INNOVATION
AS USUAL
Innovation as usual

Can we make innovation in health care the norm?

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What is meant by ‘innovation’

Innovation in health service delivery and organization:

• ‘novel set of behaviours, routines, and ways of working that are directed at improving health outcomes, administrative efficiency, cost effectiveness, or users’ experience and that are implemented by planned and coordinated actions’

Why the need to innovate in health care

- **Underuse of effective care**
  - Around 40% of clinical encounters

- **Overuse of ineffective (or harmful) care**
  - Up to 30% of healthcare spend
    - Berwick et al JAMA 2012
  - Overdiagnosis (15% to 30%)
    - Moynihan et al BMJ 2012

- **Misuse of effective care**
  - Errors of execution: up to 20%

- **Unwarranted variation in care**
  - Between 7-fold and 20-fold differences in use of interventions and hospitalisations for specific conditions between different geographic regions that are age-sex standardised
    - ACQSHC Atlas of Practice Variation V1, 2015, V2, 2017

  - **Long time lags** (2-20 years) in changing practice in response to robust evidence

- **Wasted research funding** by failure to translate = $US200B
  - Macleod et al Lancet 2014
Why isn’t innovation the norm?

Leaky pipe of clinical research translation

Glasziou & Haynes, Evidence-based Med 2005
Why isn’t innovation the norm?

Why doesn’t evidence speak for itself?
Why isn’t innovation the norm?

Arrogance, insulation, and certainty seem to be limiting our collective ability as health professionals to maximize the health of our communities.

Why isn’t innovation the norm?

Study of AMI mortality in US hospitals

• Difference between high- and low-performing hospitals
  – Not related to staff, equipment, protocols and guidelines, care pathways, tests or treatments, casemix, size, location, teaching status
  – CULTURE
    • Organisational values and goals
    • Senior management involvement and commitment
    • Broad staff presence and expertise in AMI care
    • Communication and co-ordination between different groups
    • Use of data to monitor performance
    • Ethos of problem solving, innovation and learning


– Other studies confirm predictors of high performance

Why isn’t innovation the norm?

• **Technical change**  
  – New drug, operation, service  
  – Straightforward changes with clear pathway  
  – No change to underlying construct  
  – Extension of previous learning

• **Adaptive change**  
  – Fundamental changes to construct  
  – Requires new learning  
  – Elicits sense of dislocation and emotional distress  
  – No tried and true solutions  
  – Needs tailoring to local conditions and relationships

Common mistake: trying to fix what is essentially an adaptive problem with a technical fix

Ronald Heifetz: Leadership Without Easy Answers 1994
The beginning of implementation science

# Evidence-Based Implementation of Evidence-Based Medicine

**Richard Grol, PhD**

**Jeremy Grimshaw, MBChB, PhD, MRCGP**

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## Approach

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<thead>
<tr>
<th>Educational</th>
<th>Lessons for Implementation</th>
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<td>Involve target group to discuss needs, experiences; “ownership” of product</td>
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<tr>
<td>Epidemiologic</td>
<td>Develop a sound and credible “message” or “product”</td>
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<td>Marketing</td>
<td>Learn about needs and problems of the target group; adapt innovation</td>
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<tr>
<td>Behaviorist</td>
<td>Keep in mind that most people seek reinforcement and rewards (eg, feedback) Make life easier for target group: Provide practical tools, reminders, and so forth to use innovation</td>
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## Approach

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<td>Use respected peers, opinion leaders, role models as intermediaries to promote use of the innovation</td>
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<td>Be aware that the barrier is often the setting: Improve teamwork and leadership; provide resources and support</td>
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<td>Restructure care processes; build innovation into routines</td>
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<td>Keep in mind that some target groups need some pressure to change Use regulations and budgets appropriately and carefully to support the change process</td>
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The beginning of implementation science

Disseminating Innovations in Health Care
Donald M. Berwick, MD, MPP

Predisposing factors

- Perception of innovation
  - Perceived benefit – ‘what’s in it for me/us/patients?’
  - Compatibility with values, beliefs, current needs
  - Complexity (or simplicity) of proposed innovation
  - Trialability
  - Observability

- Characteristics of adopters – Rogers model

Principles

- Find sound innovations
- Find and support innovators
- Invest in early adopters
- Make early adopter activity observable
- Trust and enable re-invention
- Create slack for change
- Lead by example

Organisational context

The call for a more nuanced approach

Requirement for extensive description of context, implementation strategies, and interventions, as well as reporting a broad range of effectiveness, process, and health economic outcomes, will challenge journals operating strict word limits for research papers and may require (innovative) solutions and use of supplementary online materials.
The call for a more nuanced approach

• The more complex an innovation or the setting in which it is introduced, less likely it is to be successfully adopted, scaled up, spread, and sustained
  – **Simple**: straightforward, predictable, few components
  – **Complicated**: multiple interacting components or issues
  – **Complex**: dynamic, unpredictable, not easily disaggregated, involves complex interactions between innovators and users which vary in intensity, complexity and level of engagement depending on the nature of the innovation and the needs and context of the user

