

REMORA



REmote MOnitoring of Rheumatoid Arthritis using a Smartphone app

Dr Lynn Austin, Research Fellow, University of Manchester
~ 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

Rheumatology clinic - current context



“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:

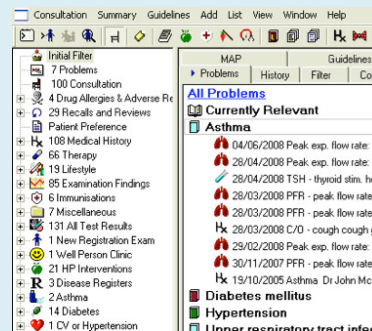
Smartphone app

Medical records

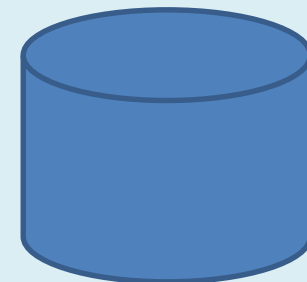
Research database



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



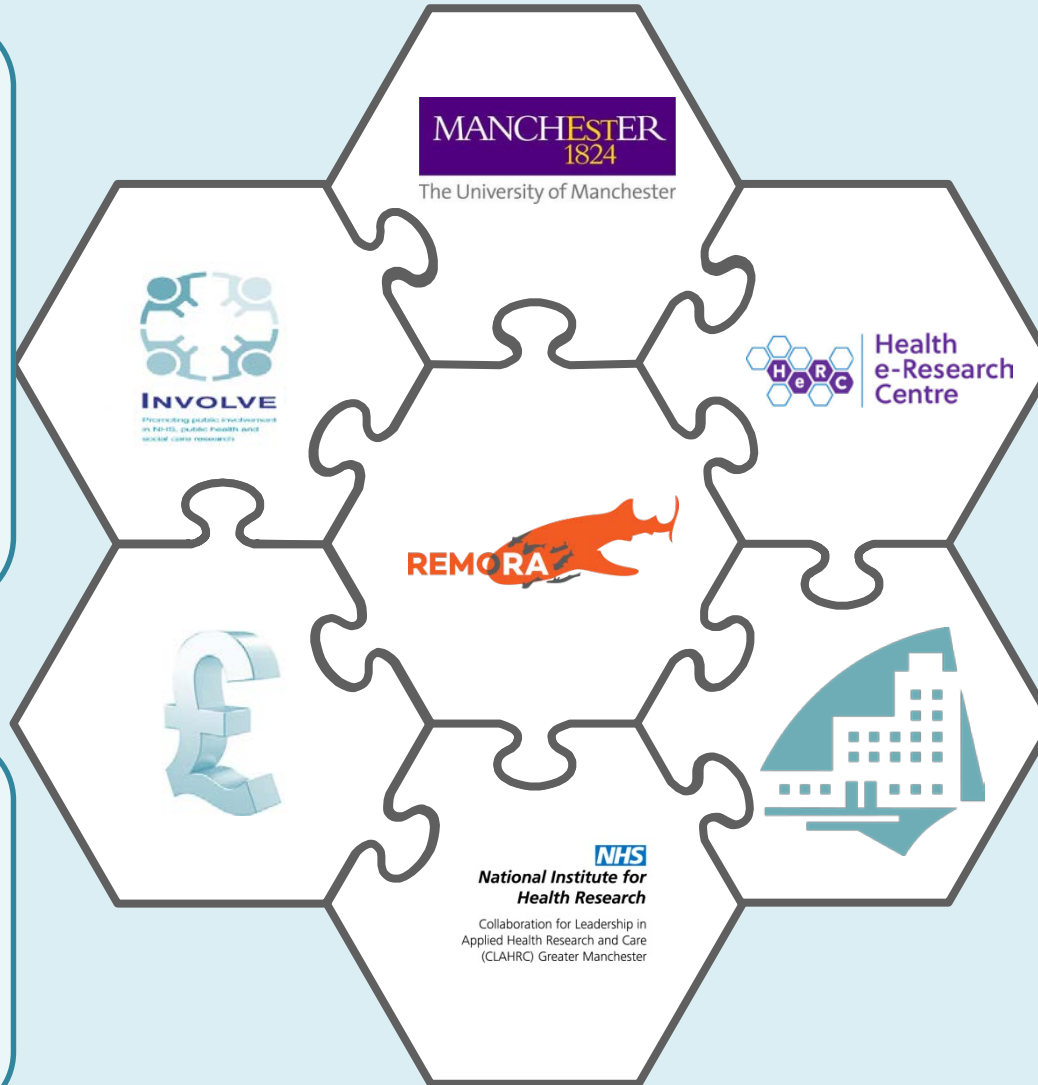
- What to record
- How to record
- When to record

