Going Forwards: Realising the Potential of M-Health Innovation

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Hanging sculpture or “mobile” by Alexander Calder: L’empennage (1953)

Mobile is here

- >4.6 billion users worldwide
- Always-on, always-with-me
- Phone \(\Rightarrow\) computer
- Numerous uses in m-health, m-libraries, m-learning…
Good morning. Remember you have an appointment at the clinic this afternoon. To cancel or change the appointment, ring 020 7288 3383.

Appointment reminders

- 22 million missed appointments in the NHS per year, costing ~£790 million
- SMS (text) reminders widely used outside medicine, from hairdressers to vets
- SMS reminders reduce non-attendance rates between 6-38% in RCTs
- SMS reminders demonstrated to be cost-effective
- Need to be integrated into booking systems
STOMP Quiz: how long does it take for nicotine to leave your body? 2 days, 2 weeks or 2 years – we will send you the answer later today!

Example from Rodgers et al. (2005), Tob Control 14: 255-61

Behaviour change

• More intensive than a single reminder
• Proven to work
  – Smoking cessation: 1.7-2.4 times higher likelihood of giving up smoking
  – Medication adherence: 11%-23% improvements
  – Long-term conditions: various trials showing improvements for diabetes
M2M (machine to machine)

- Direct messaging from home glucometer/ coagulometer/ sphygmomanometer
- Patient-reported outcomes on hospital wards (with a cheap, easy-to-clean, droppable device)
- Emergency alerting systems
PHRs: personal health records

- Electronic health record controlled by the patient, or with patient access
- Patient’s mobile phone acts as an additional way of accessing the PHR
Devices attached to the mobile phone
— eSTI² receives £4M grant

And...

• Mobile computerised Cognitive-Behaviour Therapy
• Epidemiology
• M-learning
• …
Y r u obsessed w apps? :-)  

- Don’t overlook SMS (text) & interactive voice response  
- Near universal coverage; no fragmentation  
- UK  
  - 62M population, 82M mobile phone subscriptions, 25M smartphones, 40% smartphone penetration  
- India  
  - 1220M population, 973M mobile phone subscriptions, 33M smartphones, 3% smartphone penetration  

“Utopia is that which is in contradiction with reality” – Albert Camus  

- So many promises have been made for technology that were not delivered  
  - Choose & Book (Green et al., *BMC Med Informatics Dec Mak* 2008, 8, 36)  
  - Connecting for Health (Greenhalgh et al., *BMJ* 2010, 340, c3111)  
- Problems scaling up m-health systems  
- M-health still dominated by technology ‘push’ rather than clinician ‘pull’  
- Proprietary, commercial systems under-delivering
But remember the 1880s…

• We got used to (fixed) phones!
  – The Lancet warns that if patients can telephone and converse with their doctors “for a penny, they will be apt to abuse the privilege” (1883); to diagnose by telephone rather than in person is “not in accord with the true ideal of professional duty” (1887)

• What we need from m-health now is…
  – Scalability
  – Interoperability
  – Clinically reassuring

Principles to support technology innovation?

Involve users in design
Allow co-evolution of technology and usage
Recognise issues with top-down and bottom-up approaches (middle-out?)
Address the complexity of work practices
Address organisational issues
Get the infrastructure right
Technology push v. user pull

“if you think IT is the solution to your problem, then you don’t understand IT, and you don’t understand your problem either.”

Roger Needham, CBE

In electronic health records: Greenhalgh, Potts et al., Milbank Quarterly 2009, 87(4):729-88
To make systems work, you need buy-in from staff: how will the system benefit them?

Don’t just think at the top level: how can each ward/GP surgery/district nurse use it?

Adoption of technology is a fluid and contingent process of change, entailing a co-evolution of work practices and the technology, where each adapts to the other

- Marc Berg talks of “growing” rather than building IT systems and working to achieve synergy among three fundamental (re)design tasks: technical system, primary work process (e.g. clinical care) and secondary work process (e.g. audit)

Manager: Let’s outsource the appointment reminder system. It will be easier to commission and no extra workload for our staff.
Patient: I didn’t get a reminder, so I thought my appointment had been cancelled…

Receptionist: We don’t control that system. I don’t know how it works.

Make it easy-to-use
Money

- Unlike Internet, most mobile activities have to be paid for
- What does the end user pay? What does the institution pay?
- Individual SMS are exceedingly cheap

Operators want volume
- Many health services do not deliver volume, so we have to think in terms of aggregating
- Considerable interest in health sector from mobile sector
  - … but don’t be surprised if they all withdraw again!
- Go for generic tools
- Often the simplest tools – access to e-mail, maps – are the most useful
Thank you

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Bibliography


Cite as: