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BSR Guideline

British Society for Rheumatology RHEUMATOLOGY OXFORD

BSR Guideline

Executive Summary: The British Society for Rheumatology guideline for the management of foot health in inflammatory arthritis

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The guideline was developed in line with the British Society for Rheumatology (BSR) Guidelines Protocol (version 5.4, November 2023). A lay summary of this guideline can be found in Supplementary File S1, available at *Rheumatology* online.

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The Primary Care Rheumatology and Musculoskeletal Medicine Society

Keywords: foot, inflammatory arthritis, guideline, management.

Scope and purpose

Need for guideline

Foot problems are highly prevalent in adults, children and young people with inflammatory arthritis (IA), an umbrella term encompassing a range of chronic, autoimmune conditions characterized by joint inflammation. These include rheumatoid arthritis (RA), spondyloarthritis (SpA)—comprising psoriatic arthritis (PsA), axial SpA (ankylosing spondylitis), reactive arthritis, enteropathic arthritis and undifferentiated SpA—and juvenile idiopathic arthritis (JIA). Existing guidelines relevant to foot health in IA are outdated or lack specific guidance for treatments [1–3].

Objective

This guideline aims to provide patient-focused, evidence-based, expert recommendations for the management of foot health in IA in the UK.

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Target audience

- Rheumatologists, general practitioners, orthopaedic surgeons, allied health professionals (such as podiatrists, orthotists, physiotherapists and occupational therapists) and specialist rheumatology nurses involved in the management of people with foot problems in IA, in primary care and community, secondary and tertiary care settings.
- People living with foot problems in IA and their carers.
- Clinical commissioners.

Areas the guideline does not cover

- Surgical management.
- Treatment of traumatic foot injuries.
- Systemic drug therapies.

Scope of guideline

Nineteen clinical questions (Table 1) were developed through consensus between GWG members to guide a systematic literature review, as published previously [1]. The guideline covers foot problems (including pain, deformity, nail and skin pathologies, ulceration, peripheral arterial disease and neuropathy) in people with RA, SpA and JIA. Throughout the guideline, the terms 'foot health' and 'foot problems' refer to the entire foot and ankle complex.

Methods

The systematic review underpinning the guideline was registered in PROSPERO (ID CRD42023423109). The search strategy is included in Supplementary Table S1, available at *Rheumatology* online. Guideline development followed the BSR Guidelines protocol using GRADE methodology to determine certainty in the evidence and strength of recommendation (SOR). The level of certainty in evidence (LOE) was determined as high (A), moderate (B) or low/very low (C), reflecting the confidence in the estimates of benefits or harm. Recommendations were categorized as strong (1) and in favour of an intervention when the benefits clearly outweigh the risks (or vice versa for recommendations against), or weak (2) when risks and benefits are more closely balanced or where they are more uncertain. The wording of each recommendation was agreed by all members and subjected to a vote for strength of agreement (SOA) on a scale of 1–100 (no to complete agreement). Evidence tables are presented in Supplementary Tables S2–S19, available at *Rheumatology* online. The guideline is expected to be updated after five years.

