A clinical audit into the adherence of foot health management standards of rheumatoid arthritis compared to the foot health management standards of diabetes mellitus in North-East London

Christopher Joyce¹ and Rizwan Rajak²

¹Department of Podiatric Medicine and Surgery, Homerton University Hospital NHS Foundation Trust, London, UK.

²Clinical Lead for Osteoporosis & Integrated Bone Health Service and Rheumatology Musculoskeletal Ultrasound, Croydon Health Service NHS Trust, London, UK.

Correspondence to: Christopher Joyce, Extended Scope Podiatrist (MSK and Rheumatology), Department of Podiatric Medicine and Surgery, St Leonards Hospital, Nutall Street, N1 5LZ, London, UK

E-mail: Christopher.Joyce3@nhs.net

ORCID ID: https://orcid.org/0000-0002-9079-6975
Abstract

Objectives. Rheumatoid arthritis (RA) has an affinity to smaller joints, thus its effect on the foot/ankle is widely known. Despite this, there is lack of adherence to foot management standards by podiatrists. This research aimed to audit the adherence of these standards and compare them to well-established management standard adherence in the diabetic foot.

Methods. In this clinical audit, data was obtained via six National Health Service (NHS) podiatry departments in North-East London on service provision, management, treatment and professional development on both RA and diabetic foot health via foot management clinical audit tools. Descriptive analyses were conducted analysed to identify patterns and trends, with set standard compliance conditions calculated on Net Promotor Score ® (NPS) metric to allow for multi-comparison.

Results. All areas of RA foot health management were found to have poor compliance when compared to diabetes foot health management. When using NPS, no trust audited meet the majority of foot health standards in RA; with only two having a positive score (meeting the minimum standards) compared to all trusts posting a positive NPS on diabetes foot health standards.

Conclusions. Our results indicate that poor compliance into RA foot health standards is prevalent across the audited region and may be resulting in worsening foot outcomes despite a paradigm shift in other areas of RA management. Enhanced training and knowledge is required for better adherence to the standards set out and improve a foot health management in RA.

Keywords
Rheumatoid arthritis, Foot Health, Podiatry, Standard adherence, Audit

Key messages
- Adherence to RA foot guidelines was found to be poor due to limited evidence-base.
- More awareness is required on foot health standards for RA in both podiatry and rheumatology.
- Need for a universally standardised assessment for the rheumatoid arthritis foot.
Introduction
Approximately 90% of patients with rheumatoid arthritis (RA) report foot/ankle complaints at least once in their lifetime (1), with development and severity increasing with the duration of active disease (2, 3). Despite new criterion and evidence that a treat-to-target approach is best for achieving low disease activity and clinical remission; this paradigm has not shown to be able to manage foot/ankle disease effectively (4, 5).

Dedicated podiatry services that include RA are scarce despite the high-levels of reported pain and disability, even during clinical remission (4). During the period 2006-2016, rheumatology departments access to podiatry did increase from 18% (6) to 48% (7) with the help of several national guidelines supporting the integration of podiatry into rheumatology departments (8, 9) but their exclusion into podiatry commissioning is still behind that of diabetes. Several reasons exist for this exclusion; educational inequality in rheumatic disease training (10), lack of awareness of podiatry role (11) and lack of specialist or advanced podiatrists in rheumatology (12) amongst others. Adherence to the four pillars of clinical standards (service provision, assessment, management and professional development) may help in promoting the inclusion of the RA foot into podiatry services through a knowledge-based sustainable workforce.

Despite the known effect of RA on the foot/ankle health and the limited foot services available, guidelines in rheumatology are mainly focused on medication management rather than issues pertaining to extra-articular features outside the major organs. Instead many guidelines for these are focused on when issues occur rather than before (13) despite podiatry demonstrating greater improvement in pain and disability against those without access to podiatry (14, 15). Only one study has been published on the appraisal of guidelines for foot/ankle issues in RA (16) and found a dearth in high-quality guideline research; with the majority of guidelines falling under “good clinical practice”. Comparing this to diabetes foot health, where NICE endorsed guidelines are required to be implemented and have gone through more rigour in terms of research. Presently there are 221 specialist diabetes foot care services in England and Wales (17), no figure is available for RA specialist foot clinics. Considering that both RA and diabetes, have high affinity to the foot/ankle causing functional changes, vascular comprise and increase in foot ulceration; there exists inequalities within the given care of the lower limb respective of the disease. Podiatry and diabetes are interwoven due to the relationship diabetes has with ulceration and limb loss (18), but RA relationship to foot/ankle is weaker. Considering the difference in commissioning of services with each condition, this study aimed to compare the clinical adherence to foot health standards between RA and diabetes within a defined region in London.

