A MANUAL FOR DEVELOPING AND IMPLEMENTING MONITORING SYSTEMS FOR HOME FORTIFICATION INTERVENTIONS

HF-TAG Home Fortification Technical Advisory Group

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Preface

This manual was developed by the U.S. Centers for Disease Control and Prevention and the Monitoring Manual for Home Fortification Workgroup. It was developed in response to the increasing number of new projects including home fortification strategies and the related need for technical guidance on how to develop and implement monitoring systems to improve program effectiveness of home fortification interventions.

At the request of partners and reviewers, this monitoring manual is comprehensive and attempts to:

- define and describe a wide range of monitoring concepts, frameworks, and tools
- provide details on each of the steps involved in developing and implementing a monitoring system, and things to consider at different stages
- provide illustrative examples
- provide tools and worksheets that can be adapted to different contexts

If the reader is new to monitoring, then reading the chapters in sequence will be useful. If the reader is experienced or using the manual as a reference, then picking the appropriate chapter or section will be useful. Below is a guide that suggests areas to focus on based on the experience and interest of the reader:

If you are:	Content that might be most useful
Experienced with monitoring concepts, frameworks, and developing monitoring systems	• Example tools illustrating concepts and indicators, such as -Figure 2 adapted logic Model -Appendix 5 adapted logical framework -Appendix 6 example survey questions -Appendix 7 adapted indicator matrix -Figure 4 WHO/CDC generic logic model for micronutrient interventions in public health • Examples in the chapters showing specific application of concepts to home fortification interventions • Chapter 8 Summary table and worksheets for each step
Interested mostly in developing indicators	• Chapter 5 and the tools illustrating concepts and indicators -Figure 2 adapted logic Model -Appendix 5 adapted logical framework -Appendix 6 example survey questions -Appendix 7 adapted indicator matrix
Inexperienced with monitoring concepts and frameworks or want a refresher	• Chapters 2 & 3
Inexperienced and want background on each step involved in developing a monitoring system for home fortification interventions	• All chapters, tools, and worksheets

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Parts of this manual are based on the CDC Framework for Program Evaluation in Public Health (1), CDC Updated Guidelines for Evaluating Public Health Surveillance Systems (2), CDC Physical Activity Evaluation Handbook (3), WHO/CDC Logic Model for Micronutrient Interventions in Public Health (4), the and the PSI Logframe Handbook: The Logical Framework Approach to Social Marketing Project Design and Management (5), and from documents and presentations developed by CDC. Elizabeth Ann Lundeen performed this work as a consultant to GAIN.

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Disclaimer

The mention of product names and websites in this document do not constitute an official endorsement for the products by any of the agencies or individuals involved in the development of this manual. They are mentioned to provide users of this manual with information on the types of products frequently used in home fortification interventions and where to obtain further information.

During the writing of this document, Dr. Jee-Hyun Rah was a full time employee of Sight and Life, which is a non-profit humanitarian initiative of DSM. DSM is a supplier of vitamins, carotenoids and other health ingredients, including micronutrient powders, which are mentioned in this manual.

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Abbreviations

BCC	Behavior Change Communication
CBO	Community Based Organizations
CDC	U.S. Centers for Disease Control and Prevention
CFS	Complementary Food Supplement
DHS	Demographic and Health Survey
DOT	Directly Observed Therapy
GAIN	Global Alliance for Improved Nutrition
HF-TAG	Home Fortification Technical Advisory Group
HMIS	Health Management Information System
IYCF	Infant and Young Child Feeding
LMIS	Logistics Management and Information System
LNS	Lipid-based Nutrient Supplement
LQAS	Lot Quality Assurance Sampling
MICS	Multiple Indicator Cluster Survey
MIS	Management Information System
MNP	Micronutrient Powder
MoH	Ministry of Health
NGO	Non-Governmental Organization
PSI	Population Services International

Glossary

Absolute change/difference: The actual increase or decrease from an original reference value to a new value. Absolute change = new value – original reference value.

Adherence: The degree to which a person uses or consumes a product or intervention in accordance with the recommended use. Adherence is often presented as a quantitative value indicating the proportion or percentage of a product/intervention used out of the total number recommended.

Complementary food supplement (CFS): A term used to describe the larger category of home fortification products, which includes lipid-based nutrient supplements, and powdered complementary food supplements.

Coverage: The proportion or percentage of individuals targeted by the program that receive the intervention.

Data cleaning: Conducting a systematic check of the data to detect and fix any errors that occurred during data recording or data entry. For categorical variables, this usually includes running tabulations on each variable to check that the data codes for all observations correspond to the predefined category codes for the variable. For continuous variables, this includes looking at the range of values for each variable to determine whether the values for all observations fall within a plausible range. Other aspects of data cleaning involve verifying skip logic, examining aberrations in distributions, recoding open-ended responses, and reconciling inconsistencies across multiple questions.

Data entry: Taking data that are in paper form (e.g. on hard copies of questionnaires) and transferring them to an electronic format by entering them into an electronic database stored on a computer.

Effectiveness study: An assessment of an intervention, under programmatic conditions, that measures the effects or impact of the intervention on pre-defined endpoints within the target population. (Also called impact evaluation and program evaluation).

Efficacy study: Research that is designed to determine the ability of an intervention to produce a beneficial change among participants in a controlled study setting.

