INDLELA

BEHAVIOURAL INSIGHTS FOR BETTER HEALTH

The NUDGE Handbook

A practical guide to behavioural design based on the NUDGE framework

Version 2 | July 2023

Welcome!

Welcome to the NUDGE Handbook! This practical handbook on the NUDGE framework is designed to help you and your team apply behavioural insights to behaviour change challenges in HIV services delivery and related fields. NUDGE is a behavioural design framework developed by behavioural scientists and researchers at the University of Pennsylvania's Center for Health Incentives and Behavioural Economics (CHIBE) in the United States and Indlela based at the Health Economics and Epidemiology Research Office (HE2RO), University of Witwatersrand in South Africa.

Behavioural design for better health

Over the last decade the application of behavioural science to health has really taken off, as seen in both the increase in the number of academic articles on this topic and the growth of health-focused "nudge units", behavioural insights teams, and funding initiatives. Researchers, practitioners and funders alike share enthusiasm for the theories, principles and frameworks that behavioural economics and adjacent fields can bring to persistent health behaviour change challenges. Insights about how our brains think about the present and the future, how influential our social environment is, and what we pay attention to and consider when making decisions all offer new ways to improve or "supercharge" health programs of all kinds.

To translate those insights into intervention, we rely on **behavioural design**: the systematic application of a human-centred understanding of how people think and make decisions to the design of behaviour change strategies. While many behavioural design frameworks have been published (we provide links to many below), we see an outstanding gap in practical resources to help practitioners apply these approaches in a simple but rigorous way. To that end, we have created the NUDGE Handbook as an accessible "on ramp" to behavioural design for the HIV prevention and treatment community. The NUDGE Handbook synthesizes and translates best practices in behavioural design in one brief, compelling, hands-on resource.

What is a “nudge” and what is NUDGE?

In the behavioural science field, **a nudge** is “any aspect of the choice architecture that alters people’s behaviour in a predictable way without [1] forbidding any options or [2] significantly changing their economic incentives”[1]

NUDGE is an acronym for the five key steps in the behavioural design process (Narrow, Understand, Discover, Generate, Evaluate) captured in the NUDGE framework. Given the focus on Discovering behavioural insights about barriers and Generating solutions that also incorporate behavioural solutions, the NUDGE process often produces “nudge”-type intervention designs or solutions. NUDGE was originally developed by Prof. Alison Buttenheim at the University of Pennsylvania in her research on applying behavioural insights to diverse health topics including community mental health care in the United States[2] and child nutrition programs in Peru[3]. It draws heavily on existing behavioural design frameworks[4 5] as well as design thinking[6] and intervention mapping[7] frameworks. Like all good and useful frameworks, NUDGE continues to evolve in response to researcher and practitioner experiences and needs.

[1] Thaler RH & Sunstein, CR. Nudge: improving decisions about health, wealth, and happiness. 2009. Rev. and expanded ed. New York: Penguin Books, p.6.

[2] Stewart RE, Beidas RS, Last BS, Hoskins K, Byeon YV, Williams NJ, Buttenheim AM. Applying NUDGE to inform design of EBP implementation strategies in community mental health settings. Administration and Policy in Mental Health and Mental Health Services Research. 2021 Jan;48(1):131-42.

[3] Brewer JD, Shinnick J, Román K, Santos MP, Paz-Soldan VA, Buttenheim AM. Behavioural insights into micronutrient powder use for childhood anemia in Arequipa, Peru. Global Health: Science and Practice. 2020 Dec 23;8(4):721-31.

[4] Michie S, Van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. Implementation science. 2011 Dec;6(1):1-2.

[5] Datta S, Mullainathan S. Behavioural design: a new approach to development policy. Review of Income and Wealth. 2014 Mar;60(1):7-35.

[6] UK Design Council. The double diamond: a universally accepted depiction of the design process. Available: https://www.designcouncil.org.uk/news-opinion/double-diamond-universally-accepted-depiction-design-process

[7] Fernandez ME, Ruiter RA, Markham CM, Kok G. Intervention mapping: theory-and evidence-based health promotion program planning: perspective and examples. Frontiers in Public Health. 2019:209.

What is *Indlela*?

Indlela (the way” or “the path” in isiZulu), is the world’s first disease-specific nudge unit. *Indlela* is based at the HE2RO unit of the University of Witwatersrand in South Africa, built in collaboration with researchers from the Center for Health Incentives and Behavioural Economics at the University of Pennsylvania in the United States, Boston University, the University of Cape Town and supported by funding from the Bill & Melinda Gates Foundation. The mission of *Indlela* is to build capacity to design and test nudges and other behavioural solutions to improve the effectiveness of health services and achieve better outcomes in South Africa.

Who should use the NUDGE Handbook?

