

‘Improving the patient experience using patient reported symptoms’

Using remote monitoring for haematological cancer patients undergoing chemotherapy

Sanchia Aranda, Sibilah Breen, David Ritchie, Sarah Koefed
Peter MacCallum Cancer Centre, Victoria, Australia.

Roma Maguire, Nora Kearney.
University of Dundee, Scotland, UK.



Background

- Real-time remote monitoring systems are a cost-effective mechanism for improved patient care/outcomes in chronic disease
- Early studies of real time remote monitoring systems in patients receiving cancer treatment show:
 - Improved symptom reporting/control and psychological status
 - Decreased hospital admissions and BDOC
- ***A focus on high-risk/clinically challenging groups is warranted***
 - *haematological cancers*
 - *high toxicity chemotherapy protocols*
 - *Most likely to benefit clinically*

Previous Work

- Self Care Information Review
- ChemoEd Trial

Limitations

- Reliance on retrospective recall
- No ability to tailor information to patient experience
- Absence of real time connectivity at the time patients experience of side effects and symptoms
- Salience of chemotherapy preparation information before side effects and symptoms occur

1. Patient Completes Symptom Questionnaire
 - Twice daily/feels unwell
 - Key symptoms + temperature

Local

- 2a. Mobile phone provides tailored self-care advice in response to reported symptoms

Advanced Symptom Management System (ASyMS)

Treating Hospital

3. Patient can also view symptom graphs and additional self care information tailored to side effects



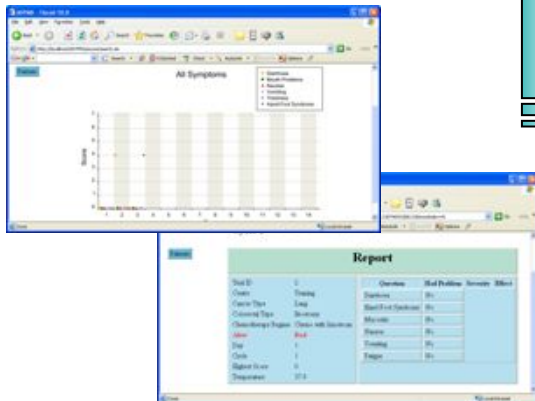
5. Clinicians contact patient to provide advice where appropriate

- 2b. Data sent in 'real-time' via GPRS to secure server
 - encrypted
 - no identifying information



3. Problematic symptoms generate alerts via pager or emergency SMS text to dedicated pager/phone
 - amber/red
 - individual/combination concerns

4. Nurses view symptom data on a secure website



Please take your temperature with your thermometer and enter it by tapping on the numbers below.

37.1

1	2	3
4	5	6
7	8	9
Clear	0	.
Next		Discard

Vomiting

Have you been sick in the past 12 hours?

Yes☒

No☐

Vomiting

How severe was it?

Mild - sick once in the past 24 hours.☒

Moderate - sick 2-6 times in the past 24 hours.☐

Severe - sick more than 6 times in the past 24 hours.☐

Vomiting

How much did it bother you?

Not at all☐

A little☐

Quite a bit☒

Very much☐

Diarrhoea

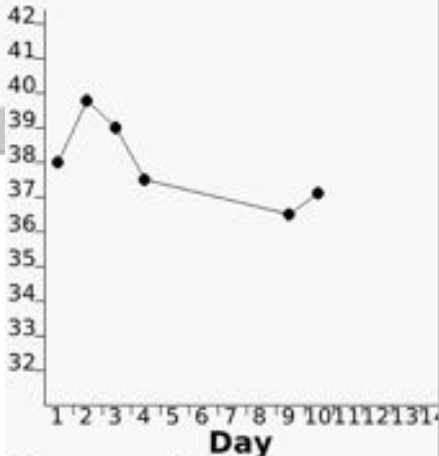
My Self Care

- ▶ Drink at least 2 litres/8 glasses of liquid daily.
- ▶ Drink between meals to avoid overloading your stomach.
- ▶ Choose drinks like water, herbal teas, sports drinks and electrolyte replacing fluids (e.g. Gastrolyte).
- ▶ Avoid caffeine and alcoholic drinks.

(1 of 3)

