وزارة الصحة
Ministry of Health

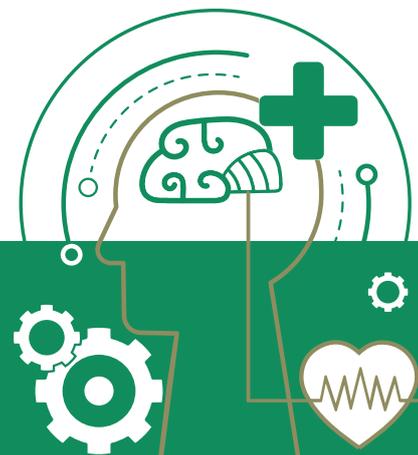# Behavioral Toolkit for Health

August 2022

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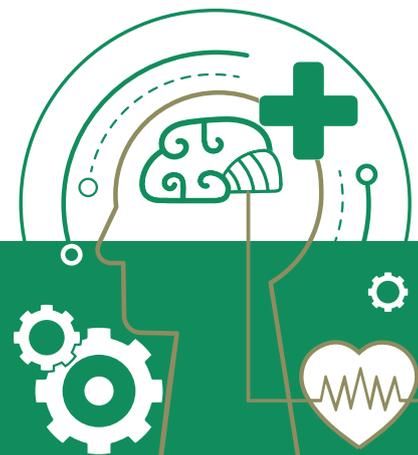# Behavioral Toolkit for Health

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Forward

As part of Vision 2030, the health sector in Saudi Arabia is undergoing a major transformation toward prioritizing prevention over treatment. The Health Sector Transformation Program identifies three priorities for health reform: (1) improving access to health care services, (2) improving the quality and efficiency of the health system, and (3) strengthening prevention against health threats. To help achieve these priorities, Saudi Arabia has established the Health Nudge Unit of the Ministry of Health as one of the first governmental behavioral insight units in the Middle East, specifically dedicated to informing health policies and programs. In an effort to make behavioral sciences a systematic tool that can be applied within programming and operations, the Health Nudge Unit has produced this toolkit with the technical support of the World Bank.

The rationale, practical guidelines, and examples described throughout this document aim to advance and improve the application of behavioral insights for better public policy design around the world. The toolkit will be a key instrument for the Health Nudge Unit in Saudi Arabia to continue expanding the use of behavioral insights to address public health challenges. By placing the citizen at the heart of health system improvement outcomes, the user can apply an evidence-based understanding of human behavior to solve pressing reform challenges. We hope that nudge units and policy practitioners worldwide will find this toolkit of benefit.
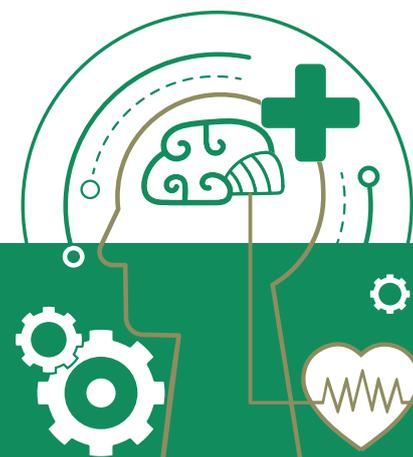
Minister of Health, Kingdom of Saudi Arabia

Acknowledgements

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I. Introduction

This document will assist behavioral science practitioners in public health identify, diagnose, design, and implement behavioral interventions contributing to the health plan. It contributes to existing behavioral frameworks and toolkits by presenting a more detailed guide on diagnosing and implementing behavioral diagnostics and interventions. The toolkit will enable practitioners to apply behavioral science to identify and diagnose factors and design solutions that influence health problems, including individual, social, and environmental barriers that shape public health behaviors. These barriers include beliefs or preconceptions in mental models, prevalent norms, contextual and environmental influences on decision-making, temporal decisions, and limited attention to information, among others. The toolkit is anchored on the recently developed IDEA framework by the Health Nudge Team (HNT). It introduces a wide range of quantitative and qualitative instruments to enrich the analysis. It covers 19 activities and 16 tools, describing their rationale and practical guidelines for their implementation with hands-on examples and case studies related to public health. The tools and activities draw from studies conducted by the HNT in KSA and other relevant examples.

This document opens with an overview of the application of behavioral science to public health policy, followed by a description of the IDEA framework. Next, it explains each of the four stages, including their respective activities and tools. Finally, it presents a summary and definitions of the main health behavioral drivers with illustrative examples.

A. A New Approach to Health Policy

One key aspect to tackle public health problems is individual behavior. A better understanding of people's behavior can inform health policy decisions that promote healthier lifestyles. Traditional theories in the public health literature stress the importance of individual, social, and environmental effects on people's attitudes, perceptions, intentions, and behaviors, with the goal of determining how to influence and change the target population's decisions and behaviors. With the rise of behavioral science, people are becoming the center of policymaking. By placing the citizen at the heart of public health outcomes, policymakers can apply an evidence-based understanding of human behavior to solve concrete and emerging public health challenges. Behavioral science offers policymakers tools for identifying behavioral barriers and bottlenecks that hinder people from achieving sound and healthy decisions and actions.

Over the past twenty years behavioral scientists have explored Nudge Theory and Prospect Theory as methods to promote better health. Popularized by the pioneering work of Thaler and Sunstein, nudges are noncoercive interventions that influence behavior and decision-making through choice architecture. For instance, people may be aware of the negative consequences of eating sugar and have negative attitudes towards this behavior. However, they often fail to translate these beliefs into action, a concept known as the intention-action gap. Behavioral scientists have also adopted Prospect Theory, developed by Kahneman and Tversky, which explores human loss aversion and decisions. This theory helps explain why people are more averse to losing money than gaining money, and as a result often make non-optimal decisions from a utilitarian perspective. Together, these theoretical tools have been used to create behavioral evidence guided policy to promote wellbeing.

BOX 1: BEHAVIORAL SCIENCES AT THE MINISTRY OF HEALTH, KINGDOM OF SAUDI ARABIA (KSA)

The Health Nudging Team (HNT) at the Ministry of Health in KSA was established in 2018 to apply behavioral science and an evidence-based approach in the health sector to improve community health and wellbeing. The unit supports policymakers and health stakeholders in achieving cost-effective solutions to significant health challenges. The mandates of the HNT are to design behavioral interventions, provide behaviorally informed policy advice to policymakers, build national capacities, and transfer knowledge in the field of behavioral insights across the health entities in KSA.

The unit has implemented more than 11 behavioral interventions in various public health areas related to antibiotics prescription, food partitioning, missed health appointments, vaccine registration, and children's health check-ups. Moreover, the unit has conducted several quantitative and qualitative research projects to define policy challenges from a behavioral perspective. For example, the HNT carried out a national survey of Saudis' knowledge of and attitudes toward organ donation. The findings will inform the design of empirical studies to encourage registration in the national deceased organ donation program.

The unit provides multiple training workshops and capacity-building activities in local universities, government agencies and departments, and regional organizations. As the demand for behavioral science is growing in KSA and regionally, the team is also investing more resources to leverage behavioral insights in the public health domain and ensure that the behavioral approach is embedded in the policymaking process to improve public health outcomes.

Increasingly, public health has integrated behavioral science into different health outcomes to solve pressing challenges. Insights from behavioral science have been used to better understand and change behaviors related to non-communicable diseases (NCDs) such as diabetes, cardiovascular diseases, and cancer. The COVID-19 pandemic has further highlighted the importance of a behavioral approach—for example, in interventions to increase vaccine registration and uptake and to encourage adherence to new health measures. The use of behavioral insights is a valuable tool that complements traditional approaches in healthcare, such as improved and egalitarian access to health services and new governance models to embed behavioral insights and initiatives inside organizations across the healthcare value chain.

1 See: Manning, L., Dalton, A. G., Afif, Z., Vakos, R., & Naru, F. (2020). Behavioral science around the world volume II: profiles of 17 international organizations (English). eMBeD report. Washington, DC: World Bank Group.; Afif, Z., Islan, W. W., Calvo-Gonzalez, O., & Dalton, A. (2018). Behavioral science around the world: Profiles of 10 countries.; UN Innovation Network (2021). United Nations Behavioural Science Report.
2 OECD (2021). https://www.oecd.org/gov/regulatory-policy/behavioural-insights.htm
3 World Bank. (2014). World development report 2015: Mind, society, and behavior. The World Bank.
4 Afif, Z., Islan, W. W., Calvo-Gonzalez, O., & Dalton, A. (2018). Behavioral science around the world: Profiles of 10 countries.
5 Manning, L., Dalton, A. G., Afif, Z., Vakos, R., & Naru, F. (2020). Behavioral science around the world volume II: profiles of 17 international organizations (English). eMBeD report. Washington, DC: World Bank Group.

We differentiate between three types of behavioral health change: inducing one-time behavior, creating healthy habits, and mitigating unhealthy behavior. For example, decreasing missed health appointments is considered a one-time behavior that could be targeted through behavioral interventions and changes in the choice architecture or context design. Encouraging physical activity is more complex, as it requires the creation of healthy habits over time. An example of mitigating unhealthy behavior would be decreasing fat intake to reduce the risk of cardiovascular disease. The gains of such behaviors to patients are often incremental and only seen in the long-term, so different behavioral change strategies must be considered to achieve lasting habit formation.[6]

BOX 2: BEHAVIORAL SCIENCE AT THE WORLD BANK

Over the last decade, governments and international and nongovernmental organizations such as the World Bank, the Organization for Economic Co-operation and Development (OECD), UNICEF, Save the Children, the European Commission, and the United Nations have institutionalized behavioral sciences in policymaking.[1] Currently, more than 200 institutions around the globe are applying lessons from behavioral sciences to public policy.[2]

At the World Bank, the Mind, Behavior, and Development Unit (eMBeD) leverages behavioral sciences to achieve its core goals of ending global poverty and enhancing equity. Following the 2015 World Development Report on Mind, Society, and Behavior,[3] behavioral sciences were integrated into the design and implementation of the World Bank's projects. A few years later, two other reports analyzed how early adopters in government[4] and international organizations[5] have integrated behaviorally informed policies across their programs.

Today, eMBeD's portfolio spans 100 completed or ongoing projects across 65 countries and covers various thematic areas, including education, health and wellbeing, gender and equality, climate and energy, and unemployment and labor. Moreover, eMBeD uses behavioral sciences to measure skills, beliefs, and wellbeing, and to analyze and counter behavioral barriers in developmental programs, such as achieving healthy lifestyles. It also provides behavioral science training to policymakers at every level.

B. The Behavioral Approach – IDEA Framework

The toolkit is anchored on the IDEA framework, which the HNT developed as a guide for designing and implementing behavioral interventions. Each section of the toolkit is anchored and detailed in each of the stages, as follows. First, the initial stage (Identify) focuses on reviewing existing research evidence and identifying the targeted stakeholders. The second stage (Deep Dive or Diagnostic) focuses on understanding the underlying behavioral issues through evidence-based fieldwork. The primary tool used in this stage is the behavioral map, which summarizes all the biases and "behavioral bottlenecks" that may be getting in the way of the desired outcome. The third stage (Experiment) uses all the findings and insights from the previous stages to design a behavioral intervention. Before finalizing the design and proceeding toward implementation of the intervention, researchers are advised to test it on a smaller scale to minimize any design flaws and refine the intervention design. The last stage (Assess) focuses on creating a feasibility and scalability plan of the findings and recommendations (Figure 1).

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6 Gardner, B., Lally, P., & Wardle, J. (2012). Making health habitual: the psychology of 'habit-formation' and general practice. *The British journal of general practice: the journal of the Royal College of General Practitioners*, *62*(605), 664–666. https://doi.org/10.3399/bjgp12X659466

Figure 1: IDEA Framework: Guide for Applying Behavioral Insights

Identify	Deep-Dive	Experiment	Assess
Behavioural Problem	Isolate the behavioural issue	Designing and implementing the intervention	Determining how to scale-up the intervention
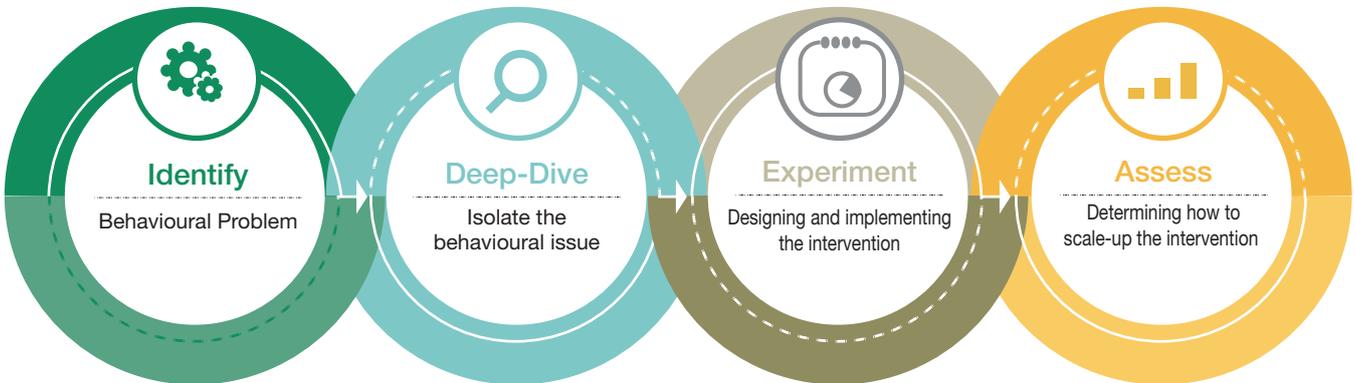
IDEA applies behavioral concepts across the conceptualization, implementation, and evaluation of programs and policies based on best practices from the behavioral science literature and lessons learned from other governmental nudge units. The application of behavioral sciences complements how we traditionally define and diagnose problems and design their solutions. Typically, policy challenges are prioritized based on selection criteria to decide whether they could lend themselves into behavioral projects (See Box 3 for details on the selection criteria used by the HNT in KSA and Annex 1 for the internal flowchart to select a policy challenge at the HNT). The process begins with the problem definition, in the form of specific behaviors that lead to the desired policy outcome. Problem definition allows the identification of specific challenges and entry points for policy action. The process continues with diagnosing and exploring factors that prevent or facilitate the desired behavior by applying quantitative and qualitative methods. With a reduced set of empirically validated barriers, it is possible to conceptualize a solution strategy to overcome those barriers. The effectiveness is assessed through rigorous methodologies to draw evidence-based conclusions, mainly experimental and statistical methods. The results provide evidence and inform policy by adjusting or scaling up the solutions. Finally, we reassess the identified and diagnosed hypotheses and adapt as needed in a learning loop process.

BOX 3: PRIORITIZATION AND SELECTION CRITERIA FOR POLICY CHALLENGES

Prioritization and Selection Criteria for Policy Challenges that Could Lend Themselves to Behavioral Work

1. Proper infrastructure and capacity to conduct behavioral projects and experiments.
2. Data availability and accessibility.
3. Clear established policies and procedures.
4. Buy-in and support from the leadership and management of the beneficiary.
5. Policy challenge with behavioral root problems.

Refer to Annex 1 for more information on the template used at the HNT to review and select health policy challenges.
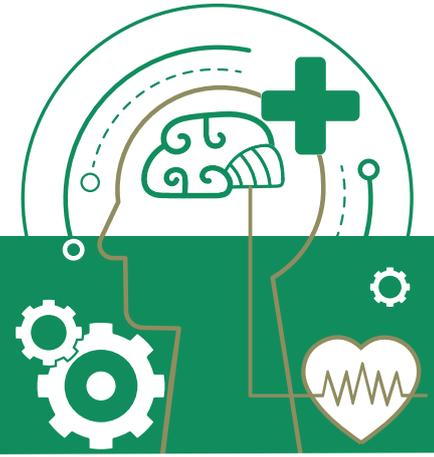
II. Behavioral Health Toolkit

A. Navigating the Toolkit

Table (1) below outlines the **Behavioral Health Toolkit**. It is grounded in the IDEA framework explained above and provides step-by-step guidance for each of the four stages: identifying, defining, diagnosing, and implementing behaviorally informed health interventions. Each stage has two components: **Activities** and **Tools**. The **Activities** sections contain a description of the steps needed to go through each stage. Although we present these activities in a linear way, many interventions require an iterative implementation process. The **Tools** sections provide a wide range of concrete research methods and technical resources with relevant examples and case studies that guide the implementation of the activities in each stage.

TABLE 1: NAVIGATING THE BEHAVIORAL HEALTH TOOLKIT

I.D.E.A.	Activities	Tools
Stage 1 **Identifying and Defining Problems**	**Activity 1.1** Conduct exploratory sessions **Activity 1.2** Develop a health problem statement and the outcome of interest **Activity 1.3** Identify the potential target audience and influencing stakeholders **Activity 1.4** Write down hypotheses about why the challenge occurs **Activity 1.5** Identify behaviors of interest **Activity 1.6** Explore the context	**Tool A** Literature review Related activities: 1.1 **Tool B** Stakeholder map Related activities: 1.3 **Tool C** Policy map Related activities: 1.4, 1.6 **Tool D** Data review and analysis Related activities: 1.4, 1.6 **Tool F** Focus Group Discussions Related activities: 1.3, 1.6 **Tool G** Semi-Structured Interviews Related activities: 1.3, 1.6

I.D.E.A.	Activities	Tools
Stage 2 **Deep-Diving and Diagnosing Behavioral Barriers**	**Activity 2.1** Outline the decision-making process **Activity 2.2** Identify and prioritize the barriers **Activity 2.3** Validate hypotheses in the field	**Tool E** Behavioral Process Map Related activities: 2.1, 2.2 **Tool F** Focus Group Discussions Related activities: 2.3 **Tool G** Semi-Structured Interviews Related activities: 2.3 **Tool H** Observations Related activities: 2.3 **Tool I** Surveys Related activities: 2.3
Stage 3 **Designing and Experimenting Solutions**	**Activity 3.1** List potential behavioral and non-behavioral solutions **Activity 3.2** Define experiment goal and target sample **Activity 3.3** Conduct research and literature review of behavioral solutions **Activity 3.4** Design solutions and conduct co-creation sessions **Activity 3.5** Define experimental evaluation design **Activity 3.6** Conduct a research ethical review process **Activity 3.7** Prepare and conduct pilot studies **Activity 3.8** Roll out the intervention and monitor the implementation **Activity 3.9** Analyzing impact	**Tool J** Behavioral design tools and frameworks Related activities: 3.1, 3.6 **Tool K** Co-creation design worksheet Related activities: 3.4 **Tool L** Experimental design Related activities: 3.5 **Tool M** Quasi-experimental design Related activities: 3.5 **Tool N** Experimental Protocol Related activities: 3.2, 3.5, 3.6 **Tool O** Monitoring and quality control of the implementation Related activities: 3.8 **Tool P** Data analysis Related activities: 3.9

I.D.E.A.	Activities	Tools
Stage 4 **Assessment: feasibility and scalability**	**Activity 4.1** Assess the external validity of your results **Activity 4.2** Assess lessons learned and adapt protocols **Activity 4.3** Conduct Cost-Effectiveness Analysis (CEA) **Activity 4.4** Determine your resources available **Activity 4.5** Prepare an implementation guide, path to scale and outreach products	**Tool Q** Costing guidelines and template Related activities: 4.2

The following sections provide a detailed overview of the process, its steps, and the respective tools recommended. Some Tools are applicable to various activities in different stages depending on the problem's complexity and availability of information. Applying each tool is at the discretion of the user/behavioral scientist depending on the scope of the intervention at hand. The presentation of activities and tools is accompanied by examples and case studies of their application in public health. This section also provides the templates needed to apply the tools, when relevant, and links to additional available resources.

Capacities required for implementing the Toolkit:

Executing the different activities and tools this toolkit contains requires a team with various capacities, skills and experience. The core team should include:

- A qualified behavioral psychologist/economist with practical experience running diagnostics, designing interventions and analyzing results.

- A project/research manager who guarantees timeline and budget are executed according to plan. This person also develops and supports the engagements with relevant stakeholders throughout the stages of the project.

- A biostatistician to review experimental design and potentially a physician depending on the intervention, for example when it has medical outcomes.

- A research analyst with strong programming skills and quantitative methods knowledge to run quantitative analysis.

- The qualitative work can be outsourced to experienced research companies or an experienced anthropologist can also join the team part-time, depending on the needs of the project.

- Field data collection is usually outsourced to experienced data collection companies to guarantee data quality.

Stage 1: Identifying and Defining Problems

When tackling a health problem, policymakers often take a solution-focused approach, using a set of preconceived concepts, solutions, and views to define the problem. This approach limits the time spent understanding the challenge from a user/stakeholder perspective, clearly identifying the chain of behaviors with specific actions, and discerning them from their outcomes. Jumping to solutions before rigorously devoting time and resources to identifying and defining the problem, policymakers formulate problems based on underlying assumptions that are seldom questioned.

Yet health problems are frequently more multifaced than traditional policymaking acknowledges: the same problem has multiple causes, which may be unrelated. In addition, problems might be caused by behavioral issues, non-behavioral factors, or both. Applying a behavioral science approach requires practitioners to take the user's or human's perspective and "diagnose" rather than "suppose." **Thus, defining a health problem from a behavioral perspective will provide a specific and clear behavior or set of behaviors that the population of interest needs to do or refrain from doing to attain the desired outcome.**

Problem definition is one of the most relevant steps of the behavioral approach, as it sets the stage for designing the right solutions. The successful application of behavioral sciences in public health policies and programs relies on the early integration of this approach. This stage aims to identify and formulate the problem by finding answers to the "why" and "who." Practitioners often complete this stage quickly by defining the policy challenge and the desired outcome. However, the latter holds its own set of assumptions and false beliefs. A well-defined problem maps out the relevant stakeholders, looking closely at the different actors, and approaches the problem from their perspective. It requires zooming out to explore the broader context and social environment in which the challenge occurs.

1. Activities

Activity 1.1: Conduct exploratory sessions

The leading partner, client, or counterpart is considered an expert and valuable source of information in the definition and diagnosis of behavioral problems. Prepare a series of meetings to obtain ideas and inputs, explore details, and get feedback that sharpens your definitions. These activities are usually part of the initial engagement with the project client, follow an iterative process, and can be informal and unstructured. However, we can complement them by applying more rigorous tools, such as Semi-structured Interviews or Focus Group Discussions (see Tool F and Tool G). These sessions are an opportunity to obtain, discuss, and validate all the elements you will need to identify along with the definition space:

➤ Policy challenge

➤ Intended outcome

➤ Relevant stakeholders

➤ Target population

➤ Context information, including documentation on relevant policies and programs

➤ Prioritized behaviors

➤ An initial set of barriers and causes for the policy challenge and the behaviors

At the end of Activity 1.1, you should have gathered inputs from local partners and counterparts on the policy challenge, context, intended outcome, and relevant documentation available.

Activity 1.2: Develop a health problem statement and the outcome of interest

Projects and programs have an overarching goal, usually aimed at solving a policy challenge to improve the welfare of a specific population group. The challenge and outcome are typically stated in the national health strategy or provided by the government/counterpart for the project.

Defining the health problem statement requires a thorough understanding of the context and the different perspectives, particularly from a behavioral lens. Defining the problem based on evidence from the field rather than one's own experience is essential to avoiding subjective assumptions. Building on output from Activity 1.1, the following questions can help narrow the challenge you want to tackle:

➤ What is the health problem?

➤ What could happen if the problem is not addressed? Why is it important?

➤ What do you already know about the challenge, and what has been done to address the problem (if available)?

➤ What causes the problem? Try to take different perspectives, setting aside assumptions and other plausible causes. (The next stage will help you identify the main behavioral barriers causing the problem.)

➤ Who is most influenced by the problem and to what degree?

➤ Are men and women affected differently by the problem?

➤ What is the desired outcome? What do you want to achieve?

At the end of Activity 1.2, you should have one or more clearly defined problem/s and an outcome you want to accomplish.

Activity 1.3 Identify the potential target audience and influencing stakeholders

The more precisely we define our target groups, the better we ensure that our behavioral change strategy responds to their actual situation and needs. The focus will be on two types of target groups: **Target audience** and **Influencing stakeholders**.

Target Audience

The target audience is the group of people expected to perform the desired behavior (for instance, children between the age of 5-17 years old are eligible for the COVID-19 vaccine). It is essential to always consider the role of gender, namely whether there are any differences between women/men or boys/girls in the health problem and target behavior. We should also identify whether the target

audience can make decisions themselves regarding the intended behavior or if there another target group (e.g., parents) is making the decisions.

> **Other factors to consider when identifying the target audience:**
> - Who is mainly influenced by the health problems?
> - Who is more likely to change their behavior related to the problem (low-hanging fruit)? These people can help cascade the change to other segments.
> - Who is easily accessible?
> - Who is making the decision to engage in the intended behavior?

In some cases, once the target audience is identified, it can be divided into segments based on different characteristics that influence the target behavior. When specifying the target audience, it is helpful to gather particular information and reference data about them.

- ► Demographics (age, gender, language, income, residency, education, occupation)

- ► Geographic (region, urban/rural, specific climate zone, city, village)

- ► Lifestyle (attitudes, social class, background, culture, gender and social norms).

Influencing Stakeholders

This group represents the people who influence, promote, or prevent the desired behavior. Several factors in the individual, relationship, community, and social interplay influence health behaviors and outcomes:[7]

- ► **Individual-level:** a group of individuals who have direct contact and influence with the primary target audience. For example, in some areas in Africa, mothers-in-law do not approve of breastfeeding babies during the first 40 days after delivery. These opinions will influence whether mothers decide to breastfeed their children exclusively.

- ► **Community-level:** a group of individuals in the community who indirectly influence the target audience's decision through different activities or services. For instance, in Armenia, adolescents are 20 times more likely to accept and smoke a cigarette from pressuring peers than are adolescents in India (Pandey et al., 2011), highlighting the critical role of peer influences on youth smoking behaviors.

- ► **Organizational and health-system level:** people at the organizational level who indirectly influence decisions of the target groups (e.g., religious leaders, social media actors, journalists, public officials, and policymakers). For example, clinicians with a habitual choice of pharmaceutical agents and familiarity with medical training and pharmaceutical promotions tend to be reluctant to use more effective new drugs or lower-cost versions of older drugs (Scherer, 1993; Frank, 2007; Hellerstein, 1998).

Based on the findings, develop a stakeholder map that visually lays out all the stakeholders and assesses their influence on the project (Tool B).

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7   Kilanowski, J. F. (2017). Breadth of the socio-ecological model. *Journal of Agromedicine*, 22(4), 295-297.

At the end of Activity 1.3, you should have a clear stakeholder map with a list of target audiences and the various influencing stakeholders.

Activity 1.4: Write down hypotheses about why the challenge occurs

Initially, keep this set of assumptions as broad and flexible as possible. Write out the structural (Tool C) or behavioral aspects of the challenge. Report on the most common causes of the specific behavior. Some of the reasons could be subjective assumptions, while others could be based on existing data (Tool D). In Stage 2 (Deep-Diving and Diagnosing Behavioral Barrier), these assumptions will be revisited, refined, and further explored.

Types of barriers:

- Structural barriers arise from the structured decision-making environment (e.g., procedural, logistics, laws, and regulations).

- Behavioral and psychological barriers are rooted in cognitive processes, beliefs, attitudes, and perceptions. They could be influenced by individual, social, or environmental factors.

At the end of Activity 1.4, you should have a list of assumptions about the structural and behavioral barriers.

Activity 1.5: Identify behaviors of interest

Behaviors are the actions an actor or a population of interest must take to attain the desired outcomes and tackle the policy challenge. To achieve intended behavioral change, it is first necessary to define the behaviors of interest in detail. The behaviors identified should all be specific, assignable, and observable (see Table 2).

