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LITERATURE REVIEW

The role of the multidisciplinary team in the management of psoriatic arthritis

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Abstract

Psoriatic arthritis (PsA) has a heterogenous clinical phenotype with manifestations in a number of different organs and systems. Whilst PsA is typified by enthesitis, synovitis and psoriasis (skin and nail); innate and adaptive immune system dysfunction often results in concomitant conditions. These include inflammatory bowel disease, uveitis, metabolic syndrome, metabolic bone disease and mental health issues. All of which have the potential to impact on quality of life, daily function, employment, family life and social activities. Through a collection of clinical vignettes, we describe the importance of multi-disciplinary and multi-speciality involvement in the care of people with PsA.

KEYWORDS

Crohn's disease, multi-disciplinary, multi-specialty, psoriasis, psoriatic arthritis, spondyloarthritis, ulcerative colitis uveitis

1 | INTRODUCTION

Psoriatic arthritis (PsA) is a member of the spondyloarthropathies (SpA) which are systemic conditions that may involve several different organs and body systems. A more precise and increasingly used term to describe these aetio-pathologically related conditions is immune mediated inflammatory disease (IMID). The term IMID better reflects the shared aetiopathogenesis, with altered innate and adaptive immune systems, converging to manifest in the enthesis, synovium, bone, skin, gastrointestinal tract, eye, cardiovascular and/or endocrine systems. These varied manifestations immediately recall the importance of a multi-disciplinary, multi-specialty team (MDST) approach.

2 | MULTI-DISCIPLINARY CARE

A variety of different healthcare professionals (HCP) can contribute to the multi-disciplinary (MD) care of patients with PsA. In most healthcare systems of the developed world, rheumatology doctors often lead the clinical team. Within the doctor team, there will be a single or several lead clinicians of consultant/attending grade, supported by rheumatology trainees, and in some circumstances rheumatology fellows; who have completed their core rheumatology training, and are gaining higher level expertise in the management of patients with PsA.

Clinical nurse specialists in rheumatology are usually the second largest group of HCPs caring for patients with PsA. There can be a wide skillset within this group, ranging from: those who monitor laboratory results as part of DMARD clinical governance; provide counselling and education to patients recently diagnosed with PsA or starting new treatment; independently examining patients and altering pharmacological management accordingly; protocolised or independent medical prescribing; performing joint and soft-tissue injection; to delivering relatively autonomous part-supervised clinical services. As with all new models of care, it is important to monitor clinical outcomes, patient safety, impact on related services and HCPs, and ensure that such models are not a false economy driven by short-term institutional or political goals.

Musculoskeletal physiotherapists may interact with patients with PsA at various stages of their clinical journey. Physiotherapists might notice that a patient presents with recurrent enthesitis and has skin psoriasis, thereby prompting a rheumatology consult or they may identify inflammatory back pain in association with psoriasis. After the diagnosis of PsA, physiotherapists provide important interventions to improve and/or recondition musculoskeletal strength, proprioception, range of movement, balance and core-strength training. Their techniques can help to manage the acutely painful joint and guide on adjuncts such as splints, braces and orthotics. Some physiotherapists provide complementary therapy such as acupuncture, deep tissue massage and hydrotherapy; where the buoyancy, resistance and warmth of the water can provide and permit a different quality of physiotherapy compared with land-based methods.

Occupational therapists have an important role within the MD team (MDT). They can be based in secondary or primary care, and with a varied role. Important contributions can include practical and verbal advice on: maintaining good musculoskeletal function (joint protection); use of electrical/mechanical aids to reduce harmful strain on the musculoskeletal system; aids and devices to help with function and safety at home, work and during hobbies; ergonomic adjustments at work or home; pacing activities and optimising energy to minimise lethargy and fatigue; and the care of young children and elderly parents. Some also provide advice on mindfulness, meditation and emotional well-being.

PsA can involve the foot and ankle in a variety of ways including synovitis of joints, enthesitis (particularly at the Achilles insertion and plantar fascia), dactylitis of the toes, tenosynovitis, bursitis and osteitis. In addition, clinical manifestations in the skin and nails may be evident. Bezza et al. reported that isolated foot symptoms can be the initial manifestation of the disease (Bezza et al., 2004). These symptoms included plantar heel pain, metatarsal pain with heel pain, dactylitis and involvement of the ankle and mid-foot. Podiatrists and other foot care professionals may be the first to be consulted by patients with PsA and are therefore uniquely positioned to make early recognition of this condition. Once the diagnosis of PsA is established, and the patient is in specialist care, podiatrists have an important role in managing the inflammatory and mechanical manifestations of PsA, including the provision of intra-articular steroids (usually ultrasound guided), skin and nail care, and orthotics.

Pharmacists are highly trained individuals, whose skills have been somewhat underutilised to date in the care of patients with PsA. Some examples of their newly expanding role might include: prescribing, escalating, switching and managing complications of advanced therapies; optimising advanced therapy use through the monitoring of serum drug levels and anti-drug antibodies; optimising the use of advanced therapy infusions across multiple patients; tapering of advanced therapies for patient preference, safety and economic reasons; leading originator to biosimilar switches in large cohorts of patients; sharing good clinical practice and harmonising clinical pathways across several specialties using similar synthetic and advanced therapies; and supporting the clinical team to navigate complex commissioning (payor, reimbursement) paradigms. As with clinical nurse specialists, there are some emerging models of advanced-skills pharmacists delivering relatively autonomous part-supervised clinical services. As mentioned above, the clinical and economic governance of newer models of care is very important.

The role of clinical psychologists in the care of patients with PsA has been limited to date. As we have progressively better understood the impact of PsA on mental health, and conversely the impact of mental health on PsA, including chronic pain syndromes and adherence/response to medication, the potential role for clinical psychologists has come to the fore. Few clinical PsA services still have the support of a clinical psychologist. Bottle necks in the training of clinical psychologists and demand from different clinical specialties has confounded matters. There is an emerging body of evidence, mainly from thematic and other forms of qualitative analyses that clinical psychologist-led methods such as counselling, cognitive behavioural therapy and motivational interviewing can improve patient experience, adherence to medication, more autonomous management of periods of high disease activity and other clinical outcomes. However, good quality medium- and long-term data on these endpoints remain sparse. As clinical psychologists have not been considered a core of the clinical rheumatology team to date, often special business cases must be proposed to secure funding for such services. It can be challenging to secure funding and identify suitably trained clinical psychologists (López-Medina & Moltó, 2020).

Dieticians have historically contributed to specialties such as endocrinology, gastroenterology and cardiology, and directly in primary care. There is increasing evidence of the interplay between elevated body mass index (BMI), incidence of psoriasis, progression of psoriasis to PsA, response to and persistence of DMARDs in PsA and the metabolic syndrome. There are various tiers of intervention for patients with an elevated BMI. In most healthcare systems, dietician input might be recommended in the first instance in patients with a BMI of 25–35. Sensitively and empathically raising the issue of being overweight, calorie control, variety of foods, portion size, comfort eating and regular eating habits can be both helpful and impactful (Jensen & Skov, 2013; Mahil et al., 2019; Puig, 2011).

All patients with PsA should have the opportunity to gain from and contribute to clinical research studies. It is known from clinical oncology, that centres contributing to research studies tend to have better clinical outcomes as measured by mortality and morbidity. A close relationship between the clinical service and research team is therefore important so that research staff can enrol patients with PsA and related conditions at various stages of their disease journey (diagnosis, initiation of treatment, stable established disease) and from other specialities, such as the psoriasis, inflammatory bowel disease (IBD) or ophthalmology clinics. In itself, this raises awareness of disease and the importance to screen for these related conditions.

3 | MULTI-SPECIALTY CARE

There are already several well-written and detailed review articles and primary research studies describing the various ways in which PsA is related to metabolic bone health (Clunie & Horwood, 2020), skin/nail psoriasis (Meier et al., 2020), Crohn's disease and ulcerative colitis (Di Jiang & Raine, 2020; Evans et al., 2021), inflammatory eye disease (Rademacher et al., 2020), mental health (Parkinson et al., 2020), chronic pain syndromes (López-Medina & Moltó, 2020), cardiovascular disease and metabolic syndrome (Karmacharya et al., 2020) and clinical outcomes (Redeker et al., 2020).

Regular MS meetings with colleagues caring for patients with related conditions such as psoriasis, IBD, ophthalmology and hepatology, can improve patient care, be educational and enjoyable. Such meetings are often multi-disciplinary and are therefore better termed MDST meetings.

