A guide to implementing an innovation in a clinical setting

Prepared for the Unité de Soutien SSA Québec by the Data Valorization Axis

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Glossary

Acceptability: The perception that an intervention is acceptable or satisfactory based on specific factors.[1]

Adaptation: The intentional modification of an intervention to achieve a better fit between an intervention and a new setting.[2]

Adoption: The intention, initial decision, or action to implement an intervention.[1]

Applicability: The extent to which an intervention can be applied to a specific setting.[3]

Behaviour change intervention: A coordinated set of activities designed to change specified behaviours.[4]

Behaviour change technique: A process that represents the smallest part of the behaviour change intervention content and that is designed to change behaviour.[5,6]

Chronic disease: Also known as non-communicable disease (NCD), a chronic disease is characterized by its long duration and is the result of genetic, physiological, environmental and behavioural factors.[7] For example: cancer, cardiovascular disease, diabetes, and chronic lung or respiratory disease.

Core components: Elements that are essential for an intervention to function as intended.[8]

Disease burden: The impact on and distribution of disease in a population based on indicators such as mortality rates and financial costs for individuals, healthcare systems, and societies.[9]

Disease prevention: The minimization of the burden of diseases and risk factors through targeted interventions.[10]

Evaluation: The systematic assessment of outcomes related to the implementation, including adaptation, of an intervention.

Feasibility: The extent to which an innovation can be implemented based on specific factors, such as the available human, financial, and material resources in a clinical setting.[11]

Healthcare or social service provider: A professional who delivers medical or allied healthcare to patients, such as physicians, nurses and nurse practitioners, social workers, nutritionists, kinesiologists, physiotherapists, and pharmacists.

Health promotion: The process of empowering people to participate in healthy behaviours. Health promotion usually addresses behavioural risk factors such as tobacco use, obesity, diet and physical inactivity, as well as areas of mental health, injury prevention, drug abuse control, alcohol control, and sexual health.[10]

Health service user: A person who receives professional healthcare services.

Implementation: The introduction and bringing of an innovation into practice through planned, intentional activities.[2,12–14]

Implementation science: The scientific study of methods to promote the uptake of an innovation into routine practice and to improve the quality and effectiveness of healthcare.[15]

Implementer: An individual who supports, plans, and takes part in the implementation of an innovation.

Innovation: A new idea, practice, or technology.[16]

Mechanism of action: The process by which a behaviour change technique enacts behaviour change.[17]

Primary care: The element within primary health care that focuses on healthcare services, including health promotion, illness and injury prevention, and the diagnosis and treatment of illness and injury. Primary care is delivered by clinicians, including family physicians, nurse practitioners, pharmacists.[18]

Train the trainer: A capacity-building strategy in which people are trained to transfer skills to others.[19]

About this guide

What is the purpose of this guide?
This guide aims to support implementers through the structured process of implementing innovations in clinical settings. It offers guidance for adapting innovations to support successful implementation.

Who is this guide for?
This guide is intended for individuals, such as clinic managers, involved in implementing an innovation. All steps in this document are written to address individuals who will lead this process.

How did we develop the guide?
We conducted a literature review to produce this step-by-step guide for implementing innovations. Given its importance, we emphasize the need to adapt innovations. We draw on our review in this guide to offer and operationalize a range of strategies for implementing an innovation in a clinical setting.

To make the steps described in this guide as tangible and easily applicable as possible, we chose to focus on a specific type of innovation. Our team is implementing a health promotion intervention to strengthen chronic disease prevention services in Québec. We therefore describe the steps involved in implementing innovations specifically aimed at preventing chronic disease (e.g., behaviour change interventions delivered by healthcare providers); however, the guide may be used for other innovations in clinical settings. We introduce the importance of behaviour change interventions in section 1.4.

What is in this guide?
This guide assumes that the reader has selected a relevant innovation for implementation in a clinical setting. The guide includes the following five key steps to consider when implementing innovations, which are described in more detail in later chapters:

Step 1. Prepare to implement the innovation
Step 2. Assess the needs and resources of the clinical setting
Step 3. Select strategies for adapting the innovation
Step 4. Adapt the intervention
Step 5. Implement and evaluate the adapted innovation

Figure 1. Process roadmap

Phase	Preparation	Needs assessment	Adaptation	Implementation and Evaluation
Summary	• Form a core committee of experts • Become familiar with the intervention • Identify and form relationships with partners • Set up regular meetings with partners and develop terms of reference	• Assess features of the clinical setting (resources, staff capacity, and contextual factors) and of the intervention • Define adaptation priorities Consult partners to present the assessment of the clinical setting and adaptation priorities	• Select evidence-based strategies to adapt the intervention • Develop a preliminary version of the adapted intervention • Present the preliminary version of the adapted intervention to all partners • Refine the adaptation plan based on feedback	• Plan training sessions on delivering the intervention • Train individuals to deliver the intervention • Decide how to evaluate the success of the implementation • Meet with key interest holders to evaluate the implementation • Document and learn from the evaluation
Core decisions/ outputs	• Core committee and partners • Terms of reference	Results of an assessment of the clinical setting with respect to the intervention	• Adapted intervention ready for implementation	• Implementation evaluation • Refined adaptation plan

1.0 Introduction

1.1 Implementation of an innovation

Implementation refers to the process of introducing an innovation, which is a new idea, practice, or technology, to practice.[2,12–14] Implementation involves many aspects, including considering how the proposed innovation fits within existing resources and practices of the clinical setting and the needs of the intended population, and adapting it accordingly to ensure that it will have the desired impact. Successful implementation of an innovation requires careful planning, coordination, and engagement with those involved in delivering it. Working closely with the people involved in delivery, and following the structured, step-by-step approach outlined in this guide, will help ensure successful implementation, which ultimately drives the success of the innovation itself.