Table 1. Key clinical questions

	Question
Q1	In adults or children and young people with suspected or confirmed IA, what clinical assessments should be undertaken when assessing foot health and disease activity, and how often?
Q2	In adults or children and young people with suspected or confirmed IA, what imaging should be requested when assessing foot health, and when should imaging be requested?
Q3	When should adults or children and young people with suspected or confirmed IA be referred to specialist foot services, e.g. podiatry?
Q4	In adults or children and young people with foot problems in IA, what personalized care (e.g. support for self-management, activation, shared decision-making and culturally-sensitive education) relating to foot health, and considering a person's wider biopsychosocial health determinants, should be provided and when?
Q5	In adults or children and young people with foot problems in IA, are orthotic devices effective, when are they indicated and which types of orthotic devices are effective?
Q6	In adults or children and young people with foot problems in IA, what types of footwear are effective?
Q7	In adults or children and young people with foot problems in IA, what frequency, intensity, type and time (duration) of exercises, gait rehabilitation and electrophysical therapies are effective?
Q8	In adults or children and young people with common toenail pathologies in IA, what conservative treatments are effective, and when should abnormal nails be surgically removed?
Q9	In adults or children and young people with common skin pathologies (e.g. callus) in IA, what treatments are effective?
Q10	In adults or children and young people with foot ulceration in IA, including infected foot ulcers, what treatments are effective?
Q11	In adults or children and young people with foot problems in IA, are local corticosteroid injections safe and effective, and if so, when should these be offered?
Q12	When should local foot symptoms prompt a review of systemic disease control in adults or children and young people with IA?
Q13	In adults or children and young people with foot problems in IA, when should a surgical referral be considered?
Q14	In patients requiring foot and ankle surgical procedures, including nail surgery, should biologics/DMARDs be stopped, when should they be stopped and for how long?
Q15	How often should foot health be reassessed in adults or children and young people with IA?
Q16	In young people with IA who are transitioning from paediatric to adult care, how should foot health be incorporated?
Q17	In adults or children and young people with foot problems in IA, what is the clinical effectiveness of physical activity?
Q18	In adults or children and young people with foot problems in IA who smoke, what is the clinical effectiveness of giving up smoking?
Q19	In adults or children and young people with foot problems in IA who are overweight or obese, what is the clinical effectiveness of weight loss?

The guideline

Recommendations for assessment and diagnosis

Assessment

1. In adults, children and young people with suspected or confirmed IA, questions relating to foot symptoms should be asked at each visit and, if appropriate, clinical examination of the foot should be undertaken, including disease activity, deformities, foot posture, musculoskeletal function, gait assessment, footwear, range of motion, vascular and neurological status, and skin and nail pathologies. SOR: 1; LOE: B/C; SOA: 92.

Rationale

The SOR is based on cross-sectional studies and expert consensus. Clinical assessment should be patient-centred and guided by symptoms and concerns; foot symptoms should prompt a detailed assessment of disease activity, including

palpation of the foot joints for localized swelling and tenderness. There is weak evidence from cross-sectional studies for the specificity of the MTP joint squeeze test to identify synovitis in patients with suspected IA, but the test has been shown to lack sensitivity [4–6]. Foot posture, deformities, gait, range of motion, skin, toenails, and neurological and vascular status should be assessed, and footwear/insoles physically examined.

In children and young people with IA specifically, age and developmental stage should be considered. Foot joints should be assessed as part of Juvenile Arthritis Disease Activity Score-71 (JADAS-71) [7] and paediatric Gait Arms Legs and SPine (pGALS) screening [8].

Imaging

2. Health professionals managing adults, children and young people with suspected or confirmed IA should have access to appropriate imaging (including X-ray, ultrasound (US), computed tomography (CT) and magnetic resonance imaging (MRI)) to assess foot health, to inform clinical management. SOR: 1; LOE: B/C; SOA: 99.

Rationale

The SOR is based on cross-sectional, cohort and case-control studies, and expert opinion. X-ray, CT, US or MRI may be most appropriate depending on the clinical scenario. MRI is considered the reference standard modality for imaging synovitis and tenosynovitis in IA, and is more sensitive than conventional radiographs for the detection of inflammation [9]. To assess foot health specifically, there is weak evidence for the use of MRI and US [10–12]. Anyone who performs US should undertake a recognized formal training programme [13]. Recommendations relating to imaging in other IA guidelines should be considered [3, 14–16].

Referral to specialist foot services

3. In adults, children and young people with foot problems in IA, prompt referral to specialist foot services, e.g. podiatry, should be considered at any stage of the disease course where they impact on activities of daily living, participation and quality of life. Foot problems include but are not limited to pain, joint damage, deformity, risk of ulceration and/or footwear difficulties. SOR: 1; LOE: C; SOA: 98.

Rationale

In this context, specialist foot services refer to foot services with experience of managing foot problems in people with IA such as podiatry, orthotics or orthopaedic surgery. The SOR is based on expert opinion and indirect evidence from qualitative studies [17–19].

Recommendations for treatment strategy

Personalized care

4. Individually tailored, culturally sensitive foot health education and support for self-management should be offered to adults, children and young people with IA, and their family members and carers, at diagnosis and on an ongoing basis. SOR: 1; LOE: C; SOA: 97.
5. Education and self-management support could be offered by any member of the rheumatology MDT. SOR: 1; LOE: C; SOA: 95.
6. Information could include how IA and medications affect the feet, advice about skin and wounds, nail care, footwear and/or physical activity, exercise and pacing, self-management advice, signposting to additional sources of support, who to contact about foot problems, and the role of podiatrists and orthotists. SOR: 1; LOE: C; SOA: 99.

Rationale

The effectiveness of foot health education and self-management support in IA has not been formally assessed. One randomised controlled trial (RCT) comparing a self-management program for foot health against usual care in participants without any systemic conditions demonstrated better foot disability scores in the self-management group, with similar cost-effectiveness [20]. Qualitative studies and surveys [21–23] highlight a preference of people with IA for receiving foot health education shortly after diagnosis and insufficient provision of foot health education. Foot health advice and self-management support should be discussed at diagnosis and reinforced at follow-up appointment by any member of the rheumatology multidisciplinary team (MDT), following the NICE guideline for shared decision-making [24]. Additionally, health professionals should be sensitive to a person's cultural identity or heritage and the beliefs and conventions that might be determined by this, when providing information [25].

Orthotic devices and footwear

7. Adults, children and young people with foot problems in IA should have access to customized orthoses to reduce pain and improve function, recommended or prescribed by a health professional. A customized orthosis can comprise a fully bespoke device or a modified prefabricated orthosis tailored to meet the needs of the patient. SOR: 1; LOE: B/C; SOA: 99.

Rationale

The GWG agreed that a prefabricated orthosis is a device that has been mass-produced to a generic foot shape; this is in contrast to a custom-made or fully bespoke orthosis which is specifically manufactured to the shape of an individual's foot. The customized orthosis referred to here is any device that has been tailored, adapted or modified to meet individual needs (including a prefabricated device that has been selected following assessment by a health professional with expertise).

The SOR is based on systematic reviews and meta-analyses indicating that customized foot orthoses may be beneficial in reducing foot pain, improving function and decreasing plantar pressure in adults with RA [26–28]. NICE also recommended that functional orthoses should be available for adults with RA if indicated [3]. There is weak evidence for the effectiveness of foot orthoses for children with IA [29, 30]. Accessibility and cost should be considered. Prefabricated orthoses are readily available and can usually be provided instantly, whereas bespoke orthoses often require multiple visits. Limited data suggest prefabricated orthoses are more cost-effective [31].

8. Therapeutic footwear may be effective at reducing pain and improving function in adults, children and young people with foot problems in IA. SOR: 2; LOE: C; SOA: 97.
9. The acceptability of therapeutic footwear for adults, children and young people with foot problems in IA should be taken into account. SOR: 1; LOE: C; SOA: 92.
10. A shared decision-making approach should be adopted to inform acceptability and may include factors such as comfort and fit, style, fastening mechanism, weight of the footwear, seasonality and cultural sensitivity. SOR: 1; LOE: C; SOA: 98.

Rationale

Two systematic reviews found limited evidence that therapeutic footwear, such as extra-depth and extra-width off-the-shelf shoes, or custom-made footwear, improves outcomes in people with RA [32, 33]. NICE guidance recommends therapeutic footwear should be available for adults with RA [3]. Adults, children and young people with IA without significant foot deformity should be supported to self-manage foot symptoms with appropriate commercially available footwear (e.g. footwear with adequate width and depth, arch support, a firm heel counter and a fastening mechanism). Acceptability of custom-made footwear can be limited by poor fit, aesthetics, shoe weight and comfort, which can be addressed by patient involvement in the design [34]. The NICE guideline for shared decision-making should be considered in the context of footwear provision and advice [24]; adults, children and young people with IA should be involved in decisions about therapeutic footwear, and choice of footwear should take into consideration their individual preferences, beliefs and values.

