

Implementation Science: A personal reflection and thoughts of the future

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Content

- Politics
- Science
- Closing thoughts

What's in a name?



What's in a name?

- A study of 33 applied research funding agencies across nine countries identified 29 terms used to refer to some aspect of the processes around clinically effective practice (Tetroe et al, 2008)
- And what about “Translational Research”?
 - First and second translation gaps
 - Mainly thought of as the T1 bench to bedside process of transferring basic science knowledge into new drugs and technologies
 - Attracting about 1% of the research funding devoted to T1 research the T2 Translational Research is the process of taking current scientific knowledge and ensuring it is applied in routine clinical care (Woolf 2008)

Implementation Research

- Implementation research is the scientific study of methods to promote the systematic uptake of proven clinical treatments, practices, organisational and management interventions into routine practice, and hence to improve health. In this context it includes the study of influences on patient, healthcare professional and organisational behaviour in either healthcare or population settings.

(adapted from Implementation Science

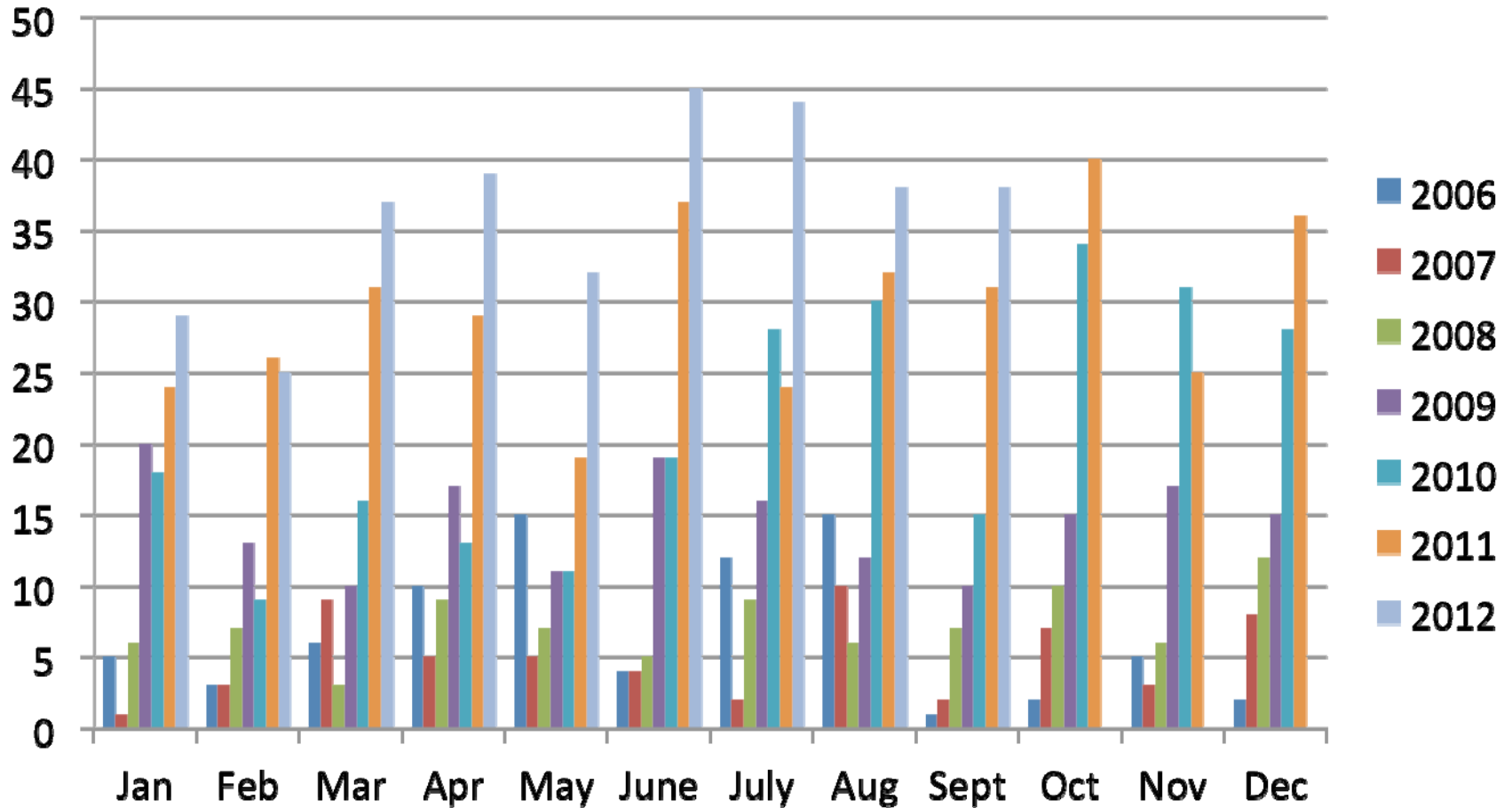
<http://www.implementationscience.com/info/about/>

