What you haven't heard:
Lessons from 130 years of health technology innovation

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Abstract

Many technology innovations in health have failed, so why is healthcare such a difficult area?

And how does the social nature of mobile help?

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UCL & Mobile Health Innovation

- **Ranking:** 4th best university in the world
- **CHIME**: only UK health informatics department in a medical school
- **NHS relationship**:
  - Provides teaching on the prestigious NHS Graduate Management Training Scheme
  - Close links to The Whittington NHS Trust
- **Projects:** electronic patient records, screening mammography, HIV+ databases, pandemic flu
- **Mobile Health:** appointment reminders, medical teaching via mobile, assessing pain over time
- **Collaboration:** commercial & technical reality with Galit Zadok (ex-Vodafone/EMAP)

Technology is not new to health

Late 1800's

Heart signals sent by telegraph (1860); first advert of medical services by phone (1878)

To diagnose by telephone rather than in person is "not in accord with the true ideal of professional duty" (1887)

Late 1900's

First online support groups (late 1970s? No later than 1982)

Cyberchondria (term coined 2001): the Internet as a new way to spread "pathogenic ideas" (1997)

Medicine can be quick to adopt new technology,

but the waves of enthusiasm are soon followed by concerns,

and even moral panic

Why healthcare is difficult

- Medicine slow to adopt technology
- Highly regulated
- High safety, duty-of-care
- Litigation threat
- Organisational culture, embedded working routines
- Who benefits, and who actually does the work?
- Focus on evidence-based medicine (*at least, in theory*)
- NHS not structured or operates like a corporate
- Funding and budget models are fragmented
  - For health
  - For research

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NHS: A Mishmash of Fiefdoms

3rd largest workforce in the world (after Chinese Army, Indian Railways)

4 devolved services: National Health Service (England), NHS Scotland, NHS Wales, Health and Care NI

England:

- 10 Strategic Health Authorities

- 152 Primary Care Trusts
  (together control 80% of NHS budget, but that's <1% each)

- 297 acute hospital and foundation Trusts

- 60 Mental Health Trusts, 12 ambulance trusts, a few Care Trusts

- NHS Special Health Authorities
  (NICE, NHS Litigation Authority, NHS Blood and Transplant)

- Certain national (England) services, including NHS Direct

Scotland, Wales and NI = similar fiefdoms
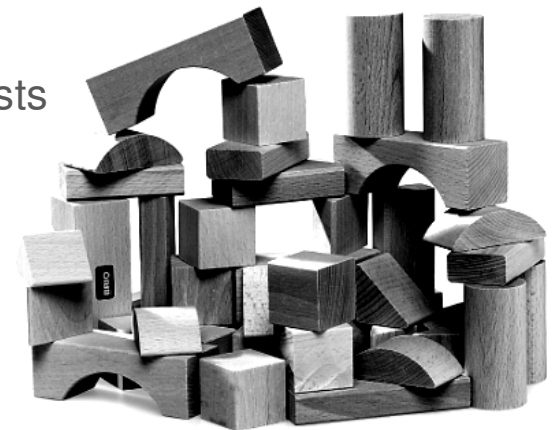
Where have there been failures of adoption?

- Diagnostic decision support
- Kitemarks for online sites
- Telemedicine
- Electronic patient records
- …

S B Freedman   ECG transmission to yacht by fax
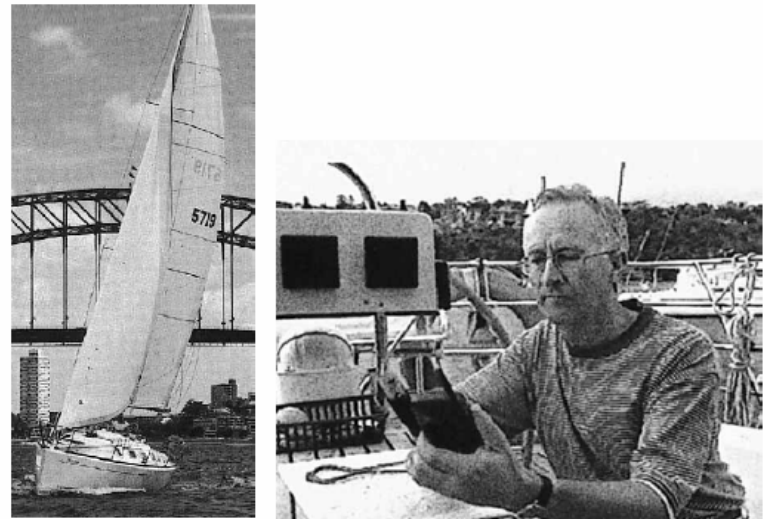
Fig 2 The author aboard a yacht in Middle Harbour, Sydney. The mobile telephone is open for viewing an ECG.

Looking at the NHS
NHS Connecting for Health

Biggest civilian IT project in the world ever; many successes, however…

"Seven years after the launch of the National Programme for IT in the NHS, **essential technology does not meet the needs** of doctors, local cost estimates are unreliable, many NHS staff remain unenthusiastic, and the programme's future is far from certain."

"The **delays** are despite the programme's having spent £2.4bn by March 2007"

"**few successful deployments** of the scheme's two main hospital systems […]"

NHS NHS Care Records Service

Home
About the NHS Care Records Service
Summary Care Records
Your Summary Care Record options
Film Clips
Detailed Records
Security and confidentiality
Access to your records
Publications
Frequently asked questions
Contacts and links

The NHS is changing the way it stores and manages your health records

Today, all the places where you receive care keep records about you.

They can usually only share information from your records by letter, email, fax or phone.

At times, this can be slow and sometimes things get lost on the way.

Now there will be quicker ways to get important information to NHS staff treating you, including in an emergency, supporting better, safer care.

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"An NHS trust at the forefront of work on the £12.7bn NHS IT scheme has called in police after a breach of smartcard security **compromised** the **confidentiality** of hundreds of electronic records."

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So *why* has health technology failed?

Disconnect between technology providers and healthcare reality

Imposed top-down solutions rather than working with clinical stakeholders with a bottom-up approach

Rigid solutions that fail to address the changing and fluid nature of healthcare work practices

All made worse by Government, policy makers and management seduced by the promise of big computer or some shiny tech

"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

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What works: the social aspect of tech

- **Wii Fit**: Nintendo succeeds (and gets paid!) where Department of Health has failed for years.

- **Online support groups** (used by tens of millions, bigger than face-to-face support groups)

- **Case Study**: FHM Mobile
  - Social aspect more popular than babes in bikinis
  - CHANGED business and revenue model. Subscription → Advertising
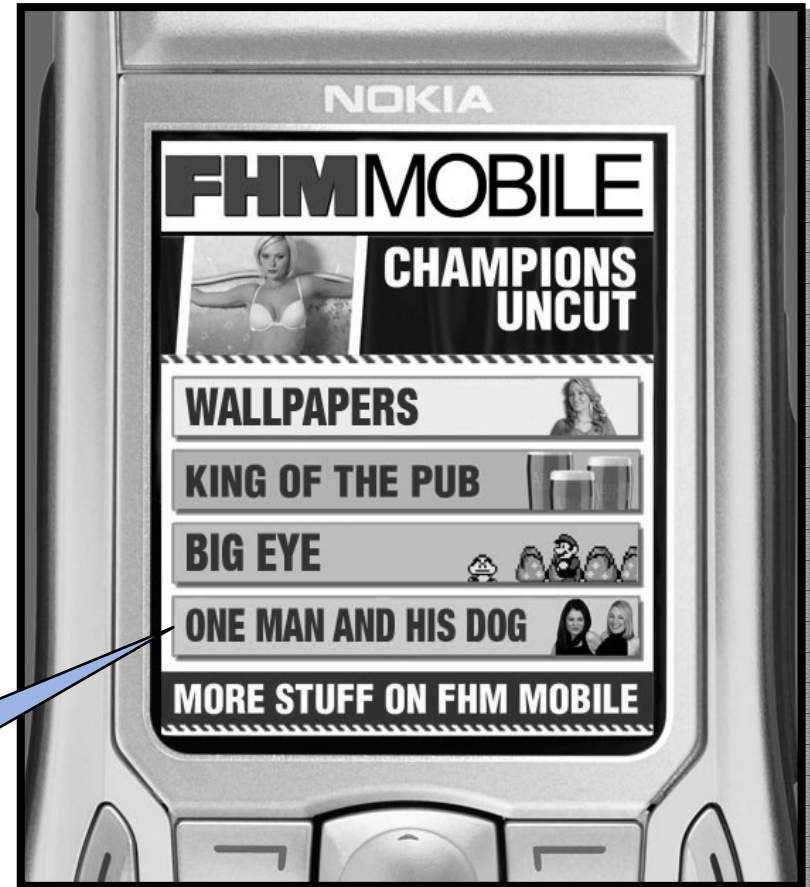
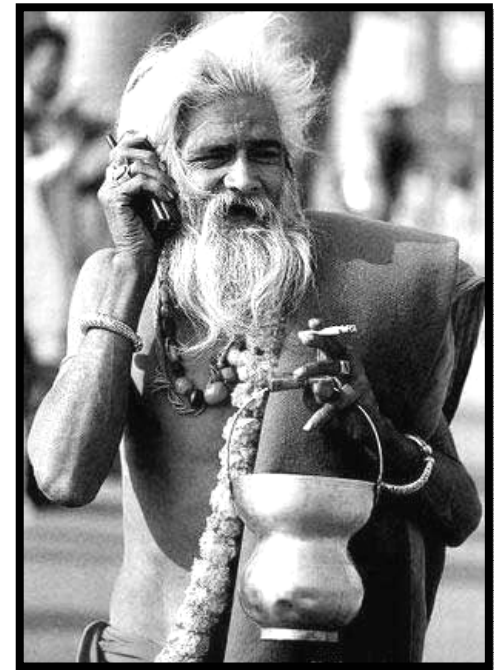Most popular area
12m PI/month (2005)

Mobile is the most social of all tech

Always-On-Me device, puts the connected user in the centre

… thus Mobile has great relevance for health care
• Ideal for education
• Ideal for social support , and *Self Management*
    • Behaviour Change
    • Mental Health
    • Quality of Life (support of chronic diseases)

But still need to qualify funding models…

Mass Adoption require Human-Centric approach to service design

- Mass adoption = 30% of addressable user base
- Needs, wants, and limitations of end users need extensive attention
- For a mobile service to be adopted, it must fulfil *Human*-centred criteria

- Lessons from Sustainability
(*Designing for sustainability in Mobile Computing,* Zadok/Pusstinen, 2009)

Applicable to Mobile Health Care

Green Switch Checklist	✓ (Y)	✗ (N)
Mass-Market Appeal		
Beneficial		
Convenient		
Good value		
Socially acceptable		
Green Appeal		
Reduction in energy consumption		

Human-Centric / *Ecology-centric*

Table 2-1: Green Switch Methodology

(Aim: ✓(Yes) in all the boxes)

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In Summary

- Health is difficult and complex
- NHS and tech a challenge; lessons to be learnt
- Scalability/Mass Adoption challenges
- IT is not a panacea, but IT can surprise and be transformative
- Sociality of health and mobile
- Mobile is the most socially-oriented tech platform of all

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Thank you. Questions?

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