MDST meetings with dermatology colleagues can offer several opportunities. Raising awareness of PsA in dermatology psoriasis cohorts, might permit a more systematic and regular dissemination of screening tools for PsA (such as the PEST, TOPAS, PASE, EARP) thereby identifying otherwise undiagnosed patients. Better quality care can also be offered to those with non-inflammatory disease such as osteoarthritis and chronic pain syndromes, through formal recognition of their condition and involving the MD team. Whilst national dermatology societies recommend regular screening for PsA, in clinical practice this does not happen frequently enough in primary or secondary care. In the rheumatology clinic, screening for related conditions may also be inconsistent.

Regular access to dermatology specialists allows discussion of non-psoriatic disease, such as lupus-like iatrogenic reactions, TNFi-induced palmar plantar pustulosis, opportunistic skin infections secondary to rheumatological immunosuppression, pyoderma gangrenosum, erythema nodosum, hydradenitis suppurativa, melanoma and non-melanoma skin cancers. Hydradenitis suppurativa is particularly important as it can respond to certain advanced therapies, such as TNFi, but not others. Thinking beyond the rheumatological indications for advanced therapies is important.

Emerging advanced therapies are often licensed for psoriasis before rheumatological indications. Working with colleagues in dermatology can sometimes allow early clinical experience with these therapies for rheumatological domains. Conversely, a breadth of JAKi have been licensed in rheumatology before dermatological indications such as atopic dermatitis and psoriasis. Early access experience can therefore be reciprocal. Figure 1 details the currently licensed advanced therapies for psoriasis, PsA and both indications.

In health care economies with rationing of lines of advanced therapy use, there might be scope to use more lines of advanced therapies, if prescribed for different indications.

Colleagues in other specialities have different approaches to screening for concomitant disease (e.g., NAFLD, HIV, hepatitis B/C and TB), monitoring for the occurrence of disease (HSV, TB, lupus) and prescribing (e.g., initiation and maintenance doses of methotrexate; and relative use of oral vs. subcutaneous methotrexate). Practices can vary between specialties, despite looking after populations with the same preponderance to these issues. Through conversation and shared experiences, one can iteratively improve clinical practice and perhaps harmonise approaches.

Whilst most of the conventional synthetic and advanced therapies tend to have a beneficial effect across the IMIDs, the target and mode of action may not always be beneficial. For example, the IL-17i class has been shown to exacerbate known Crohn's disease (Targan et al., 2016); which is particularly important if a patient with PsA, in whom the prevalence and incidence of Crohn's disease is higher than the general population, is initiated on an IL-17i. Given that several conventional synthetic and advanced therapies are cross-licensed for PsA and Crohn's disease, it would be far safer and beneficial for patients for the respective rheumatology and IBD teams to discuss in a MDST meeting before making changes.

3.1 | Clinical vignette 1

A 28 year-old hairdresser had been under the dermatology psoriasis team since a teenager. She had been either partially or

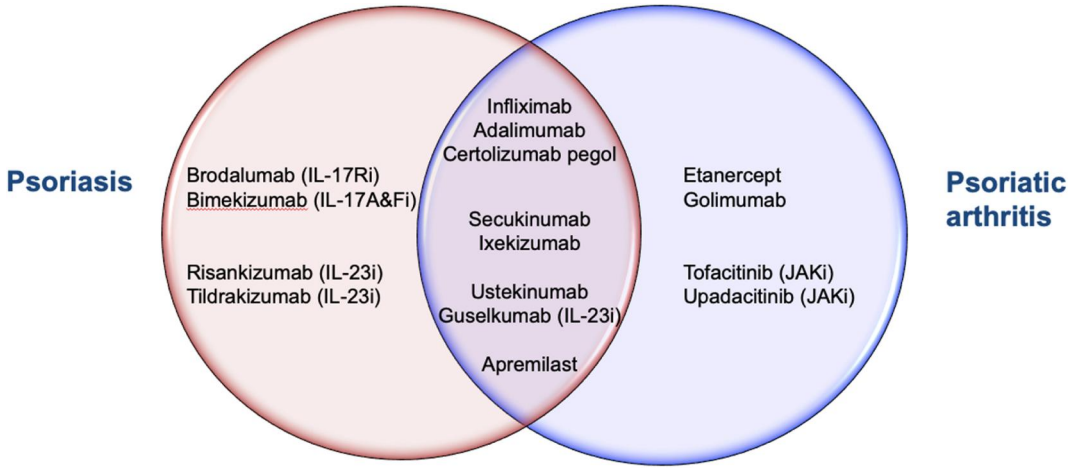

FIGURE 1 Currently licensed advanced therapies for plaque psoriasis, psoriatic arthritis and both indications

