

Leveraging cutting edge behavioral intervention development and testing frameworks to develop implementation ready interventions

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IFSO World Congress
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Land acknowledgement

- Concordia University and the CIUSSS-NIM depends on traditional Indigenous territories to provide us physical space, sustenance, safety, and community to work, live, and play.
- The Kanien'kehá:ka Nation is recognised as the custodians of the lands and waters on which Concordia University and the CIUSSS-NIM stands today. Tiohtiá:ke commonly known as Montreal is historically known as a gathering place for many First Nations.
- We acknowledge that our ability to live and work on these lands today is a direct benefit of policies of expulsion and assimilation of Indigenous peoples during the time of settlement and Confederation, and since.
- The harms of these policies are many and *are still being felt in Indigenous communities today*. We express gratitude towards the Indigenous peoples who have and will continue to steward these lands. We commit to amplifying the voices of Indigenous peoples and working against the everyday forces of white supremacy and colonialism present in the research sector.



Disclosures

- Industry Grants/Research Support: Investigator-initiated research and educational grants
 - Moderna (2021), Abbvie (2014-16)
- Consulting Fees: Behaviour change related CME, trial behaviours, and statistical analysis
 - Abcellera (2025-ongoing), Sygesa (2016-2019), Astra-Zenica (2017)
- Speaker Fees: Behaviour change of health behaviours
 - Respiplus (2021), Novartis (2015), Jansen (2014)
- Advisory Board: Development of medication adherence education, digital behaviour change programs, digital clinical tools, and digital public health tools
 - Cognitai (2025-ongoing), Rypple (2024-ongoing), Lucilab (2021-ongoing), Respiplus (2021), Astra-Zenica (2021), Sanofi (2019), Bayer (2018)



Learning objectives

- By the end of the presentation, you will be able to:
 1. Explain what a behaviour change intervention is; and
 2. Describe how to leverage knowledge users/interested parties to develop implementable behaviour change interventions



Why do we need to do better with our behavioural interventions?

- Several behavioural trials have yielded disappointing results

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Cardiovascular Effects of Intensive Lifestyle Intervention in Type 2 Diabetes

The Look AHEAD Research Group*

Obesity Surgery (2019) 29:3419–3431
<https://doi.org/10.1007/s11695-019-04109-7>

ORIGINAL CONTRIBUTIONS

Does Lifestyle Intervention After Gastric Bypass Surgery Prevent Weight Regain? A Randomized Clinical Trial

ELSEVIER

Surgery for Obesity and Related Diseases 12 (2016) 180–187

Integrated health original article

Preoperative lifestyle intervention in bariatric surgery: a randomized clinical trial

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

A Two-Year Randomized Trial of Obesity Treatment in Primary Care Practice



Example of a behavioural (behaviour change) intervention

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Cardiovascular Effects of Intensive Lifestyle Intervention in Type 2 Diabetes

The Look AHEAD Research Group*

Look AHEAD Trial (2013)

- Impact of weight loss (behaviour change intervention-driven) on MACE in patients with overweight and type 2 diabetes

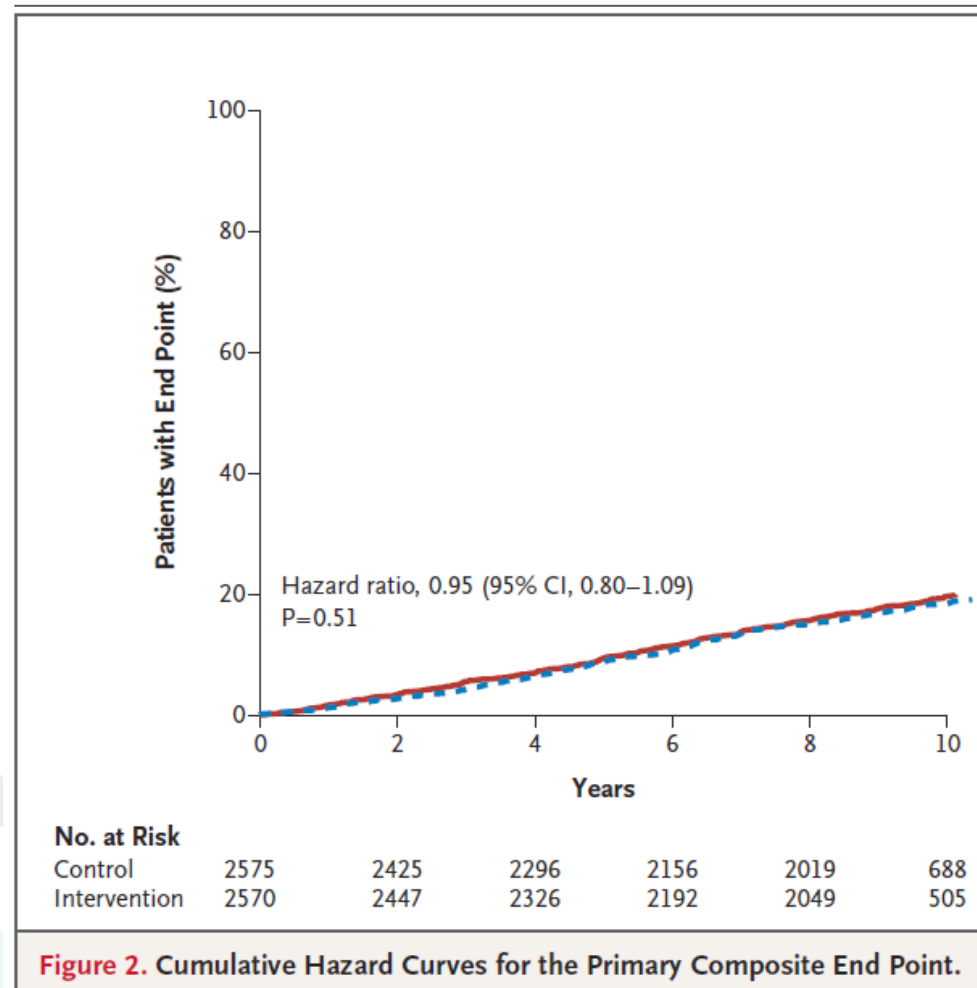


Look AHEAD Trial (2013)

- 16 centres in the US, 5,145 patients randomised:
 - Control: 2575, Intervention: 2570
- 10-year follow-up:
 - MACE: CVD death, nonfatal myocardial infarction and stroke, or hospitalization for angina
- Intervention:
 - Focus: reduce calorie intake, increase physical activity
 - Weekly counseling meetings 1st 6M, reduced after across the ten years
- Comparison
 - Diabetes education, 3x per year (years 1-4), reduced after across the ten years
- Cost?
 - Ca. \$100 Million USD funding from NIH

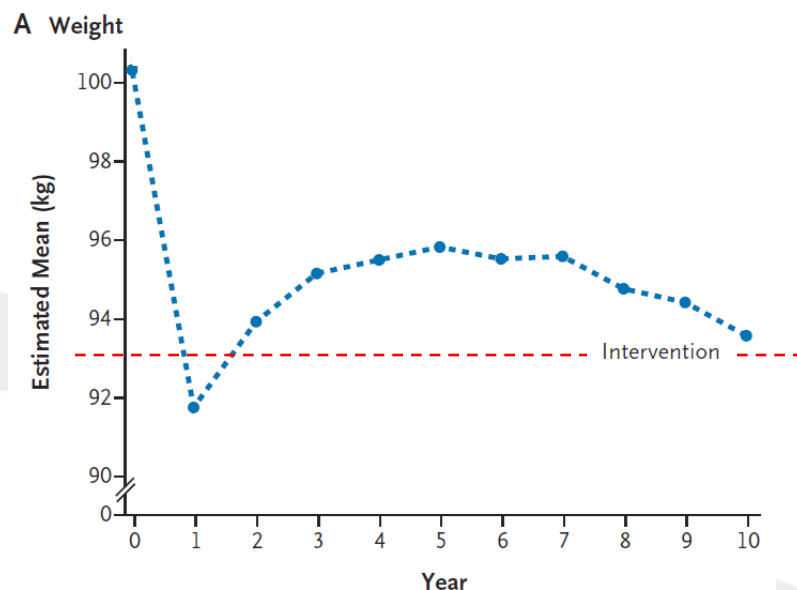


Result: MACE



Results

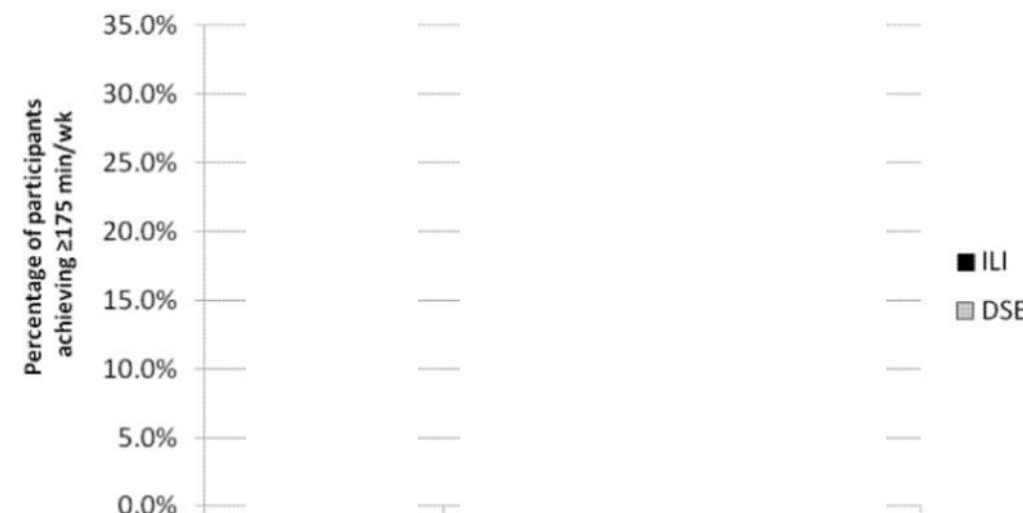
7% decrease in weight (vs. control)



- Not achieved

175 minutes per week in physical activity

- Not reported



Unick et al, 2016, MSSE



Intervention

Lifestyle intervention combines diet modification and increased physical activity with a goal of sustained weight loss. **The lifestyle intervention is modeled on** group behavioral programs developed for the treatment of obese patients with type 2 diabetes and includes intervention components from the Diabetes Prevention Program [18–20]. The intervention utilizes strategies that have been shown to be most effective for long-term weight loss and weight loss maintenance. These include a portion-controlled diet (which provides portions of food with a fixed calorie and macronutrient content) during the initial phase of weight loss, a multicomponent approach to intervention (including behavioral techniques, diet modification, physical activity, and social support), and ongoing regular contact throughout the follow-up period.

- Intervention included multiple elements drawn from a variety of studies
- There was no reported formal testing of the intervention
- Even if successful, how will such a complex intervention be implemented?

*Failure of the hypothesis?
or Failure of the intervention?*



What is a behaviour change intervention (BCI)?



Is exercise a behavioural intervention?

- What is high blood pressure called?
 - Hypertension
- What are?
 - Beta-blockers, diuretics, ACE-inhibitors
 - Anti-hypertensive medications
- Physical activity/exercise
 - Intervention or target?

