

# Primary care challenges in diagnosing and referring patients with suspected rheumatoid arthritis: a national cross-sectional GP survey

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**PRIMARY CARE CHALLENGES IN DIAGNOSING AND REFERRING PATIENTS  
WITH SUSPECTED RHEUMATOID ARTHRITIS: A NATIONAL CROSS-  
SECTIONAL GP SURVEY**

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## **ABSTRACT**

### **Objectives**

National guidelines advocate referring patients with persistent synovitis to rheumatology within 3 working days of presentation to primary care. This infrequently occurs. We aimed to identify modifiable barriers to early referral of suspected rheumatoid arthritis (RA) patients amongst English GPs.

### **Methods**

National cross-sectional survey of 1,388 English GPs (RA-QUEST study). Questions addressed GPs' confidence in diagnosing RA, clinical factors influencing RA diagnosis/referral, timeliness of referrals, and secondary care access. Data were captured using 10-point visual analogue scales (VAS), 5-point Likert scales, yes/no questions, or free-text, and were analysed descriptively.

### **Results**

Small joint swelling and pain were most influential in diagnosing RA (91% and 84% rated these of 4 or 5 importance on 5-point Likert scale, respectively); investigations including rheumatoid factor (RF; 61% rating 4 or 5) and anti-CCP (72% rating 4 or 5) were less influential. Patient history had the greatest impact on the decision to refer (92% rating this 4 or 5 on 5-point Likert scale), with acute phase markers (74% rating 4 or 5) and serology (76% rating 4 or 5) less impactful. Despite the importance placed on history and examination, only

26% referred suspected RA immediately without investigations; 95% of GPs organising further tests opted to test for RF.

### **Conclusion**

For suspected RA patients to be referred within 3 days of presentation to primary care there needs to be a paradigm shift in GPs' approaches to making referral decisions, with a focus on clinical history and examination findings, and not the use of investigations like RF.

### **Key Words**

Rheumatoid arthritis, referral, primary care, guidelines.

## INTRODUCTION

The early diagnosis and prompt treatment of rheumatoid arthritis (RA) by specialists improves patient outcomes (1). In England, the National Institute for Health and Care Excellence (NICE) Quality Standards for RA recommend that patients with persistent synovitis are referred to a rheumatology service within 3 working days of presentation to primary care (2). The British Society for Rheumatology (BSR) Healthcare Quality Improvement Partnership (HQIP) national audits based on these quality standards highlighted the challenges in achieving them (3), with only 17% and 20% of patients referred within 3 working days, in the first and second audits, respectively. Similar referral delays from primary to secondary care exist in other European countries (4) and North America (5).

Several factors contribute to these referral delays. Firstly, the rarity of RA (annual incidence 15/100,000 adults (3)) means non-specialists lack experience recognising it. Secondly, the heterogeneous nature of early RA can make identifying it challenging (6, 7). Thirdly, GPs traditionally make diagnoses before referral, using investigations to support their clinical opinion; requesting tests in patients with suspected RA will invariably delay the referral process.

Variations in national healthcare structures mean factors contributing to referral delays need considering on a country-specific basis. Data on factors associated with GP referral delays of suspected RA in England are limited, but existing studies suggest referral decisions are strongly influenced by test results – chiefly rheumatoid factor (RF) and radiographs – with negative/normal tests making referral less likely or timely (8-10). These studies are limited by their regional nature (10), small size (8), or focus on a single factor (9).

To increase the proportion of RA referrals meeting the NICE quality standard timeline (3 working days) a range of modifiable barriers to early referral need to be identified, which have generalisable impacts across England. The RA Questionnaire for GPs (RA-QUEST) study was designed to achieve this. It is a large, prospective survey of 1,388 English GPs' experiences in diagnosing and referring suspected RA patients to secondary care.

## **METHODS**

### **National GP Survey**

5,000 English GPs, randomly selected using Binley's database (National database of GP practice contact details) (11), were mailed a questionnaire in 2014, asking 12 questions about challenges in diagnosing and referring suspected RA patients, alongside questions about their demographics and primary care practice.

### **Questionnaire Development**

The questionnaire was developed by a focus group of clinical and academic GPs, and rheumatologists at Keele University; it was subsequently piloted and refined with local GPs prior to national implementation. Question items were sought to cover GP access to rheumatology, knowledge of RA symptoms/signs, confidence in diagnosing RA, and which factors influence the decision to refer and timescale of referral.

