REmote MOnitoring of Rheumatoid Arthritis using a Smartphone app

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~ on behalf of the REMORA team ~
Rationale for the study

- Rheumatoid arthritis (RA) is a long term condition
- Characterised by changes in disease severity over time
- Symptoms can be fleeting – at times an ‘invisible disease’

- Consultations occur relatively infrequently
- Dependent on patient’s recall, eloquence and stoicism
- Tools exist for capturing information on disease activity [PROMs], but these are not completed on a routine basis
“How have you been in the last six months?”

“Oh... alright, I suppose.”
Aims of the study

To develop and evaluate a Smartphone app for people with Rheumatoid Arthritis to facilitate routine recording of their symptoms between clinic visits

Collect data once and use for multiple purposes:

- Smartphone app
- Medical records
- Research database

Patients at home
Clinicians at hospital
Researchers at university
Overview of the study

Stage 1
- Reaching agreement on the components of the app
- Developing the systems required to link the data entered to the Electronic Patient Record

Stage 2
- Testing the app for 1 month with 8 patients
- Checking system for ‘end to end’ processes
- ‘Bug fixing’ & refining the app in response to feedback

Stage 3
- Evaluating the refined app for 3 months with 24 patients
- Summarising feedback from a range of stakeholders
- Producing an implementation toolkit for the app developed
The REMORA team and study activities

- What to record
- How to record
- When to record

**Interviews:**
- Patients (21)
- Clinicians (10)
- Researchers (12)

- Preferences in relation to phone app
- Economic implications

Flow of data from point of entry to EPR
- Appearance of app
- Format of question sets
- Presentation in EPR
Stage 1: Identifying the components of the app
Stage 1: Identifying the components of the app

Patients
Guiding consultation
Self-management

Clinicians

Researchers
Stage 1: Identifying the components of the app

Patients
- Guiding consultation
- Self-management

Clinicians
- Guiding consultations
- Triage outpatients

Researchers
Stage 1: Identifying the components of the app

Researchers
Source of temporally-rich data
  e.g. Measurement of flares/treatment response

Patients
Guiding consultation
Self-management

Clinicians
Guiding consultations
Triage outpatients
The REMORA app

Answer Daily
due today

Answer Weekly
due on Wednesday

Answer Monthly
due on 31st March

Question
Considering your arthritis overall, how would you rate your level of physical well being during the last 24 hrs?

Very good

2

Very bad

How long did your morning stiffness last today? (please select ‘0’ if you did not experience any stiffness)

0

1-9 minutes

10-19 minutes

20-29 minutes

30-59 minutes

1-2 hours

2+ hours

Next
The REMORA app

Question

Have you experienced a flare in the last week?

○ No
○ Yes

Next

Please can you describe how your flare has affected you?

How are you feeling?

I feel...

because...

Done
Stage 2: Checking ‘end to end’ processes

Data entered submitted via public internet

Firewall

Safe haven

Anonymised data

Firewall

Linked to EPR via NHS N3 secure network

linked to EPR via NHS N3 secure network
Stage 2: ‘Post app’ consultations
Stage 2: Early feedback on using the app

- More personal to you
- A doddle
- A great idea
- With a graph...you can see what’s going on
- A graph of acknowledgment
- You’ve got solid proof straightaway
- It's a shared conversation
- It reassured me
Stage 2: Post-testing refinements to the app

Refinements suggested:

• Inclusion of a ‘back key’
• Clearer indication of when data had been entered/next due
• More prominent reminder message
• Additional question regarding things that may have had an impact on their RA over the previous week (e.g. exercise medication)
Rheumatology clinic - the future

“Let’s see how you’ve been over the last 6 months”
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