Methods
Design
The motivation behind this audit was the lead author in their role as a rheumatology podiatrist there was very little guidance in terms of management guidelines and service provision of the RA foot. This indicated a need for a project on how foot health services are dealing with the RA foot in terms of adherence to current guidelines and comparing to adherence to guidelines in the diabetic foot.
All National Health Service (NHS)-based podiatry services within the North-East London region (n=8) were invited to participate. The sector is spread over 9 London boroughs with a population of over approximately 1.6 million. Each NHS trust has its own foot health service(s), but each trust offers a different podiatry service in order to meet the needs of the community it resides in. Currently RA foot management is not well established under NICE due to a lack of high-quality guidance. Therefore, local/national interest groups such as British Society for Rheumatology, College of Podiatry, Podiatric Rheumatic Care Association and Arthritis and Musculoskeletal Alliance are used to establish best practice.

Data was collected prospectively on each service via already developed audit tools on both RA and diabetes foot standards. The audit tool was completed by the lead podiatrist for each service and all were approached at the same time. Informed consent was gained if a completed audit tool was sent back to the lead author. This occurred over a 6 week period starting in October 2019 and ending in mid-November 2019, with reminders were sent out every 2 weeks to ensure maximum participation. This project was deemed low risk and was reviewed by the Low Risk Ethical procedures at the Faculty of Life Science and Education, University of South Wales who granted ethical approval [Ref: 19C1001LR] as well as local NHS audit committee. This study was in accordance with the Declaration of Helsinki. As each lead podiatrist had to email back to lead author and assign their service to each data collection tool, anonymity was not possible due to the need to analysis the data by trust, however it was preserved in the analysis and presentation by allocating letters to each trust.

Data collection

The audit tools had 31 questions (34 in diabetes) (Table 1) divided into the 4 pillars of clinical standards. The questions used were developed in conjunction with clinical standards in their respective fields and used a combination of evidence-base and expert-opinion; where evidence-base was not available. The RA foot health audit tool (Supplementary Data S1, available at Rheumatology Advances in Practice online) was developed by the North West Clinical Effectiveness Group for Rheumatology (NWCEG) (19) and builds on several UK-based clinical standards in RA foot health. Currently this tool has not been extensively used and thus its validity is unknown. Due to time constraints, validity testing was not possible and it is the only known audit tool in UK clinical standards of RA foot health. No changes occurred to this document and only NICE guidelines on adult RA management were updated to reflect current guidance (9).

NICE guidance on the foot in diabetes (20) has a validated audit tool to see if services are meeting NICE standards in the area (Supplementary Data S2, available at Rheumatology Advances in Practice online) and is a core part of the NHS National Diabetes Foot Care Audit (17). To ensure easier data completion and subsequent analysis, this tool was adapted in appearance and the questions placed into the same 4 clinical standard pillars as the RA tool. It was expected that if the audit tool is being used in nationwide auditing of foot management in diabetes, its validity and research base is of high quality.

These questions had 3 possible answers; red (no significant evidence available of standard being met), amber (some evidence available of standard being met) and green (full evidence of standard being met). Each question was to be best answered to what each standard had evidence for in each service. The evidence for each standard was not requested, as the audit was only examining...
adherence. Feedback of the audit was presented to the led researchers local audit committee and though regional podiatry service meetings (that involved the participating services).

**Audit standards**

Audit standards (AS) were determined *a priori* based on several different clinical standards for RA (8, 9, 19, 21) and diabetes (20, 22) (Table 2).

**Statistical analysis**

Data was analysed using descriptive statistics. This allowed for easier comparison of the data and better visual interpretation. The adherence with each AS was assessed by calculating a score based on the Net Promoter Score (NPS®) (23). Calculation of NPS® occurred by:

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\text{NPS} = \frac{\% \text{ Green Answers} - \% \text{ Red Answers}}{100}
\]

As there is no set standard on what score does a NPS® hold in AS adherence, this project devised an adherence score (Table 3). The Rheumatoid Arthritis Sufficiency Score (RASS) and DiAbetes Sufficiency Score (DASS) were made to display adherence scores and displayed using %. NPS® can be displayed in both positive and negative figures.