non-responsive to phototherapy ciclosporin, acitretin, UVB phototherapy, adalimumab and ustekinumab. Plaque psoriasis affected her body, face, genitals and nails. Affection of the high impact areas was very distressing for her. Affection of the nails impacted her occupation. Due to close working with the rheumatology team, she completed a PEST questionnaire every 1–2 years, and the most recent completion prompted rheumatology assessment, where she was found to have oligoarticular peripheral PsA, especially of her wrists, knees and ankle; impacting her occupation. The dermatology team proposed starting an IL-17i. However, on focussed questioning, she reported intermittent loose bowel motions (attributed in primary care to irritable bowel syndrome), recurrent mouth ulcers and her grandfather having multiple bowel surgeries at a young age, with a current ileostomy. She was referred to the gastroenterology team, who performed an ileo-colonoscopy that demonstrated macroscopic and microscopic evidence of Crohn's disease at the ileocaecal junction. Her case was discussed at both the psoriasis-PsA and IBD-SpA MDT meetings, and she was started on a p19-specific IL-23i by the dermatology team to address her psoriasis, peripheral PsA and Crohn's disease. At 6-month review, she had noticed a marked improvement in all areas, was better able to function at work, and reported an improvement in her relationships and intimacy.

The licensed dose of advanced therapies can vary between indications. For example, adalimumab may be prescribed at a dose of 40 mg every 2 weeks for PsA, but can be prescribed 40 mg weekly for both IBD and severe skin psoriasis. Higher weight-based doses and frequency of infliximab may be given for IBD than for PsA. More recently, secukinumab has been licensed as 300 mg every 2 weeks for patients with severe skin psoriasis and a body weight of >90 kg. Whilst RCTs sometimes evidence the differential efficacy of these regimes, licensed doses also consider cohort rather than patient-level safety signals and health-economics. Through MDST co-operation, flexible access to the variety of licensed doses can be of benefit to patients. Figure 2 details the currently licensed advanced therapies for IBD, PsA and both indications.

When the variety of advanced therapy options is more limited, for example, for IBD, compared to dermatology, there can be more incentive to optimise and best utilise the available treatments. IBD clinicians are more judicious using conventional synthetic agents (methotrexate and azathioprine) to improve efficacy and persistence of their chosen advanced therapies. They more regularly measure serum drug levels and anti-drug antibodies to guide dose escalation, switching to another advanced therapy or have frank discussions about medication adherence. Much can be learnt by observing these practices. Whilst we might debate that RCTs have shown no benefit of combination versus monotherapy in PsA and psoriasis (Mease et al., 2019), apart for skin outcomes, some registry studies have shown a benefit (Lindström et al., 2022). Why the immune system would behave differently in IBD and RA to PsA, axSpA and psoriasis is difficult to understand.

3.2 | Clinical vignette 2

A 46-year old lady with diagnosed with Crohn's disease in her 20s and with non-radiographic axial SpA aged 40 years. She has had secondary inefficacy to azathioprine, methotrexate, infliximab, adalimumab and ustekinumab for her Crohn's disease and SpA; despite being adherent to medications. She continued to suffer with persistent axial inflammatory symptoms with acute-on-chronic spondylitis and sacroiliitis confirmed on repeat MRI. Her Crohn's was only moderately active with mild changes on magnetic resonance enterogram and only slightly elevated faecal calprotectin levels. Her case was discussed at the IBD-SpA MDST meeting and given her extensive past treatment use, it was proposed that she start vedolizumab (locally acting luminal agent for Chron's disease) under the IBD team, and etanercept (TNFi) for her axial SpA under the rheumatology team. Apart from obesity and depression, she had no other comorbidities, had not been prone to infections to date and had all regularly recommended vaccinations. At her next IBD consult, her

