

## CONCISE REPORT

# Attitudes of United Kingdom rheumatologists to musculoskeletal ultrasound practice and training

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**Objectives:** This study was performed to describe what clinical rheumatologists currently use musculoskeletal ultrasound (MSUS) for, how they are currently training and is the first study to survey rheumatologists to determine their preferences for MSUS training implementation.

**Methods:** 250 questionnaires were distributed at the British Society of Rheumatology Annual General Meeting (BSR AGM), 2005.

**Results:** 126 (50%) of questionnaires were completed by UK rheumatologists and were analysed. 117 (93%) of the respondents use MSUS imaging for patient management, with 41 (33%) indicating they perform MSUS themselves. Only two (2%) performed MSUS for >5 years. Rheumatologists use MSUS to image all peripheral joints—particularly the hands and feet—to assess joint and soft tissue inflammation and to guide joint injections. Lack of training in MSUS was the principal reason for not performing MSUS. Respondents expressed a preference for future training to be via a programme of regular sessions, with training delivered by either consultant radiologists or rheumatologists. Mentoring was the educational tool and assessment method of choice.

**Conclusions:** The majority of respondents use MSUS in the management of their patients, with a third performing MSUS themselves. The report indicates rheumatologists' preferences on how training should be delivered in the future.

## INTRODUCTION

There is increasing expert consensus on what should be included in musculoskeletal ultrasound (MSUS) training for rheumatologists,<sup>1–3</sup> and this will facilitate the rational design of MSUS training programmes. Rheumatologists are interested in performing musculoskeletal ultrasound (MSUS) as part of their clinical practice.<sup>4–5</sup> Some European countries such as Germany and Spain have already incorporated MSUS into the rheumatology training curriculum and have developed training programmes for MSUS<sup>6–7</sup> whereas other countries—such as the UK—have yet to establish structured MSUS training programmes for rheumatologists, with greater reliance on short, intensive courses. A 1999 survey documented the use of MSUS among European rheumatologists, thus identifying the clinical indications for MSUS that rheumatologists would prioritise for training and practice.<sup>8</sup> Recent improvements in ultrasound technology—especially in power Doppler—and an increase in clinical ultrasound research have led to a wider range of uses for MSUS in rheumatology.<sup>9</sup> This survey provides a snapshot of current clinical practice of MSUS by rheumatologists and for the first time establishes rheumatologists' experiences of and preferences for MSUS training.

## METHODS

A questionnaire was drafted to obtain information on the current use and practice of MSUS by rheumatologists, including how

training is currently performed and how rheumatologists would like to be trained in the future. The questionnaire was piloted on four rheumatologists in the Rheumatology Department in Newcastle upon Tyne and on a non-rheumatologist, Mr Keir Windsor, Arthritis Research Campaign (arc), and following feedback, minor changes were made to the questionnaire to improve its readability.

At the BSR AGM in Birmingham 2005, 250 questionnaires were randomly handed out to participants attending imaging sessions, general sessions with an imaging content and those visiting the arc stand. A complimentary DVD, *Musculoskeletal Ultrasound “a beginner's guide to normal peripheral anatomy”* (© arc), was given as an incentive to return the completed questionnaires.

## RESULTS

Of 250 questionnaires distributed, 126 (50%) were completed and returned. The respondents were all from the UK (61 consultants, 51 specialist registrars, 14 others). Table 1 shows a breakdown of the 126 respondents, their use of MSUS and levels of experience in performing MSUS. Out of 126 respondents, 117 (93%) said they use MSUS imaging in the management of their patients, with 41/126 (33%) indicating that they are performing MSUS themselves, but only two respondents had more than 5 years' experience. Out of 126 respondents, 76 (60%) refer their patients to other departments for MSUS, principally radiology (71/126, 56%).

MSUS is used by rheumatologists to examine all peripheral joints regions with MSUS practitioners using MSUS more frequently than MSUS referrers in all joint regions. The most common areas examined using MSUS are small joints of hands and feet, shoulder, wrist and soft-tissue areas. The most common indications for MSUS are for the diagnosis of tenosynovitis, synovitis and enthesitis, and for injection guidance. Practitioners use MSUS more frequently than referrers for novel uses of MSUS such as diagnosis of erosions, for disease monitoring and for research, while referrers requested MSUS more frequently for evaluation of soft-tissue tumours, probably reflecting that this is a radiology subspecialty (see fig 1).

## Training experiences

The principal reasons given for not performing MSUS were: the lack of training in MSUS 60/80 (75%); expense of equipment 36/80 (45%); lack of time 26/80 (33%); radiology service being sufficient 16/80 (20%); other reasons 16/80 (20%). Out of the 126 respondents, 68 (54%) had undergone some training in MSUS. The most common forms of training undertaken were: informal training from radiologists 32/68 (47%); attendance at a BSR course 27/68 (40%); informal training from rheumatologists 23/68 (34%); attendance at a EULAR course 17/68 (25%);

**Abbreviations:** arc, Arthritis Research Campaign; MSUS, musculoskeletal ultrasound

**Table 1** Musculoskeletal ultrasound use and levels of experience in 126 respondents

|                      | Total no. of respondents | Not using MSUS no. (% of total) | Referring for MSUS no. (% of total) | Practising MSUS no. (% of total) | No. practising by duration of training |           |            |           |
|----------------------|--------------------------|---------------------------------|-------------------------------------|----------------------------------|--|-----------|------------|-----------|
|                      |                          |                                 |                                     |                                  | 0-1 years                              | 2-5 years | 6-10 years | >10 years |
| Consultant           | 61                       | 7 (5.6)                         | 31 (24.6)                           | 23 (18.3)                        | 7                                      | 15        | 1          | 0         |
| Specialist Registrar | 51                       | 2 (1.6)                         | 35 (27.8)                           | 14 (11.1)                        | 9                                      | 4         | 1          | 0         |
| Nurse                | 4                        | 0                               | 4 (3.2)                             | 0                                | 0                                      | 0         | 0          | 0         |
| Podiatrist           | 3                        | 0                               | 1 (0.8)                             | 2 (1.6)                          | 1                                      | 1         | 0          | 0         |
| Not specified        | 7                        | 0                               | 5 (4)                               | 2 (1.6)                          | 1                                      | 1         | 0          | 0         |

attendance at other courses 13/68 (19%); self-taught 11/68 (16%); informal training by others 3/68 (4%).

### Training preferences

Respondents were asked who they thought should train rheumatologists in MSUS. Seventy-seven per cent of respondents thought it would be appropriate for consultant radiologists to teach MSUS, whereas 63% thought that consultant rheumatologists could teach MSUS, and 33% thought that sonographers could teach MSUS. Six per cent stated that other personnel such as specialist registrars and advanced practitioners could be involved in teaching MSUS. Respondents were then asked how training should be done, bearing in mind what would be practical in their daily routine. Fifty-two per cent chose a programme of regular training sessions, 11% chose concentrated intensive courses, 35% chose both, 13% chose opportunistic teaching in addition to one or both, and 2% stated other options such as a BSR course, attendance at clinics and identification of a specific tutor.

Respondents were asked how competence in MSUS should be assessed, by ranking the following methods from 1 (highly appropriate) to 3 (least appropriate). Responses, presented here in order of mean rank score, were: mentor appraisal (1.5); formal appraisal (1.8); portfolio (2.0); not required (2.9). The respondents were asked to rank six educational tools from 1 (most useful) to 6 (least useful). Responses, again presented in order of mean rank score, were: mentor (2.0); courses (2.2); DVD (3.2); textbook (3.8); website (4.1); logbook (4.3). Other suggested educational tools included a sabbatical and journals.

### Benefits of rheumatologists performing MSUS

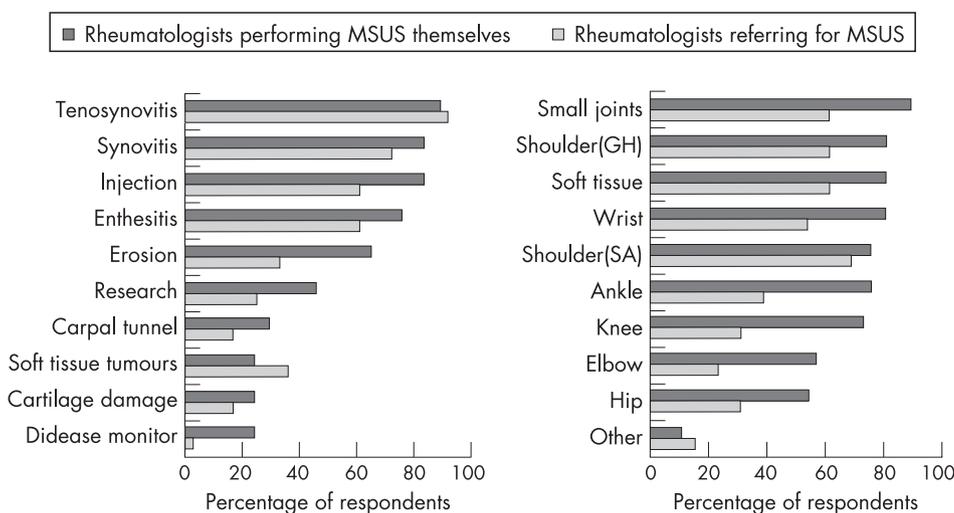
The mean waiting time for MSUS is 1.3 months (range 0-6 months) within rheumatology departments and 2.1 months (range 0-12) within radiology departments. Thirty-eight per cent of scans performed within rheumatology departments are