Targeted exercises, gait rehabilitation and electrophysical therapies

11. Individually tailored exercises should be offered to adults, children and young people with foot problems in IA, if indicated after a comprehensive holistic assessment (see Recommendation 1). SOR: 1; LOE: C; SOA: 96.

The role of targeted exercises for foot problems in IA has rarely been formally evaluated in clinical studies [35]. The SOR is based on expert consensus. There is currently insufficient evidence to recommend the use of electrophysical therapies (e.g. extracorporeal shockwave therapy, low level laser therapy) for adults, children and young people with foot problems in IA.

Nail and skin care

12. In patients without diabetes or suspected ulceration, callus debridement should not be routinely offered in isolation; additional treatments (e.g. education and self-management advice, foot orthoses, footwear, emollients) should be used. SOR: 1 (against); LOE: C; SOA: 98.

Rationale

Two RCTs concluded that sharp scalpel debridement had no benefits over sham debridement in adults with IA [36, 37]. In a small prospective cohort study ($n = 8$), treatment effect was lost by seven days [38]. The rationale for adjunctive treatments are discussed under Recommendations 4–10 and 13. No studies have been undertaken in adults with other types of IA, or children and young people with IA. GWG members with podiatric expertise agreed that inflammatory callus margins in PsA should not be debrided. In the case of suspected ulceration, and in people with diabetes, sharp scalpel debridement of overlying callus should be performed to reveal the size and nature of the ulcer, assess for infection and promote healing [39]. Additionally, callus is a risk factor for foot ulceration in people with diabetes, and sharp scalpel debridement should be performed [40]. Sharp debridement, when required, should only be undertaken by competent practitioners with specialist training.

13. Emollients are safe and effective, and can be offered for the relief of dry skin affecting the foot in IA. SOR: 1; LOE: C; SOA: 96.

Rationale

The effectiveness of emollients for foot health in IA has not been formally evaluated in clinical studies. Emollients are widely recommended for other conditions (e.g. in eczema and diabetes) [41], and risk of harm is low. Consideration should be given to other physical problems experienced by some people with IA, such as hand problems, which could make the application of emollients difficult.

14. All adults or children and young people with IA should be offered personalized nail care advice, including footwear advice, to help prevent and/or treat common toenail pathologies. People should be advised when to access foot health care, e.g. for ingrowing toenails, wounds and infections, and how to do this. SOR: 2; LOE: C; SOA: 99.
15. Systemic control of disease activity is the aim of treatment, including joint disease and extra-articular manifestations, e.g. skin and nail disease in psoriatic arthritis. Foot skin and nail health should be assessed and managed in the context of systemic disease. SOR: 1; LOE: C; SOA: 98.
16. In the presence of recurrent pain or infection, surgical removal of nails can be considered. SOR: 2; LOE: C; SOA: 96.

Rationale

Consideration should be given to the appropriateness of self-management of toenail pathologies, and when and how to access specialist foot services (see Recommendation 3).

In PsA, where multiple nails are pathological, systemic rather than local treatment should be considered and dermatology input should be sought. Widespread psoriasis, or foot psoriasis that is unresponsive to topical treatment, should prompt a review of systemic disease management [42].

Nail surgery should be considered for toenail pathologies that do not or are thought unlikely to resolve with conservative care. When infection is present, antibiotics should be considered and DMARD/biologic therapy suspended [43, 44], with input from the rheumatology MDT. There is no evidence for one type of nail avulsion surgery procedure over another in IA or generally [45]; matrixectomy should therefore be considered on a case-by-case basis.

Wound management

17. Adults, children and young people with IA and foot ulceration should be able to access an appropriate health professional(s) promptly. SOR: 2; LOE: C; SOA: 99.
18. Assessment of adults, children and young people with IA and foot ulceration should include causation, infection, wound severity and disease activity, in the context of their IA, comorbidities and their treatment. SOR: 2; LOE: C; SOA: 99.
19. Wound management could include wound cleansing, removal of devitalized tissue, application of topical medicinal products or dressings, or offloading, as appropriate. Systemic treatment for infection and/or IA disease activity should be considered. SOR: 2; LOE: C; SOA: 98.

Rationale

Recommendations are based on evidence for managing foot ulceration generally and expert opinion. Patients with or at high risk of foot ulceration should be advised how and when to access a health professional. Patient education regarding how to access a health professional is pertinent. Timely communication between the health professional who first identifies a wound and the rheumatology MDT ensures ulceration is not managed in isolation. Foot ulcer management principles include offloading, restoration of tissue perfusion, treatment of infection, treatment of comorbidities, local ulcer care, patient education and ulcer prevention [46]. Collection of a wound sample can be considered where infection is clinically suspected. Stopping conventional synthetic DMARDs (csDMARDs) and biologic DMARDs (bDMARDs) in the presence of infection should be discussed with the rheumatology MDT, with further guidance available in the BSR guidelines for bDMARD safety [43] and prescribing and monitoring of non-biologic DMARDs [44].

Targeted injection therapy

20. Local corticosteroid injections are safe and effective, and can be offered as an adjunct for the relief of inflammation and pain in the foot in IA. Image guidance using radiology or ultrasound should be considered and available if needed. SOR: 1; LOE: C; SOA: 98.
21. Children and young people undergoing local corticosteroid injection should be offered access to general anaesthesia or conscious sedation in a suitable paediatric environment. SOR: 1; LOE: C; SOA: 99.

Rationale

Weak evidence for the effectiveness of US-guided injections on foot pain reduction in adults with IA has been demonstrated in a systematic review of four uncontrolled trials and one comparative trial [47]. The GWG accepted the effectiveness of palpation-guided and US-guided injections to reduce pain and inflammation. Whilst evidence of the effectiveness of US-guided over palpation-guided injections in the foot is lacking, US-guided injections theoretically allow more accurate needle placement, injection of structures that are difficult to access and avoidance of other structures. However, RCTs at other joint sites do not show convincingly that US-guided injections are more effective than systemic [48] or palpation-guided corticosteroid injections [49] or sham lavage plus corticosteroid [50].

There is weak evidence from observational studies of improved outcomes following local intra-articular corticosteroid ankle and subtalar joint injections in children and young people with JIA [51]. Conscious sedation provides safe and effective short-term relief of pain and anxiety during intra-articular injections and can be considered in children and young people with IA [52]. General anaesthesia may be more suitable in certain cases (e.g. younger children or for multiple injections) [2].

Local corticosteroid injections are well-tolerated. Serious side-effects are rare [47] Administration is standard practice in other joints in IA (e.g. knees, shoulders), with evidence from RCTs for improved outcomes [53, 54].

Reviewing systemic disease control

22. In adults, children and young people with IA, the presence of inflammatory foot pain, new or increasing early morning stiffness, and/or suspected joint/tendon swelling should raise the possibility of active systemic disease and prompt a review of systemic disease control. SOR: 1; LOE: C; SOA: 100.

Rationale

The ankle and foot joints are particularly susceptible to damage in IA. The SOR is based on expert opinion and evidence for systemic disease control reviews in IA generally [2, 3, 42]. The presence of inflammatory foot pain, new or increasing early morning stiffness and/or suspected joint/tendon swelling are indicators of poor disease control. Pain worse after rest (especially overnight) and eased by activity raises the possibility of active inflammation. Adults, children and young people with IA should be advised who and how to contact if they have concerns about worsening symptoms.

Surgical referral

23. In adults or children and young people with foot problems in IA, prompt surgical referral should be considered where there is pain, risk of ulceration, joint damage and/or deformity at the forefoot, midfoot or hindfoot, and usually when multidisciplinary non-operative care has failed or is considered unlikely to be successful. SOR: 2; LOE: C; SOA: 99.

