

Nudging Healthy Diets

Behavioral Determinants of Nutritional Practices of Pregnant Women, Lactating Women, and Caregivers of Children Aged 6-23 Months



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giz Deutsche Gesellschaft
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Zusammenarbeit (GIZ) GmbH



Seventeen
Triggers

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The initial concept of this work was inspired by a project conducted by UNICEF and Save the Children in Myanmar, which ultimately resulted in the Banana Bag, a feeding toolkit filled with tools that encouraged caregivers to correctly introduce solid food to their babies. This project leveraged the tools and main campaign message of the Banana Bag as a starting point to adapt solutions for the project context in Cambodia. See [Annex 1: Banana Bag](#).

About GIZ-MUSEFO

The "Multisectoral Food and Nutrition Security" (MUSEFO) project was launched in 2015. It forms part of the Global Programme "Food and Nutrition Security, Enhanced Resilience" under the "One World – No Hunger" initiative from the German Federal Ministry for Economic Cooperation and Development. The project partners with the Cambodian Council for Agricultural and Rural Development (CARD).

<https://www.facebook.com/MusefoCambodia>

About 17 Triggers

17 Triggers is a global behavior change lab, using human-centered design (HCD) to solve real problems. The team has been operating in Southeast Asia and Africa since 2010 to design solutions that improve the lives of people at the base of the economic pyramid. The team thrives on working with clients to tackle these challenges, and to ensure that innovative solutions achieve measurable results and outcomes.

www.17triggers.com

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Glossary and Acronyms

Key Terms

24-Hour Dietary Recall (24HR): A 24-hour dietary recall is a structured interview intended to capture detailed information about all foods and beverages consumed by the respondent in the past 24 hours.

Drop Off Test: A method to test high fidelity tools with target groups. In this research project, physical tools were designed or purchased and packaged together into nudge kits. The nudges and tools were dropped off at people's homes for two weeks during which the tools could be used and tested. At the end of the testing period, researchers interviewed target groups to get feedback.

Elephant, Rider, and Path: A behavioral theory metaphor first introduced by psychologist Jonathan Haidt and further elaborated on in Chip and Dan Heath's 2010 book *Switch*. "The Elephant and the Rider" are used to explain the need to appeal to both emotions and logic when attempting to motivate change. The Elephant represents feelings, the Rider represents rational thinking, and the Path represents the surrounding environment. Change advocates usually (mistakenly) focus on rationality. 17 Triggers adapted the Elephant Rider and Path framework as the project team's primary framework to analyze human behavior.

How Might We (HMW): A common formulation term used to reframe insights into opportunity areas and innovate on problems found during target group research. How Might We and other terms are a rewording of the core need, uncovered through target group research, and are deployed to help teams focus.

Human-centered design (HCD): An approach to problem solving. IDEO.org summarizes the meaning behind the term thusly, "Human-centered design is about cultivating deep empathy with the people you're designing with; generating ideas; building a bunch of prototypes; sharing what you've made together; and eventually, putting your innovative new solution out in the world."

Minimum Dietary Diversity (MDD): The MDD score for children 6-23 months old is a population-level indicator designed by the World Health Organization (WHO) to assess diet diversity as part of infant and young child feeding (IYCF) practices among children 6-23 months old. It is based on eight food groups.

Minimum Dietary Diversity for Women (MDD-W): MDD-W is a population-level indicator of diet diversity validated for women aged 15-49 years old. The MDD-W is a dichotomous indicator based on ten food groups and is considered the standard for measuring population-level dietary diversity in women of reproductive age.

Nudge: A nudge is any aspect of the choice architecture that alters their behavior in a predictable way, without forbidding any options or significantly changing their incentives.

Nudges are generally viewed as low-cost, behaviorally-informed, choice-preserving solutions to various personal and societal issues. Nudges are generally easy to implement, are relatively effective, and allow people to make their own choices, which has led to their widespread adoption in both the private and the public sectors, in fields such as finance, education, and health.

Persona: For the purposes of this research project, a persona is a representation of the needs, thoughts, and goals of the project target group. Personas are created based on a synthesis of what project teams have learned about the end users and their context and based on themes or common characteristics project teams have observed.. This approach is research-based and designed to help you better understand your customers' needs, behaviors, experiences, and goals.

Pilot Test: A pilot is a longer-term test of a solution and a critical step before going into final and full implementation. A pilot is more rigorous than prototype testing or a soft roll out and allows project teams to learn if the proposed solution is effective, desirable, feasible and viable, and what it might look like to implement it at scale. If a pilot is a success, the solution is validated and ready to implement.

Pitch Test: A conversational-based testing method to quickly and easily test early low-fidelity prototypes. Target group reactions and feedback allow researchers to learn and iterate solutions without having to make the resource investment into actually producing the solution.

Vision of Perfect: A statement which aims to align the project team and stakeholders on the end target group solution. The statement should include what action the project aims to facilitate the target group to take and the intended outcome and impact. The statement is first drafted at the beginning of the HCD process and revised to be more specific during project implementation.

Acronyms

CG	Caregivers
ERP	Elephant Rider and Path
FGD	Focus Group Discussion
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
HCD	Human-Centered Design
HMW	How Might We
IDI	In Depth Interview
IDDS	Individual Dietary Diversity Scores
LW	Lactating Women
MIL	Mother-in-law
MOH	Ministry of Health
MVP	Minimum Viable Product
NNP	National Nutrition Program
PLW	Pregnant and Lactating Women

PW	Pregnant Women
RACHA	Reproductive and Child Health Alliance
VHSG	Village Health Support Group
VOP	Vision of Perfect
WRA	Women of Reproductive Age

Projection Rationale

Many Cambodian women of reproductive age (WRA) and their young children, especially those under the age of five, are at risk of malnourishment. One cause is poor diets with improper frequency, quantity, and diversity of food. Another cause is poor hygiene, which contributes to low absorption of dietary nutrients.

About 14% of Cambodian WRA are underweight and malnourished, lacking in key nutrients required for healthy pregnancies, including folic acid, vitamin D, and iodine. Additionally, a total of 18% of Cambodian WRA are overweight or obese - a trend that has been steadily increasing in recent years.

Roughly 32% of Cambodian children under the age of five are chronically malnourished, with another 10% considered wasted, and roughly 23% underweight (National Institute of Statistics 2015). Additionally, only 30% of Cambodian infants 6 to 23 months old are fed a WHO-recommended diet.

Malnourishment due to micronutrient deficiencies increases the risk of complications during pregnancy and childbirth, and increases the probability of low birth weight amongst newborns, which can lead to physical and cognitive growth impairments.

The objective of GIZ's MUSEFO project, launched in 2015, has been to improve the food and nutrition situation for the most vulnerable, particularly women of reproductive age (WRA) and young children under two years of age, in both Kampot and Kampong Thom provinces. The MUSEFO project implements the Care Group Approach, which entails nine Care Group sessions over a nine-month period for Pregnant Women (PW), Lactating Women (LW), and Caregivers (CG) of children under two years old. During the sessions, participants learn about improved nutrition and hygiene practices. As a product of these sessions, participants are given Care Group Cards to take home and track daily food behaviors, which they can then show to Care Group Leaders during home visits.

Although the Care Group Approach has recorded high levels of knowledge recall, the knowledge is not being converted into practice. As a result of limited behavior change success by the project to date, MUSEFO has engaged 17 Triggers to conduct exploratory research of the target groups' current dietary practices, as well as the potential barriers and drivers they face to consuming a nutritious diet.

Purpose of this Report

The main purpose of this report is to share with GIZ the proposed interventions designed by the 17 Triggers project team to improve nutrition for PLW and children aged 6 to 23 months old in Kampot and Kampong Thom provinces. The proposed interventions were narrowed down through feedback from users, then tested in a two-week drop-off test that was completed in March 2022. The main goal of testing was to come up with a final set of tools that could be delivered at MUSEFO's existing Care Group Sessions for further trial testing. The final set of tools and implementation guidance are detailed in the final recommendations of this report. The report concludes with further implementation

considerations and suggested next steps, so that GIZ can be equipped to test the solutions with a larger sample and potentially scale up in future.

Project Road Map

Project Objective

The project objective was to conduct exploratory research of women and children's current dietary practices, potential barriers and drivers of consuming a nutritious diet and developing innovative nudging/social behavior change tools that can support social behavior change in consumption of an appropriate diet among pregnant and lactating women and 6-23 month old children, including updating the current Care Group member card according to the beneficiaries' needs.

Solutions and tools were designed and taken from an existing project intervention called the Banana Bag, which has shown proven results in a similar project context in Myanmar. [See Annex 1: Banana Bag](#). Tools were then filtered and iterated based on two rounds of early testing. This report covers the first two stages of testing and ends with a final set of tools, including recommendations and considerations for delivering the tools to the target groups.

Project Phases and Project Activities

For this project, the team aimed to uncover the factors, including barriers and drivers, that contribute to inadequate nutrition for PLW and children aged 6 to 23 months old in Cambodia.

The project ran from 23 August, 2021 to 15 March, 2022. Throughout the course of the project, we engaged with a total of 119 people at three moments during the field immersion, pitch testing, and prototyping testing.

The table below outlines key project activities that will be covered in further depth in this report.

Key Project Activities	
Project Phase	Activity
Phase 1 Research	1.1 Field Immersion
	1.2 Main Findings
	1.3 Key Insights and Drivers
Phase 2 Strategic Focus	2.1 Behavior Selection
	2.2 Behavior Change Strategy
Phase 3 Ideation and Testing	3.1 Co-creation and Ideation
	3.2 Evaluation of Ideas
	3.3 Pitch Test

	3.4 Drop-off Test
	3.5 Drop-off Test Findings
	3.6 Drop-off Test Learnings and Recommendations
Phase 4 Final Recommendations	4.1 Introducing the Super Foods Nudge Kit
	4.2 Implementation Guidance
	4.3 Next Steps

Executive Summary

GIZ MUSEFO and 17 Triggers came together in August 2021 to try and understand the behavioral determinants for nutritional practices of pregnant women (PW), lactating women (LW) and caregivers (CGs) of children 6-23 months old in Cambodia. By using Human-centered Design (HCD) methodology, the project team was able to deeply understand the target users, analyze the factors that influence their behaviors, and develop solutions that could target behavior change.

Throughout the life of the research project the main goal statement was: We want women and children to improve their dietary diversity in terms of frequency, quantity, and diversity so that they are healthier during this crucial period of life.

The three main phases of the project were research, strategy alignment, and testing.

Research: To launch the project, our project team enacted a series of workshops and conducted field research to understand the current dietary behaviors of PLW and CG in Cambodia. To do this, the team conducted in-depth interviews (IDI) and focus group discussions (FGD) with target groups, and researched their markets and kitchens to understand the barriers and drivers in their environment that influence their nutritional behavior. Contextual observations focused on how the target groups currently source, prepare, and consume their food to identify potential opportunities for behavior change along each stage of their food decision process.

Strategy Alignment: The findings presented in the *Research* phase helped our project team to set the strategic direction for meaningful, targeted interventions. Here, we shared the results with project stakeholders to ensure all partners were well-versed on the environment, current dietary practices, and factors influencing behavior. Together, the team identified which findings showed the greatest potential for impact, and agreed on designing interventions for the target groups based on nudge theory, to impact sustainable behavior change.

Testing: Once our project team was aligned on the intervention strategy, we co-designed and ideated various solutions that could nudge targeted behaviors. Within this *Testing* phase, we developed a set of interventions and presented them to the target users in a first round of *pitch testing* for focused feedback. After making iterations, we deployed the solutions again in a second round of *drop-off testing* to be tested by the end users in a longer trial within their current contexts. Learnings from the two rounds of testing helped the team further refine the tools and interventions, and a final solution in the form of an “Everyday Nudge Kit” was developed to be implemented by GIZ at their monthly Care Group meetings.

The project concludes with a series of recommendations outlining how GIZ and their implementing partner RACHA can collaborate to implement, pilot and/or progress the proposed solution identified in this report.

Key findings and results from the project are summarized below:

Research Findings

During the research phase, the project team spent a total of 8 days in the field, splitting time between Kampot and Kampong Thom provinces, and consulted with 66 PLW and CGs to understand their dietary behaviors¹. The CGs spoken to were mainly mothers, with less grandmothers included than originally expected. The reason for this could be due to the fact that many women have lost their jobs during Covid-19, and therefore have remained at home to be the primary CGs for their children.

Through contextual research of the target groups' physical environments and current dietary practices, the team identified the following main barriers to consuming a nutritious diet:

- PLW and CGs lack knowledge on which foods make up a balanced diet. Particularly, they don't know that orange fruits/vegetables and fruits are important for nutrients.
- PLW and CGs have unhealthy snacking habits due to easy access to processed and sugary snacks from mobile vendors and their local market.
- PLW and CGs lack knowledge on the proper ratio and portioning of food, and consume an improper ratio of rice to other food groups.
- PLW rely on their mothers and mother-in-laws to give them guidance on dietary practice, especially after childbirth. There are many misconceptions about good dietary practice including avoiding green vegetables and raw fruits after childbirth.
- LW don't know that their diet can affect the nutritious quality of their breastmilk
- CGs don't have effective tools for portioning, preparing, and serving food to children. Preparation of food takes a long time and children often reject food due to inappropriate textures prepared by CGs.

Strategy Alignment

After research, the project team gathered together with 11 GIZ members to co-create and ideate potential solutions to the problems noted during research. Based on research findings, the project team made the decision to design interventions based on nudge theory, which focused on altering the target groups' environment to support them to make better food decisions throughout their day.