TABLE 2: CRITERIA TO IDENTIFY THE BEHAVIOR OF INTEREST

Criteria of Behavior	Description
Specific	- Action should be defined in detail, outlining specific elements and features (e.g., the "what," "when," and "where"). - Well-defined behavior is not the outcome of interest or the policy challenge, as those are higher-order and more complex issues. - Also, it is possible to create a collection of behaviors related to the desired outcome by being specific. In that case, each of these actions should be analyzed separately.
Assignable	Identify the "who," or the actor or target population engaging in the behavior of interest.
Observable	- Ideally, an action should be objectively detectable and measurable, to the extent possible. - Stating the behavior in a detailed manner allows for definition of an explicit criterion for observing the behavior.

Examples of Behaviors

An example of a specific, assignable, and observable behavior:
"Increase the registration of children for COVID-10 vaccine on the national health app."

An example of a behavior that does not meet the three criteria is:
"Reduce obesity rates in Saudi Arabia."

BOX 4: GUIDING QUESTIONS FOR IDENTIFYING THE BEHAVIOR OF INTEREST

Guiding questions for identifying the behavior of interest

- What is the behavior of interest? Try to identify a specific, assignable, and observable behavior.
- Is the actual behavior driving the problem, or are other underlying behaviors causing/hindering/ facilitating the problem?
- Who are the actors and stakeholders contributing to the policy challenge?
- What are these actors doing or not doing right now to contribute to the challenge? (Try to adopt another perspective and remove any existing assumptions.)
- What behaviors are desired for the actors to engage effectively with the intended behavior? Which one is the most important? Is there any behavior that should take place first (prerequisite)?
- When and where are these actors supposed to engage in this behavior?

At the end of Activity 1.5, you should have identified a specific, assignable, and measurable behavior.

Activity 1.6: Explore the context

Analyze available statistical information and literature on the incidence and depth of the policy challenge in the study's specific context. Additionally, look for patterns in indicators and measures of the desired outcome by analyzing how they have performed over time and if that performance is associated with specific locations, population groups, or socio-demographic characteristics of those groups. This exercise will provide initial inputs to identify population groups of interest for the diagnostics (Tool D: Data Review and Analysis). This step will require close partnerships with statistical departments and data centers at the Ministry of Health to ensure access to available censuses data, relevant statistics and trends. These figures provide an in-depth understanding of the challenge and help guide the definition of the actual problem and the underlying factors influencing it. This activity also includes scoping the policy context and mapping the relevant policies, laws, and regulations affecting the challenge or problem (Tool C: Policy Map). This is an iterative process so exploring the context at different moments throughout the process of problem definition is recommended.

At the end of Activity 1.6, you should have data and statistics about the challenge, policy map, and information with evidence from the literature on the policy challenge.

2. Tools

Tool A: Literature Review

The literature review will establish what we already know about the target behavior, context, and barriers as an analytical tool. It consists of compiling, organizing, and analyzing existing scientific literature (e.g., journal articles, scientific books) and institutional documentation (e.g., program manual, operational reports, concept notes, and policy briefs). The scope of the review can be as broad or as narrow as determined by the implementation team. For example, it can only focus on barriers to the behavior of interest or use scientific literature exclusively.

How to implement	1. Search for literature in physical and online databases (e.g., Google Scholar). 2. Extract data using the summary table; see Table 3. 3. Comment on patterns, consistencies, and inconsistencies across studies and gaps in the literature (optional).

Lessons from the field

For a project on health habit formation and non-communicable diseases, the eMBeD team at the World Bank conducted a literature and documentation review to understand and inform the design of sustainable health behavior change interventions using Google Scholar.

TABLE 3: TEMPLATE OF A SUMMARY TABLE FOR LITERATURE REVIEW

Document title	Year	Author	Location of interest	Behavior Change Strategy	Main points *Main or noteworthy findings*	Method/ Measurement Strategy	Link
Good intentions, bad habits, and effects of forming implementation intentions on healthy eating.	1999	Verplanken, Bas Faes, Suzanne	The Netherlands	Implementation intentions and diary	Implementation intentions did not break the negative influence of unhealthy habits yet managed to make those with unhealthy habits eat healthier in habit-unrelated respects.	Studies were administered a questionnaire that assessed their current eating habits and asked them to form implementation intentions. All Ss were then asked to keep a diary for the five days following the completion of the questionnaire detailing their eating patterns.	

Document title	Year	Author	Location of interest	Behavior Change Strategy	Main points *Main or noteworthy findings*	Method/ Measurement Strategy	Link
Biased Health Perceptions and Risky Health Behaviors—theory and Evidence	2021	Arni, P., D. Dragone, L. Goette, and N. R. Ziebarth	Germany	Diagnostic of overconfidence	Thirty percent of the population had biased perceptions of their high cholesterol levels, with most underestimating their own risk while overestimating the risk of others.	Measured health perception biases—e.g., overconfidence—using objectively diagnosed health conditions (high cholesterol and high blood pressure) and relative overconfidence asking respondents to rank their health status relative to a reference group.	
Acculturation and cancer screening among Latinas: results from the National Health Interview Survey	2005	Abraído-Lanza, A. F., Chao, M. T., & Gates, C. Y.	U.S.A.	Diagnostic of screening behavior	The study found that cultural (or social) norms were associated with screening for breast and cervical cancer	Used data from the National Health Interview Survey in the United States	

Comments

Most relevant findings:

Consistencies and inconsistencies within the literature:

Gaps in the literature:

Tool B: Stakeholder Map

A stakeholder map produces an organized visual depiction of all individuals and institutions, governmental and civil society, influential to the diagnostic, the behavior of interest, and the target population. It focuses exclusively on describing stakeholder characteristics[8] and helps reveal their interests and assess their influence on the problem at stake, looking at the three levels of the influencing stakeholders: individual, community and organizational levels.

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8   Varvasovszky, Z, & Brugha, R. (2000). How to do (or not to do). A stakeholder analysis. Health Policy And Planning, 15(3), 338–345.

How to implement	1. Conduct a desk-based search for available information. It can be based on the findings of the Literature Review.
	2. Host a brainstorming session with experts to identify additional stakeholders.
	3. Summarize information from each stakeholder using the designed template. See Table 4.

Lessons from the field

Specific stakeholders are identified from the following sectors: international/donors, national political (legislators, governors), public (ministry of health, social security agency, ministry of finance), labor (unions, medical associations), commercial/private for-profit, and non-profit (non-governmental organizations, foundations). Civil society is an important sector to consider if the community or consumers are directly interested in the policy. In a study by Singh et al. (2014),[9] key stakeholder mapping and qualitative interviews helped assess the sustainability of Screening, Brief Intervention, and Referral to Treatment (SBIRT) services.

TABLE 4: TEMPLATE FOR STAKEHOLDER MAP

Name of the stakeholder *Local government, funding agency, NGO, technical or top specialist, local leader, population representative, researcher*	Type of stakeholder *Individual, Community and Organizational*	Responsibility or role	Level of Interest *or the desire to know, learn, and/or participate in the project*	Level of Engagement	Phase of Engagement (during diagnostic, design, implementation, or analysis)
Mohammad Omar	Expert	Key local researcher and expert in qualitative methods	High	High	Diagnostic phase

Optional columns
- Influence level or power to change/affect the diagnostic
- Relationship with other stakeholders or level of coordination and cooperation

Tool C: Policy Map

The policy map provides a visual depiction of the regulatory framework around the policy challenges, including legislation, policies, regulations, and programs or projects to address them. Though similar

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9 Singh, M., Gmyrek, A., Hernandez, A., Damon, D., & Hayashi, S. (2017). Sustaining Screening, Brief Intervention and Referral to Treatment (SBIRT) services in health-care settings. Addiction, 112, 92–100. doi: 10.1111/add.13654

to and based on the literature and documentation review inputs, a policy map follows a quicker, more flexible process and has a narrower scope.

How to implement	1. Develop a template for the policy map by specifying the critical information (e.g., time frame, institution, description of the objectives)
	2. Conduct a desk-based search for available information
	3. Host a mapping workshop or brainstorming session to identify additional policies or sources of information
	4. Summarize information from each policy using the designed template. See Table 5.

Lessons from the field

In Saudi Arabia, a policy map helps identify all the laws and regulations related to organ donation. Such information is instrumental in interpreting the diagnostic findings and understanding the attitudes and perceptions toward organ donation.

TABLE 5: TEMPLATE FOR POLICY MAP

Policy *Policy, law, national plan, regulation, intervention, or program*	Time frame	Institutions	Description *Objectives and activities*	Relevance for the diagnostic	Reference/ link
Law on Human Organ Donation Passed	2021	The law has empowered the Saudi Center for Organ Transplantation (SCOT)	This law includes 27 articles that organize the procedures of moving, transplanting and preserving human organs and maintaining the rights of persons from whom or to whom organs are moved.	The government legally approves organ donation.	

Optional columns
- Strengths: list of positive elements, design features or consequences of the policy
- Weaknesses: list of positive elements, design features or consequences of the policy

Tool D: Data Review and Analysis

Data analysis is a tool for exploring, describing, and testing hypotheses using existing or new quantifiable data. It can be used throughout the behavioral diagnostic whenever measurable data is available to understand a health problem better, including its context and the behavior(s) of interest (e.g., how many citizens are vaccinated). It also explores associated factors (e.g., the socio-demographic characteristics of vaccinated and unvaccinated citizens). And it lays the groundwork for any data collection that will take place as part of the diagnostic (e.g., which region or period of the year has the highest or lowest proportion of vaccination).

How to implement	1. Identify and obtain relevant datasets on the policy challenge and the target population
	2. Describe variables or indicators of interest using graphs or tables with descriptive statistics.[10]
	3. Explore associations between variables. Segment by population group to understand if there are differences in the behavior/outcome related to a specific group (i.e., disaggregate by gender/region/etc. using cross tables).

Lessons from the field

A study by Christakis and Fowler (2007) tracked over 12,000 individuals over more than 30 years, finding clear evidence of the spread of obesity through social ties. An individual's risk of becoming obese increased by 57 percent if a friend became obese during a specific time frame.

Stage 2: Deep-Diving and Diagnosing Behavioral Barriers

A behaviorally informed diagnostics expands the traditional diagnostics process by increasing the focus of analysis on the behavioral aspect of the challenge. The objective of this stage is to differentiate between structural and behavioral challenges. The former includes informational, economic, infrastructure, and regulatory factors often highlighted in traditional assessments; the latter also considers psychological and social dynamics.

TABLE 6: ELEMENTS OF A BEHAVIORAL DIAGNOSTIC: CONTEXT, PROCESS, AND METHODOLOGY

Content	• Analysis of structural challenges: informational, economic, infrastructure, procedural/logistics, and regulatory frameworks
	• Social norms and social factors
	• Individual and psychological factors
	• Environmental and contextual factors
Process	• Context-driven: understanding local conditions, stakeholder participation, validation in the field
	• Multidisciplinary: social and data sciences
	• Evidence-based: hypotheses testing and validation of assumptions
	• Iteration and prioritization: retesting and revalidating
	• Scaling: informing policy design and mainstreaming
Methodology	• Quantitative methods: surveys and administrative data analysis, experimentation, statistical methods
	• Qualitative methods: focus group discussions, semi-structured Interviews, observations
	• Human-Centered Design: process map, profiling, co-creation

Methodologically, behavioral diagnostics rely on applying a set of research tools to gather evidence on how people make decisions. The diagnostic process depends on mixed research methods (see Table 6). Qualitative methods such as Focus Group Discussions (FGD), Semi-structured Interviews (SSI), and

10 https://dimewiki.worldbank.org/Data_Analysis

Observation exercises are used to define and understand in-depth behavioral problems and barriers. Quantitative research is based on a statistical analysis of numeric datasets. It complements the qualitative work by validating its findings through replication, population representativeness, and providing comparable measures of behavioral concepts. Depending on the problem and context, we choose the type of method. Quantitative and qualitative methods are complementary and can be deployed simultaneously or sequentially. Human-centered methods adopt the perspective of the target population to introduce a more realistic representation of the analysis. Lastly, mapping methods enrich understanding of the context of the study by focusing on the legal and policy frameworks, the relevant stakeholders, their roles, and responsibilities.

1. Activities

Activity 2.1: Outline the decision-making process

A journey map is a flow chart that represents the necessary steps an end user must take to accomplish a desired behavior or policy outcome. Mapping the decision-making process in a journey map helps identify the main bottlenecks and enablers influencing the behavior of interest. Bottlenecks are barriers or stress points that prevent users from achieving the desired outcome. The journey map lists the end-to-end steps/actions needed to reach the targeted behavior. Any data or metrics available that could help contextualize the steps, such as time spent from the date of appointment registration to the actual appointment date, any associated costs/barriers/efforts faced when booking a virtual appointment on a health app, etc. This data will enrich the behavioral map and inform the target population's decision-making process, making it realistic.

This activity outlines each step of the process people need to follow to arrive at the desired behavior. Below are some recommended tips for designing the behavioral map.

How to outline the decision-making process	
	1. Take the perspective of the specific actor by going through the decision-making process.
	2. Use the information gathered during the *Identifying and Defining* stage.
	3. Include all decisions, actions, requirements, and interactions to meet the desired behavior.
	4. Visualize the process and specify the order and relations between steps.
	5. Consider first the hypothetical/ideal process as per the service provider, then validate the process based on actual experiences by the target group.

Outlining the decision-making process starts with taking the decision-maker/beneficiary's perspective. For example, a common public health challenge is to increase vaccination rates against serious diseases. The patient's journey involves obtaining information about a vaccine, registering or booking an appointment in a healthcare center, attending the appointment, and getting the vaccine. Outlining the different decisions and actions that need to be taken helps identify where the behavioral bottlenecks and entry points for interventions are. For example, if vaccine appointment's registration is high but its attendance rate is low, one has identified a bottleneck and a potential entry point for intervention. Other things to consider are what information is communicated to citizens about vaccines, how accessible they are, and so on.

At the end of Activity 2.1, you should have a hypothetical (ideal) process/journey map as well as a journey map based on actual experiences.