**Results**

**Service Demographics**

Data was received and entered for 6 NHS-based podiatry services based in North-East London. The 2 services that did not sent back any data, gave no reason for their exclusion. No other service demographics where taken. Standard adherence answers from each trust for RA and diabetes mellitus can be found in Figure 1 and Figure 2 respectively.

**Service Provision**

RA foot service provision was poor in all trusts with only 43% meeting all standards set out. No trust had dedicated input into the rheumatology multi-disciplinary team (MDT) and only one had the facility to see people diagnosed with RA within six-weeks of initial diagnosis. Five trusts had immediate access for those with urgent foot issues (such as ulceration), but no trust had access to a rheumatology consultant for urgent issues or access to blood tests. Diabetes foot service provision found that 74% of trusts were meeting the standards set out, however no trust audited had 100% adherence, thus no trust in the region was meeting RA and/or diabetes foot service provision. All trusts audited did have access to urgent antibiotic therapy and radiology referrals when required and five out of six trusts foot protection service was led by a podiatrist.

**Foot Assessment**

Both showed that all standards were not being met, with only 25% of trusts meeting RA standards in foot assessment and 31% in diabetes foot management. Almost half (46%) of trusts audited did not meet any RA foot assessment standards, with none evaluating foot health status via RA specific foot outcome measures and baseline neurological foot evaluation. The best preforming assessment standard was five trusts carrying out basic functional assessment of the foot/ankle; one trust stated they partially met this standard. This is contrast to diabetes arm, where only one trust met the standard on functional assessment of foot/ankle. Baseline diabetic foot assessment and risk
stratification including vascular and neurological assessment was met in all trusts. However no trust was recorded of doing baseline cardiovascular risk assessment, which was similar to findings in RA.

Management
83% (5/6) trusts provided information on self-management of RA foot issues, but only three trusts tailored these specific to each patient. Of these three trusts, one provided a negotiated care plan and one trust ensuring management choices are made in accordance with evidence. All trusts in diabetes met foot emergency contacts standards and importance of glucose control (met or partially met). As with similar results in RA, diabetes management choices were in line with evidence/guidelines where only two trusts met this standard in full and only one trust had provided patients with a negotiated care plan. A more positive finding was all trusts met standards in terms of guidance on self management in both RA and diabetes.

Professional Development
Four trusts (two met this full standard, another two partially met) offered RA foot health education to their MDT and another trust had a podiatrist who had undertaken some form of postgraduate training in rheumatology. In contrast to diabetes, where all trusts offered foot education to the diabetes MDT and four trusts had podiatrists who had completed postgraduate training in diabetes/vascular, two trusts had answered amber, thus it is assumed that members of these trusts may in the process of completing postgraduate training in these areas.

Adherence scores
Adherence scores were created via NPS® metric and displayed as RASS and DASS via the designated score (Table 3). No trust audited achieved a score of >80 or even a score of >50 in terms of overall RA foot standard adherence (Figure 3). Mean RASS was 1.6 and median was -8; demonstrating poor adherence to the standards set out across all trusts. Only 2 trusts achieved a positive RASS (highest being 32); meaning they were meeting some standards within the pillars but not all. Within the diabetes arm, no trust scored >80, but 5/6 trusts did score >50 – where only minor improvements are required to meet current national guidelines. The mean DASS score was 62 and median was 66.5. The highest reported DASS was 74 from two trusts, with one trust scoring 36 and where major improvement is required (Figure 3).

Discussion
In this the first known audit of RA national foot standards and comparing them to diabetes national foot standards in the UK; adherence to RA foot standards did not concord with current recommendations (8,9,19,21)with diabetes foot standard adherence being inline with current recommendations (20,22). Our most important finding was that no trusts met adherence scores for RA foot standards, with only 2 trusts showing a positive RASS. This audit could not ascertained why this had occurred but reasons could include poor knowledge of current standards, poor application of standards into practice (due to many of RA foot guidelines having poor methodology rigour), limited training in the area of RA foot health and possible inequality in NHS-based foot service provision; where disease overrides complaint.

