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IMPLEMENTATION RESEARCH 101

JEREMY GRIMSHAW
SENIOR SCIENTIST AND PROFESSOR
jgrimshaw@ohri.ca

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The Ottawa Hospital RESEARCH INSTITUTE | L'Hôpital d'Ottawa INSTITUT DE RECHERCHE

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BACKGROUND

- Consistent evidence of failure to translate research findings into clinical practice
  - 30-40% patients do not get treatments of proven effectiveness
  - 20–25% patients get care that is not needed or potentially harmful
- Suggests that implementation of research findings is fundamental challenge for healthcare systems to optimise care, outcomes and costs

Schuster, McGlynn, Brook (1998). *Milbank Memorial Quarterly*

Grol (2001). *Med Care*

IMPLEMENTATION RESEARCH

- Implementation is a human enterprise that can be studied to understand and improve implementation approaches
- Implementation research is the scientific study of the determinants, processes and outcomes of implementation.
- Goal is to develop a generalisable empirical and theoretical basis to optimise implementation activities

IMPLEMENTATION RESEARCH

applied health research

capacity building

co-optation - cooperation - competing

diffusion*

dissemination*

getting knowledge into practice

impact

Implementation*

knowledge communication

knowledge cycle

knowledge exchange

knowledge management

knowledge translation

knowledge mobilisation

knowledge transfer

linkage and exchange

popularization of research,

research into practice

research mediation

research transfer

research translation

science communication

teaching

“third mission”

translational research

transmission

utilisation

IMPLEMENTATION RESEARCH

- Implementation science is a research relatively new field in health research
- Inherently interdisciplinary
- Wide range of disciplines need to be engaged
  - Clinical
  - Health services research
  - Social sciences
  - Design and engineering
  - Informatics
  - Methodologists
- Broad range of forms of enquiry needed

IMPLEMENTATION RESEARCH

- Knowledge synthesis (what care should we be providing, what do we know about the effectiveness of different implementation approaches);
- Research into the evolution of and critical discourse around research evidence;
- Research into knowledge retrieval, evaluation and knowledge management infrastructure
- Identification of implementation failures;
- Development of methods to assess barriers and facilitators to implementation;
- Development of the methods for optimising implementation programs;
- Evaluations of the effectiveness and efficiency of implementation programs;
- Sustainability and scalability of implementation programs;
- Development of implementation research theory; and
- Development of implementation research methods.

EXAMPLE: QUALITY IN ACUTE STROKE CARE

Implementation of evidence-based treatment protocols to manage fever, hyperglycaemia, and swallowing dysfunction in acute stroke (QASC): a cluster randomised controlled trial

Findings 19 ASUs were randomly assigned to intervention (n=10) or control (n=9). Of 6564 assessed for eligibility, 1696 patients' data were obtained (687 pre-intervention; 1009 post-intervention). Results showed that, irrespective of stroke severity, intervention ASU patients were significantly less likely to be dead or dependent (mRS ≥2) at 90 days than control ASU patients (236 [42%] of 558 patients in the intervention group *vs* 259 [58%] of 449 in the control group, p=0·002; number needed to treat 6·4; adjusted absolute difference 15·7% [95% CI 5·8–25·4]). They also had a better SF-36 mean physical component summary score (45·6 [SD 10·2] in the intervention group *vs* 42·5 [10·5] in the control group, p=0·002; adjusted absolute difference 3·4 [95% CI 1·2–5·5]) but no improvement was recorded in mortality (21 [4%] of 558 in intervention group and 24 [5%] of 451 in the control group, p=0·36), SF-36 mean mental component summary score (49·5 [10·9] in the intervention group *vs* 49·4 [10·6] in the control group, p=0·69) or functional dependency (Barthel Index ≥60: 487 [92%] of 532 patients *vs* 380 [90%] of 423 patients; p=0·44).

Interpretation Implementation of multidisciplinary supported evidence-based protocols initiated by nurses for the management of fever, hyperglycaemia, and swallowing dysfunction delivers better patient outcomes after discharge from stroke units. Our findings show the possibility to augment stroke unit care.