## **Questions About Challenges in Diagnosing and Referring Suspected RA**

The 12 questions about diagnosing and referring patients with suspected RA are provided in Supplementary Table 1 and Supplementary Figure 1. In brief, they evaluated GP confidence at diagnosing RA and recognising synovitis; how many patients GPs suspected they had seen with new-onset RA in the previous 2-years; what GPs felt were the most important symptoms in diagnosing RA (with the symptoms listed derived from a previous qualitative study of symptom complexes during the earliest phases of RA (7)); if they had heard of the S-factor campaign (an Arthritis Research UK/National RA Society delivered campaign promoting the need for patients to consult their GP early for symptoms of RA (12)) and its impact on their practice; what they felt were the most important features in making a decision to refer a patient with suspected RA; whether they referred patients with suspected RA immediately or requested further tests first; their access to secondary care rheumatology; and what they felt were the challenges in making an RA diagnosis. These were completed using a mixture of: (a) 10-point visual analogue scales (VAS) e.g. “how confident are you at diagnosing RA” on a scale of 0 (not at all confident) to 10 (completely confident); (b) yes/no responses e.g. “do you have access to a dedicated early arthritis clinic?”; (c) 5-point Likert scales; or (4) free-text boxes.

## **Statistical analysis**

All data were summarised descriptively, using mean (SD), median (IQR), and number (percentage) where appropriate based on data type, and distributions. The associations between GP time since qualification and gender, and confidence in diagnosing RA and referral practice, were evaluated using linear and logistic regression models. Missing data were omitted from the analysis (Supplementary Table 2).

## **Ethical Approval**

The study was approved by the Keele University Ethics Review Panel (ERP1). As it represented an anonymous study of primary care practitioners, national ethical committee approval was not required. Written informed consent was obtained from participating practitioners.

## **RESULTS**

### **GP Characteristics**

1,388 completed questionnaires were returned (28% response rate). Most GPs were partners (845, 61%), with salaried (291; 21%), senior partner (207; 15%) and locum (36; 3%) GPs being less common. Their mean age was 47 years, mean time since qualification was 23 years, and 705 (51%) were male. Only 38 GPs (3%) had heard of the S-factor campaign. Of those completing the free-text response regarding its impact on their clinical practice, the commonest responses were that it helped in identifying patients with RA (9 GPs; 24%), increased awareness of RA (4 GPs; 11%), meant they were more likely to refer suspected RA patients early (3 GPs, 8%), or had no impact (9 GPs, 24%). A bar-plot outlining these responses is given in Supplementary Figure 2. The median score for the number of patients with suspected RA seen over the preceding 2 years was 4 (IQR 2-6).

### **Access to Rheumatology**

498 (38%) GPs had access to dedicated early arthritis clinics. The median VAS rating for ease of access to secondary care rheumatology was 7 (IQR 5-8) indicating most GPs considered they had moderate ease of access (Figure 1, Panel C). GPs reporting access to



dedicated early arthritis clinics had a higher median VAS (7; IQR 6-8) for ease of access to rheumatology compared to those reporting no access to early arthritis clinics (6; IQR 5-8).

## **Challenges in Diagnosing RA**

### *Key Clinical Features*

Of the 24 clinical features provided, GPs identified the following five as the most important in diagnosing RA (Figure 2, Panel A): small joint swelling (91% rated this 4 or 5 for importance, out of a possible 5), small joint pain (84% rated this 4 or 5 for importance), raised ESR/CRP (82% rated this 4 or 5 for importance), early morning stiffness >60 minutes (80% rated this 4 or 5 for importance), and symmetrical joint swelling (78% rated this 4 or 5 for importance). Median Likert scores were 4 (IQR 4-5) for all five features.

Likert scores for other features included in RA classification criteria (13, 14) were considered less diagnostically important: positive anti-CCP (72% rated this 4 or 5 for importance), any joint swelling (64% rated this 4 or 5 for importance), positive RF (61% rated this 4 or 5 for importance), radiographic changes consistent with RA (57% rated this 4 or 5 for importance). Median Likert scores were 4 (IQR 3-5) for anti-CCP and 4 (IQR 3-4) for the other clinical features.

### *Confidence*

GPs were moderately confident at diagnosing RA and detecting synovitis, with median self-rated VAS of 7 (5-7) and 7 (6-8) out of 10, respectively (Figure 1, Panels A and B).

### *Key Challenges*

The main perceived challenges in diagnosing RA were “the earliest phases of RA are difficult to diagnose”, and “RA can be difficult to distinguish from other potential diagnoses”, with 80% and 82% strongly/moderately agreeing with these statements, respectively (Figure 2, Panel B). Despite often requesting RF before making a decision to refer, 48% strongly/moderately agreed with the statement “Information provided by RF testing does not aid my clinical decisions”. 244 GPs provided free-text information in response to question 12 (addressing the challenges faced by GPs in diagnosing RA), with the main challenge being a perceived delay in access to secondary care services (reported by 98 GPs; 40.2%; Supplementary Figure 2).”

### **Referral Decisions**

#### *Factors Influencing Referrals*

GPs rated patient history as the most important clinical feature in making a decision to refer, with 92% rating this 4 or 5 (median score 5; IQR 4-5) out of a possible 5 (Supplementary Figure 3). Similar Likert scores were obtained for clinical examination (81% rating 4 or 5; median score 4, IQR 4-5), RF/anti-CCP serology (76% rating 4 or 5; median score 4, IQR 4-5), and raised ESR/CRP (74% rating 4 or 5; median score 4, IQR 3-5). Little weight was placed on family history of RA (39% rating 4 or 5; median score 3, IQR 3-4). 78 GPs provided free-text information on additional factors they felt important in making a decision to refer a patient (Supplementary Figure 2), with the commonest responses being X-rays (14 GPs; 17.9%), disability (7 GPs; 9%), persistent or severe symptoms (7 GPs; 9%), stiffness (7 GPs; 9%), and synovitis (7 GPs; 9%).

### *Referral Timeliness*

Only 343 (26%) of GPs would refer suspected RA immediately to secondary care; 999 (74%) preferred to organise further tests to inform referral decisions. Of the GPs that would organise further tests, the most frequently requested were RF (944 GPs; 95%), CRP (932 GPs, 93%), and ESR (883 GPs; 88%). Radiographs (544 GPs; 55%), and anti-CCP antibody testing (433 GPs; 43%) were less commonly used, and joint ultrasound (32 GPs; 3%) used rarely. 160 GPs provided free-text information on additional tests they would use (Supplementary Figure 2), with the commonest being a list of multiple different blood tests (many of which included ANA and uric acid; 75 GPs; 46.9%), ANA and other autoantibodies (19 GPs; 11.9%), and full blood count tests (17 GPs; 10.6%).

### **Associations between GP Demographics, Confidence and Referral Practice**

#### *GP Time Since Qualification*

In a linear regression model, which included confidence in diagnosing RA (on a 10-point VAS) as the response variable, and time since qualification (in years) as the explanatory variable, a significant association was observed ( $P=0.01$ ), suggesting that GP confidence at diagnosing RA increases as more clinical experience is accrued. The effect was, however, small with a  $\beta$ -value of 0.01 indicating that per 10-year increase in the time since qualification, the confidence in diagnosing RA VAS increased by just 0.10 (out of a possible 10 units).

In a logistic regression model including the binary answer to the question “if you suspect RA clinically do you refer immediately or arrange further tests first?” as the response variable, and time since qualification as the explanatory variable no association was seen ( $P=0.62$ ).

### *GP Gender*

Undertaking the same modelling approach but including GP gender as the explanatory variable (in place of time since qualification), an association was observed between gender and reported confidence in diagnosing RA ( $P<0.01$ ) but not referral practice ( $P=0.49$ ).

Female GPs appeared to be more confident at diagnosing RA. The  $\beta$ -value of 0.45 obtained from the linear regression model indicated that females had a 0.45 higher VAS for confidence in diagnosing RA than males.

## **DISCUSSION**

Our national survey of English GPs found that when they suspect a patient has RA, the majority (74%) request investigations to support their clinical opinion before referral.

Consequently, most GPs cannot meet the NICE quality standard of referring patients with persistent synovitis within 3 days. Meeting this quality standard requires a paradigm shift in the primary care approach to inflammatory arthritis referrals, with patients presenting with synovitis referred on clinical grounds without waiting for the results of investigations. As our survey showed that GPs have a good knowledge of the clinical features of RA – with most correctly identifying small joint swelling, pain, early morning stiffness and symmetrical joint swelling as the most important symptoms/signs – this change in practice should be achievable.