Evaluation: Assessment, as systematic and objective as possible, of a planned, ongoing, or completed program that covers its need, design, implementation, impact, efficiency and sustainability, so as to incorporate lessons learned into the decision-making process and inform policy. (Also called program evaluation).

External monitoring system: A monitoring system that is managed by individuals who are external to and independent from program management and staff

Flexible administration: A regimen for using a product which allows users or caretakers to choose their own schedule for consuming the product, so long as they use all the product within a given timeframe, and do not exceed the maximum intake guidelines per day (e.g., no more than one sachet a day).

Formative research: Data collection to understand the context and factors that will influence and support the intervention.

Impact evaluation: See definition for effectiveness study.

Indicator: A measure used to determine whether a given program activity, output, or outcome has been achieved. Process indicators measure the implementation of project activities and outputs and provide information on whether the program is being implemented according to plan. Outcome indicators measure changes that occur among participants, the effects of project activities and outputs, and are the ultimate objective that the intervention is intending to change.

Internal monitoring system: A monitoring system that is managed by program staff or program staff members have access to and influence over the system.

Lipid-based Nutrient Supplements (LNS): Paste preparation containing vitamins, minerals, energy, protein, and essential fatty acids, which is mixed into food that is ready to eat. Lipids (fats) provide the majority of the energy in this product.

Logic model: A visual depiction of the program that outlines the relationships between program resources, activities that will take place, and expected outcomes.

Logical framework (logframe): A tool that serves as a roadmap for program implementation by describing the relationships among the essential elements of a program, including the objectives, indicators of success, key activities, required resources, monitoring, evaluation, and important external factors outside the control of program implementers.

Micronutrient powder (MNP): A powdered preparation of micronutrients, packaged in single or multiple-serving sachets, which is mixed into food while cooking or into food that is ready to eat.

Monitoring: Ongoing process of collecting, analyzing, interpreting and reporting indicators, to compare how well a program is being executed against expected objectives. (Also called implementation evaluation, process evaluation, performance monitoring, process monitoring, performance evaluation or program monitoring.)

Powdered Complementary Food Supplement: Powdered preparation of micronutrients that can also contain high-quality protein, essential fatty acids, amino acids, enzymes, and macro-minerals (such as calcium, magnesium, potassium or phosphorus), which is mixed into food that is ready to eat.

Program: An organized, planned, and usually ongoing effort designed to deliver services or products to target populations with need.

Program evaluation: See definition for evaluation.

Program impact pathway: Another term for program theory. An impact pathway is an assumption about how the program works, or how program elements (inputs, activities) lead to outcomes and impact.

Program monitoring: See definition for monitoring.

Program theory: A model that describes how certain program actions or activities are expected to lead to intended outcomes. Program designs are determined on the basis of the model or theory.

Project: discrete package of investments, policies and institutional and other actions designed to achieve specific objectives within a designated period.

Proxy Indicator: An indirect measure that approximates or represents the concept, in the absence of a direct measure.

Relative change/difference: Compares the absolute change to the original value. Calculated as: (new value – original value) / original value.

Home Fortification Technical Advisory Group

HF-TAG

Table Of Contents

1 Introduction

In this chapter :

- Home fortification products
- Home Fortification Technical Advisory Group (HF-TAG) and resources
- Purpose and focus of the manual
- Brief description of the remaining chapters

1.1 Background

Home fortification, also called point-of-use fortification, aims to improve the nutritional quality of the diet for nutritionally vulnerable groups aged 6 months and older. Home fortification allows families to increase the nutritional value of foods prepared in the home by adding specific nutrients (fortifying the food) immediately before consumption. Home fortification can also occur outside the home at another point of use such as schools or child care facilities. Home fortification products may come in single serving sachets, multiple serving sachets or in bulk packaging. Depending upon the product used for home fortification, the nutrients added to the food can be micronutrients alone, or micronutrients with macronutrients. There are various categories of complementary food supplements that are used for home fortification including micronutrient powder (MNP), lipid-based nutrient supplement (LNS), and powdered complementary food supplement (CFS). Home fortification interventions are often integrated into larger programs aimed at improving maternal and child nutrition or infant and young child feeding (IYCF).

The Home Fortification Technical Advisory Group (HF-TAG) is a community of stakeholders involved in home fortification comprised of members from the public, private, academic, and non-governmental organization sectors. It was established in 2009 in response to a growing need for expert technical guidance on the development, implementation, and monitoring of home fortification programs. The aim of the HF-TAG is to serve as a resource and advisor for organizations and manufacturers involved in the implementation of home fortification programs. The HF-TAG recently published a *Programmatic Guidance Brief on Use of Micronutrient Powders (MNP) for Home Fortification (6)*. As a part of this mission, the HF-TAG is establishing quality criteria and standards for home fortification products, and is working to provide guidance on advocacy, programming, and monitoring and evaluation.

A Manual for Developing and Implementing Monitoring Systems for Home Fortification Interventions is part of a series of resources and manuals that the HF-TAG will develop to support home fortification programs. Specifically, this publication is intended for use by monitoring and evaluation specialists, program designers, implementers, and managers. Additional resources under development to be eventually posted on the HF-TAG website (http://hftag.gainhealth.org) will provide guidance on:

- Implementation of home fortification interventions
- MNP Composition
- Production, quality assurance and quality control of MNPs

Home Fortification Products

Micronutrient Powder (MNP):
Powdered preparation of micronutrients, which is mixed into food while cooking or into food that is ready to eat.