Ideas were then filtered down using the main project criteria of whether it was a nudge, whether it was an affordable solution for the implementers, whether it could be produced in time to implement it, whether the tool could be found locally, and whether the tool fit within MUSEFO's current programming. The 34 solutions that remained after filtering were distributed amongst 5 tool "idea buckets" that helped define the project's target behaviors. The five tool buckets were: concepts, progress and goal tools, diversity tools, portioning and ratio tools, and texture tools.

¹ Despite some challenges based on the ongoing Covid-19 pandemic, the majority of field research was conducted in person while following personal protective equipment and social distancing guidelines.

Testing Findings

The first round of *pitch testing* allowed the team to present an early prototype of the potential solutions to the target group users and gain crucial feedback for how to improve the solutions. IDI and FGD were conducted with 30 target users to test out the 34 solutions selected for pitch testing. The main learnings from pitch testing helped the project team narrow down, revise, and add new solutions that could be carried forward in a second round of drop-off testing. 15 tools, including the most popular tools from pitch testing and some new tools that were added, were carried into a second round of drop-off testing.

Drop-off testing was carried out with 23 target group users over a two-week trial between 31 January and 18 February, 2022. This round of testing gave the target groups an opportunity to try out the solutions over a longer period in their homes. The 15 tools tested during drop-off testing included one concept, seven diversity tools, four portioning and ratio tools, and three texture tools.

The main concept selected was the Superfood concept and it was tested using four messaging tools including a poster, video, tracker, and labels. The other tools were distributed amongst four “Nudge Kits” that could be distributed to target users at a briefing. Each of the four nudge kits sought to test a hypothesis the project team had about the target groups’ dietary behavior. The hypotheses were:

- Kit 1 (intended for PLW): If you’re prepared, will you eat more diverse food?
- Kit 2 (intended for PLW): If you see it, will you eat more diverse food?
- Kit 3 (intended for CGs): Will family diversity tools improve diversity?
- Kit 4 (intended for CGs): If you only get baby tools, will you feed the baby better?

The main objective of drop-off testing was to get feedback on the messaging tools and to investigate whether the solutions worked to improve the target groups’ nutritional diversity by the end of the testing period. Diversity scores were calculated at the start and end of testing using the WHO’s Minimum Dietary Diversity (MDD) and Minimum Dietary Diversity for Women (MDD-W) measures.

Overall, diversity scores increased for all target groups after drop-off testing. The four hypotheses carried into testing were also proven correct. The main takeaways from drop-off testing were as follows.

- Make desired behaviors known and visible.
- Create obvious links between food and health.
- Integrate tools into existing practice.
- Create timely distribution and briefing moments.

Final Solution

Based on the learnings from drop-off testing, tools were further iterated, and the Everyday Nudge Kit was created. The final list of tools included in the Everyday Nudge Kit are:

- **PLW Poster:** This informational tool introduces the Super Food Concept and conveys key messages related to diversity and frequency for PLW
- **Nudge Stickers:** This visual cue is intended to be a simple way to remind PLW and CGs to eat more diverse food groups. Each sticker represents important food groups such as: Eggs, orange fruits and vegetables, green leafy vegetables, fish, and meat.
- **Fruit Basket:** This is a practical basket that could serve as a visual reminder for families to store and make fruits accessible.
- **Raw Ingredient Baskets:** These are practical food preparation baskets for meat, green leafy vegetables, and orange vegetables. Each color coded basket can serve as a reminder for PLW and CGs to source and prepare diverse food groups and not rely only on rice.
- **Silicone Bag:** These sturdy storage bags are intended to store green leafy vegetables in coolers so there is always a supply of green leafy vegetables, especially for LW. They serve as a visual cue and reminder for LW to source and eat green leafy vegetables.
- **Egg Box:** An egg box is intended to be a visual cue and reminder for families to source and store eggs and eat eggs on a regular basis.
- **CG Poster:** This informational tool conveys key messages related to diversity, frequency and texture for feeding babies 6 - 24 months.
- **Scissors:** Special scissors to cut green leafy vegetables for the baby. This utensil is a timesaver for CGs and removes a barrier they face when preparing food for babies.
- **Masher:** Food masher to prepare correctly textured food for babies 6-23 months. This utensil is a timesaver for CGs and makes it easier to create the right texture.
- **Baby Bowls:** Three bowls that help CGs feed the right amount to the baby based on age.
- **Baby Spoon:** Small spoon to feed the baby to create a moment of joy during feeding.

Recommendations

Moving forward, it is highly recommended that a pilot test be implemented to continue learning, to measure the efficacy of the kit in its latest version, and to test the financial viability of this intervention. A long pilot could also allow for GIZ and its implementing partner to observe if there is sustained behavior change over time. Recommendations for integrating this intervention into existing programs, recovering costs through various payment models, as well as instructions for pre-distribution training, distribution method, and further development possibilities are detailed in the final section of this report.

Phase I: Research

At the start of the research process, the project team held a stakeholder alignment meeting with six GIZ team members and two RACHA team members. During the meeting, the participants crafted a set of Vision of Perfect (VoP) statements in which they identified the desired behaviors they wanted to see in each of the target groups.

Following the stakeholder alignment meeting, contextual research was conducted in the two provinces, focusing on understanding the sourcing, prepping, and consumption behaviors of the target groups. An in-depth behavioral analysis was made to better understand the barriers and potential drivers to consuming a more nutritious diet. These efforts led to the creation of two personas, which represented a composite of PLW and CGs dietary behaviors to better understand the target users. The personas, combined with field research and analysis, led to a number of key insights that helped refine the project's strategic direction and narrow the project's scope of targeted interventions.

1.1 Field Immersion

1.1a Field Immersion Objectives

The fieldwork primarily focused on these main objectives:

1. To explore and understand the current dietary practices of PLW and CGs of children 6 to 23 months old (including sourcing, prepping, and consumption practices).
2. To understand who the target audience is and what motivates them (persona development).
3. To uncover barriers to a nutritious diet and identify opportunities for behavior change.
4. To conduct an audit of the current Care Group Card that is being used to confirm whether it is a useful tool for behavior change.

1.1b Geography

The project took place in two provinces where MUSEFO is currently operating: Kampot and Kampong Thom. While there were some subtle differences noted between the two different areas, behavioral findings were relatively similar. For this reason, the findings shared in this report are a combination of data gathered across both areas.

1.1c Sample

A total of 66 PLW and CGs (17 PW, 17 LW, and 32 CGs) were interviewed from 27 September to 15 October, 2021, using in-depth interviews (IDI) and focus group discussions (FGD). The CGs were a mix of mothers and grandmothers.

1.1d Methods:

The research team employed a variety of HCD field immersion methods to uncover insights into the target groups and their current dietary behavior. Methods included:

- **Rapid survey** using a quiz to test nutritional knowledge.
- **In-depth interviews (IDI)** to understand target groups' financial situation, priorities, daily activities, motivations, and influences.
- **Focus group discussions (FGD)** to understand which foods target groups know, like, and buy from markets.
- A **kitchen audit** to understand a typical kitchen space and the tools available for food preparation and consumption, as well as which foods, if any, are grown at home.
- A **market observation** to see what produce and tools are available to target groups, and for what price.

1.2 Main Findings

What follows in this section is an introduction to the personas of the target groups and main observations, findings, and barriers of the target groups' dietary practices. It also describes the Care Group Card findings and the reason it was not employed as a tool in this project. The section ends with an analysis of key insights and potential drivers that can be leveraged to create solutions for behavior change.

1.2a Personas

For the purpose of this project, personas were created as a method to get a clearer picture of the primary user at the center of the HCD process. A persona is a fictional character that represents the needs, thoughts, and goals of the project target user. Personas are created based on a synthesis of what project teams have learned about the end users, their contexts, and any general themes or common characteristics they have. This approach is a research-based method that helps project teams stay focused on the target user when designing solutions.

Meet Srey Pov: A mother representing PW and LW

Srey Pov is a 26-year-old mother who lives with her husband, three children, and sister in Kampot province. She is responsible for cooking and caring for her family. All her cooking and child-care skills were learned from watching her mother and other older family members growing up.

Srey Pov wants to save money, ensure that her children are healthy, and ensure that she heals well from childbirth. Her current food behaviors are as follows:

- She cooks recipes that are familiar to her using ingredients that she buys from the mobile market near her house or from the bigger market in the village.



Figure: Mother with daughter

- She mainly uses locally grown ingredients because they're cheaper.
- She grows some vegetables in her home garden.

Eating practices when pregnant

Srey Pov eats 4-5 times per day, based on hunger. She eats 2-4 scoops of rice with 1 bowl of food² per meal. She has a fairly diverse diet, eating 3-4 food groups. Her meals usually consist of rice, meat, and green leafy vegetables, which are readily available from the market and her home garden. She believes that she is eating a balanced diet, and doesn't often try to include other foods like orange vegetables and fruits, which she doesn't grow at home.

The people around Srey Pov encourage her to eat food to help her baby grow, but sometimes the only food available outside of mealtimes is plain rice. Additionally, Srey Pov sometimes struggles with morning sickness, in which case she focuses on eating snacks and whatever she can stomach. There is no available local remedy for morning sickness.

Main barriers:

- Ratio of rice to other food groups.
- Lack of knowledge on which other foods to include in her diet (e.g. doesn't know that fruits and orange-colored vegetables are important for nutrients).

Eating practices when lactating

After the baby is born, Srey Pov starts to eat less frequently. She joins the family during family meal times 3 times per day. She doesn't report feeling as hungry as when she was pregnant, but knows that eating will help her produce more breastmilk. She eats 1-3 scoops of rice with 1 bowl of food per meal. She primarily eats meat and rice, and avoids eating green vegetables because her mother and mother-in-law (MIL) teach her that it causes poor healing from childbirth. She is still physically restricted after childbirth and relies on her mother and MIL, and other family members, to help her source and prepare food. When lactating, she snacks often, especially on desserts.

Main barriers:

- Fear of disappointing mother and MIL by disregarding their advice about traditional eating practices after childbirth.
- Misinformed that consumption of raw fruits/vegetables could harm her and the baby.
- Misinformed that eating often can slow down healing from childbirth.
- Unaware of the effect her diet can have on the nutritious quality of her breastmilk.

² Food refers to everything other than rice in a meal. It typically consists of a soup or stir fry containing a mix of meat and vegetables.

Meet Chantha: A Caregiver

Chantha is a 50-year-old grandmother and CG to 2 grandchildren. Her son and daughter-in-law had to return to work after having the baby so she cares for their 4-year-old son and (6-23 month old) baby. She cooks and cares for the whole family, and often watches other neighborhood children who visit her home.

Chantha wants to protect her family's health, secure some money for her grandchildren's future, and increase the size of her home garden. She also wishes that her family and friends would recognize her personal sacrifices. Her current food behaviors are as follows:

- She is confident in her cooking and homemaking skills, based on how her own son grew up happy and healthy.
- She is less mobile than she used to be, but manages all her family's eating needs.
- She takes care of a small home garden, but wants to expand it to grow more vegetables.



Figure: CG with grandchild

Feeding practices

Chantha feeds her grandchildren 3-4 times a day, but lets them snack throughout the day. She measures portions for the baby using her finger and a small feeding bowl. She typically mashes rice and adds a little bit of soy sauce or mashed family food to give to the baby. If she has time, she prepares enriched porridge in the morning to give to the baby. Chantha has hacks for preparing food to a baby-appropriate texture: she overcooks or mashes the rice, minces or mashes the meat, and finely-chops vegetables before cooking. She tends to avoid cooking vegetables that take long to soften.

The food preparation and feeding process is time-consuming and often discouraging because the baby tends to reject the food by crying or crawling away. Chantha stops feeding the baby when she starts rejecting the food, believing that the baby knows best how much she needs to eat.

Main barriers:

- Doesn't know that orange-colored vegetables are important for babies' nutrition.
- Isn't aware of the texture changes required over time.
- Doesn't know how much to increase the quantity of food given to babies from 6-12 months of age.
- Doesn't have effective tools to mash food for babies, especially orange-colored vegetables.

For more information about the key target groups see [Annex 2: A Day in the Life](#).

1.2b Sourcing, Prepping, and Consumption

A main focus during contextual observations was to gain an understanding of the target groups' physical space and their current practices in sourcing, prepping, and consuming food. It was critical to understand each stage of their food decision process in order to design an intervention based on choice architecture and nudge theory. The key findings that informed solution design are as follows.

Sourcing

- Food is primarily sourced from local markets, mobile vendors, and home gardens.
- Ingredients for meals are bought in the morning (for the whole day) or before meals.
- Items purchased include: Breakfast porridge, meat, vegetables (which can't be gathered at home), and snacks (Khmer snacks, packaged snacks, fruits, sweet beverages, and desserts).
- Most home gardens have green leafy vegetables, but only some families grow orange fruits and vegetables like papaya, pumpkin, and gourd. Fruits are difficult to access.
 - Flooding and difficulties in year-round production make home gardens an unstable source of food all year-round.
- When shopping, vendors provide plastic bags; It is uncommon for PLW and CGs to carry their own shopping bags.

Prepping

- A variety of tools are used to prepare food, including a chopping board, knife, colander, cooler for vegetables, mortar and pestle (sometimes), and sieve or spoon for mashing.
- PLW prepare food to be eaten before each meal.
- CGs who feed enriched porridge prepare it in the morning; CGs who feed premix, or rice prepare it before each meal.
 - Meals prepared for babies usually take a long time, especially to create the correct texture.
 - No official measurement tools are used.