We found an over-reliance on RF-testing in primary care, undertaken in 95% of those GPs requesting tests before referral. Whilst we did not capture information on whether RF-status influences final referral decisions, two previous English studies reported that RF-negative patients were less likely to be referred (10), or referred significantly later (9). Another study

of 36,191 RF requests made to one English laboratory between 2003-2009 at an annual cost of £58,164, found the majority (67%) originated from primary care with only 7% made by rheumatologists (15). The rate of positive results in primary care was low at 6%, compared with 18% for rheumatologists. When these findings are considered against NICE recommendations, there is an argument for restricting the use of RF-testing to rheumatology units.

Another major source of delay in suspected RA patients being seen lies with secondary care services failing to see primary care referrals promptly. Our study suggests this is an ongoing issue, with 62% of GPs reporting no access to early arthritis clinics, and 25% rating their ease of access to rheumatology as being  $\leq 5$  out of 10. The need to minimise secondary care delay is also addressed in the NICE RA Quality Standards, which recommend that people with suspected persistent synovitis are assessed in a rheumatology service within 3 weeks of referral. The BSR HQIP audit reported that the presence of early inflammatory arthritis clinics increased the odds of meeting this standard by 60% (OR 1.6; 95% CI 1.4-1.7;  $P < 0.001$ ). This suggests that changes in primary care referral practice need to be linked with an increased provision of early inflammatory arthritis clinics.

Our study's strength is it represents a large national survey with GP practices randomly selected. Its limitation is the modest response rate (28%). Our response rate is, however, similar to other recent national UK surveys (16, 17), and a low-response rate does not necessarily indicate non-response bias (18), with previous research showing similar results in early survey responders compared with those responding after intensive contact attempts (19).

In conclusion, our findings suggest that to increase the proportion of suspected RA patients being referred within 3 days of presentation to primary care, there needs to be a paradigm shift in GPs' approaches to making referral decisions in patients with synovitis, moving away from the use of investigations to "confirm" their clinical suspicion of RA, to referring patients based on clinical findings. Further research is required to determine the best manner to implement this change in referral practice, and evaluate its impact on attaining NICE quality standards.

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## **CONFLICT OF INTEREST**

KR has received an educational grant from Abbvie and has received honoraria from Janssen, Pfizer and Roche. The other authors declare no relevant conflicts of interest.

## **KEY MESSAGES**

- Most GPs organise tests before deciding to refer suspected RA patients.
- An over-reliance is placed on RF-testing when making referral decisions for suspected RA.
- A change in referral practice is required, making decisions based on clinical findings

**Figure 1 Confidence in Diagnosing RA (Panel A) and Detecting Synovitis (Panel B), and Ease of Access to Rheumatology (Panel C).**

Panel A = GP confidence on Likert Scale (0-10) in diagnosing RA; Panel B = GP confidence on Likert Scale (0-10) in recognising synovitis; Panel C = GP rating “How easy is it for you to access secondary care rheumatology?” on a visual analogue scale of 0-10.



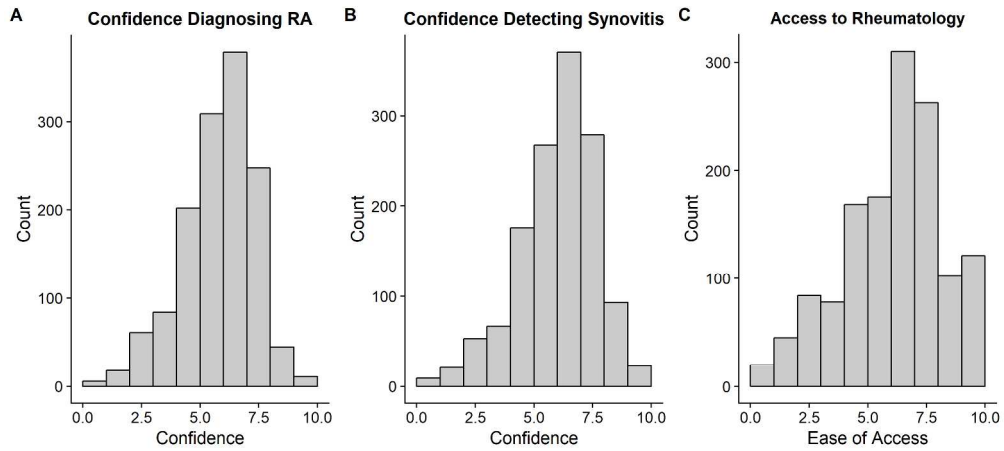
**Figure 2. Important Clinical Features (Panel A) and Perceived Challenges (Panel B) in Diagnosing RA**

