NORTH WEST PODIATRY SERVICES
CLINICAL EFFECTIVENESS GROUP –
RHEUMATOLOGY

GUIDELINES FOR THE MANAGEMENT OF FOOT HEALTH FOR PEOPLE WITH RHEUMATOID ARTHRITIS

Version 3: supersedes version 2 (amended and updated)
Date of issue: February 2014
Date of review: 3 years from date of issue

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1. INTRODUCTION TO THE GUIDELINES

1.1 The Aims of the North West Clinical Effectiveness Group

The North West Clinical Effectiveness Group (NWCEG) for the Foot in Rheumatic Diseases was initiated by the North West Region Podiatry Heads of Service in 2003. Members of the group include podiatrists who currently work with patients with rheumatic diseases, a representative from service managers and an academic link with the University of Salford.

The work of this group now continues with the aim of contributing to the global aim of improving the care of patients with musculoskeletal (MSK) and rheumatic diseases (Woolf 2012) by supporting service development and the professional development of those podiatrists involved in the management of patients with rheumatic diseases through the following objectives:

- To provide a support network for NHS podiatrists in the NW region working within the field of rheumatology and musculoskeletal services.
- To cascade learning and best practice
- To develop, review and promote protocols / guidelines that identify benchmarks and essential / desirable standards as a framework for podiatry service providers and clinical commissioning groups / within the NW region
- The development of audit and evaluation tools
- To promote podiatry within the wider rheumatology / MSK community and as part of the multidisciplinary team
- To update these guidelines and be aware and highlight other relevant guidelines in relation to the management of the foot in rheumatic disease as a framework for service provision and development
- To review new evidence from research and disseminate this into clinical practice.
- To encourage clinical development in this field through increasing awareness amongst service commissioners and providers.
- To identify the training and education needs of podiatrists to facilitate the development of specialist skills required to work at an advanced / extended scope level

1.2 The Purpose of the Current Revised Guidelines

The first guidelines were produced by the NWCEG in 2004 under a broad remit of The Management of the Foot and Ankle in Rheumatic Diseases.

In 2008 The PRCA Standards of Care for People with Musculoskeletal Foot Health Problems were launched. They are ‘patient facing’ in respect of the service that patients can expect and in this context superseded this aspect of the original NW guidelines

During 2010 the NWCEG identified a need for standards to be defined for the *specific foot health management* of patients, particularly those with rheumatoid arthritis. To this end, the original guidelines were revised and developed to be ‘practitioner facing’ with the objective of 'doing the right thing, to the right patient, in the right way, at the right time’ by rationalising and improving the quality of foot health management. They focused on the assessment and management of foot and ankle problems associated with rheumatoid arthritis. The Guidelines for the Management of Foot Health for People with Rheumatoid Arthritis were launched in October 2010.

Over the years the guidelines have been used across the Northwest region to both instigate service provision and support service review. Further to this they have been adopted by various podiatry services as best practice guidelines both across the UK and internationally.

The guidelines received national recognition as being the first in this area and received the support of the Podiatry Rheumatic Care Association (PRCA), and the NHS electronic library for Health (NeLH). The NW CEG has also been actively involved in the development of the PRCA Standards of Care for People with Musculoskeletal Foot Health Problems (PRCA 2008) and as registered stakeholders, in the development of NICE guidance for the Management of Rheumatoid Arthritis in Adults (NICE 2009).

The aim of these revised guidelines remains to provide all podiatrists who may be managing patients with RA with recommendations for the current evidence based and best practice management of RA related foot and ankle problems.

It is important to note that despite the new paradigm of early targeted therapy leading to an improvement in the impact of Rheumatoid Arthritis generally, the impact of foot problems on Quality of Life remains an issue for many patients and hence the podiatrists role in both identifying foot problems at an early stage and inputting appropriately into the wider multi-disciplinary management cannot be underestimated.

2. BACKGROUND TO RHEUMATOID ARTHRITIS

2.1 Epidemiology and Clinical Features of RA

Rheumatoid Arthritis (RA) is an auto-immune, systemic, inflammatory joint disease with a chronic, unpredictable and fluctuating course (Conaghan et al 1999). There are around 580,000 adults in England with RA, suggesting that over 690,000 adults in the UK live with the condition (National Rheumatoid Arthritis Society (NRAS) 2010).

The severity of RA may fluctuate both within and between individuals (Grondal et al 2008). Any joint may be affected but commonly the hands, feet and wrists are the most common sites. (Harris 2005). Up to 4 out of every 10 working people with RA lose their jobs within five years on disease onset with three quarters of these for reasons directly related to their condition (Young et al 2002). Barrett et al (2000) suggest 1 in 7 give up work within one year of diagnosis. RA is economically costly. In fact, the total UK costs, including indirect costs and work related disability, are estimated to be up to £41,735 / person which translates to approximately £3.8 - £4.75 billion per year (NRAS 2010).

Although any synovial joint may be affected it is well documented that RA is a condition that can affect the feet (Otter et al 2010; Turner and Woodburn, 2008). The foot is often the first area of the body to be systematically afflicted by RA (Otter et al. 2004) and at diagnosis, 16% of patients may have foot joint involvement progressing to 90% as the disease duration progresses (Grondal et al 2008). 75% of patients with RA report foot pain within 4 years of diagnosis with the degree of disability progressing with the course of the disease. Shi et al (2000) states that virtually 100% of patients report foot problems within 10 years of disease onset. The degree of clinically important disability progressing with the course of the disease and as early as disease duration of less than 2 years (Turner et al, 2006). The presence of foot complaints, both in the early and in the chronic stage of RA, has been shown to be extremely detrimental to patients' daily lives and activities, especially ambulation (Wickman et al 2004).

The basic pathological changes in the rheumatoid foot result from synovitis and bursitis (Hooper et al, 2012) and tenosynovitis (Barn et al., 2013), coupled with mechanical stress (Turner and Woodburn 2008). These structural and functional changes often affect gait and mobility (Woodburn 2002, Turner et al 2006).

Effects on the foot are diverse and multidimensional including pain, changes in gait, deformity and restrictions in the choice of footwear (Bouysset et al 2006). Specifically, the most common foot deformities in RA patients are hallux valgus, metatarsus primus-varus and splaying of the forefoot (Goksel Karatepe et al 2010). These forefoot manifestations of RA are frequently found in the metatarso-phalangeal (MTP) joints (Van der Leeden et al 2008). Synovitis of the MTP joints can have a destructive impact on the quality and structure of the joints (Siddle et al., 2012b, Riente et al., 2006) and the surrounding soft tissues and bursitis affect the inter metatarsal bursae (Hooper et al., 2012) and contribute to forefoot deformity. Tenosynovitis and midfoot synovitis lead to the development of pes plano-valgus deformity (Barn et al., 2012) These foot problems result in disability in weight-bearing activities, abnormal gait patterns and altered plantar pressure measurements (Turner et al., 2008).

This foot deformity also predisposes to callus formation and as the foot shape alters, and there is a decrease in tissue viability it can leave the feet vulnerable to ulceration (Firth et al 2008). Further to this, bacterial and fungal skin infections and nail pathologies are more prevalent in this patient group adding to the serious risk of ulceration and systemic infection. The risk of opportunistic infections is increased if the patient's medical management is with immunosuppressive drugs (Strand et al 2007, Otter et al 2004).

The feet can remain symptomatic even when the disease is in remission supported with the current early medical intervention paradigm of early diagnosis and early targeted therapy (Emery et al., 2002). Indeed there is a 'window of opportunity for early targeted therapy of RA related foot problems (Woodburn et al., 2010)

2.2 Recommendations for the Management of RA Foot Problems

Foot problems in RA are common, but under-reported by both patients and the rheumatology team (Blake et al., 2013, Williams and Graham, 2012) and often neglected in clinical practice ((Williams and Graham, 2012). This not only affects the potential to aid early diagnosis of RA (Emery et al., 2002) but also the need for effective foot health interventions. Any delay in referral to Podiatry has consequences for the patient, which can vary from minor, living with discomfort, to major, where delays result in the development of foot deformity (Blake et al., 2013).

Goals for the management of the RA foot are aimed at reducing the pain in the feet, improving foot function, mobility and quality of life using safe and cost-effective treatments, such as: - palliative foot care, prescribed foot orthoses and specialist footwear aimed at preventing any deterioration in the tissues and in joint alignment (Grondal et al 2008, Woodburn and Helliwell 1997). Woodburn et al also suggest that there is "Window of Opportunity" in early rheumatoid arthritis for effective podiatry intervention. The foot health needs for the patient with RA are varied and range from simple foot care advice, palliative care for nails and skin and orthotic / specialist footwear provision through to management of ulceration and infection (Helliwell 2003, Korda and Balint 2004).

Specific tools for measuring the impact of foot pathology on foot pain function and disability in patients with rheumatic diseases have been validated (Walmsley et al., 2012, Budiman-Mak et al., 2006 Helliwell et al., 2005, Budiman-Mak et al., 1991). These are now being used in clinical practice as well as in research.

It is becoming increasingly recognised that management strategies for RA should be aggressive, comprising proactive management and prompt intervention (Luqmani et al, 2006). The Arthritis and Musculoskeletal Alliance (ARMA 2004) recommends that all patients with suspected RA should be seen by a specialist in rheumatology within 12 weeks to confirm diagnosis and enable prompt and effective treatment, and have access to a full multidisciplinary team (MDT) assessment and intervention early in the disease process, including foot health assessment. Further to this, Woolf et al (2007) suggest that management requires an integrated coordinated multidisciplinary, multi-professional approach, with care focussed upon the needs of the affected person, providing access to a combination of expertise and competencies.