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Temperatures



Discard

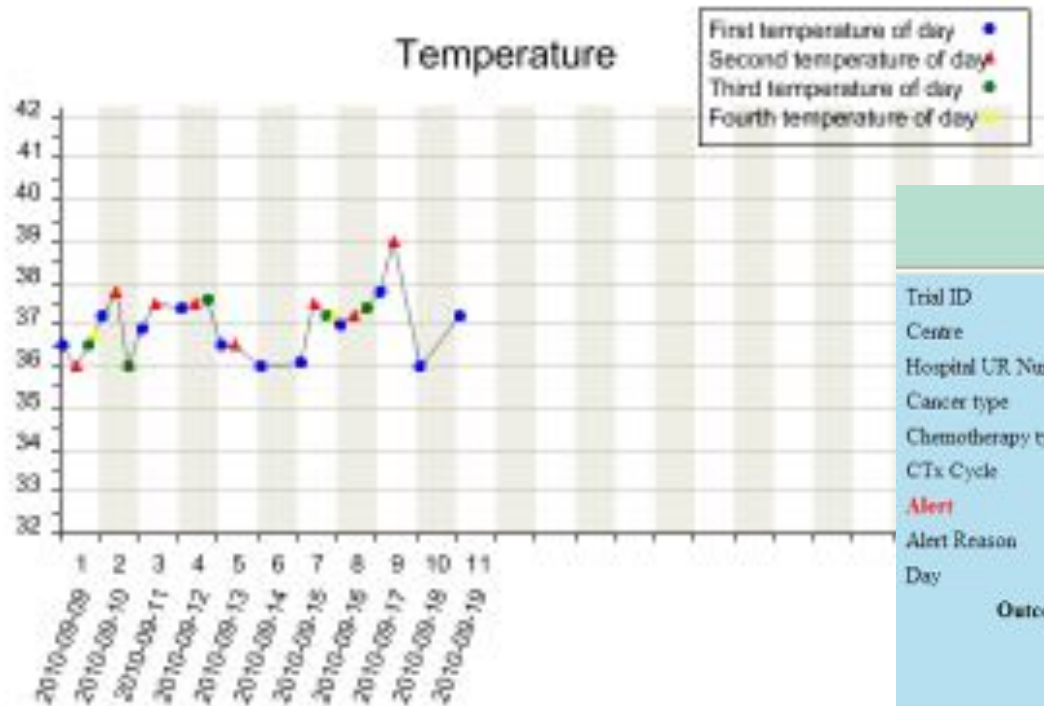
Temperatures



Close

Screen Shots
From Patient Mobile
Phone Handset

Temperature



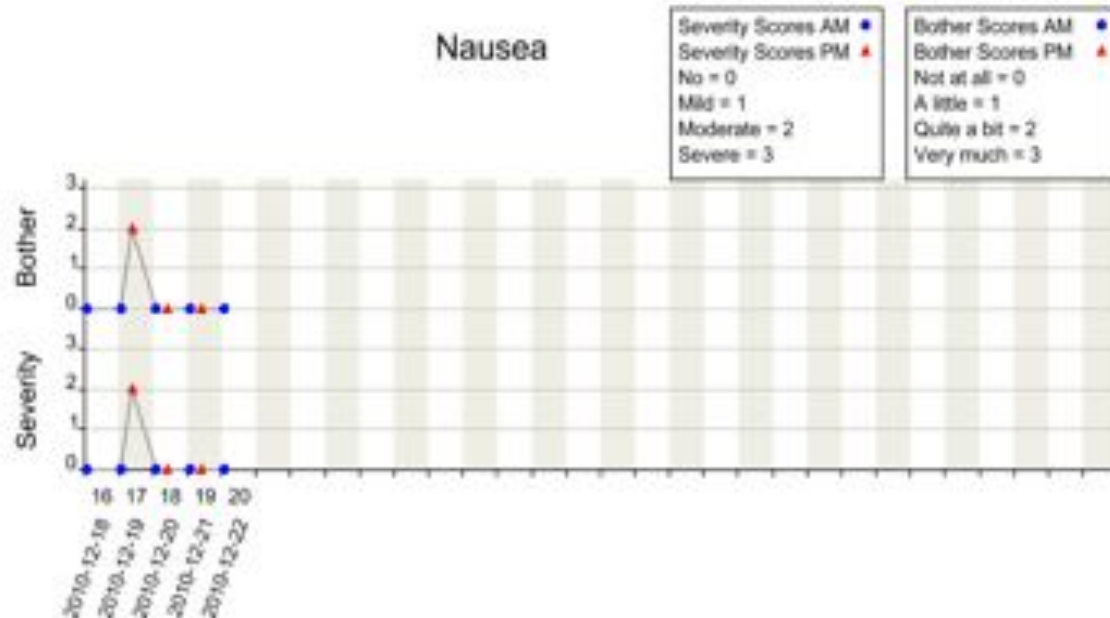
Report

Trial ID: 101
 Centre: Royal Melbourne Hospital
 Hospital UR Number: 01/01/00101
 Cancer type: Hodgkins
 Chemotherapy type: abvd
 CTx Cycle: 2
 Alert: Red
 Alert Reason: Yes to signs of infection
 Day: 9

Outcome NOT Recorded

Temperature	37.8	Severity	Effect
Signs of infection	Yes		
Question	Had Problem	Moderate	A little
Bleeding	No		
Nausea	No		
Vomiting	No		
Diarrhoea	No		
Sore mouth and throat	Yes		
Tiredness	No		
Constipation	No		
Tingling or Numbness	No		
Activities of daily living	No		

Nausea



Screen Shots
From Nursing Website

Pilot testing with Smart Phone

- Aimed to:
 - Assess end-user acceptability/feasibility of system
 - Assess frequency and reasons for system alerts
 - Assess rates of user compliance
 - Assess changes required for system refinement

Results (patients)