Activity 2.2: Identify and prioritize the barriers

The key objective of this activity is to differentiate between structural and behavioral bottlenecks. Structural barriers arise from the structured decision-making environment (e.g., infrastructure, laws, and regulations). Outlining the decision-making process will allow you to validate, discard and locate the barriers previously identified in the initial research and detect new ones. Behavioral and psychological barriers are rooted in cognitive processes, beliefs, attitudes, and perceptions. They could be influenced by individual, social, or environmental factors. Section III presents a detailed description with examples of behavioral health drivers related to public health policy. In addition, there are a couple of behavioral diagnostics models or tools that support practitioners in identifying the behavioral barriers and bottlenecks. Below is a brief description of each (Box 5).

BOX 5: BEHAVIORAL DIAGNOSTICS MODELS

Behavioral Diagnostics Models

The **COM-B**[11] model for behavior change was developed to inform the design of behavioral change interventions by recognizing that behavior is part of an interacting system involving all three components: capability, opportunity and motivation. Capabilities refer to a person's physical or psychological ability to perform the behavior. Opportunity refers to anything in the physical or social environment that may encourage or discourage the behavior. Motivation refers to internal reflective and automatic mechanisms that activate or inhibit a behavior. The model is currently widely used to categorize behavioral barriers.

A helpful tool for behavioral diagnostics based on the COM-B model is the **Barrier Identification Tool** from the Behavioral Insights Team (BIT).This tool helps practitioners explore about 20 common types of behavioral barriers to help identify different behavioral barriers and bottlenecks and relate them to the policy challenge.

These and many other frameworks can help you run your diagnostics. Choose the framework that you and your team are acquainted with based on your experience.

The behavioral diagnostics exercise can expose the need to undertake structural reforms before designing interventions to tackle behavioral bottlenecks. By itself, this activity will broaden understanding of the problem from multidimensional perspectives, deepening and narrowing the behavioral analysis. In some cases, it would also be helpful to identify enablers of the behavior of interest, expanding the focus on barriers.

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11 Michie, S., Atkins, L., & West, R. (2014). *The behaviour change wheel: A guide to designing interventions.*

To put into practice, follow these steps:

How to implement	1. Identify the barriers along the decision-making process that the target population faces.
	2. Focus on bottlenecks (i.e., the barrier between the step, decision and action) and frictions or stress points.
	3. Differentiate the structural barriers (costs, availability of services/options, infrastructures, regulations/laws/policies/rules) from behavioral ones.
	4. Differentiate the behavioral barriers (individual, social, and contextual/environmental). (Refer to section III for more details).
	5. Narrow down and prioritize the barriers. Use fieldwork's insights and responses from quantitative and qualitative research to inform prioritization. This selection tends to be subjective but can be informed by the relevance of the barrier. It is highly advisable to tackle to most relevant barrier first also taking into consideration the feasibility of removing it (is it easy and possible to remove the barrier?).

At the end of Activity 2.2, you should have identified barriers (structural and behavioral) with the different friction and stress points on the behavioral map.

Activity 2.3 Validate hypotheses in the field

For this activity, you need to validate your initial assumptions in activity 1.4 and the hypotheses barriers listed in activity 2.2. To do so, you can use administrative data and conduct field research. The fieldwork can take different forms, qualitative methods (e.g., focus group discussions, interviews, and observations) or quantitative methods (e.g., surveys). (See Tools F, G, H, and I). This will help confirm hypotheses, draw insights, and summarize them. This is one of the most crucial activities in Stage 2, as it ensures that the behavioral diagnosis is based on evidence and thorough research rather than assumptions and hypothetical analysis. This activity often leads to new barriers not considered in the initial assumptions, as it differentiates the institutional/structural, contextual, community/social, and individual factors.

At the end of Activity 2.3, you should have a validated diagnosis with a list of barriers based on thorough evidence from the fieldwork.

2. Tools

Tool E: Behavioral Process Map

Behavioral process map. Also known as user journey or process flow, a behavioral process map offers a visual representation of every step in the decision-making process leading to the behavior of interest and potential barriers from the perspective of the target population. It can describe the process of an individual or be adapted to a group, and uses principles of human-centered design by focusing on end users and describing their experiences step-by-step.

How to implement	1. Define the target behavior or endpoint as the outcome of the process (1 on Figure 2).
	2. Define a start point of the decision-making process from the perspective of the target population (2 on Figure 2).
	3. Identify decisions and actions involved to achieve the behavior (2 and 3 in Figure 2) and outline the entire decision-making process in a linear and sequential way reaching the target behavior. In some cases, identify "interaction" points that include an element of collaboration with other parties involved in the behaviors (e.g., interaction with a government official to fill out a form).
	4. Map the barriers you have identified at each step of the process (4 in Figure 2).
	5. Expand the map by adding sources, notes, links, and additional information on a separate page and correct it as new information becomes available.

Figure 2: Template of a Behavioral Process Map[12]
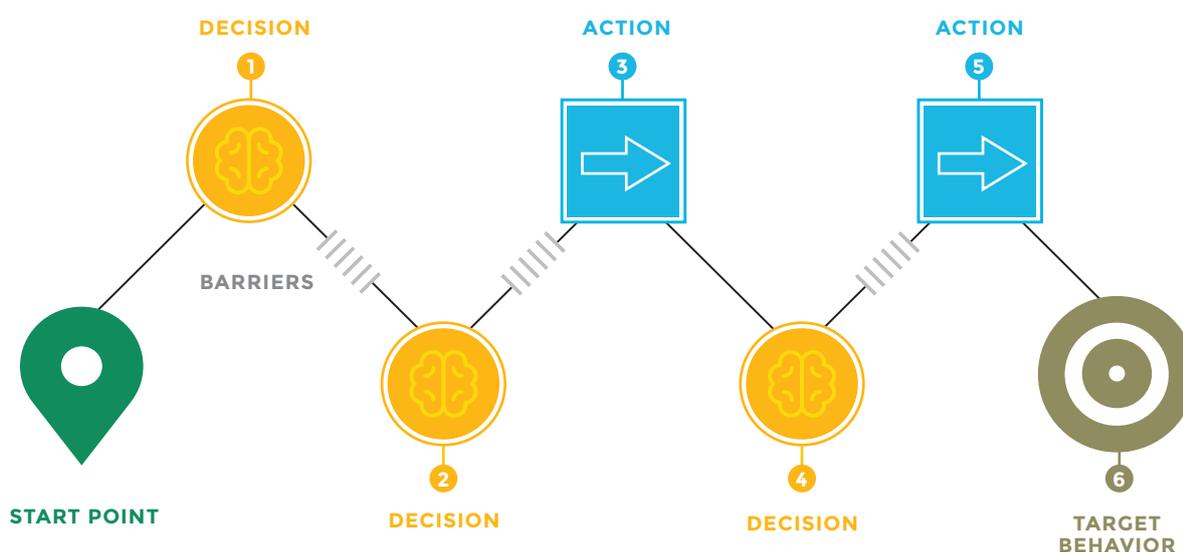
Lessons from the field

Missed health appointments are disruptive to the healthcare delivery system. In Saudi Arabia, under the framework of Vision 2030, the public healthcare sector is adopting a digital transformation and reinvention of how it engages with patients with the goal of improving efficiency and health outcomes. One of the improvements involves developing virtual clinics that deliver services via digital technology. The virtual clinic service enables patients to access medical care through the Sehhaty application and healthcare services remotely through virtual appointments. However, missed virtual health appointments have been on the rise. Therefore, the HNT developed a behavioral process map for the patient journey to identify the behaviors/actions and respective bottlenecks (see Figure 3). To illustrate, the patient starts attending a physical health appointment, then books an upcoming virtual appointment through SMS and answers a phone call to confirm the virtual appointment. These steps include several barriers, such as not receiving the SMS or the call, not paying attention to the messages, not having the Sehhaty app, not having a smart phone, and forgetting the appointment and its details, among others.

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12 Behavioral sciences approach to empowering women in forest landscape-Diagnostic Toolkit-2022.

Figure 3: Example of a Behavioral Process Map for Patients Missing Virtual Health Appointments
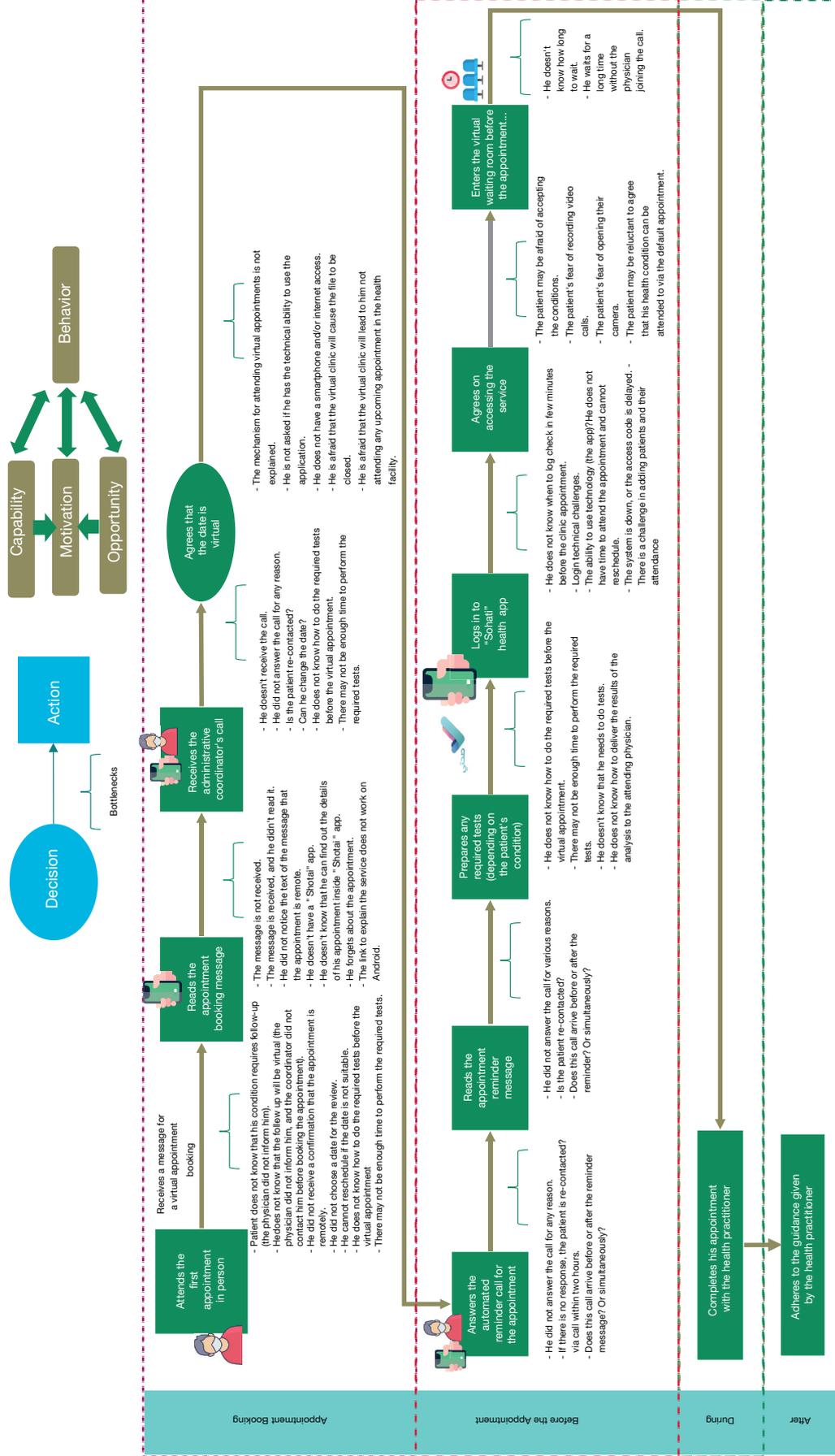
Tool F: Focus Group Discussions

Focus Group Discussions (F, G, and D) are guided conversations with a small, homogeneous group of people from the target population (e.g., parents of children in school to tackle childhood obesity) or critical informants (e.g., schools, ministry of education, NGOs, private sector) aimed at gaining an in-depth understanding of the behaviors by encouraging testimonials and interactions between participants. Thus, F, G, and D are well suited to studying how members of society influence individual behavior. In fact, one main benefit of F, G, and D is the interaction among participants and its related insights. Ideally, these activities should be outsourced to experienced research companies. To decide on the data collection method for the focus groups, consider the resources available, including time, budget, and personnel (capacity), as well as accessibility and the feasibility of implementation in the field.

How to implement	1. Prepare guiding questions, probes, and follow-up questions.
	2. Plan and prepare the implementation: train the field team, pilot-test the questions, obtain ethical clearance to conduct the exercise, identify and recruit participants,[13] consider incentives to provide, and select and organize the site.
	3. Conduct and supervise the data collection: i) Collect demographic information from the participants. This could be done in a pre-meeting setting where participants are asked to fill in demographic/general information in a questionnaire format (e.g., age, level of education, work status, etc.); ii) Guide the discussion using the questions from Step 1, being sure to take notes (Table 7); and iii) debrief (Table 8) and discuss the main insights and interpretations with the field team.
	4. Finally, organize and file all the data collection materials.
	5. Prepare a coding scheme and use it to organize and summarize your findings.

TABLE 7: TEMPLATE FOR NOTE-TAKING FORM FOR F, G, AND D

NOTE-TAKING FORM	
Archival #:	Start time:
FGD/Interview type:	End time:
Site:	The number of participants:
Date:	
Facilitator/Interviewer:	
Assistant:	

Seating chart (F,G,Ds only):

Before starting the discussion, make a seating chart indicating each participant's location and identifiers. Use this chart to identify speakers as you take notes.

Question (# or keywords)	Responses	Additional observations

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13 Based on the health policy challenge and the context, the characteristics of the participants in each group are identified (for some health issues, men and women should be separated, other topics might require age grouping and so forth).

TABLE 8: TEMPLATE FOR F, G, AND D DEBRIEF FORM

FGD DEBRIEFING FORM
Archival #:
FGD category/type:
Site:
Date:
Facilitator:
Assistant:

This form should be completed by all members of the team who were present during the discussion, including the facilitator and the assistant.