Given that podiatrists are considered the experts in the management of foot and ankle problems and recognised by NICE (2009) as primary provider of foot health services for this patient group, they should be an integrated part of the MDT. This view is supported by ARMA

(2004), the British Society for Rheumatology (BSR) (Luqmani et al 2006) and the National Institute for Clinical Excellence (NICE 2009) who all strongly advocate the need for a dedicated and specialist podiatry service for the diagnosis, assessment and management of foot problems associated with RA along with periodic review.

Patient organisations (Arthritis Research UK, Arthritis Care, and the National Rheumatoid Arthritis Society) also recommend that patients have access to specialist foot care and increasingly rheumatologists are requesting specialist foot care services for their patients (Redmond et al 2006, Williams and Bowden, 2004).

In this respect, podiatry care should be made available to all patients with rheumatoid arthritis and patients should understand the role of the podiatrist in helping them to effectively manage their foot health and how to seek help should they experience problems. Good communication between health professional and their patients' is essential. People with RA should have the opportunity to make informed decisions about their care and treatment, in partnership with their health professionals (NICE 2009). To achieve this treatment and care should take into account peoples' needs and preferences.

Essential standard

'Podiatrists are experts on foot disorders; both patients and rheumatologists can profit from the involvement of a podiatrist' (Korda and Balint 2004)

3. PODIATRY SERVICE PROVISION

3.1 Philosophy of Podiatry Services for People with RA

The broad philosophy of podiatry management of people with RA is to relieve pain, maintain function and mobility, prevent or minimise deformity and reduce the risk of ulceration thereby maintaining or improving the individuals' independence and overall quality of life.

Podiatry services should provide a specific and dedicated service for the diagnosis, assessment and management of foot problems associated with RA that can be provided in a variety of settings, such as local clinics, hospital out-patient departments, and rheumatology departments (both outpatient and inpatient). However, it is acknowledged that some patients choose to access private podiatry care from HCPC registered practitioners.

3.2 Clinical Specialist Role

A podiatry team led by a dedicated podiatry clinical specialist in rheumatology is desirable. This specialist should provide specialist care directly to patients, provide advice for other members of the podiatry and multidisciplinary team (MDT) and facilitate the development of appropriate clinical skills in other members of the podiatry team This clinical specialist should work within the rheumatology department (outpatients and inpatients) for at least part of their work schedule.

The advantages of this are that the specialist podiatrist can:

- Improve the profile of podiatry services within rheumatology
- Provide timely interventions for acute problems using extended practices that historically have required referral to secondary care.
- Provide timely referrals to appropriate members of the MDT.
- Develop inter professional working practices.
- Develop their role as advisor to the MDT
- Manage foot problems with a greater understanding of implication of medical therapy and disease management

3.3 Essential Requirements for a Podiatry Service

Based on the national recommendations (NICE 2009 and ARMA 2004) the following are considered the essential requirements that a podiatry service is expected to provide for patients with RA:

- A team of podiatrists able to meet the needs of the local population diagnosed with RA

- A team of podiatrists with knowledge of the foot health management of patients with RA and knowledge of the medical and rehabilitation management of the disease.

- A system for prioritising referrals so that foot pathologies are managed in a timely way

- The facilities for rapid assessment for patients should urgencies occur so that patients in acute pain or at risk of infection receive timely interventions. Patients who are being managed with biologic therapies should have immediate access to a specialist podiatrist if they present with foot ulceration or other infections affecting the foot.

- Provision of the appropriate facilities / skills for baseline vascular and sensory assessment i.e. hand held Doppler ultrasound and 10g monofilament. It is known that patients with rheumatoid arthritis are more at risk than the general population for coronary heart disease (resulting in circulatory insufficiency to the lower limb), vasculitis and neuropathy. Baseline and annual assessments of the vascular and neurological status of patients will both identify and monitor any problems or changes (Kitas 2003).

- Annual review and assessment of foot health in RA patients with identified foot problems (NICE 2009)

- The skills to provide biomechanical assessment of foot structure and function

- Provision of the appropriate facilities for biomechanical assessment of foot structure and function with either manufacturing or supplying foot orthoses. It is know that foot orthoses are a vital and effective intervention in rheumatoid arthritis (Hennessey et al 2012, Woodburn et al 2002a).

- Provision of specialist footwear or referral to an orthotist depending on local arrangements. It is known that many foot problems cannot be accommodated in normal

retail footwear and the benefits of specialist prescription footwear are recognised (Williams et al 2006,)

- Individual patient education and care plans. Patients need information to enable them to make informed choices about their treatment. The information should be provided with professional support and guidance with the emphasis on behavioural change rather than just information giving (Graham et al., 2011).

- A system of providing prompt and appropriate information to the referrers and other appropriate members of the multidisciplinary team. This is to facilitate good communication and collaboration between the podiatrist and the other members of the team so that care is timely and appropriate.

- Clinical documentation for recording of assessments, management plans, treatments and other interventions. In addition to the legal requirements for documentation of clinical treatments they can be used for purposes of audit

- An effective system of Continuing Professional Development, which includes
    - Annual Update Courses in Rheumatology
    - Multidisciplinary training

3.4 'Gold Standard' Requirements for a Podiatry Service

- This would include all the essential criteria plus the following desirable criteria

- A team of podiatrists, led by the clinical specialist in the management of patients with RA. A designated clinical lead with advanced / extended scope skills e.g. joint injections, experience and competencies would co-ordinate the service at a clinical level and be responsible for cascading new evidence based practice to other members of the podiatry team. They would act as clinical advisor for the team and be responsible for ensuring appropriate CPD in this area.

- The facilities for providing telephone advice and rapid assessment for patients

- Access to/provision of the appropriate facilities/skills for advanced vascular and neurological assessment such as Doppler assessment for ABPI's, vascular and MSK diagnostic ultrasound.

- Provision of the appropriate facilities and skills for lower limb mechanics and foot pressure assessment. Many rheumatic disorders affect both the architecture and function of the foot and lower limb resulting in abnormal gait and increased foot pressures. Quantifiable assessment of these will enable monitoring and timely intervention. Where available, In-shoe foot pressure assessment will identify the effects of orthotic and footwear interventions (McCormick C et al 2013, Redmond A et al 2009, Van der Leeden et al 2006, Otter S et al 2004)

- The facility for an annual review and assessment of all RA patients. This is so that patients who do not have current problems are monitored at least annually in order to detect problems early.

- An effective system of Continuing Professional Development, which includes
  - The development of advanced clinical skills such as soft tissue and intra-articular injection techniques, imaging modalities such as MSK ultrasound
  - The training in skills such as lipid and blood pressure monitoring
  - Attendance at regional, national and international rheumatology meetings and conferences (for example, the British Society of Rheumatology Conferences)
  - Support for research (either uni-professional or multi-professional) in collaboration with outside agencies (for example, universities, medical schools, and medical charities).
  - Attendance at local podiatry groups / meetings with the opportunity for networking with colleagues and peers

4. REFERRAL GUIDELINES

It is recommended that all patients with rheumatic diseases, which manifest themselves in the foot and ankle should have access to a dedicated and specialist podiatry service (NICE 2009, Williams and Bowden 2004). The Standards of Care for people with Musculoskeletal Foot Health Problems (2008) document states that **all patients** should be referred **within 3 months of diagnosis**, not just those with a problem.

> **Essential standard**
> All patients should be referred for foot health assessment within 3 months of diagnosis of RA (PRCA 2008)

4.1 Referral Pathway

A pathway of referral should be in place to facilitate patient referrals to the specialist podiatrist service by any member of the podiatry team, the multidisciplinary rheumatology team, primary care team or private practitioners.

A question about foot problems and foot pain should be included in any assessment by consultants and their teams or primary care specialists to facilitate an appropriate and timely referral of the patient to the podiatry service.

4.2 Foot Screening Pathway

The aim of the Foot Screening Pathway (Appendix 1) and the Primary Assessment/ Annual Screening Tool (Appendix 2) is to enable any member of the podiatry team or other designated personnel assessing a patient to identify those patients who are at risk from ulceration or the development of deformity and to initiate appropriate and timely interventions care. It is recommended that private practitioners who manage patients with RA for general foot care on a regular basis make links with the specialist podiatry services in order to facilitate timely referral of those patients who foot health deteriorates.

Thorough assessment and review are essential in managing patients' foot health with the aim of reducing pain, improving mobility and independence. Further to this, podiatrists aim to provide holistic care enabling patients with RA to maximise their potential to fulfil their social and occupational roles.

It has been shown that health and illness is mainly determined by lifestyle psychological factors and socio-cultural environment rather than on biological status and conventional health care (Micheal 2004). According to Waddell and Burton (2006) work is the most effective way to improve well being of individuals therefore ignoring socio cultural factors such as a patient's ability to work could potentially lead to poorer health outcomes.

Individual podiatry services will have different clinical arrangements for new and existing patients with RA in both primary and secondary services (and private practice) However, an initial structured foot assessment and screening must be carried out for all patients with RA at the first point of contact with any podiatrist and then referral on to the specialist podiatrist if the management needs require specialist intervention or the input from the multidisciplinary team. The assessment should include appropriate outcome measures and should be repeated periodically to detect any changes in foot health status. The suggestion is that those patients identified with foot problems should be reviewed on an annual basis as a baseline minimum.

Essential Standards

All people with RA and foot problems should have access to a podiatrist for assessment and periodic review of their foot health needs. (NICE 2009)

All podiatry patients with RA should receive an initial structured foot assessment complete with appropriate outcome measures with onward referral to more specialised colleagues as required

Referral to a Podiatrist is an integral part of the **early** management of RA patients.
(ARMA 2004)

5. PATIENT AND FOOT HEALTH ASSESSMENT

Clinical assessment should be systematic and thorough. The following components of a patient assessment / screening process should be carried out as a minimum standard of care for all new or existing patients presenting with new foot pathologies (see Appendix 1 and 2) . This enables an individual tailored care plan to be produced. It is recommended that all existing patient records are updated in line with these standards.

5.1 Essential Requirements for Assessment

Podiatry referral should be offered to all patients with RA and a Baseline Assessment should include:-

- Full Medical and surgical history (including disease duration).
- Medication and pain management.
- General health and systemic factors, examination for signs of extra-articular features of disease- nodules, bursa, vasculitis, tendonitis, tenosynovitis.
- Detailed assessment of foot and lower limb function and structure (both non weight-bearing and weight-bearing).
- Feel, look and move the foot assessing the foot position, deformities, range of movement and location of painful, tender, swollen sites.
- Assessment of foot pain using a scale of 0 (no pain) -10 (worst pain imaginable)
- Assessment of patients' main presenting problem, the pattern of distribution and chronological development of symptoms. The impact of the problem, patients' perceptions/knowledge and expectations also needs to be addressed.
- Vascular assessment based on clinical signs and patients' symptoms. Foot pulses should be assessed using Doppler ultrasound which provides an objective measurement of vascular status.
- Sensation assessment with 10g monofilament as a minimum.
- Assessment of nails, skin lesions and tissue viability also noting history of previous ulceration.
- Examination of the patients' footwear and its suitability for both home and outdoor use (Footwear Suitability Scale – Appendix 3).
- Assess the need for pressure relief and foot orthoses.
- Assess the need for referral for patients' requiring a surgical opinion or to other members of the MDT such as physiotherapy, occupational therapy or orthotist.
- Lifestyle and social factors- ability to self care, neglect, smoking, alcohol, occupation and activity/mobility.

- An annual review of foot health should be offered to those with identified foot problems. Patients should be monitored and reassessed for changes in foot health and general health status, allowing further outcomes to be predicted and patients' treatment and management plans to be changed accordingly

5.2 'Gold Standard' Requirements for Assessment

In addition to the essential standards it is desirable that the following are also carried out:

- Baseline measurements of foot pain, function and health status using measurement tools such as the Foot Function Index (Budiman Mak et al 2006), Leeds Foot Impact Scale (Helliwell et al 2005) or the Salford Rheumatoid Arthritis Foot Evaluation Index (Walmsley et al 2012).
- Assessment of the impact of foot problems on activities of daily living including a patient's ability to continue in or find employment
- The use of tools such as DAS28 to evaluate disease activity
- ABPI if further investigation of vascular status is required.
- Assessment of tendon reflexes where indicated
- All existing patient records are updated in line with these standards.
- Direct referral for x-rays / ultrasound / MRI scans for detailed assessment and diagnosis
- Annual review for patients with RA

5.3 Musculoskeletal Ultrasound for Foot and Ankle Pathology

The use of diagnostic ultrasound (US) by non-radiologists has increased in popularity, particularly within rheumatology as technology has improved and equipment has become more user-friendly (Brown, 2009, Taggart et al., 2011, Micu et al., 2012). US is painless, harmless (no ionising radiation) and is readily accessible for use within the clinical environment. Advances in Grey Scale (GS) and Power Doppler (PD) US imaging have enabled better and timelier assessment of changes in joints and soft tissues due to inflammation associated with rheumatoid arthritis (Schmidt, 2007, Balint et al., 2008).

For rheumatoid arthritis, the precise detection of synovitis has become fundamental to the management of inflammatory disease (Brown, 2009,Kang et al., 2012). As such, there has been an increase in focus on the use of US techniques in the assessment of rheumatoid foot pathology (Bowen et al., 2013). Several authors have described the use of US to identify soft tissue pathology within the foot (Riente et al., 2006, Joshua et al., 2007, McNally, 2008, Micu et

al., 2012) especially pathology within the foot that is otherwise unseen by clinicians (Wakefield et al., 2008, Bowen et al., 2010, Bowen et al., 2011, Hooper et al., 2012). Additional advantages over other imaging techniques are that any area of the foot can be scanned rapidly at one time-point and treatments such as guided steroid injections can be implemented immediately (Bowen et al., 2013).

Summary of US detectable foot pathologies associated with rheumatoid arthritis

- Effusions and impingements of the ankle joints.
- Visualisation of synovial hypertrophy, especially within the metatarso-phalangeal joints
- Tenosynovitis of extensor digitorum longus, extensor digitorum brevis, flexor digitorum longus, flexor digitorum brevis, tibialis anterior, tibialis posterior, peroneus longus and peroneus brevis tendons.
- Visualisation of Achilles tendon in its full length - calcification, ruptures and retro-calcaneal bursitis can be differentiated.
- Diagnosis of synovitis, especially within the metatarso-phalangeal joints.
- Diagnosis of Morton's Neuroma.
- Diagnosis of adventitial (within plantar fat pad) and anatomical (intermetatarsal) bursitis.
- Screening rheumatoid patients for high metatarsal pressures.
- Guidance of needle placement for steroid injections

Podiatrists' scope

As clinical expertise in performing musculoskeletal US has advanced, there is a consequent requirement for adequate training by non-radiologists to learn the techniques. Clinicians such as podiatrists arguably have a discrete detailed anatomical knowledge of the foot and one study has demonstrated good reliability of a podiatrist tested against a radiologist (kappa 0.702, $p < 0.01$) in the use of US for the evaluation of foot disease in RA (2008). US is compounded in that it is highly operator dependent and there is a lengthy period required to develop the necessary skills (Taggart et al., 2011,Marhadour et al., 2010). Some useful resources are available that aid interpretation of US images. Riente et al. (2006) provide detailed documentation of a proposed scanning protocol for the foot. Additionally, the US imaging characteristics of the normal anatomical structures of the foot are well described (Micu et al., 2012) as well as techniques for imaging the small joints of the forefoot (McNally, 2008) and the ankle and foot (Micu et al., 2012).

6. MANAGEMENT OF FOOT PROBLEMS

6.1 Focus of Management

Treatment and care should take into account peoples' needs and preferences. People with RA should have the opportunity to make informed decisions about their care and treatment, in partnership with their health professionals.

Good communication between healthcare professionals and patients is essential. It should be supported by evidenced-based (where possible) information / care plan tailored to the individual person's needs. Treatment, care and information given should be appropriate to the individual and take into account cultural, religious, language needs and be accessible to people with physical, sensory or learning disabilities (NICE 2009).

Following a detailed assessment a management plan will be formulated between the podiatrist and the patient. This may involve referring the patient to other members of the rheumatology team for advice on interventions such as foot surgery, physiotherapy, specialist footwear or steroid injections. It could also involve encouraging patients to seek help from other organisations such as their employers and the job centre to ensure that the complications of their disease are recognised and individual issues are addressed

Dependent on the presenting problems the podiatrist may offer the following interventions (each is then covered in detail)

- Patient education relating to all issues surrounding foot health – pages 19-20
- Foot orthoses and Footwear (Advice / therapeutic) – pages 21-26
- Management of plantar callus - pages 27-28
- Conservative and surgical management of pathological nail conditions - pages 29-31
- Management of Foot Ulceration – pages 32-33
- Joint injections or referral to the member of the multidisciplinary team responsible for this – pages 34-35
- Referral for a surgical opinion - pages 36-37
- Referral to other members of the rheumatology team i.e. physiotherapy, occupational therapy, specialist nurses, orthotists and consultants
- Providing supporting letters for employers to help patients access adaptations in their work place to help with foot problems e.g. shorter hours on feet, chairs to sit as needed

- Regardless of the intervention/s, regular review appointments and open access to the podiatry service for any developing acute problems

6.2 Patient Education Related to Foot Health

Patient Education (P.E) can be defined as: a set of planned educational activities designed to improve patients' health behaviours, health status and long term outcomes (Hill, 1997). Patient education is considered to be an integral component in the armoury of R.A. management strategies, to support and facilitate self-management of the disease (ARMA, 2004). Further to this research has shown that individuals who are actively involved their own disease management have better outcomes, improved self-efficacy, less pain and reduced incidence of depression (Lorig et al, 2005; Kjeken et al, 2006).

The Standards of Care for People with Musculoskeletal Foot-health Problems (PRCA, 2008) recommend specifically that patient-centred education should be provided to enable patients to make informed choices about their foot care, and the role of the podiatrist as a vital member of the Multidisciplinary team for the management of R.A. has been reinforced (NICE 2009).

There is a large body of evidence that supports the effectiveness of P.E. for patients with R.A. that is delivered via a staged approach over the lifetime of the patient, with the content and timing of education provision being driven by the needs of the individual (Barlow et al 2002; Hammond 2003; Waxman et al 2003; Hennell et al 2004; Fautrel et al 2005; Koehn and Esdaile 2008). New podiatry-based research shows that identifying health education needs, and provision of supportive verbal and written information can foster an effective therapeutic relationship, supporting effective foot health education for people with RA (Graham et al 2012a; Graham et al 2012b).

Using the recommendations and findings from the literature above as a guide, together with the PRCA (2008) Foot Health standards, Podiatrists can embed the following key points into the development of their Foot Health P.E. provision for individuals with R.A.

- Education should be encouraged throughout the patients' medical care with each consultation becoming an opportunity for P.E and be based on an educational-behavioural approach.

- The content of P.E. should be individualized and engaged, taking the individual experiences as the point of departure according to the patients' needs / wishes at the point of contact and should reflect the fluctuating nature of the disease. Patients in remission may sometimes prefer to focus on being well and avoid thinking about possible side effects and chronic disease (Kristiansen et al 2012)

Patient Education should aim to include:

- Disease specific information regarding; the causes & course of the disease and disease management both verbal and written.
- Direction on appropriate use of the internet for sourcing educational material.
- Details regarding access to patient support groups
- Advice regarding lifestyle choices (weight management, smoking cessation).
- Advice regarding retail/therapeutic footwear/foot orthoses.
- Maintenance of foot hygiene.
- Aspects of self-care (including safe & unsafe practices.
- Information regarding changes in foot health that should prompt further investigation.
- Access to service / providers of podiatry care

Simple information giving only has short-term, limited effects upon health behaviour, but should be used within a staged approach throughout the course of the disease. An opportune time for general information giving is early in the diagnosis, based upon the patients' own knowledge requirements. To maintain the potential effects of P.E over the lifetime of the patient, educational 'booster' sessions may be required.

Essential Standard
Patient education should include foot health self management advice and if necessary demonstration, explanation of foot problems and their impact on the individual, information on general disease management and sign posting for future foot health needs

6.3 Foot Orthoses and Footwear

The benefits of foot orthoses (insoles) and footwear have been recognised and recommended “Functional insoles and therapeutic footwear should be available for all people with RA if indicated” NICE (2009). For the purposes of clarity foot orthoses and footwear options will be discussed separately. However, the practitioner should always consider them together in relation to footwear suitability, choice of foot orthoses and the potential mechanical effect of the footwear on not just the foot but the orthoses as well.

Foot orthoses

Foot orthoses are provided to two main groups of patients with RA; those with foot problems associated with early disease and those with more established foot problems. The use of appropriate footwear (Williams et al 2007) in conjunction with foot orthoses has been recognised as minimising the pain and disability associated with RA Hodge 1999when there is established foot deformity. The choice of foot orthoses in relation to design and function is dependent on the amount of motion in the joint of the foot. This factor is not dependent on disease duration as some patients with early disease have limited motion and some with longer disease duration have good range of motion within the joints of the foot.

It is demonstrated that foot orthoses not only achieve pain reduction in the early RA foot but have a sustained effect on the foot structure and hence achieve stability of the joints of the foot and improve the patient’s mobility (Woodburn at al 2002(a)).
Therefore, there is the potential to prevent major functional and structural foot problems by providing foot orthoses early on in the disease process if joint mobility is still good. However, as foot changes have the potential to occur within 2 yrs of disease onset (Turner and Woodburn, 2008) it is essential that patients are referred for assessment of foot function as early as possible following diagnosis.

Essential Standards
Patients with a diagnosis of RA should be assessed as soon as possible following diagnosis for structural problems with the lower limb and foot.
All patients with RA and foot pain should be considered for foot orthoses and /or footwear advice, irrespective of disease duration.

Once the structural problems are established and joint mobility is reduced, management consists of reducing symptoms of pain and resultant mobility problems. Further to this, redistributing foot pressures may contribute to the prevention of tissue breakdown and ulceration over high pressure areas of the foot. RA subjects with metatarsal pain have 20 – 40 % lower pain pressure threshold (Hodge et al, 1999), these patients require more planter pressure reduction to diminish their pain sensation.

Essential Standard
Patients with established foot deformity should be assessed for accommodative foot orthoses and footwear advice/ specialist footwear

There is a broad range of devices that employ a variety of different approaches to modify foot and lower limb structure and function with general consensus within services providing them that foot orthoses include these main groups:

- Simple cushioning insoles
- Insoles to which additional padding/additions can be applied
- Contoured insoles intended to change the function of leg and foot joints, either:
    - Custom made to a cast of the patient's foot
    - Supplied off the shelf +/- adaptations

However, the boundaries between the modes of action of the types are not always exact and an individual device may include elements of more than one type or mode of action. However, Clark et al., (2006), and Jackson et al., (2004) concluded that foot orthoses;

- reduce pain and improve functional ability
- Both hard and soft foot orthoses have the potential to reduce forefoot pain
- Hard foot orthoses have the potential to reduce rearfoot pain in patients with early RA
- Hard foot orthoses have the potential to reduce hallux abducto valgus

There is only anecdotal evidence for the use of simple cushioning insoles. Two small studies indicate that prefabricated metatarsal padding (dome and bar shapes metatarsal pads) reduces mean peak plantar foot pressure by up to 21% with bars and 12% with domes (Jackson et al 2004) and both equally (Hodge et al 1999)

Hard Contoured foot orthoses are provided in order to improve the function of the foot and/or lower limb. This assumes that there is some mobility in the joints of the foot in order to improve function and realign the bony architecture. They are particularly useful for use in patients with early diagnosis of RA. In this case there is an attempt to not only reduce pain but to maintain good foot function and hence structure whilst the foot is vulnerable to deformity due to the combination of the inflammatory process and abnormal mechanics.

Customised accommodative orthoses (total contact orthoses) are designed so that the material follows closely the contours of the underside of the foot. The purpose is to redistribute the pressures applied to the foot by standing and walking more evenly. This is particularly useful where there are areas of increased pressure, for example, under the metatarsal heads. In this instance the pressure is shifted to areas of the foot that do not normally bear weight such as the arch area (Li et al 2000). They are particularly used where there is limited or no joint mobility such as in the established RA foot and where tissue viability is poor. These orthoses are often made from materials that also provide a cushioning effect, such as softer EVA or with additional foam linings.

Dynamic impression insoles made by sequential foam padding & moulded under successive walking compression have been demonstrated to reduce peak pressures & the VAS pain score when compared to the moulded custom insole (Chang et al, 2012).

Essential Standards
Functional foot orthoses should be provided where the tarsal joints are unaffected.
Accommodative / cushioning orthoses should be provided for those patients with structural foot deformity, painful symptoms and activity restriction

Footwear

The choice of orthoses is governed by the suitability of the patient's footwear, which may not accommodate the ideal foot orthoses for their particular problem. All footwear is in itself capable of modifying the structure and function of the body and therefore falls clearly within the definition of orthoses and may the only thing that needs changing to solve functional problems. Inappropriate footwear can be both a major contributing factor to foot impairment. However, when it is right it has the potential to alleviate pain and increase mobility and independence (with or without foot orthoses).

In order for health professionals & researchers to accurately & efficiently critique an individual's footwear, a valid & reliable footwear assessment tool is required (Barton et al 2009, Nancarrow 1999)

Footwear can be sub divided into three main groups:

- Standard retail footwear
- Niche retail including comfort footwear as well as extra depth, extra width and odd-size suppliers.
- Specialist therapeutic footwear

Standard Retail footwear

There are now many manufacturers of retail footwear that are both appropriate for the foot health of our patients The features of retail footwear that makes them ideal for the RA foot would be -

- Stable heel – broad enough for stability or elongated / flared to increase this effect further
- Extended heel counter
- Padded topline – to reduce irritation to the retro-calcaneal area and the infra-malleolar areas
- No prominent internal seams
- Winged toe puff
- Increased toe spring or rocker sole – to reduce forefoot plantar pressures
- Low laced – for ease of access

(Williams A and C 2010)

The suitability of retail footwear can be assessed using the Footwear suitability tool (Nancarrow 1999) see Appendix 3

Essential Standard Footwear assessment and advice should be given to all patients.

In early disease many patients experience forefoot pain and changes to the shape of their foot. Many patients recall that they had to increase their shoe size to accommodate a wider forefoot. Specialist footwear manufacturers can be very helpful in offering advice and providing wider-fitting shoes. The British Footwear Association provides detailed information

about companies that make up the British footwear industry and consumer information about hard-to-find footwear suitable for all foot sizes and shapes - see Appendix 4.

Specialist therapeutic footwear

Stock footwear is specialist footwear which is available in a variety of styles and fittings, for example extra deep, and/ or extra wide and is generally suitable for mild to moderate deformity. Bespoke footwear is an option when there is major deformity such as advanced rheumatoid arthritis deformity or if there is a huge difference in symmetry, or if the foot dimensions are outside the measurements for stock footwear.

Two systematic reviews (Egan et al 2003 and Farrow et al 2005) indicate that specialist footwear is likely to be beneficial in patients with RA. Two RCT's (Fransen and Edmonds 1997 and Williams et al 2007b) indicate that this footwear contributes to the reduction in pain and increased mobility in patients with RA although the effect is improved when combined with orthoses.

It is generally considered that the following patients could be considered for referral for specialist footwear for the following reasons:

- Failing to obtain retail footwear to fit the dimensions of the foot (including asymmetry)
- Pressure symptoms such as skin lesions/sore areas on the feet
- Increasing foot pain due to pressure from existing footwear
- Excessive footwear 'wear' indicating that patients need more stability from increased surface area of the plantar aspect of the footwear and increased rearfoot control from the heel counter.
- History of foot ulceration where footwear has been a contributory factor.