Rationale

There is no direct evidence concerning when to consider surgical referral. First-line conservative management is usually appropriate. Earlier referral for surgical opinion should be considered in certain cases, e.g. significant pain or deformity, whilst taking into account that commissioning and pathways vary nationally. Inability to wear off-the-shelf footwear may also be considered an indication for surgery. In children and young people with foot problems in IA, surgical referral is less commonly indicated.

Stopping biologics/DMARDs prior to foot and ankle surgical procedures

No specific recommendations were made regarding stopping biologics/DMARDs in patients requiring foot and ankle

surgery, including nail surgery; existing BSR guidelines [43, 44] should be followed and advice from the rheumatology MDT can be sought.

Follow-up and monitoring

24. In adults, children and young people with confirmed IA, questions relating to foot symptoms should be asked at each visit and, if appropriate, clinical examination of the foot should be undertaken, including disease activity, deformities, foot posture, musculoskeletal function, footwear, gait, range of motion, vascular and neurological status, and skin and nail pathologies. SOR: 1; LOE: B/C; SOA: 92.

Rationale

See Recommendation 1.

25. In young people with IA who transfer from paediatric to adult care, a multidisciplinary approach to foot health should be considered a core element of the transition process. SOR: 2; LOE: C; SOA: 98.

Rationale

There is no direct evidence for the inclusion of foot health in transitional care; the SOR is based on expert opinion. To enhance transitional care, young people with IA should be appropriately signposted to information relating to foot health, and made aware of how to access foot health services, at each visit. European Alliance for Associations for Rheumatology (EULAR)/Paediatric Rheumatology European Society (PReS) [55] and National Confidential Enquiry into Patient Outcome and Death (NCEPOD) recommendations [56] should be considered.

Recommendations for secondary prevention

Physical activity

26. Adults or children and young people with foot problems in IA should be encouraged and supported to meet physical activity guidelines for people with IA. This may include regular assessment and management of foot health needs, including appropriate footwear. SOR: 1; LOE: C; SOA: 98.

Smoking and weight loss

27. Adults or children and young people with foot problems in IA should be encouraged and supported to stop smoking where appropriate. SOR: 1; LOE: C; SOA: 99.
28. Adults or children and young people with foot problems in IA should be encouraged and supported to maintain/reduce weight where appropriate. SOR: 1; LOE: C; SOA: 99.

Rationale

There is no evidence for physical activity, smoking or weight loss specifically in relation to foot health in IA. Evidence from existing literature for IA in general demonstrates that physical activity is safe and beneficial, and improves pain, function, fatigue and quality of life, and potentially modifies disease [57]. The management of foot pain among people who are trying to become more active should be considered using a personalized approach, e.g. non-weightbearing physical activity or the use of customized orthoses/therapeutic footwear. Regular assessment and management of foot health needs will therefore help people to meet their activity needs. The negative effects of smoking and BMI on inflammation and disease activity in IA are well established [58, 59].

Current EULAR recommendations for physical activity in people with IA [60] and for lifestyle behaviours and work participation to prevent progression of rheumatic and musculoskeletal diseases [61], and NICE guidelines for weight management [62] and RA management [3] should be considered. The NICE guideline relating to tobacco (preventing uptake, promoting quitting and treating dependence) is also applicable for people with foot symptoms in IA [63].

Summary and conclusions

This guideline highlights the lack of high-quality evidence available to inform the management of foot health in IA, with an absence of RCTs in most treatment areas. Recommendations made in this guideline are therefore predominantly based on expert consensus and low-quality observational studies. Definitive RCTs, with adequate sample sizes and long-term follow-up, are critical to determine the clinical- and cost-effectiveness of treatments for adults, children and young people with foot problems in IA (see recommendations for research in full guideline).

Supplementary material

Supplementary material is available at *Rheumatology* online.

Data availability

Data are available in the guideline and its supplementary material.

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