

Health systems as Living Labs:  
Opportunities for collaboration with  
industry, and benefits for the  
system, patients and economy  
UK/international reflections

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# Overview

- Technology development/uptake process
- Areas of emerging interest and potential
- Examples and lessons from the UK
- Opportunities for Alberta
- Challenges

Steps	Processes	Facilities	Benefits
Basic research	Biomedical, materials, engineering and other research	University and company labs and staff	Inward investment to innovation system; improved innovation system performance
Bench to bedside	Translational research	University-health service clinical research facilities and staff	Inward investment to innovation and health systems; improved innovation system performance; improved care quality
Phase 2/3 trials	Demonstration of safety and efficacy; regulatory approval	Systems and staff to manage RCTs in acute and community care settings	Inward investment to health system; improved care quality; early access to new treatments
Appropriate use	Coverage; development and dissemination of best practice	Systems and staff for Phase 4 studies of real world use and performance, and coverage with evidence development	As above, plus improved health service data systems and intelligence

# Areas of potential and/or global interest

- Basic research
  - Focus of major initiatives around world; interest in multi-disciplinarity
- “Bench to bedside” translational research
  - Focus of major initiatives around world
- Mapping and understanding genetic variations and relationships to health in a population
  - Focus of some major initiatives around the world
- Coverage with Evidence Development and Managed Entry; progressive licensing and approval
  - Interest in health systems and industry (at least pharma) as way of handling uncertainty re real world performance and value at launch
  - Will be of increasing interest if progressive licensing model gains traction
- Development and dissemination of best practice/appropriate use
  - Long-standing challenge; no “silver bullets”
- Re-engineering device/engineering/systems innovation, evaluation and procurement processes
  - Growing interest in potential to drive quality and efficiency of care, and economic development; some practical examples
  - Industry engagement variable

# Examples from UK (1)

- Development and promotion of UK base for basic research
  - Longstanding policy; major investments from science budget; major focus on life sciences
- Translational research
  - Major recent investments in Clinical Research Centres/Biomedical Research Centres; MRC and Wellcome research programmes; training and career paths for clinical researchers
  - Work to improve links between research centres, industry and NHS
- Phase 2/3 trials
  - Major investment of money and time in clinical research networks (investigators; nurses; trials centres); streamlining ethics review and contracts (IP, “overheads” etc)
  - Attempts to link clinical research networks with wider clinical networks (to improve relevance and uptake of research)
- CED and MEA, Phase 4 studies, and promoting appropriate use
  - Clear system for “Patient Access Schemes”
  - Access to good “real world” data through General Practice Research Database (GPRD – subset of all general practices in country)
  - NICE guidelines; prescribing guidelines/advisers

# Examples from UK (2)

- UK Biobank
  - Established in 2006 through collaboration between MRC, Wellcome, Department of Health and others
  - Set up as charity with Board; run from University of Manchester
  - Sample of 500,000 aged 40-69 yrs at recruitment; biological samples, health and behavioural data collected; health outcomes followed up
  - c\$150m of public/charitable funding for first 10 years
  - Strict ethical codes and rules for access for university and industry researcher projects (charged on a cost recovery basis)
- Recent interest in promoting innovative devices/equipment/systems to improve quality and efficiency of care
  - Equipment/device development model traditionally involves working with clinicians
  - New initiatives aim to bring service managers/developers and patients into these discussions – co-development of technology by health system and industry
  - May include fast-track for evaluation and procurement/adoption
  - Goals are to improve relevance, speed and efficiency of development process to increase benefits for patients, health system and

# Re-engineering innovation in the UK

- Various strategies published by DH/NHS/Government. Correctly emphasise that health innovation is not limited to technological innovation, but policies/strategies/systems do not always address each clearly
- NHS National Innovation Centre (NIC)
  - National centre to promote and support innovation
  - Other initiatives have run in parallel – eg national competition for innovations to support infection control – note some of these have included fast-track procurement arrangement
  - NIC closing March 2013 as part of latest NHS reforms; support will be provided in future through “emerging regional innovation infrastructure”; details to be announced – not clear how procurement will be handled
- White Rose Health Innovation Partnership (HIP)
  - Regional initiative in Yorkshire (4 million people) between 2006 and 2010