Q1. Contextual barriers

- Main themes and codes identified by the team (no comments or personal opinions should be recorded at this point).
- The nonverbal language used by the participants and comments/thoughts/perceptions from the team members.
- Similarities and differences, compared to other FGDs. Here you can also include suggestions for future FGDs (e.g., questions to ask, topics to explore).

Lessons from the field

Mental health problems are a critical public health challenge that significantly contribute to psychological, social, and occupational burdens and lead to high morbidity rates.[14] A qualitative study used F, G, and Ds in six countries in Europe (Belgium, Cyprus, Greece, the Netherlands, Norway and Sweden) to identify the facilitators and barriers to implementing accessible and effective mental healthcare. The main barriers identified were lack of funding, lack of talented human resources, and lack of availability of treatment and services. The method enabled dialogue and social interactions between research participants and stimulated the discussion.

Tool G: Semi-Structured Interviews

A semi-structured interview is a tool designed to elicit in-depth and detailed insights into the perception of behavior from a single member of the target population or an individual that interacts with this population. It follows a predetermined conversational format but allows for random questions and probes. The semi-structured interview can also be applied in the first stage when defining and targeting the problem as a tool for interacting systematically with area experts and counterparts. These activities could be outsourced to local research firms.

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14 Triliva, S., Ntani, S., Giovazolias, T. *et al.* Healthcare professionals' perspectives on mental health service provision: a pilot focus group study in six European countries. *Int J Ment Health Syst* **14,** 16 (2020). https://doi.org/10.1186/s13033-020-00350-1

How to implement	1. Prepare a one-page note that includes research objectives, general questions, probes, and follow-up questions.
	2. Prepare the implementation: train the field team, pilot-test the questions, obtain ethical clearance to conduct the exercise, identify and recruit participants, and select and organize the site.
	3. Conduct and supervise the data collection: collect demographic information from the participants and conduct interview questions. Then, organize and file all the data collected.
	4. Prepare a coding scheme and use it to organize and summarize your findings.

Lessons from the field

Returning to the virtual clinic appointments in KSA, and as part of the diagnostic process of better understanding what is driving missing appointments, the HNT conducted a qualitative study using semi-structured phone interviews. The team asked specific questions about why patients were missing their health appointments. The results showed that 33% of interviewees reported they had not shown up because they lacked information about the time and location of the appointment. Also, 20% highlighted difficulties navigating and using the app itself (see Figure 4). Another question was who was responsible for missing their appointments (e.g., patient, application, or doctor). Fifty-one percent reported that they themselves were the main reason they hadn't attended their appointments, and 43% blamed the app (see Figure 5). These results helped identify the low rates of appointment attendance and informed the design of interventions that targeted patients' barriers (unaware of the time and location and forgetting the appointment details).

FIGURE 4: RESULTS OF SEMI-STRUCTURED FOR PATIENTS WHO MISSED VIRTUAL APPOINTMENTS

Reasons for not attending the Virtual Appointments
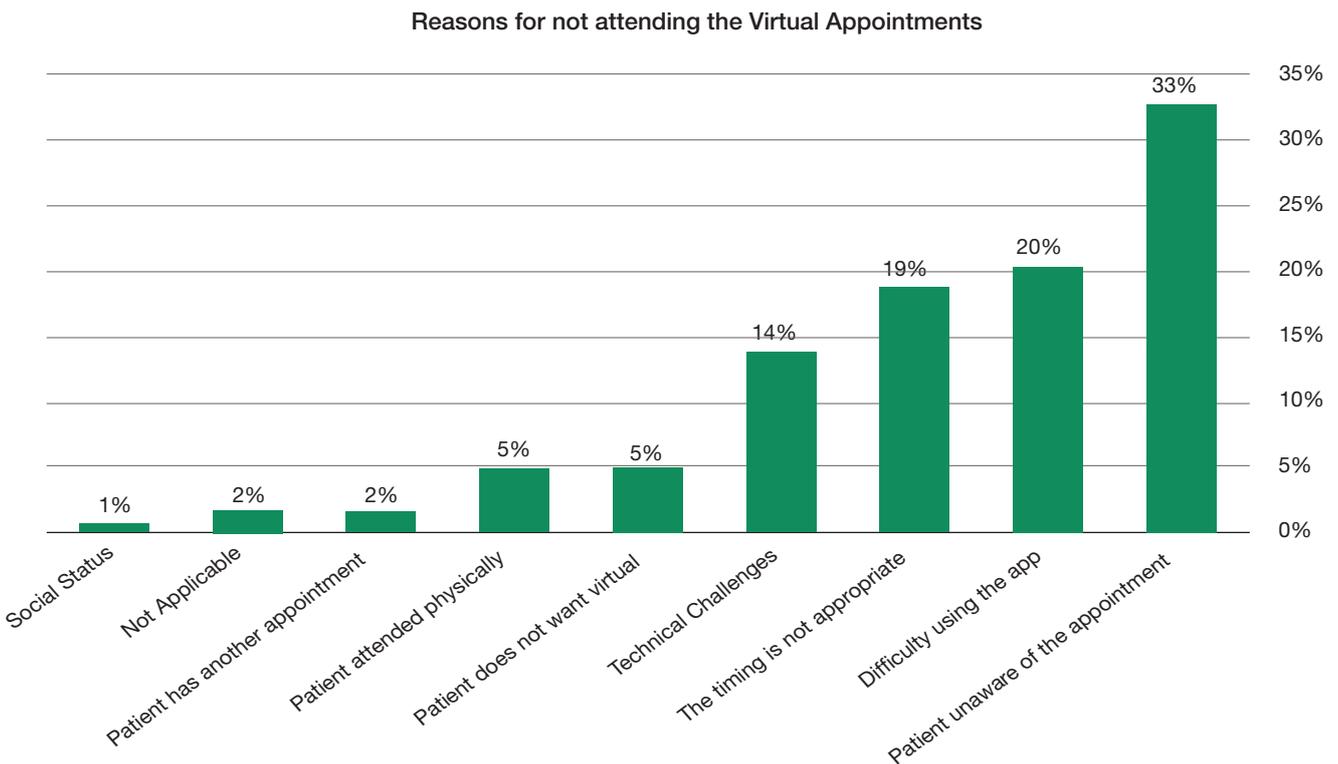
Figure 5: Results of Semi-Structured for Patients who Missed Virtual Appointments

I did not attend the virtual appointment because
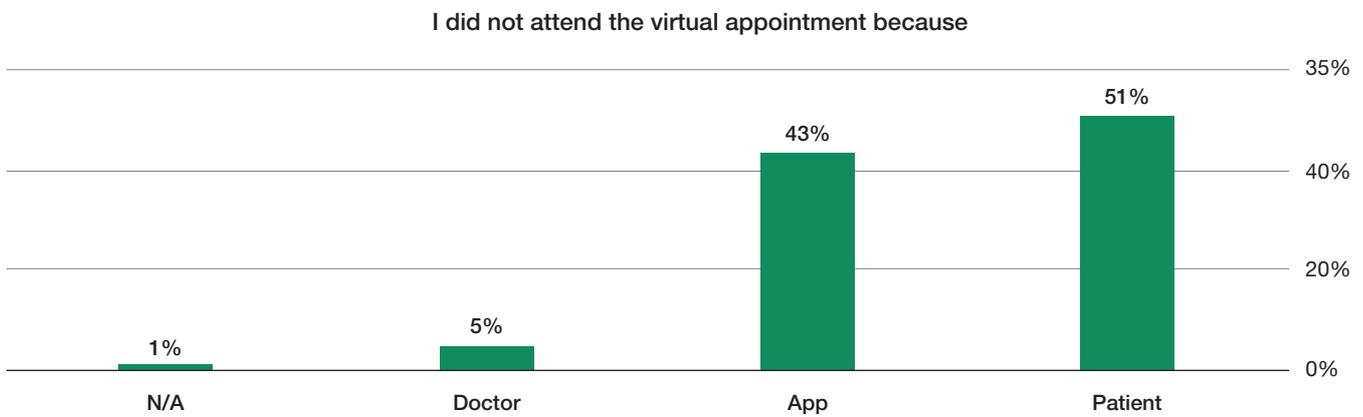
Tool H: Observations

Observation is an ethnographic method that studies behavior in the setting where it would typically occur without relying on the participant's verbal responses and retrospective memory. It allows for a deep exploration and characterization of the target population and its dynamics. Observations can be structured or unstructured (Boot and Cairncross, 1993). Structured observations provide a list of the important points to notice with a predetermined point of contact, a specific number of people, and predefined situations. They generally provide quantitative data. Unstructured observations are rather flexible and open. They often provide qualitative data. These activities could also be outsourced to local external research firms.

How to implement	1. Prepare a one-page note that includes research questions to attempt to answer and details of the process (requirements, steps, duration, number and type of interactions, language and style to use with target population, paperwork) and the location and environment (remoteness, comfort of participants, visual aids, availability of needed resources and materials).
	2. Prepare the implementation: train the field team, pilot-test the questions, identify observation sites, obtain access permits and authorizations, and prepare safety measures and ethical clearance to conduct the exercise.
	3. Conduct and supervise the observation: respond to the questions on the observational guide, taking notes of the observation work. Then, organize and file all the data collected.
	4. Prepare a coding scheme and use it to organize and summarize your findings.

Lessons from the field

The Ministry of Health of the KSA introduced the Mawid application, an electronic interface for scheduling and tracking appointments. Outputs from Mawid showed that primary health care centers (PHCs) were experiencing high rates of patient no-shows. To better understand the causes of these high patient no-show rates and an apparent misreporting from PHC clerks, the HNT conducted an observation to gather more information. The observation captured the PHCs infrastructure and check-in process as follows: (1) PHC building type (governmental: new or old, and rental: villa or apartment), (2) available devices for Mawid's interface (desktops or tablet station area for Mawid users (receptionist area, enclosed filling

room or manager's office) and other surrounding visual stimuli (posters), etc. Additionally, researchers booked an appointment with different PHCs. Visiting as a patient allowed researchers to capture the tangibility of the patient check-in process, attitude and behavioral response of clerks, and resource availability at PHC.

Tool I: Surveys

This tool is used to measure, record, and track quantifiable information about the behavior of interest using a structured set of questions or statements. It can be representative or generalizable to the entire target population or applied to a smaller group to gauge anecdotal evidence systematically.

How to implement	1. Design your questionnaire and decide the collection method. Surveys can be collected online, via phone, or face-to-face. The latter two are more time-consuming and costly but more effective when reaching a population with limited connectivity. They can also be administered by an enumerator or self-administered, with the former being recommended for a population with low education or when asking complex questions.
	2. Prepare the implementation: train the field team, pilot-test the questions, identify and recruit participants, and obtain ethical clearance.
	3. Conduct and supervise the data collection: collect information from participants and record and organize responses on a dataset.
	4. Conduct data analysis.

Lessons from the field

Organ donation is a widespread public health challenge relevant to the MENA region. The HNT in KSA designed a survey to assess Saudis' knowledge and attitudes toward deceased organ donation. The findings show that knowledge of organ donation did not differ between registered and non-registered respondents, but attitudes did, suggesting that attitudes towards organ donation might be affecting the decision to register. The survey served as a deep-dive (diagnostic) study to better understand what influences low organ donation registration rates. It will also inform the design of future empirical research to test different behavioral interventions to encourage registration.

Stage 3: Designing and Experimenting Solutions

1. Activities

Activity 3.1 List potential behavioral and non-behavioral solutions

Once you have finished with Stage 2, you would have a validated diagnostic of structural and behavioral barriers to the desired behavior. The next step in the process is to brainstorm all potential solutions to these barriers. Some barriers may require traditional policy tools such as taxation, regulation or raising awareness whereas others could be tackled using behavioral insights. You don't have to be specific about specific solutions, but it is important to determine whether the problem requires a behavioral intervention and if it is possible to conduct an experimental study.

How to implement	1. Create a list of all behavioral tools that could be used to address barriers to your desired behavior.
	2. Create a list of all traditional policy tools that could be used to implement your policy goals.
	3. Evaluate which traditional tools and which behavioral tools you have the capacity to implement in your desired context. Remove any unfeasible approaches from your evaluation.
	4. For each remaining tool, assess any probable challenges to implementation. What are the possible roadblocks?
	5. For each tool, assess positives and potential opportunities. Is there evidence on the efficacy of these approaches in the past? Conduct any necessary additional research.
	6. Compare and contrast the two lists of tools. Select the approach(es) that best combine(s) feasibility with proven efficacy.

Determining what kind of intervention to use starts with identifying all behavioral tools that can be used to remove barriers to your desired behavior. For example, a researcher wishing to reduce soda consumption could identify two behavioral strategies: 1) reducing the visibility of sugary beverages in the grocery store or 2) decreasing soda portion sizes. The researcher would then identify traditional policy methods, like taxing sodas heavily or running a public health campaign on the negative health impact of sugar. The researcher would then assess which methods were feasible and research the pros and cons of each approach. Finally, with all the relevant information, the researcher and their ministry could determine whether to employ traditional policy or behavioral tools.

At the end of Activity 3.1, you should have a list of barriers with associated behavioral solutions that can undergo an experimental evaluation to test their impact.

Activity 3.2: Define experiment goal and target sample

The first step in designing an experiment is to define the study's goal and the questions you aim to answer. Next, chose the target sample. Thanks to the problem-definition stage and behavioral process map, you will have a clearer understanding of the target audience or population group. In addition, you need to translate the target behavior into an outcome variable that can be measured quantitatively. What exactly do you intend to change? The outcome variable must be measurable and identifiable so that the effect of the experiment can be tested. Before moving forward with implementation, discuss the experiment goal and target sample, and measure outcome variable(s) with all stakeholders and beneficiaries involved in the project.

Behavioral Intervention Design: Considerations and Questions
1. Is it ethical to target this population?
2. Does it adversely affect the target group?
3. Can the target population be clearly defined and accessible to receive the treatment/intervention?
4. Is it feasible to implement and administer?
5. Can it be administered fairly and consistently across the target population?
6. Is it costly and, if so, is the return on investment worth it?
7. Is the outcome variable measurable?
8. How long will it take to show results, and how long are those effects likely to persist?

At the end of Activity 3.2, you should have a clear definition of the experiment goal and the target sample.

Activity 3.3: Conduct research and review literature of behavioral solutions

Once the experiment goal is clearly articulated and the outcome variable(s) identified, the next step is to design the experiment and decide on the interventions. An evidence review (see Tool A) is an excellent starting point for drawing inspiration to later use in your co-creation sessions.

Perform a thorough benchmarking exercise on evidence from interventions implemented in the same or different contexts, countries, or regions. This will help you map the solutions that have and have not worked to address the challenge at hand. Although context matters, this exercise will provide critical insights and ideas to design the specifics of the intervention.

Here are some exciting repositories of behavioral interventions in health policy:

- ➤ Behavioral Evidence Hub - BHUB
- ➤ Inter-American Development Bank Behavioral Economics' repository
- ➤ Innovations for Poverty Action behavioral design projects
- ➤ United Nations Behavioral Science Group
- ➤ The Behavioral Economics Guide 2021

At the end of Activity 3.3, you should have a benchmark of behavioral solutions that were applied in different contexts based on a literature review.

Activity 3.4: Design solutions and conduct co-creation sessions

The design of solutions and behavioral interventions requires a participatory approach. In co-creation session(s) brainstorm solutions. Participants with different roles, knowledge and backgrounds convene to offer diverse insights and propose interventions that respond to the challenge. The sessions allow iterative feedback on ideas and guide the design process (refer to Tools 3.1 and 3.2 on behavioral interventions design methodologies and co-creation sessions). Below are some guiding questions for the design process and co-creation sessions.

> **Solutions Design and Co-Creation Session: Guiding Questions**
> 1. When is the moment of choice/intervention?
> 2. What behavioral principle can tackle the bias/barrier?
> 3. What is the content of the intervention?
> 4. What is the communication channel? (Email, SMS, choice arch, etc.)

Using the co-creation design worksheet (Tool K), each participant proposes an intervention that addresses a specific barrier/bias. After having offered solutions for all barriers, participants complement the interventions proposed by another colleague. Continue iterating until everyone has made contributions to other colleagues' ideas. To prioritize and choose the final design of the intervention, discuss with colleagues the context, the most significant barriers, and the feasibility of implementation.

At the end of Activity 3.4, you should have a co-creation worksheet with a list of prioritized possible interventions and recommended final design.

Activity 3.5: Define experimental evaluation design

An experimental design lays out the process for approaching a research question and finding an answer. It includes: a causal question, predictions, identification strategies and econometric methods, selection of data sources, power calculation, measurement issues, and sensitivity tests. To measure the impact of your design, the gold standard is to perform a randomized control trial evaluation. If randomization is not possible, there are other experimental and quasi-experimental techniques to isolate the effect of the intervention (See Tool L: Experimental design and Tool M: Quasi-experimental design).

After defining the experimental design, prepare an experimental protocol to summarize all the details of the design and implementation plan (see Tool M: Experimental Protocol).

At the end of Activity 3.5, you should have a clear evaluation and empirical design with a protocol document for the experiment.

Activity 3.6: Conduct a research ethical review process

A straightforward internal and informal review process is desirable to assess the intervention's potential risks and unintended consequences. The literature presents different ethics frameworks that could be used for quick internal checks. The FORGOOD framework[15] (Leonhard and Delaney, 2020) is recommended for practitioners aiming to apply behavioral science ethically. It has seven dimensions of critical questions to consider before implementing an intervention (Table 10).

TABLE 9: SUMMARY OF THE FORGOOD ETHICS FRAMEWORK FOR BEHAVIORAL INTERVENTIONS

Fairness	Does the behavioral policy have undesired redistributive effects?
Openness	Is the behavioral policy open or hidden and manipulative?
Respect	Does the policy respect people's autonomy, dignity, freedom of choice, and privacy?
Goals	Does behavioral policy serve reasonable and legitimate goals?
Opinions	Do people accept the means and the ends of behavioral policies?
Options	Do better policies exist, and are they warranted?
Delegation	Do the policymakers have the right and the ability to nudge using the power delegated to them?

Another useful resource is the UNICEF ethics guide on applying behavioral insights 'Ethical Considerations When Applying Behavioural Science in Projects'. It contains a 10-question checklist to guide the user through key ethical decision points during a project. The OECD also recently released a guide on Good Practice Principles for the Ethical Use of Behavioural Science in Public Policy to ensure the safety, protection, and wellbeing of the citizens.

If the unit or department has an internal ethics committee, follow the internal review process to get the experimental study approved before implementation. If not, request approval from an external review

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15 https://bsp.ucd.ie/forgood/

board in a university or a research institution with its own Internal Review Board (IRB). Most IRBs required Human Subject certifications for the researchers conducting the study.

At the end of Activity 3.6, you should have an IRB document (if required) or checklist on the main ethical questions.

Activity 3.7: Prepare and conduct pilot studies

When possible, conducting a validation process in the field through pilot studies increases research quality. Pilot studies, as trial versions of the actual complete study, help identify areas for improvement in the design, process, measurement, and other aspects of the experiment. They help refine the study design, thus increasing its validity and reliability. Notably, however, pilot studies do not help forecast the expected results of the intervention since the sample size is smaller and might not be reliable for generalizing findings. Also, the participants or target audience that took part in the pilot study should not be considered part of the larger/actual experiment (Table 11).

TABLE 10: PILOT STUDIES: DOS AND DON'TS

Pilot Studies Do	Pilot Studies Don't
• Reduce cost and time • Increase research quality, validity and reliability • Improves research design	• Help in forecasting the expected results • Include participants that will take part in the actual experiment sample (different participants need to be recruited)

At the end of Activity 3.7, you should have results from the pilot study with lessons learned and recommendations for changes and improvement in the final experimental design.

Activity 3.8: Roll out the intervention and monitor the implementation

The experiment is rolled out in this activity with close monitoring of the data collection and research implementation. Quality control and checks are a dynamic process during the implementation phase. To ensure internal validity, quality checks on attrition, compliance, spillovers, and contamination need to be conducted throughout the implementation of the experiment[16]. See https://dimewiki.worldbank.org/Monitoring_Data_Quality for more information on how the World Bank monitors data quality.

This activity might also be outsourced to external research institutions to ensure smooth implementation with efficient quality controls and monitoring tools (See Tool O: Monitoring and quality control of the implementation).

At the end of Activity 3.8, you should have logs of the monitoring and quality checks conducted during the implementation.

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16 For more information, see: https://www.povertyactionlab.org/resource/implementation-monitoring
https://www.povertyactionlab.org/resource/real-time-monitoring-and-response-plans-creating-procedures

Activity 3.9: Analyzing impact[17]

Based on the type of variables and evaluation design, decide on the appropriate statistical tests for your analysis (Tool P.1). Then, the data is collected, cleaned, and sorted (Tool P.2). After conducting the data analysis, the findings and results are summarized in a policy brief, reports, and academic papers. In addition to the methodology and discussion of the findings and their practical implications, it is essential to document the strengths and limitations of the research for lessons learned and future research. The table below (11) summarizes these activities with respective resources. When there are implementation challenges worth documenting, make sure they are included in the report. Also, ensure that failed experiments are reported equally to avoid publication bias.

TABLE 11: RESOURCES FOR THE DATA ANALYSIS

Activity	Description	Resources
Activity 3.9.1	Decide on statistical tests and conduct data analysis	https://www.statstutor.ac.uk/resources/uploaded/tutorsquickguidetostatistics.pdf https://www.socscistatistics.com/tests/what_stats_test_wizard.aspx
Activity 3.9.2	Collect, clean, and sort data	https://www.povertyactionlab.org/resource/data-cleaning-and-management https://povertyaction.force.com/support/s/article/data-cleaning
Activity 3.9.3	Synthesize findings, peer-review, and prepare a summary report or policy brief	https://www.povertyactionlab.org/resource/communicating-partner-about-results

2. Tools

Tool J: Behavioral design tools and frameworks

Organizations like the OECD and the BIT have designed behavioral change frameworks to structure and guide the diagnostics and design of behavioral interventions to address public policy challenges. These frameworks use acronyms and checklists to outline and simplify the process. Table 12 lists the leading frameworks in literature with a brief description.

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17 Analyzing Impact does not intend to provide a deep and comprehensive overview on how to run statistical analysis, however, it contains useful resources to guide the exercise.

TABLE 12: BEHAVIORAL INTERVENTIONS FRAMEWORKS

Guide	Description	Website Link
MINDSPACE	Mindspace framework for behavioral change stands for Messenger, Incentives, Norms, Default, Salience, Priming, Affect, Commitment, and Ego. One of the first BI frameworks to be applied in policymaking. The Institute for Government, a UK think tank, was commissioned to create a report on the subject, alongside academics from the London School of Economics and Imperial College.	Dolan, P., Hallsworth, M., Halpern, D., King, D., Vlaev, I. (2010). MINDSPACE: Influencing behaviour through public policy. Institute for Government. https://www.instituteforgovernment.org.uk/sites/default/files/publications/MINDSPACE.pdf
EAST	There are four simple ways to apply behavioral insights: Easy, Attractive, Simple and Timely. The Behavioral Insights Team developed the EAST framework in early 2012.	https://www.bi.team/wp-content/uploads/2015/07/BIT-Publication-EAST_FA_WEB.pdf
BASIC	BASIC (Behavior, Analysis, Strategies, Intervention, Change) is a behavioral framework developed by the OECD in 2019.	https://www.oecd.org/governance/regulatory-policy/tools-and-ethics-for-applied-behavioural-insights-the-basic-toolkit-9ea76a8f-en.htm

Tool K: Co-creation design worksheet

TABLE 13: CO-CREATION DESIGN WORKSHEET

Challenge and desired behavior:	*In school, kids eat unhealthy food Promote healthier food choices in the school cafeteria.*	Guiding questions: When is the moment of choice/intervention? What behavioral principle can tackle the bias/barrier? What is the content of the intervention? What is the communication channel (email, SMS, choice architecture, etc.)?			
Context	Behavioral barrier	Bias	Design - Participant 1	Design - Participant 2	Design - Participant 3	Design - Participant 4

_____

_____

_____

_____

Tool L: Experimental design

TABLE 14: RESOURCES FOR EXPERIMENTAL DESIGN

What is a Randomized Control Trial (RCT)	https://www.povertyactionlab.org/resource/introduction-randomized-evaluations White, Howard; Sabarwal, Shagun; de Hoop, Thomas (2014). Randomized Controlled Trials (RCTs): Methodological Briefs - Impact Evaluation No. 7, Methodological Briefs no. 7. https://www.unicef-irc.org/publications/pdf/brief_7_randomized_controlled_trials_eng.pdf Relevant Courses: https://edge.edx.org https://micromasters.mit.edu/dedp/ https://mitxonline.mit.edu/courses/course-v1:MITxT+14.310x/
What is an impact evaluation?	https://www.povertyactionlab.org/resource/teaching-resources-randomized-evaluations Muralidharan, Karthik and Paul Niehaus. 2017. "Experimentation at Scale" NBER Working Paper 23957. https://www.nber.org/papers/w23957.pdf
Measurements: Outcomes and Indicators	https://www.povertyactionlab.org/media/file-research-resource/l2measurement
Why randomize?	https://www.povertyactionlab.org/media/file-research-resource/l3whyrandomize
How to randomize?	https://www.povertyactionlab.org/media/file-research-resource/l4howtorandomize
Power and sample size	https://www.povertyactionlab.org/media/file-research-resource/l5choosingtherightsamplesize
Threats and analysis	https://www.povertyactionlab.org/media/file-research-resource/l6threatsandanalysis
Generalizability	https://www.povertyactionlab.org/media/file/esp-generalizability

Tool M: Quasi-experimental design

Other methods of impact evaluations adopt a quasi-experimental design when randomization fails (such as pre-post, the difference in difference, regression discontinuity design, statistical matching, and instrumental variables). The resources below describe each method, the assumptions needed, and the data required:

➤ https://blogs.worldbank.org/impactevaluations/curated-list-our-postings-technical-topics-your-one-stop-shop-methodology

➤ https://www.povertyactionlab.org/media/file-research-resource/impact-evaluation-methods

➤ Handley, M. A., Lyles, C. R., McCulloch, C., & Cattamanchi, A. (2018). Selecting and Improving Quasi-Experimental Designs in Effectiveness and Implementation Research. *Annual review of public health*, *39*, 5–25. https://doi.org/10.1146/annurev-publhealth-040617-014128

➤ Harris AD, McGregor JC, Perencevich EN, et al. *The use and interpretation of quasi-experimental studies in medical informatics*. J Am Med Inform Assoc. 2006;13(1): 16–23. doi:10.1197/jamia. M1749.

Tool N: Experimental protocol

The experiment protocol is a document summarizing all the details related to the trial design: purpose, methodology, sampling techniques (eligibility and inclusion criteria), types of treatment groups and experiment overview, randomization and sample size, outcome variables, data privacy and sharing, roles and responsibilities, and implementation plan (Table 15).

TABLE 15: TEMPLATE FOR BEHAVIORAL EXPERIMENT PROTOCOL

Protocol for Behavioral Experiment	
The Challenge and the Target Behavior	
What is the behavior/problem? *What is the desired behavior?*	
Target Population	
Who is the target audience?	
Eligibility and Inclusion Criteria	
Research Design	
What is the experimental design?	
Outcome	
What are the outcome variables?	
Unit of measurement?	
Intervention	
Specify the behavioral interventions?	
Data Privacy/Sharing	
Implementation Plan	
Division of roles and responsibilities	

Tool O: Monitoring and quality control of the implementation

During the implementation of the intervention, ensure close and continuous monitoring of the experiment as well as periodic quality checks. Tools include observational visits, audio audits, backchecks, high-frequency checks, nightly monitoring reports, and machine learning. In addition, validate data and proper treatment assignment. This will also include monitoring and managing the team members and stakeholders involved in the implementation (effective roles and responsibilities).

For more resources on monitoring data quality:

https://dimewiki.worldbank.org/Monitoring_Data_Qualityhttps://dimewiki.worldbank.org/Monitoring_Data_Quality

https://dimewiki.worldbank.org/Field_Management

Tool P: Data analysis

Table (16) summarizes valuable tools that can help implement activities related to data analysis.

TABLE 16: RESOURCES FOR THE DATA ANALYSIS TOOLS

Tool	Description	Resources
Tool P.1	Choice of statistical tests	https://stats.oarc.ucla.edu/spss/whatstat/what-statistical-analysis-should-i-usestatistical-analyses-using-spss/
		https://www.socscistatistics.com/tests/what_stats_test_wizard.aspx
		https://www.statstutor.ac.uk/resources/uploaded/tutorsquickguidetostatistics.pdf
		https://www.povertyactionlab.org/resource/data-analysis
		https://stats.oarc.ucla.edu/spss/whatstat/what-statistical-analysis-should-i-usestatistical-analyses-using-spss/
		https://online.stat.psu.edu/statprogram/reviews/statistical-concepts/hypothesis-testing
Tool P.2	Data Cleaning and sorting	https://www.povertyactionlab.org/resource/data-cleaning-and-management
		https://www.povertyactionlab.org/resource/data-security-procedures-researchers

Stage 4: Assessment: Feasibility and Scalability

Once you have finished analyzing the data and have measured the effect of your intervention, you can perform other activities to determine if and how to scale-up the intervention to other populations.

1. Activities

Activity 4.1: Assess the external validity of your results

Throughout stages 1, 2 and 3 you were careful in outlining the decision-making process for a specific audience (activity 2.1) and defining a target sample (activity 3.2). Your results are robust for this target population, but it is important to consider the replicability of your findings if applied in a larger or different population.

It is possible that your intervention, as designed and tested, is only effective on your original target population. Expanding it to other audiences would produce no (or opposing) results. Avoid such outcome by conducting heterogeneity checks, contrast your findings to other research that tested a similar intervention, and determine with colleagues and peers if the intervention results are likely to be replicated when scaled-up.

How to implement	1. Conduct heterogeneity analysis: Assess how your results change across different settings (geographies, ages, gender, etc.).
	2. Compare your results to other evidence available: Assess how your findings differ or agree with similar research in diverse contexts and populations.
	3. Discuss with your team, experts and researchers on intervention scale-up expected outcomes.

JPAL has developed a generalizability framework worth exploring: https://www.povertyactionlab.org/blog/5-24-17/practical-framework-evidence-informed-policy-addressing-generalizability-puzzle

At the end of Activity 4.1, you should have decided if the intervention results are generalizable to a larger population.

Activity 4.2: Assess lessons learned and adapt protocols

Prior to scaling up a program, it is critical to reflect on the lessons learned during the initial implementation and determine what needs to be adapted. This will provide valuable insight into executing the future intervention more effectively. Identify the strength of the initial project and the ways in which it could be improved. Some suggested thought questions are provided below:

How to implement: Lessons learned guiding questions	1. What parts of the experiment did not go as planned? What were the specific bottlenecks or issues?
	2. How can these bottlenecks and issues be fixed in future iterations?
	3. What went well in the project? What strengths can future implementations draw upon?
	4. Were there any potential problems that did not come to fruition? Should this be a concern for additional implementations?
	5. Were there any unusual circumstances surrounding this project? What were those? Can they be replicated?
	6. Do you expect new challenges during scale-up? How can you mitigate these?

At the end of Activity 4.2, you would have created a repository of lessons learned and established what parts of the intervention need to be adapted for a successful scale-up.

Activity 4.3: Conduct Cost-Effectiveness Analysis (CEA)

Cost-effectiveness analysis (CEA) is a tool that estimates the ratio of costs to impacts of an intervention. As it is a commonly used measure, it will allow you to compare different interventions evaluated in different countries in different years and will help you prioritize interventions with higher (expected) value for money.

Input	Output
• An estimate of the intervention's impact • The cost of the intervention	• Dollars spent per additional treated unit of analysis

JPAL has developed a tool on how to conduct cost-effectiveness analysis with costing guidelines and templates that can be found at https://www.povertyactionlab.org/resource/conducting-cost-effectiveness-analysis-cea. Additional resources can be found in Tool Q.

After you have performed the CEA for this intervention, revisit your unit or organization priorities (see Annex 1. Internal Flowchart to Prioritize Policy Challenges at the HNT) and compare your results to other interventions' CEAs. CEA may not, by itself, provide sufficient information to inform all policy or investment decisions, but it can be a useful starting point for governments, donors, program implementers, and researchers when choosing between different interventions that aim to achieve the same outcome. This comparison can guide your decision on which intervention(s) will produce the best results given your financial resources available.

At the end of Activity 4.3, you should have a measurement and a comparison of your intervention's value for money.

Activity 4.4: Determine your resources available

Health public entities have countless challenges to address, and it is unlikely that they can tackle them all at the same time. Considerations around budget, infrastructure, staff capacity and political will are critical to ensure correct scale-up and sustainability in time of the intervention.

> **Available resources: Guiding Questions**
>
> 1. What is the budget available for scaling-up the intervention? Is there a budget to sustain the intervention in the medium or long-term?
> 2. Who should perform the scale-up? Is coordination with other units or departments necessary?
> 3. Does the team responsible have the capacity (technical and time) to conduct the scale-up?
> 4. Is there infrastructure and technology in place to expand the intervention to a larger population?
> 5. Is political acceptance or backlash expected from the intervention's scale-up?

At the end of Activity 4.4, you should have mapped what kind of resources you possess to scale-up and sustain the intervention in time.

Activity 4.5: Prepare an implementation guide, path to scale and outreach products

If you have determined that the intervention is generalizable to a broader population, that it is cost-effective and that you have the required resources for it successful scale-up and continuity, then you can prepare recommendations, guidelines and plans grounded in the evidence generated. An implementation guide is a document that maps the learning about effective intervention implementation with recommended actions.

How to implement	1. Create a document that gathers the intervention's implementation steps.
	2. Include a path to scale plan that charts a route from the end of the evaluation to evidence use at scale.
	3. Prepare outreach products for the findings and the recommended actions for the team responsible for the scale-up and other relevant stakeholders.

At the end of Activity 4.4, you should have a roadmap on how to implement at scale your intervention.

2. Tools

Tool Q: Costing guidelines and templates

- ► J-PAL Costing Guidelines

- ► J-PAL Costing Template

- ► Basic J-PAL Costing Template

- ► Comparative Cost-Effectiveness Analysis to Inform Policy in Developing Countries
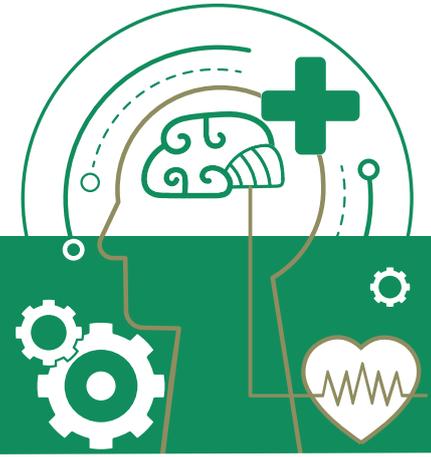
III. Health Behavioral Drivers

Behavioral drivers influence different stages in the health behavioral change process and can either hinder or facilitate it. For example, these drivers affect whether people seek the information and knowledge needed to achieve behavioral change, have the right intentions and beliefs to make the change, or take meaningful action to implement the change. We categorize them into three areas: individual, social, and contextual. Table 17 presents a list of the most relevant and prevalent behavioral health drivers. It aims to aid the Toolkit's user identify and prioritize barriers and outline the decision-making process (see Activity 2.2).

TABLE 17: DEFINITION AND EXAMPLES OF BEHAVIORAL HEALTH DRIVERS

Concept	Definition	Example
Individual Drivers		
Self-Efficacy	Refers to the perception or evaluation of one's abilities to complete tasks, meet objectives and face challenges.[18] Individuals assess whether they will succeed or fail on a specific task, often either overvaluing or undervaluing their cognitive strengths based on external factors.	Physical health is, at minimum, indirectly affected by local information flows and self-efficacy: only if someone believes that their actions can make a difference to their wellbeing and ideally observes this narrative in others is there an impetus to make healthier decisions.
Present Bias	The tendency to disproportionately value immediate rewards rather than a higher-value, delayed reward.	When asked to choose between a healthy snack and an unhealthy snack to consume next week, people prefer the healthy choice. However, they prefer the unhealthy snack to consume today.
Intention-Action Gap	Failure to translate one's intentions into actions and behaviors.	The patient understands the importance of symptom monitoring but does not adhere to it.
Overconfidence Bias	Overestimation of one's own performance and over-placement of one's own performance relative to others.	Doctors who jump to a particular conclusion about what disease a patient has may then ask questions and look for evidence that tends to confirm their diagnosis.

18 Social Cognitive Theory, the Health Belief Model, and the Transtheoretical Model.

Concept	Definition	Example
Optimism Bias	The tendency to overestimate the likelihood of positive events and underestimate negative ones.	Smokers underestimate the likelihood of dying from cigarettes.
Availability Heuristic	The tendency to assess the probability of some event by the ease with which the event comes to mind.	People overestimate the odds of dying from getting a vaccine vs. not getting it.
Loss Aversion	The pain experienced from losses is twice as great as the pleasure experienced from equivalent gains.	Subsidizing healthy food options is less effective in promoting healthy eating than taxing unhealthy food options. People value the gain of a discount on healthy foods less than the loss of having to pay more for unhealthy food (Cawley, 2011).
Anchoring Bias	Initial exposure to a certain number or attribute serves as a point of reference and impacts subsequent judgments.	When faced with a decision under uncertainty, individuals attribute too much weight to the initial exposure, which, without further awareness, distorts estimates and judgements.
Cognitive Overload	The amount of mental effort and memory used at a given time. Overload occurs when the volume of information or choices provided exceeds an individual's capacity to process it. It results in difficulty making good decisions or understanding an issue.	When participants in a study were asked to choose between cake and fruit salad, participants who had been given a challenging mental task (remembering a seven-digit number) were 50 percent more likely to choose cake than were those given an easier mental task (remembering a two-digit number) (Shiv and Fedorikhin, 1999). Cognitive overload can impact the capability of an individual to follow up on the different stages of a screening process. Even though invitation letters increase the uptake of preventive screening programs, they often contain an overwhelming amount of information, thereby limiting the invitation's potential to increase screening uptake.
Status Quo Bias	The tendency to stick to the current state of affairs; a preference for things to remain the same.	Clinicians are habitual in their choice of pharmaceutical agents, relying on drugs they became familiar with in medical training or learned about through pharmaceutical promotions (Scherer, 1993; Frank, 2007). This has translated into a reluctance to use more effective new drugs or lower-cost versions of older drugs (generics) (Hellerstein, 1998).

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Ministry of Health

Concept	Definition	Example
Confirmation bias	The overweighting of evidence is consistent with a favored belief, underweighting evidence against a favored belief, or a failure to search impartially for evidence. Or The tendency to selectively search for and consider the information in a way that confirms one's beliefs while ignoring or underweighting evidence that contradicts them.	With the Covid-19 vaccine, people tend to read supporting information instead of conflicting information. This thwarts attempts to discredit false information that vaccine-hesitant people hold, as they tend to ignore evidence contrary to their beliefs.
Cognitive Dissonance	It refers to the mental conflict that occurs when a person's behaviors and beliefs do not align. It may also happen when a person holds two beliefs that contradict one another.	People smoke even though they have read countless times that it is dangerous. This self-contradiction causes dissonance, so people need to develop cognitive tools to justify the contradiction. For example, by overly exaggerating how much pleasure they get out of smoking and underestimating the future costs.
Social Drivers		
Social Influence/ Herding	The tendency to do what others around us are doing or expect us to do often leads to herd behavior.	
Social Norms	The unwritten rules governing behavior within a society. Social norms signal appropriate behavior and are classed as behavioral expectations, or rules within a group of people that often pressure individuals to perform or refrain from performing specific actions.	Tracking over 12,000 individuals over more than 30 years, Christakis and Fowler (2007) find clear evidence of the spread of obesity through social ties. An individual's risk of becoming obese increased by 57 percent if a friend became obese during a specific timeframe.
Groupthink/Peer Effect	Groupthink occurs when a group makes poor decisions because of high levels of within-group cohesion. Describes the influence exerted by a peer group on its members to fit in with or conform to the group's norms and expectations.	Kremer and Levy (2008) found that peers influence college students' preferences regarding alcohol consumption, and male students randomly assigned to a roommate who reported drinking alcohol before college have lower grades on average. Powell, Tauras, and Ross (2005) also found an essential role of peer influences on youth smoking behaviors.
Stigma	The negative social attitude attached to a characteristic of an individual that may be regarded as a mental, physical, or social deficiency can lead unfairly to discrimination against and exclusion of the individual.	In the United States, the uptake of disability programs became stigmatized to the extent that it created barriers and discouraged the uptake of the screening process for individuals declared disabled (Hansen et al., 2014). Such stigma can also influence the uptake of cancer screening. In the U.K., screening and testing positive for HPV—a risk factor for cancer—accompanied individuals feeling stigmatized (McCaffery et al., 2006).

Concept	Definition	Example
Contextual Drivers		
Framing Effects	The tendency to draw different conclusions depending on how information is presented. People's choices are influenced by how information is presented, leading to changes in preferences due to inconsequential variations in the wording or representation of the choice problem.	Food options or incentives can be presented to highlight the positive or negative aspects of a decision, leading an option to be perceived as more or less attractive. People are more likely to choose an 80% fat-free yogurt than one that is 20% full fat.
Priming	Individuals' exposure to a stimulus influences actions and behaviors in subsequent/unrelated behaviors without any awareness or connection.	Priming people with words related to a healthy lifestyle increases their likelihood of exercising.
Choice Architecture	People's behaviors are influenced by the context within which they make decisions.	Rearranging the school cafeteria by putting the healthy options first increases the likelihood of children consuming fruits.

IV. IDEA Framework in Practice: The Effect of Hand Hygiene Zones on Emergency Room Healthcare Workers
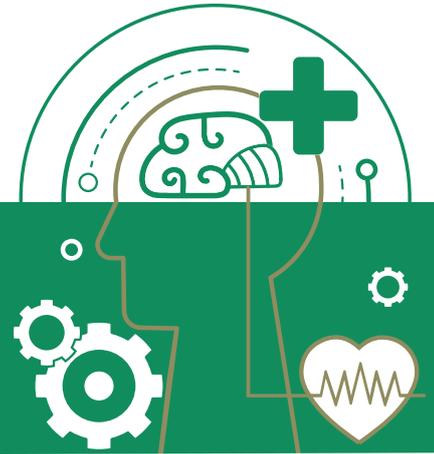
Stage 1: Identifying and Defining Problems

Hand hygiene is crucial for all healthcare providers because it is the most efficient strategy for preventing the transmission of infections, thus reducing patients' length of stay and the use of resources. However, we identified that adherence to hand hygiene practice by healthcare workers (HCWs) is lower than desired. Compliance data in hospitals governed by the Ministry of Health (MoH) show a range from 5% to 80%. As a result, patients continue to experience preventable infections from the transmission of diseases caused by poor hand hygiene. We hypothesize that there are behavioral barriers that impede correct hand washing practices.

Stage 2: Deep-Diving and Diagnosing Behavioral Barriers

We conducted field interviews in MOH hospitals to better understand the lack of compliance with hand hygiene guidelines by healthcare workers. Based on our observations and prior research, a Behavioral Map was used to identify and focus on behaviors that are contributing to this problem. Hypothesized bottlenecks that impede desired behavior include a feeling that proper hand hygiene is a hassle, particularly when HCWs are in a hurry, and a feeling that other HCWs do not comply, making it a social norm. Other cognitive biases include overconfidence that their hands are clean and the (mistaken) belief that gloves are sufficiently protective.

Figure 6: The Behavioral Map illustrates hypothesized behavioral bottlenecks that conflict with the desired behavior of HCWs, along with the primary and secondary suggested behavioral strategies of the appropriate intervention (Green boxes)

Desired Process	Hypothesized behavioral bottlenecks	Behavioral Strategy	BI Intervention (s)
Understand the value of hand hygiene	I am in a hurry (Hassle)	Priming	Create visual hand hygiene zones around each hed
	It is not routine/it is not part of my procedures (Hassle/Heuristic)	Create full-time surveillance	
Recognize each moment as it arises	Other HCWs are not doing it (Social norms)	Hold consultants accountable for hand hygiene of their team	Recruit patients to ask for hand hygiene
	My hands are already clean (Overconfidence)	Emphasize the impact on patient safety	
Perform hand hygiene	I am wearing gloves (Misinformation)	Address HCWs' misconceptions	Signs with specific, behaviorally informed messages

The main suggested behavioral strategies informed by the Behavioral Map are priming the environment and creating full-time surveillance. In addition, we proposed recruiting patients to remind HCWs to perform hand hygiene as a way to reinforce the desired behavior. The intervention development went through several stages to test and imaprove the intervention materials as well as to solicit feedback from experts regarding the target behavior and what types of messages should be used for addressing HCWs.

Stage 3: Designing and Experimenting Solutions

In an RCT of 15 hospitals, we addressed behavioral barriers by a) displaying posters targeting the reasons that hamper HCWs from performing hand hygiene, b) creating a sense of urgency by placing reflective stickers around each bed, thus creating a visual hand hygiene zone, and c) providing patients with stickers that non-verbally request hand hygiene performance before touching the patient. Observers, who were blind to both condition and the purpose of the experiment, were trained to record the frequency with which HCWs touched patients with appropriate hand sanitization. After analyzing the data with a difference-in-differences approach, we did not find that the set of visual cues significantly increased proper or overall compliance to hand hygiene in treatment hospitals.

Stage 4: Assessment: Feasibility and Scalability

Hand hygiene is an ongoing issue in hospital care, and one still in need of effective ways to improve it. There are likely higher cost approaches to coercing greater compliance with WHO hand hygiene guidelines, but evidence from behavioral science suggests HCWs may potentially be nudged toward compliance from lower-cost interventions. Though our low-cost intervention did not produce a statistically significant impact, subsequent experiments may build on what we learned here. We learned that our posters and stickers were less noticeable than we anticipated, and we were limited by data collection constraints. Future experiments may focus on testing more arresting visual cues, as well as on ways to train observers and collect data more reliably.
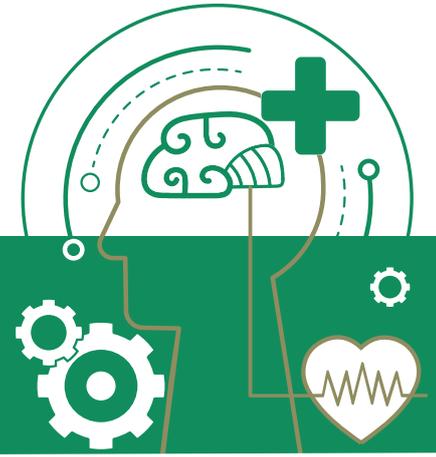
V. Conclusion

This toolkit was an effort led by the Nudge Unit of the Ministry of Health (MOH) of Saudi Arabia and the technical support of the World Bank. It intends to guide behavioral science practitioners, especially those in public health and other sectors, to identify, diagnose, design, and implement behavioral interventions. By placing the citizen at the heart of development outcomes, the user can apply an evidence-based understanding of human behavior to solve pressing development challenges.

Aiming to shift behavioral science from an ad-hoc and opportunistic response to policy problems to something systematically applied within programming and operations, this toolkit is available to any audience for public use. The rationale, practical guidelines, and examples described in detail throughout the document can help advance and improve the application of behavioral insights for better public policy design around the world. The toolkit will be a key instrument for the HNT in KSA to continue expanding the use of behavioral insights to address public health challenges. We hope that nudge units and practitioners worldwide can also benefit from it.

VI. Annexes

Annex 1: Internal Flowchart to Prioritize Policy Challenges at the HNT

Policy Challenge

Does it contribute to the HNT's Objectives?
- Yes
- No

Is the beneficiary committed and engaged
- Yes
- No → Rejection

Does the beneficiary have the right infrastructure for implementing?
- Yes
- No → Rejection

Are there clear policies and procedures?
- Yes
- No → Rejection

Can the policy challenge be tackled without policies in place?
- Yes
- No → Rejection

Is data available and accessible?
- Yes
- No → Rejection

Can we put a plan to gather and collect data?
- Yes
- No → Rejection

Implement IDEA Framework

Annex 2: List of Behavioral Projects by the HNT

The following table provides a list of examples of behavioral projects conducted by Health Nudge Unit at the KSA Ministry of Health. For a complete list of projects, please contact the HNU.

Study title	Year	Aim	Design	Sample	Intervention(s)	Data collection method	Nudge strategy	Main outcome	Results (* sig)
The Effect of Hand Hygiene Zones on Emergency Room Healthcare Workers	2019	To test the efficacy of visual cues on health care workers' compliance with hand hygiene guidelines.	RCT, 2 arms	15 ER departments	Fluorescent tapes and signs. Yellow-and-red-checked tape was wrapped around each hospital bed to create a visual concept of a zone, and an A4-sized yellow reflective rectangular sticker was placed on these "zone lines" reading "HAND HYGIENE ZONE. CLEAN YOUR HANDS."	Observation	Salience	The percentage of healthcare staff in compliance with WHO hand-hygiene practices at the first moment "before touching a patient."	18% increase in intervention group*
Nudging Parents Increases Children Clinical Screening in Saudi Arabia: A Mixed-Methods Study	2021	To examine the efficacy of reminders to increase utilization of screening clinics.	Prospective Pre-Post, mixed-methods	117 parents	Three unique SMS were sent to parents at one-week intervals.	Electronically from the national booking system	Reminders	The number of parents who booked an appointment for their children at the students' health-screening clinics.	9.4% increase after intervention*
Increasing the Utilization of Well-baby Screening in Primary Health Care Centers through Auto-scheduled Appointment	2021	To examine the efficacy of the default option in children's attendance at well-baby clinics.	RCT, 2 arms	250 parents	System-generated appointments followed by confirmatory SMS.	Electronically from the national booking system	Default	The percentage of participants attending their appointment.	17.6% improvement*

Study title	Year	Aim	Design	Sample	Intervention(s)	Data collection method	Nudge strategy	Main outcome	Results (* sig)
A National Nudge Study of Different Framed Messages to Increase COVID-19 Vaccine Uptake in Saudi Arabia: A Randomized Controlled Trial	2021	To examine the efficacy of five framings on nudging citizens to take the COVID-19 vaccine.	RCT, 6 arms	7,547 adult citizens	App pop-up notifications. Each treatment group received one message type (commitment, loss aversion, salience, social norms, or ego.) The pop-up messages concluded with a direct link (universal for all types of smartphones to ensure inclusivity) to book the vaccine appointment. Adding the booking link ensured participants were directed to the desired behavior immediately after reading the message. These messages appeared as a pop-notification on participants' smartphones. The control group did not receive any messages or alerts.	Electronically from the national vaccine registry	Framing	The percentage of participants who booked their appointments in each group by the end of the fifth day from receiving the message.	19-21% increase in intervention groups*
Effectiveness of Using Commitment Device to Improve Attendance to Virtual Clinic Appointments among Patients in Saudi Arabia	2021	To assess the efficacy of using commitment device to improve health appointment attendance.	RCT, 2 arms	8 primary health care centers (PHCs)	Printed consent and journey flowchart. The intervention consisted of a consent form that included patients' personal information (name, national ID number, and mobile number), three clear statements explaining the next steps regarding the upcoming virtual appointment, and the signatures of both the doctor	Data was collected at the PHC from attendance records	Commitment	The percentage of show-up rates for virtual appointments.	16.9% improvement in attendance*

Study title	Year	Aim	Design	Sample	Intervention(s)	Data collection method	Nudge strategy	Main outcome	Results (* sig)
					and the patient. Patients were asked to check the box for the following three statements: (1) "I agree to have my next appointment at the virtual clinic," (2) "I will be informed about the date and time of my virtual appointment," and (3) "I will attend my virtual appointment using the 'Sehhaty' application."				
The Effect of Partitioning on Food Consumption: A Randomized Controlled Trial	2022	To test the efficacy of partitioning on food consumption.	RCT, 2 arms	139 adults	Wrapped vs. unwrapped food pieces. Participants in the intervention group received one box of chocolates, each piece wrapped separately, whereas participants in the control group received a package of unwrapped chocolates.	Counting the number of chocolate pieces consumed by each participant	Decision point, sludge	The percentage of pieces consumed in each group.	56% consumption reduction in intervention group*

Annex 3: Examples of HNT Projects

Year	Aim	Design	Sample	Intervention(s)	Data collection method	Nudge strategy	Main outcome	Results (* sig)
2019	To test the efficacy of visual cues on health care workers' compliance with hand hygiene guidelines.	RCT, 2 arms	15 ER departments	Floruescent tapes and signs. Yellow-and-red-checked tape was wrapped around each hospital bed to create a visual concept of a zone, and an A4-sized yellow reflective rectangular sticker was placed on these "zone lines" reading "HAND HYGIENE ZONE. CLEAN YOUR HANDS."	Observation	Salience	The percentage of healthcare staff in compliance with WHO hand-hygiene practices at the first moment "before touching a patient."	18% increase in intervention group*
2021	To examine the efficacy of reminders to increase utilization of screening clinics.	Prospective Pre-Post, mixed-methods	117 parents	Three unique SMS were sent to parents at one-week intervals.	Electronically from the national booking system	Reminders	The number of parents who booked an appointment for their children at the students' health-screening clinics.	9.4% increase after intervention*
2021	To examine the efficacy of the default option in children's attendance at well-baby clinics.	RCT, 2 arms	250 parents	System-generated appointments followed by confirmatory SMS.	Electronically from the national booking system	Default	The percentage of participants attending their appointment.	17.6% improvement*
2021	To examine the efficacy of five framings on nudging citizens to take the COVID-19 vaccine.	RCT, 6 arms	7,547 adult citizens	App pop-up noitifcations. Each treatment group received one message type (commitment, loss aversion, salience, social norms, or ego.)	Electronically from the national vaccine regestry	Framing	The percentage of participants who booked their appointments in each group by the end of the fifth day from receiving the message.	19-21% increase in intervention groups*

Year	Aim	Design	Sample	Intervention(s)	Data collection method	Nudge strategy	Main outcome	Results (* sig)
				The pop-up messages concluded with a direct link (universal for all types of smartphones to ensure inclusivity) to book the vaccine appointment. Adding the booking link ensured participants were directed to the desired behavior immediately after reading the message. These messages appeared as a pop-notification on participants' smartphones. The control group did not receive any message or alerts.				
2021	To assess the efficacy of using commitment device to improve health appointment attendance.	RCT, 2 arms	8 primary health care centers (PHCs)	Printed consent and journey flowchart. The intervention consisted of a consent form that included patients' personal information (name, national ID number, and mobile number), three clear statements explaining the next steps regarding the upcoming virtual appointment, and the signatures of both the doctor and the patient. Patients were asked to check the box for the following three statements: (1)	Data was collected at the PHC from attendance records	Commitment	The percentage of show-up rates for virtual appointments.	16.9% improvement in attendance*

Year	Aim	Design	Sample	Intervention(s)	Data collection method	Nudge strategy	Main outcome	Results (* sig)
				"I agree to have my next appointment at the virtual clinic," (2) "I will be informed about the date and time of my virtual appointment," and (3) "I will attend my virtual appointment using the 'Sehhaty' application."				
2022	To test the efficacy of partitioning on food con-sumption.	RCT, 2 arms	139 adults	Wrapped vs. unwrapped food pieces. Participants in the intervention group received one box of chocolates, each piece wrapped separately, whereas participants in the control group received a package of unwrapped chocolates.	Counting the number of chocolate pieces consumed by each participant	Decision point, sludge	The percentage of pieces consumed in each group.	56% consumption reduction in intervention group*