Figure: Food preparation area in CG's house

Eating and Feeding

- The main tools used for serving and eating food are a plate, bowl, rice scoop, ladle, and a spoon. CGs use a smaller spoon for feeding babies. There are no special tools designated for PLW.
- CGs report that babies often reject food, making them difficult to feed.
- Babies usually transition to family (adult) food when they turn 12 months old.

1.2c Care Group Card Findings

One of the existing interventions of the GIZ MUSEFO project is the Care Group Card, which is delivered to PLW and CGs at monthly Care Group Sessions. As part of research, the project team conducted an audit of the Care Group Card to confirm whether it was being utilized effectively by target groups.



Figure: Care Group Card

During field immersion, the team visited households and asked whether they had a Care Group Card and whether they could show it to the project team. The majority of households had a Care Group Card in their home, but it was always tucked away and hidden from plain sight. When asked about the contents of the Care Group Card, the participants shared that the details were confusing. For example, they mentioned that the Card does not differentiate nutritional needs of PLW versus babies. The food groupings on the Card of “Energy Foods,” “Body-Building Foods,” and “Protective Foods” were memorable to users, but they weren’t able to distinguish which foods fit into each category. A more directive way of grouping food based on Individual Dietary Diversity Scores (IDDS) seemed to be more helpful to the target groups.

Although the Care Group Card has potential to be a strong tool given its availability in homes, the team ultimately decided not to move forward with it in testing. Instead, the team decided to focus on simpler food groups and revising the Super Foods concept and “Eat Every Day” messaging associated with the Banana Bag.

1.3 Key Insights and Drivers

While findings tell us what the personas are doing, insights can explain the “why” behind their behavior. Each insight is a potential direction to explore when ideating solutions. The following are key insights and potential drivers that could influence behavior adoption.

Key Insights and Potential Drivers for Behavior Adoption	
PLW and CGs use the absence of sickness as a measure of health	
Insight	Driver
Current diets are not causing visible sickness. If mothers think what they are doing is good enough, there is no reason for them to adjust their behaviors.	<p>Increase perception of risk/family vulnerability.</p> <ul style="list-style-type: none"> ● Link different nutrients to different types of health. ● Highlight invisible nutritional benefits. ● Prompt anticipated regret of lost benefits. ● Externalize health.

Experience is favored over expertise	
Insight	Driver
Mothers think that experts are trustworthy, but follow their mother and MIL's guidance more.	Shift social norms and create trial moments. <ul style="list-style-type: none"> ● Provide opportunities for experiential learning and create new norms that will spread. ● Include the older generations. ● Highlight mothers and CGs that are practicing good dietary behaviors.
Foods are grouped together by recipe	
Insight	Driver
From mothers we spoke to, foods were grouped and categorized based on the components of a dish as opposed to food groups.	Build on existing recipes. <ul style="list-style-type: none"> ● Simplify the key foods to add and show how to easily add them to meals. ● Add one ingredient at a time. ● Link each food to a nutritional benefit.
All other food is secondary to rice	
Insight	Driver
Eating a lot of rice is part of Khmer culture. PLW and CGs don't realize that rice does not have the same nutritional value as vegetables and meat. They also don't know that other foods can make them fuller.	Decrease rice and increase vegetables and meat in diet. <ul style="list-style-type: none"> ● Provide clear measuring guidelines of food types consumed. ● Shift beliefs about costs and benefits. ● Show how rice alone is not nutritional or filling.
PLW and CGs don't know what makes up a balanced diet	
Insight	Driver
Mothers think that a diet containing rice, meat and green leafy vegetables is "complete" and well-balanced.	Make moms aware of what a complete diet is. <ul style="list-style-type: none"> ● Bring in more color using orange and yellow vegetables. ● Promote egg consumption. ● Use a home garden as a source of orange vegetables and fruits. ● Promote fruits by nudging purchasing.

LW believe that they cannot change the quality of their breast milk	
Insight	Driver
LW currently avoid eating most vegetables because they are worried it will make their milk disappear or that it will slow down healing from childbirth, but don't think about the nutritional tradeoff.	<p>Show the link between diet and breastmilk.</p> <ul style="list-style-type: none"> ● Link the nutrients eaten by mother to the quality, not just quantity of breastmilk.
Poor snacking habits impede nutritional health	
Insight	Driver
Snacks are easily accessible and tasty. PLW spend a lot of money on sugary snacks that fulfill their sweet cravings. Snacking is an impulsive behavior that is not planned ahead of time.	<ul style="list-style-type: none"> ● Promote snacks that are nutritious. ● Swap a sugary snack for fruit that is sweet but also healthy. ● Place fruits in an easily accessible place to catch the eye, instead of unhealthy snacks. ● Visualize weekly or monthly expenditure on snacks.
CGs don't know they can improve babies' acceptance of food	
Insight	Driver
CGs take cues from their baby to guide their feeding practices.	<ul style="list-style-type: none"> ● Boost confidence in CG's ability to feed the baby, even when the baby refuses. ● Reinforce correct practices including providing age-appropriate texture ● Provide texture tools to speed up the food preparation process ● Share knowledge about best practices between peers. ● Distract the baby during feeding, so they can feed for longer. ● Support easy taste and nutrition boosters like pumpkin, banana, or other desirable sweet fruit and leafy green vegetables.

PLW and CGs portion food after preparation

Insight	Driver
<p>It's decided how much each person will eat after food is prepared.</p>	<p>Redefine the ratio for everyone (we can't change one person's consumption).</p> <ul style="list-style-type: none">● Clarify correct preparation amounts of green leafy vegetables meat, orange/yellow, and rice visually.● Encourage mothers to measure out the correct amount and ratio of food <i>before</i> it gets cooked.● Provide measurement tools for food preparation and serving.

Phase 2: Strategic Focus

Following review of the research findings and insights, the team came together again in a strategic alignment meeting with the GIZ MUSEFO team. The team reviewed findings and identified key behaviors that could be targeted for behavior change. The team started by returning to the project's original "Vision of Perfect" statements to determine if any adjustments needed to be made. This ensured that the team could move forward with an updated vision and clear collective goal.

2.1 Behavior Selection

The project started with an overarching Vision of Perfect:

We want women and children to improve their diet in terms of frequency, quantity, and diversity so that they are healthier during this crucial period of life.

Following a stakeholder alignment meeting and *research phase*, the VoP statements were segmented to cater to each target group.

The project team identified lack of nutritional diversity as the main challenge faced by all target groups, and selected increasing consumption of various food groups as the ultimate desired behavior. The focus foods were: orange fruits and vegetables, dark green leafy vegetables, fruits, meat, and eggs. The decision to focus on food groups that were familiar to the target groups versus introducing entirely new foods was made in alignment with nudge theory explained below. Target groups expressed a willingness to add those specific foods to improve their diet.

For CGs of children between 6 to 23 months, the team decided to focus on solutions that target texture and age-appropriate quantities of food. Another key decision was to move away from guiding CGs to provide enriched porridge to babies, and instead focus on achieving a food group diversity score, according to WHO's Minimum Dietary Diversity (MDD) measures.

The following are the VoP statements per each target group that were taken into the next phase of *Ideation and Testing* as a starting point for solution design:

PLW:

- We want PW to eat 4 times per day using at least 6 food groups.
- We want LW to eat at least 4 times per day plus 1-2 healthy snacks every day.
- We want PLW to eat at least 6 food groups daily

CGs:

- We want CGs to feed 6 month olds 5 food groups at least 2 times per day (2-3 tablespoons per meal).
- We want CGs to feed 7-8 month children 5 food groups at least 3 times per day (3 rice spoons to a half tiny bowl per meal).
- We want CGs to feed 9-11-month-olds 5 food groups at least 3 times per day (increase from half a tiny bowl to one tiny bowl per meal).

- We want CGs to feed 12-24-month-old children 5 food groups at least 3 times per day (full tiny bowl per meal) and include some additional snacks (mashed fruits or vegetables).

2.2 Behavior Change Strategy

A main project objective was to develop innovative social behavior change tools to nudge positive change in the consumption of an appropriate diet among all target users (PLW and 6 to 23-month-old children via CGs). The goals were to arrive at a solution that worked across all target groups, was culturally relevant, integrated with current practices, didn't only focus on one additional food group, and worked for illiterate or semi-literate users.

For this reason, the project team chose to apply nudge theory in the solution design of this project. Nudge theory is based on the idea that shaping the environment, also known as choice architecture, can influence the likelihood that one option is chosen over another by target users.³

For this project, we had to take a look at the context that target users operated in: Where and how they shop, their food preparation process, and the physical space where they cook and eat. We found during field immersion that the target users had relatively high knowledge of what the desired eating behaviors were, however, weren't always practicing them. The questions we ask in the ideation phase of the project stem from what can be done to prompt change that requires minimal effort from the target users to adopt, while looking for opportunities within their existing environment for visual cues and reminders to change their default.⁴

³ Thaler, R.H. and Sunstein, C.R. 2008, *Nudge: Improving decisions about health, wealth, and happiness*, Yale University Press, New Haven.

⁴ A classic example of nudge at play is placing a salad bar at the beginning of a buffet. There are a lot of strategies one could use to discourage people from opting for unhealthy foods - eg. public information campaigns, putting signs on unhealthy foods, etc. Nudge suggests that simply changing the environment so that a salad is the first choice might curb people from defaulting to unhealthier options.

Phase 3: Ideation and Testing

During the *Ideation and Testing* phase, the project team co-created concepts and ideas with 11 GIZ team members, including Sanne Sigh, Dominique Uwira, Socheata Sar, Phally Seng, Bori Pheap, Heng Samnang, Seng Tet, Ok Sokuntha, Chhit Chorpum, Leng Sotheth, Heang Vanna, Saren Norpheapheakdey, and Sorn Piseth.

During this phase, the project team and key stakeholders sought to develop testable ideas, which could be shared with target groups for early feedback and evaluation. Ideation and testing took place between 29 October, 2021-15 March, 2022.

3.1 Co-creation & Ideation

3.1a HMW Statements

As a starting point to the workshop, participants were reminded of the personas for whom the ideas were being generated. Then the participants worked to form innovative How Might We (HMW) statements that could address problems identified during the research phase. HMWs reframe key insights and potential drivers into opportunity areas for creative solution design.

Below are the HMW statements we took into the ideation sessions:

- HMW give mothers a reason to say, “yes” to improving her dietary practice?
- HMW set easily achievable goals for PLW?
- HMW let CGs measure their progress?
- HMW get families to incorporate more diversity into their diet?
 - HMW get mothers to add an orange/yellow vegetable every day?
 - HMW get mothers to add an egg every day?
 - HMW encourage mothers to choose fruit as her snack?
- HMW get mothers to portion correctly when prepping food for the whole family?
- HMW get CGs to portion correctly when feeding food to babies?

3.2 Evaluation of Ideas

Through the *Co-creation and Ideation* workshop, more than a hundred ideas for solutions were conceptualized. These ideas were then filtered down to 34 potential tools that could be carried into the first round of pitch testing.

3.2a Filtering Criteria

The main criteria for filtering ideas were:

- Is the idea a nudge?
- Is it an affordable solution for the implementers and the target group?
- Can the tool be produced in time to implement it?
- Can the tool be found locally?
- Does it fit within MUSEFO's current programming?

3.2b Tool Idea Buckets

The 34 tools were organized into five tool “idea buckets” including: Concepts, progress and goal tools, diversity tools (including general diversity and specific food group diversity tools), portioning and ratio tools, and texture tools. The following table shows how the tools were distributed amongst the tool idea buckets.

Tools	Pitch Tests (34)
Concepts	 Superfoods  Care with Colours  Food groups
Progress & Goal	 The Nutrition Celebrity Dream Team  Mom's Telegram Group  The 21 Day Cooking Challenge  The Kitchen Counter
General Diversity	 Vendor Reminder  Hot Hand  Baby Utensils  Divided Cooler  Family Placemat  Baby Toys  Shopping Bag  PJ Pants
Diversity Add Orange	 Pumpkin Purse  Orange Cutting Set  Pumpkin Spoon Rest
Diversity Add Egg	 Egg Box  Egg Timer  Egg Shell Counter
Diversity Add Fruit	 Dice Game  Basket  Plate  Teether
Portioning & Ratio	 Ingredient Divider  Measuring Cups  Ladles  Serving Spoons  Rice Bowl
Texture	 Sieve & Crusher  Fork  Masher  Scissors

Figure: Tool idea buckets

3.3 Pitch Test

3.3a Pitch Test Objectives

The pitch test was carried out over four days from 22-25 November, 2021. The project team consulted a total of 30 PLW and CGs in in-depth interviews (IDI) and focus group discussions (FGD) to gain feedback on the tools that were ideated.

The main objective was to present an early prototype of the solutions to the target groups and gauge whether the target groups saw value in them. The key questions the project team sought to answer was whether the target groups agree with the problem being addressed, and whether the target groups like and want to use the solution offered.

3.3b Pitch Test Findings

Summary of Learnings

The following learnings from the pitch test helped inform the project team on which tools to carry into drop-off testing and how to iterate the tools to be more effective.

Concept Learnings: Food groups are a helpful way to discuss diversity and eating habits. Simple instructions paired with achievable goals and visual food groups help the target groups understand what they should do, and how they should do it.

- *Concept Recommendation: Superfood Concept and messaging.*

Progress and Goal Tool Learnings: Target groups were excited to see that they could make small changes to their already good practices but had limited access to digital modes of tracking progress

- *Tool Recommendation: The Kitchen Counter tracking tool.*

Diversity Tools Learnings: Promote planning meals ahead of time. This can be facilitated by tools for planning, sourcing, and storing food. Pushing a variety of ingredients helps target groups not get “bored” with specific ingredients and making visible reminders helps nudge target groups to incorporate more diversity.

- *Diversity Tool Recommendation: Shopping bag. Visual nudges for each food type.*

Orange Learnings: Orange-colored food is desirable but people don't believe they can eat it every day. This behavior can likely be motivated by messaging, especially focusing on the benefits of orange fruits/vegetables, including beauty and intelligence.

- *Orange Vegetable Tool Recommendation: Orange chopping board*

Egg Learnings: Eggs are a backup food - target groups eat eggs when there may be rain or less money. Eggs are a food that people believe they will get tired of if they're eaten every day.

- *Egg Tool Recommendation: Egg box*

Fruit Learnings: Fruits are highly desirable as babies enjoy them, PW eat fruits to assist with morning sickness, and LW eat some fruits but less than PW. Fruits are considered a snack to be shared but they are an afterthought - people may eat them when they want a snack but only if they're visible.

- *Fruit Tool Recommendation: Fruit basket*

Portioning Learnings: PLW and CGs require different tools. PLW need tools to support food preparation for the whole family, while CGs need tools for the baby only. Ratio of rice and different ingredients is important because it can be integrated at preparation and serving. If food is cooked, it will be eaten.

- *Portioning Tool Recommendation (PLW): Rice bowl, Ingredient divider*
- *Portioning Tool Recommendation (CGs): Cup measures, 3 Baby bowls & spoon*

Texture Learnings: Texture tools improve confidence for CGs and therefore support diversity. Creating the right texture takes a lot of time and effort and CGs are excited for any tool that can ease this process.

- *Texture Tool Recommendation: Sieve & crusher. Masher. Scissors*

Tool Selection for Drop-off Testing

Based on feedback from the target groups, the most popular tools from each of the 5 buckets were identified and refined, and some new tools were added. These tools were then plotted along the target groups' key decision making moments - planning, sourcing, storing, prepping and serving - to ensure that all potential opportunities along the food decision journey were addressed. The tools were then broken up into 4 different nudge kits (2 kits for PLW, 2 kits for CG) to see which would perform best when tested with the target audience over a longer period of time. A total of 15 tools were carried into drop-off testing.

Details about the tools tested in pitch testing, their intended use, the feedback they received, and reasons why they were dropped or carried into a second round of drop-off testing can be found in [Annex 3: Pitch Test Findings](#).

3.4 Drop-off Test

3.4a Drop-Off Test Objectives

The second round of testing, called the drop-off test, allowed the target groups to try out the solutions and tools in their context. The project team was able to get live feedback on whether the target groups actually used the tools, whether the tools were effective in changing behavior, and whether the target groups liked the tools.

The objectives of the drop-off testing were two-fold:

1. To get feedback on the visuals and messaging tools
2. To confirm whether the selected tools ultimately improved diversity score



Figure: CGs receive tools at the drop off moment

Figure: CG demonstrates how she uses the tracking tool

3.4b Concept and Messaging Tools

The main concept that was carried into drop-off testing was the Superfoods concept, which included a visual that had friendly food characters advertising the message: “Eat Every Day.” It was observed that target groups already eat from a variety of different food groups, and feel proud when they do a good job of eating diversely. By including 5 different food groups in the visual, it encouraged users to make small changes to further diversify their diets, and to do so “every day.”



Figure: Key visual with 5 food group characters and key message “Eat us every day!”

Four **messaging tools** were used as vehicles to deliver the Superfoods concept to target users:

- **Poster:** A picture of the Superfoods and “Eat Every Day” message, and a summary of the main food groups, how PLW should eat, and how CG should feed. The poster should be posted in a shared living area as a visual reminder.
- **Video:** An animated story to remind target groups that it is important to eat more than just rice, every day. The video should be shown during drop-off briefing and shared with target users to be watched on their personal devices whenever they want.
- **Tracker:** A tracking card with scratchable food items. Target users should scratch off all the food items eaten daily to see what food groups are missing from their diet over time.
- **Labels:** Each tool had a label with a key message to remind target users the benefit of each food group. For the full list of messages, see [Annex 4: Key Messages](#).



Figure: A sticker label on an egg box with the message “Eat an egg every day - it makes your baby stronger.”

3.4c Nudge Kits

Other tools selected for drop-off testing were distributed into four nudge kits that could be delivered to the target groups. Kit 1 and 2 were developed to be shared with PLW, and Kit 3 and 4 were developed to be shared with CGs of infants. The table below details the main hypothesis each kit sought to test, as well as the contents of the kits.

Kit	Photo	Content
<p>PLW (Kit 1) (6) If you're prepared, will you eat more diverse food?</p>		<p>Shopping Bag Ingredient Divider Nudge Stickers</p>
<p>PLW (Kit 2) (6) If you see it, will you eat more diverse food?</p>		<p>Chopping Board Egg Box Fruit Basket Green Leafy Vegetable Bag Mom Bowl</p>
<p>CG (Kit 3) (5) Will family diversity tools improve diversity?</p>		<p>Shopping Bag Chopping Board Egg Bowl Fruit Basket Green Leafy Vegetable Bag</p>
<p>CG (Kit 4) (6) If you only get baby tools, will you feed the baby better?</p>		<p>Measuring Cups Sieve & Crusher Masher Scissors Baby bowls Spoon</p>

Figure: Tools broken into four different nudge kits for testing

3.4d Drop-off Briefing Workshop

At the start of drop-off testing, the project team conducted a highly interactive briefing workshop with the target groups. During the workshop, the project team presented the three messaging tools to the target groups, and unboxed each nudge kit with the participants. The project team explained how each tool from the nudge kit works and gave

the participants an opportunity to ask questions. The messaging tools and nudge kits were tested by a total of 23 households (4 PW, 8 LW, 11 CGs) in both provinces over a two-week period.

At drop-off, the target groups were asked for their 24-Hour dietary recall, in which they recounted all the foods and beverages they had consumed in the last 24 hours. At the end of the two-week testing period, the participants were asked to provide another 24-Hour dietary recall, to compare whether changes in dietary behavior had been made.

3.4e Drop-off Endline Evaluation Methods

At the end of the trial, the project team collected feedback from the target groups using the following methods:

- **In-Depth Interview (IDI):** A 1-hour IDI was conducted with users to probe on diversity scores, how tools were used, and any reasons why the target groups liked or disliked the tools. After the IDI, the researchers had a clear understanding of which tools supported behaviors and which tools didn't.
- **Focus Group Discussion:** 2 FGDs were conducted to probe on new questions that emerged in the research. One of the activities in the FGDs was a "market test" where we invited target groups to tell us which tools they would like to "buy."
- **24HR:** The project team compared notes between the 24HR provided at the start of drop-off testing and gave the target groups a diversity score based on WHO's Minimum Dietary Diversity (MDD) and Minimum Dietary Diversity for Women (MDD-W) measures.

3.5 Drop-off Test Findings

3.5a Diversity Score Key Findings

Overall, there was an increase in diversity score amongst all target groups, with the greatest increase of 0.6 for CGs. This indicates that the nudge kits and tools were effective in nudging the desired behaviors.

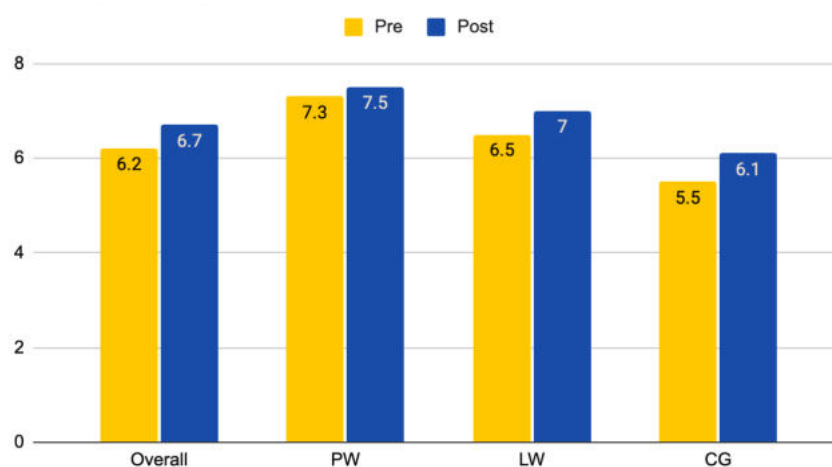


Figure: Graph showing diversity score per audience

Diversity score went up for all the kits, except Kit 3, which showed a decrease in score. Kit 3, which focused on providing family diversity tools, seemed to add more tasks for CGs when feeding infants. In turn, it had the opposite desired effect than intended, and led to a decrease in diversity score. The largest increase in diversity score, on the other hand, was

seen in Kit 4, which was the kit focusing on tools for the baby. It was reported that the tools included in this kit integrated well with existing practices and gave CG the confidence to feed babies a more diverse diet.

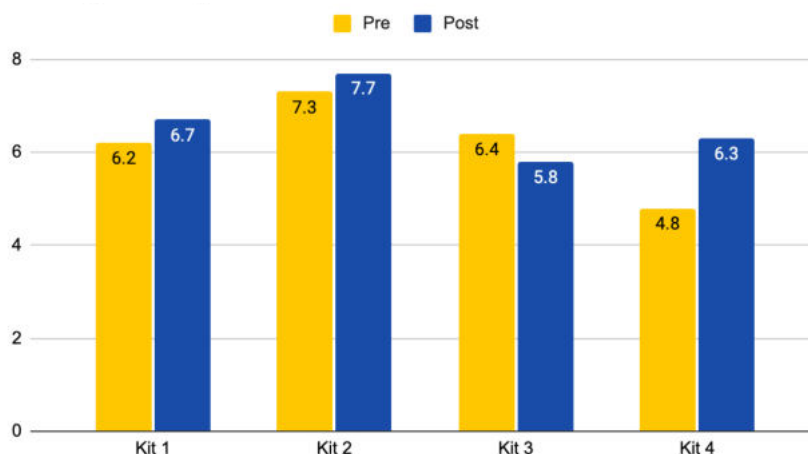


Figure: Graph showing diversity score per kit

The additions that most often impacted the change in diversity score was an inclusion of something extra from the following categories: other vegetables, eggs, nuts, seeds, dairy, and fruits - not necessarily green leafy vegetables or orange fruits or vegetables.

3.5b Nudge Kits Key Findings

The nudge kits were built around four hypotheses. The following tables provide the findings and recommendations for iteration associated with each kit. For details on how individual tools within kits performed, see [Annex 5: Prototype Testing Tool Findings](#).

PLW, Kit 1: If you're prepared, will you eat more diverse foods?	
Hypothesis	Finding
If tools are provided to support shopping and food preparation, PLW will eat more diverse food groups.	PLW who used Kit 1 showed a moderate increase in diversity score from 6.2→6.7. Tools in this kit were not used every day, but still helped to increase diversity.
Tool	Findings & Recommendations
Shopping bag	While some PLW used this shopping bag, it was not very useful because PLW don't often go to the market, and buy from mobile vendors instead. Recommendation: Remove from kit
Ingredient divider	This tool was intended to hold raw ingredients during food prep, but ended up becoming storage for cooked food as PLW had a better system in place for food prep. Some users commented that it could use drainage holes for wet vegetables.

	Recommendation: Iterate and keep
Nudge Stickers	Though PLW who used the stickers really liked them and explained that it inspired them to try cooking different foods, stickers were less valued than other tools when it came to ranking. Recommendation: Iterate and keep

PLW, Kit 2: If you see it, will you eat more diverse food?

Hypothesis	Finding
If visual cues or reminders are in the line of sight, PLW will eat more diverse food groups.	Making key behaviors visible supports PLW. PLW who used Kit 2 showed an increase in diversity score from 7.3→7.7.
Tool	Findings & Recommendations
Fruit Basket	PLW indicated that making fruits visible reminded them to eat them more. Recommendation: Iterate and keep (embed the stickers on the basket so they seem less fragile)
Chopping Board	The chopping board was the most popular tool overall, however, it was found unused in most houses. Recommendation: Iterate and keep (provide a nudge sticker to place on the family's existing chopping board)
Egg Box	The egg box was the second most popular tool for PLW who were enthusiastic to adopt and use it. Recommendation: Keep
Green Leafy Vegetable Bag	The tool works, but PLWs don't use the tool. Green leafy vegetables are already a part of the diet and may not need a nudge. Recommendation: Iterate and keep (consider switching to a silicon instead of plastic bag)
Mom Bowl	This tool did the opposite of what it intended and PLW reported eating more rice.

	Recommendation: Remove from kit
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CG, Kit 3: Do family diversity tools improve diversity?

Hypothesis	Finding
If families are given tools to improve diversity, CGs will increase diversity in food groups served.	Family diversity tools do not improve CG behavior. There was a decrease in diversity for CG (6.4→5.8). This nudge kit asked CGs to <i>do more</i> - use a special chopping board, put eggs in a special location, or store green leafy vegetables for longer - this added more tasks to the already time consuming task of caring for a small child.
Tool	Findings & Recommendations
Shopping bag	This tool was seen as too big and too nice for CG. They also perceived it as less useful as they don't go all the way to the market for their shopping and buy from mobile vendors instead. Recommendation: Remove from kit
Fruit basket	CGs indicated that making fruits visible reminded them to eat them more. Recommendation: Iterate and keep (embed the stickers on the basket so they seem less fragile)
Chopping board	The chopping board was the most popular tool overall, however, it was found unused in most houses. Recommendation: Iterate and keep (provide a nudge sticker to place on the family's existing chopping board)
Egg Box	The egg box was the second most popular tool overall, but there wasn't a major change in consumption of egg for babies overall. Recommendation: Keep
Green Leafy Vegetable Bag	The tool works, but CGs don't use the tool. Green leafy vegetables are already a part of the diet and may not need a nudge. Recommendation: Iterate and keep (consider switching to a silicon instead of plastic bag)

CG, Kit 4: If you only get baby tools, will you feed the baby better?

