Improving Value and Reducing Waste in Research: A role for Behavioural Science

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Behavior Change Ahead?
Our interventions are often ‘promising’ but…

- Modest and variable effects (Flodgren et al., 2017)
- Lacking evidence for long-term impact (Kwasnicka et al., 2016)
Overview

- Research Prioritisation of methodological research priorities
- Focus on two:
  - Intervention Development
  - Novel Research Designs
Facilitate the global improvement of the quality of behavioural trials
To conduct an international, Delphi consensus study to identify and achieve consensus on priorities for methodological research in behavioural trials among IBTN members.
1. Expert topic generation: Core IBTN members (n=15) invited to generate items: 135 items

2. Finalise topic ‘long list’: Research Prioritisation Team: 33 items, in 12 categories

3. Two-phase eDelphi survey to all IBTN members: N1=77/306 & N2=57/77 responses

Rate and rank priorities for methodological research in trials of behavioral interventions

List all possible topics or research questions which you consider important for behavioral trials’ methodology research.
Highest priority topics:

- **Intervention development:**
  - Specifying intervention components (highest rated)
  - Tailoring interventions to specific populations and contexts (highest ranked)

- **Intervention implementation:**
  - How to disseminate behavioural trial research findings to increase implementation (second highest rated)
  - Methods for ensuring that behavioural interventions are implementable into practice and policy (second highest ranked)

- ‘Development of novel research designs to test behavioural interventions’ also emerged as a highly ranked research priority.
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- ‘Development of novel research designs to test behavioural interventions’ also emerged as a highly ranked research priority.
MRC Guidelines for development and evaluation of complex interventions

Develop intervention
Either developing a new intervention, or adapting an existing intervention for a new context, based on research evidence and theory of the problem

OR

Identify intervention
Choosing an intervention that already exists (or is planned), either via policy, practice, and exploring its options for evaluation (evaluability assessment)

Feasibility
Assessing feasibility and acceptability of intervention and evaluation design in order to make decisions about progression to next stage of evaluation

Core elements
- Consider context
- Develop, refine, and (re)test programme theory
- Engage stakeholders
- Identify key uncertainties
- Refine intervention
- Economic considerations

Implementation
Deliberate efforts to increase impact and uptake of successfully tested health innovations

Evaluation
Assessing an intervention using the most appropriate method to address research questions

BMJ 2021;374:n2061
Using Behaviour Change Theory to systematically develop interventions: The Behaviour Change Wheel

BCTs: The smallest possible component of an intervention designed to change behaviour

Active ingredients of behaviour change interventions

(Abraham & Michie, 2008)

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<td>Set or agree a goal defined in terms of the behaviour to be achieved. Note: only code goal-setting if there is sufficient evidence that goal set as part of intervention; if goal unspecified or a behavioural outcome, code 1.3, Goal setting (outcome); if the goal defines a specific context, frequency, duration or intensity for the behaviour, also code 1.4, Action planning.</td>
<td>Agree a daily walking goal (e.g. 3 miles) with the person and reach agreement about the goal. Set the goal of eating 5 pieces of fruit per day as specified in public health guidelines.</td>
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Specificity helps us to work out the active ingredients when synthesising evidence

Behaviour change techniques and intervention characteristics in digital cardiac rehabilitation: a systematic review and meta-analysis of randomised controlled trials

Eanna Kenny 🌹, Rory Coyne 🌻, John W. McEvoy 🌹, Jenny McSharry 🌹, Rod S. Taylor 🌹 and Molly Byrne 🌹
Table 4. Frequency of BCTs in the interventions.

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BCTs associated with effective programs

1.1 Goal setting (behaviour)
1.2 Problem solving
2.2 Feedback on behaviour
2.3 Self-monitoring of behaviour
3.1 Social support (unspecified)
5.1 Information about health consequences
6.1 Demonstration of the behaviour

1.3 Goal setting (outcome)
2.2 Feedback on behaviour
5.1 Information about health consequences

Healthy eating

Physical activity

Medication adherence

5.1 Information about health consequences
7.1 Prompts/cues

Smoking cessation

2.3 Self-monitoring of behaviour
5.1 Information about health consequences
7.1 Prompts/cues
Highest priority topics:

• **Intervention development:**
  - Specifying intervention components (highest rated)
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• **Intervention implementation:**
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• ‘Development of novel research designs to test behavioural interventions’ also emerged as a highly ranked research priority.
The Multiphase Optimization Strategy (MOST) to optimize multicomponent interventions prior to evaluation

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CARDIAC REHABILITATION IS UNDERUSED

Cardiac Rehabilitation Enrollment, Engagement, and Completion Among Medicare Beneficiaries Aged 65 and Over who had a primary qualifying event* in 2017:

- 29% of patients initiated CR sessions
- 23% of patients attended up to 12 sessions
- 17% of patients attended up to 24 sessions
- 8% of patients attended up to 36 sessions (considered to be a full dose of CR)

(Million Hearts, 2022)

Eanna Kenny

Eanna Kenny: To use the Multiphase Optimization Strategy (MOST) to identify an optimised version of digitally delivered cardiac rehabilitation

Preparation
- Develop a conceptual model
- Identify set of candidate components
- Identify optimisation criterion

Optimisation
- Optimisation trial
- Factorial experiment
  Based on results, identify the optimal intervention

Optimised intervention expected to be sufficiently effective?

Evaluation
- Confirm effectiveness via RCT
Conceptual model for digitally delivered cardiac rehabilitation

**Intervention components**
- **Goal setting & self-monitoring**
  - 1.1 Goal setting (behaviour)
  - 1.3 Goal setting (outcome)
  - 2.3 Self-monitoring of behaviour
  - 2.4 Self-monitoring outcomes of behaviour
  - 2.6 Biofeedback
- **Education**
  - 5.1 Information about health consequences
- **Feedback**
  - 2.2 Feedback on behaviour
  - 7.1 Prompts/cues
- **Exercise training**
  - 4.1 Instruction on how to perform the behaviour
  - 6.1 Demonstration of the behaviour
- **Social support**
  - 3.1 Social support (unspecified)
  - 3.2 Social support (practical)
  - 3.3 Social support (emotional)

**Theoretical Domains**
- Goals
- Behavioural regulation
- Knowledge
- Beliefs about consequences
- Beliefs about capability
- Emotions
- Social influences

**COM-B**
- Capability
- Motivation
- Opportunity

**Behavioural outcomes**
- Physical activity
- Healthy eating
- Medication adherence
- Smoking

**Clinical/physiological outcomes**
- Exercise capacity
- Quality of life
- CVD risk factors
Improving Value and Reducing Waste in Research: A role for Behavioural Science

Molly Byrne

Health Behaviour Change Research Group
University of Galway
U-CARE Venue 2023, Uppsala
Oct 9-10 2023

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