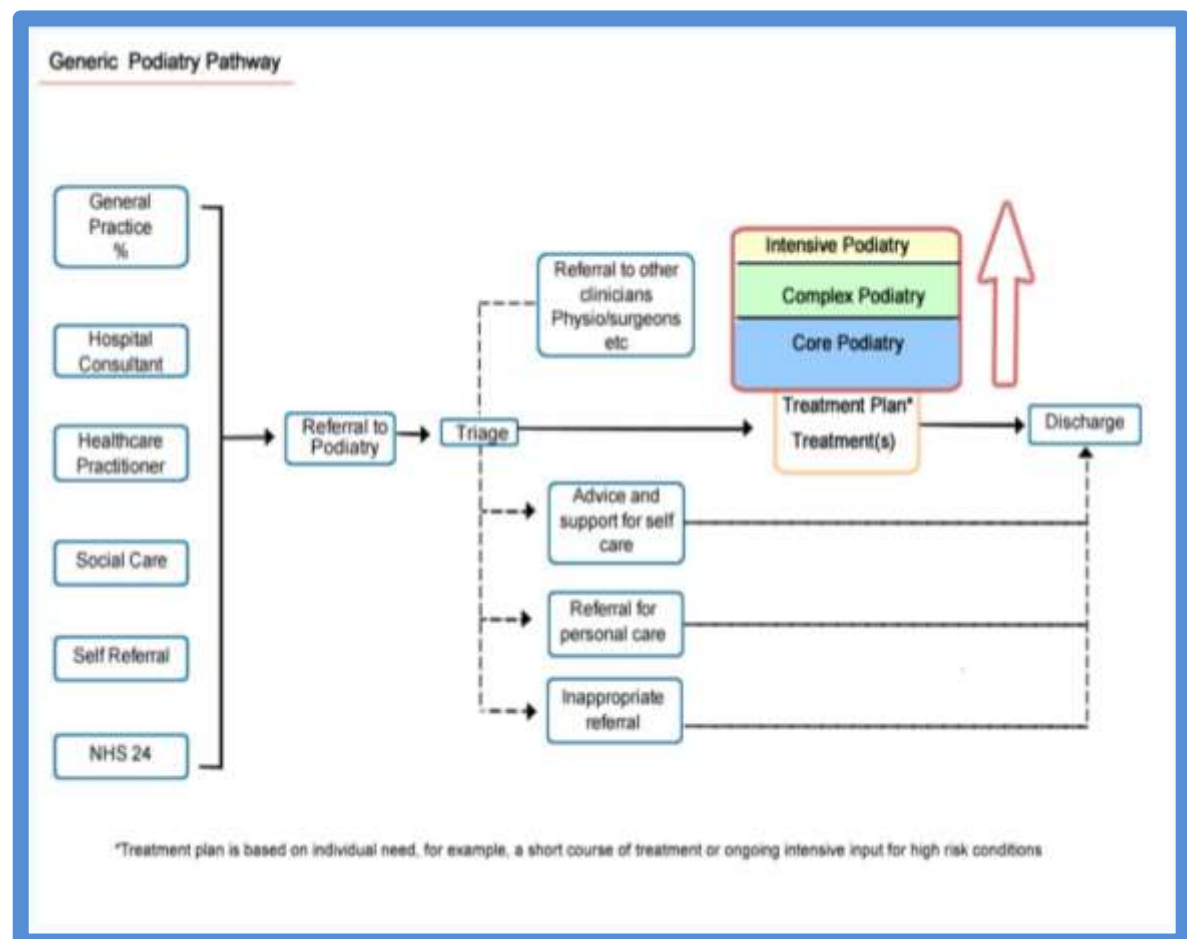
In addition, the activity data do not account for those waiting for care (on waiting lists), those accessing private provision or those who would benefit from care but who are not accessing help.

6.2 Generic podiatry pathway framework

In order to understand how patients move through the podiatry service a generic podiatry pathway framework was developed (Figure 5). Patients access the podiatry service via different routes of referral with relevant information conveyed using referral forms to enable clinician-led triage. Patients are directed to the most appropriate pathway for their care, including referral to other specialties or multidisciplinary teams.

Patients who are triaged to podiatry services will be assessed and an individual plan for treatment identified. This may entail a one-off treatment, or may involve more prolonged podiatry input.

Figure 5. Generic Podiatry Pathway Framework.



6.2.1 Referral to Generic Podiatry

Patients may have open access to the service via self-referral, or can be referred by NHS 24, General Practice, Hospital Consultant, other Healthcare Practitioners, Social Care or other (Figure 5).

The pattern of referral to podiatry is summarised in Table 4 below, based on the survey of individual NHS Boards. The proportion of referrals from each source varies considerably across Scotland.

One NHS Board area received only 2% self-referrals, whilst in another area, self-referrals made up almost 70% of total referrals. In three NHS Board areas Hospital Consultants contributed to over 15% of referrals. Similarly referrals via primary care ranged from 15% to 75% of all referrals to NHS podiatry.

Table 4. Sources of referral to podiatry (%) 2014-15.

Source of Referral	Average	Range	Number of returns
NHS Consultant	7%	1% to 22.5%	9
Primary Care	39%	15% to 74.8%	9
Other Healthcare Practitioner	11%	0% to 21%	9
Social Care	1%	0% to 2.1%	9
Self-Referral	41%	1.9% to 70%	9
NHS 24	3%	0.6% to 5.6%	2
Other	1%	0% to 4.96%	6

Source: Survey of NHS Board Podiatry Services

It is anticipated that the source of referrals will continue to change, reflecting current redesign of the podiatry service. There is transition towards increasing access via self-referral, as Allied Health Professionals are being recognised as an important first point of contact. There is also increasing collaboration within multi-disciplinary teams, such that NHS Consultants and other Allied Health Practitioners are referring directly to podiatry without the need to involve general practice.

Referral rates

Table 5 shows national podiatry referral data as a simple summation of quarterly data returned in aggregate form by NHS Boards to the Information Services Division, as at September 2015. The figures supplied by NHS Boards include activity provided by hospital-based services. Care provided in the community was excluded except where that care was provided by hospital-based staff. This is a particular problem when assessing podiatry services because much of the provision is community based. Hospital in-patient and day patient referrals are also excluded from the data. Two NHS Boards did not submit returns and as a result the Information Services Division could not report the Scotland total for 2014-15.

Table 5. Podiatry: new attendances (non-in-patients, non-day patients) by NHS Board of treatment financial year 2014-15

NHS Board	Number	Rate per 100,000 population
Ayrshire & Arran	0	0
Borders	1898	1664
Dumfries & Galloway	2841	1895
Fife	11214	3053
Forth Valley	19	0
Grampian	241	41
Greater Glasgow & Clyde	24840	2174
Highland	0	0
Lanarkshire	16557	2534
Lothian	1088	127
Orkney	364	1686
Shetland	386	1662
Tayside	4543	1098
Western Isles	0	0

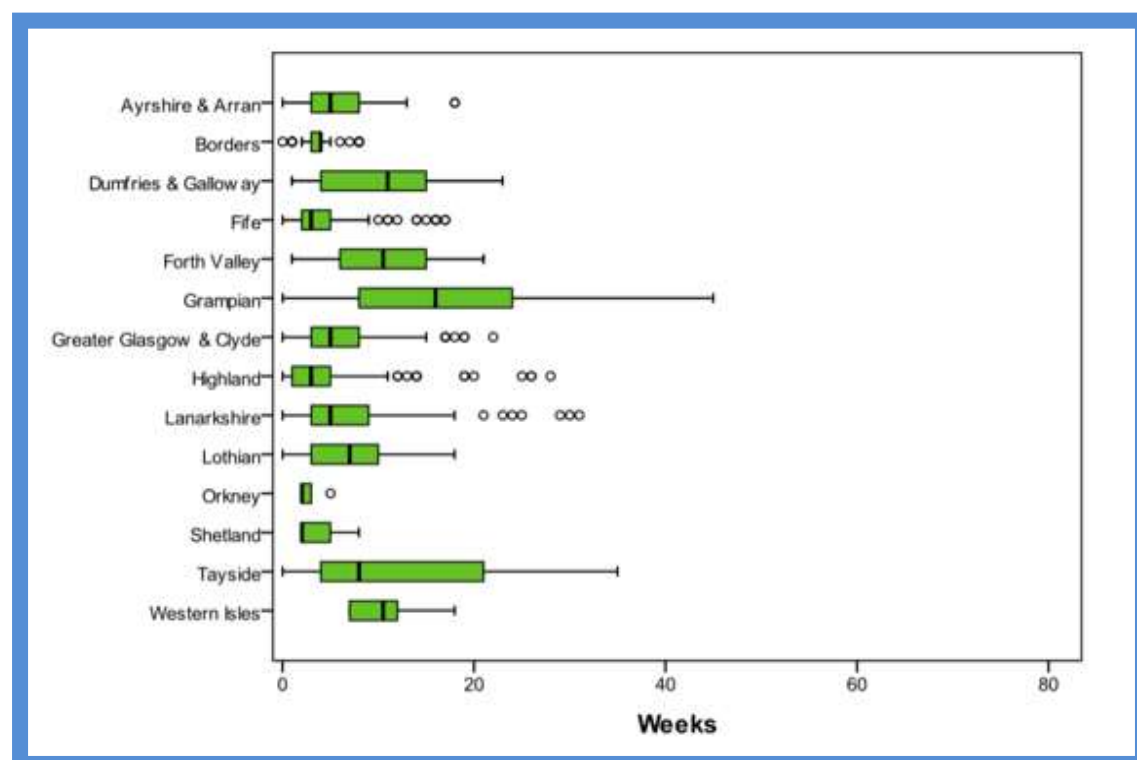
Source: ISD Scotland

We have chosen to include this table to illustrate the lack of robust data available to inform service delivery across Scotland. The wide variation in crude rates of referral suggests that these figures are unlikely to be a true reflection of referral rates and do not capture community based activity.

A national census of all new patients attending outpatient and community services in Scotland for 1st Allied Health Practitioner treatment was held between Monday 6 and Friday 10 February 2012. The census received data from 340 Podiatrists reporting 1,655 adult patients seen for first treatment during census week, an average of 5 new patients each.

Thirty-five per cent of adult patients were seen within 3 weeks, with an additional 24% (393 patients) seen between 3 and 6 weeks, 72 patients (4%) waited more than 18 weeks. The median waiting time for podiatry ranged from 2 weeks in NHS Orkney and Shetland, 3 weeks in Fife and Highland to Grampian where the median waiting times was 16 weeks. Grampian also demonstrated the biggest range in waiting times for podiatry (Figure 6). These figures are likely to have changed significantly in the intervening years, but no further reports are available.

Figure 6: Podiatry, Referral to 1st Allied Health Practitioners Treatment



Source: ISD AHP Waiting Times Report⁴⁵

Local Referral Data

Given the very limited nature of the nationally collated activity data, the survey of NHS Board podiatry services requested data on the number new patient referrals, return contacts, discharges following treatment and patients who did not attend (DNAs). These were converted to crude rates using the total population from mid-year estimates (as shown in Table 6). These crude rates suggest that there may be considerable variation in activity across Scotland. However, firm conclusions cannot be drawn due to methodological issues with the data collection process (including a lack of data definitions).

As at April 2016, around 280,000 individuals were on NHS podiatry service caseloads across NHS Board areas. This represents around 5.2% of the Scottish population.