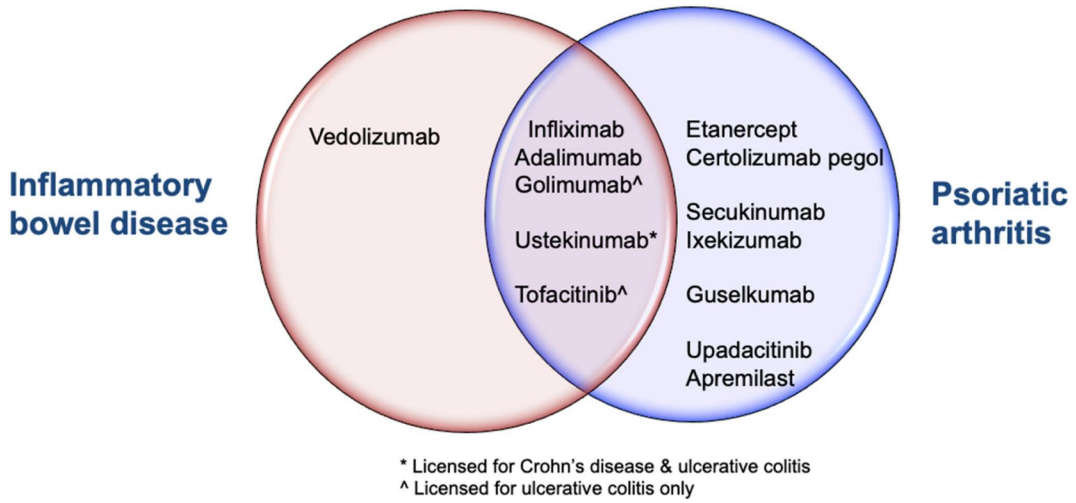

FIGURE 2 Currently licensed advanced therapies for inflammatory bowel disease (IBD), psoriatic arthritis and both indications

rheumatologist attended to co-consult. The benefits and risks of combining advanced therapies for two different indications were explained. Due to the higher risk of infection, she preferred to start half-dose etanercept. This was agreed, and she responded well for her axial SpA and Crohn's disease. After a year of combined advanced therapy use, she had not experienced any significant infection, so after discussing with her, etanercept was increased to full dose, to address her residual symptoms of axial SpA. A year later, she continues to do well.

Despite acute anterior uveitis (AAU) being a prevalent condition, and a high proportion of patients being refractory to topical and intra-orbital steroids, there is only once licensed advanced treatment in the form of adalimumab (TNFi). Depending on geography, adalimumab is generally only licensed for short term use for the treatment of AAU. MDST collaboration can permit long term use of advanced therapies for AAU, whilst considering the differential efficacy (non-TNFi agent not being efficacious) and safety (etanercept exacerbating AAU) of other advanced therapies in AAU (Rademacher et al., 2020).

Regular MDST meetings can serve as a reminder to screen for related conditions. For example, imaging of the GI tract to diagnose and monitor IBD, in the form of computerised tomography of the abdomen-pelvis, or magnetic resonance enterograms are being assessed for their utility in screening for axial SpA. A study by Gaffney et al. showed value for this purpose (*in press*). Another study by Evans et al. showed that MRE can be used to screen for axSpA and prompt formal rheumatology assessment (Evans et al., 2022). The Dublin Uveitis Evaluation Tool (DUET) study demonstrated the benefits to our patients of systematically screening for SpA in patients presenting to the ophthalmology department with AAU and other forms of inflammatory eye disease (Haroon et al., 2015).

3.3 | Clinical vignette 3

A 24-year old young lady with recurrent acute anterior uveitis (AAU) was referred to the rheumatology clinic as a DUET-type screening questionnaire had identified some musculoskeletal symptoms. She was found to have peripheral oligoarticular PsA with nail-only psoriasis. She had partial response to oral then subcutaneous methotrexate, despite the addition of sulfasalazine. She was still requiring regular topical and intra-orbital steroids for AAU. After discussion with the ophthalmology team, the rheumatology team added in adalimumab. Her PsA and AAU responded well within 3 months of use. However, 18 months later she was having recurrent flares of arthritis and eye disease. Her adalimumab serum levels were found to be low, but no anti-drug antibodies were identified. On gentle discussion she reported adhering to adalimumab. After discussion with the ophthalmology team, the rheumatology team switched her to infliximab infusions every 8 weeks, and continued methotrexate and sulfasalazine. She regained remission of her PsA and AAU. On doing so and satisfied with the outcome, unprompted, she admitted to the clinical nurse specialist that she had stopped being compliant with adalimumab when switched from the originator to the biosimilar, as the latter had caused injection site pain and swelling.

Non-alcoholic fatty liver disease (NAFLD) is prevalent in patients with psoriatic disease and SpA, with obesity being a significant contributor. NAFLD regularly complicates the use of csDMARDs and NSAIDs, and sometimes even advanced therapy use. Carriage of hepatitis B and C can be frequent in certain populations, which again complicate the use of synthetic and advanced therapies. Given that psoriatic disease and SpA onset is in the young, during their lifetime, there is a chance that liver transplant and liver cancers may be encountered. Close collaboration and discussion with the hepatology team can therefore be helpful and allow novel management strategies to be devised. None of the above comorbidities preclude the use of synthetic and advanced therapies; but informed counselling and prudent monitoring is required.

3.4 | Clinical vignette 4

A 56-year old ex-investment banker was referred to the rheumatology clinic having recently moved to the UK from Japan. His new GP in the UK had noticed severe deformity of the hands, and prompted by a recent primary-care and secondary-care rheumatology education evening thought he should be assessed for inflammatory arthritis. In the rheumatology clinic, he was noted to have shortening of several fingers and thumb, with nail onycholysis and a small psoriatic plaque on his genitals. The nail and genital changes had always been attributed to fungal infection. He had consulted a general physician in Japan 15 years ago, who had diagnosed 'inflammatory arthritis' and proposed methotrexate. The patient preferred to use homoeopathic remedies instead. Over the past 15 years he had progressively lost the function of his fingers and thumbs, could no longer write or type, had therefore taken early-retirement from the bank, and he now needed help from his wife for dressing and cutting up his food. Interestingly only a few joints had ever been tender or swollen. Methotrexate with sulfasalazine was proposed, which he reluctantly agreed to. Screening laboratory tests identified inactive carriage of hepatitis C. He was referred to the hepatology team, who performed liver biopsy, fibroscan, started ritonavir, and after MDST discussion agreed that he could start methotrexate monotherapy with regular hepatitis C viral load monitoring. Due to further clinical and radiographic changes over the subsequent 2 years, after further MDT with the hepatology team, an IL-17i was added to his treatment regime. He has been more stable to date and is under close clinical monitoring, regular hepatitis C viral load testing and surveillance for liver fibrosis and cancer.

3.5 | Metabolic syndrome and cardiovascular disease

Given the excess burden of metabolic syndrome and cardiovascular disease in patients with psoriatic disease (Karmacharya et al., 2020)

regular communication and collaboration with the wider MDST in endocrinology, clinical pharmacology, obesity and cardiology is important. To date, much of this responsibility has been deferred to colleagues in primary care to screen, manage and coordinate. Historical experiences of how effective this is in clinical practice are mixed, and the recovery of healthcare systems from the Covid-19 pandemic is prompting some resistance from primary care. The management of metabolic syndrome and cardiovascular disease might be considered in some healthcare systems and regions to be the remit of the dermatology and rheumatology teams. An MDST approach will be the core of any such services.

3.6 | Clinical vignette 5

A 17-year old lady is referred by her GP to the rheumatology clinic with a 6-year history of chronic plaque psoriasis of the body, scalp, inverse areas and nails. She had swollen, tender and stiff left knee, right ankle and left wrist. She had several tender other joints and entheses. Her serology, ESR, CRP and plain radiographs were normal. She had gained much weight recently due to being more sedentary, not having a regular job and comfort eating due to anxiety and low self-esteem. Her BMI was 43. Her father, who attended the consultation with her, is under the care of the same rheumatology department with a diagnosis of PsA treated effectively with a TNFi, having had liver enzyme derangement when on methotrexate and then leflunomide. A series of empathic discussions are made with the rheumatologist and the clinical nurse specialists that weight reduction to a target BMI of 25 might improve her skin psoriasis, PsA and reduce the probability of having fatty liver-related issues with csDMARDs should she need them. Given her father's experience, she preferred not to start a csDMARD, to more actively pursue losing weight and have the three swollen joints injected with steroids. Her case was discussed at the obesity-IMID MDST meeting who signposted her to community dietician and psychology services. Over a year she managed to reduce her BMI to 39. Another obesity-IMID MDST meeting referred her to the dedicated regional tertiary care intensive weight management programme, where she was started on semaglutide subcutaneous injection weekly. Over the course of a year, her BMI decreased to 31. She experienced a marked improvement in her skin and nail psoriasis, PsA and general well-being. She was no longer comfort eating, managing full-time employment and experienced an improvement in her mental health and self-confidence though clinical psychology and dietician input.

3.7 | Orthopaedic surgery and sports medicine

It is not uncommon for patients, especially young patients, to present with a monoarthritis or enthesitis, that is initially managed by colleagues in orthopaedics, sports medicine, podiatry and community physiotherapy. Collaboration, co-education and regular conversations with orthopaedic surgeons, sports medicine doctors, podiatrists, physiotherapists and orthotists is therefore important, so that cases at initial presentation or refractory to their intervention have a holistic assessment for underlying IMID. Musculoskeletal radiologists have shown an important role here, through the identification of inflammatory features such as disproportionate synovitis or joint effusion, insertional enthesitis or bone marrow oedema, to prompt assessment by rheumatology.

3.8 | Radiology

Most hospitals benefit from the expertise of musculoskeletal radiologists. Unfortunately in many circumstances, their main interest can be in orthopaedic and sports medicine conditions. Relatively few have a dedicated interest and high-level expertise in inflammatory arthritis, and even fewer in peripheral and axial SpA. This can lead to high variability in the interpretation of SpA imaging, resulting in both false positive and false negative reporting. It should also be borne in mind that the diagnosis of SpA is a clinical not a radiological diagnosis, as it must consider the clinical history, examination and laboratory results, and not imaging in isolation. Sensitively reviewing and discussing national and international guidelines on peripheral and axial SpA at radiology-rheumatology MDST meetings is one option for improving patient care (Bennett et al., 2017; Bray et al., 2019; Maksymowych et al., 2019). Given the increasing demand for imaging and insufficient radiologist workforce in many countries, radiographers are taking on extended roles such a plain radiograph reporting and musculoskeletal ultrasonography. The clinical governance of such practices can be varied. Supporting education, involvement in MDST meetings, regular audit and discrepancy meetings are important to maintain standards.

3.9 | Clinical vignette 6

An 18-year old man attended the rheumatology clinic as he and his mother wanted a second opinion. He had been involved in a road traffic accident 4 months earlier and immediately started experiencing widespread spinal pain. After several attendances to his GP, emergency department, physiotherapy, and having tried several NSAIDs and opiate-based analgesics, he continued to suffer with severe spinal pain. He attended a private rheumatologist who performed an axial MRI. It was reported as showing widespread spondylitis and normal sacroiliac joints. He was diagnosed with axial SpA and TNFi therapy proposed. When reviewed in clinic for the second opinion, he reported never having any musculoskeletal symptoms prior to the road traffic accident. There were no symptoms or signs of peripheral arthritis, enthesitis, psoriasis, IBD, uveitis or urethritis; nor any family history of these. His axial MRI was reviewed at the radiology-rheumatology MDST meeting with a dedicated musculoskeletal radiologist with specific interest in inflammatory arthritis. The locations of the spinal lesions were not entheseal, and this raised the possibility of an infiltrative aetiology. He was referred to

haematology for urgent review. Bone marrow aspiration confirmed lymphoma and he was started on chemotherapy. His lymphoma is now in remission, and with resolution of his spinal symptoms.

4 | MODELS OF MDST CARE

A variety of different MDST models of care exist in clinical practice and have been reported. They are described and critiqued in detail by Gudu et al. (Gudu & Jadon, 2020). In brief, two HCPs may: simultaneously consult the patient; consult sequentially; or both might be available and the patient choses one to consult on that particular occasion. These models give the patient an opportunity for two-person or multi-person conversations and clinical assessment. Management decisions can be made at the time. However, this model can be challenging to orchestrate as it can be difficult to predict the needs of the patient on the day, and some members of the clinical team's time may not be fully utilised. For these reasons, funding of such models of care be difficult to attain or maintain.

Another model is for the relevant members of the MDST to meet in person or through teleconference, and discuss patients using their case notes. This model is particularly suited to institutions with electronic patient records and where aligning the MDST's diaries and/or geography can be difficult. A limitation is the inability to include the patient in those discussions, although that might now be possible through teleconferencing. Discussions with patients can be made immediately afterwards by telephone, or arranging single- or multi-HCP consultation soon afterwards as part of a hybrid model.

For all models, communication with the patient and the wider clinical teams managing that patient is extremely important.

As is discussed by Gudu et al. few centres have collected rigorous clinical practice or research study clinical outcome data evidencing the benefit to patients, institutions and healthcare systems of MDST working (Gudu & Jadon, 2020). For those of us practising MDST working, we appreciate its benefits. However, initial and sustained funding of such models requires evidence of benefit and regular collection of key performance indicators. Some examples of the benefits to patients, clinical teams and institutions are detailed in Table 1.

5 | REGIONAL MDSTS

The advent of teleconferencing has permitted some regions to start regular regional MDSTs. This allows smaller specialist and non-specialist clinical teams to verbally present their clinical cases and seek advice on diagnosis, further assessment, management and need for referral to specific centres for face-to-face assessment of patients. Access to such regional MDSTs might: reduce variability in patient care related to the availability of local specialist services; improve networking; medical education and awareness of new/established services/initiatives; and generate clinical and research interest in psoriatic disease, SpA and other IMIDs. Referrals between hospitals, patient travel, associated costs and environmental impact may also be improved.

6 | PRIMARY CARE INTERFACE

In some regions there are musculoskeletal alliances, bridging primary and secondary care, with physiotherapists having a very important role. However, much communication between primary and secondary care remains predominantly as written correspondence. Even the 'Advice and Guidance' system implemented in the UK in recent years, relies nearly entirely on a series of short written exchanges and rarely a verbal dialog. The recent pandemic-related widespread availability and familiarity with teleconferencing might serve as an opportunity to improve verbal conversations. To achieve this requires: appropriate selection of

TABLE 1 Likely benefits of multi-disciplinary, multi-specialty teamw working to patients, clinical teams and institutions

Benefit to patients	Benefit to clinical teams	Benefit to institutions
Better communication between clinical teams, giving reassurance to the patient that factors most important to them are being considered and addressed.	Clinical advice and mentorship within the team, for both new and established members of the clinical team.	Better clinical governance through improved verbal rather than entirely written communication.
More timely and less delayed decision making.	Professional development and learning from the practices of other healthcare professionals and specialties.	More timely and less delayed decision making.
Improved safety when using several immunosuppressants for different indications.	Shared decision making for complex patients, and where novel management approaches may pose higher risk.	Reduced or more appropriate referrals from other departments and institutions.
Access to a wider range of multi-disciplinary and multi-specialty skills and knowledge.	Earlier experience with novel treatments through licensing for other indications.	Medico-legal aspects of shared decision making for complex patients, and where novel management approaches may pose higher risk.
Access to novel management approaches.	Academic research study inception & execution.	Earlier experience with novel treatments through licensing for other indications.
Less impact from variations in provision of care related to geography or commissioning.	Recruitment to clinical trials.	Academic research study and clinical trial activity.
Greater access to clinical trials, especially for those refractory to standard treatment paradigms.	Comradery, team work and enjoying clinical medicine.	Improving the clinical working environment for staff through comradery and team work.
Less travel for the patient.		

patients to discuss; availability of several relevant members of the primary and secondary MDSTs; aligning diaries; time-efficient meetings to maintain interest and not impact other clinical duties; administrative support and associated funding for the clinical teams' time; and perhaps most importantly, engagement of clinical teams less interested in IMID, with whom patients have the greatest unmet clinical need.

7 | CONCLUSIONS

There can be great benefits to patients, clinical teams and healthcare systems from MDST approaches. The holistic care of patients moves us away from an organ- or disease-focussed approach, to a more person-centred multi-system approach that better aligns with the underlying immunological basis of the condition(s). MDST working can be very educational, satisfying and rewarding. As described in this paper, there remains a research agenda, which if addressed, will consolidate the clinical, societal and health-economic benefits of MDST collaboration.

AUTHOR CONTRIBUTION

Deepak R. Jadon and Philip S. Helliwell contributed equally.

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CONFLICT OF INTEREST

None for either authors.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analysed in this study.

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