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

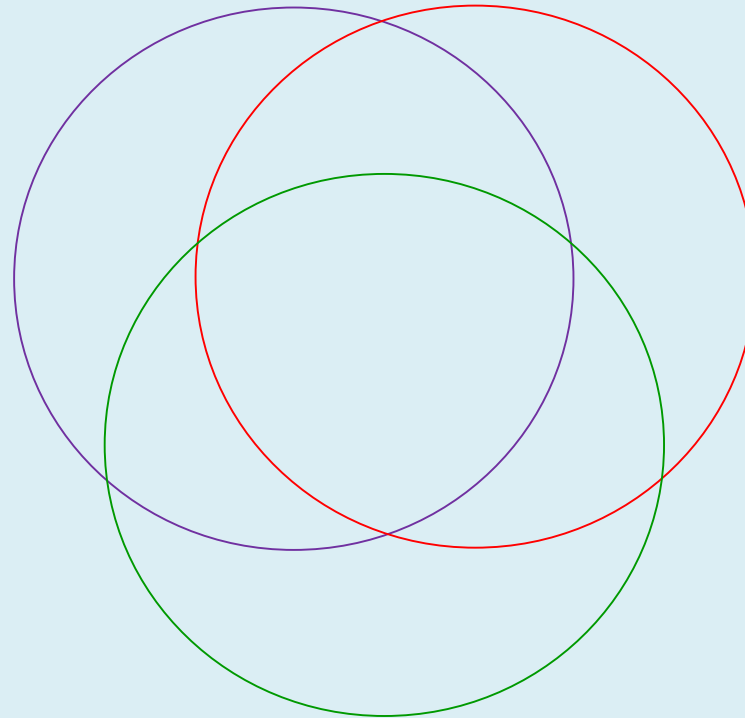
Format of question sets

Presentation in EPR

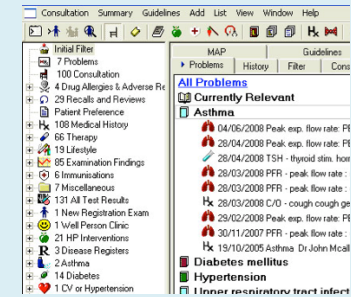
Stage 1: Identifying the components of the app



