

Delivering sustainable innovation in healthcare infrastructure

DESIGN & HEALTH WORLD CONGRESS
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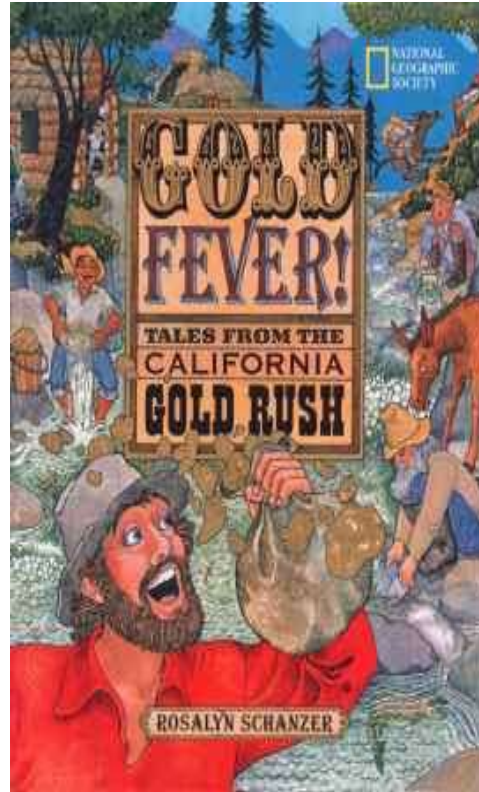
Professor James Barlow PhD

Overview

- Context – economic crisis, technology push, the infrastructure faultline
- The need for innovation – and why it's hard
- HaCIRIC's research programme
- Some emerging lessons for sustainable innovation in healthcare infrastructure

Global economic crisis

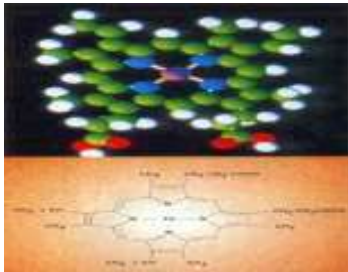
- In the East: high savings, \$ reserve accumulation
- In the West: high consumption, \$ borrowing
- ... mixed with poor regulation, deception, and outright fraud



Technology is changing care service models and demand



Advances in medical and diagnostic equipment reduce cost and increases access to care close to or at home



New pharmaceuticals reduce the requirement for in-patient care but increase the numbers requiring long term support



Advances in surgery will improve outcomes, reduce lengths of stay and extend the range of eligible patients

The emerging faultline?



Tertiary care



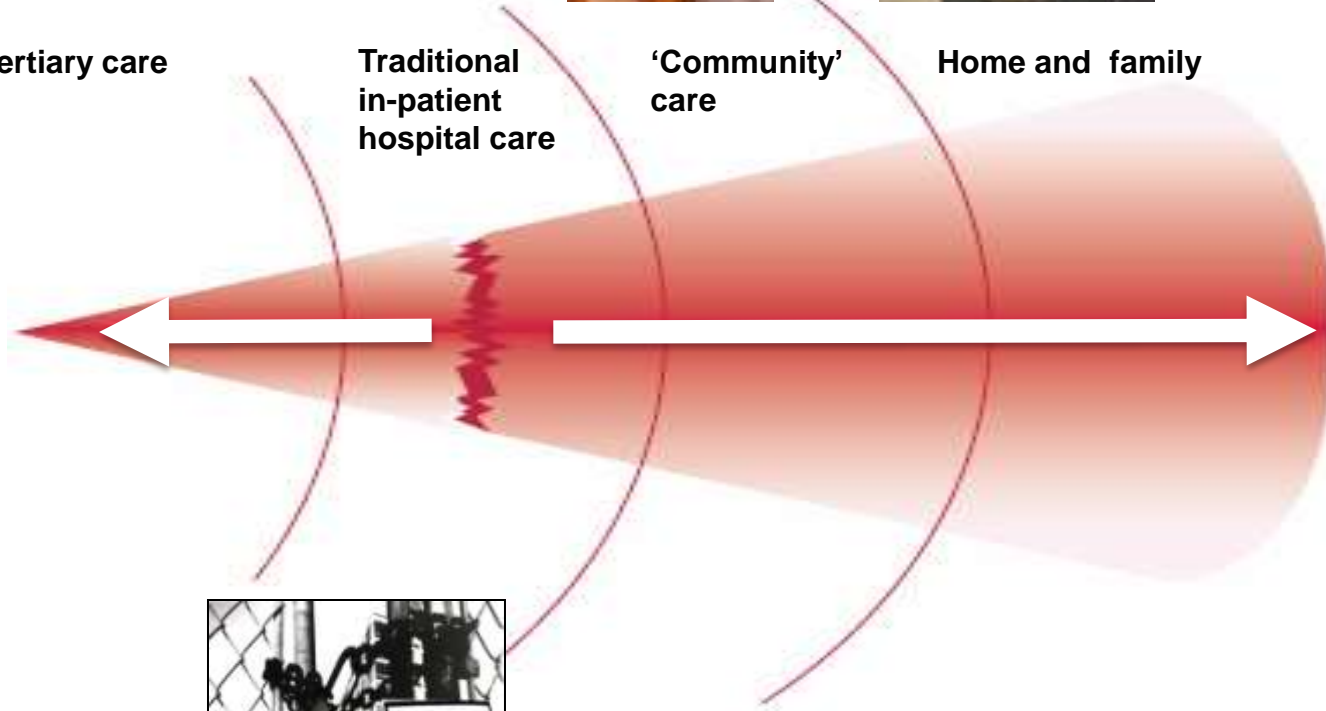
Traditional
in-patient
hospital care



'Community'
care

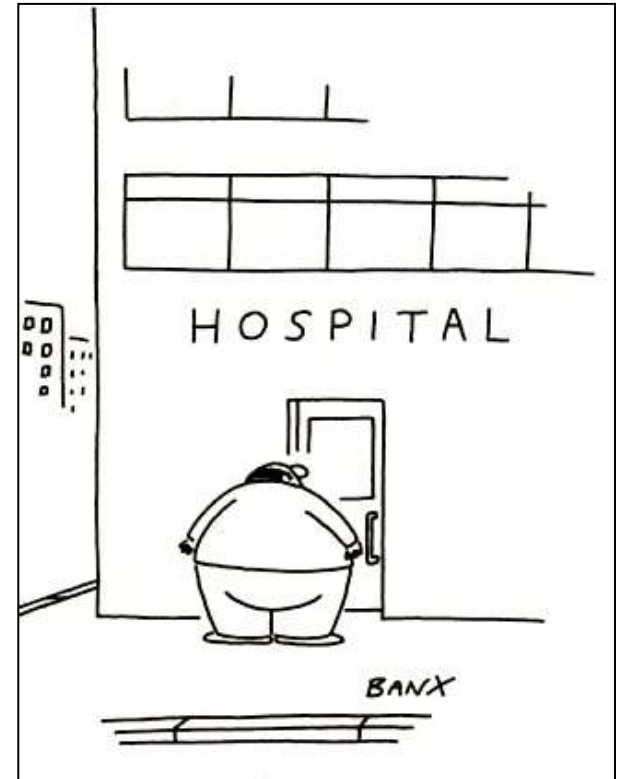


Home and family
care



With thanks to Laurie McMahon

... and infrastructure will need to cope



Major investment in healthcare built infrastructure is underway

- UK: £24bn hospital programme
- Major new investment across eastern European
- €30-50bn needed to modernise German hospital infrastructure
- New **economic stimulus packages** including national healthcare infrastructure



Liquidity: a scarce resource?

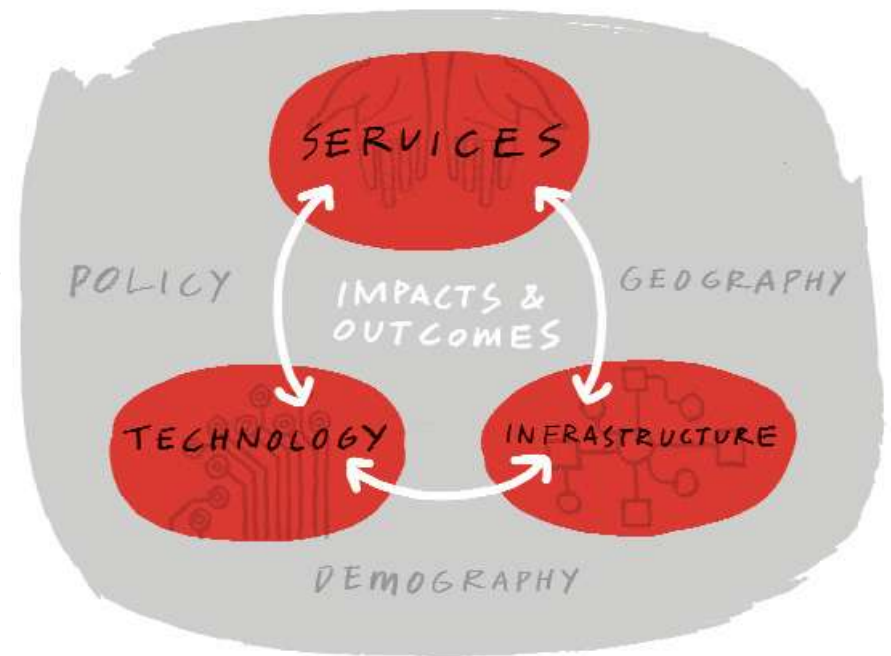
- Banks transferring **liquidity costs** to customers
- Healthcare sector has to **compete** for scarce funding with other industries
- Historically **limited support** for healthcare in the boardrooms of banks

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But how to cope with pace of change, rising demand and economic crisis?

- Innovation is part of the **solution** ... not an optional extra
- **Applying** what we know works but hasn't spread
- Creating **new approaches** to healthcare
 - Products
 - Processes
 - Infrastructure
 - Financing and delivery models