The Society of Chiropodists & Podiatrists (CPD update, May 2006, pS6) – 'Who Should Be Referred for Specialist Footwear?' advises referring patients who have:

- Problems associated with systemic disease (e.g. RA).
- Functional/structural problems that impact on the foot.
- Width, depth, length outside range of retail footwear (and asymmetry).
- Provision of substantial foot orthoses that cannot be accommodated in retail footwear.

It has been found that patients considered that it was important to receive information at the point of referral so that they can make considered choices as to whether to be referred or not (Williams et al 2007a). Without some knowledge of what is available the opportunity to engage the patient in the decision making at this stage is lost and may be one of the reasons patient expectations are not met. The option of referral for a surgical opinion should be offered as an alternative to referral for footwear.

Stock footwear is specialist footwear which is available in a variety of styles and fittings, for example extra deep, and/ or extra wide and is generally suitable for mild to moderate deformity. This footwear is generally supplied with 3x3mm removable liners that provide the option for being replaced with orthotic devices. Stock footwear with specific modifications is termed 'modular'. Bespoke footwear is an option when there is major deformity such as advanced rheumatoid arthritis deformity or if there is a huge difference in symmetry, or if the foot dimensions are outside the measurements for stock footwear.

Essential standards –

Patients who are assessed as requiring therapeutic footwear should be informed of the potential benefits and limitations of this footwear (in respect of cosmesis) and allowed to decide on whether to be referred /provided with therapeutic footwear or not

Referral for surgical opinion should be offered as an alternative to referral for therapeutic footwear

6.4 Management of Plantar Callus

Persistent synovitis of the forefoot is associated with peri articular erosion, subluxation and dislocation of the MTP joints which in term exposes the metatarsal heads to increased pressure during gait. (Van der Leeden M, 2010). In response to increased focal stresses, the strateum corneum thickens initially in a normal physiology response to chronic excessive pressure or friction of the skin eventually however, pathological lesions (callosities) develop, which cause pain and contribute to impairment of gait and related functional and health status in people with RA.

Three studies have investigated callus reduction in RA.
Woodburn et al, (2000) concluded that a reduction in plantar callus with sharp debridement reduced forefoot pain for approximately 7 days, but increased forefoot pressures in 10 out of 14 feet. This was not statistically significant but indicates that reduction of callus over **prominent** metatarsal heads may lead to tissue damage. This would be of particular concern in patients with the following factors

- **Foot deformity**
- **Reduced tissue viability** (long term steroid therapy, vasculitis, concurrent peripheral vascular disease) and/or neuropathy.

Davys et al (2005) demonstrated a reduction in pain in 38 participants but concluded the effect was no greater than sham treatment. Localised pressure or gait function did not significantly improve following treatment, but they indicate what to include when managing plantar callus in RA patients:

- Pts need to be informed about causes and management of callus.
- It is recommended that thick **callus is debrided cautiously and frequently**.
- **If infection is present, then overlying callus should be debrided to expose the underlying infection**. If ulceration is present, surrounding callus and necrotic tissue should be appropriately debrided.
- **Removal of superficial callus over plantar bursae should be avoided altogether.**
- Advice about the use of emollients for dry plantar callus should be given. Patients should be encouraged to self manage by applying emollient daily and to use a foot file on these areas at least three times a week.
- Adhesive plantar padding **should not** be used as a pressure relief mechanism especially if there are tissue viability concerns. Instead a dry dressing secured with a bandage can be used for localised protection.

- Pressure relieving and functional orthoses have been demonstrated in studies to reduce forefoot pressures should be provided (McCormick et al 2013, Redmond et al 2009, Van der Leeden et al 2006, Otter S et al 2004 and Woodburn et al 2002 (a))
- Footwear advice should be provided with consideration given to footwear with the necessary depth and width to accommodate the patients' feet. (See Footwear and Orthoses – pages 24-29).
- Therapeutic footwear should be considered and when appropriate referred to an Orthotist.
- If the patient has severe pain in the forefoot and /or severely affected mobility, it may be appropriate to consider a surgical referral and opinion.
- Regardless of the interventions, regular review appointments and open access to the Podiatry service for any developing acute problems.

A more recent study by (Siddle et al., 2013) further adds to the concern about routine sharp debridement of callosities in people with RA. The study concluded that the long term effects of sharp debridement of painful forefoot plantar callosities in people with RA when used in conjunction with a combined therapeutic approach produced no additional benefit over a combined therapeutic approach alone.

The authors suggest that the use of sharp debridement should be confined to the short term alleviation of severe pain and address only high risk presentations such as extravasated blood and suspected ulceration.

Essential Standard
Callus should be assessed in relation to symptoms and causative factors before debridement is considered. The focus of callus management should always be the reduction of foot pressures with foot orthoses and suitable footwear first, before debridement is considered as a safe or unsafe intervention

6.5 Conservative and Surgical Management of Pathological Nail Conditions

Onychomychoses

Onychomycosis (OM) is an infection of the nail unit that can be caused by various species of dermatophytes, yeasts, molds and even some bacteria. OM infects between 2% and 18% of the population with increasing frequency as patient age increases to 20% and 30% for those older than 60 years and 70 years respectively, (Derby et al 2011, Ameen 2010) and there is an increased association with immune-compromised hosts (Bodman 2003). Bodman (2003 also identified that if OM is left untreated, it can lead to subungual and skin ulceration, in patients with RA.

The most sensitive diagnostic test is histopathological analysis of a nail clip biopsy. A Periodic Acid-Schiff stain (PAS) test is commonly used as a quicker and more sensitive diagnostic workup than traditional fungal cultures (Arca et al 2004). There are five types of OM:

- Distal Subungual Onychomycosis (DSO)
- Superficial White Onychomycosis (SWO)
- Proximal Subungual Onychomycosis (PSO)
- Total Dystrophic Onychomycosis(Primary) (TDO)
- Total Dystrophic Onychomycosis (Secondary) (TDO)

Treatment of Onychomychoses

- Regular Podiatry treatment. Thorough debridement of all dystrophic and hypertrophic nail plates to relieve painful pressure and facilitate topical agent penetration to the nail bed. This also allows the podiatrist to check for subungual ulceration.
- Topical Therapy. Topical Lacquers such as Trocyl (Tioconazole), Loceryl (Amorofine) and Lamisil (Terbinafine). These treatments can be effective in the treatment of early infections with limited involvement, such as DSO and SWO. Occasional local irritation and hypersensitivity reactions can occur, such as mild burning, erythema and itching.
- BNF (2012) states systemic antifungal therapy is necessary if there is nail involvement although antifungal treatment may not be necessary with asymptomatic Tinea infection of the nails. Topical antifungals such as Amorolifine or Tioconazole may be useful for treating early OM when there is mild DSO in up to 2 nails, SWO or where oral therapy is contra-indicated. Oral antifungal therapies e.g. Sporanox (Itraconazole) and Lamisil (Terbinifine hydrochloride) are frequently used as they have a broad spectrum of activity and require a short duration of treatment. These treatments would be recommended for

PSO and TDO. There are many possible contra indications which require caution when prescribing.

- Hepatic and Renal Impairment
- Risk of exacerbation of Psoriasis
- Risk of Lupus-erythematosus like effect. (Autoimmune Disease)
- Pregnant and nursing mothers.
- Drug interactions

Patients with known or suspected immunodeficiency need to complete blood counts and monitoring as the drug may induce a transient decrease in absolute lymphocyte counts which may cause severe neutropenia. If clinical signs and symptoms are suggestive of a secondary infection and full blood count shows a neutrophil count <1000 cells/mm treatment should be discontinued.

Essential Standards
Fungal infections (of the nail and skin) must be investigated and treated. If left untreated they can lead to ulceration and secondary bacterial infection.
Discussion with the patients GP or consultant is advised before systemic treatment is instigated

Onychocryptosis

Onychocryptosis (O/C) is a common problem for which patients seek Podiatry treatment. The nail may puncture the soft tissue and allow bacterial invasion resulting in paronychia and infection, often accompanied by hypergranulation tissue.

Treatment of Onychocryptosis

In the first instance for mild O/C regular conservative podiatry treatment should be carried out in an attempt to resolve the situation. If indicated an appropriate dressing regime and antibiotic therapy should be arranged to assist management of localised infection. If the condition fails to resolve or presents as gross O/C with pain, infection and / or hypergranulation tissue, partial or total nail avulsion should be considered as first line treatment.

Essential Standard
Consultant advice should be taken on ingrown nails (O/C) if the patient is being managed with a biologic therapy and where there are signs of clinical infection and or the need for nail surgery

Before undertaking nail surgery, a thorough assessment should be carried out (as per local requirements) and informed consent obtained.

It is advised that **all** patients with RA undergoing nail surgery (regardless of their medical management) should have a written agreement by their consultant or GP obtained by the podiatrist planning to carry out the procedure.

The final decision to carry out nail surgery should take place on the day it is planned and cancelled if there are any changes in general or foot health or medication that may have implications to the procedure or post operative healing.