- System used by patients for total of 365 days
- Thirty two medical alerts generated (red -11; amber – 21)
 - Nausea
 - Mucositis
 - Temp >38 degrees
- 12 missing alerts generated (system not used >24 hours)
 - 6 alerts from 1 patient
- Compliance with daily use – 97%

1. acceptability/feasibility

- Easy to use & fits with routine
- One patient lacked confidence to fully utilize all functionality

"I didn't want to play outside the area [symptom questionnaires] just in case I upset the phone or anything" P1

"Its so easy to use. I think small children could be taught to use that.." P4

It wasn't a burden at all after you became accustomed to the routine of doing it each day...I found I adapted automatically to doing it like brushing my teeth

2. positive impacts on care

- Security, reassurance & shared management
- Understanding and planning
- Empowered and pro-active
- Communication & early intervention
- Benefits of Real time reporting
- Future benefits : predictive modelling

3. Appropriateness of content

- Symptom Questionnaire

“[The] questions were pretty thorough so I am not sure you can really add that much...it covered all bases.’ P

- Self Care Information

“It had everything in one spot rather than having to go somewhere and pick up a folder...summarized it nicely...” P9

4. Limitations

- Mobile coverage
- Manipulating answers and guilt
- More useful for symptomatic patients
- Application on own phone or the internet
- More useful for symptomatic patients

Nursing Views

Acceptability/Feasibility

- Easy to use/easier than expected
- Fit with routine and current roles

Effect on Process of Care

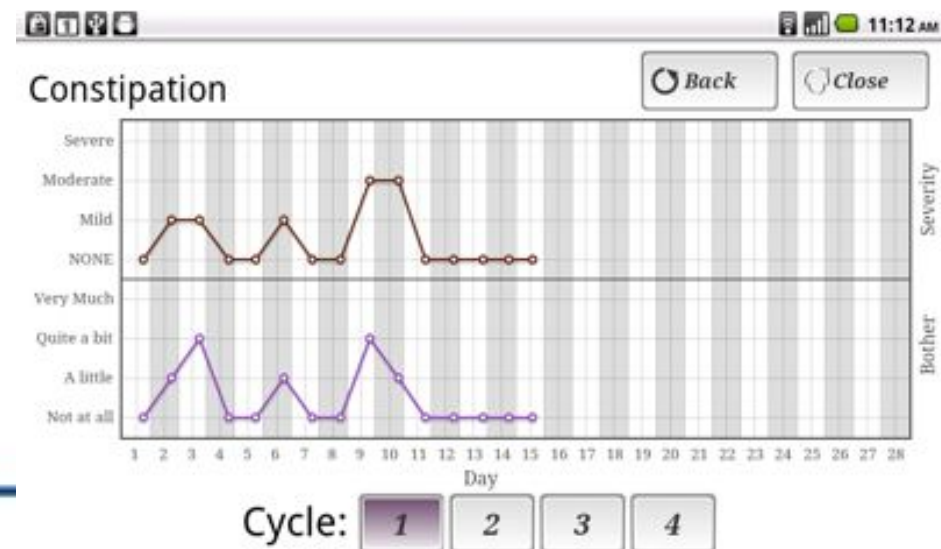
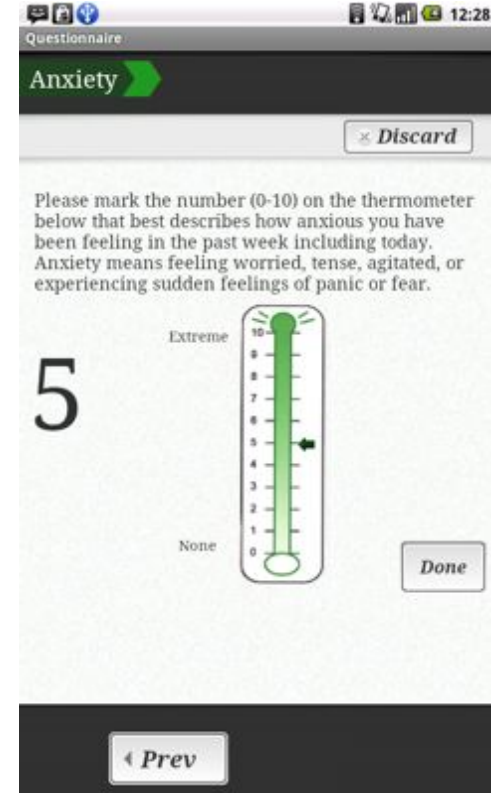
- Decrease inappropriate calls/controlling workload
- Consistency of assessment and advice
- Repeated alerting and repeated contacts appropriate
- Potential to allow patients to leave hospital sooner

Conclusions

- Highly acceptable/feasible to patients and nurses
- Numerous benefits for patients/cancer nurses
- High compliance
- Need to adapt symptoms monitored; some wording; reformat website and address performance issues
- Need to ensure that patients are supported to use system effectively:
 - Use handset functionality
 - Keep reporting accurately and not feel guilty about taking up nurses time (normalise follow up)

Next Steps

- System has been re-programmed into an Android app
- Phase 3 RCT in progress incorporating structured nursing support at set intervals in addition to responding to alerts



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