EXAMPLE: QUALITY IN ACUTE STROKE CARE

- Improvements in proportions of patients that received protocol based care:
  - Fever (intervention: 31%; control: 15% P<0.001),
  - Hyperglycaemia (intervention: 66%; control: 45% P<0.001)
  - Swallowing (intervention: 48%; control: 26% P<0.001)

Drury et al (2013) *International Journal of Stroke*

EXAMPLE: QUALITY IN ACUTE STROKE CARE IMPLEMENTATION

- Selected by New South Wales Agency for Clinical Innovation for scaling up and implementation across 36 stroke units in 12 month timescale
- Improvements in proportions of patients that received protocol based care:
  - Fever (pre: 62%; post: 78%; P<0.0001),
  - Hyperglycaemia (pre: 16%; post: 27%; P<0.0034),
  - Swallowing (pre: 39%; post: 52%; P<0.0002).
- Hyperglycaemic patients significantly more likely to received insulin (41% vs 14%; p<0.001).
- Febrile patients significantly more likely to receive paracetamol (50% vs 17%; p=0.0038).

EXAMPLE: QUALITY IN ACUTE STROKE CARE IMPLEMENTATION

2014 NSW Premier's Public Sector Award for Improving Performance and Accountability

EXAMPLE: QUALITY IN ACUTE STROKE CARE IMPLEMENTATION

Independent QASC Economic Evaluation

If FeSS protocols were implemented in 65% of the eligible Australian patient populations for one year **the total economic benefit (saving) would be $281 M**

QASC EUROPE

QASC Quality in Acute Stroke Care Europe

- Nurse-initiated, evidence-based stroke care in Europe, to manage fever, hyperglycaemia and swallowing difficulties

- In collaboration with the Angels Initiative and the European Stroke Organisation

- Funding from ESO to conduct evaluation in up to 300 hospitals in 12 countries

CENTRE FOR IMPLEMENTATION RESEARCH

Standing on the shoulders of giants

- 1990s/2000s - Ottawa Health Decision Centre
  - MRC/CIHR funded
  - Ian Graham, Andreas Lapaucis, Annette O'Connor, Ian Stiell, Peter Tugwell
  - Jamie Brehaut, Dawn Stacey
- 2000s/2010s
  - Increasing strength in knowledge translation and implementation science
  - Collaborative research with clinical colleagues at the Ottawa Hospital Research Institute

CENTRE FOR IMPLEMENTATION RESEARCH

- Established Sept 2017
- Formalisation of strong, highly collaborative interdisciplinary group of implementation scientists
- 14 scientists (11 OHRI, 3 external visiting scientists)
  - Biostatistics, clinical epidemiology, cognitive psychology, engineering, health economics, health psychology, health services research, human factors/user centred design, knowledge translation, medical education, medical sociology. medicine, nursing, shared decision making.
- 29 current trainees (MSc, PhD, Postdoc)

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CENTRE FOR IMPLEMENTATION RESEARCH

- We undertake ambitious interdisciplinary research that contributes to implementation research in three ways
  - Substantive knowledge
    - Addressing stubborn implementation problems using mixed methods studies (including large scale field evaluations)
  - Methodological knowledge
    - Statistical, health economics
    - Application of behavioural models
  - Conceptual (theoretical) knowledge
    - Knowledge to action cycle; Ottawa Model of Research Utilisation
    - Behavioural approaches to implementation

CENTRE FOR IMPLEMENTATION RESEARCH

- We work with local, provincial, national and international collaborators and partners
- We work across a broad range of settings:
  - Primary care, secondary care, community care
- We work across a broad range of problems
  - My current list (incomplete) – de-implementing low value care, diabetes quality improvement, enhancing audit and feedback, improving blood utilisation, improving cardiac death organ donation, improving medication use following heart attacks, improving organ donation registration, stroke management in emergency departments etc

SUMMARY

- Implementation research is about saving lives by improving health outcomes and the quality of health services.
- Substantive evidence base on the effects of different implementation interventions; good news is that it is possible to change stakeholder decisions and behaviours!
- However current evidence base provides little practical guidance for health care systems about which interventions to use and how to optimise them
- That's where we come in!

CONTACT DETAILS

- Jeremy Grimshaw

  jgrimshaw@ohri.ca

  @GrimshawJeremy

  http://www.ohri.ca/profile/jgrimshaw

- Centre for Implementation Research

  @TOH_CIR

  http://www.ohri.ca/cir/