# Designing, implementing and evaluating a system in secondary care for the REmote MOnitoring of Rheumatoid Arthritis (REMORA)

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Background

Patients with rheumatoid arthritis (RA) often experience fluctuations in disease activity, known as flares, between clinic visits. These symptoms are unseen and frequently unrecorded as they are dependent on the patient's recall, eloquence and stoicism during a consultation. This limits clinical understanding around patterns of disease activity over time.
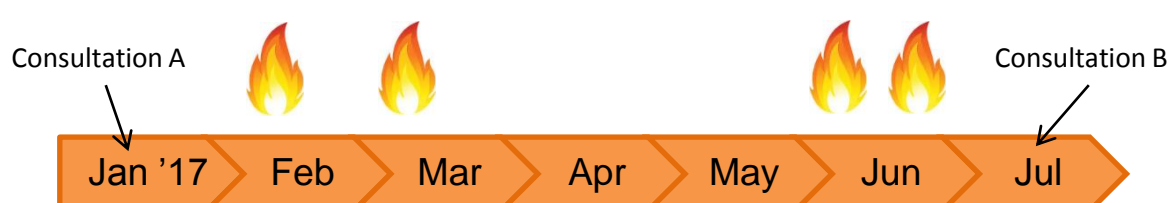

Objectives

- Design a smartphone app which allows patients to regularly enter data on their disease activity by responding to prompts to complete questionnaires on RA symptoms and severity.
- Transfer the recorded data remotely into the electronic patient record (ePR) at Salford Royal NHS Foundation Trust (SRFT) so that patterns of disease activity can be graphed.
- Establish an anonymised, duplicated dataset to be stored in a research database to support future research.
- Develop an implementation toolkit detailing the necessary steps to creating and implementing a functioning ePR-linked health app within other geographical areas; healthcare providers; or conditions.

Methods

Patients with RA, researchers and clinicians were interviewed to support the co-design of REMORA. 3 questionnaire sets (daily, weekly and monthly) were created to prompt patients to enter data. The questions incorporated the DAS28 and HAQ-DI tools used for measuring RA disease activity. A two-phased pilot approach was used, the first of which consisted of eight patients, recruited through regular rheumatology clinics at SRFT. They tested the app for one month between clinical consultations to demonstrate a working concept. The second phase involved 20 patients testing the app for three months to mimic a realistic gap between appointments. All participants reported their disease activity including pain, fatigue and the effect of their RA on their daily lives.
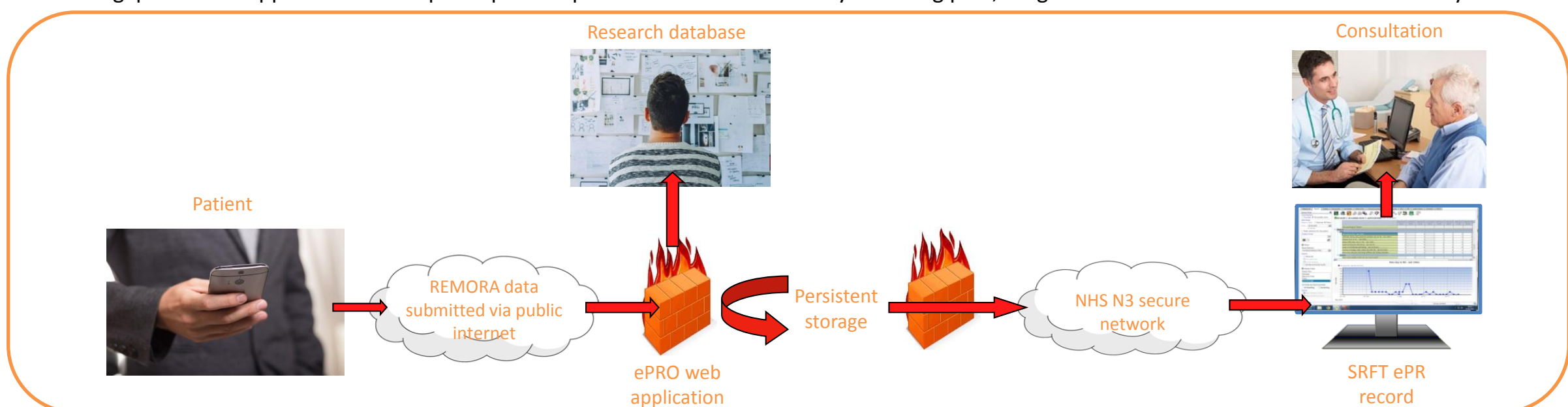
App data were sent directly to the patient's ePR and were discussed in a clinical consultation at the end of the testing period during which real decision making around health and treatment options for the patients took place.

Results

During the post-testing consultations, patients and clinicians were able to make clinical decisions based on graphical data collected in ePR through the REMORA app. REMORA provided previously unseen insight into the nature of RA as an invisible but constantly changing process, providing clear evidence and justification for changes to treatment and consultation options. Patients were more able to engage in shared decision making with their clinician and gained valuable understanding of their own condition. Follow-up interviews with patients revealed very positive experiences and genuine benefits associated with using REMORA.

Implications

REMORA has implications for improved patient care, facilitating the process of shared decision making between patient and clinician; increasing patient capacity for self-management and active involvement in their own care; potential for increased efficiency and cost-saving by employing a more responsive and flexible consultation schedule; and allowing clinicians or patients to better initiate discussions during spikes in disease activity. Plans are underway for a 'REMORA2' study, further developing the app design so that it is more responsive to patient needs and behaviours, and could also see REMORA implemented for testing across other trusts and settings, including primary care.