Hypothesis	Finding
If provided with specific tools for the baby, CGs will feed the baby more diverse food groups.	Making the feeding easier helps CGs feed more diversely. There was an increase in diversity from 4.8→6.3. The highest increase of any group. With the tools in this kit, the time to prepare healthy foods decreased significantly and CGs felt they wouldn't be able to achieve the same results without the tools. The combination of clear information and supportive tools was extremely effective.
Tool	Findings & Recommendations
Baby bowls	<p>The bowls are a useful and empowering tool. The switch to the bowls was easy and straightforward.</p> <p>Recommendation: Iterate and keep (make the fill line more obvious so CGs know they're filling it to the correct volume every time)</p>
Measuring Cups	<p>This tool had mixed results. When comparing it to the baby bowls, the bowls are an easier and more effective tool for CGs.</p> <p>Recommendation: Remove from kit</p>
Spoon	<p>The spoon was reported to increase both acceptance and the amount of food babies eat. It also made feeding time easier and more pleasant for CGs and babies.</p> <p>Recommendation: Keep</p>
Sieve & crusher	<p>The sieve and crusher were unpopular and unhelpful to CGs.</p> <p>Recommendation: Remove from kit</p>
Masher	<p>The food masher is the most popular mashing tool and makes CGs feel confident in their ability to prepare food for the baby. It also helped them increase the breadth of foods they fed the baby.</p> <p>Recommendation: Keep</p>
Scissors	CGs fed more green leafy vegetables as the scissors made it easier to prepare them. The cleaning comb getting lost was

	<p>a problem, but CGs suggested this could be solved by linking it to the scissors with a chain.</p> <p>Recommendation: Keep</p>
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3.5c Concept and Messaging Key Findings

Target groups had a high recall of the concept and key message. Overall, the poster showed the most favorable outcomes. The simple graphics were easy to understand, and users expressed that it gave them ideas for how to diversify their diet. Specific findings are noted below:

- **Poster:** 14/23 participants put the poster up in their house. Those that put the poster up demonstrated an increase in diversity score. Those that did not put the poster up showed no change in diversity score.
 - Findings: The poster is an effective way to remind target groups of the information introduced at the briefing moment. It allows information to be shared with family members. Putting up the poster serves as a commitment to eat better.
 - *Recommendation:* Update the photos and graphics, and create different posters for PLW and CGs.
- **Tracker:** 2/23 used the tool every day. The majority of target groups had either not scratched anything off or lost interest within the first week.
 - Findings: The success of the tracker differs greatly depending on the participant. Most PLW and CGs expressed that they are too busy to track their dietary practices daily.
 - *Recommendation:* Remove from kit
- **Video:** Often, target groups would let their children watch the video while they sat back. The message of the story feels more appropriate for the CGs group. The storyline did resonate with a few of the target groups and the messages seemed well understood.
 - Findings: Video appears to be a difficult channel because not all target groups have access to smartphones, which means they cannot take the video back home to share with family and friends.
 - *Recommendation:* Keep the video as part of the briefing for caregivers only.

3.6 Drop-off Test Learnings and Recommendations

Key Learnings and Recommendations	
Make desired behaviors known and visible	
Learning	Recommendations
Diversity increased slightly for PLW as a result of reminders and being well prepared.	Provide ingredient baskets for food prep and nudge stickers for key ingredients. Provide more specific information on where to place

	the nudge stickers for maximum effect.
Target groups need to be reminded of tools and messages throughout time.	Repeat messages more than once; schedule check ins to encourage tool usage; reinforce community support
Create obvious links between tool use and health	
Learning	Recommendations
CGs are motivated by the health of the baby.	Link tool use to the baby's health. Focusing on the benefits of each different food type will encourage them to feed more diversity.
There is a cultural clash for LW and the desired behaviors. LW want permission to eat certain foods, such as green vegetables.	Provide tools to LW that promote specific practices such as eating vegetables and fruits. Help them store food for longer, so they have ingredients even if they're unable to leave the house. Focus on why and how foods and behaviors impact the health of both mother and baby. Involve CGs and other family members of LW.
Integrate tools into existing practice	
Learning	Recommendations
Making CGs practice easier and faster feeding methods increases adoption.	Provide tools for the baby that increase efficiency of food preparation and feeding (masher, scissors, spoon and bowl)
Create timely distribution and briefing moments	
Learning	Recommendations
Pregnancy is the moment to spark lasting motivation for the life of the kit.	Leverage the connection between mother and baby as motivation for now and after birth by delivering the first set of tools at the start of pregnancy
Preparation for the desired behavior helps increase diversity.	Distribute CG tools in anticipation of complementary feeding (before 6 months) with a special briefing and demonstration of how to use the tools in the kit
Distribution is not enough. Create a briefing moment that sticks.	In the briefing discuss: <ul style="list-style-type: none"> ● Key desired behaviors ● Ingredient benefits ● Desired use of the tool


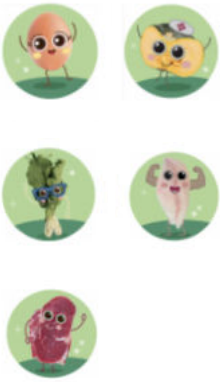
	<ul style="list-style-type: none">● Demonstration of how to use the tool● Discussion on where to place each tool● Moment of commitment to do the behaviors and use the tools <p>Setting up the standard lets target users know what they're aiming for and feel confident in their ability to achieve it.</p>
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Phase 4: Final Recommendations

4.1 Introducing the Everyday Nudge Kit






By following the HCD process, we created an Everyday Nudge Kit. The Kit includes informational tools, visual reminders and physical tools to be used in food preparation and feeding. The items are intended to be distributed to PLW and CGs directly at Care Group monthly meetings implemented by GIZ MUSEFO’s implementing partner, RACHA. The distribution model could vary and implementation guidance is provided in the next section of the report.


The tools, their corresponding messages, and recommendations for when to distribute the tools for each group are shown in the following table. For details about estimated costing of the toolkits, see [Annex 6: Cost Breakdown of the Final Kits](#).

Tool	Instructions
PREGNANT WOMEN DISTRIBUTION (the moment they join)	
	<p>PLW Poster</p> <p>This informational tool introduces the Superfood Concept and conveys key messages related to diversity and frequency for PW. For a closer look at the poster, see Annex 7: PLW Poster.</p> <p>How to use: PLWs could be encouraged to hang the poster in a central area of their home so that all household members can be reminded of important diversity and frequency messaging.</p>
	<p>Visual Nudges (Nudge Stickers)</p> <p>This visual cue is intended to be a simple way to remind PLW and CGs to eat more diverse food groups. Each sticker represents important food groups such as: eggs, orange fruits/vegetables, green leafy vegetables, fish, and meat. For a closer look at the stickers, see Annex 8: Nudge Stickers.</p> <p>How to use: PLW could be encouraged to place stickers in strategic locations in their house, for example, in their food preparation and cooking spaces, so they serve as subtle reminders to add another food group to their meal planning.</p>

	<p>Fruit Basket</p> <p>This is a practical basket that could serve as a visual reminder for families to store and make fruits accessible.</p> <p>How to use: PLWs and CGs can be encouraged to place the fruit basket in a strategic location in their household, for example where families have leisure or eat meals, so families have easy access to healthy snacks.</p>
	<p>Ingredient Baskets</p> <p>These are practical food preparation baskets for meat, green leafy vegetables, and orange vegetables. Each color coded basket can serve as a reminder for PLWs and CGs to source and prepare diverse food groups and not rely only on rice.</p> <p>How to use: PLW and CGs could be encouraged to store ingredient baskets in their food preparation space. Each basket can store food items associated with the food group and the PLW or CGs can use each basket to rinse and prepare each ingredient before cooking.</p>
<p>LACTATING WOMEN DISTRIBUTION (at 7-9 months pregnant)</p>	
	<p>Silicone Bag</p> <p>These sturdy storage bags are intended to store green leafy vegetables in coolers, so there is always a supply of green leafy vegetables, especially for LW. They serve as a visual cue and reminder for LWs to source and eat green leafy vegetables.</p> <p>How to use: LWs could be encouraged to store fresh green leafy greens in the storage bags for up to 2-3 days. In instances when they purchase too much for one meal, or pick too much from their home garden, they have a supply on hand to use.</p>
	<p>Egg box</p> <p>An egg box is intended to be a visual cue and reminder for families to source and store eggs, so that they can eat eggs on a regular basis.</p> <p>How to use: LWs could be encouraged to place the egg box in strategic locations, for example, in their food preparation and cooking spaces, so they serve as subtle reminders to add eggs to their meal planning.</p>

CAREGIVER DISTRIBUTION (at 4-6 months old baby)

 <p>The poster is titled 'កូនងើតរបស់អ្នក' (Your baby's first food). It features a photo of a baby being fed with a spoon. Below the photo, there are three columns representing different stages of feeding: '៦ ខែ' (6 months), '៧-៩ ខែ' (7-9 months), and '៩ ខែ ឬ ក្រោយ' (9 months or later). Each column shows a progression of food textures from puree to soft lumps to finger foods. At the bottom, there are icons for various food groups like fruits, vegetables, grains, and proteins.</p>	<p>CG Poster This informational tool conveys key messages related to diversity, frequency and texture for feeding babies 6-23 months old. For a closer look, see Annex 9: CG Poster.</p> <p>How to use: CGs could be encouraged to hang the poster in a central area of their home so that all household members can be reminded of important diversity, frequency and texture messaging for babies.</p>
 <p>The image shows a pair of scissors with green handles and a green comb-like attachment on the blades, designed for safely cutting soft green leafy vegetables.</p>	<p>Scissors Special scissors to cut green leafy vegetables for the baby. This utensil is a timesaver for CGs and removes a barrier they face when preparing food for babies.</p> <p>How to use: CGs could be encouraged to use these scissors to chop up green leafy vegetables and then boil them for the baby.</p>
 <p>The image shows a white plastic food masher with a green handle and a green lid, used for mashing soft-cooked food into a smooth or slightly lumpy texture.</p>	<p>Masher Food masher to prepare correctly textured food for babies 6-23 months. This utensil is a timesaver for CGs and makes it easier to create the right texture.</p> <p>How to use: CGs could be encouraged to use the masher by putting all cooked food into the masher until the right texture is achieved.</p>
 <p>The image shows three stainless steel bowls of different sizes: a large bowl, a medium bowl, and a small bowl, used for portioning food according to the baby's age.</p>	<p>Baby Bowls Three bowls that help CGs feed the right amount to the baby based on age.</p> <p>How to use: Encourage CGs to use these three bowls at three key milestones when portion size should increase: 6 months, 7 months, and 9 months.</p>
 <p>The image shows a small stainless steel spoon with a green handle, designed for gently feeding a baby.</p>	<p>Baby Spoon Small spoon to feed the baby to create a moment of joy during feeding.</p> <p>How to use: Encourage CGs to feed the baby using this gentle baby spoon and wash with soap and water after each use.</p>

	<p>Fruit Basket (if they did not get as PW)</p> <p>This is a practical basket that could serve as a visual reminder for families to store and make fruits accessible.</p> <p>How to use: PLWs and CGs can be encouraged to place the fruit basket in a strategic location in their household, for example where families have leisure or eat meals, so families have easy access to healthy snacks.</p>
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4.2 Implementation Guidance

Moving forward, it is highly recommended that the items in the Everyday Nudge Kit are tested over 10 days. Therefore, it is highly recommended that a pilot test be implemented to continue learning, to measure the efficacy of the kit in its latest version, and to test the financial viability of this intervention. A long pilot could also allow for GIZ and its implementing partner to observe if there is sustained behavior change over time.

4.2a Implementation Partner

In the mid or long term, the Everyday Nudge Kit could be integrated into other existing programs such as the National Nutrition Program (NNP), or directly into the health services system through the Ministry of Health (MOH) and its network of health clinics who provide antenatal care and postnatal care services. One could also envision a commercial model where kits are sold either to PLW directly or through a third-party payer model.

4.2b Cost Recovery Model

When selecting an implementation partner (or multiple) it is important to consider the cost-recovery model and how the intervention could be financially viable and sustained over time. There are three main cost drivers to consider when planning for implementation:

- **Cost of kit items:** this includes the cost to procure the physical tools and production/printing costs of informational tools
- **Storage and transportation costs:** this includes warehousing or storage-related expenses to keep items safe and secure, as well as transporting expenses to deliver items to Care Group meeting
- **Labor costs:** the cost of salaries of the field and operational staff to distribute the kit items and facilitate informational sessions (initial briefing and on-going message reinforcement)

To recover these costs, there are a few cost recovery models that could be explored:

- **Charge full cost to target users:** a pure commercial model could be created where the private sector creates these kits and sells them directly on the market. The pros of this approach could be that the target users feel more ownership and, if there is a business case, the commercial model could be sustainable. The cons could be that the price will likely be too high for low income, vulnerable households. They may not be able to afford to buy all the tools at the right moment.
- **Partial subsidy:** this model could involve a commercial partner whose role it is to procure the kits, and a donor-funded or government-funded program that pays a

portion of the cost (e.g. for example 50%), with the target user paying a subsidized price. This could take the shape of a voucher that target users can redeem when they purchase the kit items. The pros of this approach is that the price is lower for the target group, but fundraising will be required to offset the cost.