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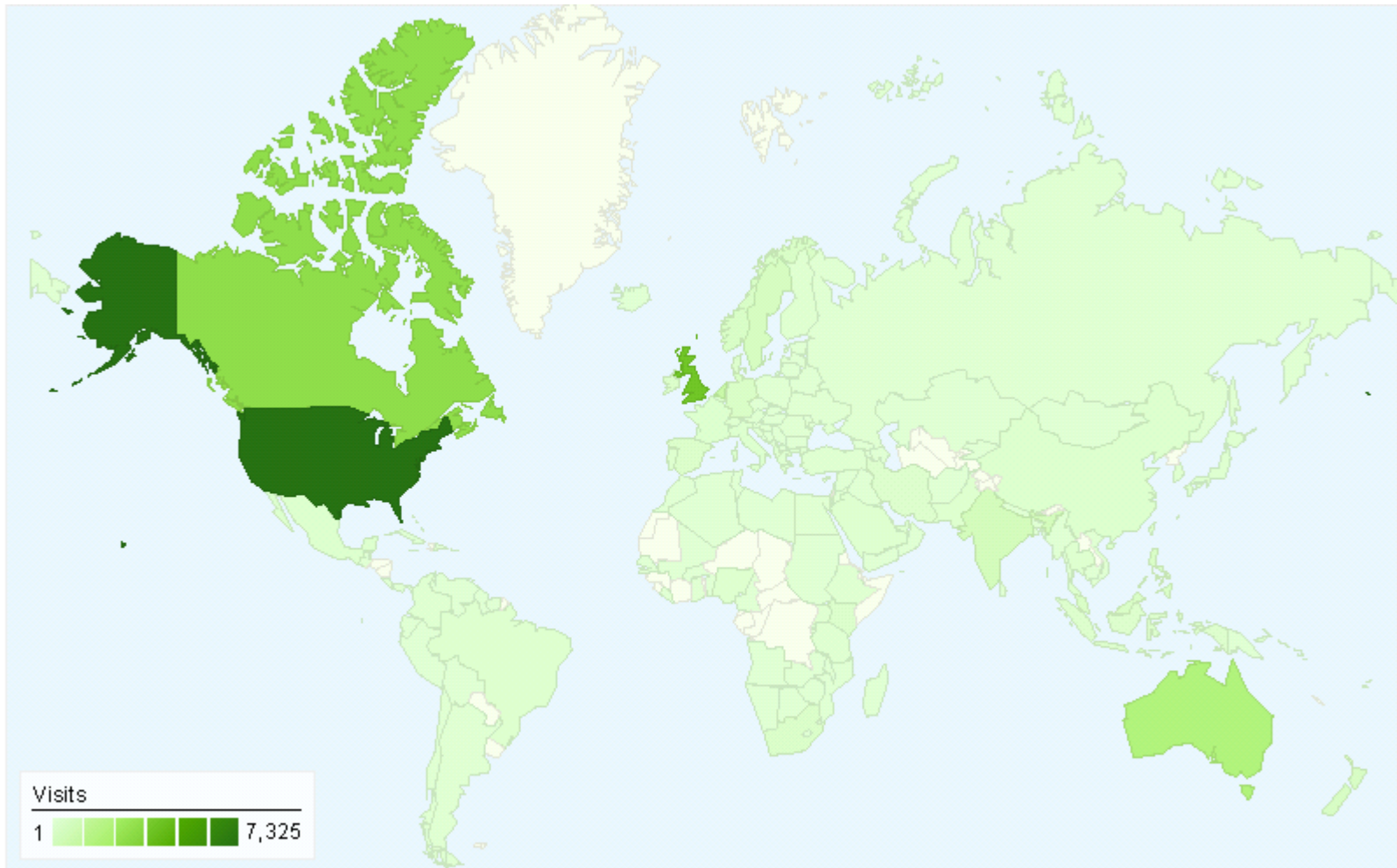
Implementation Research

- Implementation research centrally involves the study of changing behaviour and maintaining changed behaviours
 - of and in organizations and the groups and individual healthcare professionals within them
- It concerns:
 - The study of behaviour
 - The determinants of behaviour
 - How to change and maintain behaviour
- All with due cognisance of the organisational context within which behaviours are enacted

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On to the science - but ...

- Studies provided scant theoretical or conceptual rationale for their choice of intervention (Davies et al, 2010)
- Generalisability
 - Enduring issue of reporting doing implementation versus researching implementation
- Limited descriptions of interventions and contextual data (Grimshaw et al, 2004)
 - Provides less information to guide the choice or optimise the components of (often complex) interventions in practice (Foy et al, 2005)
- Research on economic and political approaches to change is scarce



State of the art

- Systematic review
- Barriers and facilitators
- Determinants of behaviour
- Effectiveness studies
- Laboratories

Systematic reviews

The effectiveness of strategies to change organisational culture to improve healthcare performance (Review)

Parmelli E, Flodgren G, Schaafsma ME, Baillie N, Beyer FR, Eccles MP



An overview of reviews evaluating the effectiveness of financial incentives in changing healthcare professional behaviours and patient outcomes (Review)

Flodgren G, Eccles MP, Shepperd S, Scott A, Parmelli E, Beyer FR





Effectiveness of quality improvement strategies on the management of diabetes: a systematic review and meta-analysis

Andrea C Tricco, Noah M Ivers, Jeremy M Grimshaw, David Moher, Lucy Turner, James Galipeau, Ilana Halperin, Brigitte Vachon, Tim Ramsay, Braden Manns, Marcello Tonelli, Kaveh Shojania

Summary

Background The effectiveness of quality improvement (QI) strategies on diabetes care remains unclear. We aimed to assess the effects of QI strategies on glycosylated haemoglobin (HbA_{1c}), vascular risk management, microvascular complication monitoring, and smoking cessation in patients with diabetes.

Methods We identified studies through Medline, the Cochrane Effective Practice and Organisation of Care database (from inception to July 2010), and references of included randomised clinical trials. We included trials assessing 11 predefined QI strategies or financial incentives targeting health systems, health-care professionals, or patients to improve management of adult outpatients with diabetes. Two reviewers independently abstracted data and appraised risk of bias.

Findings We reviewed 48 cluster randomised controlled trials, including 2538 clusters and 84 865 patients, and 94 patient randomised controlled trials, including 38 664 patients. In random effects meta-analysis, the QI strategies

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See Online/Comment

DOI:10.1016/S0140-6736(12)60637-0

Li Ka Shing Knowledge Institute of St Michael's Hospital, Toronto, ON, Canada (A C Tricco PhD); Women's College Hospital and Department of Family and Community Medicine (N M Ivers MD) and Division of

Audit and feedback: effects on professional practice and healthcare outcomes (Review)

Ivers N, Jamtvedt G, Flottorp S, Young JM, Odgaard-Jensen J, French SD, O'Brien MA, Johansen M, Grimshaw J, Oxman AD



Data collection and analysis

All data were abstracted by two independent review authors. For the primary outcome(s) in each study, we calculated the median absolute risk difference (RD) (adjusted for baseline performance) of compliance with desired practice compliance for dichotomous outcomes and the median percent change relative to the control group for continuous outcomes. Across studies the median effect size was weighted by number of health professionals involved in each study. We investigated the following factors as possible explanations for the variation in the effectiveness of interventions across comparisons: format of feedback, source of feedback, frequency of feedback, instructions for improvement, direction of change required, baseline performance, profession of recipient, and risk of bias within the trial itself. We also conducted exploratory analyses to assess the role of context and the targeted clinical behaviour. Quantitative (meta-regression), visual, and qualitative analyses were undertaken to examine variation in effect size related to these factors.

Main results

We included and analysed 140 studies for this review. In the main analyses, a total of 108 comparisons from 70 studies compared any intervention in which audit and feedback was a core, essential component to usual care and evaluated effects on professional practice. After excluding studies at high risk of bias, there were 82 comparisons from 49 studies featuring dichotomous outcomes, and the weighted median adjusted RD was a 4.3% (interquartile range (IQR) 0.5% to 16%) absolute increase in healthcare professionals' compliance with desired practice. Across 26 comparisons from 21 studies with continuous outcomes, the weighted median adjusted percent change relative to control was 1.3% (IQR = 1.3% to 28.9%). For patient outcomes, the weighted median RD was -0.4% (IQR -1.3% to 1.6%) for 12 comparisons from six studies reporting dichotomous outcomes and the weighted median percentage change was 17% (IQR 1.5% to 17%) for eight comparisons from five studies reporting continuous outcomes. Multivariable meta-regression indicated that feedback may be more effective when baseline performance is low, the source is a supervisor or colleague, it is provided more than once, it is delivered in both verbal and written formats, and when it includes both explicit targets and an action plan. In addition, the effect size varied based on the clinical behaviour targeted by the intervention.

Authors' conclusions

Audit and feedback generally leads to small but potentially important improvements in professional practice. The effectiveness of audit and feedback seems to depend on baseline performance and how the feedback is provided. Future studies of audit and feedback should directly compare different ways of providing feedback.



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Using theory to synthesise evidence from behaviour change interventions: The example of audit and feedback

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ABSTRACT

Evidence syntheses are used to inform health care policy and practice. Behaviour change theories offer frameworks for categorising and evaluating interventions and identifying likely mechanisms through which effects are achieved. Yet systematic reviews rarely explicitly classify intervention components using theory, which may result in evidence syntheses and health care practice recommendations that are less than optimal. This paper outlines a method for applying theory to evidence syntheses of behaviour change interventions. We illustrate this method with an analysis of 'audit and feedback' interventions, based on data from a Cochrane review. Our analysis is based on Control Theory, which suggests that behaviour change is most likely if feedback is accompanied by comparison with a behavioural target and by action plans, and we coded interventions for these three techniques. Multivariate meta-regression was performed on 85 comparisons from 61 studies. However, few interventions incorporated targets or action plans, and so meta-regression models were likely to be underfitted due to insufficient power. The

Theory



*Theory is splendid but until put
into practice, it is valueless.
(James Cash Penney)*

The use of theory in Implementation Research offers (at least) three important potential advantages

– Theories offer

- a generalisable framework that can apply across differing settings and individuals
- the opportunity for the incremental accumulation of knowledge
- an explicit framework for analysis

So far, so good

*In theory there is no difference
between theory and practice.
In practice there is (Yogi Berra)*

- No clear agreement about what makes a study or an intervention “theory-based”
 - Range of phrases such as “informed by theory”, “underpinned by theory”, “theory-inspired” and “theory-based”
- Little agreement about which theories are important and under what circumstances
- There is considerable overlap between theories
- And then there are models and frameworks

Theory picking

Implementation Science

Research article

Open Access

Applying psychological theories to evidence-based clinical practice: Identifying factors predictive of managing upper respiratory tract infections without antibiotics

Martin P Eccles*¹, Jeremy M Grimshaw², Marie Johnston³, Nick Steen¹, Nigel B Pitts⁴, Ruth Thomas⁵, Elizabeth Glidewell⁵, Graeme MacLennan⁵, Debbie Bonetti⁴ and Anne Walker⁵

PRIME

- To explore the usefulness of a range of psychological frameworks to predict health professional behaviour relating to the management of:
- Psychological measures were collected by postal questionnaire survey from a random sample of general practitioners (GPs) in Scotland

Conclusions

- The theories individually each explained a significant proportion of the variance in our dependent variables
 - Aggregated analysis suggested that they were measuring similar phenomena within their own individual structures
- What would be an optimum core set of measures if the aim was to cover most behaviours and clinical groups?
 - Given our current limited understanding this would have to be the subject of studies replicating this one and further work examining different combinations of theories and models.
- Operationalising the constructs with theoretical purity was a challenge
- Problems with measuring behaviour
- Response rates

Being past your PRIME: iQuaD

To explore the usefulness of a range of psychological frameworks to predict etc. etc.