• These interactions unlikely to be elucidated by reductionist RCT designs

• Research translation may not necessarily follow a pipeline model

• Studies are needed that are interdisciplinary, nondeterministic, locally situated, designed to examine recursive relationship between human action and the wider organizational and system context

Greenhalgh et al. BMJ Open 2016;6(2):e010208
The call for a more nuanced approach

- Rational, linear, one-way relationship between research and policy/practice

- Multi-dimensional models

- Relational, interactive, dynamic models

- Post-modern models in which analyses of power are brought to the fore

The need for a more nuanced approach

Surgical checklist

• Synthesis of 18 qualitative studies: implementation required change in:
  – workflow of healthcare professionals
  – their perception of the checklist
  – their perception of patient safety in general

• Barriers and enablers centred on the checklist, implementation process and local context
  – Required safety checks disrupt OT staffs’ routines
  – Conflicting priorities and different perspectives and motives of stakeholders complicate implementation.
  – Viewing the checklist as a simple technical innovation, expectation of cooperation between surgeons, anaesthetists and nurses is often not addressed, reducing the checklist to a tick-off exercise.
Getting users and researchers together

Users views of research
- Irrelevant; not integral to care
- Too slow/obsolete
- Too narrow or simple
- Too much or too conflicting
- Too process driven
- Marginal effects
- Uninterpretable
- Impractical
- Intrusive/threatening

Researchers’ views of users
- No appreciation of scientific method
- Politically and culturally driven
- Crisis motivated – quick fix
- Reliance on tradition/judgement
- Risk averse
- Clinical inertia
- Short term focus
- Focused at microsystem level

Co-design
Co-creation
Co-execution

For optimal generation and application of the evidence that healthcare systems need to maximise population health, research questions should be informed by those who plan, deliver, and receive care

Hanney et al. Health Serv Deliv Res 2013
Getting users and researchers together

A multifaceted intervention to reduce inappropriate polypharmacy in primary care: research co-creation opportunities in a pilot study

Example 1: Identifying patients at high risk of medication misadventure. The research team worked closely with the principals (or their delegates) of the practices recruited to the pilot to develop a standardised but customisable patient management software query that would help identify patients at high risk according to evidence-based criteria.

Example 2: Co-designing a multipurpose tool for use during the deprescribing appointment. Focus group discussions with GPs - make it simple, integrate it into the medical software used in general practice, and minimise burden of documentation for GPs A tool or template, easily imported into the electronic consult notes, was developed and served to collect data for the research team; act as a memory prompt for the GPs of the key steps of deprescribing; provide a framework for documenting deprescribing consultation.
Plethora of research paradigms

• Knowledge management
• Knowledge transfer/translation
• Knowledge mobilisation
• Improvement science
• Implementation science
• Participatory action research
  – generating knowledge that is also put into action in real time
  – locally defined; context sensitive; facilitated rather than directed; ensures shared power among participants
• Team science
• Systems science
  – Lean thinking; Six-sigma; Complexity theory; agent-based modelling; scenario planning; simulations; social network analysis; system dynamic modelling; machine learning
Plethora of change theories

- Rogers’s Theory of Diffusion
- Bandura’s Social Cognitive Theory
- May’s Normalization Process Theory
- Knowledge-to-Action Framework of Graham et al.
- Quality Implementation Framework of Meyers et al.
- Theoretical Domains Framework of Michie et al.
- Consolidated Framework for Implementation Research of Damschroder et al.
- Prochaska and DiClemente’s Transtheoretical Model of Behaviour Change
- Rosenstock’s Health Belief Model
- PARiHS Framework of Kitson et al.
- Diffusion of Innovations, NASSS frameworks of Greenhalgh et al.
- Reach Effectiveness Adoption and Implementation Maintenance framework (RE-AIM) of Glasgow et al.
Plethora of change theories

Damschroder et al. Implement Sci 2009

Greenhalgh et al. J Med Internet Res 2017
Are we losing our way?

Problem of shared understanding and common terminology surrounding implementation science

- Lack of common language
- Mentality of ‘short-termism’
- Language that cannot withstand the test of time
- Research bereft of transformative goals
- Lack of shared agenda & research purpose
- Inappropriate methodologies underpinning research studies
- Inconsistent applications with no embedded evaluation plans

Rapport et al J Eval Clin Pract 2018
Are we losing our way?

Review of 159 KT theories, models, or frameworks

*Which have been subject to comprehensive testing? Which works best?*

- Most (87%) used in five or fewer studies; 60% once
- Most commonly cited
  - Bandura’s Social Cognitive Theory (168 studies)
  - Prochaska and DiClemente’s Transtheoretical Model of Behaviour Change (141 studies)
  - Rosenstock’s Health Belief Model (67 studies)
- Most commonly used to inform planning/design, implementation and evaluation activities
- Only 26 (16%) used across the full implementation spectrum either within or across studies from planning to sustainability/scalability
- All used for individual-level behaviour change; 48% for organization-level; 17% for system-level change

  Strifler et al J Clin Epidemiol 2018

- More information is needed on each of the frameworks from documentation analysis, published case studies, informant interviews

  Milat & Lie Public Health Res Pract 2017
Are we losing our way?

Extent of collaboration between researchers and users

- 13 studies
- Activities poorly reported
- None formally based on theory
- Variation in number and type of interactions
  - meetings and presentations most common format
- Range of positive and sub-optimal outcomes
  - but only 3 reported impacts on policy making or service delivery
- No association between outcomes and:
  - initiator of the partnership
  - dedicated funding
  - partnership maturity
  - nature of decision-maker involvement
  - presence or absence of enablers
  - number of different KT activities

Gagliardi et al
Implement Sci 2016
Are we losing our way?

Systematic review of 19 studies of action research in hospital settings

- Studies assessed four stages of AR: problem identification, planning, implementation, evaluation
- Significant heterogeneity with regard to theoretical background, methodology employed and evaluation methods
- Educational trainings were used extensively if reported problem was a lack of practical skills and knowledge
- 16/19 studies reported an evaluation - majority very limited, involved only focus groups and interviews
- Very little evaluation of the process elements of AR - limited generalizability
- Lack of managerial and organizational support frequently limited sustainability
- Most studies included only nurses; patient input was absent
- Most studies reported difficulty in attracting participants

Montgomery et al J Health Organ Manage 2015; 29 (6): 729-749
Are we losing our way?

Marginal effects

Lau et al BMJ Open 2015
Moving forward

What is the problem?
Why the need for change?
Who are the key stakeholders?
Do we fully understand their world?

Frame innovation as system of care change rather than as a project

Develop the innovation
   After doing literature review, environment scan, key stakeholder consultation, driver diagrams
   Engage and empower frontline staff
   Establish and nurture nimble relationships
   Focus on sharing insights and resources to inspire innovative thinking and solutions
   Create closed loops for evaluating and refining innovation over time
   Consider different supports/incentives according to need at different times


Amy Barouch, Icare 2018
Moving forward

Scaling up and sustainability

Your innovation is probably worthless

...and unlikely to improve patient outcomes over time

...until you or someone else wraps it in a scalable and sustainable business model

Gary Morgan, MPT Innovation Group, Flinders University, 2018
Moving forward

Pre-empting the disruptive challenges ahead

Future of Healthcare

Consumerisation

Future of Healthcare

Decentralisation

Integration

Digitisation

Predictive and preventative healthcare

Data-driven personalisation

IoT connected healthcare

Advanced assistive technology

E-health records

Focus on holistic wellbeing (physical and mental)

Integrated care models

Outcomes-based care

Patient-directed care

Virtual healthcare delivery

Amy Barouch,
Icare 2018
Rapid, responsive, relevant (R3) research: a call for a rapid learning health research enterprise

William T Riley¹, Russell E Glasgow¹, Lynn Etheredge² and Amy P Abernethy³

Learning healthcare systems

“systems . . . in which knowledge generation is so embedded into the core of the practice of medicine that it is a natural outgrowth and product of the healthcare delivery process and leads to continual improvement in care.’


- NIHR Collaborations for Leadership in Applied Health Research and Care (CLAHRC)
- VA Quality Enhancement Research Initiative
- Intermountain Healthcare; Kaiser Permanente; Virginia Mason
- Agency for Healthcare Research and Quality
Moving forward

Open innovation

- the need to look outside the traditional organisational boundaries to innovate and make the boundaries of the organization more permeable

• Review of 18 studies: most studies focussed on inbound –
  – external knowledge is integrated with the internal knowledge base at an initial phase of the innovation process using innovation networks
• Limiting factors: complex organizations of healthcare; the need to establish routines for capturing knowledge from patients and clinicians; regulations and healthcare data laws
• Positive outcome patient empowerment

Health Roundtable; clinical networks and collaboratives
Clearinghouses and directories

Wass & Vimarlund Health Inform Manag J 2016
Moving forward

Changing culture

• Present change as improving patient outcomes/safety, not efficiency/costs
• Present the downside of standing still as greater than the downside of change
  — What’s in it for me/us?
• Allow people to remain connected to others identified with the old (and previously successful) ways of doing things
• Provide people with role models (teach the teacher) for the new innovation
• Provide people with the skills (and confidence) to change
• Use nudge strategies that retain choice but push towards change
  — Incorporate change into job descriptions and deliverables in employment contracts
• Allow (and listen and respond to) healthy scepticism
• Dispel fears of hidden agendas
• Alleviate any threats of change to personal identity or status

• Invite psychologists, sociologists, marketing gurus to advise
Conclusion

• Our health services need to become learning healthcare systems
  – avoid the words ‘research’ and ‘project’
• Less theorising and more action on innovating
• Understand the culture and psychology of all participants
• Establish trusting symbiotic relationships that co-create/co-execute innovation
• Use narratives and anecdote as well as data
• Tap into the huge reservoir of human curiosity and good intent
• Avoid paralysis by analysis and don’t make perfect the enemy of the good
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