Anyone interested in applying behavioural science and behavioural design principles to a behaviour change challenge will find the NUDGE Handbook to be helpful. We wrote the handbook specifically for our *Indlela* partners who implement Behavioural Insights Tests (or “BITs”) and similar projects supported by *Indlela*. For that reason, the NUDGE Handbook uses examples from (and may be most easily applied to) HIV prevention and treatment service delivery in South Africa. We intend for future editions of the Handbook to expand the examples to other health behaviour change domains and other regions of the world. NUDGE is widely applicable – give it a try! And please let us know how future handbooks can help you in this work. We welcome your feedback at indlela@heroza.org.

Overview of the NUDGE framework

NUDGE is a 5-step behavioural design framework:

Narrow the Problem In this step you will **narrow** the focus of your project to a specific target or "focal" behaviour.

Understand the Context Next, you need to **understand** the context in which the behaviour occurs including the cultural, economic, social, and structural factors that influence and shape the focal behaviour.

Discover Insights To **discover** insights about the specific barriers to your focal behaviour, you next connect your contextual understanding to behavioural science principles.

Generate Solutions With these insights, you are ready to **generate** intervention strategies that address behavioural barriers.

Evaluate What Works Finally, it is critical to **evaluate** your interventions for efficacy, effectiveness, and other important outcomes.

How to use this guide

As with many design frameworks and approaches, NUDGE is intended to be a flexible guide, not a prescriptive recipe. NUDGE can support and accommodate a wide range of problems, domains, intervention approaches, and project stages. If your intervention design project or Behavioural Insights Test is launching, you might start at the beginning with Narrow and work your way through to Evaluate. Or maybe you've already completed some of the NUDGE steps, even if you didn't use the same terminology or process laid out here. If so, feel free to skip steps or focus on the exercises or strategies most useful for your specific initiative.

To help you know which steps you may have already completed and when to proceed, we provide a "How do you know when you're done?" checklist for each step. And as the flight attendants always remind us: "In the event of an emergency, your nearest exit may be behind you." The NUDGE process is more often iterative rather than linear. Discovery may lead you back to Narrow for a slightly different definition of the problem. Evaluation may inform subsequent intervention generation ideas. Don't be afraid to circle back to an earlier step. **Design is dynamic.**

Follow along with the PREVENT Program example throughout the Handbook

To make the NUDGE steps as concrete as possible for users of the Handbook, we have developed an exemplar Behavioural Insights Test or "BIT" project being conducted by the "PREVENT" program (a fictitious program synthesized from many actual HIV programs that we work with).

PREVENT is focused on helping PLHIV remain in care and achieve viral suppression. Their programs are located in Department of Health clinics where they provide testing, linkage to care, adherence counselling, and viral load testing to PLHIV at high risk for being lost to follow-up. PREVENT leadership was eager to develop and test behavioural interventions to increase the proportion of PLHIV receiving care who achieve viral suppression – a critical outcome to help end the epidemic. You can follow along with PREVENT as the team works through the NUDGE process, and learn about the approaches and the outcomes of each step.

Narrow the problem to a specific "focal" behaviour

The first step in designing a behavioural solution is to identify what problem you are trying to solve. You likely have a big or broad problem in mind, or possibly you're focused on several related behaviours that may be important in achieving a certain goal or outcome. Nudge solutions or similar behaviourally-informed interventions will work best when targeted at a specific, concrete focal behaviour. But how to get there?

Start with the broad topic you're interested in, an outcome you want to improve, or a particularly urgent need your clients, collaborators, or funders are facing. From there, brainstorm at least 5 (more is ok!) candidate focal behaviours. If you are having trouble focusing on a specific behaviour, ask the questions in Box 1. Once you have a brainstormed list, choose the specific focal behaviour best meets the following four criteria:

1. **Impact potential:** The focal behaviour is directly and causally related to an important outcome of interest. If you can change this behaviour, you can "move the needle" on the outcome.
2. **Measurability:** The focal behaviour is measurable and observable. Can you quantify an indicator that will demonstrate behaviour change?
3. **Nudgeability:** It is possible to change the focal behaviour by changing the "choice architecture" or the decision environment. In other words, the focal behaviour is not a structural problem.
4. **Existing channel:** You have a way to reach the target audience with your intervention to change the focal behaviour. There is an existing channel or touchpoint with clients or community members.

As with every step in NUDGE, stakeholder involvement is critical for the Narrow step. Include stakeholder perspectives as you brainstorm possible target behaviours and choose the most appropriate target for your NUDGE project.

Box 1. Prompts to help Narrow your problem to a specific focal behavior

Prompt	Examples
What is the larger problem or outcome we are trying to change?	People Living with HIV/AIDS (PLHIV) achieve viral suppression
Who is involved in the decisions and actions that lead to the problem?	PLHIV, partners and family members, counselors and nurses.
What specific behaviours (decisions or actions) are made along the way to the outcome?	PLHIV: Receive first ARV prescription following diagnosis, schedule return clinic visit, attend return clinic visit, pick up medication refill, take medication every day, schedule viral load test, complete viral load test.
What specific behaviours (decisions or actions) are made along the way to the outcome?	PLHIV: Receive first ARV prescription following diagnosis, schedule return clinic visit, attend return clinic visit, pick up medication refill, take medication every day, schedule viral load test, complete viral load test. Counselors and nurses: Link PLHIV to care following diagnosis, counsel PLHIV on importance of ARV adherence and viral load, schedule return visits, follow-up with PLHIV lost to care.
Which specific behaviours best meet the 4 Narrow criteria: ▪ Impact potential ▪ Measurability ▪ Nudgeability ▪ Existing channel	The specific behaviour "Attend return clinic visit to access ARVs" best meets the criteria: Impact potential: Clients who return to their first visit are more likely to remain in care and reach viral suppression. Measurability: Attendance at return visit is captured in clinic record and Tier.net. Nudgeability: The decision environment and choice architecture can be changed to encourage return visits. Existing channel: Clients receive adherence counselling when they initiate care and can also be reached by SMS reminder systems.

Narrow: How do you know when you're done?

You have completed the Narrow step when you have agreed on a focal behaviour that best meets the four Narrow criteria: Impact potential, Measurability, Nudgeability, and Existing Channel. You are ready to proceed to the Understand step!

Narrow: What did PREVENT do?

To Narrow the focus of the project, the team convened a meeting with diverse stakeholders: clinicians, lay counsellors, clinic clients (including PLHIV who were in care and those who had been lost to care), and behavioural scientists and other experts. In a 90-minute workshop, they used the prompts in Box 1 to brainstorm and prioritise a long list of possible focal behaviours. Following the workshop, the team did an "How Might We?" exercise and then applied the four Narrow criteria to choose the most promising focal behaviour: **PLHIV do not attend return clinic visits to pick up medication following an HIV diagnosis.** This focal behaviour had high impact potential, was measurable and nudgeable, and there was an existing channel to reach clients before their return clinic visit. The Narrow step took 3 weeks, including planning for and conducting the stakeholder workshop and confirming the focal behaviour. See the Resources section and Box 1 for more details.

Understand the context of the focal behaviour through inquiry

You have Narrowed the focus of your project to a target behaviour; now you need to Understand the context in which the behaviour occurs, including the social, economic, and cultural factors that influence the focal behaviour. Understanding the context of the behaviour lays the groundwork for insights discovery and for solution generation, the next two steps in the NUDGE process. Designing effective nudges requires a rich and nuanced understanding of program clients, and the situations and contexts that shape their behaviour.[8]

What happens if you skip this contextual inquiry step in your rush to design a nudge intervention? A failure to understand the focal behaviour means you run the risk of designing interventions that don't address key behavioural barriers and don't ultimately change behaviours or improve outcomes.

There is no one best way to undertake contextual inquiry. Box 2 offers several appropriate methods we can use to understand the context of a focal behaviour. Your team may already have substantial expertise and background in the behaviour, as well as lived experience – this rich knowledge can be captured through one or more of the methods shown in the Box. You may also want to gather some new data and insights through observation, interviews, surveys, or reviews of programmatic or administrative data or published studies, and then organize and share those data through one of the methods in Box 2.

[8] Karlsen R, Andersen A. Recommendations with a nudge. Technologies. 2019 Jun;7(2):45.

Box 2. Approaches to contextual inquiry to help Understand your focal behaviour.

Method	Description	When to use
Behavioural mapping[9]	Map that reflects patterns of movement and behaviour within a given environment.	To show relationships between multiple behaviours occurring in different settings with different users or actors over time.
User journey mapping[10 11 12]	Timeline which outlines each touchpoint that the user experiences to perform the key behaviour.	To reflect actions, mindsets and emotions of users through visualisation and storytelling. Commonly used in user experience or "UX" design for products and services.
Service blueprinting[13]	Extension of the user journey map that visualises the relationship between different service components.	To clarify interactions between service users, touchpoints, and activities that are both seen and unseen by the user.
Other contextual inquiry methods from the innovation field[14]	Rapid field exercises like "Show me", "A day in the life", "The Concierge", "The Five Whys", "What's Good about that" and "Eye of the Beholder".	To develop a rich shared understand of the client or user experience through direct observation and conversation of people in the context of the focal behaviour.

[9] https://advanced-hindsight.com/wp-content/uploads/2021/06/Behavioral-Mapping-and-Blueprinting-Cheat-Sheet.pdf

[10] https://www.nngroup.com/articles/journey-mapping-101/

[11] https://uxplanet.org/a-beginners-guide-to-user-journey-mapping-bd914f4c517c

[12] https://www.macadamian.com/learn/healthcare-customer-journey-mapping/

[13] https://www.nngroup.com/articles/service-blueprints-definition/

[14] https://accelerationlab.upenn.edu/approach

Understand: How do you know when you're done?