Table 6. To show crude rate per 100,000 population (2014-15)

NHS Board	New Patients	Return Contacts	Discharges	DNAs
Ayrshire & Arran	3956	17033	2347	2259
Borders	1890	12275	2740	930
Dumfries & Galloway	2000	25773	*	1083
Fife	3450	23619	2102	3018
Forth Valley	1259	12661	1603	1018
Grampian	154	1431	*	144
Greater Glasgow & Clyde	1303	6248	529	*
Highland	*	*	*	*
Lanarkshire	2580	15026	*	2626
Lothian	1742	8385	1894	*
Orkney	*	*	*	*
Shetland	1472	18937	1885	1550
Tayside	1049	26077	385	2399
Western Isles	2899	37270	2371	2932

* data not available

Source: Survey of NHS Board Podiatry Services

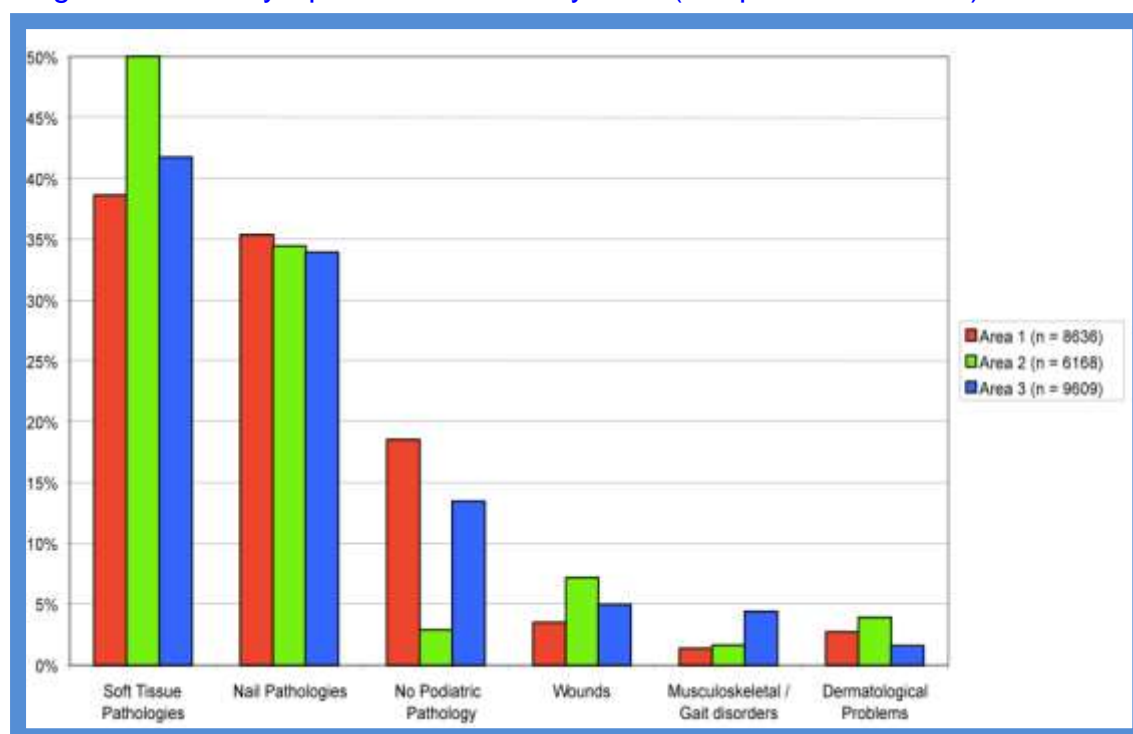
6.2.2 Podiatry Treatment

Data to describe the pattern of activity offered by NHS podiatry services is limited. We found only one analysis of activity, and this dates back to 2004, so can only provide historical context. “The Podiatry Information Project” aimed to provide a representative ‘snapshot’ of typical community activity. It was a collaborative project undertaken by the Information Services Division and the Society of Chiropodists and Podiatrists Scottish Faculty of Management. Podiatrists from three different Primary Care Trusts participated, the majority of whom were Podiatrists working in community settings (the pilot did not include activity of Senior 1 Specialist staff who were estimated to comprise approximately a third of the workforce at that time).

The project reported that the most common foot problems that these podiatrists treated were soft tissue pathologies, which made up almost half of all problems (Figure 6). Nail pathologies were the second highest, accounting for approximately a third of all problems. The next most common category was ‘No podiatric pathology’. It was suggested that this related to a service redesign, which aimed to reduce the numbers of patients seen for ‘social reasons’ i.e. no podiatric pathology. Generally, no podiatric pathology related to nail cutting. However these patients may also have had other podiatry specific problems such as a soft tissue pathology and / or an associated problem / risk factor such as diabetes.

This report is over a decade old. The findings are extremely unlikely to reflect the current pattern of activity across NHS podiatry services. These findings only offer a glimpse of the historical pattern of activity that will inevitably have changed following the removal of personal foot care and other service redesigns. Current data are not available for comparison.

Figure 7. Podiatry Specific Problems by Area (Snapshot from 2004)



6.2.3 Proportion of Activity by Tier of Podiatry Service

The tiered model encompassing core podiatry care, complex care and intensive podiatry (as outlined in Figure 2) was used to illustrate the proportion of activity across the breadth of podiatry service provision across Scotland. Survey data suggest that core podiatry accounted for around half of the activity for podiatry services, although NHS Boards reported a wide range from 17% to 73%. Complex podiatry accounted for around a third of activity, and intensive podiatry accounted for around a fifth (Table 7).

Table 7. To Show Proportion of Activity within Each Tier (Core / Complex / Intensive) For Podiatry Services Across Nine NHS Boards (2015-16)

	Average	Range	Number of returns
Core Podiatry	54%	17% - 73%	9
Complex Podiatry	34%	17% - 48%	9
Intensive Podiatry	21%	3% - 44%	9

Source: Survey of NHS Board Podiatry Services

It is likely that the case mix varies between NHS Boards and will have changed from the activity illustrated in Figure 6 as a result of the removal of personal foot care from podiatry provision and other ongoing service redesign, but we do not have retrospective data available to compare the caseload over time.

6.2.4 Generic pathway summary

The generic pathway framework has been used to illustrate patient flows through the Scottish podiatry service. The survey data suggests that the route of referral into the service varies between NHS Boards. Service providers report that they are moving towards self-referral, with one NHS Board accepting almost three quarters of their referrals via this route. One NHS Board has a similar proportion of their referrals coming via general practice, and there is a range of values across the remaining NHS Boards.

Nationally collated, routinely available data are not of sufficient quality and do not adequately describe rates of referral to podiatry across NHS Boards. Methodological issues with data collection hinder interpretation of survey data describing rate of referral, return contact, discharges and DNAs. This is also true for data describing the activity at different tiers of podiatry (in terms of core, complex and intensive podiatry care). The data do suggest that there is likely to be variation in activity across Scotland, but this is difficult to quantify.

6.3 Specialist Podiatry Pathway Frameworks

There are a number of specialist pathways within podiatry provision. We focused on complex wound management and MSK, reflecting the high level of activity in these areas. We used diabetic foot disease and rheumatoid foot disease as tracer conditions to illustrate the pathways.

Podiatry care is offered in community healthcare settings including health centres, patient's own homes and in care homes, as well as in hospital based clinics.

6.4 Wound Management

Complex wounds have multiple aetiologies and as such patients may access wound management from a variety of routes. Most people with complex wounds are managed in the community. Wound care has historically been a nursing responsibility, however, over recent years Community Nurses and Podiatry staff have built relationships which have allowed podiatry services and the community nursing services to work together to provide person centred care using a shared care model for patients. Care is supported by referral to specialist services including tissue viability, surgical specialties (e.g. vascular, plastics), dermatology and specialist podiatry.

Complex wounds often require intensive periods of treatment to reduce the risk of further deterioration. In addition, it should be recognised that complex wounds may not heal. For example, some frail elderly patients may not wish or be able to undergo definitive treatment such as invasive vascular intervention. Vascular insufficiency will remain a long-term problem for these patients, with subsequent poor wound healing and ongoing wound management needs.

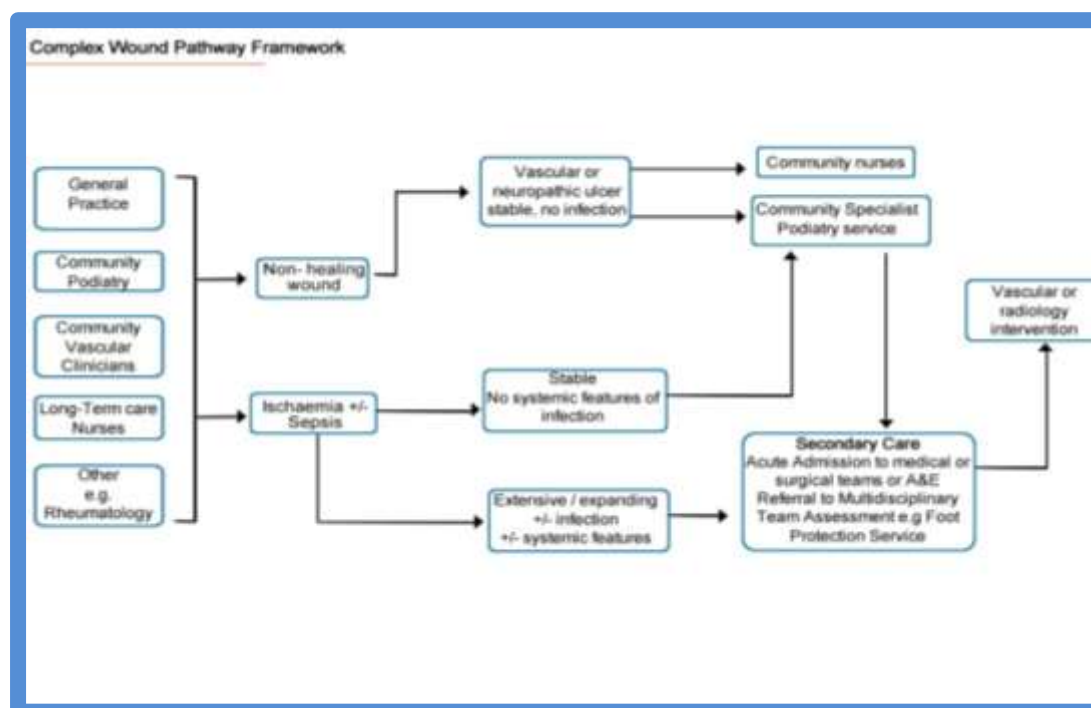
Podiatrists have the knowledge and skills to assess complex wounds, establish the underlying pathology and put measures in place to address the causes to promote, where possible, a healing environment. Their expertise includes:

- Vascular assessment, and early diagnosis of claudication and critical limb ischaemia;
- Wound care including sharp debridement of wounds to establish dimension and removed unwanted debris;
- Recognising that dressing choice for foot wounds can be different than other areas of the body because of the pressures they are subjected to and the awkward positions they need to fit to;
- Footwear knowledge and close working relationship with Orthotists to achieve desired pressure relief;
- Knowledge in foot off-loading devices, deflective padding and insoles; and
- Many podiatrists now prescribe and can arrange antibiotics to address wound infection.

Podiatrists have developed specialist roles in wound management including Diabetes Specialist, Tissue Viability Specialist and Vascular Specialist.

A Podiatry Pathway Framework for patients with complex wounds (see Figure 7) was developed in consultation with podiatry managers to help illustrate the role of Podiatry within the context of a multi-disciplinary approach to wound management.

Figure 8. Complex Wound Pathway Framework



The Complex Wound Pathway Framework illustrates some of the routes patients may take. Patients with stable non-diabetic wounds are likely to be managed in the community with referral to specialist services if indicated. When there is evidence that a wound is ischaemic or there is evidence of infection the patient is likely to require specialist intervention within secondary care. Podiatry input within this acute setting is usually within a multidisciplinary team setting.

Patients with diabetes are at increased risk of poor outcomes and are managed in line with guidance outlined in the next section on diabetic wound management.

6.4.1 Wound Management Case Studies

We have used case-studies to help illustrate activity at a local level, based on the available data. Several services have recently undertaken their own analyses of specialist wound care provision, brief details of the findings are provided below.

Case study from NHS Board

Brief Description of Service

Wound care has historically been a nursing responsibility, however, over recent years Community Nurses and Podiatry staff have built relationships which have allowed the Podiatry and the Community Nursing Services to work together to provide person centred care using a shared care model for patients. This has been formalised using a shared protocol.

Activity Data

Analysis of activity from this NHS Board found that there were 19,209 patient contacts with specialist wound care podiatry (including diabetic patients) during the financial year 2015-16 following podiatry triage. This is a crude rate of 2,940 contacts per 100,000 population. Further analysis showed that the majority of patients were seen in clinic with 33% seen in a domiciliary setting and 7% seen as an in-patient. Podiatry services changed dressings once a week for 73% of the patients, twice a week for 24% of patients, three times a week for 2% and 4 times a week for 1% of patients. Podiatry input included debridement for 69% of patients, applying deflective padding for 25% of patients and offering pressure relieving devices such as trauma shoes 5%.

Case study from NHS Board

Snapshot Audit of Complex Wound Management

Brief Description of service

In this NHS Board area non-diabetic patients with complex wounds may be referred by GPs or other health and social care professionals because they have a foot problem. There is a self-referral system so that people can self-refer when they have concerns regarding their foot health.

For the non-diabetic population the majority of wounds are treated by the Specialist Community Podiatrists. Where staff have concerns or wounds are not healing, care is supported by a Tissue Viability Podiatrist and Podiatry Diabetes Specialists.

In the acute hospitals Podiatry accept Consultant referrals for foot wounds from throughout the organisation (including Plastic surgery, Orthopaedics and Rheumatology) whether they be in-patients or outpatients. Specialist

Community Podiatrists will offer wound management if the patient is unable to attend outpatient hospital based care.

A number of initiatives have been set up to optimise the care of patients with complex wounds. This includes promoting the approaches used in the CPR for Diabetic Feet⁴⁸ to include the wider non-diabetic population with complex wounds.

Data

A snapshot audit of complex wound management undertaken by the podiatry service was undertaken over a two week period. During that time 146 patients with non-diabetic complex wounds were seen (a crude rate of 40 patients seen per 100,000 population in the two week period). These patients were seen in the community clinics (n=48), domiciliary visits (n=38), care homes (n=52), in-patients (n=6) and hospital out-patients (n=2). A total of 41 patients were referred for specialist podiatry input (Tissue Viability Podiatrist) but it was noted that this service is in its infancy and the numbers referred are increasing with time.

The snapshot assessed the aetiology of non-diabetic complex wounds and found that the largest proportion were pressure ulcers (not related to footwear) (32%) followed by ischaemic causes (22.5%). Rheumatoid arthritis accounted for 5.5% of cases and neurological conditions accounted for 2.5%. Other causes, including trauma, accounted for 37.5% of cases. It was suggested that the number of patients with neurological conditions was lower than expected and the short timescale of two weeks may not be quite long enough to provide a representative sample of activity.

As would be expected more patients were seen with complex wounds associated with diabetes. A total of 251 patients with diabetes were seen by Community Diabetes Specialist Podiatry services for the management of active foot disease (a crude rate of 68 patients seen per 100,000 population in the two week period). These patients were seen in the community clinics (n=106), domiciliary visits (n=76), care homes (n=28), in-patients (n=30) and hospital out-patients (n=11). The number of patient contacts would be expected to be greater because this group of patients would be seen at least weekly (and often twice weekly unless nursing staff were available to change dressings, for example in in-patient settings). During the two-week analysis, 186 patients were referred for specialist podiatry input.

6.4.2 Diabetic Wound Management

The epidemiology of wound management for patients with diabetes is more robust than for other types of complex wound because diabetic foot care has been developed and evaluated more rigorously than other areas of podiatric care.

6.4.3 Epidemiology of diabetic foot problems

The risk of foot problems in people with diabetes is increased because of either diabetic neuropathy (nerve damage or degeneration) or peripheral arterial disease (poor blood supply), or both. Peripheral arterial disease affects 1 in 3 people with diabetes over the age of 50.

The Scottish Diabetes Foot Action Group introduced a national strategy for diabetic foot care across Scotland. The group's work has included the implementation of foot screening and risk stratification⁴⁶, the development of patient information resources⁴⁷ and professional education materials, and a national in-patient foot care initiative "CPR for diabetic feet"⁴⁸.

The Scottish Diabetes Foot Action Group strategy, the SIGN Guideline on The Management of Diabetes⁴⁹, and the NICE Guideline [NG19] Diabetic Foot Problems, Prevention and Management⁵⁰, provide comprehensive guidance on foot care for people with diabetes. The key recommendations are summarised below.

Guidelines recommend that all patients with diabetes should have their risk of foot disease assessed when diabetes is diagnosed, and at least annually thereafter. Foot risk assessment should also take place if any foot problems arise, on any admission to hospital, and if there is any change in the patient's status while they are in hospital.

Annual foot screening can be undertaken by a trained healthcare worker to assess the patient's risk of developing a foot ulcer. The risk is stratified by low, medium and high risk of developing a diabetic foot problem, or having active foot ulceration. The Scottish 'diabetic foot risk stratification and triage documentation' uses a traffic light system to illustrate the triage of patients⁴⁶. The process is described below.

Low risk: This group of people have no risk factors present e.g. no loss of sensation, no signs of peripheral arterial disease and no other risk factors.

People with diabetes who are assessed as 'low risk' have no greater chance of developing a foot ulcer than somebody without diabetes. Scottish guidance recommends that the healthcare worker should agree a personal foot care and self-care management plan and also review footwear. Written and verbal education should be provided including information on how to access podiatry (urgent or otherwise) as

required. Cardiovascular risk reduction information should be offered. All smokers should be encouraged to consider a smoking cessation programme.

Moderate Risk: This group of patients will have one risk factor present e.g. loss of sensation, signs of peripheral arterial disease, unable to or has no help to self-care or poor renal function.

People who are assessed as 'moderate risk' of developing a foot problem should have an agreed plan as above, but also have an additional foot assessment and agreed treatment/management plan undertaken by podiatrist or other trained healthcare professional where required. There should be a review of the patient's own footwear and the provision of specialist footwear and insoles should be considered, measured and fitted by an orthotist/podiatrist.

High Risk: This group now includes patients who are described as being "in remission" having had previous ulceration, amputation or consolidated Charcot arthropathy. Other people who are high risk include those with more than one risk factor present e.g. a combination of loss of sensation, signs of peripheral arterial disease, callus or deformity, unable to or has no help to self-care or poor renal function.

In addition to the steps outlined above, (including an agreed plan) people with diabetes who are at 'high risk' of active foot disease would benefit from assessment by a podiatrist experienced in the diabetic foot with referral to other relevant specialists as required. Further review of the patient's own or prescription footwear and insoles should be undertaken by an orthotist/podiatrist. This is especially recommended for those 'in remission', who have had active foot ulceration which is now healed.

Active Foot Disease: This group of patients includes those with presence of active ulceration, infection, with or without ischaemia, gangrene or unexplained hot, red, swollen foot with or without the presence of pain.

It is recommended that people with newly diagnosed 'active foot disease' should have rapid referral to and management by a member of the multidisciplinary diabetes foot team or be referred directly to vascular services when appropriate.

Using this approach the NHS Podiatry Services work in acute hospital settings providing highly specialised multi-disciplinary diabetes foot consultations and treatment, involving Podiatrists, Consultant Physicians, Consultant Vascular Surgeons, Orthotists, Diabetes specialist nursing and microbiology. Within the multidisciplinary team podiatrists influence medical management and lifestyle changes in addition to leading on the management of foot and lower limb pathologies. The ethos governing the delivery of this specialised service is to promote healing of active foot

complications and to prevent ulceration relapse via education, promotion of self-management and foot protection programmes. The services aims to take a collaborative approach with patients emphasising prevention and measures to reduce risk (such as smoking cessation).

The NICE guidance details the healthcare professionals involved in the multidisciplinary setting, alongside timescales for initial assessment and follow-up. It recommends that:

People with a 'moderate or high risk' should be referred to the Foot Protection Service (led by a podiatrist with specialist training in diabetic foot problems, and should have access to healthcare professionals with skills in diabetology, biomechanics and orthoses, and wound care). NICE guidance recommends that moderate risk individuals should be seen within 6-8 weeks. For high risk individuals this guidance recommends that they should be seen within 2-4 weeks.

Depending on the person's risk of developing a diabetic foot problem, reassessments should be carried out at the following intervals:

- Annually for people who are at low risk;
- Frequently (for example, every 3–6 months) for people who are at moderate risk;
- More frequently (for example, every 1–2 months) for people who are at high risk, if there is no immediate concern; or
- Very frequently (for example, every 1–2 weeks) for people who are at high risk, if there is immediate concern.

NICE guidance recommends that people with 'active foot disease' should be referred to the Multidisciplinary Foot Care Service and seen within 24 hours. The Multidisciplinary Foot Care Service should be led by a named healthcare professional, and consist of specialists with skills in the following areas: Diabetology, Podiatry, Diabetes specialist nursing, Vascular surgery, Microbiology, Orthopaedic surgery, Biomechanics and orthoses, Interventional radiology, Casting, and Wound care. The Multidisciplinary Foot Care Service should have access to rehabilitation services, plastic surgery, psychological services and nutritional services.

The annual Scottish Diabetes Survey⁵¹ is an important source of information about diagnosed diabetes in Scotland, describing many aspects of care for people with diabetes, including foot care. It is recognised that the survey is likely to underestimate the prevalence of diabetes. Full details are available from the publications section of the Diabetes in Scotland website and only key findings are presented here:

- There were 284,122 people diagnosed with diabetes in Scotland recorded on local diabetes registers at the end of 2015. This represents 5.3% of the population;
- The crude prevalence of diabetes ranged from 4.5% to 6.1% across NHS Boards;
- 61.2% of patients with type I diabetes and 77.8% of those with type II diabetes had their foot scores recorded in the previous 15 months; and
- 352 (1.2%) of those with type I diabetes and 1740 (0.7%) of those with type II diabetes have a record of having had a major lower limb amputation.

Table 8 shows the percentage of people on the Scottish Diabetes Register recorded as having active foot disease, a high / moderate / low foot risk score, or no score recorded over the previous 15 months. This shows that the majority of people who have either type I or type II diabetes (who had a foot score recorded) have a low risk score, requiring no podiatry input. A total of 2% of people with type I diabetes and 1% of people with type II diabetes (who had a score recorded) had active foot disease during the preceding 15 months.

Table 8. To show the percentage of people on the Scottish Diabetes Register recorded as having active foot disease, a high / moderate / low foot risk score, or no score recorded over the previous 15 months (2015)

	Active Foot Disease	High Risk	Moderate Risk	Low Risk	Not Recorded
Type I	n=364 2%	n=1,200 6.6%	n=1,852 10%	n=15,175 81.6%	38.8%
Type II	n=1926 1%	n=10,140 5.2%	n=32,507 16.7%	n=150,581 77.2%	22%

Source: Scottish Diabetes Register 2015

Over 8% of people with type I diabetes were recorded as having had a foot ulcer, with 1.2% having had an amputation (see Table 9). The proportions of people with type II diabetes who have ever had a foot ulcer or an amputation are lower, (4.3% foot ulcer and 0.7% amputation), but the absolute numbers are greater due to the higher prevalence of type II diabetes.

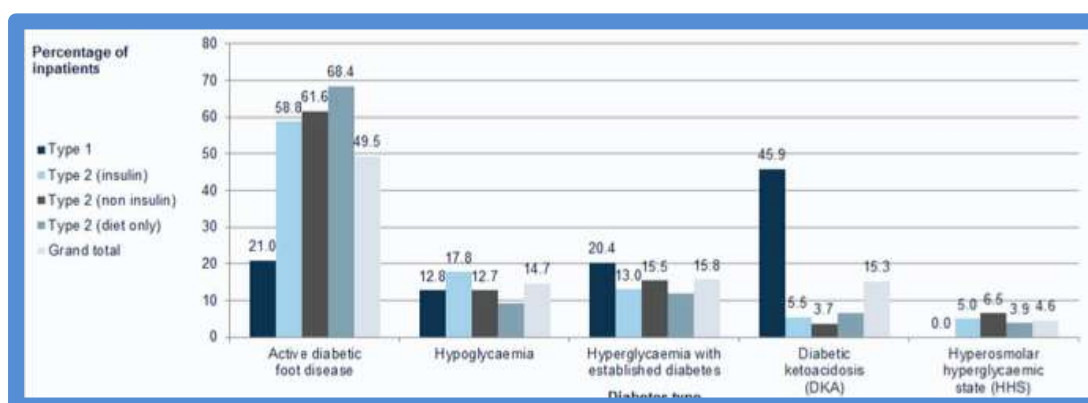
Table 9. To show the percentage of people on the Scottish Diabetes Register recorded as ever having had a foot ulcer, or ever having had a lower limb amputation (2015).

	Type I		Type II	
	Number	%	Number	%
Ever Having Had a Foot Ulcer	2,537	8.40%	10,903	4.30%
Ever Having Had a Lower Limb Amputation	352	1.20%	1,740	0.70%

Source: Scottish Diabetes Register 2015

The 2015 National In-patient Diabetes Audit (England and Wales) ⁵² provides an insight into diabetic foot disease amongst the in-patient population. It was carried out by hospital teams in England and Wales on a nominated day between 21 and 25 September 2015. The audit found that 5% of all in-patients with diabetes were admitted to hospital because of foot disease, and a total of 8.9% of in-patients who had diabetes, had active foot disease at the time of admission. Of the patients admitted for management of their diabetes and complications 49.5% were admitted because of active foot disease. A breakdown of reasons for admission (for the management of diabetes and its complications), by diabetes type, is shown in Figure 8. It clearly shows that active diabetic foot disease was the most common reason for admission overall, with diabetic ketoacidosis predominating for patients with type I diabetes (45.9%). Although we do not have Scottish data to describe reasons for admission, it is likely that the picture is similar to that in England.

Figure 9. Percentage of in-patients admitted for management of diabetes or a diabetes complication by diabetes type, England and Wales, 2015



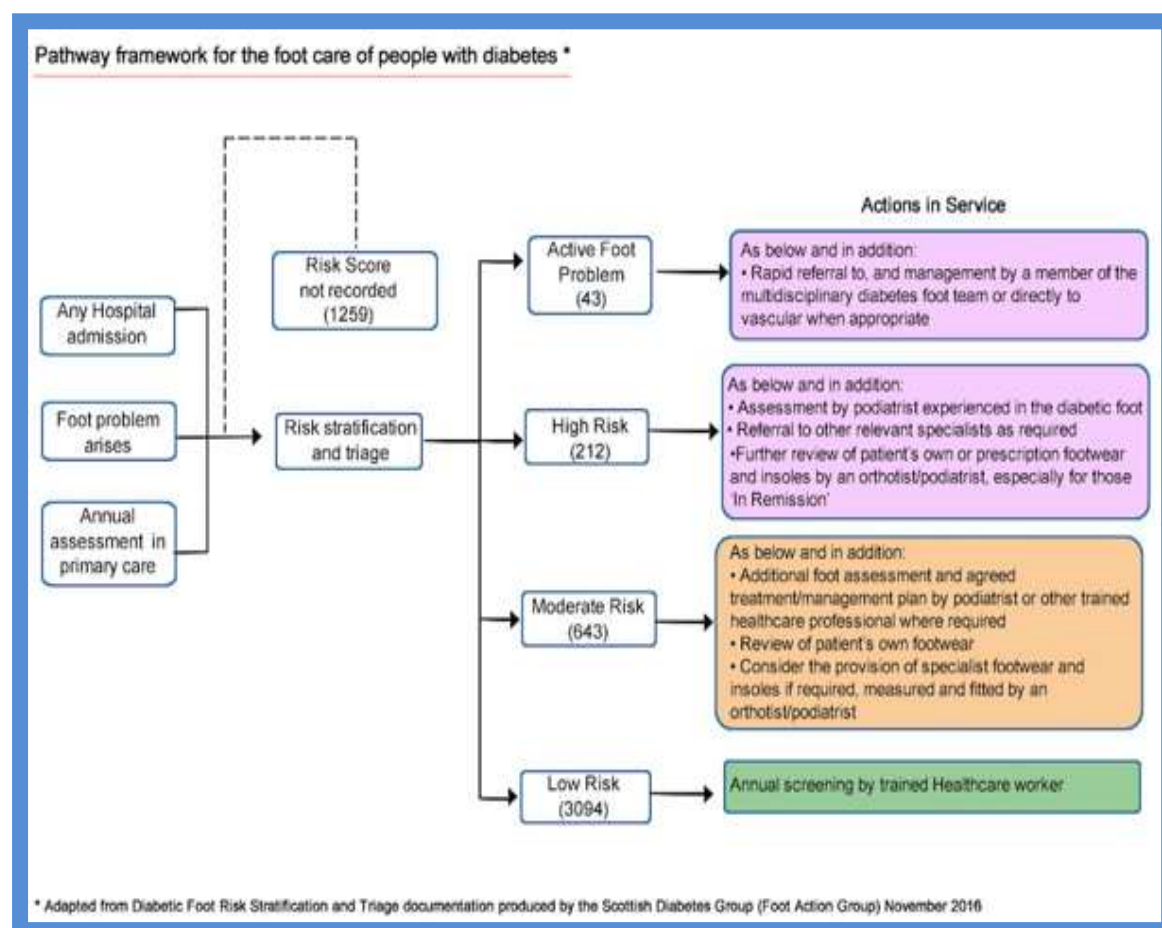
Source: National In-patient Diabetes Audit (England and Wales) 2015

In November 2013 the Scottish Diabetes Foot Action Group carried out an audit of in-patient foot care across 12 of the Scottish NHS Boards⁵³. A total of 1,048 in-patients were included. The prevalence of foot ulceration in the in-patient audit population was 14%.

A specialist pathway framework for diabetic foot care was developed to help describe the epidemiology of diabetic foot disease for a synthesised NHS board population of 100,000 people. The pathway framework is illustrated in Figure 9 and is based on the risk stratification and triage system developed in Scotland described above⁴⁶.

Figure 10. Diabetic Foot Risk Stratification and Triage Pathway Framework.

(Numbers in brackets indicate estimated need in a synthesised NHS Board of 100,000 people based on data from the Scottish Diabetes Survey)



The Scottish Diabetes Register enables us to describe the epidemiology of this pathway. The numbers shown in Figure 9 are the estimated current level of need for podiatry amongst the population with a diagnosis of diabetes (both type I and type II), for a synthesised NHS board population of 100,000 adults. The proportion of people with each foot score in a synthesised NHS Board population is detailed in Table 10.

Based on data from the Scottish Diabetes Survey (2015) ⁵¹ there were 284,122 people in Scotland registered with diabetes, giving a prevalence of 5.3%. For a synthesised NHS board population of 100,000 the following figures apply.

Type I diabetes:

- 5,300 people known to have diabetes, of which 10.7% recorded as type I (n= 567). However, 38.8% of people registered with type I diabetes have no foot score recorded. It is not clear if people with no foot score are more or less likely to have a low risk foot score; and
- 61.2% of people with type I diabetes had a foot score recorded in past 15 months, which equates to 347 people.

Type II diabetes:

- 5,300 people known to have diabetes, of which 88.3% were recorded as type II (n= 4,680). However, 22.2% of people registered with type II diabetes have no foot score recorded; and
- 77.8% of people with type II diabetes had a foot score recorded in past 15 months, which equates to 3,641 people.

Table 10. To show proportion of people with each foot score in a synthesised NHS board, for Type I and Type II Diabetes

Foot Score	Type I	Type II	Total Number
Foot Score recorded in past 15 months	61.2% n=347	77.8% n=3,641	3,988
Foot Score – Low Risk	81.6% n=283	77.2% n=2,811	3,094
Foot Score – Moderate Risk	10% n=35	16.7% n=608	643
Foot Score – High Risk	6.5% n=23	5.2% n=189	212
Foot Score – Active Foot Disease	2% n=7	1% n=36	43

The data suggests that for a synthesised NHS board with a population of 100,000, there will be over 250 people with diabetes who have active ulceration or are at high risk of ulceration and are therefore likely to be in regular contact with podiatry services.

Caution is needed when using these data to plan services because the Scottish Diabetes Survey underestimates the prevalence of diabetes; a large proportion of people with diabetes did not have a foot score recorded; of those with a foot score, the data relate to a score recorded in the past 15 months, and therefore it does not correlate directly with the prevalence data which is based on a 12 month period.

In order to evaluate the effectiveness of care provided to patients with diabetic foot disease in England and Wales a National Diabetes Foot Care Audit⁵⁴ has been established. The audit was undertaken for the first time in 2015. This provides measurements as to whether the NICE recommended clinical pathways are in place locally and how effective those pathways are in managing new diabetic foot ulcers. Their findings showed that the longer the delay before review by the diabetic foot care team, the more likely the foot ulcers would be severe, and that one half of all patients were ulcer free at 12 weeks from first expert assessment.

The 2015 National In-patient Diabetes Audit in England found that although it is recommended that all patients with diabetes should have their foot risk assessed on any admission to hospital and if there is any change in their status while they are in hospital, only 33% of patients included in the audit had a foot risk assessment during their hospital stay. Of those in-patients admitted with active diabetic foot disease, over 80% received a specific diabetic foot risk examination (a definition which excludes general pressure sore checks) for ulceration within 24 hours. Nearly 60% were seen by a member of the multi-disciplinary foot care team within 24 hours of admission to hospital and 63.5 per cent had received input from the multi-disciplinary foot care team in the previous 7 days.

The Scottish in-patient diabetic foot audit undertaken in 2013 found that only 43% of the audit population reported that their feet had been checked on admission to hospital⁵³. Clinical examination identified patients who were at risk of developing foot ulceration, 60% of this group did not have any pressure relief measures in place. Of the 14% of patients with active foot disease, 65% had been referred to a diabetes foot care team. The week-long 2013 audit found that in Scotland 2.4% (n=25) in-patients with diabetes developed a new foot lesion during their admission to hospital. As a result of the audit findings the Scottish Diabetes Foot Action Group introduced the national in-patient foot care campaign 'CPR for Diabetic Feet' from April 2014 and plan to re-audit to evaluate the impact.

The 2015 National In-patient Diabetes Audit included a question on whether the hospital had any tools or systems to increase the number of in-patients with diabetes that have a foot examination. 52.5% of sites reported that a tool or system was used, with 46.0% reporting that nothing was in place.

In-patients with diabetes who were admitted to hospitals where a tool or system was in place were more than twice as likely to have had a specific diabetic foot risk examination for ulceration than those in other hospitals (a statistically significant difference of 43.0% compared to 20.4%). However, there was no corresponding reduction in the proportion of in-patients that developed a foot lesion in hospitals. The overall number of patients developing foot and heel lesions whilst in hospital in England has fallen from 257 (2.2%) in 2010 to 153 (1.1%) in 2015, possibly reflecting an increase in awareness of the need for foot examination and appropriate management of patients with diabetes.

Separate, smaller audits from England suggest that a number of patients may be lost to follow-up despite a high risk of foot disease^{55,56,57}.

6.4.4 Wound Management Summary

Diabetic Foot Care

The strategic approach to the care of people with diabetic foot disease that has been adopted across Scotland has increased awareness of the need for involvement of podiatry as part of a multidisciplinary approach to diabetic foot care. This is clearly set out in National Clinical Guidelines. There is also an evidence base for podiatry interventions such as footwear and offloading techniques^{58, 59} (although it is recognised that there is continuing uncertainty about the optimal approaches to the general management of wounds^{60,61,62}).

The epidemiology describing the need for diabetic foot care in Scotland is outlined in the National Diabetes Audit datasets. Estimates suggest that around 850 patients per 100,000 will have high or moderate risk scores, requiring regular care from specialist podiatry services. An estimated 40 patients per 100,000 population may have active foot disease. Audit data for the in-patient population in England found that a total of 8.9% of in-patients who had diabetes had active foot disease at the time of admission (14% of in-patients in Scotland) and 5% of all in-patients with diabetes were admitted to hospital because of foot disease. Of the patients admitted for management of their diabetes and complications 49.5% were admitted because of active foot disease.

Measures to assess whether the need for care is being met include structure, process and outcome measures. Some of these indicators are collated as part of the Scottish dataset including endpoints such as presence of foot ulceration and amputation. The

assessment of the contribution that podiatry makes to care is not directly measured from existing data, as it is an integral part of multidisciplinary care. There is concern that there is variation in practice in preventing and managing diabetic foot problems across different NHS settings, and amputation rates still vary considerably across the UK.

Work by the Scottish Diabetes Survey to develop their assessment of the care processes and outcomes may provide an opportunity to gain a better understanding of gaps in services provided to these patients. Local audits may also be valuable to help improve the quality of care offered to diabetic patients with foot disease. Meanwhile there is insufficient data to provide a detailed picture of the structure, process and outcomes associated with podiatric foot care for patients with diabetes in Scotland.

Non-Diabetic wounds

Complex foot wounds in non-diabetic patients have not been subject to the same levels of scrutiny. There is little research literature to describe the epidemiology of complex wounds in the Scottish population. The one prospective observational study, based in the UK, found the prevalence of foot wounds was 0.22 per 1000 population (95% CI 0.19-0.26). We did not assess the rate of referral for the management of complex wounds in our survey of NHS board podiatry services.

Services have undertaken analysis of their activity at a local level. Analysis of activity within one NHS board area found that there were 19,209 patient contacts with specialist wound care podiatry (including diabetic patients) a crude rate of 2,940 contacts per 100,000 population in 2015-16. An analysis of activity over two weeks at another NHS board found that there were 146 non-diabetic patients accessing podiatry wound services, a crude rate of 40 patients per 100,000 for the two week period. Local analysis such as these will help inform local service planning but further developments in data collection are required to allow more detailed analysis and interpretation.

The role of podiatry is less clearly defined for the care of patients with non-diabetic wounds compared to diabetic patients. Neither SIGN nor NICE Guidelines discuss the need for multidisciplinary teams or identify specific professional groups that should be involved in the care of patients with pressure ulcers or peripheral arterial disease^{63, 64, 65, 66}. They do recommend that only appropriately trained individuals should undertake assessments such as Ankle Brachial Pressure Index. The lack of recognition of a role for podiatry may be due to insufficient research to provide an evidence-base rather than podiatry having less of a role to play in the management of non-diabetic wounds.

Podiatry services are formalising their contribution at a local level, for example, one NHS board has developed Foot Ulcer Guidance⁶⁷ which is intended to apply to all environments, including hospitals, long term, rehabilitation and community care. The guideline may be used as a resource for individuals who are at risk of, or have an existing foot pressure ulcer, to guide awareness of the range of preventative and treatment strategies that are available. Podiatry services at another NHS board have used the principals of “CPR for diabetic feet⁴⁸” and extended the guidance to include non-diabetic complex wound care. A shared care protocol with Community Nursing⁶⁸ has been developed by another NHS board.

In summary, the epidemiology, clarity on the role of podiatry, and the evidence base for podiatry interventions relating to complex wounds are limited. However the foot care of patients with diabetes has been subject to a more rigorous and systematic approach, which we have described in detail.

It is extremely challenging to adequately describe the need for podiatry services amongst the Scottish population with complex non-diabetic wounds. Approaches to improve the care for these patients are being developed by Scottish NHS podiatry services. This process would benefit from improved epidemiological information and more robust evidence based guidance to help identify where podiatry resources can be most effectively targeted and to inform the quality improvement of services.

6.5 Musculoskeletal Pathway Framework

The National Delivery Plan for Allied Health Professionals and recent changes to Scottish Trauma and Orthopaedic Services have enhanced the role of Podiatrists and other Allied Health Professionals. The Trauma and Orthopaedics ACCESS programme (Addressing Core Capacity Everywhere in Scotland Sustainably)⁶⁹ includes the Allied Health Professional MSK Redesign. This aims to optimise the use of existing workforce capacity whilst improving access for patients with musculoskeletal pain. A key component of the model is self-referral access to Allied Health Professional MSK services to offer early intervention and potentially reduce the burden of chronic pain. Centralised Allied Health Professional triage hubs for physiotherapy, podiatry and orthotics have been implemented by many NHS Boards.

A significant proportion of podiatry workload involves the management of patients with foot and ankle MSK conditions. The redesign included a target maximum 4 week wait for assessment by an Allied Health Professional. As part of the waiting list target MSK Allied Health Professional referral data have been collated by the Information Services Division for nine NHS Boards. Data for the quarter Jan-March 2016 showed that there were 13,658 adults referred to podiatry, a crude rate of 390 per 100,000 population⁷⁰.

Our survey found that NHS Boards recorded almost 30,000 patient contacts with podiatry services in 2014-15, as illustrated in Table 11. Data were not supplied by a number of NHS Boards and for those NHS Boards that did submit data the rates of referral vary considerably. This suggests that the data may not be robust and may not provide a true reflection of the number of patients accessing podiatry services for MSK conditions.

Table 11. To show the number of patient contacts for Musculoskeletal Conditions (foot and ankle including RA) and crude rate per 100,000 population 2014-15.

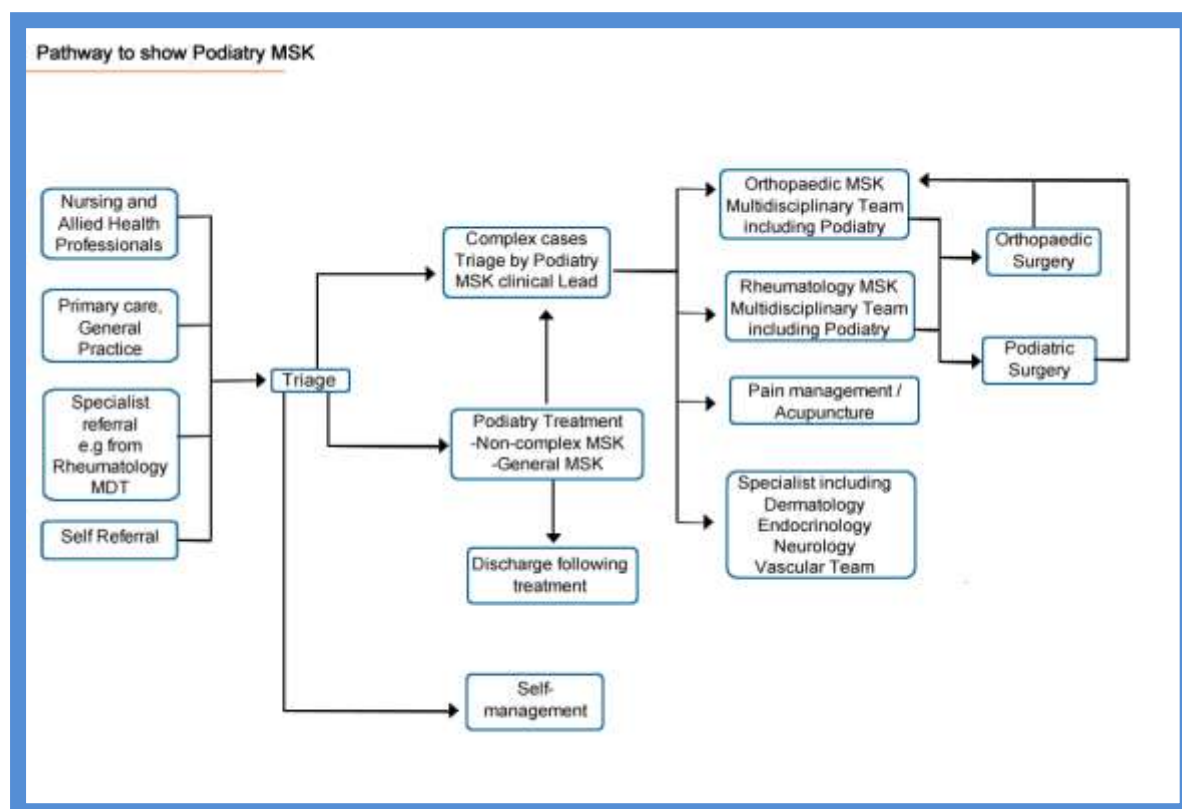
NHS Board	Number of Patient contacts	Rate per 100,000
Ayrshire & Arran	14893	4013
Borders	571	501
Dumfries & Galloway	*	*
Fife	6193	1686
Forth Valley	*	*
Grampian	723	124
Greater Glasgow & Clyde	*	*
Highland	*	*
Lanarkshire	2875	440
Lothian	*	*
Orkney	1115	5164
Shetland	*	*
Tayside	2779	672
Western Isles	497	1824

* data not available

Source: Survey of NHS Board Podiatry Services

A podiatry pathway framework for patients with MSK conditions (see Figure 10) was developed in consultation with Podiatry Managers to help illustrate the role of podiatry within the context of a multi-disciplinary approach to MSK.

Figure 11. Podiatry Pathway Framework for patients with MSK Conditions



Patients with MSK conditions have a variety of access routes to MSK Podiatry services including self-referral, GP referral and referral from other Healthcare Practitioners including members of Multidisciplinary MSK teams, Nursing teams and other Allied Health Professionals.

Podiatry departments undertake musculoskeletal assessment and triage, directing low risk patients to self-management. Many NHS Boards provide support e.g. from videos of condition-specific exercises, self-management and signposting for out-patients and introducing support classes for patients around stretching exercises and direction for the management of some MSK conditions. National resources have also been developed which can be accessed through NHS Inform.

Some NHS Boards use the Musculoskeletal Advice and Triage Service (MATS) operated by NHS24. This process is outlined in The Modern Outpatients¹ document which reports that patients with MSK pain are taken through risk stratification questions to determine their clinical need for: self-management advice (e.g. exercises, footwear); supported self-management (e.g. for patients less able to self-manage); an Allied Health Professional call back or referral for assessment; secondary care referral e.g. to Trauma and Orthopaedics; or, occasionally, immediate A&E attendance.

Patients who require straightforward podiatry intervention are directed for non-complex MSK podiatry and are managed in a community setting. More complex cases are passed to Podiatry MSK Clinical Leads for further assessment and management. MSK Clinical leads may be Extended Scope Practitioners.

The MSK Clinical lead may have a range of options for further management of each patient including:

- Specialist MSK Podiatry;
- Specialist MSK Physiotherapy;
- Referral for multidisciplinary team review;
- Foot & Ankle Orthopaedic Surgeon; and
- Orthotist.

Some board areas have a MDT inclusive of Extended Scope Practitioner Podiatrist, Extended Scope Practitioner Physiotherapists, Orthotists, Nurses and Orthopaedic Consultant. This team will receive referrals that require further investigations that may be carried out in the acute setting; referrals that would benefit from the clinical expertise available from the MDT; and patients that would be considered for surgical intervention when conservative treatment has not achieved the desired outcomes.

MSK Specialist Podiatrists undertake assessment and treatment, which can involve enabling skills around self-management, advice, exercise, joint manipulation, functional or accommodative orthoses (insoles) (which can be without modification or custom-made), acupuncture for pain management, through to steroid injection for chronic painful inflammatory conditions.

In summary, patient pathways throughout Scotland have been designed to realise the aspirations of many of the strategic visions for the modernisation of services to ensure that the vast majority of services are provided in local communities. The MSK patient pathway guidance is that the majority of referrals are received within the primary care setting with onward referral if clinically indicated. It is anticipated that the majority of patients will be managed within primary care but there will be instances that the intervention of MSK Podiatry Extended Scope Practitioners and the wider team within the acute setting is needed to achieve the best possible outcome for patients.

Standards of care for people with musculoskeletal foot problems have been developed by the Podiatry Rheumatic Care Association⁷¹ which aim to provide a benchmark by which foot health service standards may be evaluated by all stakeholders. This may provide a useful basis for discussion of service delivery for people with MSK foot problems.

6.5.1 MSK Case Studies

We have used case studies to help illustrate activity at a local level, based on the available data. Several services have undertaken brief analyses of specialist MSK provision, details of the findings are provided below.

Case Study: Rheumatology

Brief Description of service

Specialist Rheumatology Podiatrists work within the Rheumatology Department as part of their Multi-disciplinary Team. All patients with newly diagnosed Rheumatoid Arthritis or Psoriatic Arthritis are referred by Consultant Rheumatologists for a Podiatry review. Patients with other conditions such as Ankylosing Spondylitis and Connective Tissue Disorders are referred to podiatry if they have foot and ankle problems.

The Specialist Rheumatology Podiatrists offer a comprehensive podiatry service including biomechanical assessment, supply of orthotics, steroid injections, acupuncture and diagnostic ultrasound. They also offer support for effective medicines management and lifestyle advice. The team is also involved in clinical research as well as undergraduate and post-graduate teaching.

Activity Data

There were new 220 rheumatology referrals attending rheumatology podiatry appointments and 1,210 follow-up rheumatology podiatry appointments over a 12-month period November 2015 to October 2016. This represents a crude rate of around 390 referrals per 100,000 population.

Case Study: Rheumatology

Brief Description of Service

All patients with inflammatory arthropathies who have foot or ankle problems are referred by Consultant Rheumatologists to a Specialist Rheumatology Podiatrists. The Specialist Rheumatology Podiatrists offer a comprehensive podiatry service including biomechanical assessment, supply of orthotics, steroid injections, acupuncture and laser therapy.

Activity Data

For 2015-16 there were approximately 40 patients with inflammatory arthropathies referred by secondary care rheumatology services to specialist Rheumatology MSK Podiatrists per month. This represented an estimated 7-8% of specialist MSK podiatry referrals and a crude rate of around 70 referrals per 100,000 population.

Case study Non-Rheumatology MSK

Brief Description of Service

When a patient accesses the MSK Podiatry Service, their care follows the MSK Podiatry Foot and Ankle Pathway. A number of mechanisms have been put in place to help facilitate this, such as Foot & Ankle Pathway Guidelines and the Rapid Access to Allied Health Professional MSK Services. The patient pathway is being developed in an electronic format and will give the latest evidence based practice for each of the presenting conditions.

Activity Data

Analysis of activity from another NHS Board found that there were 1635 patient contacts with Specialist MSK Podiatrists (excluding rheumatology patients) during 2016 following podiatry triage. This is a crude rate of 250 contacts per 100,000 population. Analysis of activity over the preceding years is presented in the table below.

Year	Number of contacts	Rate per 100,000*
2011	1069	187
2012	1210	211
2013	1371	210
2014	1347	206
2015	1263	193
2016	1635	250
* based on mid-year population estimates.		

Case study Non-Rheumatology MSK

Brief Description of the Service

The MSK redesign aimed to enable individuals with foot and ankle pain to directly access podiatry services without the need for a GP appointment or referral. This ensures that the patient sees the right person without delay and reduces unnecessary appointments with orthopaedic consultants.

However, in some instances patients continue to attend GP appointments and GPs then refer directly to orthopaedics.

In a Podiatry Extended Scope Practitioner working within the orthopaedic multidisciplinary team triages all foot and ankle referrals. The data in table below highlights the conditions that have been referred to orthopaedics, but based on agreed protocols could have been effectively assessed and treated by Community Podiatrists. A total of 51 appointments with a Consultant Orthopaedic Surgeon were cancelled and redirected to the podiatry service by the Extended Scope Practitioner Podiatrist with feedback sent to the referring General Practitioner.

Data

6 Month Summary of Orthopaedic Referrals Cancelled/Redirected to Podiatry (Jan-July 2016)

Condition	Number of Patients
Neuroma	16
Plantar Heel Pain	7
Tendo Achilles	5
Mild hallux abducto valgus	3
Plantar Fibroma	1
Lesser Toe Deformities	3
Ankle Pain	2
Foot Pain (nonspecific)	2
Hallux Rigidus (Stage 1,2)	1
Plantar 1st Metatarsal Head Pain	2
Shin Pain (Shin Splints)	1
Flexible Flat Foot	1
Biomechanical Review	1
Toe splints requested	1
Lateral Foot Pain (NAD on Xray)	1
Infected Toe - hospital Podiatry requested	1
Paediatrics- recurrent metatarsalgia	1
Paediatrics – Footwear rubbing	1

Currently attending Podiatry Care, plan incomplete	1
Total	51

The cases studies have helped to describe some of the models of service provision for patients with MSK conditions. We also used rheumatoid arthritis as a tracer condition to offer further illustration of the role of specialist MSK podiatry.

6.5.2 Rheumatoid arthritis

Many of the patients who are referred to podiatry from the rheumatology service have rheumatoid arthritis. The podiatry needs of other patients with rheumatological conditions would also benefit from review, but it is not within the scope of this document.

Rheumatoid arthritis is a chronic, erosive inflammatory arthritis thought to affect approximately 1% of the Scottish adult population. The foot is often the first area of the body to be systematically affected by rheumatoid arthritis.

The incidence rates of rheumatoid arthritis in the UK have been produced by Arthritis Research UK, based the Norfolk Arthritis Register (NOAR) as shown in Table 12.

Table 12. New cases of rheumatoid arthritis per 100,000 population, per year.

Age	Males/100,000	Females/100,000
15–24	3.0	15.5
25–34	5.6	29.0
35–44	12.1	50.6
45–54	31.3	91.9
55–64	42.1	88.1
65–74	66.6	94.4
75+	57.0	29.8

Source: Norfolk Arthritis Register ⁷²

Further analysis of study methodology undertaken by Wiles *et al*⁷³ suggests that the true age-adjusted incidence may be as high as 54.0 per 100,000 for women and 24.5 per 100,000 for men. This would equate to an estimated 40 new cases of rheumatoid

arthritis within a synthesised NHS Board (based on a population distribution of 51% females and 49% males).

The prevalence of rheumatoid arthritis has also been estimated based on Norfolk Arthritis Register data, as shown in Table 13.

Table 13. Estimated prevalence of rheumatoid arthritis by age and sex.

Age	Males (%)	Females (%)
16–44	0.02*	0.12
45–64	0.58	1.67
64–74	1.14	2.56
75+	2.18	2.99
Total adult population	0.44	1.16

Source: Norfolk Arthritis Register

**Males aged 16–44 were not included in the survey. This figure was calculated by assuming that the female: male ratio of rheumatoid arthritis in the 16–44 age group is the same as that observed in NOAR for the incidence of rheumatoid arthritis in the same age group.*

At diagnosis, approximately 16% of patients with rheumatoid arthritis have foot involvement. In 15% of cases the forefoot is the first area of the body to become symptomatic, and virtually 100% of patients report foot problems within 10 years of rheumatoid arthritis onset. In addition to musculoskeletal problems, patients with rheumatoid arthritis are at increased risk of complex wounds (the prevalence of foot ulceration in this population was outlined in a survey described in the section on epidemiology of complex wounds). This patient group may also be at increased risk of infection as a result of disturbance of the immune system and the use of immunosuppressive agents.

The SIGN Clinical Guideline 123, 'Management of early rheumatoid arthritis' (2011)⁷⁴ recommends that podiatry referral should be offered to all patients with rheumatoid arthritis. Similarly, the NICE Clinical Guideline 79, 'The management of rheumatoid arthritis in adults' (2013)⁷⁵ recommends that all people with rheumatoid arthritis and foot problems should have access to a podiatrist for assessment and periodic review of their foot health needs, and that functional insoles and therapeutic footwear should be available for all people if indicated. This is set within the context of an annual review for all patients to allow cross referral to other members of the multidisciplinary team.

Given that the foot is often the first area of the body to be systematically affected by rheumatoid arthritis and that guidance suggests that podiatry referral should be offered to all patients diagnosed with rheumatoid arthritis, up to 40 newly diagnosed patients could be referred within a synthesised NHS Board population. In addition, patients with established disease may require referral to podiatry.

The Health Care Needs Assessment for Rheumatoid Arthritis undertaken by ScotPHN reported that most rheumatology departments in Scotland now have at least some elements of a multidisciplinary team but provision is patchy and most units do not have all professions attached to their Unit⁷⁶. The assessment drew on audit data from 2011 which showed that only two thirds of patients saw a physiotherapist or occupational therapist during the first 6 months of rheumatology care, less than half saw a podiatrist and 18% did not see a specialist nurse⁷⁷. Similar findings were reported in an audit of care of eight Scottish Rheumatology Centres⁷⁸. The impact of this level of service provision was explored with patients and Rheumatology Specialist Podiatrists in Scotland (2013)⁷⁹. Focus groups identified that podiatry care was a positive experience for patients, however, gaps in specialist rheumatology podiatry provision were identified. The study concluded that a specialist rheumatology podiatry care model would allow early referral, greater flexibility and continuity of care, increased education for all involved and improved multidisciplinary team working.

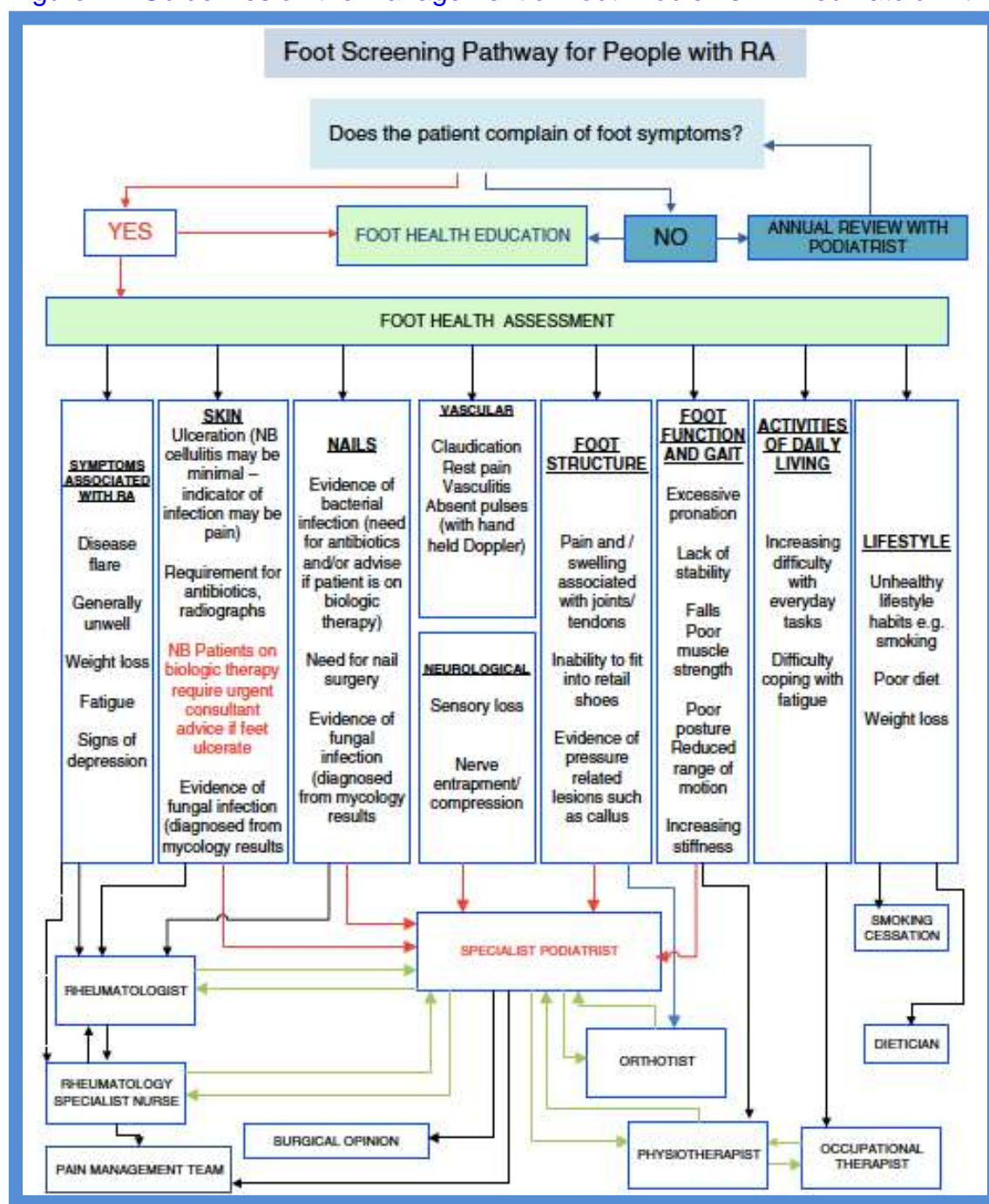
Similar findings have been reported elsewhere in the UK. A cohort study of rheumatoid patients in England found similarly low levels of access to podiatry. Over a ten-year follow-up only 36% of patients received foot care, with females being more likely to access care compared to males⁸⁰. Evaluation of foot health needs of patients with rheumatoid arthritis from a Tertiary Rheumatology Centre in the UK found that patients reported Rheumatology clinicians were not meeting their foot health needs⁸¹. Similar findings were evident for patients with inflammatory arthritis (including rheumatoid arthritis) suggesting that the foot health needs of patients with other rheumatological conditions may also need to be addressed⁸². Patients who responded to a postal survey in 2011 had a high prevalence of foot pain but over 70% of patients reported receiving podiatry care. This figure is considerably higher than other surveys undertaken within a similar time period, and it is not clear why there would be such a discrepancy.

Guidelines on the management of foot health problems in rheumatoid arthritis have been developed for specialist podiatry services in England⁸³. These are summarised in Figure 11. The management of specific foot problems (callus, nail pathology, ulceration) and the use of specific interventions (foot orthoses, footwear, patient education, steroid injection therapy) are detailed including recommendations for close collaboration with other members of the multidisciplinary team. Podiatrists have

commented that stable patients are not recalled annually, but are provided with advice and encouraged to contact the service if problems arise.

It is acknowledged that there were limitations to the approach taken for this guideline development but it is the only published rheumatoid arthritis podiatry guideline. It is also widely acknowledged that there is little evidence-based research to support the development of guidelines for the management of foot problems in rheumatoid arthritis. Agreement levels were predominantly 'expert opinion' or 'good clinical practice'. This was with the exception of foot orthoses and therapeutic footwear, which had better grades of recommendation, underpinned by a limited number of systematic reviews and randomised controlled trials.

Figure 12. Guidelines on the Management of Foot Problems in Rheumatoid Arthritis⁸³.



The Corporate component of the HCNA for Rheumatoid Arthritis⁷⁶. noted a level of concern that developments in musculoskeletal pathways may inadvertently lead to delays in the assessment of those with undiagnosed rheumatoid arthritis.

Inflammatory diseases such as rheumatoid arthritis are often difficult to detect and diagnose. It was suggested that robust training will be needed for all Allied Health

Professionals to help ensure that the improvements in rheumatoid arthritis referral times (as result of GP education) is not undone.

6.5.3 MSK Summary

The literature review provided an insight into the epidemiology of foot and ankle MSK. Whilst there may be some debate about how closely these estimates reflect the true level of need, it is acknowledged that MSK conditions are prevalent in the general population and are responsible for a large proportion of consultations with general practice.

The MSK service redesign has made significant changes to the process of accessing podiatry care for patients with many different musculoskeletal conditions. As yet we do not have adequate datasets to enable us to describe service provision. The newly established nationally collated referral data showed that for Jan-March 2016 there were 13,658 adults referred to Podiatry MSK services across Scotland, a crude rate of 390 per 100,000 population. The case studies from two NHS Boards illustrate elements of the service. Referrals to rheumatology MSK podiatry were 70 and 390 per 100,000 population for the two areas studied. The number of patient contacts with MSK podiatry for non-rheumatology patients in one NHS Board was 250 per 100,000 population. These should be considered illustrative only, as the data may not be comparable.

Our review of rheumatoid arthritis as a tracer condition suggests that within a synthesized NHS Board population of 100,000 people there may be around 40 patients with newly diagnosed rheumatoid arthritis. Evidence-based clinical guidelines advocate for early access to podiatry services for this group of patients. Whilst we do not have data to assess the current situation, we have examples of good practice where rheumatology departments work closely with their podiatry colleagues and other multidisciplinary team members.

In summary, because of the wide range of MSK conditions that can involve podiatry services we have not been able to provide a comprehensive picture of the epidemiology, the role of podiatry, or the evidence base for podiatry interventions. Where we have looked in detail at a single condition we provide an overview of the epidemiology and identified evidence-based guidance that makes recommendations for Podiatric care. Ongoing improvements to the care of patients with MSK conditions are being developed by Scottish NHS podiatry services. This process would benefit from improved epidemiological information, activity data and more robust evidence based guidance to help identify where podiatry resources can be most effectively targeted and to inform the quality improvement of services.

7. Conclusions of Epidemiological HCNA

The purpose of the epidemiological element of this HCNA was to use quantitative data to estimate the size and composition of the population of requiring generic podiatry and specialist podiatry services for complex wounds management and musculoskeletal conditions. It was intended that the level of need would be described using research literature on the incidence and prevalence of a disease, and the current provision of services would be described using routinely available data. We also reviewed the literature to establish the evidence base.

The review of research literature describing the size and composition of the population requiring podiatry services was complicated by a number of factors. Specifically, the diversity of foot problems included within the provision of NHS podiatry meant that the review could not capture the full picture of the need for podiatry. Despite focusing on specialist podiatry there was a lack of agreed definitions around complex wounds and MSK conditions. It also was recognised that there were few high quality studies in this area. This makes it difficult to provide a comprehensive description of the population that would benefit from podiatry interventions.

The review of available data to describe current provision of services found that there was little nationally collated data that could contribute to the analysis. This resonates with the findings of a report by The Health Foundation and Nuffield Trust which focused on the quality of care provided by Allied Health Professionals⁸⁴. They commented that “across AHP groups there is very little consistent nationwide information about either the volume or the quality of care provided.”

We tried to approach this challenge by using care pathway frameworks to explore the data available to outline the epidemiology in terms of a “synthesised NHS board population”, using pathways to illustrate patient flows. There were still difficulties extracting meaningful data from within local services and we relied on case studies to illustrate elements of care provided by the podiatry services. Again, this concurs with the findings of the Health Foundation and Nuffield Trust report which commented that “... there is a shortage of even basic information about activity ... this is especially problematic in areas outside of hospital care”.

Work has been conducted in Scotland to develop a recommended minimum dataset for Allied Health Professionals. However, as noted on the Information Services Division website, following the devolving of responsibility for eHealth to local NHS boards in 2009 there has been a proliferation of locally defined data sets making national data capture difficult. The Allied Health Professionals National Delivery Plan (NDP) for Scotland 2012-15³ reiterated the need for a national minimum dataset. This

is being addressed by the Information Services Division with the development of Allied Health Professional Operational Measures⁸⁵

For specialist podiatry services we were able to undertake a brief review of the evidence base. We found clear evidence-based guidelines for the role of Podiatry for both tracer conditions, diabetic foot care and rheumatoid arthritis. Although we did not explore the evidence base for other conditions in detail, there appears to be a lack of consideration of the potential role of podiatry in some clinical guidelines. This is certainly the case for the management of complex wounds. This lack of visibility of Allied Health Professionals was also noted by the Health Foundation and Nuffield Trust Report⁸⁴.

Taking a formal public health needs assessment approach, we have drawn on the epidemiological literature, reviewed the available activity data, and summarised key evidence-based guidance. We acknowledge that there is neither a large epidemiological literature nor robust activity data associated with podiatry services, and we have augmented the available data with brief case-studies to help illustrate the needs that are being met at a local level. As is the case for many Allied Health Professionals the research evidence base supporting the role of podiatry is somewhat limited. However, where we looked at specific tracer conditions we found that there is evidence based guidance for the involvement of NHS podiatry services in the care of patients with foot disease associated with diabetes and rheumatoid arthritis. Drawing this information together we have outlined what is known about the need for generic NHS podiatry services and specialist management of complex wounds and MSK conditions.

8. Corporate Needs Assessment – Patient Views

Views of Patients and Patients Groups – Summary

It was important to obtain the views of the public and patients to inform the health care needs assessment. The project group agreed that the best way to reach patients was through the public partnership forums. An initial proposal to hold a half day workshop did not suit many patients so the project group decided to obtain views through a questionnaire distributed to all NHS Boards instead.

Method

A questionnaire was developed by the members of the project group to obtain views of patients and patients' groups on the following aspects of the service:

- Access to, awareness and information on specialist NHS podiatric services;
- Particular views of patients requiring;
 - Diabetes foot care and wound care;
 - Arthritis, mobility help and nail surgery; and
 - Musculo-skeletal lower limb and foot care / biomechanics.

It was circulated via the public partnership forums in each NHS Board for onward dissemination. It was also sent to Diabetes Scotland, Arthritis Care UK, NRAS and Age UK.

In two NHS boards a different approach of obtaining views using the questionnaire were used. In NHS Dumfries & Galloway local patient groups received a hard copy of the questionnaire and return envelope to encourage response; in NHS Western Isles, attendees to clinics were asked to complete the questionnaire at appointments.

The responses were collated and the main points extracted.

Given the different means of obtaining responses and the potential different response rates from different NHS Boards, in addition to the relatively low response rate overall, the findings included in this summary should be viewed with caution. The overview serves only to highlight some issues that may affect the service.

Overview of responses

97 responses in total were received. 58 of respondents were currently receiving specialist NHS Podiatry care and 62 had previously received specialist NHS Podiatry care. 9 of the responses were from patient groups and not individuals.

The largest proportion of respondents were receiving diabetic foot care (20/97); followed by musculo-skeletal (14/97); arthritis foot care (11/97); and mobility care (10/97). A full list of specialist care being received by respondents is listed in the questionnaire included in Appendix 1.

Accessing Specialist NHS Podiatric Services

Of those that responded, most felt that there was a lack of information available in their GP practice. Unless they had been referred or undertaken their own research, they were unaware. A somewhat contradictory view was that information that was available was relatively easy to find. Overall it was felt that more leaflets and posters being available may be beneficial.

There were different views on how easy it is to get an appointment with a podiatrist; 27 said it was 'very easy'; 23 said it was 'ok, with help'; and 24 said it was 'difficult'. Those who said that it was difficult felt the reasons for this were that it was hard get appointments; there were not enough appointments/podiatrists; there were long waiting lists and a large number of patients. Of those that said it was 'easy', it seemed that they may know how better how to negotiate NHS systems, or they may be those who most need the service and access is made easier for them to reduce their risk.

Very few responded to the question about what would stop them visiting an NHS podiatrist if one were available. However, some did raise the issue of access and transport making it difficult. This is a recurring theme when consulting with patients.

In response to the question about whether people are aware of the service that specialised NHS care podiatry can offer to people with particular diseases, 53 said 'no' and 31 said 'yes' (9 'blank' and 2 'don't know').

Diabetic foot care and wound care

In response to whether people with diabetes and significant vascular problems understood the need for foot care, 33 in total responded that 'almost everyone' and 'most people' would know. However, 37 responded 'a few people' and 11 responded 'hardly anyone', would know. In addition, 53 responded that they would not know the possible risks of not looking after their feet; 27 said they would know the risk. In addition, 55 thought patients would not know and 26 thought they would know about getting specialist care if they developed a foot ulcer or were hospitalised.

When asked about how awareness of these issues could be increased in the population, the following suggestions were made:

- More information (leaflets, posters) should be available at GPs and other NHS or care facilities; there should be better use of social media; and better

communication by professionals. The voluntary sector could provide invaluable support to raising awareness and self-management. It was commented that this is not the responsibility of the voluntary sector.

The following were suggested as additional NHS input in relation to these conditions:

- More appointments should be made available;
- There should be more focus on prevention in more serious conditions;
- There should be more awareness of podiatry services generally; and
- More information relevant to these conditions should be made available.

Arthritis, mobility help and nail surgery

41 said 'a few people', 17 said 'hardly anyone' and 24 said 'most people' would know an NHS podiatrist could assess them if they required part or all of their toenails removed.

The areas of greatest need regarding mobility and arthritis were listed as:

- Footwear;
- Transport;
- More follow up after initial appointment;
- Regular treatment to slow/prevent conditions worsening;
- Mobility classes; and
- More information or advice on the condition and its management.

56 said that people would not be aware that self-management, after assessment and advice from a podiatrist, is the usual way in which care is offered; 26 said they would be aware.

59 said it would be helpful to have a longer period of time to see the podiatrist to allow more specific time to discuss self-management; 24 said it would not be helpful.

79 said it would be acceptable to see the same podiatrist where possible; 2 said it would not.

When asked for more detail as to why seeing the same podiatrist or having extra time would be helpful, the following responses were received:

- Older people need more time for conditions to be explained;
- Improved patient confidence;
- Consistency / continuity of care/ knowledge of condition;
- Better self-management; and
- Build the relationship between patient and professional.