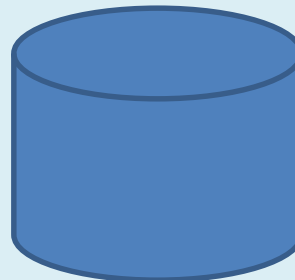
Patients



Clinicians



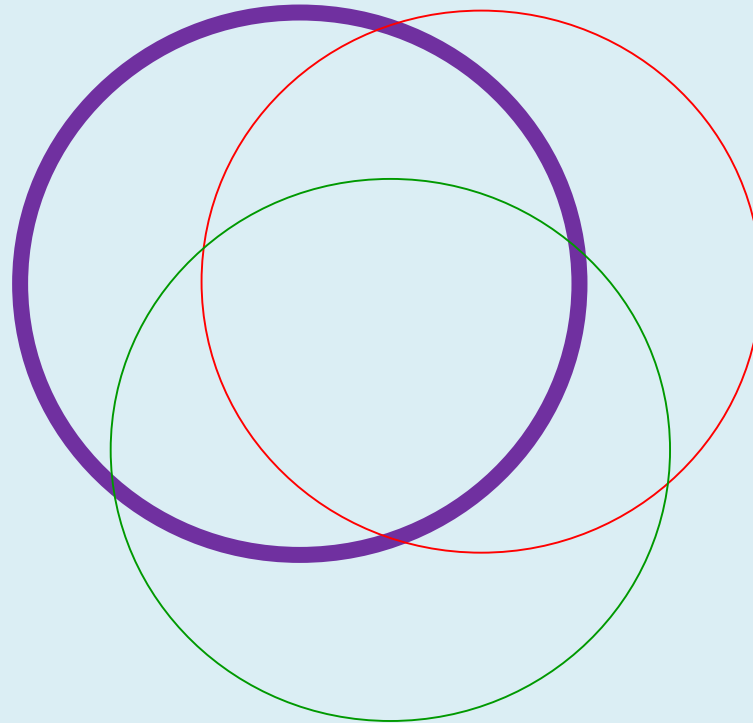
Researchers



Stage 1: Identifying the components of the app



Patients
Guiding consultation
Self-management



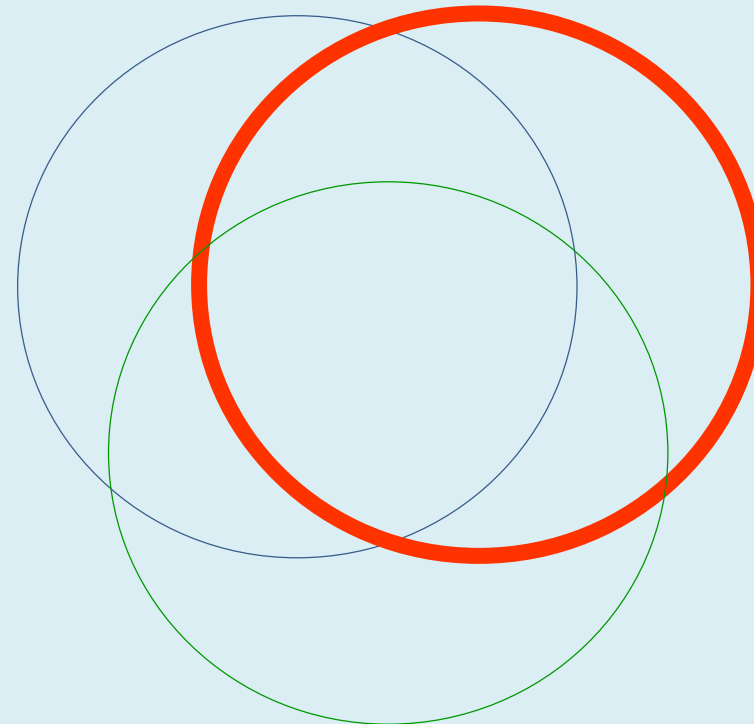
Clinicians

Researchers

Stage 1: Identifying the components of the app



Patients
Guiding consultation