Prior to any decision regarding nail surgery it may be useful to consider the following:

- ESR and CRP should be checked prior to surgery to check current disease activity
- The trauma of a local anaesthetic and nail surgery on a patient with active disease can increase the risk of vasculitis progressing to gangrene.
- Raynauds phenomenon is characterised by an abnormal vasospastic response of the digital arterioles to emotional or temperature changes. Nail surgery should never be attempted during a vasospasm as the local anaesthetic stays in place longer acting as a partial tourniquet. It may be advisable to carry out the surgery in the warmer summer months
- Prostocycline infusion may be necessary to maximise the circulation to the area
- Patients taking immuno-suppressive drugs may require prophylactic antibiotics and possibly suspension of their therapy. Consultant advice should be sort as necessary.
- The patient's medication may need to be increased in preparation of the trauma to the body during the surgical procedure.
- The optimum time for surgery may be after the patient has had a disease flare up whereby close monitoring and altered medication has resulted in disease stability.
- The use of a tourniquet may not be advised for the whole time during surgery. Some consultants prefer that tourniquets are only used during phenolisation of the nail matrix.

This guidance is not intended to replace any local trust nail surgery policy or protocol which should be followed accordingly.

6.6 Management of Foot Ulceration

It is likely that ulcers in Rheumatoid Arthritis (RA) are multifactorial in origin and these factors may contribute to the poor rates of healing. Foot ulcers occur frequently on the dorsal aspect of hammer toes and plantar aspect of the MTP joints (Firth 2008) Foot ulceration can be recurrent, multiple sites are common with slow time to achieve healing which can pose risk of infection (Siddle 2011)

Arterial disease as a factor contributing to foot ulceration has a higher incidence and prevalence in RA (McEntegart et al 2001). Traumatic ulceration, secondary to foot or ankle deformities may be made worse by poorly fitting shoes and/or sensory neuropathy which is associated with RA. Immunosuppressive therapy (especially corticosteroids), poor nutrition (common in long standing RA) and active RA (Siddle 2012a) may also contribute.

The role of cutaneous vasculitis in the aetiology of ulceration can be difficult to determine in the feet. It is important to look for other clinical evidence of systemic vasculitis such as nail-bed infarcts, splinter haemorrhages, mononeuritis multiplex. Systemic rheumatoid vasculitis is a rare but serious extra – articular consequence usually occurring in longstanding RA patients or patients with refractory RA (Murosaki 2012)

The aim of ulcer management is to create the best environment for healing to occur and to minimise adverse factors that delay the healing process and patient comfort.
The factors are:-

- Existing disease/medication
- Poor nutrition
- Poor patient compliance with treatments and advice
- Inappropriate management of the ulcer.

Essential Standard
Optimum ulcer management can only be achieved by a holistic and integrated multi-disciplinary team approach

The foot assessment should be structured and detailed including vascular, neurological and foot structure/function assessments. Identification of risk factors such as poor nutrition, smoking and contributory factors such as ill-fitting footwear is vital as these are potentially

modifiable. Ideally ESR, platelet counts, blood glucose and FBC should be checked and X-rays may also prove valuable in the management of foot ulceration.

Aims of Treatment:

- Keep free from infection / relieve pain
- Prevent deterioration / improve foot function
- Promote healing / establish wound closure
- Prevent reoccurrence / maintain tissue viability

Treatment

- Assessment of the ulcer i.e. type, location, duration, size.
- Debridement of the ulcer if necessary
- Investigations as appropriate e.g. x-ray, wound swab if clinical infection is suspected.
- Management of any infection according to local policies
- Antibiotics via GP/consultant if required
- Suitable dressings according to type of ulcer – see local Trust Protocols.
- Pressure relief and/or provision of orthoses if indicated
- Footwear assessment with appropriate action including advice, adaptation and referral to orthotist if required.
- Referral to consultant/GP/multi-disciplinary team member.
- Patient education / involvement in the management of their condition.
- Advise consultant / rheumatology team of ulcer / infection, particularly if the patient is managed with a biologic therapy

Essential Standard

Contact the patient's consultant / rheumatology nurse **IMMEDIATELY** if the patient is being managed with Biologic therapy and develops an ulcer and/or infection.

6.7 Steroid Injection Therapy

The structures of the foot and ankle in RA are particularly susceptible to inflammation and are amenable to both diagnostic and therapeutic injection of steroid. This therapy allows for specific targeting of localised joints which may be symptomatic even though the general disease process is controlled by oral medications. Therefore, the main indication for use of therapeutic injection therapy is for active joint inflammation and pain relief but only in the absence of sepsis.

Essential standard Consider steroid injection therapy for targeting localised, inflamed joints and soft tissue structures when the general disease is controlled (but only in the absence of sepsis).

Hay et al (1999) found that the close proximity of joints in the foot can make accurate *clinical* localisation difficult and guided injections using ultrasound are recommended where possible. The use of injections can also be diagnostic if local anaesthetic is used allowing for identification of problematic structures (Helliwell et al 2007).

Administering steroids via the intra articular or localised soft tissue approaches has advantages over oral use of steroids. Typical systemic side effects seen with steroids are reduced and improvement can be rapid. Ward et al (2008) found improvement following corticosteroid injection up to and including 6 months post injection.

Common sites for injection include the ankle joint, subtalar joint, first metatarso-phalangeal joint, interphalangeal joints, the plantar fascia, interdigital spaces, the tarsal tunnel, retro-calcaneal bursae and tendon sheaths of the peroneal and posterior tibial tendons.

The choice of type of steroid used (long or short acting), +/- local anaesthetic is lacking and depends on individual consultant choices, local policies and availability. Commonly used steroid preparations include Methylprednisolone 10-60mg, Triamcinolone 10-40mg and Hydrocortisone 25-50mg depending on site of injection. Local anaesthetics used include Lidocane 1%, 2% or Bupivacaine 0.25%, 0.5%.

The benefit gained from injection therapy depends on a number of factors:

- Correct diagnosis of the presenting complaint

- Appropriateness of injection therapy as treatment option
- Degree of inflammation
- Accurate placement of the injection
- Type of steroid used
- The amount of rest following the injection
- Correction of any structural deformity using orthoses

All these factors contribute to both the benefit and duration of benefit from injection therapy. Jones et al (1993) found that clinical response was closely associated with accuracy of injection placement. In the foot, accurate placement is sometimes difficult and often injections are guided using x-ray screening or ultrasound (U/S). Without guidance, accuracy of placement depends purely on the skill of the practitioner. Using x-ray guidance often leads to delay in performing the injection and exposes the patient to radiation. U/S guidance is seen as the way forward and is likely to become more common as clinicians are trained in the modality and the technology becomes cheaper and more readily available (Brown et al 2004).

Essential standard
Injection therapy should be seen as an adjunct to conventional podiatric management in combination with attempts to correct any structural deformity using orthoses (Helliwell et al 2007)

As with any invasive procedure there are potential risks, which the referring practitioner needs to be aware of and the administering practitioner needs to consider before injection is carried out and discussed with the patient before informed consent is obtained.

There is believed to be a higher risk of post injection infection associated with injections in the foot and ankle. However, anecdotally, this risk is reported to be low if good aseptic techniques are adopted for any joint or soft tissue injection procedure. Soft tissue rupture, especially related to injections of the plantar fascia is also more likely following steroid injection (Beales et al 1999).

6.8 Foot Surgery

Whilst it is recognised that advances in the medical management of RA with biologic therapies has seen a reduction in the requirement for orthopaedic surgery, many patients with the disease will go on to develop problems with their feet and ankles that may require a surgical opinion. People with RA should be referred for an early specialist surgical opinion if any of the following do not respond to optimal non-surgical management

- Persistent pain due to joint damage or other identifiable soft tissue cause
- Worsening joint function
- Progressive deformity
- Persistent localised synovitis

(NICE guidelines 2009).

Reasons for surgical referral may include:

- Persistent pain, stiffness, synovitis in the foot or ankle joints, tenosynovitis or tendon ruptures, loss of function (Loveday et al 2012)
- Foot deformities causing restriction in mobility due to pain, or recurrent ulceration.
- Osteomyelitis / septic arthritis.
- It is generally accepted that referrals for surgical opinion should be considered for patients with RA when optimum conservative management has failed to bring their symptoms to an acceptable level. A potential exceptions is early synovectomy in severe disease, to prevent rapid joint destruction (Canseco K et al., 2011)

However, the patients reason for seeking surgery may be different with (Wilkinson and Maher, 2011) concluding that for the most part patients expect pain relief, improved mobility and improved shoe fitting, but a small number of patients also expect a cosmetic improvement. The potential outcomes of foot surgery need to be discussed prior to referral to orthopaedic services to ensure that expectations are realistic and patients can make an informed decision.