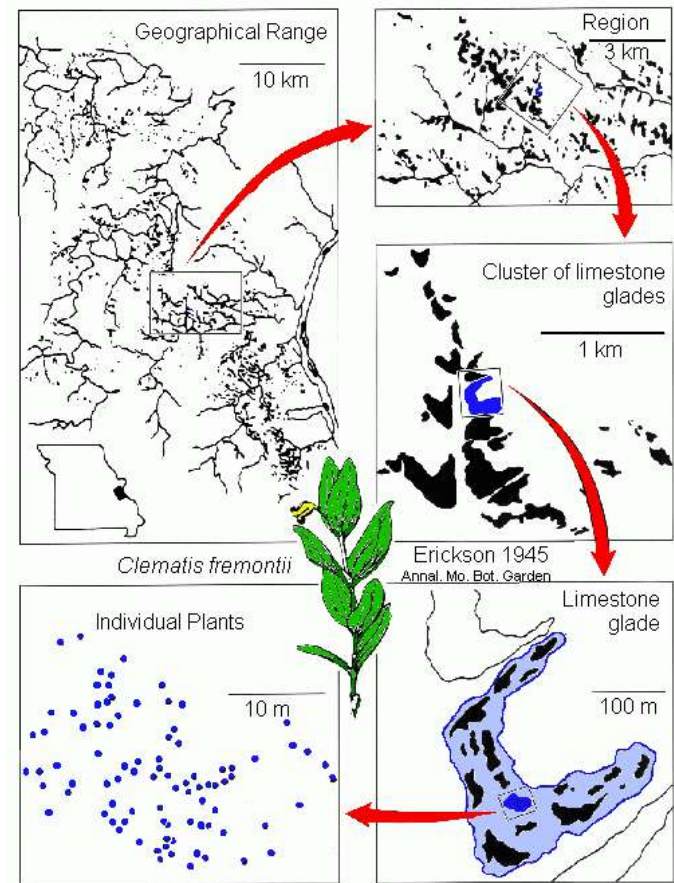


Some innovations that are needed

- Link **capital funding** to desired design (not vice-versa)
- Real – rather than rhetorical – partnerships which **incentivise innovation and flexibility** across the site and through lifespan
- **Lifecycle** approach to economics
- Whole systems perspective – foster evolution of **whole-care system**, don't just focus on accommodation

... especially in a complex system

- Healthcare systems operate and need to be understood at different levels:
 - subsystems to whole systems

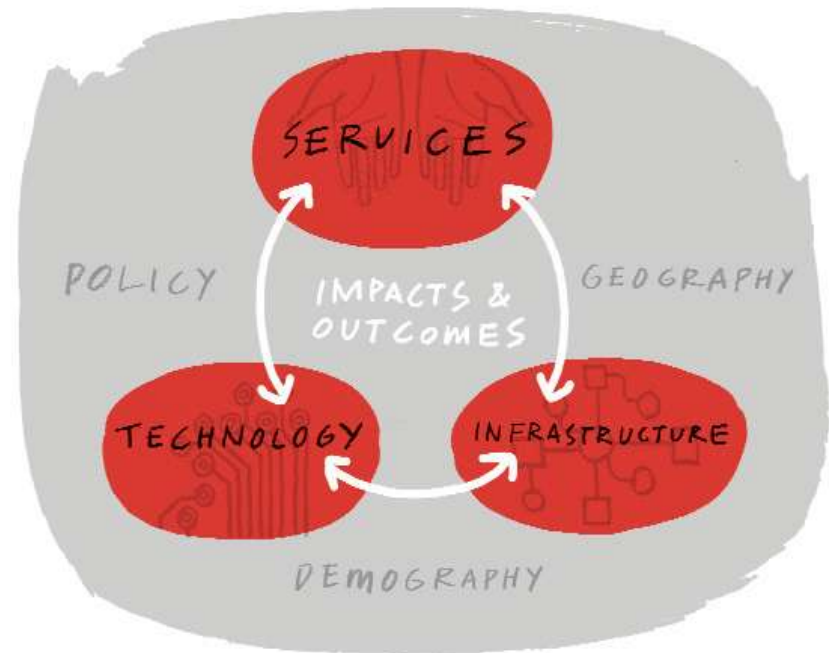


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About HaCIRIC

- Health Care Infrastructure Research and Innovation Centre
- EPSRC funded, established in 2006
- Imperial College, Loughborough University, Reading University and the University of Salford
- Focuses on **healthcare infrastructure systems** – services, built environment and large scale integrated technical infrastructure
- Over 30 research projects underway



HaCIRIC's research focus

— We address a set of related issues:

- how innovation can be **stimulated**
- how its implementation and spread can be **managed** more effectively, and
- how better understanding of its impact and value can improve **decision making**

Core collaborative areas (CCAs)

- Stimulating innovation through finance and delivery models
- Managing change and innovation
- Innovation impacts – outcomes and processes
- Design and decision making

CCA1: Stimulating innovation through finance and delivery models

How do procurement, contractual and financing models –and targets and incentives – influence innovation in healthcare infrastructure and services?