To help with self-management and increase mobility, it was felt that the voluntary sector could help:

- Provide information and / or advice;
- Raise awareness of conditions; and
- Self-help groups.

Some respondents were suspicious that these questions indicated an attempt to move care from NHS to the voluntary sector, which was felt to be inappropriate.

The additional input to help with these conditions was listed as:

- Hydrotherapy;
- More clinics; and
- Easier access.

Musculoskeletal lower limb and foot care / Biomechanics

In response to the query about how many people with musculoskeletal lower limb and foot care needs would know that they could be assessed and treated by an NHS podiatrist, 2 said 'almost everyone', 20 said 'most people', 34 said 'a few people', 18 said 'hardly anyone', 1 said 'no clue' and 1 said 'not sure'. (19 responses were left blank.)

The greatest needs were identified as:

- Information, advice and publicity;
- Advice and support for self-management;
- Specialist equipment e.g. insoles; and
- Maintaining mobility.

It was felt that there is a role for the voluntary sector in raising awareness of services, community support and training of care workers.

In relation to the NHS, need was identified as:

- More podiatrists and mechanic practitioners;
- Better/quicker triage;
- Better access to professionals and more care in the community;
- Pain management; and
- More awareness.

Other comments received about specialist NHS podiatric services and how they are provided were:

- Variation in services depending on area. There was mention of remote and rural issues;
- Cuts leading to a lack of prevention of worsening conditions;
- Lack of access;
- Better communication being necessary;
- Nail cutting being important, but not available; and
- Good footcare.

Summary

Across all three conditions, it was felt that patients could be better informed about their condition and the service provided by specialist NHS podiatry; this related both to general information being available and better communication by health care professionals. It was understood this would be important in preventing deterioration in condition and maintaining mobility.

The strongest view expressed was in relation to receiving consistency of care with consecutive appointments being with the same podiatrist.

There was some concern about access to the service.

As stated previously, it is not possible to gauge how views varied between different patients in different NHS Boards and in different age groups. Or how representative the views are of all patients using specialist NHS podiatry or with the included conditions. However, it can be said that the key points resonated with the project group members. Therefore it is likely that addressing these would increase the focus on prevention by specialist services and improve the current service to patients.

This poses the following challenges:

- How to be more effective at highlighting the role of the podiatry service?
- How to be more effective at raising awareness of personal foot care self-management?
- How to be more effective at highlighting the role of the voluntary sector in supporting personal foot care?
- How to influence the further development of the voluntary sector to ensure equity and sustainability?

9. Comparative Needs Assessment

Comparative Podiatric Services

Introduction

While podiatry is the study, diagnosis and treatment of lower limbs and foot, podiatrists are qualified to treat people with arthritis, diabetes, nail surgery and sports injuries⁸⁶ therefore it should be noted that much research into podiatry is carried out as part of another discipline, e.g., foot ulcers as part of diabetes research, musculoskeletal as part of rheumatology, falls as part of gerontology or orthopaedic surgical research. Therefore it is often very hard to find research or comparative systems looked at from the podiatric point of view rather than otherwise.

Podiatry in the UK

Podiatry in the UK is considered to be a “medium-sized” allied health profession, with just over 13,000 HPC-registered practitioners in the UK⁸⁶. However, only around 3,800 of these are employed within the English NHS and in Scotland, according to the NHS NES Workforce report (2014), there are only 678 employed by NHS boards.

Podiatrists in Scotland offer services from nail surgery to diabetic foot assessment and ulcer care and biomechanical problems as well as musculoskeletal care. Care in Scotland follows the SIGN guidelines (also with some input from NICE) which has guidelines for basic foot care and further guidelines and care pathways which are disease specific.

It should be noted that those reviews which describe podiatry in other countries were either informal⁸⁷ or were private practice which could not adequately be compared with NHS systems⁸⁸, or allow us to compare like with like. Indeed, in Canada, depending on which province a Canadian podiatrist is licensed⁸⁸ in, they may or may not be able to perform foot surgery or write non-topical prescriptions, and private practices may work on a cash basis rather than via healthcare organisations. The research is sparse and the evidence base is limited, some studies putting this down to the status of allied health professionals compared to the medical profession⁸⁹. However, both New Zealand and Australia run podiatry services which accept UK podiatric qualifications⁹⁰ and can give some comparison with Scottish podiatry.

New Zealand: Access to Podiatry

New Zealand has a population roughly the same size as Scotland (4.47 million)⁹¹ and a public healthcare system funded by taxation⁹². Podiatrists in New Zealand must be not only registered with the Podiatry Board of New Zealand but also hold a current

practicing certificate⁹³. According to the 2009 Ministry of Health Podiatric Workforce survey⁹⁴ there are 177 working podiatrists (although more are registered to practice), with 122 of those engaged in private practice with only 8 wholly employed by hospitals or health services. This is considerably fewer than in Scotland. It can be seen from this that while noted as an allied health profession and registered to the same degree as the UK, the majority of podiatrists work privately, although public health organisations (e.g. GPs) can access their services for their patients⁹⁵, especially if diabetic, without cost to the patient. Podiatric services can be offered as part of a community health organisation⁹⁵. As most podiatric practices are private, it is difficult to find evidence or data on usage. New Zealand has an ageing population like Scotland⁹¹, but also the Maori ethnic group which, although only 7.9% of the population, has a three times higher risk of diabetes compared to European rates⁹⁶.

Australia: Access to Podiatry

Australia has a population of 23.1 million⁹⁷ and a more complex healthcare system which runs a two-tier system of private healthcare and Medicare⁹⁸. Podiatrists are classified as allied health professionals and must be registered with the Podiatry Board of Australia with approved qualifications and skills⁹⁰. In Australia in 2011 3,783 podiatrists were working as podiatrists, 888 undertaking clinical work in the public sector and 2,960 in the private sector⁹⁰. Podiatric treatment is available either through private health insurance or five visits per year to an allied health professional are available on Medicare benefits if recommended by a doctor and (in the case of podiatry) if the patient is in a high risk group (e.g., diabetic)⁹⁸. Aboriginal Australians automatically count as high risk for diabetes and for accessing foot care as they and the Torres Island people have a three times prevalence of diabetes compared to non-indigenous Australians⁹⁹. Diabetes is rapidly increasing in Australia which has already a prevalence of 7%, higher than that of Scotland at 5.4%.⁹⁹

In both countries the services offered are equivalent to those offered in Scotland, i.e., routine podiatric and continuing care from nail surgery, orthotics, musculoskeletal to diabetes^{90,92}. There is emphasis given to care of the diabetic foot in both countries¹⁰⁰¹⁰¹. The New Zealand Guidelines group which produced evidence-based care pathways for disease has since gone into voluntary liquidation¹⁰⁰ but its foot screening for diabetic care standard refers practitioners to the SIGN 116 *Management of diabetes* guidelines (2010)¹⁰². Australia too references SIGN 116¹⁰³, but also produces its own evidence-based guidelines from the Australian National Medical and Research Council, stipulating that foot care education should be provided to all people with diabetes in order to assist with prevention of foot complications¹⁰³. Where possible this should be done by a podiatrist but as the Australian Podiatric Workforce Survey showed the remote areas had markedly fewer podiatrists a suitably trained, alternative health-care worker may undertake a review of the feet⁹⁸. This should be done annually

in low-risk people and at least 3-6 months in those with immediate or high risk feet (without foot ulceration).⁹⁸

It is not easy to compare data across countries due to differing populations and/or the time period over which data was obtained¹⁰⁴ and even harder to find outcomes data, as different systems (particularly those with a private element) may not have the requirement to make such data publicly available⁸⁶. However, an Australian cross-sectional survey of podiatrists' best practice for diabetic foot care found that most podiatrists used most of the best practice guidelines¹⁰¹. Although the sample size was small compared to the podiatric population (222 out of 3,783), the majority of the replies (158) were from the public sector who reported higher usage of multi-disciplinary foot teams and wound classification¹⁰¹.

As both countries have an ageing population^{105 96 97}, there is publicly provided personal care once the client has been assessed to need it. In New Zealand this is over the age of 65 or for those deemed to need it⁹², and in Australia at age 70 (50 if indigenous). There is no information available on whether personal foot care offered by way of personal care is supplied by podiatrists.

European diabetic foot care

Many European health services have implemented international guidelines on diabetic foot care including creating multi-disciplinary foot clinics¹⁰⁶. The most widely used clinical guidelines are "International consensus and practical guidelines on the management and the prevention of the diabetic foot' by the International Working Group on the Diabetic Foot ¹⁰⁴ (IWGDF). Other guidelines that are used in the EU5 region (France, Germany, UK, Italy, Spain), include the chiropodist-podiatrist consultations for preventing foot lesions in diabetic patients in France, the national disease management guideline for diabetic foot prevention and therapy in Germany, and the clinical practice guideline for type 2 diabetes in Spain¹⁰⁶ (Acker).

While the IWGDF has stated that multidisciplinary teams to deal with diabetic foot problems has resulted in a drop in amputation rates¹⁰⁴ in France arterial investigations were more often taken only after a second amputation and particularly if the amputation was above the toe-level. It should be noted that in France diabetic patients were not reimbursed by the healthcare system for podiatric foot care until 2009, and even then only for those deemed high-risk¹⁰⁷. A further study by Richards *et al*¹⁰⁸, found that those with diabetic foot infections had a lower limb amputation rate of 48% in spite of the guideline care delivered in specialized centres. In Germany although guidelines were in place and clearly defined progress between healthcare centres, 20% or less were referred to specialized diabetic foot clinics from primary care¹⁰⁶.

Conclusion

It can be seen from the above that other than slender research on diabetic foot cases, there is little evidence to compare podiatry in one country with another^{89 104 106}. While podiatry remains an allied health profession with differing public/private status in different countries this may continue to be the case⁸⁹.

10. Recommendations

1. NHS podiatry services should increase awareness about the service they provide amongst NHS and Social Care leaders within the Integrated Joint Boards, Public Health Directorates, and more widely. Specifically there needs to be increased awareness of:

- Changes in personal foot care provision;
- The role of specialist podiatry, particularly in relation to complex wound management and musculoskeletal conditions (MSK);
- The contribution that podiatry services make to the care of older people including maintaining mobility, enabling people to remain active, as well as contributing to falls prevention; and
- The contribution that podiatry services can make to prevent ill health and improve health and wellbeing, including signposting for smoking cessation advice for people with peripheral vascular disease.

2. NHS podiatry services need to engage fully with the Service Improvement agenda by having access to good quality data about their service:

- Podiatry Managers and Practitioners need to be actively involved in the development and rollout of the Allied Health Professional Operational Measures and the ISD National Allied Health Professionals dataset;
- Opportunities to evaluate specialist podiatry care processes and outcomes should be explored. For example, future developments in the Scottish Diabetes Survey and a National In-patients Audit should consider how to capture the contribution made by Allied Health Professionals including NHS Podiatrists; and
- Where models of good practice have been developed, these should be evaluated and shared with other podiatry services via the NHS Scotland Knowledge Network
- Supporting the development of practice improvement should be explored with in-service training developed to support staff to participate fully in redesigning models of care and practice improvement. These should be reflected in the implementation of the Everyone Matters: 2020 Workforce Vision.

3. The role of NHS podiatry in the provision of anticipatory care should be explored to assess the impact on quality of life for individuals and the cost effectiveness for service providers:
 - There needs to be better understanding about whether risk- stratification, triage and timely podiatric intervention for patients with diabetic foot disease can improve outcomes for patients and reduce the number of patients requiring admission to hospital;
 - The effectiveness of this approach for patients with non-diabetic wounds should also be considered
 - The essential role of the third sector in personal foot care needs to be acknowledged: and
 - Effective approaches to managing anticipatory care across the specialist podiatry services should be established and maintained.
4. The evidence-base informing the effective contribution of podiatrists and other Allied Health Professionals should be enhanced:
 - When developing evidence-based guidance, consideration should be given to the role of Allied Health Professionals wherever possible. For example, clinical guidelines for the management of complex (non-diabetic) wounds would benefit from considering the role of podiatry.

Appendix 1 - Patient survey



Appendix 1 Podiatry
questionnaire.docx

Appendix 2 – Group membership

Project Working Group Membership

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