Intervention → Intervention target

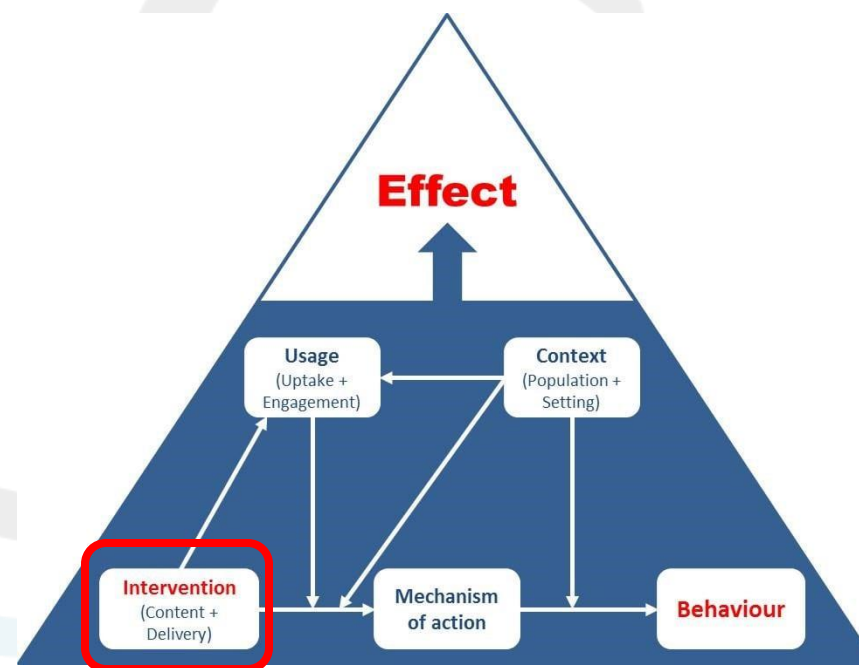
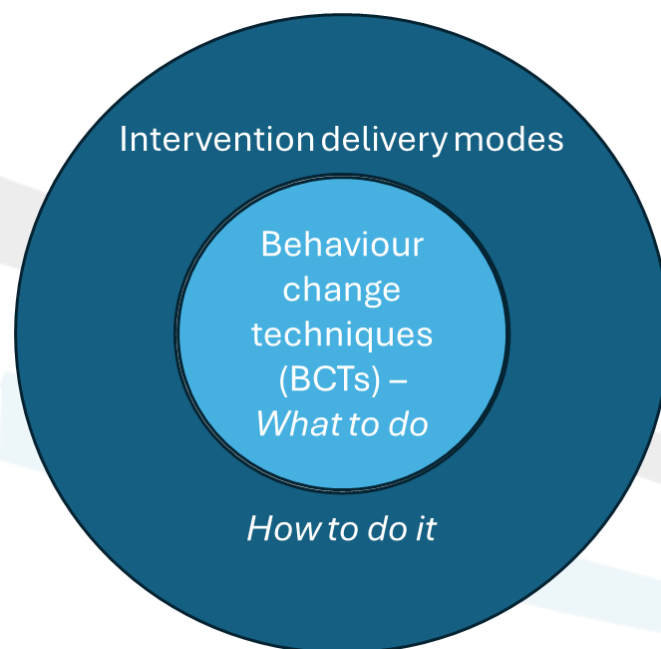


?



What is a behaviour change intervention (BCI)?

- Behavioural/behaviour change intervention
 - Complex series of interacting techniques which are combined; and
 - delivered in a certain to change a specific behaviour, e.g., physical activity



Behaviour Change Techniques Ontology

BCT group	Definition	No. of BCTs in this group
Goal directed BCT	A behaviour change technique that sets or changes goals.	23
Monitoring BCT	A BCT that involves gathering or using information about performance.	12
Social support BCT	A BCT that involves taking steps to secure or deliver the support or aid of another person.	16
Guide how to perform behaviour BCT	A BCT that provides guidance regarding how to perform the behaviour.	6
Conduct a behavioural experiment BCT	A BCT that advises on how to identify and test hypotheses about the behaviour, its causes and consequences.	1

Level 1 label	Level 2 label	Level 3 label	Level 4 label	Definition
goal directed BCT BCIO:007001				A <behaviour change technique> that sets or changes goals.
	goal setting BCT BCIO:007002			A <goal directed BCT> that sets goals.
		set behaviour goal BCT BCIO:007003		A <goal setting BCT> that sets a goal for the behaviour to be achieved.
			set measurable behaviour goal BCT BCIO:007300	A <set behaviour goal BCT> that describes the behaviour to be achieved in terms of a measurable target.
		agree behaviour goal BCT BCIO:007004		A <goal setting BCT> that involves the intervention source agreeing with the person on a behavioural goal.
		set outcome goal BCT BCIO:007005		A <goal setting BCT> in which the goal is a positive outcome of performing the behaviour.
			set measurable outcome goal BCT BCIO:007300	A <set outcome goal BCT> that describes the behavioural outcome to be achieved in terms of a measurable target.
		agree outcome goal BCT BCIO:007006		A <goal setting BCT> that involves the intervention source agreeing with the person on a goal which is a positive outcome of performing the behaviour.

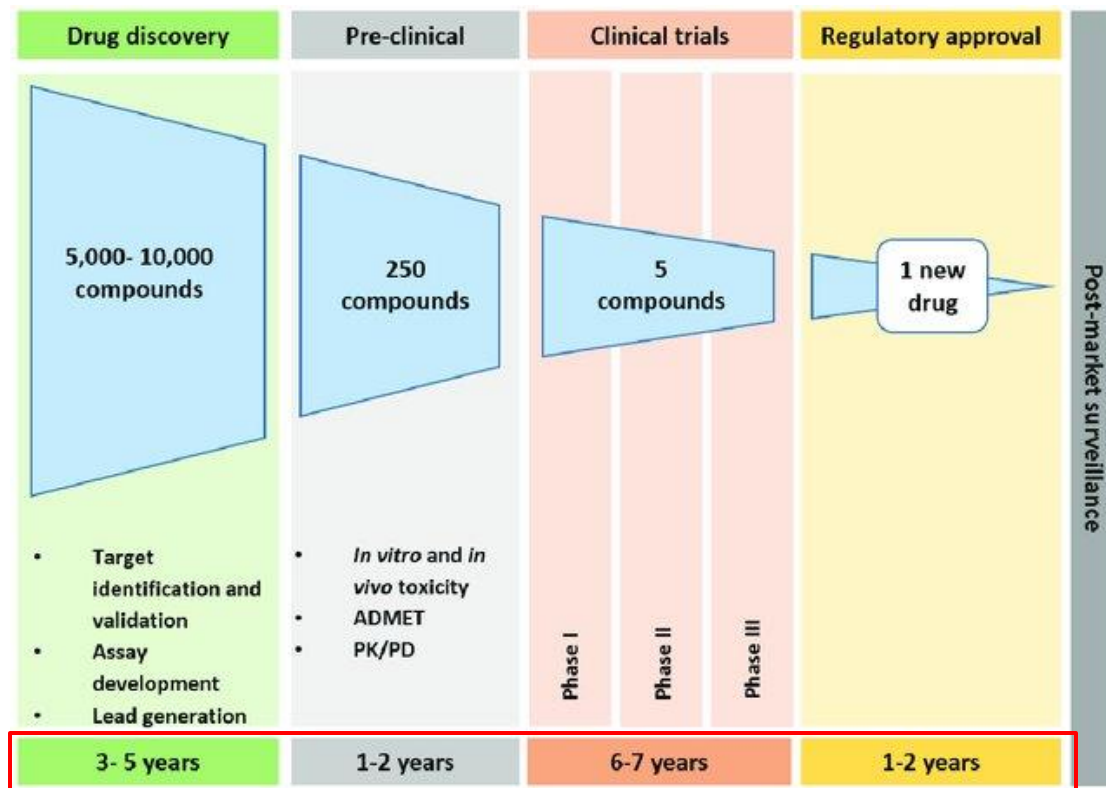
new perspective on	5
behaviour in the	21
renewal of what other	7
targeted pairing of a	15
person to perform a	9
to manage mental	4
ing relating to	6
structure or functioning	1
yes or other drugs.	3
	20
environment in which the	12

	impedes the behaviour.	
Prompt focus on self-identity BCT	A BCT that prompts the person to focus on their mental representation of themselves.	5
Behavioural consequence BCT	A behaviour change technique that alters the consequences or promised consequences for a behaviour.	77
Outcome consequence BCT	A behaviour change technique that alters the consequences or promised consequences for an outcome that results from performing or not performing a behaviour.	35

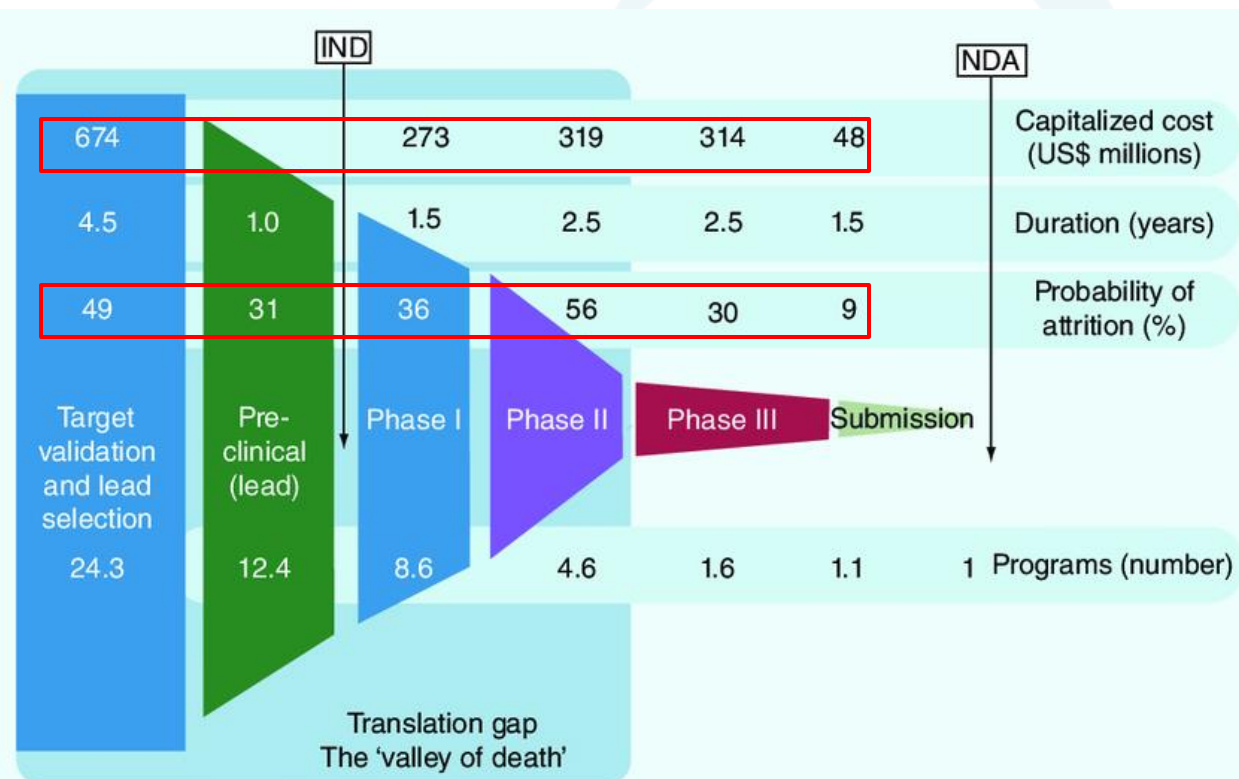
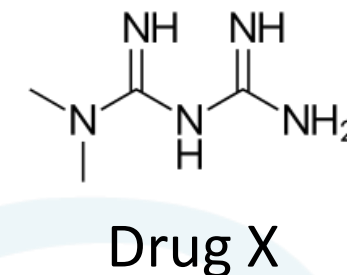
Marques et al. Wellcome Open Res. 2024
doi: 10.12688/wellcomeopenres.19363.1.

How do we build and test BCIs?





Total time: 11-16 years
Total cost: 1.6 billion USD
Prob. success: 0.07%
Prob. failure: **99.93%**



How complex is
a behavioural intervention
vs. a drug?

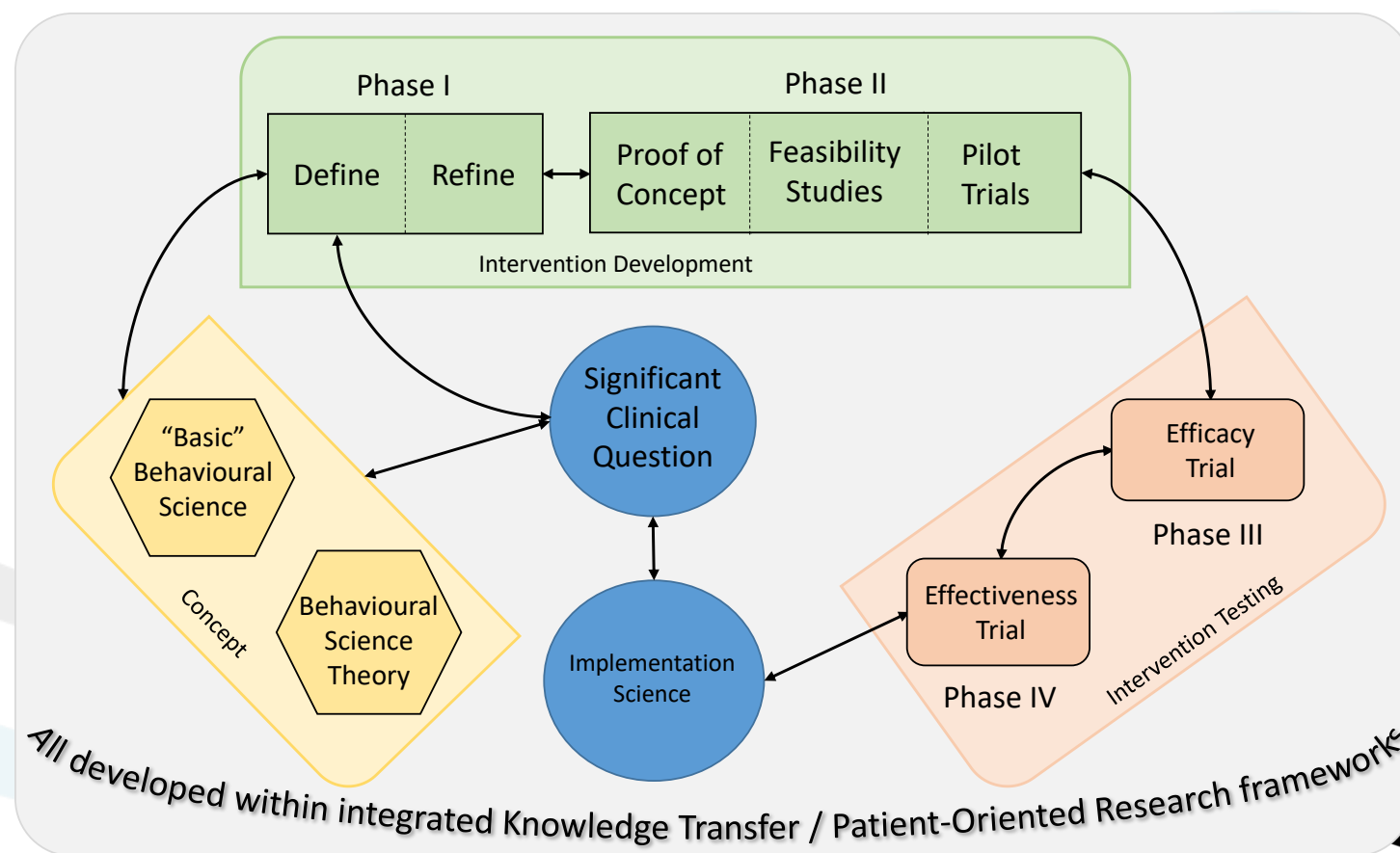
Usual BCI development and testing: ISLAGIATT method

- It
- Seemed
- Like
- A
- Good
- Idea
- At
- The
- Time



What should we use?

- Example
 - ORBIT-IBTN Model
 - MRC Complex interventions
 - NIH Stage Model
 - Etc.



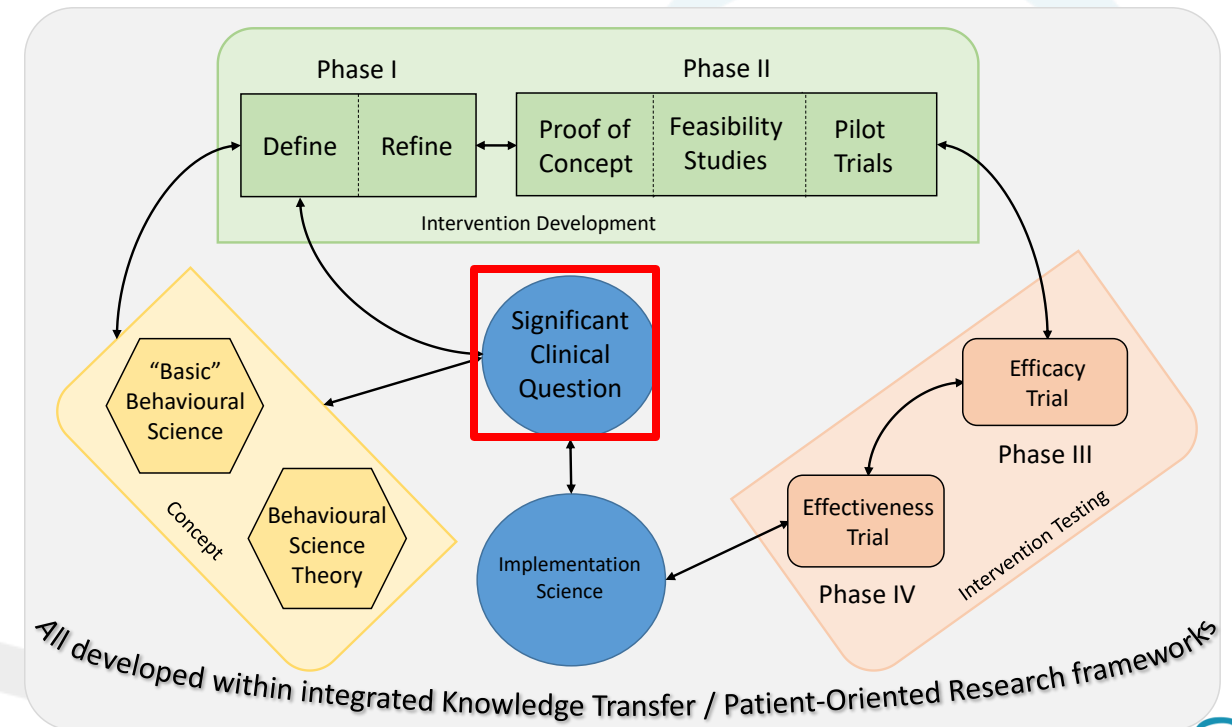
An example of how we can use ORBIT-IBTN to build an implementable BCI