Self-management



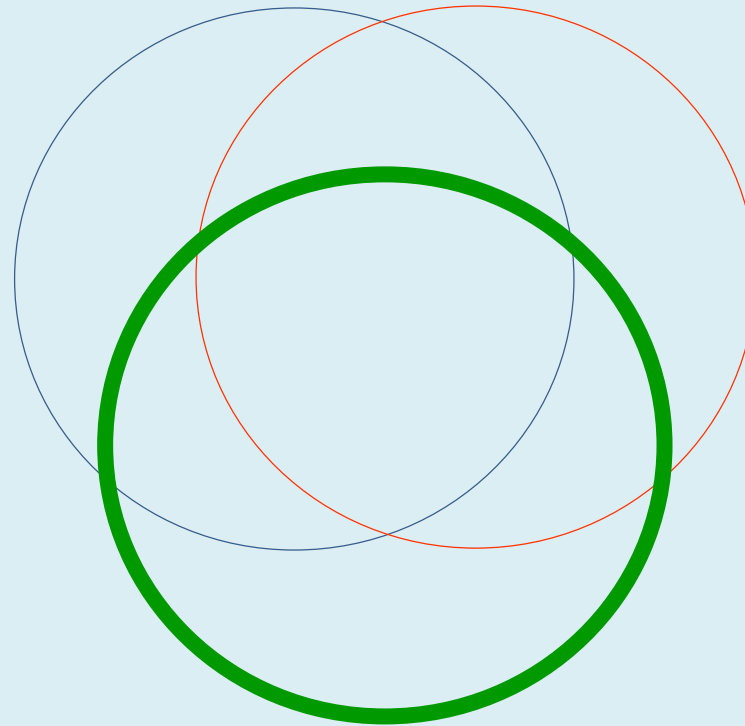
Clinicians
Guiding consultations
Triage outpatients

Researchers

Stage 1: Identifying the components of the app



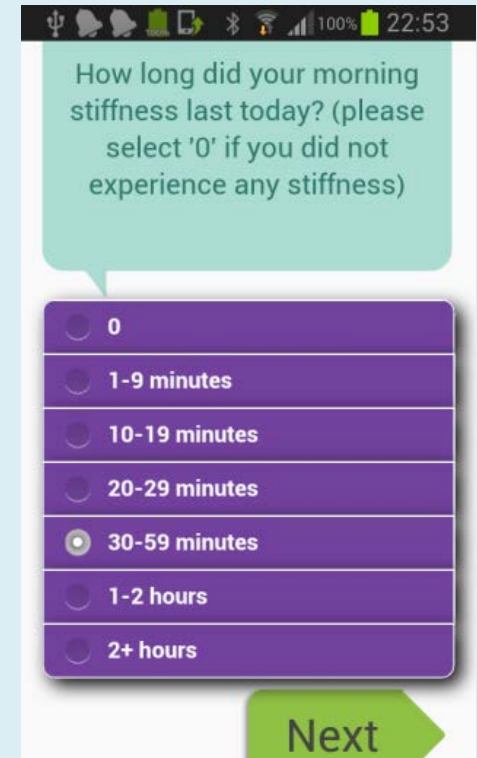
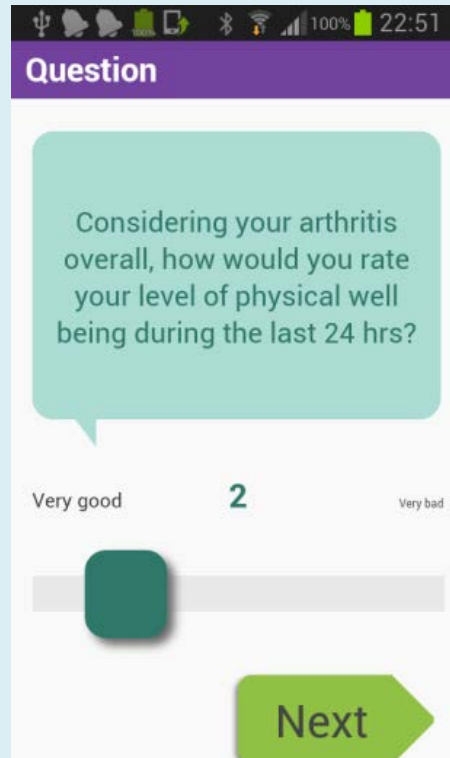
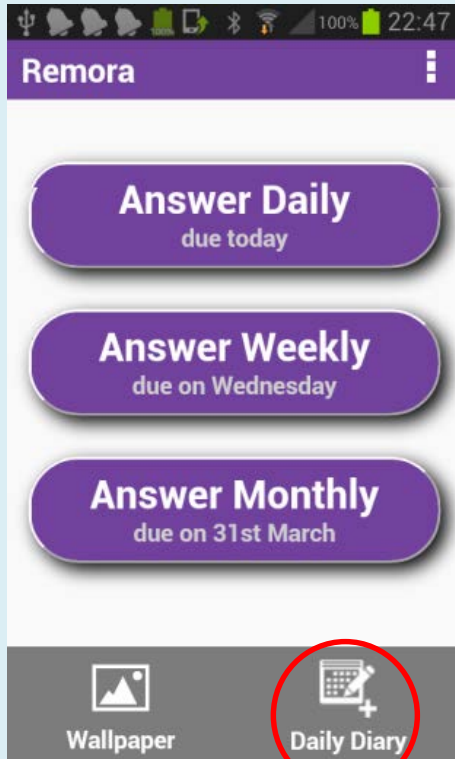
Patients
Guiding consultation
Self-management



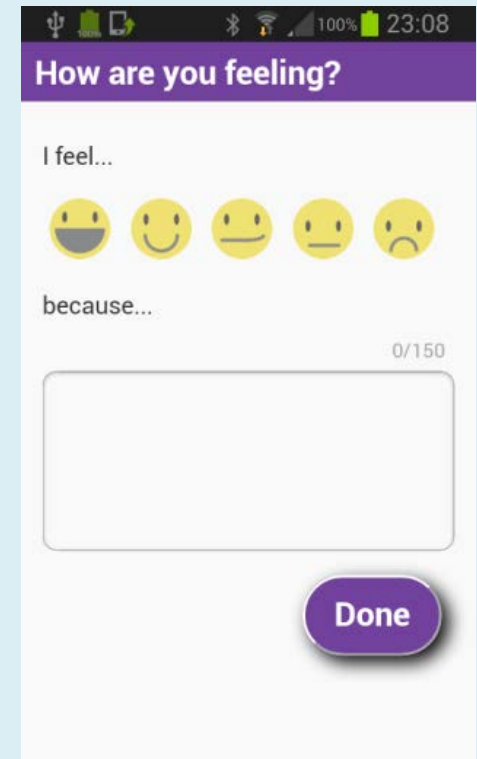
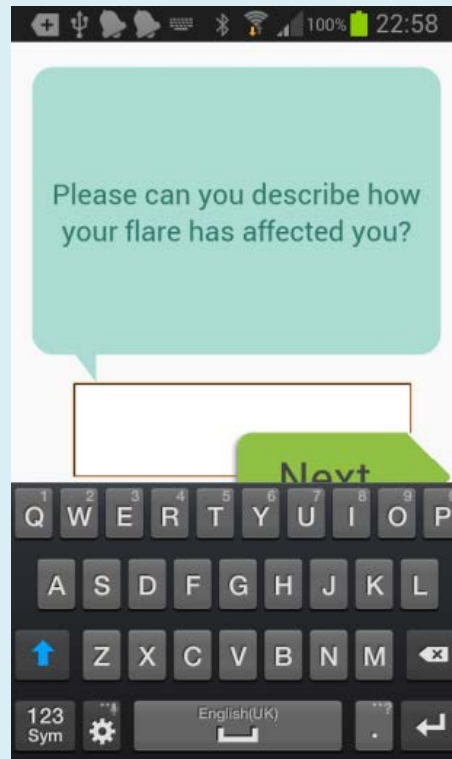
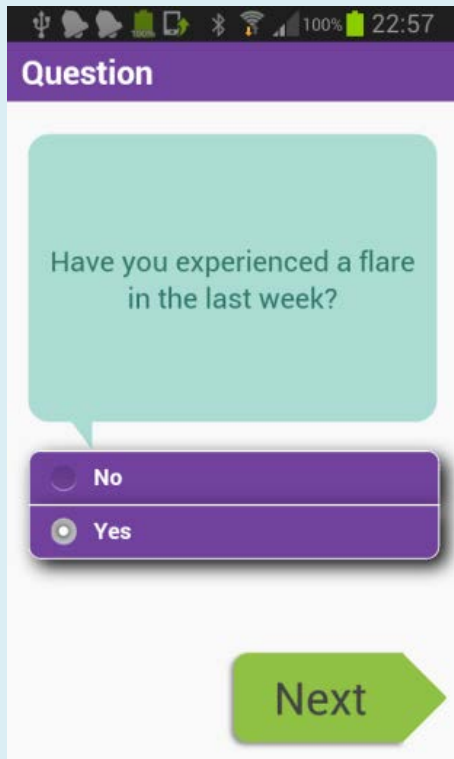
Clinicians
Guiding consultations
Triage outpatients

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

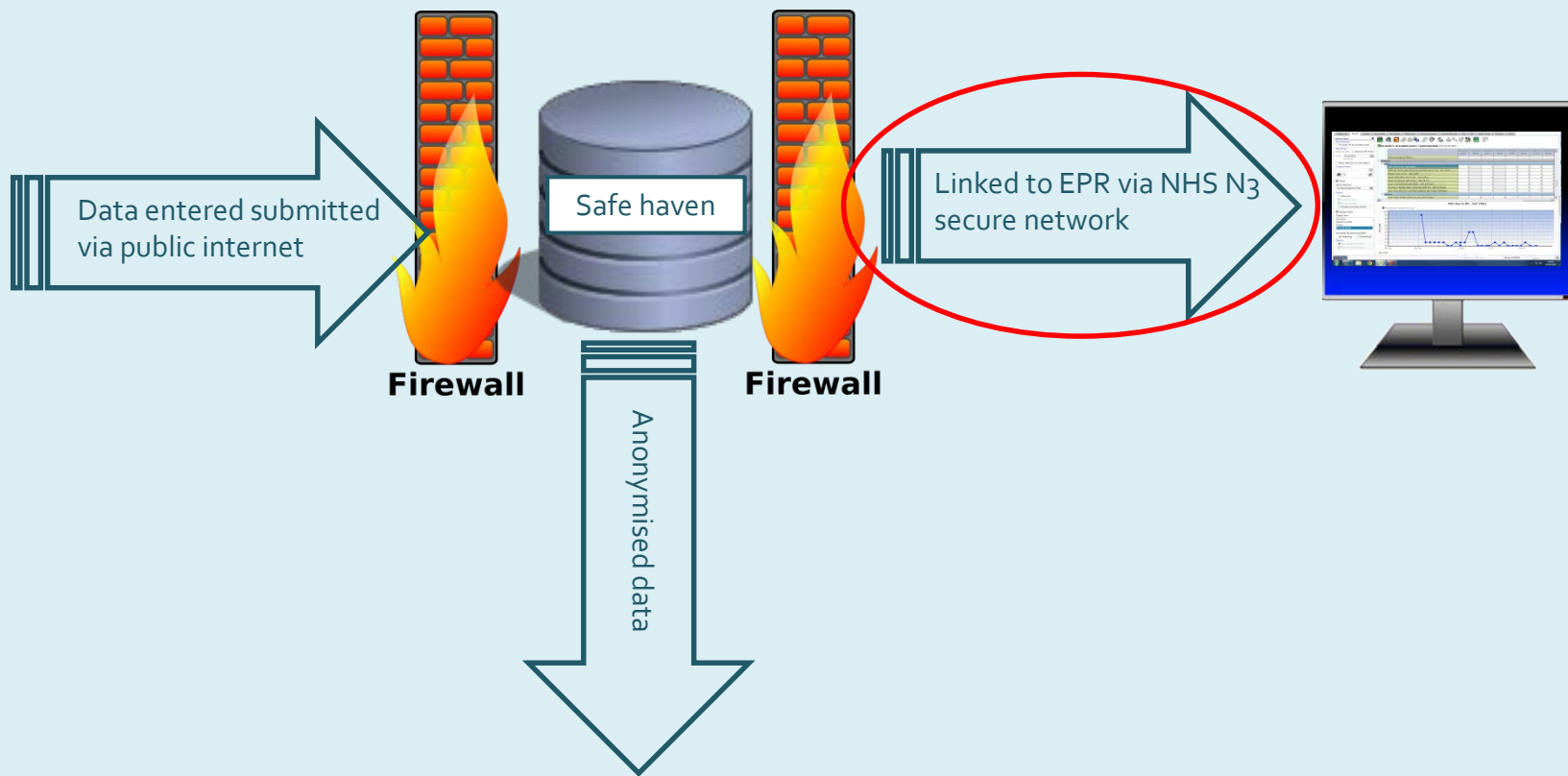
The REMORA app



The REMORA app



Stage 2: Checking 'end to end' processes



Stage 2: 'Post app' consultations



This chart All available charts
 Date Range: Based on date: Received Performed
 From: 18-04-2015 (One Year Ago)
 Retain selections for next patient
 Display Format: [Icons]
 Filters
 Result Selection: No Result Selection Filter
 Options:
 Abnormal
 Annotated only
 Include pending
 Include community results
 Display Styles
 Display View:
 Summary
 Report by Order
 Trend
 Trend & Graph
 Sort Order (by Performed Date):
 Ascending Descending
 Options:
 Show category headers
 Show community source

All results for all available charts for performed dates from 18-04-2015;

	12042016 20:42	12042016 20:43	13042016 19:13	13042016 19:14	14042016 18:54	15042016 18:21	16042016 21:28	18042016 07:40
Echocardiogram Report								
Remora								
Daily								
Pain due to RA - last 24hrs	0		0		0	1	0	0
Difficulty doing daily physical activities due to RA - last 24hrs	1		1		1	1	1	0
Fatigue due to RA - last 24hrs	1		1		1	2	1	0
Sleep difficulties due to RA - last 24hrs	1		0		1	2	0	0
Level of physical well being - last 24 hrs	1		0		0	1	0	0
Level of emotional well being - last 24 hours	1		0		1	2	0	0
Coping (manage, deal, make do) with RA - last 24 hours	1		1		2	2	1	0
How long did your morning stiffness last today (minutes)	1		1		1	1	1	1
Weekly								
How many tender joints do you have today?		0		0				

Pain due to RA - last 24hrs

Date	Value
15 Mar 2016	0
22 Tue	9
23 Mar 2016	1
24 Mar 2016	1
25 Mar 2016	1
26 Mar 2016	1
27 Mar 2016	1
28 Mar 2016	0
29 Mar 2016	0
30 Mar 2016	1
31 Mar 2016	1
1 Apr	1
2 Apr	4
3 Apr	4
4 Apr	0
5 Apr	0
6 Apr	0
7 Apr	0
8 Fri	1
9 Apr	0
10 Apr	1
11 Apr	0
12 Apr	0
13 Apr	0
14 Apr	0
15 Fri	1
16 Apr	0
17 Apr	0
18 Apr 2016	0

18-Apr-16 09:59

Stage 2: Early feedback on using the app



More personal to you

With a graph...you can see what's going on

A graph of acknowledgment

A doddle

You've got solid proof straightaway

A great idea

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"





For further details please contact a member of the research team:

Lynn Austin - Research Fellow

Will Dixon - Chief Investigator

Caroline Sanders – Co investigator

lynn.austin@manchester.ac.uk

will.dixon@manchester.ac.uk

caroline.sanders@manchester.ac.uk