NHS-based service provision and its subsequent service delivery are based on Model of Care; a framework ensuring patient centred care is the focus of commissioners and health partnerships (24).
In this audit, this is more evident within diabetes that is model of care is being implemented as standards where met and is shown in wider audits conducted into diabetes foot health (17).

This finding is not reflected in RA foot provision, as only 43% of audited trusts met service provision standards; however no trust audited met all standards as set out in this pillar. Only 1 trust had the facility to assess patients within six-weeks of initial RA diagnosis, which is recommended by arthritis-based associations (8, 21). However, there is no supported data that earlier podiatric involvement lessens foot disability/pain (25, 26) but has shown to lessen deformity. The only known audit published on RA foot health service provision in Northern Ireland (27) found that only 29% of people with a diagnosed inflammatory arthritis had an initial foot assessment within three months; but this data was done retrospectively and included both psoriatic and juvenile idiopathic arthritis, while this study focused on RA and analysed data from a management view.

No trust audited had dedicated input into the rheumatology MDT or access to a rheumatologist for urgent issues, reflecting current literature. In UK-wide studies on MDT make-up variation, podiatry’s inclusion in the MDT within London NHS trusts ranged from 32% (28, 29) to 48% (7). As reasons for this haven’t yet been explored, it can be related to current contracts for rheumatology under NHS England (30), which have excluded podiatry and thus commissioning groups are not required to fund specific posts and is up to individual rheumatology services to include podiatry within their team. This literature further demonstrates that lack of coherence and collaboration between research, rheumatology services and commissioning groups; resulting in worsening foot/ankle outcomes in RA.

It is thought that diabetes foot service provision is being met more due to attractive payment tariffs to carry out more diabetic foot assessments, as well as the need for commissioners and providers to enact NICE guidelines and thus more focus on the foot in diabetes. All these can lead to improved service provision; however where not examined further within this study. This was demonstrated in this study, which found high levels (74%) of adherence to service provision guidelines including 5/6 trusts having a podiatrist lead their foot protection service; a cornerstone of diabetic foot management (20).

Assessment of the RA foot was the most underperforming area of the audit with both these diseases is known to affect the foot/ankle more than other chronic diseases. This is reflected across the world (31, 32) showing a global issue rather than just a regional one. There is no universally accepted RA foot assessment proforma (unlike in diabetes where a proforma and risk stratification exist) and results in often inadequate or varied assessment across different sites. 53% of trusts audited were carrying our basic RA risk foot assessment (lower limb vascular, neurological and biomechanical), but no trust carried out the neurological aspect. Similar results are found in Northern Ireland (27) where 39-57% of patients with an inflammatory arthritis received baseline neurological and vascular assessment, however individual scores for each assessment was not seen. Another finding was no trust carrying out RA foot specific disease activity/outcome measures; Foot Impact Scale and Salford Arthritis Foot Evaluation are the most commonly used in RA foot outcomes (19). Due to the complex nature of the RA disease process and absence on Disease Activity Score (DAS), appropriate disease activity in the foot/ankle at the time of this audit was not present. Recently the Rheumatoid Arthritis Foot Disease Activity Index-5 (RADAi-F5) (37) was developed by a team in Glasgow for specifically measuring disease-activity in the foot/ankle in people with RA. In there validation study of RADAi-F5
they found consistent associations between this tool and Foot Impact Scale, DAS-28 and a modified rheumatoid arthritis disease activity index; demonstrating a reliable and fast approach to measuring disease activity. As this index has only been recently published, no further study to-date have been done on its validity but it is a promising area in RA foot research.

In contrast, diabetes foot assessment was carried out by all trusts in this audit and is above the current national average at 90.2% (17) and inline with current national recommendations (20, 33). Despite similar causality pathways for foot ulceration and amputation between diabetes and RA, no research has built on the diabetes risk stratification and assessment for an RA population despite this being an area recommended by several research teams (34, 35). It should be noted that despite better risk stratification and better scores in favor of diabetes; amputation rates have reduced but still remain high in both minor and major amputations (36); showing more factors are involved rather than stratification and subsequent management based on assessment.