Example project: Impact of UK's Private Finance Initiative on innovation

- Funding from the Howard Goodman Fellowship
- 6 hospitals built under pre-PFI delivery models and 7 PFI schemes as case studies:
 - Pre-PFI: design and construction **innovation**, greater **integration** among regional hospital boards and individual hospitals
 - PFI: little innovative thinking, consortia aim to minimise exposure to **risk**, clients **unwilling to pay** for innovations, limited collaborative working



CCA2: Managing change and innovation

How do you better support the adoption, spread and sustainability of innovations in healthcare services and infrastructure systems?

Example project: Adopting and diffusing a complex innovation in care services

- Case studies of initial adoption processes, spread and mainstreaming in UK telecare
- **Pockets** of excellence don't spread and **pilot** projects are not sustained
- Importance of organisational and system factors in influencing mainstreaming:
 - Champions, leadership
 - Organisational integration
 - 'Evidence' to persuade sceptics and build business case

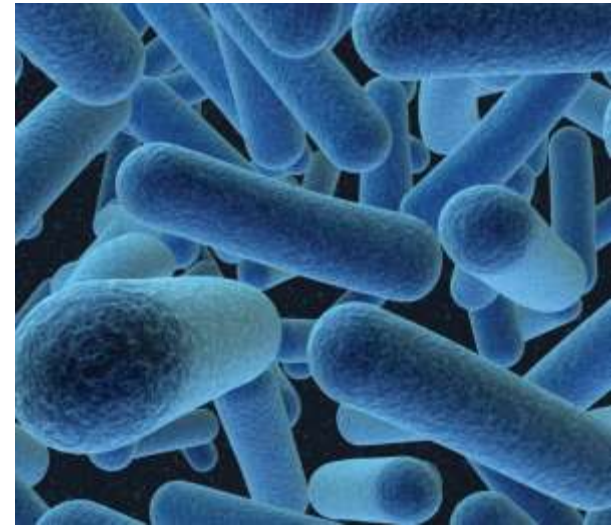


CCA3: Innovation impacts – outcomes and value

- What is relationship between innovation in infrastructure / services and health outcomes?
- Can we develop new ways to capture the potential and realised value delivered by innovative infrastructure and services?

Example project: Controlling healthcare associated infections

- Multidisciplinary, collaborative research programme with UCL on controlling healthcare associated infections (HCAI):
 - Efficacy of routine cleaning in hospital wards to reduce transmission of HCAI
 - Relationship between physical design, user behaviour and spread of HCAI
 - Design audit tool to identify and implement infection control measures in briefing, design, construction and operation of hospital facilities

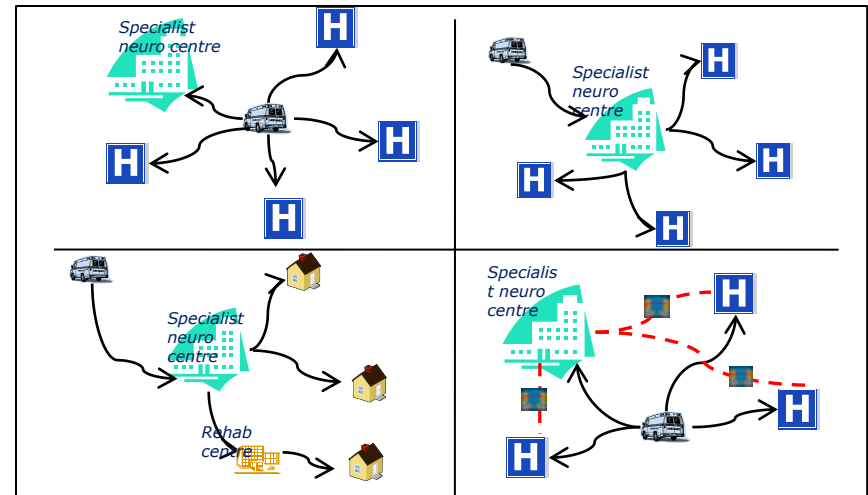
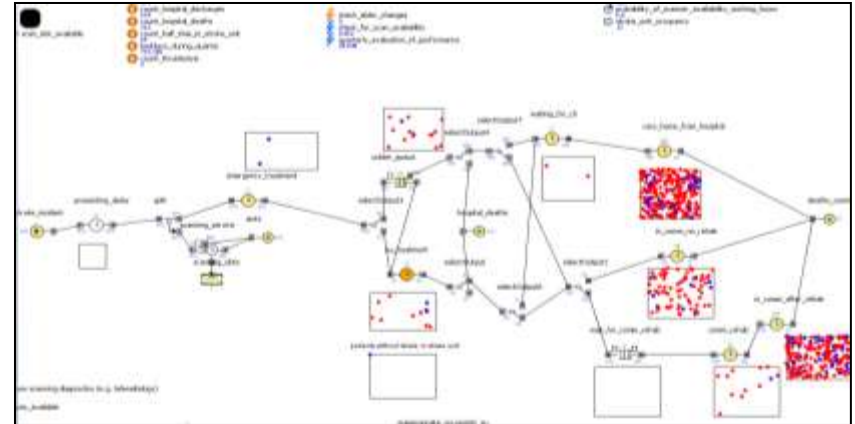