- **Program/project budget:** this is the current model, and this means that a donor-funded or government-funded project will use grant money to pay for the costs related to implementing this intervention. The pros is that the target users do not have to pay, reducing the affordability barrier, but the main con is that the intervention will end when the project is completed, therefore not sustainable.
- **Integration into the national health system and budget:** this model would involve convincing the Ministry Of Health that this intervention is essential to improve child and maternal nutrition and should be integrated into the public health system. The cost would then be absorbed by the national government, through tax collection. The pros is this could be a sustainable model, and one that could be replicated nationwide, but the cons is that current health budgets are scarce and this may not be viewed as a priority for public funds.
- **Brand sponsorship:** a way to reduce the cost of each item could also be to seek corporate and brand sponsors for tools included in the kits (e.g. Nuby Masher) that could either provide items for free to low cost, or donate funds to the cause in return for brand recognition. This could help reduce the unit price of each kit.

4.2c Pre-Distribution

Training

The implementing partners distributing the tools and briefings need to understand key behaviors, why each tool is important, how to use each tool, and its benefits to the target group. GIZ MUSEFO would need to take the lead and train the implementing partner, who will then train the field team that distributes the tools.

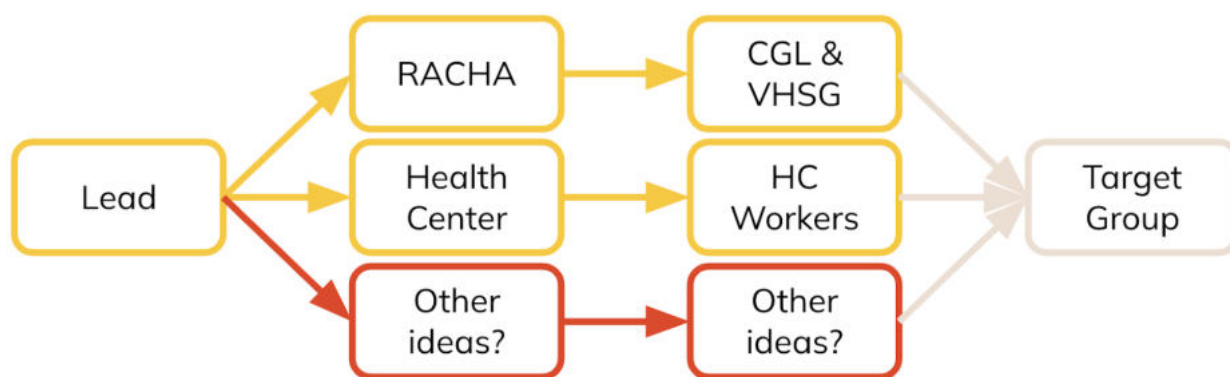


Figure: Diagram showing potential training processes for implementation

When planning the training, it is important to consider the scale of the training which, in turn, is based on the scale of distribution. To make training efficient and effective, the team can consider video or online training tools, while ensuring that the training is still engaging and interactive and the trainers are well-prepared. **Moving forward, GIZ and their implementing partner could consider developing a training manual, a training video and short videos that show influencers/community members using the tools to be**

used to onboard and train implementing partners on how to distribute and deliver briefings.

4.2d Distribution

Distribution Channel

For the pilot, the Everyday Nudge Kit was designed so that GIZ MUSEFO can integrate this intervention into their existing Care Group monthly meetings. Their implementing partner in RACHA and they work alongside Care Group Leaders (CGLs) and Village Health Support Group (VHSG).

If GIZ is planning to work with additional implementing partners, they could consider integrating into the health system structure, for example at ANC and PNC appointments. This is primarily dependent on the key stakeholders chosen, as they will have more input into which moments can be well-leveraged.

Distribution Moments

There are three distribution moments when PLW and CGs should be given Nudge Kit items: at the start of pregnancy, postpartum, and when the baby turns six months old. At each phase of distribution (PW, LW, CG), there needs to be a novel and participatory briefing. Briefing sessions should include these topics:

- Key desired behaviors - diversity (green leafy vegetables, orange fruit/vegetables, eggs, meat, fruits), texture and quantity.
- Benefits of each behavior - what's the reason to eat each food/practice each behavior?
- Desired use of the tool - show what each tool is intended for.
- Demonstration of how to use the tool - show exactly how to use the tool and let target groups try to use the tools.
- Discussion on where to place each tool - ensure target groups commit to putting tools in specific places.
- Moment of commitment - commitment to practice and use, ideally with a certificate
- Plan for follow up - tell target groups when follow up will be and change expectations by the time of follow-up.



Figure: Babies play with the ingredient divider tool while CGs are briefed on the toolkits at the dropoff moment

In the briefing, it is important to include other audiences within the PLW support network, such as partners/husbands, siblings, relatives, and parents. In order to enact sustainable behavior change, it is important that they understand the reasoning behind the tools as well. These secondary audiences should receive their own personal invitations.

Having target groups see others get the tools and hear the advice can be a helpful incentive to ensure the target groups join the periodic meetings. Make sure target groups know exactly when they will receive the tools, so that they know when the next set is coming.

Ensure that the briefing is positive and motivating.

Moving forward, GIZ and their implementing partner should consider developing briefing session guides, a commitment certificate, and invitation for key family members to join the briefing meetings.

Communications Channels

Other communication channels could be considered in the pilot phase to deliver key messages to the target groups. It is critical to take into account what channels and technologies the target groups are already comfortable with. In this context, many target groups didn't have a phone and preferred in-person learning, which is costly and resource-intensive.

	High Engagement	Low Engagement
Digital	Video	Telegram Messenger IVR Phone Calls
Analog	Caregroups Health Centers (ANC/PNC, Nutrition Counseling) Home Visits Poster	Picture Instructions Vendor Speakers

Figure: Comms channels for distribution

When considering communication channels, ensure to integrate existing channels and engagements. Use a combination such as:

- Tool distribution and training: Care Groups, ANC/PNC, Nutrition Counseling.
- How-to instructions and demo: Video.
- Info at home: Poster; Picture instructions.
- Follow up Reminders: IVR; Phone Calls.

Consider how information transmits throughout communities, and how the channel that is scaled can be used for information sharing as well.

4.2e Follow-Up

GIZ could consider including follow-up post distribution to ensure that target groups continue to be motivated and feel engaged with the behaviors and tools. The follow up could remind target groups about key behaviors, tools, and messages and ask for target group feedback so there is constant improvement. When planning follow up, test a variety of methods like IVR, in-person, or community led. Some options for how follow up happens are:

- When: Caregroups; Home Visits; ANC/PNC; Nutrition Counseling.
- Who: Community to Community; Project officer; CGL & VHSG.
- Other touchpoints: IVR, Phone Calls.

Consider how to monitor and collect data during follow-up to ensure that the pilot is progressing as planned or to pivot, if required.

4.3 Next Steps

This intervention offers a quick and easy way to nudge improved consumption behaviors among PLW and CGs in Kampong Thom and Kampot Provinces. As this is qualitative research, the sample size was small. It would be prudent to distribute the tools to a larger sample over a longer time period to test the solution as a pilot. A pilot offers the opportunity to test tool and message effectiveness again, distribution at key moments, cost recovery models, briefing, and follow-up. It would also show how target groups interact with the campaign over time.

The first step moving this intervention forward is to align with key partners on who will own the project and shape the pilot and subsequent distribution.

See [Annex 10: Pilot and Scale Up Worksheet](#) that can be used to ensure that key questions are answered in the next phase.

Annexes

Annex 1: Banana Bag



In 2018, UNICEF and Save the Children International partnered with 17 Triggers to investigate the most significant barriers that Myanmar families faced during the first 1,000 days of a newborn's life, and how a Baby Box might help improve their nutritional behaviors. After extensive rounds of research and product iteration, a solution was trialed in two regions for 3

months.

Figure: Baby playing with banana bags in Chin, Myanmar

Shaped like a banana, the bag was filled with a variety of tools designed to encourage diversity (egg and bean boxes), correct preparation of food (crushing tool set), feed the correct amount (portion bowls), and practice the correct WASH behaviors (soap and baby towel). All the tools were wrapped in a main campaign message delivered by the Superfood characters: "Feed not only rice, but beans, eggs, and vegetables, to your children every day."

Findings across all key behaviors showed early promise of the Banana Bag being a successful intervention to improve complementary feeding. Mothers felt more confident in their feeding practices. They became advocates, spreading good practices, recipes, and even tools among their communities.

This project borrows similar ideas and insights from the Banana Bag, especially for CGs complementary feeding behavior. It also allowed the researchers to do initial tool testing during the field research, getting target group feedback earlier and therefore being able to refine the final set more quickly.



Figure: Breakdown of recommended tools for the final Banana Bag solution

Annex 2: A Day in the Life

This visual represents the daily activities of both Srey Pov and Chantha, whose daily activities are quite similar. Creating a storyboard of their day helps to understand the daily pressure of our target users and find moments where their behaviors can be influenced by an intervention. The following visual shows how PLW and CGs manage their time, especially related to sourcing, prepping, and eating/feeding food throughout their day.

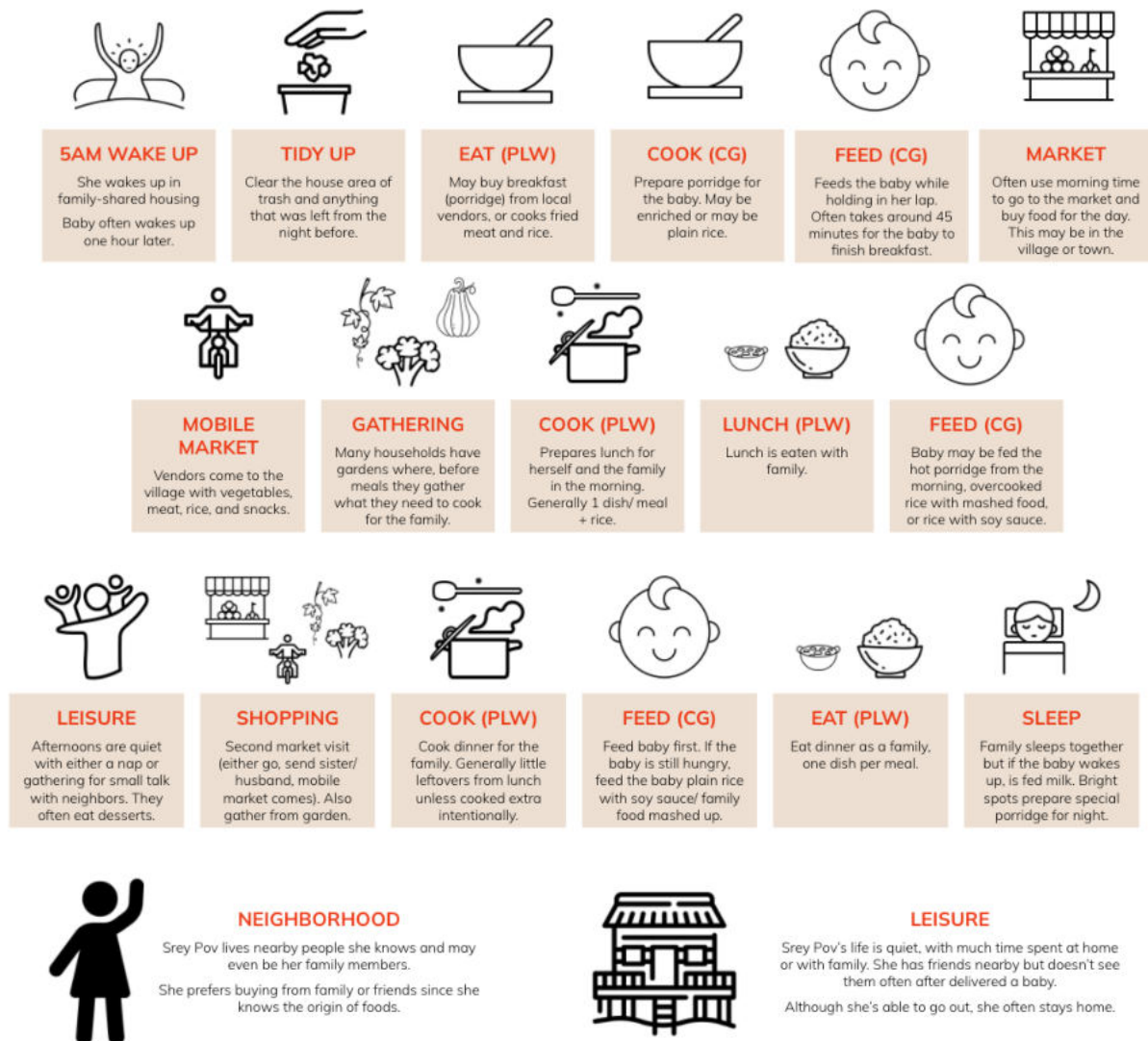

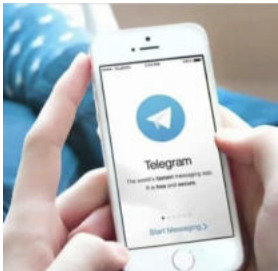




Figure: A Day in the Life of Srey Pov and Chantha





Annex 3: Pitch Test Findings

Details about the tools, their intended use, the feedback they received, and reasons why they were dropped or carried into a second round of drop-off testing.