Management of the foot/ankle occurs on a conservative level despite the lack of consensus on if this is the best strategy for RA foot management (38). Even with this lack of agreement standardisation is similar across guidelines both specific and non-specific to RA foot disease (16). Despite the standardisation and availability of RA foot specific management standards and guidelines, no trust audited in both RA and diabetes met the required adherence score (>80) as set out in this audits design; with the RA arm not having the standardisation pertained in current research. Similar findings where found in Northern Ireland in terms of RA management adherence in line with best practice (27) but no further explanation was given. There are several reasons that could result in this non-adherence (and should be explored further) but reasons for this appear to be based in a lack of sound theory and infrastructure available (39). It may also stem from the lack of adherence or knowledge in applying clinical guidelines to clinical practice. Lineker and colleagues (40) found that a lack of disseminating by teams, access to recommended services and lack of clinical team input into arthritis-based guidelines, is the reason for many services not integrating their care with clinical guidelines and standards. This can also be seen in the lack of teams stating their management are in line with current recommendations (one trust stated this). This gives both podiatry and rheumatology the need to further disseminate research and encourage more MDT work between these two professions in order to improve the complex management of the RA patient.

Chronic diseases such as RA and diabetes share similar characteristics in their disease progress: disability, deformity complex medical management and psychosocial issues. Many of these issues can be self-managed, when appropriate training and support is given and it is the reason for inclusion of self-management in both NICE guidelines in RA (9) and diabetes (20). This is reflected well in this audit as 5/6 and 6/6 of trusts ensured self-management was key to RA and diabetes foot health respectively.

Allied-health education in rheumatology is poor due to the lack of continuous professional development on offer (10, 41). This coupled with the largest UK professional body in podiatry: College of Podiatry focusing on diabetes and vascular development by their members (42) further underpins and under develops the need for rheumatology specialist podiatrists. These conclusions are evident in this audit; with only one trust having a podiatrist with postgraduate rheumatology training compared to four trusts having a podiatrist with postgraduate diabetes/vascular training.
This lack of diversity in a rheumatology MDT contributes to the lack of foot health education offered and the opposite seen within a diabetes MDT, despite education given to an MDT by podiatrists can improve lower limb outcomes (33, 37).

There is a general gap in rheumatology foot research in terms of guideline adherence and this is the first known study to audit adherence to UK-based standards in the RA foot but also compare this to the well-established foot management standards in diabetes. No trust audited met all standards for both RA and diabetes, but diabetes standards were met across five out of six trusts. When adherence scores are compared, RA scored a mean of 1.6 while diabetes scored a mean of 62. This meant that trusts audited were not meeting 95% of current national RA foot standards compared to 40% not meeting diabetes foot standards. A major reasoning why this was found is down to inequality in healthcare; more specifically inequality in podiatry service provision. McCulloch and colleagues (43) discuss how podiatry is bound by boundary work; whereas podiatry sticks within its known clinical areas such as diabetes or vascular and thus their services are usually based on this work. This may lead to inequalities in podiatry access from commissioners as they may not be aware of podiatry’s growing scope, clinicians who feel they may not be appropriating trained in areas outside their boundary work and patients who are not aware of podiatry role in the management of their condition. However, this is an area that does require more research.

Strengths of this audit include first known study to assess current standards in RA foot health management in the UK as well as use of the NWCEG Rheumatology audit tool. The research presented is hoped will further strengthen the exploration of current standards in RA foot health and will shed a spotlight of this under researched area, hopefully starting a process of improvement. It was also the first study to examine current implementation of current local/national RA foot criterion as set out by the NWCEG Rheumatology audit tool. No other published study had used this data collection tool before. This will only improve the tool capabilities in the future.

The major limitations of this audit were the introduction of potential bias during data collection and the sample size. As clinical leads completed both data collection tools; this could have led to an introduction of bias, as they may have wanted to show their service is meeting current standards. This appeared not to have occurred due to the results found, but it would have reduced bias if people not part of the audited services audited the management of RA and diabetes foot health to ensure an independent view, however this was not possible though due to time constraints. Eight trusts where initially approached to complete this audit; with six giving consent. Though studies with low participant rate are easier to conduct, the low numbers mean caution is advised when interpreting results. Six out of eight trusts is high as only the North-East London NHS sector was audited. Nevertheless, it would have been more beneficial to recruit varying trusts over multiple regions across the UK.

Key recommendations

Several recommendations have been made following the results of this audit and its presentation to relevant bodies during the dissemination of the research. Some of the recommendations made were:
1. Workshops on the implementation of RA foot management guidelines and their clinical benefits (within the podiatry and rheumatology units in sector audited) and then larger scale workshops for podiatrists in podiatric rheumatology health and its association with the high-risk foot developed in a similar way to diabetic foot workshops run by professional bodies in this area. 2. Need to promote further research within the area of RA foot assessment and encouraging the development of pathways and assessment for the RA foot within a healthcare setting.