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Title: Figure 1 Confidence in Diagnosing RA (Panel A) and Detecting Synovitis (Panel B), and Ease of Access to Rheumatology (Panel C). Legend: Panel A = GP confidence on Likert Scale (0-10) in diagnosing RA; Panel B = GP confidence on Likert Scale (0-10) in recognising synovitis; Panel C = GP rating "How easy is it for you to access secondary care rheumatology?" on a visual analogue scale of 0-10.

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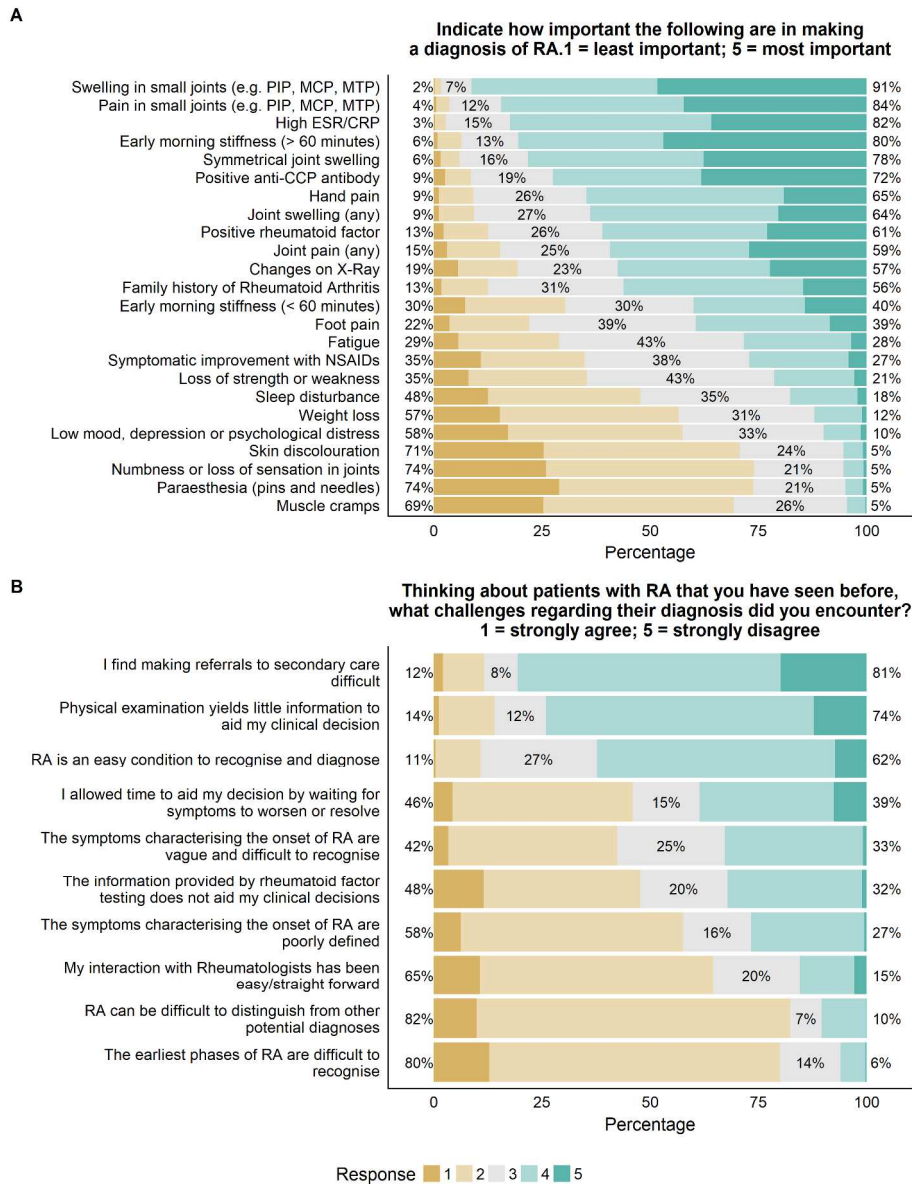


Figure 2. Important Clinical Features (Panel A) and Perceived Challenges (Panel B) in Diagnosing RA.

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