Advances

- Chronic disease (diabetes)
- Care from teams of HCPs
- Multiple behaviours within same group of individuals
- Individual and organisational measures
- Clustering

Implementation Science

Study protocol

Open Access

Improving the delivery of care for patients with diabetes through understanding optimised team work and organisation in primary care

Martin P Eccles^{*1}, Gillian Hawthorne², Marie Johnston³, Margaret Hunter¹, Nick Steen¹, Jill Francis⁴, Susan Hrisos¹, Marko Elovainio⁵ and Jeremy M Grimshaw^{6,7}

Six Behaviors

Prescribing ...



1. **...additional antihypertensive drugs** for patients with type 2 diabetes whose blood pressure (BP) is above a target of 140 mm Hg for Systolic BP or 80 mm Hg for Diastolic BP, even following previous management.
2. **...additional therapy for the management of glycaemic control (HbA1c)** for the management of HbA1c in patients whose HbA1c is higher than 8.0%, despite maximum dosage of 2 oral hypoglycaemic drugs.

Providing ...



1. **...advice about weight management** to patients with type 2 diabetes whose BMI is above a target of 30kg/m², even following previous management.
2. **...advice about self-management** to patients with type 2 diabetes, registered with your practice.
3. **...general education about diabetes** for patients with type 2 diabetes, registered with your practice.

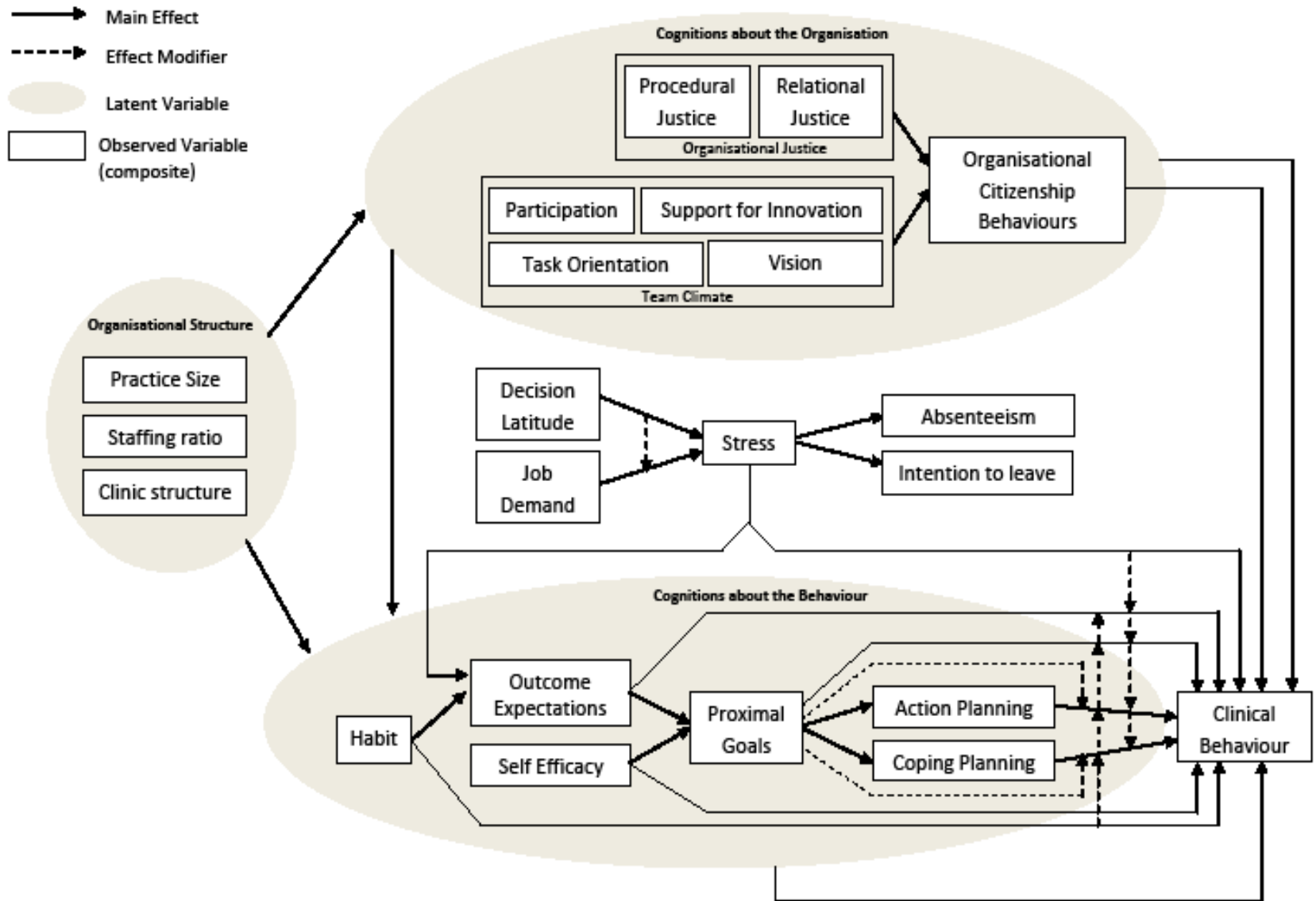
Examining...



1. **...foot circulation & sensation** in the feet of patients with type 2 diabetes, registered with your practice.

iQuaD

Conceptual overall model of relationships between theoretical models (and their component constructs) and outcomes



Next steps: Intervention building and testing

BMC Health Services Research



Research article

Open Access

An intervention modelling experiment to change GPs' intentions to implement evidence-based practice: using theory-based interventions to promote GP management of upper respiratory tract infection without prescribing antibiotics #2

Susan Hrisos*¹, Martin Eccles¹, Marie Johnston², Jill Francis³,
Eileen FS Kaner¹, Nick Steen¹ and Jeremy Grimshaw⁴

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This article is part of the series [Theoretical Domains Framework for behaviour change research](#).

[Highly accessed](#)[Open Access](#)**Methodology**

Developing theory-informed behaviour change interventions to implement evidence into practice: a systematic approach using the Theoretical Domains Framework

Simon D French^{1,2*}, Sally E Green¹, Denise A O'Connor¹, Joanne E McKenzie¹, Jill J Francis³, Susan Michie⁴, Rachelle Buchbinder^{1,5,9}, Peter Schattner⁶, Neil Spike⁶ and Jeremy M Grimshaw^{7,8}

Service level pragmatic cluster randomised controlled trials

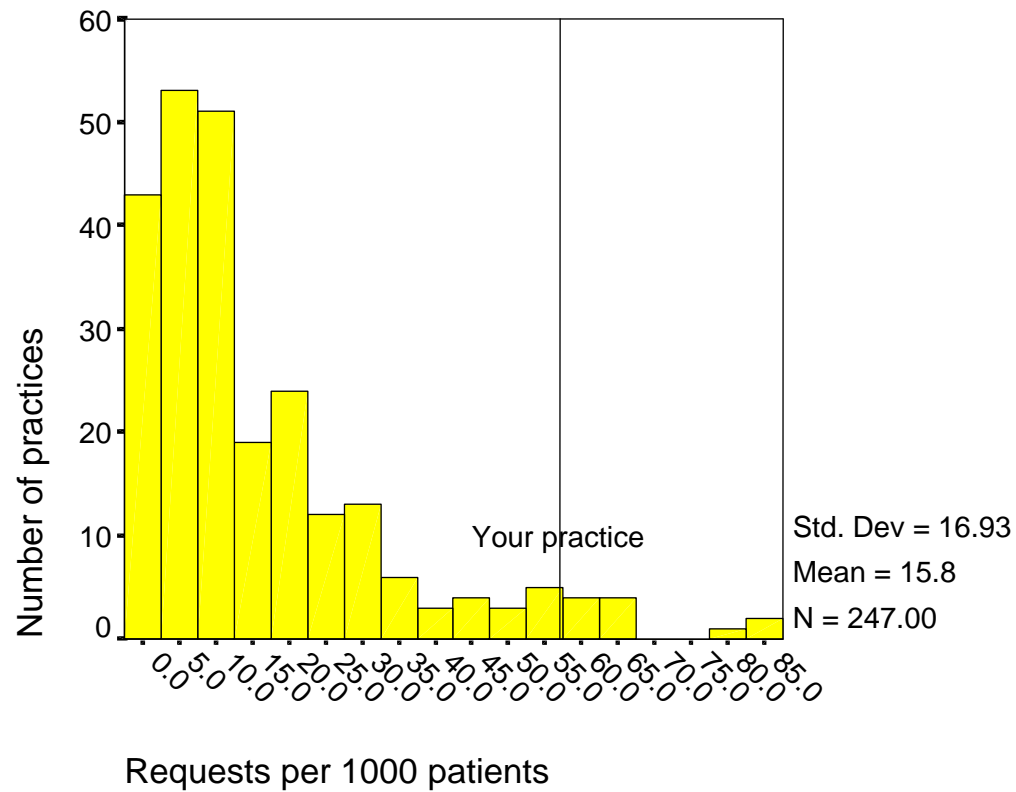
ARTICLES

Effect of audit and feedback, and reminder messages on primary-care radiology referrals: a randomised trial

Martin Eccles, Nick Steen, Jeremy Grimshaw, Lois Thomas, Paul McNamee, Jennifer Soutter, John Wilsdon, Lloyd Matowe,
Gillian Needham, Fiona Gilbert, Senga Bond

Lancet 2001; **357**: 1406-09

Audit and feedback



Requests for
knee x-rays

Second intervention

- NEXUS EDUCATIONAL MESSAGE

In either acute (less than 6 weeks) or chronic back pain, without adverse features, x-ray is not routinely indicated

In adults with knee pain, without significant locking or restriction in movement, x-ray is not routinely indicated

Trying to make it easier



Ottawa Hospital Research Institute
OHRI  **IRHO**
Institut de recherche de l'Hôpital d'Ottawa

Edit 1 0 112 ...

home

Welcome to the Ethical Issues in Cluster Randomized Trials Wiki!