Essential Standard

Red Flags requiring urgent referral include

- Tendon rupture e.g. Tibialis posterior, Achilles Tendon
- Septic arthritis
- Suspicion of cancer affecting skin or bone

It is important to provide effective care for foot and ankle problems that persist in spite of improvements in disease management. Failure in non surgical care such as provision of orthoses and specialist footwear is often followed by surgical intervention with orthopaedic foot surgery accounting for one third of lower limb surgery in RA (Siddle et al 2011)

Conservative management (prior to surgical referral) should consider accommodative footwear, orthoses, steroid injections and a comprehensive individualised package of podiatry care. Backhouse et al (2011) in his study found that only 29% of the cohort had ever seen a podiatrist and suggested a lack of integration between foot care providers and raises questions about the timing of both conservative and surgical interventions. It is essential therefore that podiatrists link with orthopaedic services as well as integrating into Rheumatology/MSK services

In relation to surgical outcome Loveday et al (2012) describes the aims of surgery to be control pain, maintain foot and ankle function and prevent deformity, whilst Conaghan et al (1999) also adds the restoration of function with the overall aim being to maintain independent mobility thus improving quality of life. However, the aims of surgery need to be counterbalanced against the potential risks of:

- Infection (hence the need for monitoring and immediate access for management of the infection)
- Recurrence of deformity (hence patients need **re-assessment of foot orthoses following surgery)**
- Non – union Hence patients should be reassessed for further surgical intervention or continue to be managed conservatively)
- Neuro – vascular damage (hence patients need monitoring after surgery)

Essential standard
Patients will need reassessing for their footwear needs and the need for footwear following foot surgery

6.9 Outcome Measures / Screening Tools

An outcome measure is an evaluation tool; the intention is to use the tool to obtain a baseline measurement, before treatment and again after treatment, to ascertain how effective the treatment has been. Outcome measures are used in conjunction with standard clinical assessments and any more detailed investigations deemed necessary.

Traditional outcome measures/ evaluation tools, used in the management of the RA patient, such as DAS28, HAQ, HAD and OSRA, whilst indicating the status and effects of RA in the patient, do not include foot and ankle.

Commonly used foot specific tools such as the Foot Function Index (FFI) (Budiman-Mak et al., 2006), the Manchester Foot Pain and Disability Questionnaire (MFPDQ) (Garrow et al., 2000) and the Bristol Foot Score(BFS) (Barnett et al., 2005) are not RA specific.

As there is a high prevalence of significant foot and ankle problems in RA patients (Grondal et al., 2008); outcome measures which are both foot and ankle specific, as well as RA specific, are required to aid the management of the RA foot.

Darzi (2008) recommends the use of patient-reported outcome measures (PROMs), as a means of ensuring that the patients' view of their illness and treatments are central to our interventions. This recommendation has been re-enforced by the expectation that PROMS will become increasingly more important in decision making about NHS provision and funding (Health., 2010) and the Kings Fund report (Devlin and Appleby, 2010)

The most commonly used PROM in clinical practice is the 10cm visual analogue scale (VAS). This is a scale between 0= no pain, to 10= worst pain imaginable and is used to gauge a patient's perception of their pain at a given time. This can be applied to global pain and then specifically to foot pain as a simple way of indentifying the impact of foot pain as part of the overall picture.

However, it has been shown that the RA patient does not necessarily rate foot pain as the main defining issue with their feet; they are more likely to identify quality of life, the ability to walk and footwear choices as their biggest concerns, (Williams et al., 2007a, Williams et al., 2010, Otter et al., 2012). Therefore more relevant PROMS are needed, in addition to VAS, to capture this information.

A systematic review by (Walmsley et al., 2010) found only one RA disease specific PROM for the foot and ankle; the Leeds Foot Impact Scale (LFIS) (Helliwell et al., 2005). LFIS is only available via application to the author and is therefore not included in these guidelines.

(Walmsley et al., 2012) developed a new RA foot specific, validated PROM; the Salford Rheumatoid Arthritis Foot Evaluation (SAFE) Instrument. This contains 61 Questions in two sections; with the aim of accurately reflecting the RA patients' experiences to give a clinically meaningful measurement.

The Swindon Foot and Ankle Questionnaire' (SFAQ) (Waller et al., 2012) (Appendix 5) is a patient reported foot symptom tool. It is a simple but rapid way of screening for foot pathology rather than a tool to identify the physical and psychosocial impact of feet on the person consisting of 10 questions plus foot diagrams. Though not as comprehensive as the SAFE PROM, it is designed to be user friendly and the diagrams are a useful addition for the patient to identify their areas of concern.

Both the SAFE and SFAQ have been designed for the patient to complete prior to their appointment and the clinician to evaluate the score generated.

6.10 Audit

Clinical audit is a process which helps to ensure patients and service users receive the right treatment from the right person in the right way. It does this by measuring the care and services provided against evidence based standards and then narrowing the gap between existing practice and what is known to be best practice. Clinical audit should reflect national and/or local areas of concern and lead to improvements in the care provided. In the current climate audit can also show clinical commissioning groups that standards are been met as well as help drive business cases for development and investment in services.

The NWCEG – Rheumatology developed an audit tool in 2011 which can be used to audit current rheumatology service provision in relation to the foot health management of people with Rheumatoid Arthritis against available guidance and evidence standards at the time. The tool covers 4 areas:

- Service Provision
- Assessment
- Management
- Professional Development

If you would like a copy of the audit tool, please contact:

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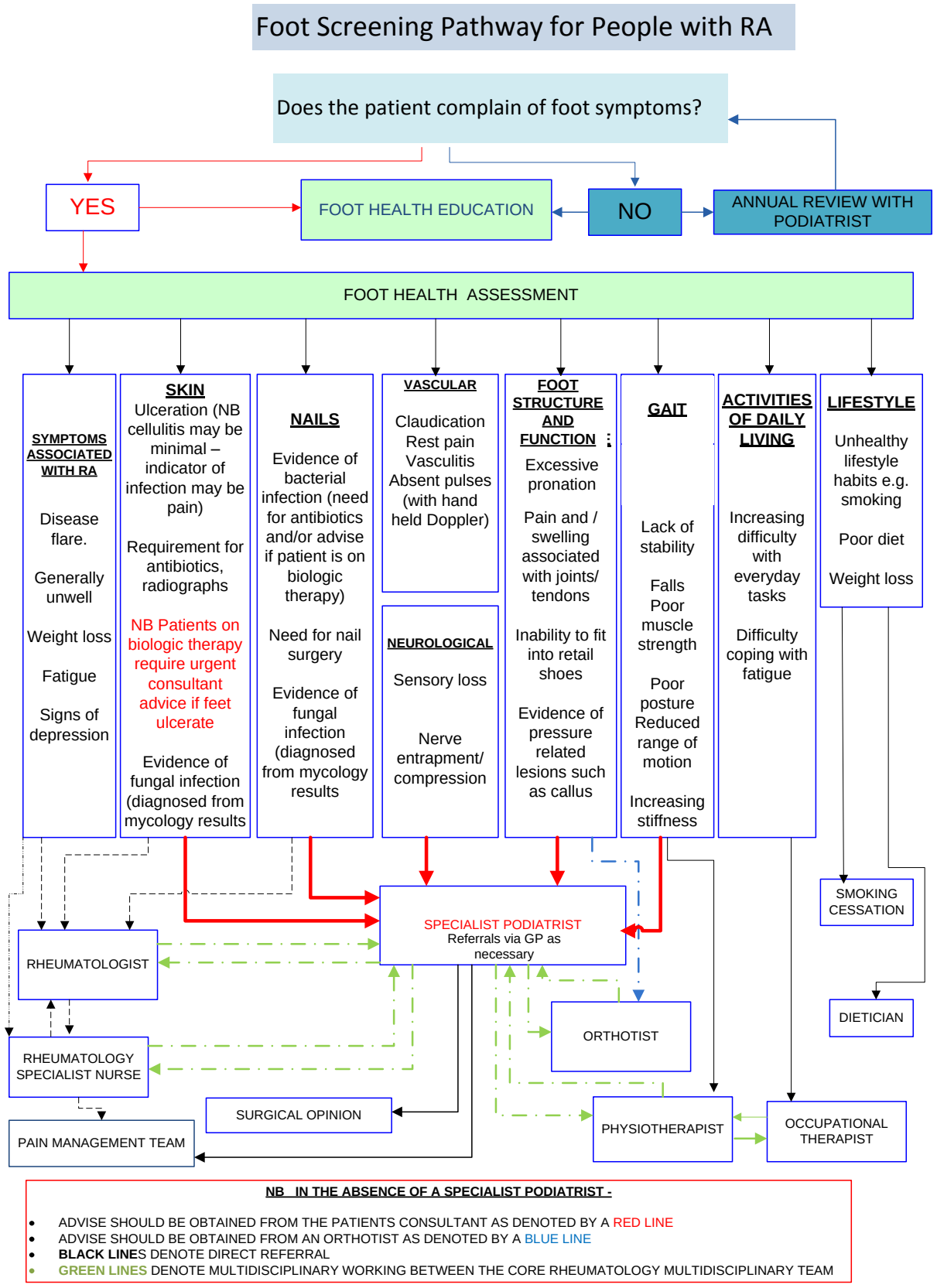
Appendix 1



Appendix 2

Example of Primary Assessment / Annual Screening Tool

Name: _____ NHS No: _____
Address: _____ Unit No: _____
D.O.B. _____
GP: _____ Consultant: _____
Diagnosis: _____ Duration: _____

Relevant Medical History: _____
Allergies: _____

1. Medication:
   NSAIDS: _____
   DMARDS: _____
   STEROIDS: _____
   BIOLOGIC: _____
   OTHER: _____

2. Vascular Assessment:

		Right	Left
Palpation	DP	palpable / non palpable	palpable / non palpable
	PT	palpable / non palpable	palpable / non palpable

Doppler Assessment:
DP _____
PT _____

Intermittent Claudication:	yes ☐	no ☐	yes ☐	no ☐
Rest Pain:	yes ☐	no ☐	yes ☐	no ☐