Tool	Description of the “Pitch”	Findings
Concepts		
<p>Superfoods</p> 	<p>The Superfoods concept shows a variety of key ingredients that you should eat every day. They are friendly and informative - telling you the best things to eat, and why!</p>	<p>The characters work well and can link to specific benefits, but they can't be too specific. They are more CG focused.</p> <p><i>Recommendation:</i> Provide a broader array for each character to show it is not just one ingredient per group.</p>
<p>Care with Colors</p> 	<p>The Care with Colors concept shows you the beautiful colors that you should be eating every day. When your diet is colorful and diverse, you and your baby are healthier.</p>	<p>The colors are quite clear for green leafy vegetables, but otherwise there are only 2 categories that matter to target groups - orange and red. Some key food groups are combined, and target groups struggled to agree on colors of certain foods.</p> <p><i>Recommendation:</i> Do not rely on color as a nudge for diversity.</p>
<p>Food Groups</p> 	<p>The Food Groups concept uses simple grouping of food to show you where you're doing well and where you can do better!</p>	<p>The division of food made sense to the target group who could easily identify which groups were missing from their daily diet. They knew what they should be eating but they didn't understand why.</p> <p><i>Recommendation:</i> Bring food groups into messaging of Superfoods but link the nutrient value to the benefits of each group.</p>
Progress and Goals		
<p>Nutrition Dream</p>	<p>A group of influencers join</p>	<p>This idea is good in theory, even to</p>

<p>Team: Facebook Influencer channel</p> 	<p>forces and become the Nutrition Dream Team. Each week, one member teaches about a specific healthy food, showing the benefits and how to cook it. Target groups can try recipes at home and share feedback on Facebook.</p>	<p>the target groups. However, given the gaps in use of Facebook, it may not be as comprehensive as desired. If it moves forward, video in Khmer with text captions, and the faces should be community members and influencers.</p> <p><i>Recommendation:</i> Use video to explain concepts and ideas, but with “people like me” instead of big influencers.</p>
<p>Mom’s Group: Telegram channel</p> 	<p>Target groups join a telegram group with other PLW and CGs in their area to learn about nutrition, take quizzes about common foods, try recipes, and share pictures of meals and milestones.</p>	<p>The idea of community learning was very attractive. There is a desire to try new things together and learn together. Telegram doesn’t seem like a good option.</p> <p><i>Recommendation:</i> Use community learning moments to teach key concepts. Reevaluate Telegram as a channel in 1-2 years.</p>
<p>21 Day Challenge: Caregroup channel</p> 	<p>Challenge for target groups to share a picture of their meal every day. Target groups receive feedback for their meals and points based on their adherence to key behaviors. They receive new recipes and information about fruits and vegetables (diversity).</p>	<p>Adherence and Information can be useful, but not as a group challenge. This may be something that can work better as a poster.</p> <p><i>Recommendation:</i> Try an at home tracking tool which may be less tech heavy and more accessible.</p>
<p>Kitchen Counter: Personal tracking</p> 	<p>At home wall calendar with stickers that target groups can place to see what they ate every day and track what’s missing. When something is missing, add it at dinner.</p>	<p>This may be an interesting reminder of what to eat, but likely won’t function as a tracker. GIZ gave a calendar that was sitting untouched because “it was too beautiful to rip” so any poster must be focused on utility first.</p> <p><i>Recommendation:</i> Create an at home tracker that is more</p>

		functional than aesthetic.
Diversity (General)		
<p>Baby Utensils</p> 	<p>Small, green spoon that is soft so that it's easier to feed the baby.</p>	<p>We learned that many babies reject food. This offers an opportunity to encourage the baby to eat green/orange fruits and vegetables by providing a green/ orange spoon which will remind the caregiver. This will also support easier feeding because it is small enough for a baby.</p> <p><i>Recommendation:</i> Keep the spoon in the kit.</p>
<p>Shopping Bag</p> 	<p>Shopping bag that has a compartment for green leafy vegetables, meat, orange vegetables, and fruit.</p>	<p>Although multiple pockets seemed undesirable to one participant, this idea gained traction as it was better understood . Recommend adding messaging. This bag would support increased diversity in both shopping and food gathering in the garden.</p> <p><i>Recommendation:</i> Keep in the kit and add messaging.</p>
<p>Vendor Nudge</p> 	<p>Reminder at vendor level to eat healthy foods. Vendors have knowledge about what is good to eat for PLW and babies.</p>	<p>Local vendors may be the right channel to share information and this could include vendors that are part of the Caregroups so they have more authority. This is also an opportunity to sell ingredients for the pre-mix and increase availability of desired foods.</p> <p><i>Recommendation:</i> Consider as a follow-on project as opposed to a nudge within this project.</p>
<p>Divided Cooler</p>	<p>A cooler or cooler insert that has space for vegetables, meat, fruits, and orange vegetables.</p>	<p>A participant said that she usually puts her green leafy vegetables in plastic before putting them in the cooler, which supports freshness. Considering that most households</p>

		<p>already have a cooler, it may be more useful to develop inserts and messaging for inside.</p> <p><i>Recommendation:</i> Provide a freezer bag for green leafy vegetables.</p>
<p>Hot Hand</p> 	<p>A hot potholder for target groups that has pumpkins, green leafy vegetables, meat, and other recommended foods.</p>	<p>Although this tool would be helpful, it is too late in the cooking process to act as a nudge to add diverse foods.</p> <p><i>Recommendation:</i> Recommend not moving forward because target groups identified that the tool would not remind them to add diversity once all of the ingredients are prepared.</p>
<p>Family Placemats</p> 	<p>Placemat for baby to sit on which has fruits and vegetables to distract the baby.</p>	<p>The mat should be large (picnic mat) and have pictures of foods and animals.</p> <p><i>Recommendation:</i> Recommend not moving forward since the babies are mobile for the majority of the time of the intervention. Reminders can be integrated elsewhere.</p>
<p>Baby Toys</p> 	<p>Baby toys that look like key fruits and vegetables.</p>	<p>The toy needs to be continuously engaging as the child gets older. Plastic is an acceptable material. There wasn't a lot of engagement around the idea as to what kids like, but there was enthusiasm.</p> <p><i>Recommendation:</i> Recommend not moving forward since the toys will not adapt to the baby's age and needs effectively.</p>
<p>Pajama Pants</p>	<p>Fruit and vegetable themed pajama pants for target groups to wear when they cook, that remind them to</p>	<p>The pajama pants, while a nice addition, may not nudge consumption every day. We repeatedly heard that the</p>



eat the correct diversity.

informational reminder should be on the wall.

Recommendation: Recommend not moving forward since they will not be used daily and target groups pointed out that their clothing doesn't impact their consumption.

Portioning & Ratio

Measuring Cups
(drop off)



Use each metal cup to prepare the right amount of each specific ingredient.

Measuring cups that are made specifically for baby-sized meals would be more desirable. This would help CGs provide food all day for the baby - since they often prepare food once, for the whole day.

Recommendation: Provide instructions attached to the measuring cups to indicate food measurement for the baby.

Ingredient Divider
(drop off)



Three compartment wooden platter that has divisions for food preparation (green leafy vegetables, meat, vegetables, egg). Target groups can put all ingredients into the platter and remember to have 3 groups per meal.

This tool should be moved forward, but adhere to the recommendations shared by target groups - larger, higher sides, and 3 compartments. The tool can include certain messaging around it, to encourage diversity. [iterations to follow]





Recommendation: Keep the idea of an ingredient divider but make it bigger with higher sides and reminders directly on the tool.


Ladle (drop off)






Large ladle for soups and stews that helps target groups select *more* of each healthy ingredient (as opposed to rice).

Since target groups cook and serve only what will be consumed at that meal time, the ladle didn't support eating more diversity in meals. However, there was interest in the tool due to the perceived high quality - something to consider as we source other tools for the kit.





		<p><i>Recommendation:</i> Remove the ladle.</p>
<p>Mom's Bowl</p> 	<p>A special bowl for moms that shows the right amount of rice vs. other ingredients and helps mom eat less rice.</p>	<p>Identify the desired amount of rice that a PLW should eat and ensure the bowl is that size.</p> <p><i>Recommendation:</i> Keep the rice bowl as a nudge.</p>
<p>Smaller Rice Scoop (drop off)</p> 	<p>A smaller rice scoop that helps target groups eat less rice and more "food."</p>	<p>Providing a scoop may be helpful if the currently used one is larger, however this isn't always the case. The size of the bowl is as/more important than the scoop.</p> <p><i>Recommendation:</i> Do not recommend moving forward.</p>
<p>Add Orange</p>		
<p>Pumpkin Purse</p> 	<p>Coin purse shaped like a pumpkin so that target groups can take it to the market with their money and remember to buy orange vegetables.</p>	<p>Target groups wanted a big, tote bag sized purse instead of a change purse. This idea could be combined with The Shopping Bag. Target groups also wanted a "cute" purse.</p> <p><i>Recommendation:</i> Combine with the Shopping Bag as a market/sourcing nudge.</p>
<p>Vegetable Cutting Set</p> 	<p>Set of chopping board, knife, and peeler that are all orange to support preparing orange vegetables.</p>	<p>The chopping board may work as a nudge - for not only orange but all vegetables. Plastic is acceptable. It is also a space that can be used for messaging (suggested by target groups). We can also consider a nudge sticker/ hook. [iterations to follow]</p> <p><i>Recommendation:</i> Bring forward the chopping board only and add</p>

		messaging.
<p>Pumpkin Spoon rest</p> 	<p>Pumpkin shaped spoon rest to be placed near the cooking area that will remind target groups to add orange to meals every day.</p>	<p>The spoon rest answers a definite need for somewhere to place a spoon in use. However, it may not nudge consumption of orange because it's too far into the cooking process.</p> <p><i>Recommendation:</i> Do not include as a tool to produce and test.</p>

Add Egg

<p>Egg storage</p> 	<p>A box for target groups to store up to 10 eggs at a time and keep them safe from breaking. Place it in the cooking area to remember to eat eggs every day.</p>	<p>The egg box was very popular, and acted as a useful storage and nudge to eat eggs. Although we thought a smaller box was better, the big box for 10 eggs was more desired. The location of storage is generally far from heat. Plastic is okay.</p> <p><i>Recommendation:</i> Give target groups a 10 egg egg box and add messaging.</p>
<p>Egg timer</p> 	<p>Egg shaped timer to remind target groups to add egg and rings when food is ready.</p>	<p>This tool won't help remind them to eat egg and will likely not be used often in the kitchen.</p> <p><i>Recommendation:</i> Do not recommend moving this tool forward.</p>
<p>Eggshell compost bank</p> 	<p>Marked container to store used egg shells that nudges target groups to add more eggs so that they can compost more egg shells.</p>	<p>It may be a compelling tool if each PLW & CG was always planting their own food but, 1) they aren't and 2) they have manure which is a more common fertilizer. This would not nudge egg consumption.</p> <p><i>Recommendation:</i> Not moving forward.</p>

Add Fruit

<p>Fruit Basket (drop off)</p> 	<p>Basket that the family can fill with fruits and place in a central location.</p>	<p>Although it wasn't extremely desirable initially, when one family tried it, they liked it and it did encourage the baby to demand fruit because he could see it.</p> <p><i>Recommendation:</i> The bowl/basket must have a curved bottom and potentially a cover, to protect from ants and flies.</p>
<p>Fruit plate (drop off)</p> 	<p>Pretty plate that target groups can use to put chopped fruit on as a snack.</p>	<p>This intervention seems to have potential, especially as an initial trigger for behavior change. However, it is a tool that will easily get repurposed in the household and may lose its original use.</p> <p><i>Recommendation:</i> Do not move forward.</p>
<p>Fruit dice</p> 	<p>Dice with fruits that you can roll and they help you select which fruits to buy and eat.</p>	<p>Overall, dice didn't seem to be a very popular tool or game and there is a desire to choose for themselves.</p> <p><i>Recommendation:</i> Suggest not moving forward.</p>
<p>Silicon Feeder (drop off)</p> 	<p>Squishy feeder for babies that will help them eat more fruits.</p>	<p>Although this tool is interesting, it will be for a very specific age group that already eats fruits. The key here is likely messaging more so than a tool to encourage fruit.</p> <p><i>Recommendation:</i> Do not move forward.</p>
<p>Add Texture</p>		
<p>Sieve and Stick</p>	<p>The Sieve can support making food very smooth and liquid.</p>	<p>This is a tool that some CGs already use and are familiar with. It may not be useful, since it's already owned.</p> <p><i>Recommendation:</i> Suggest moving</p>



		<p>forward to test against other texture tools.</p>
<p>Fork</p> 	<p>The Fork can support more textured mashed foods which are suitable for older children.</p>	<p>Although forks are well know, they are not seen as a useful texture tool.</p> <p><i>Recommendation:</i> Suggest not moving forward.</p>
<p>Nuby Masher</p> 	<p>The Nuby Masher is a tool to mash pre-prepared food.</p>	<p>CGs were very excited about this new tool. It would support the mashing of prepped food.</p> <p><i>Recommendation:</i> Suggest moving forward to test against other texture tools.</p>
<p>Herb Scissors</p> 	<p>The Herb Scissors are used for cutting greens, which are a staple of the Cambodian diet.</p>	<p>The scissors may support the addition of greens to baby's diet as they are more efficient than CG's current practise.</p> <p><i>Recommendation:</i> Suggest moving forward to test against other texture tools.</p>

Annex 4: Key Messages

The following key messages explained to the target groups the benefits of each food group, and “why” they should be eaten every day. These messages were usually printed on a label.