Over the past four years, our international research team has been working on a Canadian Institutes of Health Research funded project to study the ethical challenges in cluster randomized trials (CRTs). The ultimate goal of our project is to produce international consensus guidelines for the ethical conduct and ethics review of CRTs. The project comprised three components: an in-depth ethical analysis leading to a series of normative articles discussing the ethical issues in CRTs; review of the reporting of ethical issues in published CRTs; and surveys of CRT trialists and ethics review committee chairs. We have created this Wiki webpage to facilitate an open discussion about the ideas expressed in the series of articles and the proposed ethics guidelines. For further information about our project, please see our [published study protocol](#).

Wiki Home
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2. Who is the research subject

Laboratories

Clarkson *et al.* *Implementation Science* 2010, **5**:57
<http://www.implementationscience.com/content/5/1/57>



IMPLEMENTATION SCIENCE

STUDY PROTOCOL

Open Access

The translation research in a dental setting (TRiaDS) programme protocol

Jan E Clarkson^{1*}, Craig R Ramsay², Martin P Eccles³, Sandra Eldridge⁴, Jeremy M Grimshaw⁵, Marie Johnston⁶, Susan Michie⁷, Shaun Treweek⁸, Alan Walker⁹, Linda Young¹⁰, Irene Black⁹, Debbie Bonetti¹, Heather Cassie¹, Jill Francis², Gillian MacKenzie¹⁰, Lorna MacPherson¹¹, Lorna McKee², Nigel Pitts¹, Jim Rennie¹², Doug Stirling¹⁰, Colin Tilley¹³, Carole Torgerson¹⁴, Luke Vale²

Closing thoughts

- Politics
 - Implementation Science needs to (continue to) establish its brand
 - For a science that involves changing behaviour it is surprisingly ineffective at doing it in a political context
 - Has (at least one) journal
 - A Society
 - Need to bring people together
- Science
 - Need good methodologists
 - Methodological challenges
 - Need good collaborators
 - Multi and inter-disciplinary

Implementation Science: Impact Factor 3.1



Implementation
Science

Co-Editors in Chief

Martin Eccles

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www.implementationscience.com

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