3. Creation of a pro-forma to be used during the assessment of people who present with a rheumatology (not RA specific) foot/ankle issue. This will ensure both high quality data collection as well as appropriate clinical documentation – incorporating all aspects of clinical standards mentioned.

**Conclusion**

Our findings indicate that there is a blend of poor knowledge and inequality in RA foot health provision and resources are skewed in favour of diabetes foot provision due to specific NICE guidelines, payment tariffs and higher quality research. Despite research stating RA affinity to foot/ankle disease, there is a lack of appropriate management for these people, as shown by these audits findings and further research in this area is recommended. This research should be a “call-to-arms” to podiatrists and rheumatology teams for implementing current national standards for RA foot health into practice, mandating commissioning groups for foot health services that are not disease-specific and the wider rheumatology community to take RA foot health more serious.

**Funding:** No specific funding was received from any bodies in the public, commercial or not-for-profit sectors to carry out the work described in this manuscript.

**Disclosure statement:** The authors have declared no conflicts of interest. CJ has declared that the work presented was used in partial fulfilment of an MSc in Rheumatology from the University of South Wales.

**Data availability statement:** The data underlying this article will be shared on reasonable request to the corresponding author.
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Table 1: Audit standard questions criterion

| Service Provision | Rheumatoid Arthritis (RA) | Diabetes Mellitus (DM) |
|-------------------|---------------------------|------------------------|
| A team of podiatrists with knowledge & skill in foot management of people with RA | A team of podiatrists with knowledge & skill in foot management of people with DM |
| Dedicated input in the rheumatology MDT | Dedicated input in the diabetes MDT |
| Annual review of those with identified foot problems | Annual review of those with identified foot problems (or earlier of increased or high risk via diabetic foot assessment) |
| The facility to see patients within 6 weeks of RA diagnosis | Facility to see patients within 2-4 weeks of those who are high-risk of developing diabetic foot problems |
| A mechanism for urgent referral for surgery | Referral to MDT foot service within 1 working day for those with limb/life-threatening diabetic foot problems |
| A mechanism for provision of foot orthoses if indicated | Urgent access to off-loading non-removable device OR removable offloading device (if non-removable contra-indicated) |
| Clinics are accessible to people with mobility issues | Clinics are accessible to people with mobility issues or service adapts to those who are housebound |
| Patient assessment results are communicated to the referrer and patients consultant | Patient assessment results are communicated to the referrer and patients consultant |
| Immediate access for foot care for those with urgent problems | A mechanism for urgent request from microbiology for suspected infection for diabetic foot problems |
| Immediate access to the patient rheumatologist for urgent problems | Named consultant to be accountable for overall care of the person with diabetic foot problem |
| Direct referral to radiology | Direct referral to radiology |
| Direct referral for blood tests | A mechanism for urgent referral for antibiotic therapy |
| Ability to refer those with increased or high risk of developing diabetic foot problems to foot protection service | Podiatrist leads the foot protection service |

### Assessment

| Assessment | Rheumatoid Arthritis (RA) | Diabetes Mellitus (DM) |
|------------|---------------------------|------------------------|
| Assessment of foot pain is carried out and monitored at each visit | Each person with DM gas a diabetic foot assessment and is categorised according to its findings |
| Assessment of suitability of footwear is carried out at each visit | Assessment of suitability of footwear is accrued out at each visit |
| A full vascular assessment is carried out at baseline and annually | Assessment of lower limb ischemia via palpable pulses/intermittent claudication/rest pain carried out annually |
| A full neurological assessment is carried out at baseline and annually | Assessment of neuropathy (using 10g monofilament) carried out annually or earlier if required |
| A full lower limb structure/ functional examination is carried out at baseline and annually | A full lower limb structure/ functional examination is carried out at baseline and annually |
| Assessment of cardiovascular risk factors is carried out at baseline and annually | Assessment of cardiovascular risk factors is carried out at baseline and annually |
| Foot health status is evaluated at baseline and annually (SAFE or FIS)* | Use of ankle brachial pressure index (ABPI) in those with non-healing ulcers or suspected peripheral arterial disease |
| Assessment of lifestyle / social factors is carried out at baseline and annually | Assessment of lifestyle / social factors is carried out at baseline and annually |

**Management**

| Patients are provided with a negotiated care plan | Patients are provided with a negotiated care plan |
| Information is provided on lifestyle changes | Information is provided on lifestyle changes |
| Information is provided on self-management | Information is provided on self-management of basic foot care and its importance |
| Mechanisms ensure that management choices are made in accordance with evidence/guidelines | Mechanisms ensure that management choices are made in accordance with evidence/guidelines |
| Patients are given informed choice of non-surgical/surgical options for foot health management | Information is provided on importance of good blood glucose control |
| Advice and negotiated guidance on appropriate for footwear for their needs | Advice and negotiated guidance on appropriate for footwear for their needs OR referral for bespoke footwear |
| Nail surgery is carried out in liaison with patients consultant | Information is provided on who to contact in foot emergencies |
| Tailored education, information and advice with signposting to support services and organisations | Urgent referral to MDT foot service or foot protection team in those with active foot ulceration or suspected foot ulceration |
| Callus debridement is only considered when appropriate pressure relief is in place | Use of sharp debridement or other forms of debridement by trained professionals taking into account expertise |
| | Antibiotic guidelines covering pathways for managing diabetic foot infections |

**Professional Development**

| Education is provided to the MDT on foot health, podiatrists role/referral | Education is provided to the MDT on foot health, podiatrists role/referral |
| Clinical specialist / lead has undertaken postgraduate training in rheumatology | Clinical specialist / lead has undertaken postgraduate training in diabetes/vascular |
| | Regular reviews of treatment and patient outcomes in line with National Diabetes Foot Care Audit (NDFA) |
### Table 2 Audit standards

| Rheumatoid Arthritis foot standards | Diabetes mellitus foot standards |
|------------------------------------|----------------------------------|
| ARMA inflammatory arthritis standards | NICE NG19 - Diabetic foot problems: prevention and management |
| Musculoskeletal Foot Health Standards | NICE CG147 - Peripheral arterial disease: diagnosis and management |
| NWCEG Rheumatology podiatry guidelines | |
| NICE NG100 - Rheumatoid arthritis in adults: management | |

### Table 3 Adherence Score Key

| Index Score | Meaning |
|-------------|---------|
| < 49        | Not meeting current national standards – major improvement required |
| 50-79       | Meeting majority of current national standards - minor improvement required |
| >80         | Meeting all current national standards |
**Figure 1** Adherence to RA foot clinical standards across all audited trusts.

| Question                                                                 | Trusts | A       | B       | C       | D       | E       | F       |
|-------------------------------------------------------------------------|--------|---------|---------|---------|---------|---------|---------|
| **Pillar 1: Service Provision**                                          |        |         |         |         |         |         |         |
| Podiatrists with knowledge and skill of foot management in RA           |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Input into the rheumatology MDT                                         |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Annual review of those with identified foot problems                    |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Able to see patients within 6 weeks of diagnosis                        |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Access to urgent referral for surgery                                   |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Access to foot orthoses if indicated                                    |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Clinics accessible for people with mobility issues                       |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Assessment results communicated with referrer and patients consultant   |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Immediate access for those with urgent foot problems                    |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Immediate access to patients consultant for those with urgent issues    |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Direct referral to radiology                                            |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Direct referral for blood tests                                         |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| **Pillar 2: Assessment**                                                |        |         |         |         |         |         |         |
| Assessment of foot pain carried out and monitored at each visit         |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Assessment of suitable footwear                                          |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Full vascular assessment occurs baseline and annually                   |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Full neurological assessment occurs baseline and annually                |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Full lower limb structural/functional occurs baseline and annually      |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Assessment of cardiovascular risk factors occurs baseline and annually   |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Foot health status evaluated (using SAFE or FIS) baseline and annually   |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Assessment of lifestyle/social factors occurs baseline and annually      |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| **Pillar 3: Management**                                                |        |         |         |         |         |         |         |
| Patients provided with negotiated care plan                              |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Information is provided on lifestyle changes                            |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Information is provided on self-management                              |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Management choices made in accordance to evidence/guidelines            |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Patients given informed choice of non-surgical/surgical options         |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Advice and guidance on appropriate footwear for patients needs           |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Nail surgery is carried out in liaison with patient consultant          |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Tailored education and advice with signposting to support services       |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Callus debridement only considered when appropriate offloading in place |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| **Pillar 4: Professional Development**                                  |        |         |         |         |         |         |         |
| Education is provided to the MDT on foot health and podiatry role        |        | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
| Clinical specialist/lead has undertaken postgraduate training in rheumatology |     | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   | 🔴 🔴   |
Figure 2 Adherence to diabetes foot clinical standards across all audited trusts.