Coconstruction of Adjunct Behavioral Interventions to Bariatric Surgery: The INTER-Change Program

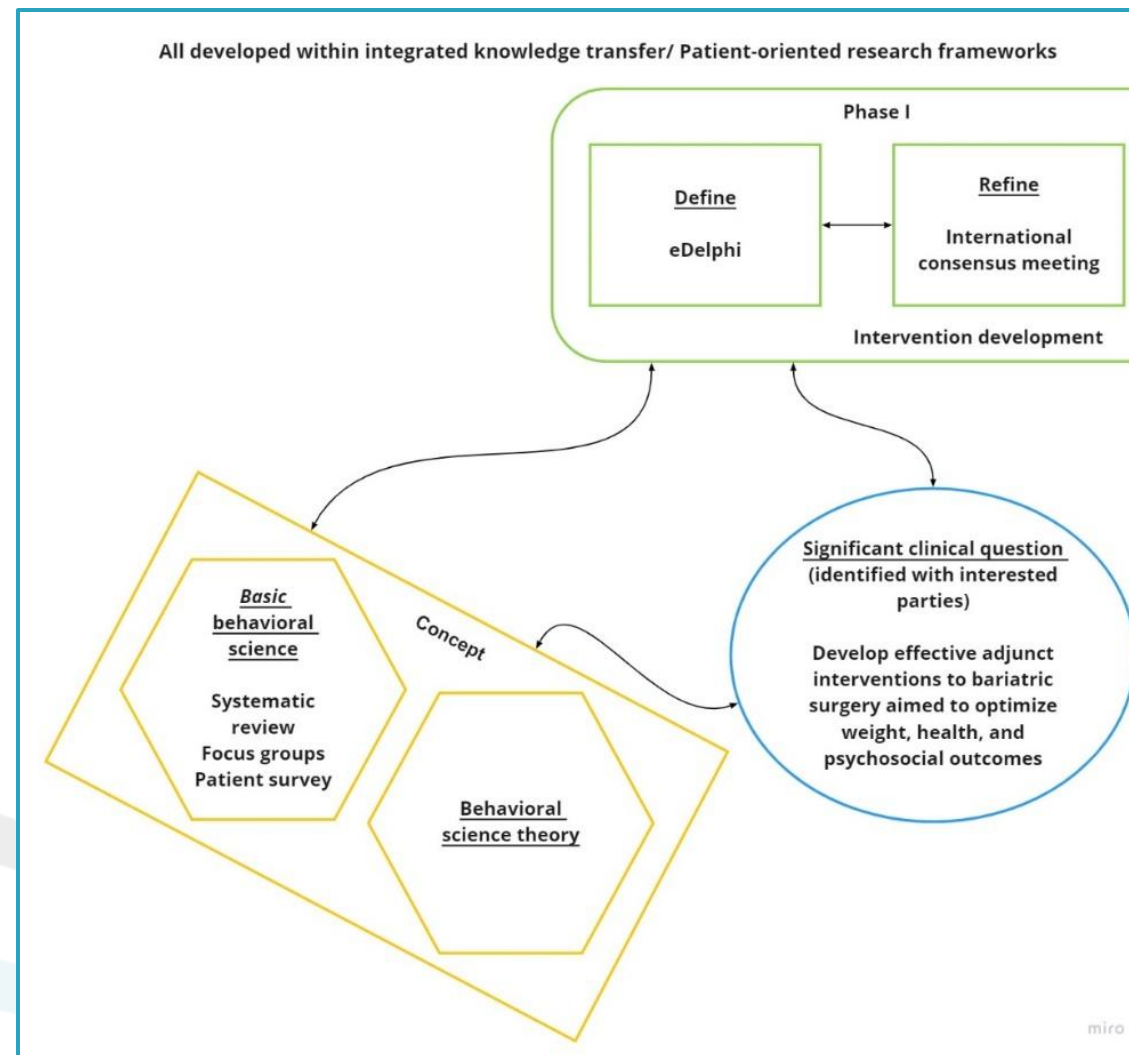
Annabelle Fortin^{1, 2}, Kim L. Lavoie^{1, 2}, Tair Ben-Porat^{1, 3}, Reyhaneh Yousefi^{1, 3}, Sandra Peláez^{4, 5},
Anne-Sophie Studer⁶, and Simon L. Bacon^{1, 3}, for the INTER-Change Team

- Clinically significant question
 - What behaviour change interventions adjunct to metabolic bariatric surgery enhance long-term health outcomes in patients undergoing MBS?