# NHS National Innovation Centre

- Identifies NHS needs and communicates to inventors/developers
- Runs competitions/calls for ideas in service priority areas
- Receives and provides feedback on ideas from inventors/developers
- Provides information on the innovation process, how to do it, and what support/advice is available from NHS, university, trade and other bodies in and beyond the UK
- Provides information for the service on recent innovations of potential value to NHS
- Has supported work on eg:
  - Splint for fractured neck of femur
  - Enhanced ultrasound imaging
  - (Parallel national schemes– eg for for infection control)



# White Rose Health Innovation Partnership (1)

- Initiative developed by York, Leeds and Sheffield Universities in Yorkshire, England (population c4 million)
- Partnership between universities, National Health Service, industry, Regional Development Agency
- Funded through bid to Higher Education Innovation Fund
- Aimed to exploit medical device industry cluster, university research expertise and NHS clinical and research expertise to promote innovation of greater relevance and value to the health services and greater profitability for industry (through local, national and export sales)
- Partnerships with New Jersey, USA, Singapore and China aimed to share science and innovation bases and markets

# White Rose Health Innovation Partnership (2)

- Approach was based on an Accelerated Radical Innovation process (adapted from work in the chemical industry sector)
- WR HIP hosted workshops for NHS clinicians and managers, industry and university scientists (from a wide range of disciplines) to brainstorm innovative solutions to clinical problems
- These ran in a pre-competitive space, with partners then free to use and develop ideas and partnerships in private, commercial arrangements
- Health economics was included at the scoping stage, to help identify and focus on developments that would be affordable. A toolkit was developed to support this (cf UK MATCH Project)
- Partners all found the work useful. Some new devices were developed.
- But HIP did not develop sustainable business model to continue after HEFCE funding

# Opportunities for Living Lab Alberta (1)

- Basic research
  - very stiff competition
  - pharma industry (and larger device companies) source science globally and know where leaders are
- Translational research
  - Also very stiff competition; need to focus on internationally competitive strengths
  - Align university, industry and service partners
  - Ensure training and career paths for clinician scientists
  - Scope to extend into community health services as well as acute?

# Opportunities for Living Lab Alberta (2)

- Phase 2 and 3 trials
  - Strong and increasing competition globally (Eastern Europe, China), but benefits for industry in spreading patient base
  - Potential benefits for quality of care and earlier access for patients to new treatments
  - Requires strong infrastructure
- Mapping and understanding health correlates of genetic variation
  - Range of competition
  - Population size? Ethics? Feasibility of testing?  
Feasibility/cost of collecting range and depth of health information required
  - What is business model?

# Opportunities for Living Lab Alberta (3)

- Phase 4/real world evaluation/Coverage with Evidence Development/Progressive Coverage
  - Increasingly important - to industry, health systems and patients
  - No clear leaders yet (though some models to learn from)
  - Alberta system/population attractive – small enough to be feasible and large enough to get useful data (at least for relatively common conditions)
  - Potential benefits of improved quality of care, early access to new treatments, wider benefits of improved health information systems
  - Many challenges – data systems, study coordination, study methods
  - What is the business model?
- Re-engineering device innovation, evaluation and procurement
  - Major potential benefits for patients, system and economy
  - How well developed is medical device/engineering sector in Alberta and how willing/able to engage?
  - Can Alberta partner with other parts of Canada?
  - What is the business model?

# Challenges

- Agreeing a cross-Government focus for an Alberta Living Health Lab that will deliver benefits both for patients and for the innovation system and economy
- Changing attitudes and behaviour in the health service (and Ministry?), eg
  - Innovation is not a threat or (always) a cost drive
  - The private sector and profits can help public systems improve quality and efficiency
  - Clinicians and managers need to be motivated, trained and be given time to engage with the research and innovation process
- Defining appropriate business models
- Establishing trust and partnerships with
  - Patients and the public
  - Health service institutions and staff
  - Post-secondaries
  - Industry
  - Other Provinces/jurisdictions