You can be confident that you have developed a rich understanding of the context for your focal behaviour if you can answer the following questions[15]:

1. What are the steps the client or provider takes to achieve the focal behaviour?
2. Where does the behaviour take place?
3. When does the behaviour take place?
4. Who or what helps the behaviour happen?
5. Who or what gets in the way or prevents the behaviour from happening?

Understand: What did PREVENT do?

To understand the context of the focal behaviour that PREVENT chose to address—PLHIV not returning to clinic visits to get ARV medication refills – the team decided to create a "patient journey map" based on the user journey map method described above. Starting with input from long-time counsellors and linkage officers in their clinics, the team members mapped out a timeline from the initiation of treatment following diagnosis through the return to clinic for medication refill and adherence counselling. The map was expanded and supplemented with existing data and insights from a previous project focused on men at high risk for disengagement from care. As part of the journey map, the thoughts and feelings of patients were added in order to identify "pain points" in the and opportunities to make the journey easier and more successful. The draft patient journey map was shared with other stakeholders for iterative refinement and validation. The Understand step took three weeks, including 4 90-minute meetings with the project team and various stakeholder groups. See Resources section and references in Box 2 for more details.

[15] https://www.diva-portal.org/smash/get/diva2:839872/FULLTEXT01.pdf

Discover insights about the barriers to the focal behaviour

With a rich **Understanding** of your **Narrowed** problem in hand, you are ready to **Discover** insights about the specific barriers to your focal behaviour. In this step, you connect what you know about the focal behaviour from contextual inquiry to behavioural science insights and decision-making factors. This process will lead to the **Discovery** of key behavioural barriers that need to be addressed in your intervention designs. If you skip the **Discover** step, you risk designing interventions that are not grounded in the context and realities of your target population and do not address the specific barriers they face in carrying out the focal behaviour. This step is referred to in other behavioural design frameworks as "diagnosis", "sensemaking" or "identifying barriers and facilitators".

Discovery is a structured brainstorming exercise to connect your contextual understanding to common concepts from behavioural science. Your brainstorming will yield a long list of specific barriers to your focal behaviour. **Discovery proceeds in 3 steps** (and see additional Discover resources at the end of the guide)**:**

Step 1: Start with a map, flowchart, or other graphical or textual representation of your focal behaviour from the Understand step. While some mappings can be pretty complicated, it's also fine to work with a simple 2- or 3-step flowchart.

Step 2: For each step (or "moment") in your process or map, ask yourself (and your team) what is getting in the way of (or helping with) progress towards the focal behaviour. You might use the prompts in Box 3 to help you think about multiple dimensions of the behaviour and discover barriers that you might not have considered yet. Not every prompt will be helpful or relevant – that's ok! Whether your team does this brainstorming step together or individually, be sure to capture all the brainstorming in a list, a spreadsheet, a digital whiteboard, or something similar. At this stage, brainstorm lots and lots of barriers. You will refine that list in the next step. You will refine that list in the next step.

Step 3: From the longer list of possible behavioural barriers and facilitators you created in Step 2, refine and reduce the list down to just 3-7 that you want to use to Generate solutions or intervention ideas. If time and resources allow, you might want to take your longer list "back to the field" to share with experts, providers, clients, and other stakeholders. This can help you pressure test or validate your list of barriers and facilitators. In a rapid study, the team can validate or prioritize behavioural barriers based on their own expertise and understanding of the context and behaviour.

Box 3. Prompts to help with brainstorming behavioural barriers and facilitators during the Discover step.

Cues	**What cues or prompts the individual to act, including making a decision, making a plan, forming an intention, or performing the target behaviour?**
What prompts the person to act? How salient are the cues to act? Do cues to act come at the right time? Does the person know when it is time to act? How does the environment cue action or fail to cue action? Does the person know how others are acting? Who else is around when it's time to act?	How easily or quickly can an intention or plan or decision to act be translated into behaviour? Is the action aligned in time with the moment of greatest intention? How long ago was the decision to act made? Can the action only happen at a certain time or in a certain order? What are the critical antecedents?
Alternatives	**What alternative actions does the individual have besides making a decision, making a plan, forming an intention, or performing the target behaviour?**
How easy is it to forget or avoid action? How easy is it to postpone action or procrastinate in the moment? How often does the person change their mind in the moment? What other actions are more attractive, tempting, or salient in the moment?	How fragile or breakable is a previous decision, plan or commitment? How easy is it to fall off a behavioural path or series of linked actions? How easy is it to get back on track once off a behavioural path?
Meaning	**What does the focal behaviour (and related decisions, intentions, plans and actions) mean to the individual?**
What does it mean to take this action? What identities are associated with this behaviour? How much feedback does the person get about the behaviour? What does it mean to break an earlier commitment or plan?	Does taking action feel uncomfortable or painful such that it is avoided? What are the perceived consequences of failing to act? Is the action thought of as a series of sub-actions? Does the person have a realistic sense of how much time the behaviour takes?