| Question                                                                 | Trust | A | B | C | D | E | F |
|-------------------------------------------------------------------------|-------|---|---|---|---|---|---|
| **Pillar 1: Service Provision**                                          |       |   |   |   |   |   |   |
| Podiatrists with knowledge and skill of foot management in Diabetes    |       |   |   |   |   |   |   |
| Input into the Diabetic MDT                                             |       |   |   |   |   |   |   |
| Annual review of those with identified foot problems                   |       |   |   |   |   |   |   |
| Able to see patients within 2-4 weeks of those at high-risk of diabetic foot problems |       |   |   |   |   |   |   |
| Referral to MDT foot service within 1 working day for those with limb/life-threatening foot problems |       |   |   |   |   |   |   |
| Urgent access to off-loading non-removable OR removable device          |       |   |   |   |   |   |   |
| Adapting service for people with disabilities or housebound            |       |   |   |   |   |   |   |
| Assessment results communicated with referrer and patients consultant   |       |   |   |   |   |   |   |
| Named consultant to be accountable for overall care of diabetic foot problems |       |   |   |   |   |   |   |
| Mechanism for urgent request to microbiology for suspected diabetic foot infections |       |   |   |   |   |   |   |
| Mechanism for urgent antibiotic therapy                                |       |   |   |   |   |   |   |
| Direct referral to radiology                                            |       |   |   |   |   |   |   |
| Ability to refer those with increased/high risk of developing foot issues to protection team |       |   |   |   |   |   |   |
| Podiatrist leads foot protection service                                |       |   |   |   |   |   |   |
| **Pillar 2: Assessment**                                                |       |   |   |   |   |   |   |
| Each person with diabetes get a diabetic foot assessment and categorised according to findings |       |   |   |   |   |   |   |
| Assessment of suitable footwear                                         |       |   |   |   |   |   |   |
| Full vascular assessment occurs baseline and annually                   |       |   |   |   |   |   |   |
| Full neurological (using 10g monofilament) assessment occurs baseline and annually |       |   |   |   |   |   |   |
| Full lower limb structural/functional occurs baseline and annually      |       |   |   |   |   |   |   |
| Assessment of cardiovascular risk factors occurs baseline and annually  |       |   |   |   |   |   |   |
| USE of ankle-brachial pressure index for those with non-healing or suspected peripheral arterial disease |       |   |   |   |   |   |   |
| Assessment of lifestyle/social factors occurs baseline and annually     |       |   |   |   |   |   |   |
| **Pillar 3: Management**                                                |       |   |   |   |   |   |   |
| Patients provided with negotiated care plan                             |       |   |   |   |   |   |   |
| Information is provided on lifestyle changes                           |       |   |   |   |   |   |   |
| Information is provided on self-management of foot care                |       |   |   |   |   |   |   |
| Management choices made in accordance to evidence/guidelines           |       |   |   |   |   |   |   |
| Information is provided on importance of good glucose control          |       |   |   |   |   |   |   |
| Advice and guidance on appropriate footwear for patients needs OR referral for bespoke footwear |       |   |   |   |   |   |   |
| Information is provided on who to contact in foot emergencies          |       |   |   |   |   |   |   |
| Urgent referral to MDT foot service or foot protection team in those with active or suspected foot ulceration |       |   |   |   |   |   |   |
| Use of sharp debridement or other forms of debridement by trained professionals |       |   |   |   |   |   |   |
| Antibiotic guidelines covering pathways for managing diabetic foot infections |       |   |   |   |   |   |   |
| **Pillar 4: Professional Development**                                  |       |   |   |   |   |   |   |
| Education is provided to the MDT on foot health and podiatry role      |       |   |   |   |   |   |   |
| Clinical specialist/lead has undertaken postgraduate training in diabetes/vascular |       |   |   |   |   |   |   |
Figure 3 Trust adherence to RA (A) and diabetes mellitus (B) foot health standards and comparing this to their compliance score (RASS or DASS).