Lipid-Based Nutrient Supplement (LNS):
Paste preparation containing vitamins, minerals, energy, protein, and essential fatty acids, which is mixed into food that is ready to eat.

Powdered Complementary Food Supplement (CFS):
Powdered preparation of micronutrients that can also contain high-quality protein, essential fatty acids, amino acids, enzymes, and macro-minerals (such as calcium, magnesium, potassium or phosphorus), which is mixed into food that is ready to eat.

Complementary Food Supplement (CFS):
A term used to describe the larger category of home fortification products, which includes lipid-based nutrient supplements, and powdered complementary food supplements.

1.2 Purpose of the Monitoring Manual

Often in public health programming, too little emphasis is placed on monitoring and evaluation. For all projects, it is important to conduct monitoring, because significant time, money, and human resources are invested in projects, and monitoring can enable managers to identify problems and improve project performance. Impact evaluations and other forms of evaluation are important and help demonstrate whether projects are achieving the stated objectives and having the desired impact on the population. Impact evaluations might also be required to justify continued or increased investment in projects. However, it is important to recognize that project evaluations can be expensive and complex to implement. **The decision of whether to implement an evaluation, either an impact evaluation or another type, depends upon many factors and is context specific, whereas monitoring is essential for all projects.**

This manual focuses on monitoring, and not evaluation, because globally most home fortification projects have been implemented just recently, and therefore, the priority should be on program monitoring in order to achieve good coverage and adherence to the intervention. There are few resources available to help nutrition projects develop and implement monitoring systems, and this manual is meant to address this gap. Thus, the focus of this manual is on the priority need for designing and implementing monitoring systems for home fortification projects.

The purpose of this manual is to:

- Contribute to the development and implementation of well-designed home fortification monitoring systems
- Help generate evidence for the effectiveness of these interventions in programmatic settings
- Serve as a resource for individuals, government ministries and other local and international organizations involved in the design, implementation, and management of monitoring systems

The manual provides guiding principles, tools (logic model, logical framework, and indicator matrix), and examples illustrating the concepts described using a fictional project involving an integrated IYCF and MNP intervention for children 6-23 months of age. While the manual content applies to emergency and non-emergency contexts, the nature of emergency response might limit the types of systems and methods that are feasible to develop and implement. However, the steps outlined in the remaining chapters still apply to an emergency context. Information in this manual can also be adapted to use within an organization's existing monitoring and evaluation framework.

The fictional example used to illustrate concepts was developed based on project experiences in various countries, and while the fictional example is specific to MNPs and children 6-23 months of age, the concepts and tools described are applicable to any home fortification intervention targeting any population group. The manual focuses on the example of an IYCF/MNP integrated project because a significant portion of the programmatic experiences worldwide are with MNP, and when used with children less than 2 years of age home fortification products should be integrated into larger initiatives to improve IYCF and child nutrition. Since home fortification interventions are often integrated into these larger programs, it is useful to have an example showing the development of the monitoring system within the context of a more comprehensive initiative; however, the concept and tools equally apply to stand alone home fortification projects.

Home fortification interventions are still a relatively new strategy in public health nutrition. While there is significant published evidence for the efficacy of home fortification interventions, primarily on MNP, there is little evidence to date on program effectiveness or best practices in monitoring large-scale MNP projects or even small scale LNS or powdered CFS projects.

Thus, this manual:

- Is **not** prescriptive in nature.
  - Instead it provides:
    - General frameworks and tools used in public
    - health project monitoring
    - Examples that are specific to home fortification projects
    - Special considerations for monitoring home
    - fortification interventions

- Is **not** intended to be a fully developed, comprehensive monitoring plan that country projects adopt as a template
  - ► Instead it provides the user with tools and information to guide the process of designing a monitoring system
- Does **not** include examples and concepts specific to any one project.
  - ► These were developed based on experiences of organizations implementing home fortification projects in countries throughout Asia, Africa, and Latin America
- Does **not** include examples that should be interpreted as global guidelines or recommendations.
  - ► The integrated IYCF/MNP project example used throughout the manual was developed for the purpose of explaining the concepts covered in the manual
  - ► The project description, monitoring system, tools, and indicators are included as potentially useful tools and illustrative examples

It is most useful to review this manual at the beginning of the planning process for the monitoring system, which ideally will occur as the project itself is being designed. The tools and information presented can be used to develop a project logic model and logframe, identify performance monitoring indicators, select appropriate data sources and data collection methods, and create a comprehensive monitoring plan. Those new to monitoring may find reviewing the chapters in sequence the most useful. Experienced readers or those using the manual as a reference should probably pick the appropriate chapter, section, tool, or tailored example.

The subsequent chapters will systematically guide the user through the steps involved in designing and implementing a monitoring system.
Chapter Two - provides background information on program monitoring, a framework to guide the development of a monitoring system, and a discussion of the standards and attributes of an effective monitoring system.
Chapter Three - provides the user with information on how to identify and engage stakeholders of home fortification programs, develop a program description, and develop a logic model and logframe, which will serve as the foundation for developing the monitoring system.
Chapter Four – focuses on determining the purpose of the monitoring system, defining users and their informational needs, and considering the design, data sources, and data collection methods of the monitoring system.
Chapter Five - covers using logic models and logframes to develop performance monitoring indicators, use of the indicator matrix, characteristics of good indicators, and special considerations when developing monitoring indicators for home fortification programs, including a section on adherence.
Chapter Six – focuses on the development of a comprehensive monitoring plan that defines the human resource needs, and describes the process for how the data will be collected, managed, analyzed, reported, and used for programmatic decision-making.
Chapter Seven - brings together information from the previous chapters and discusses considerations for scaling-up a monitoring system and ensuring the sustainability of the monitoring system.
Chapter Eight - summarizes the steps and main tasks to develop a monitoring system for home fortification interventions, and includes worksheets and templates to facilitate this process.

Key points from Chapter 1:

- Monitoring is essential for all projects
- There is a priority need for guidance on designing and implementing monitoring systems for home fortification projects
- This manual provides guiding principles, tools (logic model, logical framework, and indicator matrix), and examples illustrating concepts
- Review this manual at the beginning of the planning phase for the monitoring system, ideally when the project itself is being designed
- Inexperienced readers may find reading the chapters in sequence most useful.
- Experienced readers or those using the manual as a reference will find jumping to the appropriate chapter or section most useful.

2 Monitoring and Evaluation Concepts and Planning for the Monitoring System

In this chapter :

- Brief descriptions of monitoring and evaluation concepts used in this manual
- Comparison of efficacy studies, program monitoring and impact evaluation (effectiveness studies)
- Considerations when deciding on an impact evaluation
- Responsibility and accountability for monitoring
- Importance of financial commitment and routine budgeting for monitoring
- Synergism of monitoring activities, program management, and improving the quality of intervention delivery
- Utility of monitoring frameworks to guide development of monitoring system

2.1 Monitoring and Evaluation Concepts

Although this manual provides guidance to program managers on monitoring of home fortification projects, to better understand that focus it is important to give the larger picture of program evaluation, program monitoring, and other topics that will be discussed in this guide.

2.1.1 What is a Program?

A project is a discrete package of investments, policies, and institutional or other actions designed to achieve specific objectives within a designated period. A project becomes a program when it is scaled up and institutionalized within an organization receiving core funding for ongoing support. Usually this happens after 10 or more years of implementation. The concepts and tools in this manual apply equally to projects or programs, but for ease of reading only one term will be used at a time in the manual.

2.1.2 What is Program Evaluation?

Program evaluation is the assessment, as systematic and objective as possible, of a planned, ongoing, or completed program that covers its need, design, implementation, impact, efficiency and sustainability, so as to incorporate lessons learned into the decision-making process about the program and inform and guide public policy.

2.1.3 What is Program Monitoring?

Monitoring is the ongoing collection, analysis, and interpretation of data on the program (inputs, activities, outputs, and outcomes). The primary purpose of monitoring data is to enable program managers to assess the performance of programs for program improvement. Practitioners from different audiences and disciplines may use various terms to describe program monitoring, for example: process monitoring, implementation evaluation, process evaluation, performance monitoring, and performance evaluation. Monitoring is the focus of this manual.

2.1.4 The Importance of Program Monitoring

Monitoring is critical for project implementation. It allows managers to continuously assess the project's functioning, based on predefined objectives, targets, and performance indicators, and when the project is not performing in accordance with these objectives, to do further analysis and then make necessary adjustments to improve performance and increase the likelihood that objectives will be met. Monitoring is especially important for projects introducing new products, such as home fortificants, which require good acceptability among the target population for adequate coverage and adherence.[1] Monitoring should be planned and designed from the beginning of a project. It should be ongoing so that problems can be identified and remedied in a timely manner. Without continuous monitoring, managers risk completing the project and discovering that it did not meet objectives due to issues that could have been corrected along the way.

2.1.5 The Complementary Purposes of Efficacy Studies, Program Monitoring, and Impact Evaluation

Efficacy studies, monitoring, and evaluation all make important contributions to the necessary knowledge base of programs. **Table 2.1** below compares various characteristics of efficacy studies, program monitoring, and impact evaluation.

An **efficacy study** is research, which is designed to determine the ability of an intervention to produce a beneficial change among participants in a controlled study setting. An efficacy study is often the first step when a new product or intervention is developed, because it can show whether the intervention has the potential to be efficacious under ideal conditions (in a setting where researchers have more control over participants' use of the intervention and the information that they receive about the intervention). Once an intervention is proven to be efficacious (that it worked) in a controlled research setting, the next step is to implement the intervention within the context of a project (a less controlled setting within a community, clinic, or school, for example) and assess the effectiveness of the intervention under conditions that are closer to the normal way in which interventions are usually delivered.

Program monitoring assesses an intervention within the context of a pilot or scaled-up project or program (i.e. "real world" or programmatic conditions). Program monitoring consists of frequent, ongoing data collection in order to identify problems in program implementation and is usually part of regular program management focused on intervention inputs, activities and outputs. Program managers and field staff use monitoring results to assess the ongoing performance of the program, identify any problems in program operations, and implement corrective measures to improve the functioning of the program (7). Program monitoring also includes special data collection that is periodic and complementary in order to answer specific questions or solve problems that arise during program development or implementation. This may include extra qualitative data collection or knowledge, attitude and practice (KAP) surveys, for example.