Discover: **How do you know when you're done?**

You are done with Discovery when you have a list of behavioural barriers and facilitators to your focal behaviour that 1) are rooted in your contextual understanding and 2) link that context to behavioural science principles.

Discover: What did PREVENT do?

Starting with the patient journey map developed for the Understand step, and using the Discover prompts in Box 3, the PREVENT team brainstormed a few dozen barriers and facilitators related to the focal behaviour of **attending return clinic visits to pick up medication following an HIV diagnosis.** The team held one two-hour in-person brainstorming session to captured barriers and facilitators on large sticky notes on poster-sized versions of the patient journey maps. After that meeting, and following the process laid out in Step 3 of Discover, they then reduced that initial list down to 5 that were well supported by the contextual inquiry from the Understand step, endorsed by diverse stakeholders, and could usefully inform the Generate process. This Discover step took two weeks, including the brainstorming meeting and the follow-up work on prioritising behavioural barriers. The five were:

Barrier/facilitator	Relevant behavioural insight(s)	Evidence from contextual inquiry
PLHIV underestimate how busy their regular lives are and do not schedule their return visit at a convenient or feasible time.	Hot-cold empathy gap Optimism bias	Quotes from interviews with clients and counselors.
PLHIV don't like to focus on their diagnosis, and a return appointment reminds them of their new status.	Informationavoidance Affect heuristic	The literature on emotional processing of HIV diagnosis.
SMS reminders for return to clinic visits do not come at the right time to be effective.	Attentional bias Salience	Discussions of the patient journey map with clinic staff who send reminder messages.
PLHIV may feel healthy and well and do not perceive a need for ongoing treatment; the return visit is perceived as optional or unnecessary.	Mental models	The literature on comprehension of treatment as prevention.
Being told to return to the clinic frequently feels like the clinic staff is punishing them or doesn't trust them to return.	Identity	Quotes from interviews with clients.

Generate intervention strategies that address behavioural barriers

Now that you have **Discovered i**nsights about the key behavioural barriers and facilitators, you are ready to **Generate** intervention strategies that address those behaviours directly. In this important (and fun!) step, you and your team will become behavioural designers.

A first step towards generating solutions is to revisit your "design brief" (your specific behaviour change goal) now that you have a deep Understanding of the patient experience and have Discovered important insights about the behaviour. An easy way to do this is to conduct another "How Might We…?" exercise (you may have done this in the Narrow step as well). The output from your How Might We exercise can be a helpful guide towards solution generation.

The next step in the Generate process is a brainstorming session. The inputs for that brainstorming session can include: 1. your list of 3-7 behavioural barriers and facilitators from Discover step; 2. The output from a How Might We exercise to reconfirm and orient your design goal. 3. the prompts and resources listed below; 4 your knowledge of how different tools and nudge strategies can be addressed specific barriers (see tables below); 5. the creativity and expertise of your team!

The design process can be as simple as a one-hour meeting around a table or a whiteboard; or it can unfold over many weeks and many meetings. Essentially, you want to re-focus your team on the focal behaviour and the behavioural barriers and facilitators you identified, and then ask:

Where do see opportunities to:

- Simplify the decision or action to make the behaviour easier to achieve?
- Remove barriers to the action?
- Amplify, increase, or make more powerful the facilitators to the action?
- Help narrow or overcome the intention-action gap?
- Draw attention to the benefits of the behaviour?
- Apply the EAST framework[15] to make the focal behaviour Easy, Attractive, Social, and/or Timely?

[15] EAST: Four Simple Ways to Apply Behavioural Insights. 2014. https://www.bi.team/publications/east-four-simple-ways-to-apply-behavioural-insights/

The design field has many other techniques and strategies to make brainstorming and solutioning productive and creative. Two that we recommend are 1. "Make it Worse" – try brainstorming solutions that actually make the problem worse instead of better. This may point you to new solutions. 2. How Would X Do It? In this approach, you imagine how a company in a very different domain or field would tackle this same problem. How would SPAR do this? How would my favorite hair salon do this? Your intervention design brainstorming might also be informed by Boxes 4-6 below, which identify tools and strategies that can be applied to specific behavioural barriers.

An important step in intervention design is "prototyping" or testing out key features or elements of your intervention in the settings and with the populations where you ultimately want to evaluate the intervention. This step allows you to minimize any risks associated with implementing the intervention, and ensures that stakeholders are on board with your intervention designs. You will want to assess:

- **Appropriateness:** Are the interventions appropriate to the population and setting they were created for?
- **Feasibility:** Can we implement the interventions in real-world settings?
- **Acceptability:** Are the interventions acceptable to clients and to health care providers or program staff?

