

Editorial

Facing the challenges of running a rheumatology-based ultrasound service in the COVID-19 era

The Covid-19 pandemic has had major implications for clinical rheumatology services. Departments have tried to minimize the spread of the virus by reducing patient attendances, for example by the increased use of tele-medicine for the management of stable patients and those conditions deemed non-urgent. This has been largely successful and the practice may well be here to stay. However, US, a service now integral to many rheumatology clinics, cannot be performed remotely and requires close and sometimes prolonged patient contact. While general recommendations now exist for using US in the context of Covid-19 [1–3], none specifically address rheumatology-led US services.

We would like to share some of our experiences to date at two large and busy clinical and research centres in countries with a high prevalence of Covid-19 infections.

Reducing scanning exposure risk

- a. *Considering appointment type.* We have continued to offer our one-stop services for new early arthritis referrals, to facilitate immediate decisions regarding diagnosis, the commencement of treatment or the discharge of patients. We have advised that clinicians scanning their own patients as part of a face-to-face appointment, should scan in the same room as the clinical assessment. Most of our current scanning, however, is through a formal booking service. We have discouraged ad hoc referrals on the day requests to minimize patient movement around the department.
- b. *Limiting the number of scans to US examinations to those considered essential only.* We have undertaken a validation of our waiting list and returned scan requests where it was felt the added benefit was likely to be low (albeit reassuring for the patient) or where the length of wait made the result less relevant. Going forward, we have reminded referrers to consider the necessity for imaging. Examples of high-priority scanning needs include: (1) scans for patients with recent onset symptoms, in which the identification of specific US features would inform the diagnosis and, where needed, guide the direction of a needle for diagnostic aspiration; (2) scans for patients not responding to treatment, where clinical assessment is inconclusive; and (3) scans for US-guided joint CS injections. Conversely, clinically stable patients, or those where the diagnosis can be reached on clinical grounds alone, should be deprioritized.
- c. *Ensuring low risk of Covid-19 before and on arrival.* As per other face-to-face appointments, it is appropriate that all patients undergo screening questionnaires and temperature checks on arrival. Whether patients should be Covid-19 tested prior to arrival is uncertain, but this adds to further logistic pressures. We ask all our patients to wear a mask when they enter the clinical areas. It has been recognized that Covid-19 may present as GCA [4], and so particular attention should be directed to these patients.
- d. *Limiting lengths of scanning time.* Rheumatologists often scan multiple joints, which may on average take between 20–25 minutes in a clinical setting. US research protocols, however, may take up to 75 minutes. In contrast, radiology musculoskeletal sonographers usually complete their work in 15–20 minutes, as their scanning is usually limited to one joint/region. We have tried to limit joint numbers to the least that offer the answer to the main clinical question. This is not possible, however, for research patients, for whom predetermined specific groups of joints need to be scanned. It has been suggested that a minimal number of images are saved per examination to minimize annotation time.

Scanning environment

- a. *Wearing appropriate personal protective equipment.* This will be dependent on the institution, but as standard, we have opted to wear a face mask, gloves, eye protection and an apron. For sonographers at a higher risk (e.g. those with comorbidities), and who have failed standard FFP3 mask fittings, we have sourced positive pressure headsets on the grounds that they have significant contact times with patients.
- b. *Cleaning scanning environment.* Between each examination, the machine, probes and cables, couch and chairs are wiped down using appropriate agents. Published guidance has suggested appropriate regimens for probe sterilization [5]. Additional time has been added to appointments to allow adequate equipment and room cleaning.

- c. *Room ventilation.* We have debated the risk of air conditioning. According to the UK Health and Safety Executive [6], risk is very low, assuming there is an adequate supply of fresh air and ventilation. However, with US there is also the potential additional risk of the machine fans stirring up the air. The compromise has been to turn the air conditioning off during patient examinations. It has been suggested that windows and doors are kept open to improve air circulation, but this needs to be considered against the need to maintain patient privacy.

Intra- and peri-articular CS injections

CSs are frequently used in rheumatology, but data with respect to their risk in the context of COVID-19 is lacking. The UK NHS has recently provided guidance recommending for 'patients who require a CS injection', to 'only give a steroid injection if a patient has significant disease activity and/or intrusive and persisting symptoms and there are no appropriate alternatives' [7]. Conventional US-guided injections should currently be considered on an individual basis, and avoided if alternative treatments are possible. The potential for short-lived immunosuppression has been discussed within the literature [8], but the risks need to be measured against the high prevalence of musculoskeletal problems that can be effectively managed with a steroid injection.

Provision of US training

Pre-Covid-19, we regularly received students or trainees to observe and gain hands on experience in clinics. We now have to reconsider the way we offer training opportunities. It is likely that in the future, some training will be delivered remotely [9], with only one trainee attending clinic at any one time. In addition, we suggest that trainees' contact time with patients should be limited to more focused examinations of a particular structure rather than the entire examination [10]. We are also looking at virtual reality and simulation systems as potential surrogates for learning both diagnostic and interventional techniques.

In conclusion, the provision of an US service is integral to clinical rheumatology services. However, it poses risks for the transmission of COVID-19. We hope that our observations may be helpful to others who are currently evaluating their own US services.

Data availability statement




Data are available upon reasonable request by any qualified researchers who engage in rigorous, independent scientific research, and will be provided following review and approval of a research proposal and Statistical Analysis Plan (SAP) and execution of a Data Sharing Agreement (DSA). All data relevant to the study are included in the article.

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Andrea Di Matteo ^{1,2,3,*}, **Kulveer Mankia** ^{1,2,*}, **Emilio Filippucci**³, **Walter Grassi**³, **Emma Rowbotham**^{2,4} and **Richard J. Wakefield** ^{1,2}

¹Leeds Institute of Rheumatic and Musculoskeletal Medicine, University of Leeds, ²National Institute for Health Research Leeds Biomedical Research Centre, Leeds Teaching Hospitals NHS Trust, Leeds, UK, ³Rheumatology Unit, Department of Clinical and Molecular Sciences, "Carlo Urbani" Hospital, Polytechnic University of Marche, Jesi, Ancona, Italy and ⁴Department of Musculoskeletal Radiology, Chapel Allerton Hospital, Leeds, UK

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*Andrea Di Matteo and Kulveer Mankia contributed equally to this study.

Correspondence to: Richard J Wakefield, Leeds NIHR Biomedical Research Centre, Leeds Institute of Rheumatic and Musculoskeletal Medicine, Chapel Allerton Hospital, Leeds LS7 4SA, UK E-mail: medrjw@leeds.ac.uk; r.j.wakefield@leeds.ac.uk

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