Other relevant information _____

3. Neurological Assessment:

	Right	Left
10g Monofilament:	normal / abnormal	normal / abnormal

Symptoms: sharp pain ☐ burning ☐ dull ache ☐ numb ☐ tingling ☐ other ☐

4. Foot Structure Assessment:
Previous foot surgery / injury: _____

Extra articular features:
N/A
Bursae sites _____
Nodule sites _____
Subluxed met heads _____
Foot position: _____
_____

Range of joint movement - NWB:	Right	Left
Ankle – knee extended	flexible / reduced / rigid	flexible / reduced / rigid
Ankle – knee flexed	flexible / reduced / rigid	flexible / reduced / rigid
Subtalar	flexible / reduced / rigid	flexible / reduced / rigid
Midtarsal	flexible / reduced / rigid	flexible / reduced / rigid
1st Ray	flexible / reduced / rigid	flexible / reduced / rigid
HAV stage	1 / 2 / 3 / 4 / 5	1 / 2 / 3 / 4 / 5
Lesser toe involvement	2 / 3 / 4 / 5	2 / 3 / 4 / 5

5. Nail / skin problems
   Nail pathology _____
   Skin pathology _____
   Callus sites _____
   History of ulceration yes ☐ no ☐ site _____
   Current ulcer yes ☐ no ☐ site _____

   Cause arterial / vasculitis / small vessel disease / pressure
   Treatment details _____
   _____

6. Current pressure relief / orthotic management
   Type: simple insole ☐ pre-mould ☐ functional ☐ TCI ☐
   NA ☐

   Footwear: retail ☐ stock ☐ modular ☐ bespoke ☐
   Appropriate yes / no
   Uses footwear sufficiently to benefit foot health yes / no
   If no why? Uncomfortable ☐ appearance ☐ weight ☐ other ☐

7. Mobility: _____

8. Social factors: _____

9. Presenting complaint: _____

10. Any other relevant information (inc any treatment given):

_____

11. Plan / Action / Collaboration:

Routine podiatry treatment	☐	X-ray / MRI / US	☐
Annual recall / self referral	☐	Bloods	☐
Wound care management	☐	Injection clinic	☐
Orthotic intervention	☐	Education	☐
Consultant Rheumatologist	☐	Orthopaedic opinion	☐
Rheumatology Nurse	☐	Vascular investigation	☐
MDT. Specify.....	☐	Orthotist / Footwear	☐

Other _____

Clinician's Signature: _____ Date: _____

Appendix 3

Footwear Suitability Scale (Nancarrow 1999)

1. Is the heel of your shoe less than 2.5cm (1")?	As the height of your heel increases the pressure under the ball of your foot becomes greater. Increased pressure can lead to callus and ulceration	
2. Does the shoe have laces, buckles or elastic to hold it onto your foot?	If you wear slip on shoes with no restraining mechanism, your toes must curl up to hold the shoes on. This can cause the tops of your toes to rub on your shoes leading to corns and calluses. Secondly, the muscles in your feet do not function as they should to help you walk, instead they are being used less efficiently to hold your shoes on	
3. Do you have 1cm (approx thumb nail length of space between your longest toe and the end of your shoe when standing?	This is the best guide for the length of the shoe, as different manufacturers create shoes which are different sizes. Your toes should not touch the end of the shoe as this is likely to cause injury to the toes and place pressure on the toe nails	
4. Do your shoes have a well padded sole?	Shoes should have supportive, but cushioned sole to absorb any shock and reduce pressure under the feet	
. Are your shoes made from material which breathes?	A warm, moist environment can harbour organisms such as those which cause fungal infections	
6. Do your shoes protect your feet from injury?	The main function of footwear is protection from the environment. Ensure your shoes are able to prevent entry of foreign objects which can injure the foot. If you have diabetes a closed toe is essential to prevent injury to the foot.	
7. Are your shoes the same shape as your feet?	Many shoes have pointed toes and cause friction over the tops of the toes which can lead to corns, callus and ulceration. If you can see the outline of your toes imprinted on your shoes, then the shoe is probably the wrong shape for your foot	
8. Is the heel counter of your shoe firm?	Hold the sides of the heel of your shoe between the thumb and forefinger and try to push them together. If the heel compresses, it is too soft to give your foot support. The heel counter provides much of the support of the shoe and must be firm to press	
If you have not put a tick in every box, your footwear is probably not protecting and supporting your foot as it should be		

Appendix 4

List of Essential Standards

Page 8

- Podiatrists are experts on foot disorders; both patients and rheumatologists can profit from the involvement of a podiatrist

Page 13

- All patients should be referred for foot health assessment within 3 months of diagnosis of RA

Page 14

- All people with RA and foot problems should have access to a podiatrist for assessment and periodic review of their foot health needs.
- All podiatry patients with RA should receive an initial structured foot assessment complete with appropriate outcome measures with onward referral to more specialised colleagues as required
- Referral to a Podiatrist is an integral part of the **early** management of RA patients.

Page 20

- Patient education should include foot health self management advice and if necessary demonstration, explanation of foot problems and their impact on the individual, information on general disease management and sign posting for future foot health needs

Page 21

- Patients with a diagnosis of RA should be assessed as soon as possible following diagnosis for structural problems with the lower limb and foot.
- All patients with RA and foot pain should be considered for foot orthoses and /or footwear advice, irrespective of disease duration.

Page 22

- Patients with established foot deformity should be assessed for accommodative foot orthoses and footwear advice/ specialist footwear

Page 23

- Functional foot orthoses should be provided where the tarsal joints are unaffected.
- Accommodative / cushioning orthoses should be provided for those patients with structural foot deformity, painful symptoms and activity restriction

Page 24

- Footwear assessment and advice should be given to all patients

Page 26

- Patients who are assessed as requiring therapeutic footwear should be informed of the potential benefits and limitations of this footwear (in respect of cosmesis) and allowed to decide on whether to be referred /provided with therapeutic footwear or not
- Referral for surgical opinion should be offered as an alternative to referral for therapeutic footwear

Page 28

- Callus should be assessed in relation to symptoms and causative factors before debridement is considered.
- The focus of callus management should always be the reduction of foot pressures with foot orthoses and suitable footwear first, before debridement is considered as a safe or unsafe intervention

Page 30

- Fungal infections (of the nail and skin) must be investigated and treated. If left untreated they can lead to ulceration and secondary bacterial infection.
- Discussion with the patients GP or consultant is advised before systemic treatment is instigated
- Consultant advice should be taken on ingrown nails (O/C) if the patient is being managed with a biologic therapy and where there are signs of clinical infection and or the need for nail surgery

Page 32

- Optimum ulcer management can only be achieved by a holistic and integrated multi-disciplinary team approach

Page 33

- Contact the patient's consultant / rheumatology nurse **IMMEDIATELY** if the patient is being managed with Biologic therapy and develops an ulcer and/or infection.

Page 34

- Consider steroid injection therapy for targeting localised, inflamed joints and soft tissue structures when the general disease is controlled (but only in the absence of sepsis).

Page 35

- Injection therapy should be seen as an adjunct to conventional podiatric management in combination with attempts to correct any structural deformity using orthoses

Page 36

- Red Flags requiring urgent referral include
  - Tendon rupture e.g. Tibialis posterior, Achilles Tendon
  - Septic arthritis
  - Suspicion of cancer affecting skin or bone

Page 37

- Patients will need reassessing for their footwear needs and the need for footwear following foot surgery

Useful Website resources

- Arthritis Research UK http://www.arthritisresearchuk.org
- Arthritis Research UK information resources regarding arthritis medication http://www.arthritisresearchuk.org/arthritis-information/drugs
- Arthritis Research UK video resources: Musculoskeletal ultrasound: a beginner's guide to normal peripheral joint anatomy. Issue 05-3. http://www.arthritisresearchuk.org/health-professionals-and-students/video-resources/msus/foot-scans.aspx
- British National Formulary (BNF) http://www.bnf.org/bnf/org
- British Society for Rheumatology http://www.rheumatology.org.uk/
- British Society for Rheumatology / British Health Professionals in Rheumatology (BHPR) http://www.rheumatology.org.uk/BHPR/
- Geertsma, T. Ultrasound Cases: Musculoskeletal Joints and Tendons, 6.8 Foot. Hospital Gelderse Vallei in Ede, The Netherlands and ALOKA Holding Europe AG in Zug, Switzerland. http://www.ultrasoundcases.info/category.aspx?cat=112
- Grassi W: Advanced rheumatology sonography. Università Politecnica delle Marche, Rome, Italy. http://www.e-sonography.com/rheuma/
- Healthy Footwear Group http://www.healthy-footwear-guide.com/
- National Rheumatoid Arthritis Society http://www.nras.org.uk/
- The British Footwear Association http://britfoot.com

Appendix 5

Swindon Foot and Ankle Questionnaire

Swindon foot and ankle questionnaire

During the past week, have your feet or ankles	Yes	No
(1) been painful?	☐	☐
(2) been swollen?	☐	☐
(3) made walking difficult?	☐	☐
(4) made standing up difficult?	☐	☐
(5) stopped you going to work?	☐	☐
(6) made other daily activities difficult?	☐	☐

	Yes	No
(7) Do your shoes rub the skin on your feet or ankles?	☐	☐
(8) Have you had callouses or hard dry skin?	☐	☐
(9) Have you had your footwear adapted or insoles made?	☐	☐
(10) Have you had surgery or are you due to have surgery for your feet or ankles?	☐	☐

If you have suffered or are suffering from foot or ankle pain, please indicate its location on the drawing