Box 4: Tools to simplify decisions and make actions easier

Behavioural economics tools and strategies	When to use
Defaults	If no choice is made, the outcome is good When there are consistent preferences/ circumstances
Prompted / Required / Forced choice	Create a situation in which the person must choose
Reducing number of choices	Limiting available choices or dimensions of choice may help simplify decision
Decision aids/ Displaying information	Choice is complex and multiple comparisons are needed
Framing a choice	When framing the choice as a loss or gain could be helpful

Box 5: Tools to help people follow through with intentions

Behavioural economics tools and strategies	When to use
Checklists	In situations of complexity, stress or memory failure
Goal-setting	If directing attention and effort towards achieving something, requires commitment and feedback
Plan making /Planning Prompts/ Foot in the door	When something may be complex with obstacles or in the future, helping to plan specific steps with times/ locations; progress already made to move towards the goal
Action/ Implementation prompts / Do it now/ Achievable steps	To overcome procrastination / forgetfulness help people to outline specific steps to be taken/ visualise the specific way in which the action will be completed; help person act as soon as the intention is set; smaller steps to see progress towards goals
Deadlines/ Interim Deadlines	When motivating people to act and overcome procrastination an outwardly imposed deadline with consequences if missed
Reminders	When a cue is needed to remind a person that action needs to be taken, may be via a channel they will see and trust
Commitment devices	At the initial decision point offering a means of restricting future action voluntarily, to achieve goal
Remove hassles or add counter-hassles	Relatively small obstacles get in the way – remove hassles if possible or make the opposite behaviour more difficult
Deescalate / Remove Steps	A problem or action is dreaded because it's perceived as unpleasant or intractable
Simplify the action/ Cut the costs/ Give slack	Cognitive load is high and bandwidth is too highly taxed to complete the action
Avoid negative priming/ Self-affirmation	The target behaviour identifies with a stigmatised group
Simplified language	Technical information is difficult to comprehend
Provide new information/ Analogies	Misconceptions or false beliefs drive behaviour
Reframe information	Information is complex and potentially not well understood

Box 6: Tools to motivate the behaviour and emphasize benefits

Behavioural economics tools and strategies	When to use
Social norms/desirability	When there is uncertainty about the norm or what others are doing, or that it is uncommon for people like them
Commitment to others	When a behaviour can be more entrenched by committing to others
Reciprocation	When the tendency to reciprocate to others may be leveraged
Emphasise authority	If symbols of authority or authority figures may influence the compliance with a behaviour
Loss / gain framed messaging	When framing the choice as a loss or gain could be helpful/ people would rather not lose something
Scarcity framing	If the perception that something is limited or restricted / only available for a short time/ for a few early adopters will influence behaviour
Provide new information	Misconceptions or false beliefs drive behaviour
Personalise information	Optimal choice is different or specific to individuals
Immediate benefits	It's possible for an immediate benefit or reward to be given for the behaviour (or cost to be removed)
'Fresh starts'	If relevant at the beginning of something new – new year, new month, birthday, new job, anniversary, etc

Generate: How do you know when you're done?

You are done with idea generation when you have a set of intervention designs or that you think have a good chance of addressing the behavioural barriers you identified and ultimately changing the focal behaviour. Ideally you have also had a chance to prototype, pressure-test, or pilot these interventions in the settings and with the populations where they will be evaluated. If many interventions or intervention components were designed and prototypes, you have selected the elements or the specific interventions that you will evaluate.

Generate: What did PREVENT do?

Using the five barriers discovered in the previous Discover step, the PREVENT team held two 90-minute design sessions to generate intervention ideas to encourage HIV clinic clients to **attend return clinic visits to pick up medication following an HIV diagnosis.** At the first meeting, the team went through a "How Might We..?" exercise to reconfirm their shared understanding of the behaviour change challenge they were addressing. Two statements that emerged from that exercise were "How might we help PLHIV see their care journey as something over which they have agency and control?" and "How might we help PLHIV keep their care journey at top of mind?" And the second meeting, the team used the EAST framework and the intervention types in Boxes 4,5 and 6 to brainstorm dozens of intervention ideas and components. The team then spent six weeks rapidly prototyping the most promising intervention components in the clinic to uncover any potential problems related to feasibility, acceptability, and appropriateness. Following the prototyping process, they were left with two multi-component nudges they were eager to evaluate[16]:

Intervention components and nudge strategies	Barriers addressed
1. **Choose Your Own Adventure:** This intervention consists of three separate components designed to address barriers related to scheduling, procrastination and prospective memory. First, counselors have clients **choose a date** for a return visit from a list of 3-4 options. Second, counselors have clients **choose the timing and content of a reminder message** to arrive. Third, the client is invited to **choose a CCMDD external pick-up point** for future medication dispensing.	PLHIV underestimate how busy their regular lives are and do not schedule their return visit a convenient or feasible time. SMS reminders for return to clinic visits do not come at the right time to be effective. Being told to return to the clinic frequently feels like the clinic staff is punishing them or doesn't trust them to return.
2. **Linked calendar and clinic poster:** PREVENT created a small **calendar** for clients that matched imagery and messaging from in-clinic posters reframed ART adherence and clinic visits as healthy and health-promoting behaviors. The calendar included stickers that can be placed in the clinic posters during return visits to **track progress** and accomplishment of health goals.	PLHIV don't like to focus on their diagnosis, and a return appointment reminds them of their new status. PLHIV may feel healthy and well and do not perceive a need for ongoing treatment; the return visit is perceived as optional or unnecessary.

[16] The Linked Calendar and Clinic Poster intervention design idea presented here was inspired by this study: McCoy SI, Fahey C, Rao A, Kapologwe N, Njau PF, Bautista-Arredondo S (2017) Pilot study of a multi-pronged intervention using social norms and priming to improve adherence to antiretroviral therapy and retention in care among adults living with HIV in Tanzania. PLoS ONE 12(5): e0177394. https://doi.org/10.1371/journal.pone.0177394

Evaluate the intervention(s)

Once you have **generated** one or more intervention designs, you are now in a position to ask, "Does it work?", and to answer that question with an appropriate **evaluation** design. Detailed approaches to evaluation are beyond the scope of this handbook, but we offer resources and some questions to consider as you hone your evaluation questions and choose an evaluation design and approach that best addresses your research, practice, and implementation goals.

An important first step is to figure out what evaluation question you want to answer, and what type of evidence you need given the program context. Some possible evaluation questions include:

- Does the intervention meaningfully improve behavioural or clinical outcomes?
- Does the intervention do better than what we're currently doing?
- If this intervention has already been shown to work in other contexts and with other populations, does it work the same way with our clients in our context?
- Does this intervention work better for some people than other people?
- Can this intervention be implemented at scale?

For evaluation of nudge-type interventions, or interventions developed using the NUDGE framework, we encourage you to thinking about an evaluation design that is the right mix of **Relevant, Rapid, and Rigorous.**

Relevant: Choose an evaluation question and approach that is relevant for the context and for the stage of intervention development. What evidence would be most helpful to produce at this moment? Who needs to see this evidence? What resources are available for evaluation? How feasible or acceptable is a randomized design?

Rapid: By definition, many nudge interventions are light-touch, relatively minor tweaks or additions to an existing program. It doesn't make sense to spend 6-18 months evaluating an intervention of that scope. In choosing your evaluation approach, consider how rapidly you can design and carry out a test of the intervention's efficacy, feasibility, or acceptability. Is the intervention itself easy to deliver? Can you quickly ascertain a relevant short-term outcome measure? Will analysis of evaluation data be straightforward?

Rigorous: At the same as you are prioritizing making your evaluations relevant and rapid, you also don't want to sacrifice rigor. For your given evaluation question, how can you get the "best" possible answer given constraints. Even a rapid evaluation takes time and resources, and you want your results to be compelling and persuasive to stakeholders. No need to let "the perfect be the enemy of the good", but resist the temptation to invest in an evaluation whose results you don't have confidence in.

Evaluate: How do you know when you're done?

This is a bit of a trick question – in some ways, you are never done with evaluation! But for purposes of the NUDGE framework, you are done with this step when you have answered the evaluation question you identified with the right mix of rigor, speed, and relevance. Your evaluation is complete when you have sufficient evidence to decide about the next phase for your intervention or your focal behavior challenge. Do you need to circle back to a previous step with new insights? Are you ready to recommend implementing this intervention throughout your program? Is it time to write a grant for a larger study? Whatever your next step is, we hope the NUDGE framework has been helpful in charting a course from problem definition through testing of your intervention design.

Evaluate: What did PREVENT do?

Following the prototyping process described above, the PREVENT team determined that they needed evidence about the efficacy of the two interventions in order to determine if they should be evaluated at a larger scale across many clinics. To evaluate the interventions, they decided on a **non-randomized pre-post design** in four clinics.

Study design details: In two clinics, the Choose Your Own Adventure intervention was run for 8 weeks with all eligible clients. In two other clinics, the Linked Calendar and Poster intervention was similarly tested with all eligible clients. The outcome of primary interest was the proportion of clients who returned to the clinic for their return visit within six weeks of their initial diagnosis or re-initiation of treatment. At each of the four clinics, the on-time return visit rate was compared for the 8 weeks prior to the intervention period and the 8-week intervention period.

Why this design? This design was chosen based on the feasibility of implementation, as several stakeholders were reluctant to run a randomized design. The clustered nature of this design (in which the clinic rather than the individual client was the unit of treatment of assignment) did not have full statistical power to detect a clinically meaningful difference in on-time return visit rates. However, it would provide a signal about effectiveness as well as important implementation factors.

What happened? The trial revealed that the Choose Your Own Adventure intervention was challenging to implement in practice and also did not appear to improve return visit rates. The Linked Calendar and Poster intervention was feasible and easy to implement, and analysis of aggregate clinic data suggested a meaningful increase in return visit rates. The PREVENT team decided to revise the Choose Your Own Adventure intervention to improve implementation, and also planned a larger multi-site randomized trial of the Linked Calendar and Poster.

Conclusion

It's an exciting time to be a behavioural designer! We hope that the NUDGE Framework and this handbook are a useful guide and resource as you take on the challenge of applying the behavioural science toolkit to persistent challenges in health care delivery. As you deploy NUDGE, keep these tips in mind:

- NUDGE is designed very intentionally to be flexible. If you need to loop back to previous steps or iterate, do so!

- It's fine to pick up NUDGE if your intervention development or evaluation process is already underway. Dive in at the most appropriate point and take what's useful. The "How do you know when you're done?" sections may help you determine which steps are most useful. You might also find that your project lends itself well to combining steps – for example, Understand and Discover can often be done in parallel; often Discover and Generate are very intertwined as well.

- Feel free to use NUDGE as a complement or companion to other theoretical or practical approaches to understanding and changing behaviour, or to intervention development and testing.

Please let us know if NUDGE is helpful – and how! We will continue to revise the handbook and add examples from other projects, both real and stylized. If your project would be a good NUDGE case study, we'd love to hear from you at info@indlela.org

Good luck!

More **Resources**

Behavioural Design Toolkits and Frameworks

- Wendel S. Designing for behavior change: Applying psychology and behavioral economics. O'Reilly Media; 2020 Jun 2. Available at link
- Batterbee I. The behavioural design toolbox of 20 ideas and techniques; 2020 July 27. Available at link
- Gravert C, Nobel N: Impactually: Applied Behavioural Science-an introductory guide. Available at link
- Ly C, Mazar N, Zhao M, Soman D: A Practitioner's Guide to Nudging (March 15, 2013). Rotman School of Management Working Paper No. 2609347, Available at link

Resources for **Narrow**

- Jociute D: How Might We Statements: Asking the Right Questions, Available at link
- The Behavioural Insights Team: Chapter 1. Target. In Target, Explore, Solution, Trial Scale: An introduction to running simple behavioural insights projects. Available at link

Resources for **Understand**

- Goepel N, Svanhall F, Rahme M. Strategic Recommendations for the Design of Nudges towards a Sustainable Society. (2015). Available at link
- Hauser OP, Gino F, Norton MI. Budging beliefs, nudging behaviour. Mind & Society. 2018 Nov;17(1):15-26. Available at link
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- The Behavioural Insights Team: Chapter 2. Explore. In Target, Explore, Solution, Trial Scale: An introduction to running simple behavioural insights projects. Available at link

Resources for **Discover**

- "Sensemaking" section of the Penn Medicine Center for Health Care Innovation Toolkit. Available at link
- The Behavioural Insights Team: Chapter 2. Explore. In Target, Explore, Solution, Trial Scale: An introduction to running simple behavioural insights projects. Available at link

Resources for **Generate**

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- Nuffield Council on Bioethics. Public health: ethical issues [Internet].London, UK: Nuffield Council on Bioethics, 2007: 1–225 Available at link
- OECD Tools and Ethics for Applied Behavioural Insights: The BASIC toolkit Stage 3: Strategies - p 26. Available from link
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- Caraban A, Karapanos E. The'23 ways to nudge'framework: designing technologies that influence behavior subtly. Interactions. 2020 Sep 1;27(5):54-8. Available at link
- Dolan P, Hallsworth M, Halpern D, King D, Vlaev I. MINDSPACE: influencing behaviour for public policy. Available at link
- "Intentional Divergence" section of the Penn Medicine Center for Health Available at link
- "Rapid Validation" section of the Penn Medicine Center for Health Care link
- The Behavioural Insights Team: Chapter 3. Solution. In Target, Explore, Solution, Trial Scale: An introduction to running simple behavioural insights projects. Available at link
- Jociute D: How Might We Statements: Asking the Right Questions. Available at link

Resources for **Evaluate**

- Koplan JP, Milstein R, Wetterhall S. Framework for program evaluation in public health. MMWR: Recommendations and Reports. 1999 Sep 17; 48:140. Available at link
- Baker C. Quantitative research designs: Experimental, quasi-experimental, and descriptive. Evidence-based practice: An integrative approach to research, administration, and practice. 2017:155-83. Available at link
- J-PAL Impact evaluation methods: What are they and what assumptions must hold for each to be valid. Available from link
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