CCA4: Design and decision making

- Decisions on new healthcare services often made with little evidence of their wider potential impact
- We need a more integrated approaches to planning healthcare infrastructure and services

Example project: stroke care service redesign

- Initial project funded by Dept of Health to investigate stroke care configurations and develop simulation model to explore impact
- New collaborative work with Harvard Medical School and MIT:
 - Cultural differences in approaches to stroke care
 - Disruptive innovation
 - Cost effectiveness and outcomes



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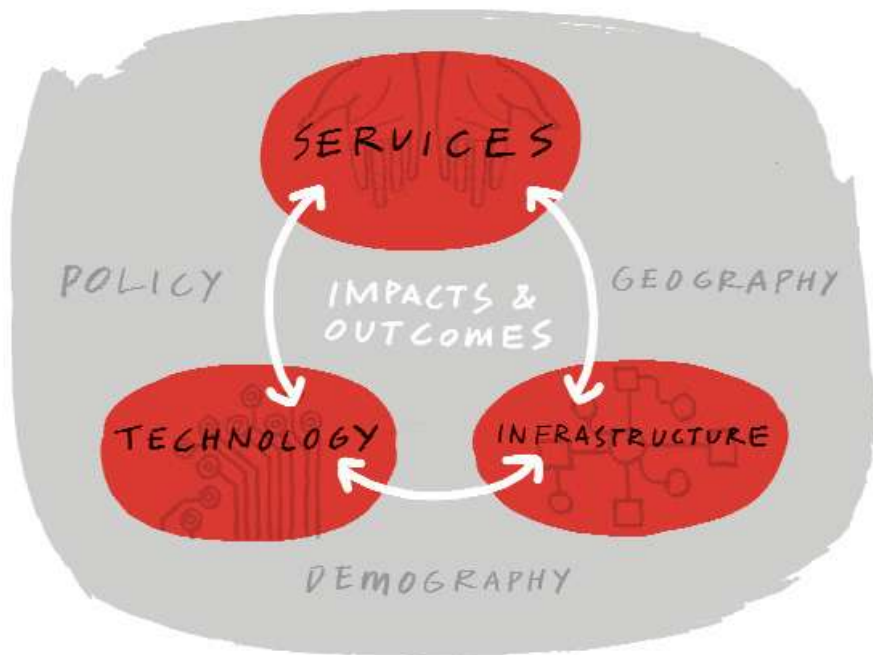
Generic lessons for delivering sustainable innovation in healthcare infrastructure

It's all about:

- organisations and people
- funding and incentives
- sensitivity to context
- evaluation to get the right kind of evidence

Conclusions

It's about understanding services, technologies and infrastructure as a system



Thank you

James Barlow

j.barlow@imperial.ac.uk