1.2 Adaptation of an innovation

Adaptation is a crucial step to successfully implementing an innovation. Adapting an innovation involves using strategies to improve its alignment with the needs of the intended population and the clinical setting, while preserving the core components that are expected to influence the target behaviour and that should be retained. Implementation researchers, clinic managers, and healthcare and social service providers make these adaptations to ensure innovations are relevant and acceptable in their specific clinical setting.[20]

For example, implementers may need to adapt the content, mode/format, setting, and process of introducing the innovation. Adaptations to the content of the innovation may include: adding, removing, or substituting optional activities and shortening or lengthening parts of the innovation. Adaptations to the process of introducing the innovation may include: adjusting the format or frequency of certain aspects; modifying the roles or responsibilities of those who will deliver the innovation; modifying training processes for those delivering the innovation (e.g., who conducts the training, when the training is offered, how the training is offered, and the scope and intensity of the training); modifying the strategies used to implement the innovation; and changing evaluation processes or feedback mechanisms to fit with existing clinical workflows.

Examples of content adaptations (what is delivered)

- Simplifying tools into shorter, decision-focused summaries for busy staff
- Modifying non-essential components of an intervention with respect to the local context

Examples of adaptations to the introduction process

Changes to the planning and preparation for the innovation.

- Modifying training approaches (e.g., shorter sessions, on-demand modules, or peer-led training)
- Adjusting staff roles (e.g., shifting patient education tasks from physicians to nurses)

Examples of delivery adaptations (how the innovation reaches users)

Changes to the mode, format, timing, or setting of delivery.

- Switching from in-person visits to virtual or hybrid care
- Delivering an intervention in shorter, more frequent sessions instead of longer appointments
- Changing when the intervention occurs (e.g., during triage instead of during the physician visit)
- Using text message reminders instead of phone calls or emails to follow up with service users

1.3 Importance of adapting an innovation

The success of an innovation in a clinical setting depends on its alignment with patient needs and preferences, clinician capacities, and the material, financial, and/or human resources of the setting. As such, innovations need to be adapted to the settings in which they are offered.

Adapting an innovation can maximize its value by improving its relevance and effectiveness for the population served while making delivery more feasible and efficient for implementers. Ensuring that it meets individual and organizational characteristics promotes its adoption in the clinical setting and maintenance over time.[21] It also promotes an orientation toward the patient and unique contextual factors, which supports the provision of person-centered care – a key concept in family medicine and primary care.[22] Understanding the local context can therefore improve its impacts on and the quality of healthcare services and, in turn, health outcomes in a community.[21]

1.4 Complex innovations in clinical settings: behaviour change interventions

1.4.1 What are behaviour change interventions?

Behaviour change interventions are "coordinated sets of activities designed to change specified behaviour patterns".[4] They are used in various healthcare and social service settings, including mental health and primary care, and can drive improvements in patient and healthcare provider experience, population health outcomes, healthcare expenditure, and health equity.[23–28] They target behaviours such as smoking, physical activity, diet, and vaccination uptake. Behavioural interventions are typically complex and include multiple components, such as education and skill development. They are evidence-based and integrate techniques or strategies demonstrated to increase successful behaviour change.[29]

1.4.2 Why are behaviour change interventions important for chronic disease prevention?

Chronic diseases, such as diabetes, obesity, cardiovascular disease, and cancer, account for 86% of deaths in Canada and 75% of deaths globally.[7,30] This burden is largely attributable to smoking, excessive alcohol consumption, physical inactivity, and unhealthy diet.[31] Behaviour change interventions for preventing chronic diseases offer evidence-based solutions by promoting healthy behaviours.[32] In Québec, these interventions are usually delivered in settings of primary care by family doctors, nurses, nutritionists, and/or kinesiologists.

Behaviour change interventions can reduce cardiometabolic risk factors, such as high cholesterol, blood pressure, body mass index, and body weight. For example, in people with overweight, obesity, and prediabetes, physical activity interventions can help reduce the risk of developing type 2 diabetes.[23,33] Physical activity interventions promote participation in physical activity[34–36] and improve symptoms of depression, anxiety, and distress in the adult populations.[37] They can also help reduce the risk of developing certain cancers.[33] Dietary interventions, such as nutritional counseling, have also been shown to improve cardiovascular and metabolic risk factors.[38] Although the evidence demonstrates

benefits of behaviour change interventions[1] for chronic disease prevention, they must be adapted to the settings where they are introduced and the individuals to whom they are delivered.

This guide therefore presents a step-by-step approach to implementing innovations using chronic disease prevention as the primary context, while offering a framework that can be applied to other innovations intended to be implemented in clinical settings.

[1] **In the following sections, we will refer to behaviour change interventions as "interventions".**

2.0 Step 1: Prepare to implement the innovation

To introduce an intervention in a clinical setting, a core implementation committee that will execute the steps described in this guide must first be formed. The committee must familiarize themselves with the core components, mechanisms of action, and suggested/necessary adaptations and delivery process of the intervention. The committee should also identify interest holders who should be involved to ensure successful implementation.

2.1 Form a core implementation committee

Identify individuals who will offer relevant expertise pertaining to the intervention and the clinical setting in which it will be implemented.

Who should be part of the core committee and why?
The individuals forming the core committee will vary depending on the clinical setting, but they would ideally include a health service user with relevant experience, an expert in the practice and science of implementation and/or adaptation, a healthcare professional (healthcare or social service provider), and an expert in the intervention.

1. Health service user: Individuals (e.g., patients) who received the intervention in other settings could share valuable insights with the committee. Their firsthand experience of receiving the intervention can highlight what is most likely to help future patients.
2. Expert in implementation: Individuals with expertise in implementation methods and processes can guide adaptation and decision-making related to the process.
3. Healthcare or social service provider: A healthcare or social service provider can advise on adaptations that will ensure the intervention is feasible to implement. A provider from the clinical setting will help ensure that the committee has sufficient knowledge of the setting.
4. Expert in the intervention: An individual who is familiar with the intervention and how it has been implemented in other settings may have important insight into the facilitators and barriers of implementing the intervention in the intended clinical setting.

Examples of interest holders:

- Researchers
- Healthcare and social service providers
- Health service users (patients and caregivers)
- Patient advocacy group members
- Healthcare/clinic managers and other decision-makers
- Policymakers
- Administrative and support staff

2.2 Become familiar with the intervention

Ensure that the core committee members have a shared understanding of the intervention through iterative meetings. For example, the committee needs to understand the 'active ingredients' or core components of the intervention and the processes through which these ingredients change behaviour. The adapted version of the intervention must maintain these core components to ensure its effectiveness. Create a formal document of the core components and other relevant features of the intervention as a resource before starting the adaptation process.

Consider the following to include in the document:

1. What are the components and mechanisms of action of the intervention?
2. Which components are essential for the intervention to work as intended and, therefore, must be preserved when adapting the intervention?
3. How would the intervention be delivered, over what period of time, and with what follow up procedures? Who is responsible for delivering the intervention?
4. What is the expected impact of the intervention?

A tool for identifying and documenting core components: The Theory and Techniques Tool is useful to link behaviour change techniques with mechanisms of action.[39]

2.3 Identify and form relationships with partners

Identify and invite interest holders (partners) who can offer valuable guidance throughout the adaptation process. These are individuals who have (1) relevant scientific or clinical knowledge or lived experience related to the intervention or to the field of implementation science and/or (2) the power to introduce and help promote the adoption of the intervention into the clinical setting. Consider who can facilitate collaborations with these individuals, and who can help promote the project and generate buy-in among them.

2.4 Set up regular meetings with partners and develop Terms of Reference

It is important to keep partners involved in meaningful ways throughout any project. Brahim et al. recommend discussing the frequency and mode of communication ahead of time to ensure that all team members have a shared understanding of their roles and of the project's progress.[40] During a first introductory meeting with all committee members and partners, discuss and agree on a regular meeting time. Elaborate the terms that will govern the collaboration, including roles, responsibilities, expectations, such as decision-making rules, compensation (e.g., for service user partners), and other practices that will promote meaningful and sustainable collaboration, such as record-keeping. A complete guide to developing Terms of Reference is available here: https://www.soutiensrapmetho.ca/outils-methodologiques/#chartespartenariales.[41]

Key consideration: Co-production improves the implementation of an intervention.

Co-production is a model of collaboration that explicitly responds to service user needs.[42] Engaging users and key interest holders in adapting an intervention can make the final product more applicable and appropriate. It can lead to identifying and integrating key decisions that advance equity-oriented priorities of local healthcare institutions and governing bodies.

Key Consideration: Equity, diversity, and inclusion (EDI) must be considered at throughout the implementation processes.

Throughout this guide, we will refer to the recommendations of Hung et al.[43]:

- Ensure diverse representation in your committee
- Establish transparent agreements or terms of reference
- Use inclusive language and consider the cultural safety of all outputs
- Create opportunity for team reflection and learning
- Take time to build trust and relationships
- Facilitate meaningful engagement
- Foster a respectful environment for shared learning

3.0 Step 2: Assess the needs and resources of the clinical setting

3.1 Assess features of the clinical setting

To determine how best to align the intervention with the clinical setting, conduct an assessment of the current practices and needs of the setting with respect to the intervention.[44] Considering EDI is essential when conducting this assessment because it ensures that the needs identified reflect the experiences, barriers, and priorities of a given clinical setting, including its health service users.

Consider the following tool for assessing the human, material, and financial resources needed to introduce the intervention to the clinical setting. To complete this, consult with partners and other colleagues in the clinical setting who may have knowledge about the following domains. These domains may also be relevant for other innovations.

Table 1. A tool for assessing features of the clinical setting in relation to the intervention

Domain	What to Assess	Guiding Questions	Useful resources
Organizational Readiness	Leadership support	To what extent are administrative staff, healthcare/social service providers, and managers motivated and willing to take the necessary actions to implement the intervention?	Hospital Change Readiness Questionnaire[45] Learning Health System readiness questionnaire[46]
	Staff engagement	Who are champions who can motivate colleagues, troubleshoot challenges, and support the implementation process?	
Resources & Infrastructure	Time commitment	What is the capacity of staff and other individuals in the setting?	
	Funding	What are the costs (e.g., human resources, equipment, training)?	
	Technology	What technology, if any, is needed to implement the intervention?	
	Other resources	Does the intervention require referrals to community-based resources and specialized clinics/institutions? If so, what are the referral processes in the clinic?	
Workflow & Processes	Fit with current routines	What specific tasks in the intervention are similar to things staff already do? When during a typical clinic day would each task realistically happen (before visit, during visit, after visit)?	

		Who in the clinic would be responsible for each task? What existing tools or systems (EHR, forms, templates) could be used or slightly modified to support these tasks?
	Staff roles	For each step of the intervention, which staff role will be responsible (e.g., clinician, nurse, administrator, manager)? Does this add any new tasks to that role, or shift tasks from one role to another?
	Team dynamics	How do staff currently communicate about patient care and clinic operations (e.g., emails, EHR messages, meetings)? Which existing ways of staff communication can be used to plan, coordinate, and monitor the intervention?
Staff Knowledge & Training	Training needs	What would be the necessary training and support required to equip staff with the skills for effective delivery? Who needs training? What training format fits (e.g., onsite vs online, group vs individual, synchronous vs asynchronous)? If applicable, how should current training structures in the clinical setting be adapted?
Patient Factors	Health service user preferences for delivery	For each part of the intervention, what do health service users prefer or need in terms of when/how it is delivered to ensure they will participate?
	Needs and potential barriers	What barriers (e.g., language, transport) need to be considered when adapting the intervention?
Evaluation	Monitoring	Which clinic role already tracks data (e.g., quality metrics, patient satisfaction, treatment adherence), has available time, and/or knows (or can learn) how to use clinic tools for basic tracking?
	Feedback mechanisms	What does success look like? How often will progress be checked and how?

For more information on domains to consider for introducing mobile health tools, consult the following guide on mHealth implementation: https://ssaquebec.ca/en/news/guide-to-mhealth-implementation/.[11]

While conducting this assessment, keep a detailed record of key characteristics of the clinical setting. This record will help facilitate discussions between committee members on the most appropriate adaptations to consider.

Based on this assessment, how does the intervention need to be adapted? For example, how might the length or delivery mode of the intervention need to be adapted to align with the resources of the clinical setting? Which intervention activities/modules might need to be adapted to specific needs or preferences of the service users? What adaptations would ensure that target health service users are reached?

3.2 Define adaptation priorities

Schedule a meeting with the core committee to discuss adaptation priorities based on the results of this assessment. Use the following steps to guide this discussion:

1. Discuss the characteristics of the original intervention that will not be appropriate or feasible based on the clinical context and that need to be adapted.
2. Prioritize what might facilitate and hinder the adaptation and adoption of the intervention.
3. Select the characteristics of the intervention that can be adapted based on these facilitators and barriers. One tool that may help the committee make this selection is the Eisenhower matrix: https://asana.com/resources/eisenhower-matrix.[47]

3.3 Consult partners to present the assessment of the clinical setting and adaptation priorities

At this point, the partners' involvement is essential to inform the intervention adaptation decisions. Invite all partners to a consultation meeting, with the understanding that follow-up meetings may be needed.

3.3.1 Before the consultation meeting

Prepare and distribute to all partners (1) a summary of the committee's needs assessment and initial discussions around which parts and characteristics of the intervention to adapt, (2) an agenda for the meeting to help partners come prepared, and (3) a list of guiding questions to ask meeting participants.

Ask partners if they consent to having the meeting recorded for documentation purposes. If any partner does not consent, a core committee member could take notes.

3.3.2 During the consultation meeting

Present an overview of the assessment summary and answer any questions partners have. Go through each part of the intervention, explaining what the committee has found from their needs assessment (3.1) and the proposed changes at each phase (3.2). Explain that the objectives of the meeting are to discuss each part of the intervention, explore feasibility considerations, and gather practical input on potential adaptations to make. Then, facilitate a group discussion on the specific elements and phases of the intervention that require adaptation to align with the needs of the target clinical setting. Aim to reach consensus (or majority agreement, depending on the decision-making rule outlined in the Terms of Reference).

Guiding prompts to facilitate the discussion:

1. Discuss the alignment of the intervention with all the domains that were previously assessed (i.e., staffing, resources, training, technology, time, and workflow impact, organizational policies, leadership priorities, patient population needs, etc.).
2. Discuss the domains that might facilitate and hinder the introduction of the intervention.
3. Discuss what should be adapted and what may or may not be possible to adapt based on these facilitators and barriers.
4. Discuss who will need to support or drive the proposed changes (e.g., department heads, clinicians, administrators, key champions).

Note any uncertainties that require additional information or follow-up actions.

At the end of the meeting, inform partners that they will receive a summary of the discussion points. This process may be iterative, and the committee may set up follow-up meetings if needed.

3.3.3 After the consultation meeting

Send all partners (attendees and those who could not attend) a written summary of the meeting discussion. Contact any partners who were unable to attend the meeting to offer a debrief meeting and gather their feedback. Circulate their feedback to the rest of the group.

4.0 Step 3: Select strategies to adapt the innovation

The Expert Recommendations for Implementing Change (ERIC) is a project in which experts in implementation and clinical practice refined implementation related terms and definitions to promote the clarity, transparency, and comprehensiveness of implementation strategies.[48]

Our team selected the strategies from the ERIC Project that are specifically related to adapting interventions. Below, we present these strategies and their definitions. Some of these strategies have been discussed in earlier sections of this guide.

Table 2. ERIC strategies related to adaptation

Strategy		Brief explanation[2]
1	Assess for readiness and identify barriers and facilitators	Determine the degree to which a clinical setting is reading to implement an intervention. Assess facilitators and barriers of implementation.
2	Audit and provide feedback	Assess implementation outcomes over a time period and provide this data to key interest holders, such as clinicians and administrators, to monitor, evaluate, and modify the implementation.
3	Build a coalition	Recruit and form relationships with key interest holders (i.e., partners).
4	Capture and share local knowledge	Gather feedback on how implementers made something work in their setting and then share it with other settings in which an intervention will be implemented.
5	Change physical structure and equipment	Evaluate the physical structures and/or equipment of a clinical setting and adapt as needed.
6	Change record systems	Change record systems to promote better implementation outcomes.
7	Conduct cyclical small tests of change	Implement changes in an iterative manner using small tests of change first before making system-wide changes.
8	Conduct educational meetings	Conduct meetings targeting various interest holders to teach them about the intervention.
9	Conduct educational outreach visits	Meet with service providers in their clinical setting to educate them about the intervention and making changes to their practices.
10	Conduct local needs assessment	Collect information related to the need for the intervention.
11	Conduct ongoing training	Plan for and conduct continuous training related to the intervention.
12	Create a learning collaborative	Foster a collaborative learning space to improve implementation.
13	Create new clinical teams	Build on the clinical team's skills to promote successful implementation.
14	Develop a formal implementation blueprint	Develop a formal implementation plan that includes: 1) aim/purpose of the implementation; 2) scope of the change; 3) timeframe; and 4) progress indicators.

[2] We modified these definitions/explanations to ensure they are relevant with respect to the applications described in this guide.

15	Develop academic partnerships	Partner with an academic unit to foster shared training and development of skills related to the implementation.
16	Develop an implementation glossary	Develop and distribute a list of terms describing the intervention, its implementation, and the roles of the interest holders involved in implementation.
17	Develop and implement tools for quality monitoring	Introduce into quality-monitoring systems the information that is specific to the intervention (e.g., patient outcomes)
18	Develop and organize quality monitoring systems	Develop and organize procedures that monitor processes and/or outcomes related to implementation.
19	Develop educational materials	Develop appropriate materials for educating interest holders about the intervention and how to deliver it.
20	Develop resource sharing agreements	Develop partnerships with organizations that have important resources for implementing the intervention.
21	Distribute educational materials	Distribute educational materials in person, by mail, and/or electronically.
22	Facilitate relay of clinical data to providers	Provide feedback about processes/outcomes related to the intervention using appropriate modes of communication.
23	Identify and prepare 'point-persons'	Identify and prepare individuals who will support the implementation process and help overcome resistance to the intervention in the clinical setting.
24	Identify early adopters	Identify clinical settings who have adopted the intervention earlier and learn from their experiences with implementing the intervention.
25	Increase readiness	Promote the readiness of interest holders to implement the intervention.
26	Inform local opinion leaders	Identify and inform people who are influential about the intervention and who may influence others to adopt it.
27	Intervene with patients to enhance uptake and adherence	Identify possible strategies with service users (e.g., patients) that promote their adherence to the intervention.
28	Involve patients/consumers and family members	Engage or include patients/consumers and families in the implementation effort.
29	Make training dynamic	When training individuals on how to implement the intervention, tailor the ways in which information is delivered based on their learning styles.
30	Obtain and use patients/consumers and family feedback	Develop strategies to increase feedback on the implementation from service users.
31	Obtain formal commitments	Ask key partners to provide a formal document on how they will implement the intervention.
32	Prepare patients/consumers to be active participants	Prepare service users to be active in their care and to ask questions about the intervention and their care.
33	Promote adaptability	Identify how the intervention can be tailored to meet local needs and clarify which elements of the intervention must be maintained.
34	Promote network weaving	Build high-quality relationships and networks within and outside the clinical setting to promote information sharing, problem-solving, and a shared vision related to implementing the intervention.
35	Provide local technical assistance	Deliver technical assistance related to implementation issues using local support staff.
36	Provide ongoing consultation	To support successful implementation in a clinical setting, offer ongoing consultation with an expert in the implementation process.

37	Purposely reexamine the implementation	Monitor progress and adjust implementation strategies as needed.
38	Recruit, designate, and train for leadership	Recruit, designate, and train leaders that will help promote change.
39	Remind clinicians	Develop reminder systems designed to prompt service providers to deliver the intervention.
40	Stage implementation scale up	Phase implementation efforts by starting with small pilots or demonstrations before scaling up.
41	Tailor strategies	Tailor the implementation strategies to address barriers and leverage facilitators that were identified through a needs assessment.
42	Use advisory boards and workgroups	Create and consult with a formal group of diverse interest holders to provide feedback on the implementation process.
43	Use an implementation advisor	Seek guidance from experts in the science and practice of implementation.
44	Use data experts	Consult experts to decide on how implementation outcomes and other data will be managed.
45	Use data warehousing techniques	Integrate clinical records to facilitate implementation across clinical settings.
46	Use train-the-trainer strategies	Train designated individuals to train others in implementing the intervention.
47	Work with educational institutions	Encourage academic institutions to train service providers in delivering the intervention.

To illustrate the relevance of these strategies in a specific clinical setting, we conducted a literature review examining how behaviour change interventions have been adapted in primary care settings. Below, we summarize these strategies across three key domains: feedback mechanisms, intervention content, and intervention delivery. These may be applied to adapt other innovations for different clinical settings.

1. Iterative and interest holder-driven feedback and refinement: Ongoing, structured adaptation cycles using data from the clinical setting

- Carry out Plan-Do-Study-Act cycles with multidisciplinary team review to refine adaptation plan[49]
- Actively involve interest holders
    - Involve community leaders as educators[50,51]
    - Conduct learning meetings to gather feedback[49]
    - Conduct meetings with interest holders to make necessary adjustments[52–56]

2. Intervention content and materials: Techniques for adapting the intervention content to the population context

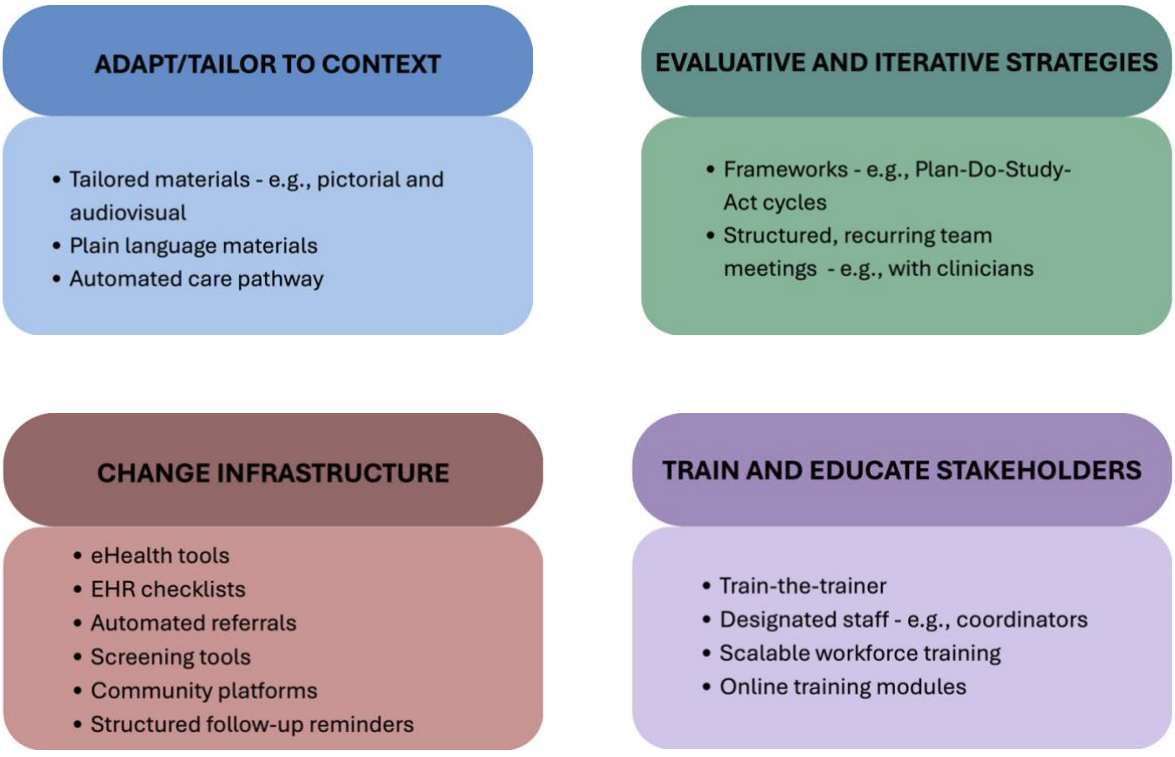
- Tailor materials to strengthen health literacy and engagement
    - Create plain language and translated materials for health service users[57]

- Create and apply an automated, rule-based care pathway[58]

3. Delivery: Techniques for introducing and delivering the intervention

- Apply electronic health (eHealth) tools[53]
- Implement clinical decision support systems/reminders[49,59,60]
    - Electronic health record (EHR) embedded checklists
- Implement tools to screen for symptoms of health conditions[59–61]
- Implement automated referral pathways[59]
- Set up structured follow up consultations with service users
    - Use platforms that are commonly used within the community[62]
- Training approaches[57,60,63]
    - Use train-the-trainer approach
    - Hire support staff such as clinical coordinators
    - Plan scalable workforce training
    - Create online training modules for providers

Figure 2. Strategies for adapting behaviour change interventions according to ERIC concepts[64]



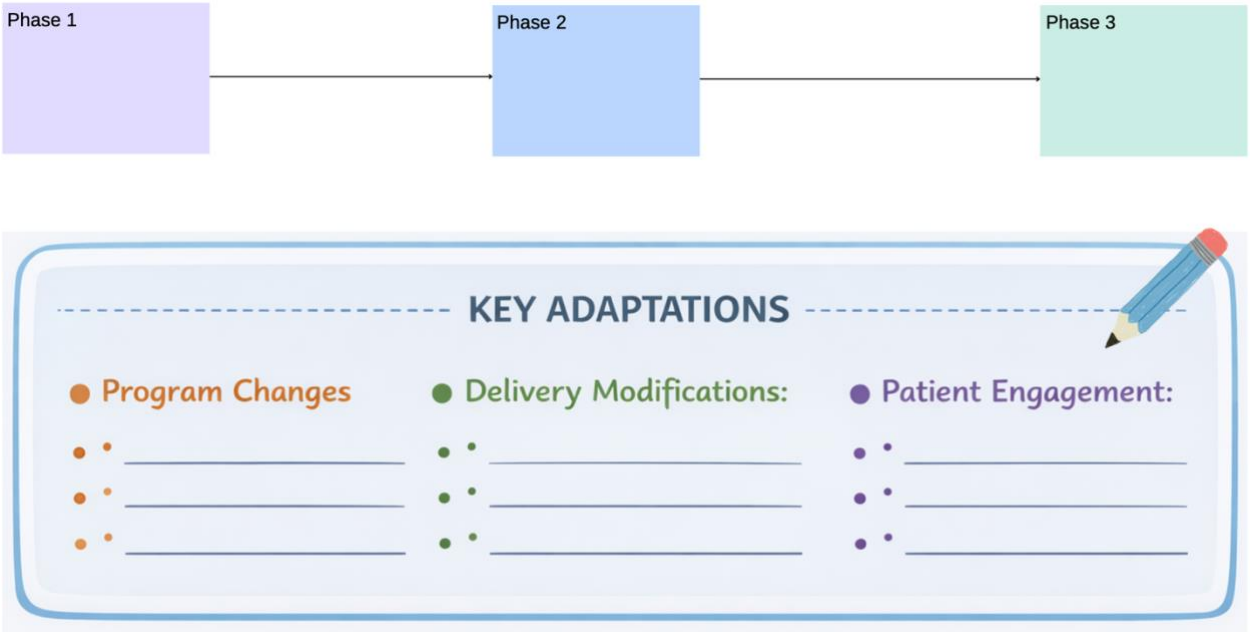
5.0 Step 4: Adapt the intervention

5.1 Develop an adaptation plan

Once the adaptation strategies have been selected, the next step is to determine how they will be applied in the intervention. This means operationalizing the intervention with respect to the ways it will be adapted. For example, applying some adaptation strategies could mean that documents or equipment need to be modified. Other strategies may have implications for how certain activities/modules are structured or delivered and how implementers are trained or supervised. Work through each strategy and map out the adapted intervention, making sure that every decision is documented and linked back to the needs and gaps identified in Step 2.

Consider creating a visual representation of all phases of the intervention, including where adaptations will be made. The following is an example of a tool to document the adapted intervention.

Figure 3. Tool to document the adapted intervention



5.2 Present the adaptation plan to partners

Before meeting with partners, provide them with a document detailing the planned adaptations so that they can come prepared with their feedback. During the meeting, discuss the adaptation plan and ensure it is well-aligned with the identified needs of the clinical setting, feasible to implement, and likely to achieve the intended outcomes.

Begin the meeting with a presentation of the adapted intervention, followed by a structured discussion to solicit their feedback. Consider the following questions to guide the discussion:

1. To what extent do the selected adaptations address the needs identified in this setting? Are there any identified needs or gaps that you feel have not been sufficiently addressed by the planned adaptations?
2. What modifications would you recommend, if any, to strengthen the alignment between the adaptation plan and the identified needs?
3. Are there any proposed adaptations that have been made that are unnecessary, or that may compromise the core components of the original intervention?
4. What are the greatest risks to implementing the adapted intervention as planned, and how might these be mitigated?
5. Overall, how confident are you that the adapted intervention, as currently planned, will be successful with respect to the goals of the clinical setting?

Solicit feedback from partners who are unable to attend the meeting, scheduling separate meetings with them if needed. Provide all partners with a written summary of the meeting discussion, including decisions. Include the feedback obtained from those who were not present.

5.3 Refine the adaptation plan

Convene with the core committee to integrate the partners' feedback into the adaption plan. First, categorize the feedback in terms of intervention components or other relevant groupings. Assess each recommendation/suggestion and determine which will be adopted or modified. Revise the adaptation plan accordingly and send it to partners requesting additional feedback. Schedule another meeting if needed.

Continue refining the adaptation plan in this manner until all committee members and partners (or the majority, depending on your decision-making rule) agree that the adapted intervention[3] is acceptable.

[3] **The adapted intervention will now be referred to as "intervention".**

6.0 Step 5: Implement and evaluate the adapted innovation

6.1 Implement the innovation

6.1.1 Plan training sessions on delivering the intervention

List the tasks involved with respect to implementing the intervention. Assign each of these tasks to individuals in the clinical setting. You may use a template such as this one, to do so.

Table 3. Template to document the roles and responsibilities

Individual	Responsibilities/tasks during intervention delivery

Other suggested project management tools include: The RACI (Responsible, Accountable, Consulted, and Informed)[65] matrix and the WBS (Work Breakdown Structure).[66]

Plan training sessions for individuals to learn how to deliver the intervention according to their responsibilities. To do this, decide on specific training objectives. Consider using Bloom's taxonomy of educational learning objectives to develop objectives.[67] Bloom's taxonomy consists of different levels of learning: knowledge, comprehension, application, analysis, synthesis, and evaluation. For example:

> *By the end of the training, participants will be able to:*
>
> *Explain the purpose and goals of the intervention; or*
> *Describe their specific role in implementing the intervention; or*
> *Apply the steps of the intervention correctly in their clinical setting; or*
> *Identify when and how to refer patients to other services; or*
> *Use any tools, forms, or resources associated with the intervention; or*
> *Record information related to the intervention accurately; or*
> *Identify when the intervention is not going as planned and know who to notify.*

Once these objectives are agreed on, they can then guide decisions about:

- Content: What needs to be taught to meet each objective?
- Format: Should training be in-person, online, or hybrid?

- Training lead: Who will lead the training session?
- Audience: Which objectives apply to which individuals?
- Duration: How much time is needed to cover the content?
- Assessment: How will participants know they have met the training objectives?

Table 4. Template to document the purpose, content, target audience, and the lead trainers of training sessions

Training objective	Training format	Participants	Trainer
Example: To train healthcare providers to counsel patients using motivational interviewing	*Example: Mock encounter between healthcare provider and patient partner to practice motivational interviewing skills. In-person delivery.*	*Example: Healthcare provider*	*Example: A healthcare provider and a patient partner*

In addition to formal training sessions, consider identifying opportunities for mentorship in the clinical setting. Through mentorship opportunities, such as reflexive practice workshops, participants can:

- Reflect on their own practice and identify areas for growth
- Use feedback from training sessions to improve
- Share challenges and solutions with peers and mentors

Here are examples of reflective practice questions to provide training participants with respect to implementation in their clinical setting[68]:

1. Think about the situation: What happened exactly and in what order, where were you at the time and who else was involved? What part did you have to play? What was the final outcome?
2. How did the situation, yourself, and others interact? Did the situation go well or was there room for improvement?
3. Could you have done anything differently? Think about what factors you could have influenced.
4. When similar situations happen again, will things change as you would expect them to?

6.1.2 Train individuals to deliver the intervention

Contact the individuals you have listed in 6.1.1 and invite them to a training session based on their respective responsibilities. Plan to offer more training sessions for individuals who are not available.

Create a post-training feedback form to circulate after training sessions to assess participants' attitudes, knowledge, and behaviours with respect to the tasks they will have to carry out when implementing the intervention. Consider using questions from the Modified Knowledge/Attitudes/Behaviours Questionnaire to do this.[69] Modify and conduct additional training sessions, as needed, based on feedback.

Once everyone has reached a level of confidence and competence in carrying out their responsibilities, based on the prespecified training objectives, the clinical setting can begin to implement the intervention.

6.2 Evaluate the implementation process

6.2.1 Decide how to evaluate the implementation process and outcomes

To evaluate how well the intervention was implemented, consider conducting brief check-in meetings or interviews with healthcare providers, managers, and/or other individuals involved in the implementation.

Use the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) framework to assess the following aspects of the implementation:

- Reach: Reflects how well the intervention reaches its target audience
- Effectiveness: Assesses the overall success of the implementation
- Adoption: Assesses the involvement of staff in implementing the intervention
- Implementation: Reflects how well the core components are delivered as intended
- Maintenance: Assesses the long-term sustainability of the intervention

6.2.2 Meet with additional interest holders to evaluate the implementation

To learn how well the intervention was implemented, consider gathering the following information from healthcare providers who have delivered the intervention. This can be modified for other individuals in the clinical setting who were involved in implementing the intervention, such as clinic managers and administrative or other support staff.

Information to gather from healthcare providers:

1. What challenges have you felt or encountered when delivering this intervention?
2. What suggestions do you have to improve the process of introducing this intervention to the clinical setting?
3. What might facilitate continuing to deliver this intervention?
    a. Individual-level: e.g., attitudes, beliefs, skills, knowledge, practices
    b. Interpersonal-level: e.g., team structure and functionality, roles, workflows
    c. Institutional-level: e.g., leadership, resources
    d. Other: e.g., training, engagement of healthcare providers
4. Is there anything else you would like to share about your experience with delivering the intervention that you have not already shared?

For specific questions and examples of how to gather information pertaining to each dimension of the RE-AIM framework, consider the following table (adapted from Holtrop et al., 2018).[70]

Table 5. Guidance for evaluating implementation outcomes with respect to the RE-AIM framework

RE-AIM Domain	Questions	Examples of how to collect the data
Reach	What factors contributed to the participation of the individuals?	Conduct group or individual interviews with service users and healthcare providers to determine contributors to the adoption of the intervention.
Effectiveness	Did the intervention work as intended? What other factors contributed to the results?	Observe and reflect on outcomes, such as number of referrals to a specific resource or service that is part of the intervention over a certain period of time. Conduct individual interviews with healthcare providers to add to reflections on the observed outcomes.
Adoption	What factors contributed to individuals taking up the intervention? What barriers interacted with the intervention to prevent adoption?	Conduct individual interviews with managers, healthcare providers, and service users to understand the level of adoption in the clinical setting.
Implementation	What influenced implementation or lack of implementation?	Conduct interviews with managers, healthcare providers, and other individuals involved in implementing the intervention to understand their experience.
Maintenance	What should be sustained, what discontinued, what modified, and why?	Conduct interviews with managers, healthcare providers, and other individuals involved in implementing the intervention to determine how to maintain the intervention over time.

The Intersectionality Supplemented Consolidated Framework for Implementation Research (CFIR) offers prompts and reflection points for determining how to incorporate intersectionality considerations when implementing and evaluating the implementation of an intervention.[71] Intersectionality is the idea that different aspects of a person's identity and life circumstances overlap and work together to shape their experiences, opportunities, and barriers.[72] Applying an intersectional lens to implementing and evaluating the intervention involves considering how overlapping factors may affect who can access the intervention, how it is delivered, and how different service users experience its benefits. Consider the following prompts when meeting with key interest holders.

Table 6. Guidance for using the CFIR framework for evaluating implementation outcomes using an intersectional lens

CFIR Domain	Intersectionality prompt examples
Outer setting (external policies and incentives)	How did current structures (economic, political, geographical, environmental) and the current contexts come to be? How have different sectors (e.g., economic, political, and environmental) intersected to produce the current context within which the clinical setting operates?
Inner setting (access to knowledge and information)	Who holds power within the clinical setting? How may these power relations affect the implementation of the intervention?
Characteristics of individuals (individual identification with the organization)	What assumptions do implementers make about health service users (e.g., what do healthcare providers assume about patients in precarious housing situations)?

6.2.3 Document and learn from the evaluation

Keep a record of all check-in meetings, observations, and interviews.

As a core committee, set up a meeting to reflect on the feedback received from these and discuss potential next steps for improving the intervention and its implementation. Summarize the feedback and provide these summaries to the partners.

Set up a meeting with the partners to present the evaluation and recommendations for improving the intervention and to solicit their feedback. Consider further adaptations based on their feedback.

Continue to monitor, evaluate, and refine the intervention and its implementation.

7.0 Summary: Five steps to implementing an innovation in a clinical setting

Step 1: Prepare to implement the innovation

- ☐ Form a core implementation committee
- ☐ Become familiar with the intervention
- ☐ Identify and form relationships with partners
- ☐ Set up regular meetings with partners and develop Terms of Reference

Step 2: Assess the needs and resources of the clinical setting

- ☐ Assess features of the clinical setting
- ☐ Define adaptation priorities
- ☐ Consult partners to present the assessment of the clinical setting and adaptation priorities
    - ☐ Before the consultation meeting: Prepare a summary of the committee's needs assessment, a meeting agenda, and a list of discussion questions
    - ☐ During the consultation meeting: Reach an agreement on the specific elements and phases of the intervention that require adaptation to align with the needs of the target clinical setting
    - ☐ After the consultation meeting: Circulate a discussion summary and debrief partners who were unable to attend the meeting

Step 3: Select strategies for adapting the innovation

Step 4: Adapt the innovation

- ☐ Develop an adaptation plan
- ☐ Present the adaptation plan to partners
- ☐ Refine the adaptation plan

Step 5: Implement and evaluate the adapted innovation

- ☐ Plan training sessions on delivering the intervention
- ☐ Train individuals to deliver the intervention
- ☐ Decide how to evaluate the implementation process and outcomes
- ☐ Meet with additional key interest holders to evaluate the implementation
- ☐ Document and learn from the evaluation

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