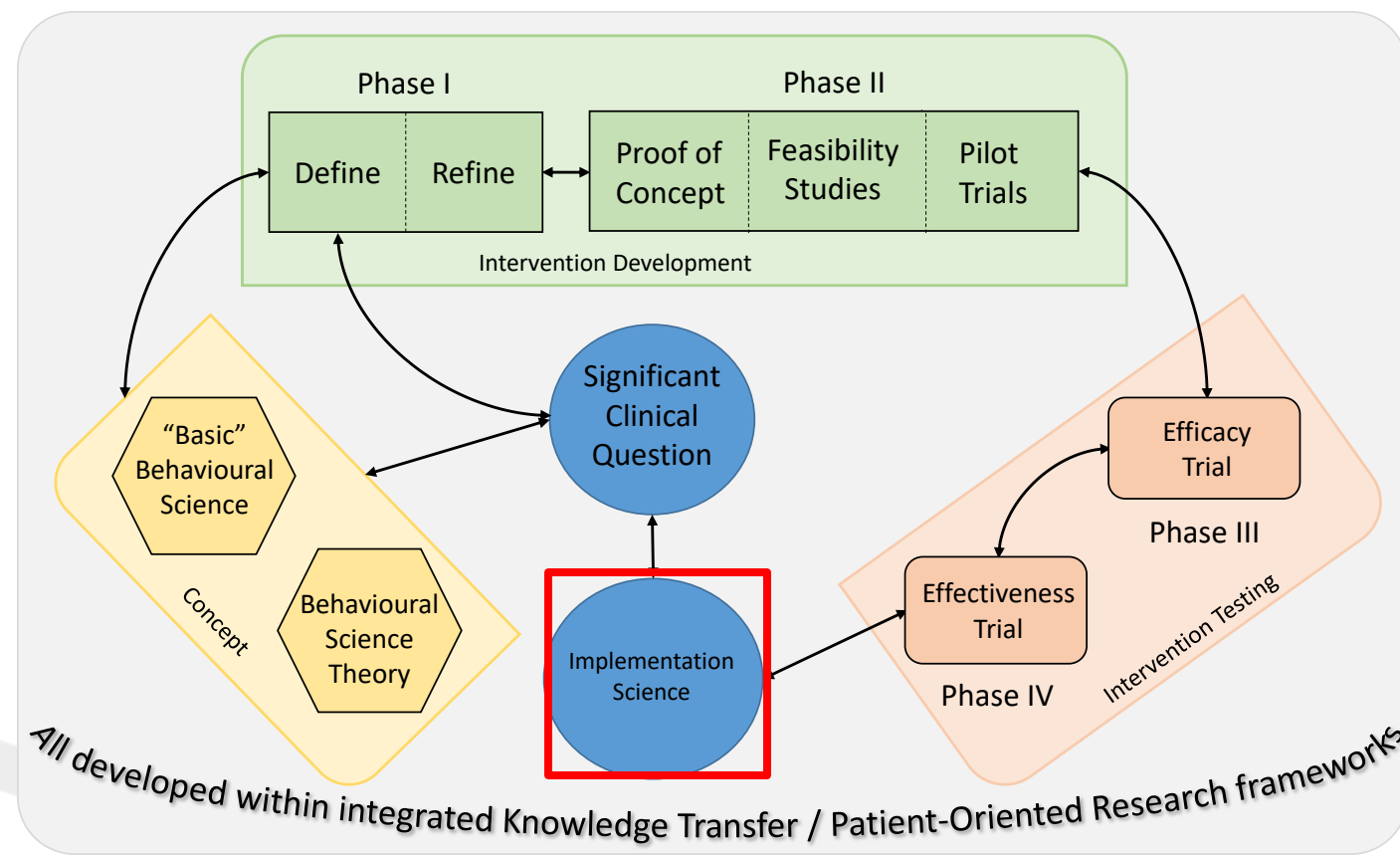
Elements of the INTER-Change Program

- Concept
 - Living systematic review
 - Focus groups
 - Patient survey
- Phase I: Define
 - eDelphi
- Phase I: Refine
 - International consensus meeting



Implementation

- The INTER-Change Program Team
 - Two patient-investigators
 - Three healthcare administrators
 - Three bariatric surgeons
 - One bariatric nurse
 - Four researchers
 - Three students
- Helped define the questions
- Evaluate the options
- Promote the outcomes



Step	Aims and Scopes	Target Interested Parties	Interested Parties' Role	Current Status
Living Systematic Review and Meta-Analysis	Integrate accumulated knowledge on adjunct behavioral interventions for weight management in patients undergoing BS Generate knowledge that is relevant to interested parties Disseminate knowledge to relevant groups	Patients undergoing MBS Healthcare practitioners	Participate in defining research questions and outcomes of interest; interpreting results, and disseminating results to relevant groups	Phase 1 – initial results, completed and published (Julien et al., 2021; Yousefi, 2022); Phase 2 – living systematic review, ongoing
Focus Groups of Interested Parties	Gather opinions on different aspects of the bariatric care process Generate a list of potential intervention components to be submitted to interested parties in the eDelphi	Patients undergoing MBS Health practitioners Health administrators/policymakers	Provide opinions on different aspects of potential interventions; provide opinions on key outcomes of a successful bariatric care process Participate in the analysis of the data generated (patient-investigators)	Focus groups completed; Thematic analysis ongoing (expected to be completed end of summer 2026)
Patient Survey	Gather opinions of a broad cross-section of patients undergoing BS on current interventions offered and interventions that should be provided as part of the bariatric care process Generate a list of potential intervention components to be submitted to interested parties in the eDelphi	Patients undergoing MBS	Generate research questions Provide opinions on current interventions offered as part of the bariatric care process Provide opinions on behavioral intervention resources that should be developed and proposed to better support bariatric patients during the pre and/or post surgical process	Distribution started in January 2024 Analyses currently being undertaken
eDelphi	Prioritise the intervention components and the structure most likely to be successful Maximise intervention ability to be integrated into current healthcare practice	Patients undergoing MBS Health practitioners Health administrators/policymakers	Provide rankings and ratings on intervention components and structure to prioritize	Planned for end 2026
Consensus Meeting	Detail the final set of behavioral intervention components and their structure to be initially tested Generate an appropriate study protocol	Patients undergoing MBS Health practitioners Health administrators/policymakers	Discuss and refine crucial intervention components, define the best timing of interventions, and find functional ways to integrate them into current clinical practice	Planned for 2027
All Steps	Overall program scope, design, and strategies	Patients undergoing MBS Health practitioners Health administrators/policymakers	Patient-investigators provides input and direction for the INTER-Change program as a whole	An ongoing process

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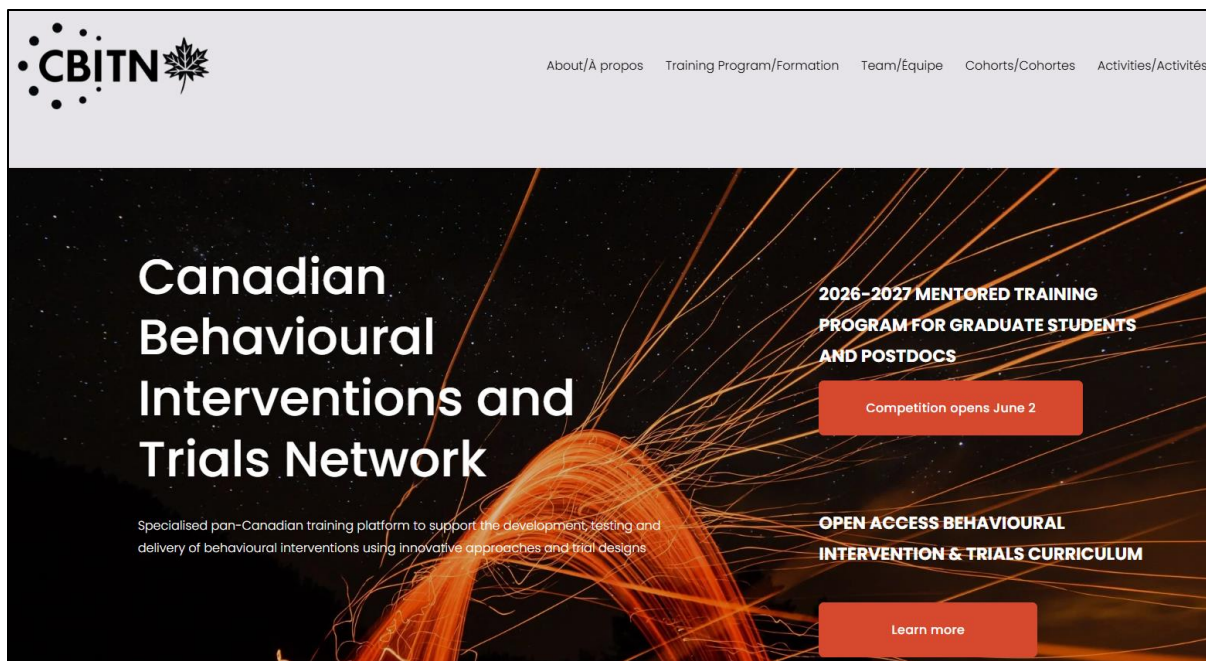
**“Things do not change:
We change”**

Henry David Thoreau



Resources

www.CBITN.ca



CBITN

About/À propos Training Program/Formation Team/Équipe Cohorts/Cohortes Activities/Activités

Canadian Behavioural Interventions and Trials Network

Specialised pan-Canadian training platform to support the development, testing and delivery of behavioural interventions using innovative approaches and trial designs

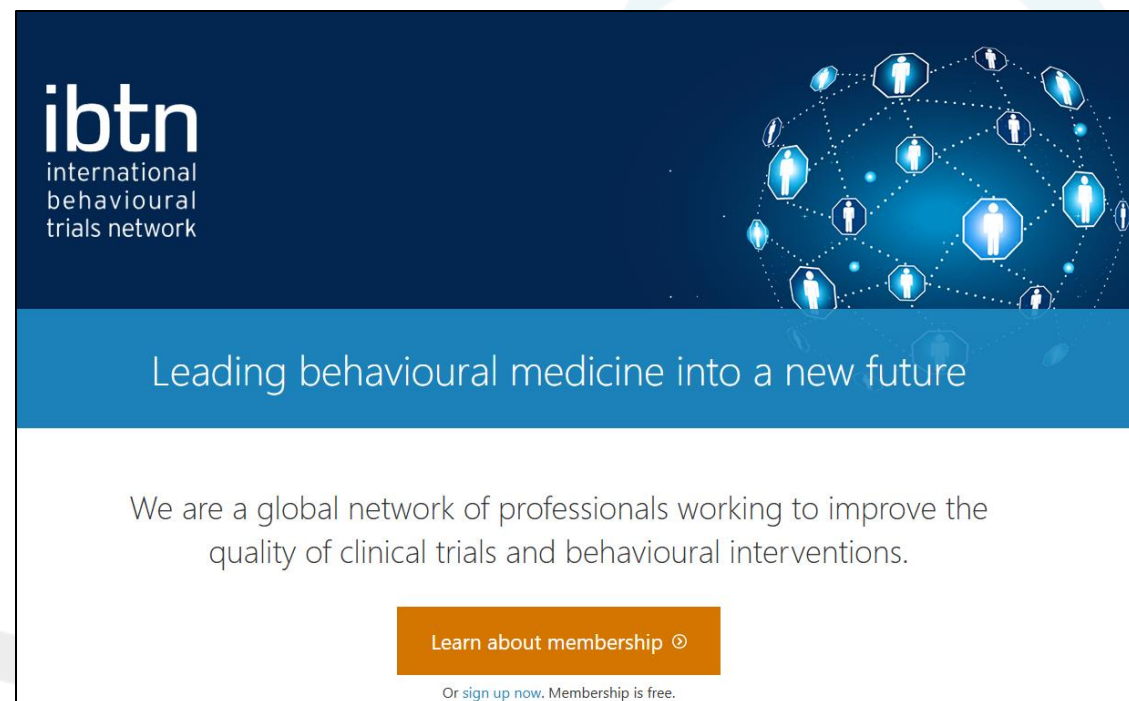
2026-2027 MENTORED TRAINING PROGRAM FOR GRADUATE STUDENTS AND POSTDOCS

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- Collaborators

- Dr. Kim Lavoie
- CIUSSS-NIM MBS team
- Investigators
- Patients
- HCPs / administrators

- Staff and students

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