done so on the same day as the investigation is ordered, compared with MSUS imaging done within radiology departments by radiologists where only 1% of scans are performed on the same day as the investigation is ordered. Sixty-seven per cent of all scans within rheumatology departments are being performed within 1 month of referral compared, with 45% of all scans within radiology departments.

### DISCUSSION

Most respondents are using MSUS in their clinical practice, though this may be an overestimate due to sampling bias incurred by handing out the questionnaire at imaging-related sessions. However, the questionnaire was also made available at a charity (arc) stand. A key finding of the survey is that training in MSUS in the UK has changed very little since the EULAR survey in 1999,<sup>8</sup> which may explain why the majority of respondents have little or no practical experience of performing MSUS, with only two rheumatologists having more than 5 years of practical experience. MSUS training is still done at postgraduate level and predominantly takes the form of short introductory courses and informal training from colleagues. Rheumatologists identify lack of training in MSUS as the most important reason for not performing MSUS, and this deficit clearly needs to be addressed. Three expert consensus now exist to inform the development of international training guidelines in MSUS,<sup>1-3</sup> though there is no consensus on how training should be delivered or what competency assessments will be needed.

According to this survey, rheumatologists want structured MSUS training, preferably delivered as a programme of regular training sessions, with a minority opting for short intensive courses and one-third preferring both combined. A combination of these methods has been successfully used by the Ultrasound School of the Spanish Society of Rheumatology, which, from 1996-2005, has trained rheumatologists to the level of expert in 60% of Spanish Rheumatology Departments.<sup>7</sup> While our respon-



**Figure 1** Indication for MSUS performed by rheumatologists. The graphs show the different uses of MSUS among those responders who perform MSUS themselves and those referring for MSUS. Data show the percentage of responders who indicated they use MSUS for the following indication and joint areas. GH, glenohumeral joint; SA, subacromial bursa.

dents express a preference for consultant radiologists and rheumatologists to act as expert trainers, the reality is that this survey identified very few rheumatologists capable of providing training in the UK. This is a common situation in most countries without training programmes, and it is likely that any newly established training programme would need to train a small number of experts initially. Training from sonographers was an acceptable alternative to one-third of respondents.

The majority of respondents agree that appraisal is necessary and express a preference for mentor appraisal, closely followed by formal appraisal, which would also require mentors. With a limited number of mentors, portfolio assessment with intermittent mentor appraisal is a more realistic approach to recording and assessing training. Recently, Taggart *et al* have reported the successful implementation of a formal examination in MSUS competence which could be performed at the end of a training programme.<sup>10</sup> The authors would strongly recommend a training logbook to be maintained, but respondents ranked this as the least useful educational tool, preferring DVDs, textbooks and websites.

This survey identifies which joint areas and indications MSUS is most commonly used for in clinical practice, and this information may be used in combination with expert consensus<sup>1-3</sup> to refine an MSUS curriculum and guidelines for rheumatologists. Potential benefits of rheumatologists performing MSUS are also highlighted. Thirty-eight per cent of scans performed by rheumatologists are done instantly, compared with 1% performed by radiology departments, allowing immediate changes to management and reducing the need for return appointments. Only a small number of centres are managing to provide this level of service. This may be because there is only one rheumatologist fully trained in MSUS providing the service to a centre servicing many rheumatologists.<sup>8</sup> A further benefit of MSUS is in guiding joint and soft-tissue injections. Use of MSUS for guided injections is higher in this report, compared with the 1999 EULAR survey, which may reflect the literature published since on the benefits of MSUS guided joint injections.<sup>11-14</sup> These data support the development of MSUS in Rheumatology and provide for the first time the training preferences of rheumatologists who are predominantly non-experts in the practice of MSUS.

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