	PW	LW	CG
Diversity (Main Message)	Eat us every day! Rice alone is not enough. Please add green leafy vegetables, eggs, meat or fish and an orange vegetable to meals every day.		
Fruit	Eat fruits every day It's a healthy snack		
Eggs	Eat an egg every day It makes you and your baby stronger		Eat egg every day It makes your baby stronger
Pumpkin	Eat orange vegetables every day They keep you and your baby healthy		Eat orange vegetable every day They keep your baby healthy
Green leafy vegetables	Eat green leafy vegetables every day They protect you and your baby		Eat green leafy vegetables every day They protect your baby
Meat/fish	Eat meat or fish every day They help you and your baby grow		Eat meat or fish every day They help your baby grow
Portioning	Add more love What you eat gets passed down from your body to your baby's body.		Add more food as your baby grows Use a bigger bowl as baby gets older, they need more food to grow.
Frequency	Add an extra meal Eat 4 meals a day when pregnant and breastfeeding so that you and your baby get the nutrients you need.		Add an extra meal as your baby grows
Texture	N/A	N/A	Add the right texture Feed food to your baby only after crushing. Then, they can digest it well.

Annex 5: Prototype Testing Tool Findings

Tool & Intended Use	Usage
PLW, Kit 1: If you're prepared, will you eat more diverse foods?	
 <p>Shopping bag Take the shopping bag to the market and fill each colored section with foods that are that color.</p>	<p>4/6 used the tool. Some took it to the market 1x/week. Target groups remember that colors are a nudge toward diversity.</p>
 <p>Ingredient divider When cooking, fill each section with a different raw ingredient - meat, green leafy vegetables, and orange vegetables. Use the fourth compartment for eggs or spices.</p>	<p>3/6 used the tool. One tried using it for raw ingredients. All of them thought it was most useful to store food that was already cooked.</p> <p>The four different sections served as a good visual reminder of diversity.</p>
 <p>Sticker labels Stick the stickers around the house, to remind you to eat green leafy vegetables, fish, meat, eggs, and orange vegetables.</p>	<p>4/6 stuck up the stickers. Often the stickers were in the same area as the poster and tracker.</p> <p>3/4 who put up stickers increased/maintained their daily diversity score. PLW reported feeling more inspired when thinking about what to buy or cook.</p>
PLW, Kit 2: If you see it, will you eat more diverse food?	
 <p>Fruit Basket Fill with fruits and place in a central location. When you see the fruit, have one as a snack.</p>	<p>4/6 used the tool. Used to keep fruit (although some used to wash green leafy vegetables and meat).</p> <p>Everyone ate fruits at follow up. One LW said she felt more confident that eating fruits was a safe practice.</p>



Orange Chopping Board

When preparing food, use the orange chopping board.
The orange color will remind target groups that they should add orange to meals.

4/6 used the tool (3 every day). Used to cut meat and vegetables.
All ate orange at baseline and follow up.
Some indicated that it encouraged them to eat orange more often.



Egg Box

Store up to 10 eggs in the egg box. Place the egg box near the eating area so that you are reminded to eat/feed eggs every day.

4/6 used the tool (all every day). Some used as backup to plastic bag/ fridge.
1 person added eggs, but didn't use the tool. Two who used it often say they don't like eggs and didn't eat eggs 24hrs before follow up.



Freezer Bag

Buy extra green leafy vegetables and put them in the freezer bag to stay fresh and ready to eat all day (or two). Also use it to store leftovers.

2/6 used the tool. When used to store vegetables, kept vegetables fresh. If not used for vegetables, not used at all.
Everyone ate green leafy vegetables at follow-up. The one LW who added green leafy vegetables did not use the bag.

"It keeps greens so fresh!"
Pan Nou (LW)



Mom Bowl

Use the mom bowl for rice instead of your original bowl. Because the bowl is smaller, you will eat less rice and more "food."

4/6 used the tool. They used it for fish sauce, stir fry, and feeding the baby porridge.
PLW reported eating more rice or taking longer to eat the correct amount of food. It did the opposite of what was intended.

"I put stirfry in the bowl and use a bigger bowl for rice. I eat more rice now!"
Than Kay (PW)

CG, Kit 3: Do family diversity tools improve diversity?



Shopping Bag

Take the shopping bag to the market and fill each colored section with foods that are that color. Green leafy vegetables in green, Meats in red, Orange fruits and vegetables in orange.

3/5 used the tool. 2 used for the market. Want to use it to store baby things.

"I store baby things when we travel."
Sin Sopheap (CG)



Fruit Basket

Fill with fruits and place in a central location. When you see the fruit, have one as a snack.

3/5 used the tool (0 in use). Want to put cut fruit in the basket → in use for a shorter time.

4/5 fed fruits at follow up. Children are eager to eat any fruit they see.

"Don't want to use because of stickers... I want to keep it new."

Oun Seng (CG)



Orange Chopping Board

When preparing food, use the orange chopping board.
The orange color will remind target groups that they should add orange to meals.

3/6 used the tool (2 every day). Used to prep food for the baby only.
All fed orange at baseline, 3 of 5 fed orange at follow up. Those who indicated using the tool did not all feed orange the day before.

"It is a reminder to eat yellow"
- Bav Samann (CG)



Egg Box

Store up to 10 eggs in the egg box. Place the egg box near the eating area so that you are reminded to eat/feed eggs every day.

3/5 used the tool (2 use every day). Fill with eggs and use a plastic bag for leftovers.
No change in feeding eggs from drop off to follow up.

"I don't like storing eggs... I buy them next door."

Oun Seng (CG)



Freezer Bag

Buy extra green leafy vegetables and put them in the freezer bag to stay fresh and ready to eat all day (or two). Also use it to store leftovers.

2/5 used the tool. Tool was either lost or hidden away (1 who used it, lost it).
4/5 fed green leafy vegetables at follow-up. One CG added, but didn't use the bag. One CG didn't feed, and had used the bag but lost it.

CG, Kit 4: If you only get baby tools, will you feed the baby better?



Baby Bowls

Use the corresponding bowl for the age of the baby, and ensure that the bowl size increases at 7 months and 9 months.

100% used the tool every meal. All were using the correct bowl size and were filling it between 50-100% with the majority filling to around 75%.

CGs said that they feel more confident in how much they should feed the baby and they felt they were feeding the baby more food now.

"It is easy to know!"
Vun Khim (CG)



Cup Measure

Use the cup measures to prepare enough food for the whole day. Change the amount at 6, 7, and 9 months so that the food increases correctly.

4/6 used the tool. A couple of moms used it correctly, trying to measure and prepare enough food for the whole day.

The tool was difficult to use and some people used it incorrectly. When it is used incorrectly, moms may feed too little food by preparing too little, using one cup for the whole day, or using it simply as a bowl.

"I measure one cup every day"
Man Tok (CG) [should be preparing at least 2 cups/ day]



Baby Spoon

Feed the baby with the baby spoon which will increase food acceptance. This will

100% used the baby spoon. 5/6 used it every day and every meal, saying that it was the right size for the baby. One mom lost the spoon.

5/6 CG loved the spoon and said that it is easier to feed the baby with the small spoon and the color made the baby more

lead to the baby eating more food and the CG feeling confident to feed more diversity.

excited to eat. They expressed that they felt the baby was eating more.

"I used to think he had a poor appetite. He eats more than before. He likes the color."
Man Tok (CG)



Sieve & Crusher

Put cooked food into the sieve, add water and crush with the stick until it is an acceptable texture for the baby.

None of the moms used the sieve and crusher, claiming their baby was already too big for food that smooth. It didn't impact behavior at all.

"I don't use this. My baby is too old."
Vun Khim (CG)



Food Masher

Put cooked food into the masher and mash the food to an acceptable texture for the baby.

All of the CGs used the food masher, and 5/6 used it every day. CGs felt that this made a huge difference in how quickly they could cook for their baby. They used to spend so long mashing, and now spend only a few minutes. They felt very confident in how they could feed their baby and it gave them opportunities to feed more diversity, because it was easy to prepare.

"Before this, I only made rice porridge with salt. I didn't know how to mash food."
Yuy Sreymom (CG)



Scissors

Cut green leafy vegetables so that they are the correct texture for baby to eat.

5/6 CGs used the scissors. These CGs reported using them everytime they cooked green leafy vegetables. CGs felt that they fed more green leafy vegetables because they were feeling "lazy" to chop green leafy vegetables. They feel that the green leafy vegetables are smaller and better to feed the baby.

"I feed more greens now because it's faster than before. I was too lazy to chop"
Phalla (CG)

Annex 6: Cost Breakdown of the Final Kits

The following table shows an estimate of what the final tools in each kit will cost. As reflected in the CG kit, certain tools are likely to become cheaper when ordered in bulk directly from suppliers as opposed to the market prices we got when buying small quantities for testing.

Pregnant Women (\$1.50)	Lactating Women (\$7.6)	Caregiver Kit (\$23.8→\$12)	
			
Poster Raw ingredients baskets (\$0.30/ Fruit basket (\$0.30/ Nudge tokens (unknown)	Silicone Greens bag (\$4) Egg box (\$3.6)	Poster Baby bowls (\$4 all together) Baby spoon (\$1) Scissors (\$7.8→\$2) Food masher (\$11→\$5)	Fruit basket (if not give when PW)

Annex 7: PLW Poster



ការបរិភោគបាយតែមួយមុខគឺមិនគ្រប់គ្រាន់ទេ។ សូមបញ្ចូលបន្លែពណ៌បៃតង ស៊ុត សាច់ ឬត្រី និងបន្លែពណ៌ទឹកក្រូចក្នុងរបបអាហារជារៀងរាល់ថ្ងៃ។



ញ៉ាំថ្ងៃលើជារៀងរាល់ថ្ងៃ។ ថ្ងៃលើគឺជាអាហារសម្រន់ដ៏ល្អសម្រាប់សុខភាព។



ម៉ាក
 សូមបន្ថែមក្រីស្រណាញ់របស់អ្នក ។
 របបអាហាររបស់អ្នកក៏ដូចជា
 របបអាហាររបស់ទារក
 ព្រោះនៅពេលកំពុងពោះ
 និងបំបៅដោះទារក
 រាល់សារធាតុចិញ្ចឹមពីអាហារ
 ទាំងឡាយត្រូវបានបញ្ជូនពី
 អ្នកទៅទារក។



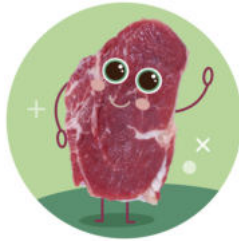
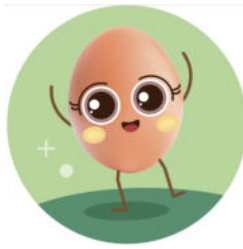
អហារប្រចាំថ្ងៃ

អ្នកត្រូវការថាមពលច្រើននៅពេលដែលទារក
 កំពុងលូតលាស់ធំធាត់ក្នុងថ្ងៃ។
 ដើម្បីទទួលបានសារធាតុចិញ្ចឹមគ្រប់គ្រាន់ដល់អ្នកនិងទារក
 អ្នកត្រូវញ៉ាំអាហារ ៤ ពេលក្នុងមួយថ្ងៃ។

អហារសម្រន់សុខភាព

ញ៉ាំបន្លែពណ៌បៃតងជារៀងរាល់ថ្ងៃ
 នៅពេលកំពុងបំបៅដោះទារក។
 បន្លែពណ៌បៃតងមាន
 មុខងារចិញ្ចឹមបំបៅដោះទារកនិងអ្នក។

Annex 8: Nudge Stickers



Annex 9: CG Poster

កូនងើតរបស់អ្នក



**សូមបន្ថែមអាហារខណៈពេលដែលទារកកំពុងលូតលាស់។
ចូរប្រើប្រាស់ទំហំបានទៅតាមការលូតលាស់របស់ទារក
ព្រោះទារកត្រូវការអាហារបន្ថែមទៅតាមវ័យរបស់ទារក។**

<p>៦ ខែ</p> 	<p>៧-៨ ខែ</p>  <p>សូមបន្ថែមចំនួនពេលទទួលបានអាហារ ដល់ទារកក្នុងពេលកំពុងលូតលាស់</p>	<p>៩-២៤ ខែ</p> 
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**មុននឹងផ្តល់អាហារដល់ទារក អ្នកចាំបាច់ត្រូវតែ
កិនអាហារនោះឲ្យម៉ត់ដើម្បីឲ្យទារកមានភាពងាយស្រួល
ក្នុងការរំលាយអាហារ។**



៦ ខែ



៧-៨ ខែ



៩-២៤ ខែ



Annex 10: Pilot and Scale Up Worksheet

Use this worksheet to ensure that key questions are answered for the pilot and scale up.

Domain	Answers by the team
Key Stakeholder (Leadership)	
Key Stakeholder (Implementation/ Distribution)	
Payment Model	Cost of Kit: Price of Kit: Payment Model:
Pre-Distribution Training Requirements	Scale of implementation: Scale of training: Flow of training: Tools to implement training:
Pre-Distribution Participant Recruitment	Recipient parameters (PW, LW, CG): Total number of each: Method of recruitment: Who else can support:
Distribution Channels & Moments	Moment to be leveraged: Channel to be leveraged:
Briefing Moment	[see above]
Communications Channels	Tool distribution and training: How to and demo: Info at home: Follow up Reminders:
Follow-Up	When: Who: How: What:
Logistics	# kits: Storage: