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Three-part Implementation Science seminar series

2021

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Upcoming seminars

A transdisciplinary approach to implementation

Keynote speaker: Professor Gabriele Bammer (ANU)

1st September 2021

The holy grail of scale in implementation

Keynote speaker: Professor Terry Haines (Monash University)

8th November 2021

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MACH Implementation Science Webinar Series

14 July 2021

How do implementation science frameworks work?

Explanations, and the example of reducing low value care across 4 Victorian hospitals

Professor Jill Francis PhD

Professor of Implementation Science, Melbourne School of Health Sciences

Professor of Health Services Research, Department of Health Services and Implementation Research, Peter MacCallum Cancer Care Centre

Affiliate Investigator, Centre for Implementation Research, Ottawa Hospital Research Institute, Canada

Professor Harriet Hiscock MB BS, FRACP, MD

Group Leader, Health Services, Centre for Community Child Health, Murdoch Children's Research Institute

Director, Health Services Research Unit, The Royal Children's Hospital

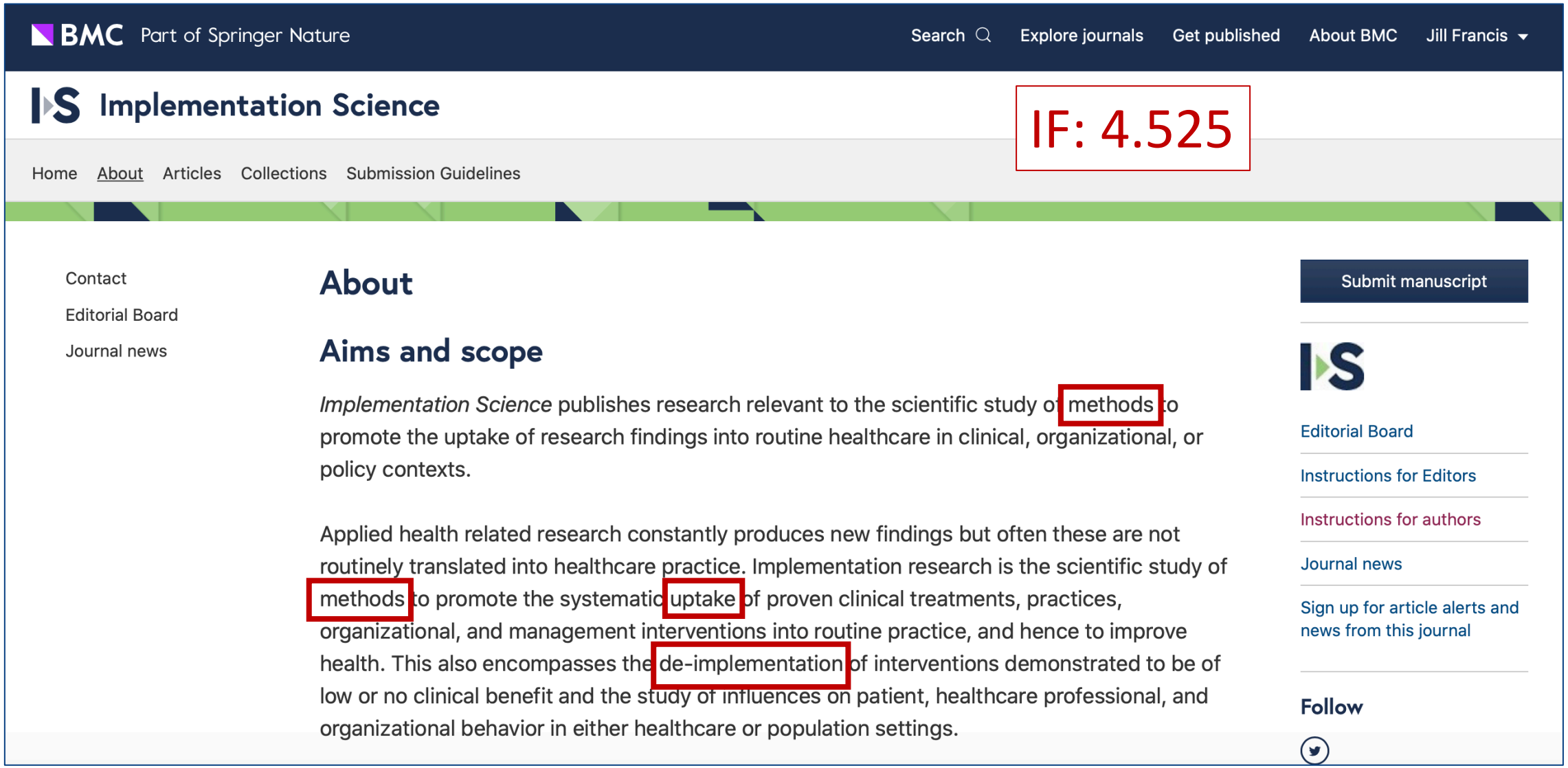
Professorial Fellow, Department of Paediatrics, The University of Melbourne

Low-value Care

"Any practice, investigation or procedure that lacks evidence, may cause harm or provides little benefit"

Hiscock H, et al. Reducing unnecessary prescribing in infant reflux. Safer Care Victoria, 2021

Implementation Science Definition
https://implementationscience.biomedcentral.com/about



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Implementation Science

IF: 4.525

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About

Aims and scope

Implementation Science publishes research relevant to the scientific study of methods to promote the uptake of research findings into routine healthcare in clinical, organizational, or policy contexts.

Applied health related research constantly produces new findings but often these are not routinely translated into healthcare practice. Implementation research is the scientific study of methods to promote the systematic uptake of proven clinical treatments, practices, organizational, and management interventions into routine practice, and hence to improve health. This also encompasses the de-implementation of interventions demonstrated to be of low or no clinical benefit and the study of influences on patient, healthcare professional, and organizational behavior in either healthcare or population settings.

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Follow

What about 'Improvement Science'?

- **Similarities:**
  - Both seek to enhance care and improve patient outcomes with an eye to cost
  - Both embrace **Science**: Systematic methodology based on evidence [1]

- **Differences** [2]: Improvement science -
  - Is designed to accelerate learning-by-doing
  - Has a narrower focus than implementation science
  - Seeks to maximize impact of lessons learned from a **specific** improvement effort
  - Aims **to maximize local benefits from local solutions**

1 https://sciencecouncil.org/about-science/ 2 https://impsciuw.org/implementation-science/

Lost in 'Knowledge Translation'?

- 29 terms relating to the "knowledge-to-action" process, eg:
  - #Knowledge transfer
  - #Knowledge translation
  - #Knowledge exchange
  - Research utilization
  - Implementation
  - Improvement
  - Dissemination
  - Diffusion

The Journal of Continuing Education in the Health Professions, Volume 26, pp. 13–24. Printed in the U.S.A.

Innovations

Lost in Knowledge Translation: Time for a Map?

Ian D. Graham, PhD; Jo Logan, RN, PhD; Margaret B. Harrison, RN, PhD; Sharon E. Straus, MD, MSc; Jacqueline Tetroe, MA; Wenda Caswell, RN, MEd; and Nicole Robinson

Abstract

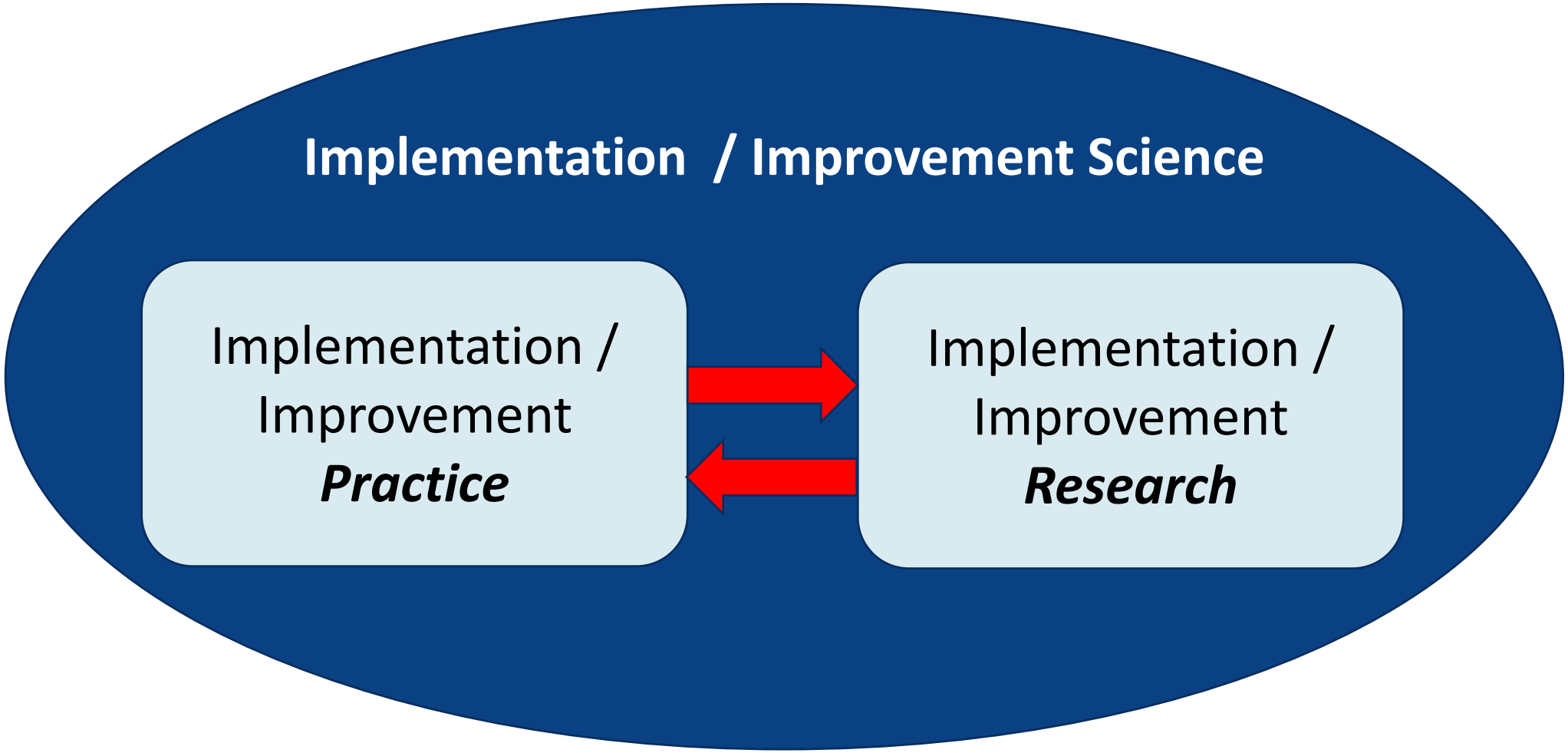
There is confusion and misunderstanding about the concepts of knowledge translation, knowledge transfer, knowledge exchange, research utilization, implementation, diffusion, and dissemination. We review the terms and definitions used to describe the concept of moving knowledge into action. We also offer a conceptual framework for thinking about the process and integrate the roles of knowledge creation and knowledge application. The implications of knowledge translation for continuing education in the health professions include the need to base continuing education on the best available knowledge, the use of educational and other transfer strategies that are known to be effective, and the value of learning about planned-action theories to be better able to understand and influence change in practice settings.

Key Words: Knowledge translation, continuing education, knowledge transfer, knowledge exchange, research utilization, continuing professional development

Despite the considerable resources devoted to health sciences research, a consistent finding from the literature is that the transfer of research

ful.[2–4] Similarly, it is estimated that cancer outcomes could be improved by 30% with optimum application of what is currently known[5] and that

Key distinction

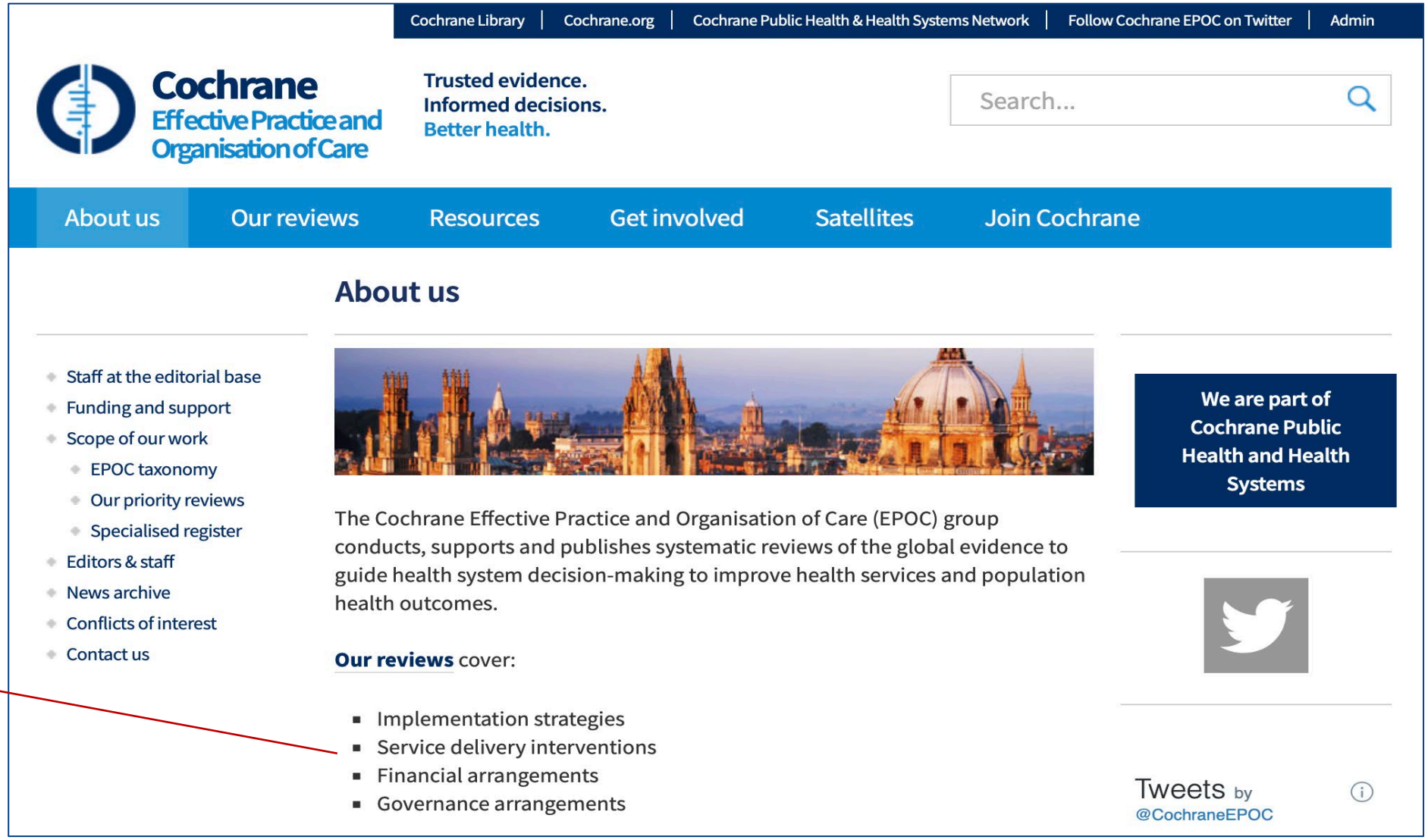


Research is *Implementation* Research if …

- Research participants are healthcare professionals
- Problem to be addressed concerns quality or efficiency of health care
- Research question involves identifying, investigating or addressing gaps in care
- **Ultimate aim is to build *evidence* about whether implementation strategies work**

Which Implementation Approaches Work? Current Evidence

- Implementation strategies
- Service delivery interventions
- Financial arrangements
- Governance arrangements



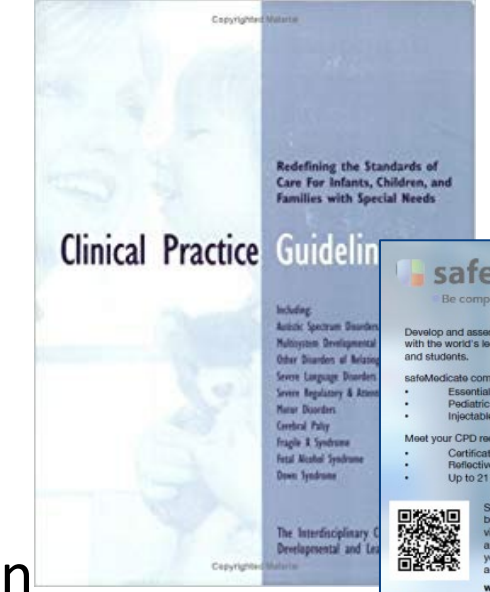
Broad, 'top-down' implementation strategies

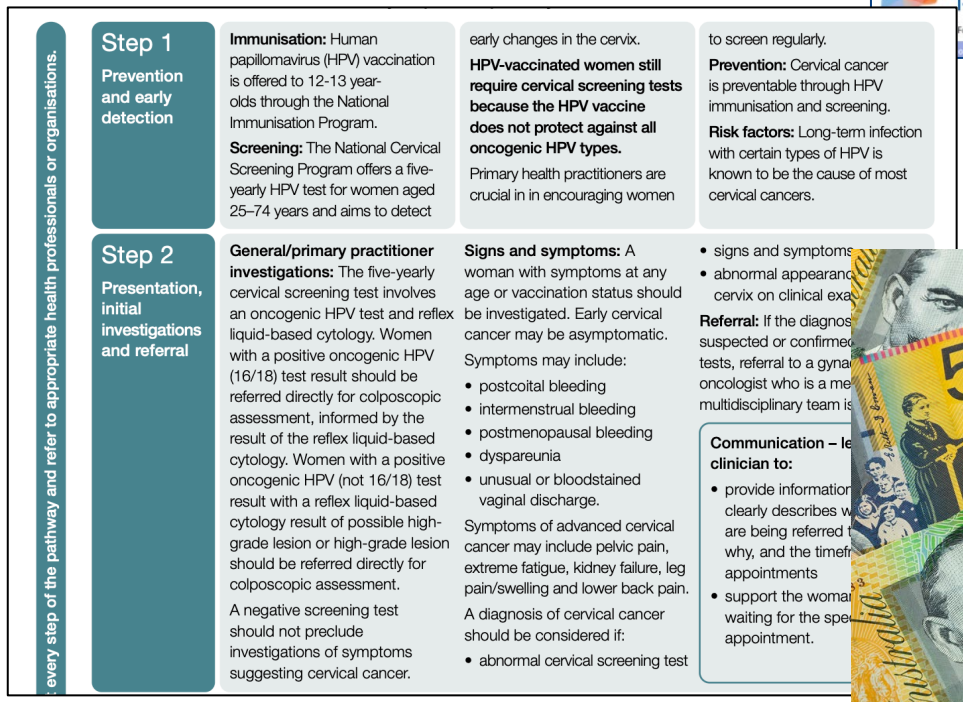
Clinical practice guidelines

Continuing Medical Education

Clinical pathways

Financial incentives





Evidence for Top-Down Implementation Interventions: Findings from EPOC (Cochrane) reviews

- Printed educational materials (Giguère, 2012)
- Continuing medical education (Forsetlund, 2009)
- Audit & Feedback (Ivers, 2012)
- Financial incentives (Flodgren, 2011)
- Hospital nurse-staffing models (Butler, 2019)
- On-screen, point-of-care computer reminders (Shojania, 200[illegible])
- Clinical pathways (Rotter, 2010)

* May have a **small** beneficial effect on professional practice outcomes"

* "…alone or combined with other interventions, can improve professional practice. The effect is likely ... **small**"

* "Generally leads to **small** but potentially important improvements in professional practice"

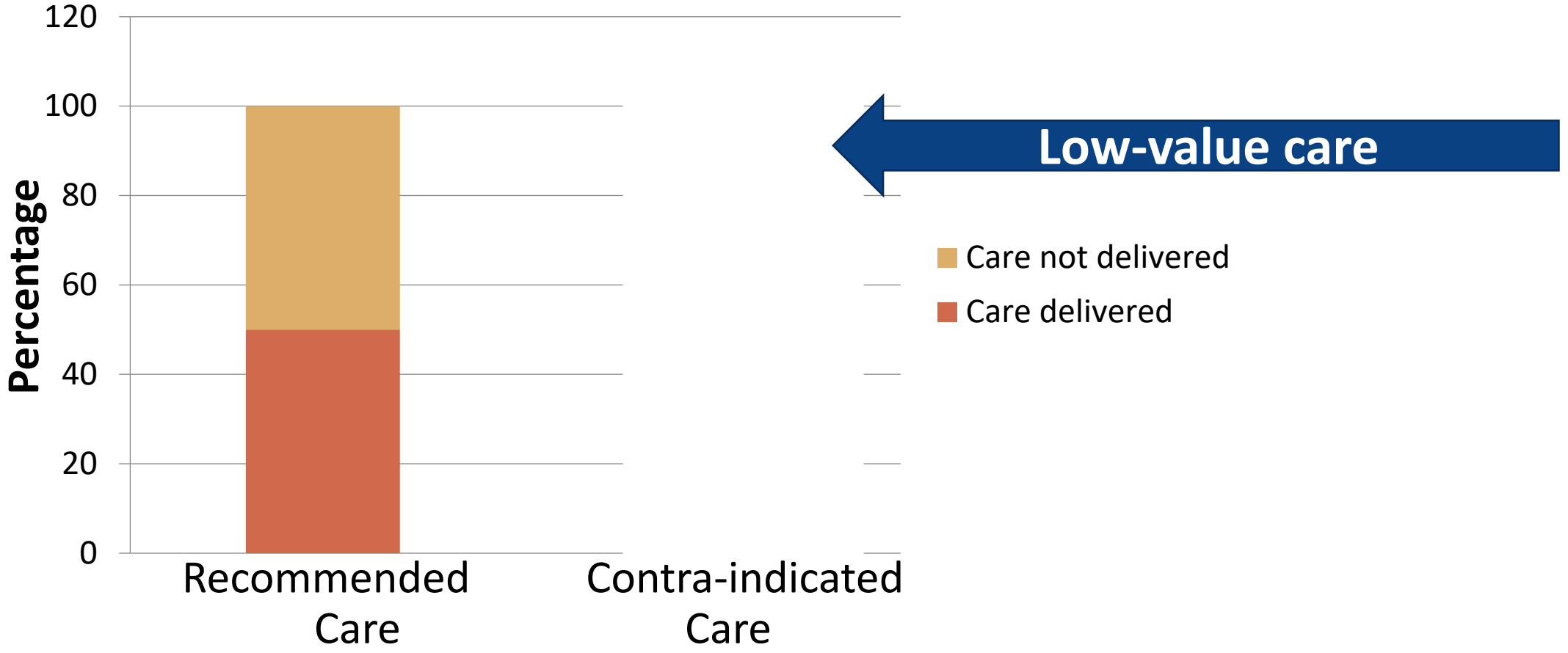
* "Serious methodological **limitations**; very limited in completeness and generalisability."

* "The certainty of the evidence about hospital nurse staffing remains **very low**"

* "**Further research** [needed] if computer reminders are to succeed on more than a trial and error basis"

* "Reduction in in-hospital **complications** (OR 0.58) and improved **documentation** (OR 11.95)
* **No evidence** of differences in readmission to hospital or in-hospital mortality"

Reality check: Evidence-practice Gaps almost Universal



Schuster MA, McGlynn EA. How good is the quality of health care. *Milbank Quarterly*, 1998.

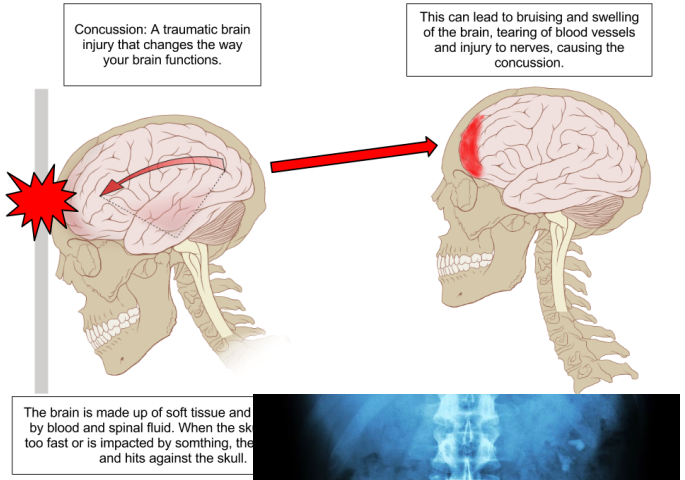
Four Kinds of Care Gaps

(1) *Slow uptake* of new interventions that are clinically effective

(2) *Premature or continued uptake* of new interventions and technologies that are subsequently shown to be ineffective, wasteful or even harmful

(3) *Failure to keep up* with gradually emerging evidence

(4) *Failure to keep up* with changes in the ethos of care (e.g., person-centred care; https://www.safetyandquality.gov.au/our-work/partnering-consumers/person-centred-care)



2. *Premature uptake* of new interventions that are ineffective, wasteful or even harmful

Low-value care requires de-implementation: strategies to reduce or stop behaviours

‘Technology creep’: *Don’t get over-excited by innovation*

Interventions with high face validity: *Don’t assume clinical effectiveness*

3. *Failure to keep up* with emerging evidence

Low-value care requires de-implementation: strategies to reduce or stop behaviours

Journal of Paediatrics and Child Health

2 Scherphof CS, van den Eijnden RJ, Lugtig P, Engels RC, Vollebergh WA. Adolescents' use of nicotine replacement therapy for smoking cessation: Predictors of compliance trajectories. *Psychopharmacology* 2014; **231**: 1743–52.
3 Dunlop S, Lyons C, Dessaix A, Currow D. How are tobacco smokers using e-cigarettes? Patterns of use, reasons for use and places of purchase in New South Wales. *Med. J. Aust.* 2016; **204**: 355.
4 Royal College of Physicians. *Nicotine Without Smoke: Tobacco Harm Reduction*. London: The College, 2016. Available from: https://www.rcplondon.ac.uk/projects/outputs/nicotine-without-smoke-tobacco-harm-reduction-0 [accessed 18 May 2017].

Dear Editor,

THE RACP EVOLVE GENERAL PAEDIATRICS LIST

Evolve is a joint initiative of the Royal Australasian College of Physicians (RACP) and its specialties to identify and reduce low-value medical practices (tests, procedures or interventions that are overused, inappropriate or of limited effectiveness).[1] RACP specialties participate by producing a list of their 'top five' low-value practices to lay the ground for clinical change.[2]

In 2016, the RACP's Paediatrics and Child Health Division (PCHD) produced a top five list for general paediatrics. To kick-start the process, JS compiled a list of all paediatric-related clinical practices already identified as 'low value' by other RACP specialties and similar initiatives in Australia and overseas (http://www.evolve.edu.au; http://www.choosingwisely.org; http://www.choosingwisely.org.au; and https://www.nice.org.uk; accessed 24 May 2017). A core working group comprising six fellows (including HH and SD) and one advanced trainee discussed these practices and nominated others. JS conducted a rapid review of the published evidence to confirm that the practices were of low value, and 15 practices were shortlisted for further consideration.

Table 1 Top 10 low-value paediatric clinical practices for all respondents according to sector

Ranking	All Do not routinely...	Public sector Do not routinely...	Private sector Do not routinely...
1	Prescribe oral antibiotics to children with fever without an identified bacterial infection	Prescribe oral antibiotics to children with fever without an identified bacterial infection	Advise frenotomy for the relief of ankyloglossia in newborns
2	Undertake chest X-rays for the diagnosis of bronchiolitis in children or routinely prescribe salbutamol or systemic corticosteroids to treat bronchiolitis in children	Treat GORD in infants with acid suppression therapy	Prescribe oral antibiotics to children with fever without an identified bacterial infection
3	Treat GORD in infants with acid suppression therapy	Undertake chest X-rays for the diagnosis of bronchiolitis in children or routinely prescribe salbutamol or systemic corticosteroids to treat bronchiolitis in children	Undertake chest X-rays for the diagnosis of bronchiolitis in children or routinely prescribe salbutamol or systemic corticosteroids to treat bronchiolitis in children
4	Order chest X-rays for the diagnosis of asthma in children	Order abdominal X-rays for the diagnosis of non-specific abdominal pain in children	Order chest X-rays for the diagnosis of asthma in children
5	Order abdominal X-rays for the diagnosis of non-specific abdominal pain in children	Order chest X-rays for the diagnosis of asthma in children	Order abdominal X-rays for the diagnosis of non-specific abdominal pain in children
6	Advise frenotomy for the relief of ankyloglossia in newborns	Advise frenotomy for the relief of ankyloglossia in newborns	Order baseline blood tests just because an intravenous cannula has been placed in a paediatric patient
7	Order baseline blood tests just because an intravenous cannula has been placed in a paediatric patient	Order baseline blood tests just because an intravenous cannula has been placed in a paediatric patient	Treat GORD in infants with acid suppression therapy

RACP Top 5 "do not routinely do"

- Prescribe oral antibiotics to children with fever without an identified bacterial infection
- Order chest X-rays for the diagnosis of bronchiolitis or routinely prescribe salbutamol or systemic corticosteroids to treat bronchiolitis
- **Treat GORD in infants with acid suppression therapy**
- Order chest X-rays for the diagnosis of asthma
- Order abdominal X-rays for the diagnosis of non-specific abdo pain

Hiscock at al JPCH 2017

Bottom-up Approach – Behavioural perspective

Simon French

Four-step Procedure

- Who needs to do what, differently?
- What are the barriers and enablers to performing these behaviours in the health care context?
- How can the barriers be overcome; and enablers leveraged?
- How best to evaluate success of the implementation intervention?

8
ent/7/1/38

IMPLEMENTATION SCIENCE

Open Access

ory-informed behaviour change
implement evidence into
matic approach using the
ains Framework

enise A O'Connor[1], Joanne E McKenzie[1], Jill J Francis[3], Susan Michie[4],
tner[6], Neil Spike[6] and Jeremy M Grimshaw[7,8]

Background: There is little systematic operational guidance about how best to develop complex interventions to reduce the gap between practice and evidence. This article is one in a Series of articles documenting the

Who needs to do what differently? AACT framework

Implementation Science (2019) 14:102
/10.1186/s13012-019-0951-x

METHODOLOGY

Action, actor, context, target, tim a framework for specifying beha

Justin Presseau[1,2,3*], Nicola McCleary[1,2], Fabiana Lorencatto[4], Andrea M
Jill J. Francis[6]

Abstract

Background: Designing implementation interventions to change the beh
professionals in the health system requires detailed specification of the be
alignment between intervention components and measured outcomes. D
to clarify evidence-practice gaps, clarify who needs to do what differently,
design interventions to address these and ultimately provides an indicator
intervention's effect on behaviour change. An existing behaviour specifica

WORKSHEET

Action
Specify an action that can be observed or measured

Actor
Specify the person or people who does or could do the action

Context
Specify the physical location, emotional context or social setting

Target
Specify the person or people with or for whom the action is performed

Time
Specify when the action is performed (time, date, frequency, duration)

Who needs to do what differently? AACTT framework at different organizational levels

AACTT specification for focal and ancillary **Actions** of multiple **Actors**, **Contexts, Targets** and **Times** with worked example applied to improving hand hygiene

Action	Use alcohol-based gel (focal)	Check and refill empty gel dispensers (ancillary)	Order dispensers and gel (ancillary)
Actor	Staff physicians, nurses, residents	Cleaning staff	Hospital administrator
Context	In patient rooms	In patient rooms	In own office
Target	Patients receiving care at the hospital	Staff physicians, nurses and residents	Cleaning staff
Time	Before and after touching a patient	Every shift	Quarterly

Who needs to do what differently? Applying the AACTT framework

AACTT specification: **reduce acid suppression prescribing** or **stop existing AST**

Action	Stop prescribing acid suppression medication	Wean infants off acid suppression medication	Demonstrate how to settle infants without medication
**Actor	Hospital paediatricians	General practitioners	Nursing staff
Context	In-patient ward, special care nurseries	Routine consultation	Hospital admission
Target	Healthy unsettled infants and their parents	Infants already on acid suppression medication and their parents	Parents of healthy unsettled infants
Time	Every admission	Every consultation	Every admission

Barriers and Enablers: Theoretical Domains Framework (of behaviour change)

Francis *et al. Implementation Science* 2012, **7**:35
http://www.implementationscience.com/content/7/1/35

IMPLEMENTATION SCIENCE

ORIGINAL ARTICLE

Making psychological theory

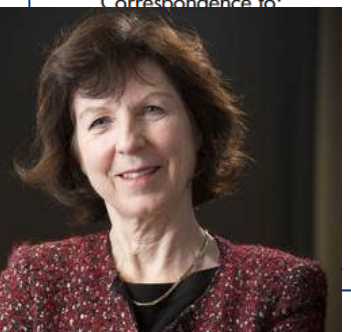
evidence based practice: a c

S Michie, M Johnston, C Abraham, R Lawton, D
Theory'' Group

Background: Evidence-based guideli
health outcomes are not achieved. Thi
involved in changing the behaviour o
consensus on a theoretical framework
to identify an agreed set of key theoret
based practice and (2) developing s
constructs to an interdisciplinary audi
Methods: Six phases of work were cor
(2) simplifying into construct domai
interdisciplinary evaluation; (5) valid
contributors were a ''psychological th
and a ''health psychology'' group (n
Results: Twelve domains were identifie
professional role and identity, (4) belie
and goals, (7) memory, attention an
social influences, (10) emotion regulat
Conclusions: A set of behaviour chan
implementation research. Application
change processes inherent in impleme
these proposed domains.

See end of article for authors' affiliations

Correspondence to:



Cane *et al. Implementation Science* 2012, **7**:37
http://www.implementationscience.com/content/7/1/37

IMPLEMENTATION SCIENCE

RESEARCH Open Access

Validation of the theoretical domains framework for use in behaviour change and implementation research

James Cane[1], Denise O'Connor[2] and Susan Michie[3*]

Abstract

Background: An integrative theoretical framework, developed for cross-disciplinary implementation and other behaviour change research, has been applied across a wide range of clinical situations. This study tests the validity of this framework.

Methods: Validity was investigated by behavioural experts sorting 112 unique theoretical
and open sort tasks. The extent of replication was tested by Discriminant Content Validatio
Analysis.

Results: There was good support for a refinement of the framework comprising 14 domai
constructs (average silhouette value 0.29): 'Knowledge', 'Skills', 'Social/Professional Role and
Capabilities', 'Optimism', 'Beliefs about Consequences', 'Reinforcement', 'Intentions', 'Goals',
Decision Processes', 'Environmental Context and Resources', 'Social Influences', 'Emotions',
Regulation'.

Conclusions: The refined Theoretical Domains Framework has a strengthened empirical b

TDF for exploring Barriers and Enablers

Theoretical Domains Framework:

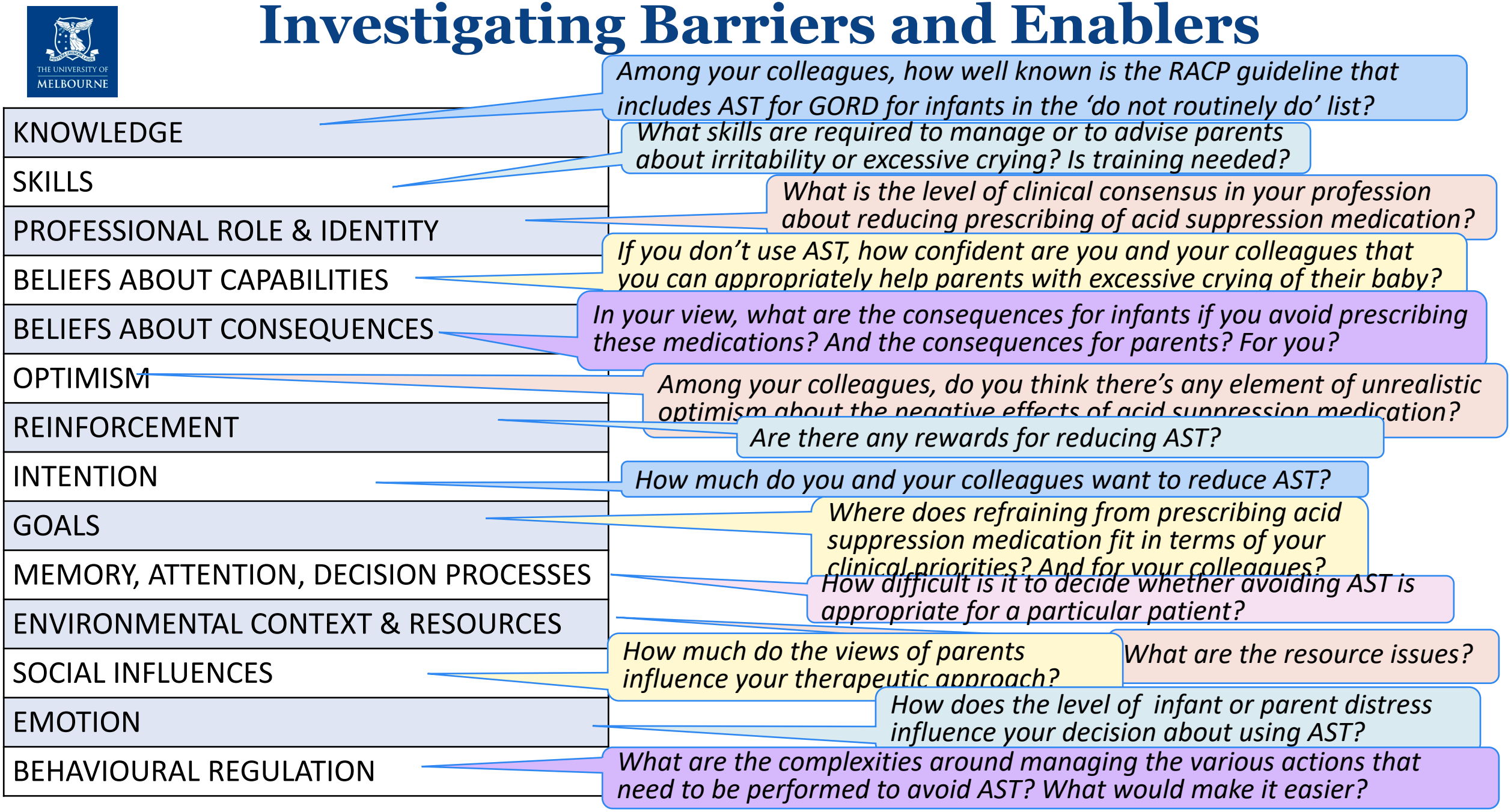
- Underpinned by decades of behaviour change research
- Synthesizes key factors associated with **behaviour change**
- 33 theories (128 constructs) distilled into 12 'construct domains'
- Provides a list of **topics** to explore that might affect behaviour
- Used for understanding **barriers** and **enablers** to behaviour change among healthcare professionals and patients

Michie et al., 2005; Cane et al., 2012

Theoretical Domains Framework (TDF)
KNOWLEDGE
SKILLS
PROFESSIONAL ROLE & IDENTITY
BELIEFS ABOUT CAPABILITIES
BELIEFS ABOUT CONSEQUENCES
OPTIMISM
REINFORCEMENT
INTENTION
GOALS
MEMORY, ATTENTION & DECISION PROCESSES
ENVIRONMENTAL CONTEXT & RESOURCES
SOCIAL INFLUENCES
EMOTION
BEHAVIOURAL REGULATION

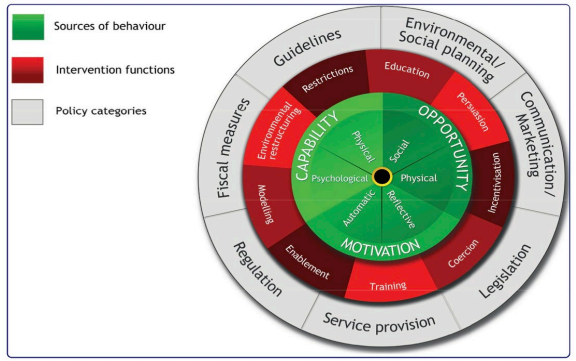
Susan Michie

Investigating Barriers and Enablers



Designing an Implementation Intervention

Behaviour change techniques to address barriers



ann. behav. med.
DOI 10.1007/s12160-013-9486-6

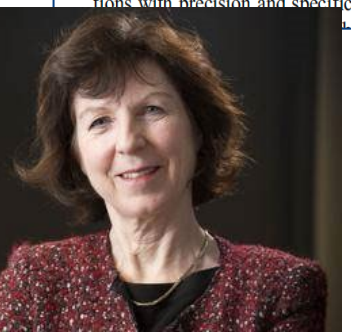
ORIGINAL ARTICLE

The Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques: Bui an International Consensus for the Reporting of Behavior Change Interventions

Susan Michie, DPhil, CPsychol · Michelle Richardson, PhD · Marie Johnston, Phl CPsychol · Charles Abraham, DPhil, CPsychol · Jill Francis, PhD, CPsychol · Wendy Hardeman, PhD · Martin P. Eccles, MD · James Cane, PhD · Caroline E. Wood, PhD

Abstract
Background CONSORT guidelines call for precise reporting of behavior change interventions: we need rigorous methods of characterizing active content of interventions with precision and specificity.

according to similarity
sort task. Inter-rater a
coding 85 intervent
assessed.
Results This resulted i



Michie *et al. Implementation Science* 2011, **6**:42
http://www.implementationscience.com/content/6/1/42

IMPLEMENTATION SCIENC

RESEARCH Open Acces

The behaviour change wheel: A new method for characterising and designing behaviour change interventions

Susan Michie[1*], Maartje M van Stralen[2] and Robert West[3]

Abstract

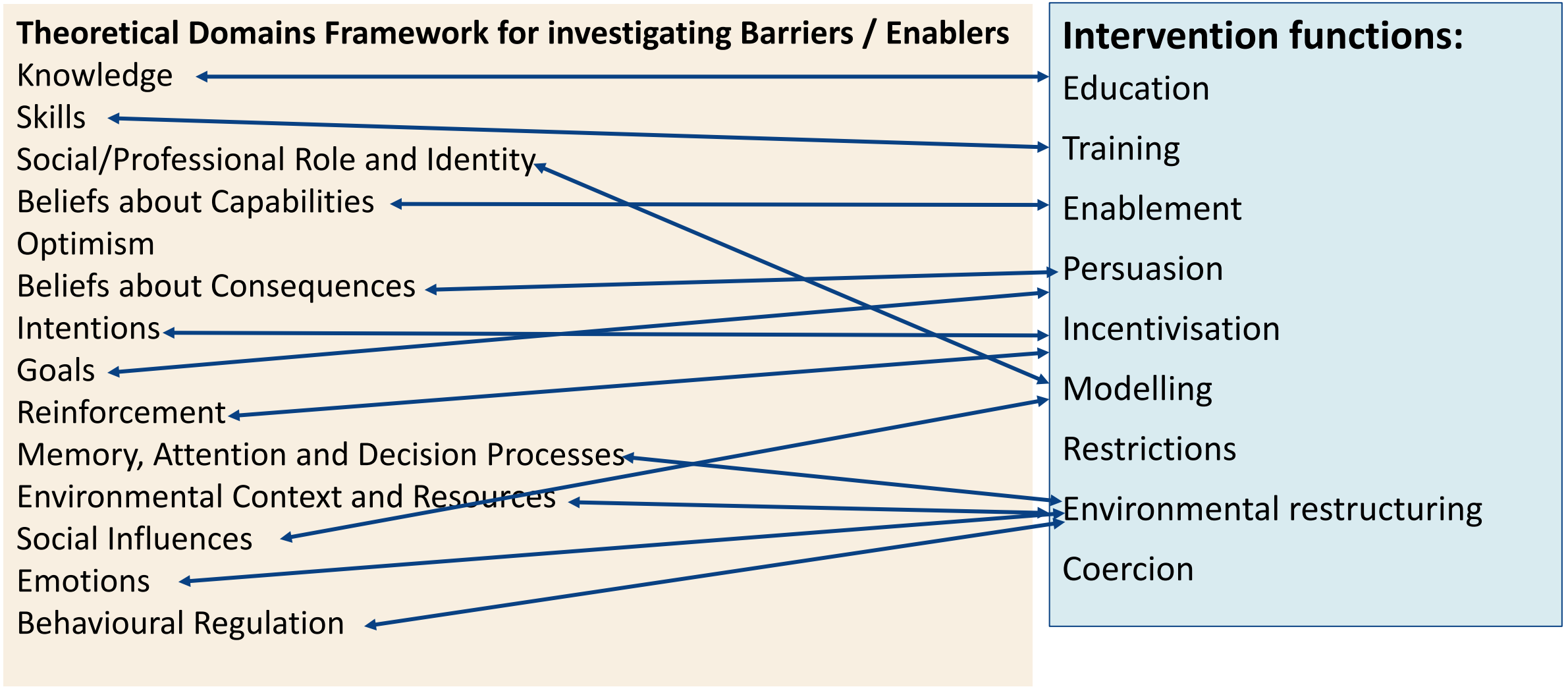
Background: Improving the design and implementation of evidence-based practice depends on successful behaviour change interventions. This requires an appropriate method for characterising interventions and linking them to an analysis of the targeted behaviour. There exists a plethora of frameworks of behaviour change interventions, but it is not clear how well they serve this purpose. This paper evaluates these frameworks, and develops and evaluates a new framework aimed at overcoming their limitations.

Methods: A systematic search of electronic databases and consultation with behaviour change experts were used to identify frameworks of behaviour change interventions. These were evaluated according to three criteria: comprehensiveness, coherence, and a clear link to an overarching model of behaviour. A new framework was developed to meet these criteria. The reliability with which it could be applied was examined in two domains of behaviour change: tobacco control and obesity.

Intervention functions:

Education
Restrictions
Environmental restructuring
Modelling
Enablement
Training
Coercion
Incentivisation
Persuasion

Matching the Solution to the Identified Problem



Trial Designs:
Clinical Trials vs Implementation Trials

	Randomised Clinical Trial	Randomised Implementation Trial
Objective	Evaluate a clinical intervention	Evaluate an implementation strategy
Population	Specified patient group	Specified healthcare professionals or teams
Intervention	Clinical intervention (eg specified alternative to acid suppression medication	Implementation strategy (eg national guideline PLUS parent testimonials)
Comparator	Placebo OR Usual care	No strategy OR Usual Implementation approach
Outcome	QoL; symptom relief; specific side effects	Practice change

Implementation and De-Implementation: Different Approaches?

Patey *et al. Implementation Science* (2018) 13:134
https://doi.org/10.1186/s13012-018-0826-6

RESEARCH

Changing behaviou
theories of behavio
implementation an
critical interpretive

Andrea M. Patey[1,2], Catherine S. Hurt[1], Jerer

Abstract

Background: Implementing evidence-based care requires
implementation) and more of others (implementation). Vari
may result from failure to consider a distinction between ap
frequency. The distinction is not well represented in metho
whether there is a theoretical rationale to support this distir

Methods: Using Critical Interpretative Synthesis, this concep
(biology, psychology, education, business) likely to report ap
were identified from databases using search terms related t
in frequency of behaviour and explicit use of theory were ir
how theory was operationalised, and theory-based recomm

BCTs Identified in Implementation and De-implementation Interventions Ranked by Frequency

Implementation (n=81)		De-implementation (n= 97)	
Frequency (%)	BCT	BCT	Frequency (%)
59 (73%)	Feedback on behaviour	Instruction on how to perform the behaviour	69 (71%)
53 (65%)	Instruction on how to perform the behaviour	Feedback on behaviour	42 (43%)
27 (33%)	Social comparison	**Behaviour substitution**	23 (24%)
20 (25%)	Credible source	Monitoring of behaviour by others without feedback	22 (23%)
17 (21%)	Prompts / cues	Social comparison	18 (19%)

whether implementation and de-implementation interventions already use different approaches. We used the behaviour change technique (BCT) taxonomy (version 1) (which includes 93 BCTs organised into 16 groupings) to investigate whether implementation and de-implementation interventions use different BCTs.

Methods: Intervention descriptions were coded for (a) implementation and de-implementation BCTs using taxonomy (v1). BCT frequencies were compared using Fisher's exact test with Bonferroni correction and Fisher's exact test was used to compare implementation and de-implementation rankings for de-implementation BCTs.

Results: Twenty-nine and 25 BCTs were identified in implementation and de-implementation interventions respectively. *Feedback on behaviour* was identified more frequently in implementation than de-implementation

Methods for choosing an appropriate substitute behaviour?

OPEN ACCESS

De-implementing wisely: developing the evidence base to reduce low-value care

Jeremy M Grimshaw [1,2] Andrea M Patey [1] Kyle R Kirkham,[3,4] Amanda Hall [5] Shawn K Dowling [6] Nicolas Rodondi [7,8] Moriah Ellen [9,10,11] Tijn Kool [12] Simone A van Dulmen [12] Eve A Kerr,[13,14] Stefanie Linklater [1] Wendy Levinson,[15,16] R Sacha Bhatia[17,18]

For numbered affiliations see end of article.

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Published Online First 6 February 2020

ABSTRACT

Choosing Wisely (CW) campaigns globally have focused attention on the need to reduce low-value care, which can represent up to 30% of the costs of healthcare. Despite early enthusiasm for the CW initiative, few large-scale changes in rates of low-value care have been reported since the launch of these campaigns. Recent commentaries suggest that the focus of the campaign should be on implementation of evidence-based strategies to effectively reduce low-value care. This paper describes the Choosing Wisely De-Implementation Framework (CWDIF), a novel framework that builds on previous work in the field of implementation science and proposes a comprehensive approach to systematically reduce low-value care in both hospital and community settings and advance the science of de-implementation. The CWDIF consists of five phases: *Phase 0*, identification

scarce healthcare resources threatening the sustainability of healthcare systems.[3] Reports from the Institute of Medicine[4] and international studies have repeatedly demonstrated similar levels of low-value care.[1 5–7]

Recognition of the overuse of low-value care led to the establishment of Choosing Wisely (CW) by the American Board of Internal Medicine Foundation in 2012 and subsequently spread to over 20 countries.[8] CW is an initiative that seeks to encourage a dialogue between clinicians and patients about avoiding unnecessary medical tests, treatments and procedures

Summary: Generalisable Approach to Reducing Low Value Care

1. Identify evidence of the implementation problem
2. What needs to change? (who needs to do what, differently, instead of the LVC?)
3. What are the barriers / enablers?
4. Select techniques for addressing the barriers and leveraging enablers
5. **Evaluate** the implementation strategy (primary outcome is practice change)
6. **Scale** the strategy (consider context)