Like program monitoring, an **impact evaluation** (also called an effectiveness study) also examines an intervention under programmatic conditions; however, while program monitoring focuses on assessing program operations and implementation, an impact evaluation focuses on measuring the effects or impact of the intervention on pre-defined endpoints within the target population (for example, measuring micronutrient status among target children). Impact evaluation is a periodic activity, which often consists of collecting data at the baseline, mid-term, and endline of a project. The goal of an impact evaluation is to determine project effectiveness and achievement of expected objectives, which can provide donors and policy makers with the evidence they need to make decisions about continuing or scaling-up the project. (7)

Table 2.1: Comparison of Efficacy Studies, Program Monitoring, and Impact Evaluation

	Efficacy Studies	Program Monitoring	Impact Evaluation (Program Effectiveness)
Purpose	Determine the ability of an intervention to produce a beneficial change (positive impact)	Identify and correct problems in project implementation	Understand the extent to which a project / intervention achieves its expected impact on participants
Setting	Controlled research conditions	Pilot or scaled-up / large-scale project, programmatic conditions	Pilot or scaled-up / large-scale project, programmatic conditions with program monitoring[a]
Frequency of data collection and reporting	Variable, often including ongoing and periodic	Routine, frequent, ongoing, also periodic special data collection	Periodic (baseline, mid-term, endline)
Primary users	Scientific community, policy makers	Program managers, field staff	Coalition members, donors, program administrators, policy makers

[a] *Note that program monitoring is usually a pre-requisite to determine if an impact evaluation (program effectiveness) is warranted.*

[1] *Please find definitions of coverage and adherence in the Glossary and a comparison of adherence and compliance in Appendix 1.*

As noted, all three of these are complementary. Before deciding to carry out the mid-term or endline assessment as part of an impact evaluation, monitoring data should be assessed to determine whether coverage and adherence are sufficient to expect that the intervention will result in an effect on the population. If coverage and/or adherence to the intervention are not near or above a predetermined target, then a mid-term or endline assessment to examine impact may not be justified because the exposure to the intervention is presumed insufficient to cause an impact on the population. Additionally, data from a well-designed monitoring system can support an impact evaluation, because having information about the implementation process (e.g. coverage and adherence) helps to link the intervention to observed changes among the population. Monitoring data can be used to help explain the results of impact evaluations, and should be analyzed along with impact evaluation data as part of the evaluation process.

2.1.6 Considering an Impact Evaluation

Although this manual focuses on monitoring, this section briefly discusses a few key issues projects often consider when deciding whether an impact evaluation is necessary or feasible. Impact evaluations are valuable because they document the effects of programs on the participants, including planned, unexpected, or even negative effects. They analyze why intended impacts were or were not achieved, and the results are used to inform practice, decision-making and policy. They also enable projects to be accountable for the resources allocated and help to justify continued investment, scale up, or discontinuing the project. When projects have sustained high coverage and adherence, it may be important to consider an impact evaluation to demonstrate that the intervention is resulting in the intended effects among the participants. For vitamin and mineral interventions, impact evaluations are generally conducted among the target population using cross-sectional, pre- and post-intervention nutrition or health status surveys, and may also involve randomized controlled designs. These surveys may measure changes in micronutrient status or the prevalence of micronutrient deficiencies (i.e., anemia, iron deficiency anemia, or vitamin A deficiency), micronutrient intake, as well as changes in anthropometric indicators such as growth stunting. It is important to plan for and design the impact evaluation at the beginning of a project, especially because more rigorous evaluation designs require the collection of data prior to the start of the intervention. When choosing an evaluation design, evaluators and project managers must balance the need for methodological rigor and precision in the data, with the resources available for the evaluation. There are comprehensive guides describing how to design and implement surveys of vitamin and mineral status of populations (8), surveys of anthropometric indicators (9), and nutritional assessment and dietary intake (10). As mentioned in Chapter 1, this manual does not focus on impact evaluations. For more information on conducting impact evaluations, please see the website for the International Initiative for Impact Evaluation (http://www.3ieimpact.org/) and the following references: (8,11-15).

Depending upon the local context for the project, some project managers, policy-makers within the country, or donors may decide that it is necessary to conduct an impact evaluation in order to demonstrate the effectiveness of the home fortification project in improving the nutritional status and micronutrient intake of target groups in that country. In other contexts, it may be deemed sufficient to have credible monitoring data indicating that the project is functioning in accordance with predefined targets, and has achieved a high degree of coverage and adherence among the target population. Whether or not an impact evaluation is needed depends upon the local context for the home fortification project, and the requirements of key project stakeholders.

Some of the factors to consider when deciding whether or not to conduct an impact evaluation include:

- Adequacy of coverage and adherence to the intervention
- Donor requirements
- Adequacy of funding
- Availability of technical support to design and implement a scientific evaluation
- Stakeholder interests and needs
- Information needs of policy makers
- Existing evidence base for the intended effects of the intervention

WHO recommends MNP home fortification interventions as efficacious in reducing anemia and iron deficiency among young children (16,17). Several countries are beginning to collect impact evaluation data to understand whether these interventions are also effective in large-scale project settings. Given that micronutrient powders have been proven to be efficacious in reducing anemia and iron deficiency among young children, if a project is functioning properly in terms of the inputs (resources), activities, outputs and early outcomes (behavior change, and specifically high coverage and adherence), it can be assumed that the project will produce measureable improvements in the micronutrient intake and reduce the prevalence of anemia and iron deficiency among young children (later outcomes). Therefore, for most countries that are implementing home fortification projects with MNP, it may be sufficient to have credible monitoring data, which demonstrates that the project achieved a high degree of coverage and adherence, as well as appropriate knowledge, attitudes, and practices of caretakers using these products. However, project managers in some countries may decide that an impact evaluation of the project is necessary to meet the information needs of donors, policy-makers, and other project stakeholders. If the primary goal of an MNP project is to have an impact on outcomes for which there i s little or no evidence base – meaning outcomes other than anemia and iron deficiency, such as increases in the quantity and quality of the diet, or reductions in vitamin A, zinc, folic acid, or vitamin B12 deficiencies for example – it is important to consider conducting an impact evaluation (adequately powered) during the pilot stage of project implementation, in order to generate evidence that the intervention is capable of producing the expected effects.

Cost-Effectiveness Analysis

Another form of evaluation is a cost-effectiveness analysis, which is a method of assessing the efficiency of a program. A cost-effectiveness analysis compares program costs and effects (impacts) with the costs and effects of alternative interventions. Cost-effectiveness analyses can enable policy-makers and donors to evaluate alternative interventions, by determining which intervention would have the greatest degree of impact with the allocated funding. For more information on designing and conducting cost-effectiveness analyses, please review (18-21).

2.2 Who Is Responsible for Monitoring

Program managers and staff members are responsible for effective program implementation, and thus, are also responsible for overseeing program monitoring and ensuring that data and information are properly collected, analyzed, and used for decision-making to improve the performance of the program. Several managers and staff members may be involved in overseeing program monitoring; **however, it is important that one manager or staff member is given the responsibility for ensuring that monitoring activities are carried out, and data are analyzed and acted upon.** When a program is in the implementation phase and staff members are busy, it is not unusual for monitoring systems to stop functioning if one person is not designated to be accountable for managing the monitoring process. Chapter 6 further describes human resources needed for monitoring and the management and use of monitoring data.

While program managers and staff members are responsible for conducting program monitoring, all stakeholders should have input in defining which elements of the project should be monitored, performance indicators, and targets. Ideally, all stakeholders should be involved early on in the process of developing a monitoring system, as stakeholder buy-in is essential in order for the results to be accepted and used to make project adjustments. Within the context of home fortification projects, the specific person(s) responsible for overseeing program monitoring depends upon the model for project implementation (i.e. donor-subsidized public sector free distribution, versus private sector social marketing, or a market-based

approach). For example, with the donor-subsidized, public sector free distribution model, the staff members responsible for monitoring could be project managers at the implementing agency (for example a non-governmental organization [NGO]), or staff at various levels of the Ministry of Health and within the health care system. With a private sector social marketing model, the persons responsible for monitoring could potentially include product or brand managers at the manufacturing company, in addition to program managers from collaborating implementing agencies (e.g, NGO). Regardless of the specific implementation model used, the persons responsible for overseeing monitoring and using monitoring data are generally at the program manager level.

2.3 Financial Commitment

Early in planning it is important to understand the available financial resources for program monitoring as this will play a critical role in the choice, feasibility, and sustainability of different monitoring system designs and data sources. Monitoring should be considered a standard component of program costs, such as transportation or procurement costs. When developing the project proposal and budget, it is important to consider the amount of human and financial resources that will be needed for routine monitoring at different phases, as well as periodic special data collection needs that will be assumed to arise and require funding even if concrete objectives for that data collection are not yet defined. This will help ensure that adequate funds are allocated to sustain routine and special monitoring activities throughout the life of the project. The appropriate amount of funds needed to implement a monitoring system will vary depending upon the scale and phase of the project, monitoring design, existing data collection infrastructure, and data collection activities that are chosen, as well as other local context-specific factors. However, as a rule of thumb, generally up to 10% of the overall project budget should be used to support monitoring activities. As with other elements of the project budget, cost information pertaining to monitoring activities should be carefully gathered to ensure the budget contains adequate funds.

2.4 Ethical Approvals

When developing a monitoring system it is important to understand the ethical rules and procedures for collecting information from human subjects, and secure any needed approvals required by the country. The ethical procedures and approvals vary by country and context, and in some cases may take a long time to secure so it is important to understand and plan for this early in the planning process.

2.5 The Intersection of Monitoring, Project Management, and Quality Improvement

There is important synergism between monitoring activities, project management and improving the quality of intervention delivery. Because project monitoring potentially covers all intervention processes related to inputs, activities, and outputs, the breadth of monitoring overlaps with some routine project management activities. It benefits project managers to design a monitoring system that complements and facilitates management, so any opportunities for overlap are valued and efficient. Similarly, the broad scope of monitoring intersects with staff performance and experiences. There is the potential that project staff may feel threatened by monitoring activities if the system is designed in a way that is viewed as punitive and not supportive and responsive; this is also related to the nature of supervision and the institutional culture. Monitoring systems and management practices that are perceived as punitive usually do not work as effectively as those viewed positively, and this can influence both the quality of monitoring data and the quality of intervention delivery if issues are not reported or assistance is not sought. Monitoring also offers the opportunity to focus on improving the quality of intervention delivery, which is important for all intervention strategies but is fundamental for behavior change communication strategies related to home fortification products and infant and young child feeding. Monitoring, project supervision and management that center on assessing the quality of intervention delivery and go beyond counting that activities took place are instrumental to improving the effectiveness of projects.

Key Points:

- Integrate monitoring with project management activities when possible
- Design monitoring systems that are viewed by staff as supportive and responsive, not punitive
- Focus on improving intervention delivery, not just counting activities that took place

2.6 Frameworks to Guide the Development of a Monitoring System

Program theory and evidence-based frameworks are useful tools for the design, implementation, monitoring, and impact evaluation of projects because they explicitly describe, or model, how an intervention is supposed to work and cause the expected results. The use of these frameworks to guide project design and implementation results in more effective interventions throughout the project life cycle. Likewise, before beginning the development of a monitoring system for a home fortification project, it is useful to review different frameworks, which have been developed to guide practitioners engaged in monitoring and evaluation activities for public health projects. One useful guide used in this manual is the U.S. Centers for Disease Control and Prevention's *Framework for Program Evaluation in Public Health* (1). In addition to this framework, other relevant tools and information will be presented to help provide guidance throughout the monitoring process.

2.6.1 Steps and Standards for Developing a Monitoring System

Although the CDC Framework references "program evaluation," its steps and standards apply equally to developing a monitoring system. Per Figure 1, the six steps include: engage stakeholders, describe the project, focus the design, gather credible evidence, justify conclusions, and ensure use and share lessons learned. This manual guides the reader through these steps as they apply specifically to the development of a monitoring system for home fortification projects:

Chapter 3 – Engaging stakeholders and describing the project

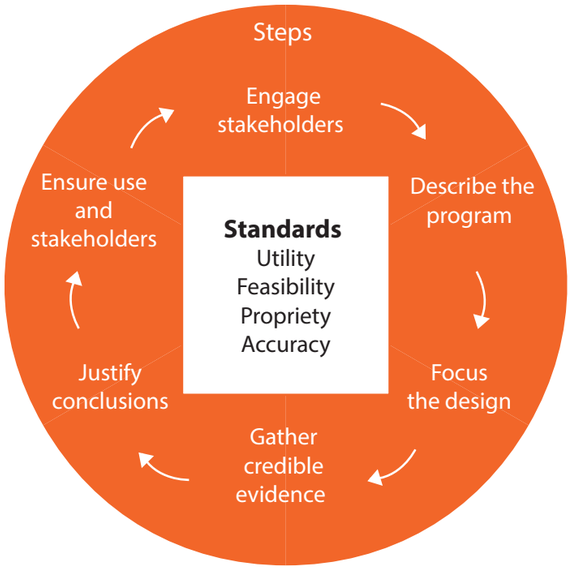
Chapter 4 – Focusing and designing the monitoring system

Chapter 5 – Gathering credible evidence through the selection of appropriate monitoring indicators

Chapters 6-7 – Justifying conclusions, and ensuring use and sharing lessons learned

Chapter 8 – Summary table of the steps

Figure 1 : Recommended framework for program monitoring



Standards for Effective Monitoring Systems

In addition to the 6 steps, the CDC Framework also defines the standards to help guide development of a monitoring and evaluation approach. The four categories of standards, based on the Joint Committee on Standards for Educational Evaluation (22), are adapted and outlined below.[2]

1. **Utility** - a monitoring system should be designed and implemented in a way that meets the information needs of users, and enables appropriate adjustments to be made to improve the functioning of projects. The usefulness of a monitoring system can depend upon many factors, including: stakeholder involvement, credibility of data, relevance of the questions answered, and effectiveness and timeliness of the communication of monitoring results.
2. **Feasibility** - a monitoring system should also be practical, realistic, and cost-effective. For example, integrating monitoring into routine project operations may make it more feasible by causing less burden and disruption of ongoing work of project staff. It is useful to keep the monitoring design and procedures as simple and pragmatic as possible, while still obtaining credible and relevant data.
3. **Propriety** - monitoring activities should be ethical and implemented in a manner that respects the rights and interests of all participants and stakeholders, and produces information that will ultimately improve services for participants.
4. **Accuracy** - for monitoring findings to be accepted and used, they must be deemed accurate and correct. The accuracy of a monitoring system can depend upon many factors, including: thorough documentation of the project and monitoring procedures, use of credible information sources, systematic collection and analysis of valid and reliable data, and impartial interpretation and reporting of the data.

[2] The four categories of standards encompass 30 specific standards. See Appendix 2, boxes A-D for more information on these as applied to monitoring systems for home fortification interventions.

2.6.2 Other Attributes of an Effective Monitoring System (2)

In addition to the four evaluation standards, when developing a monitoring system it is also useful to consider the attributes of an effective surveillance system because they also apply to monitoring systems:

- Simplicity
- Flexibility
- Acceptability
- Representativeness
- Timeliness
- Stability
- Sustainability

These attributes are described in more detail in Appendix 3 and are important for developing useful, feasible, and sustainable systems. It may not be possible to develop a system that embodies all of these attributes, but it is useful to critically consider each during the development of the monitoring system.

Key points from Chapter 2:

- Efficacy studies, program monitoring and impact evaluation (program effectiveness) are complementary.
- Do not assume all projects require impact evaluations; carefully consider whether an impact evaluation is useful, necessary, and feasible.
- It is important that a manager/staff is assigned responsibility and held accountable for ensuring that monitoring activities are implemented and the information is used.
- Financial commitment and adequate budgeting for monitoring throughout the life of the project is a basic requirement.
- Early in the planning process understand the ethical rules and procedures for collecting information from human subjects that must be followed, and secure any needed approvals required by the country.
- Monitoring activities, project management and improving the quality of intervention delivery are interrelated and have an important synergistic relationship, which ideally enhance each other and improve project effectiveness.

3 Engaging Stakeholders and Describing the Program

In this chapter :

- Introduction to the fictional project example used to illustrate concepts throughout the manual
- Identifying and engaging stakeholders
- Program descriptions
- Developing logic models and logical frameworks (logframes)

The remaining chapters of this manual will discuss the elements of the CDC Framework (1) in more detail, as they relate to the development and implementation of a monitoring system for home fortification programs. Throughout this manual, monitoring concepts will be discussed using a fictional example of an integrated project designed to support improved infant and young child feeding (IYCF) practices and the use of micronutrient powders (MNPs) for home fortification. This example draws from the programmatic experience of various countries.

3.1 Brief Description of the Example Integrated Infant and Young Child Feeding (IYCF) / Micronutrient Powders (MNP) Project Used to Illustrate Concepts Presented in the Manual

In the example IYCF/MNP project used throughout this manual, the program targets children 6-23 months[3] of age and their caretakers with the aim of reducing anemia and stunting of young children through improved IYCF practices and MNP intake. In the example, the existing IYCF National Plan of Action was revised to integrate the MNP intervention. The integrated IYCF/MNP intervention package has already been developed and piloted, and is now in the first year of national level distribution. The MNP product and IYCF/MNP counseling and support are delivered free to participants. The intervention package, which is implemented through government health clinics and supported in the community by volunteers, includes clinic counseling and support, peer-to-peer counseling and modeling, community outreach activities for caretakers, and mass communication. The behavior change communication messages and activities focus on using locally available and affordable foods to improve IYCF practices, and emphasize increasing dietary diversity and meal frequency in order to improve the diet, as well as fortifying complementary foods prepared in the home using MNP. The MNP supply is imported by the country annually.

Caretakers receive 60 MNP sachets (15 vitamins and minerals in each sachet) every six months for each eligible child 6-23 months of age, through routine, free distribution of MNP at government health clinics. Caretakers are asked to give their children one sachet daily for 60 days (daily use), and are instructed that if they have to stop using the MNP for any reason, they should resume use when possible and complete all 60 sachets. After completing the 60 sachets in 60 days, they have a four month break and then caretakers should return to the clinic to pick up the next batch of 60 sachets. Government health care providers counsel caretakers on improved IYCF practices and the use of MNP, and monitor adherence to the intervention package. Volunteers carry out peer-to-peer counseling and support modeling to reinforce the intervention package and help caretakers overcome problems that might limit coverage and adherence. A comprehensive monitoring system has been implemented, which includes data collected through health clinic records. For the first two years, monitoring activities include the collection of annual household surveys, representative of children 6-23 months of age.

Note that in the above description, the example project used a regimen of 60 sachets to be used daily for 60 days with new MNP distribution every 6 months, starting at six months of age when complementary feeding is introduced, and continuing at least until 23 months of age. This is consistent with the suggested duration and time interval between periods of intervention in the WHO guideline for use of MNP home fortification among children 6-23 months of age to reduce anemia and improve iron status (17). This dosage, duration and time interval between periods of intervention can have logistical challenges and is not necessarily ideal for programmatic purposes.

The dosing regimen for MNP and other home fortification products is not standard and may vary according to country needs. The Home Fortification Technical Advisory Group (HFTAG) (6) suggests no less than 60 sachets every 6 months and no more than 180 sachets every 6 months (no more than one sachet per day), and that a target of 90 sachets per six months period (equivalent to 15 per month, or 3-4 per week), which thus provides an additional intake of 50% RNI/day for each micronutrient, is likely reasonable for most situations. The decision on which groups to target with how many sachets, over what period of time and using which distribution strategies should be based on risk of micronutrient deficiencies, estimated micronutrient needs and available funds. More information on developing and implementing a home fortification intervention will be available in future HF-TAG publications.

[3]The program targets children from 6 months of age to those who have completed 23 full months (up to 23 months and 30 days).

3.2 Identify and Engage Stakeholders of Home Fortification Programs

The first Framework step is the identification and engagement of program stakeholders. These are the persons or organizations that have a vested interest in what will be learned from monitoring the implementation of the intervention and what will be done with the knowledge. These stakeholders should be involved in planning discussions, and their feedback and input should be actively sought to ensure the monitoring system is based on relevant values, objectives, targets, and performance indicators. Seeking the input and involvement of program stakeholders helps to ensure that the results of monitoring activities will meet the information needs of primary users, are accepted as being credible, and are used to improve program operations. Excluding stakeholders from this process increases the likelihood that the monitoring results will not meet stakeholder needs or will be ignored or criticized.

A comprehensive list of potential stakeholders is best. Below are the main categories and some examples of stakeholders for the example IYCF/MNP project. Note that some stakeholders may fall into more than one main category.

1. Those involved in program operations and partners
   - Ministry of Health officials and staff members
   - Ministry of Finance officials and staff members
   - Donors
   - Partner organizations / coalition partners (e.g. nutrition clusters, IYCF and micronutrient coalitions)
   - Program managers and staff members
   - Health care providers and program managers within the health system
   - Community volunteers (e.g. lady health workers or village health committees)
   - Media outlets (radio, television, newspapers)
   - Product distribution outlets (e.g. pharmacies, stores, clinics)
   - Also includes product producers when all or some of the products are locally produced

2. Those served or affected by the program
   - Participants and clients (e.g. caretakers of children 6-23 months of age)
   - Family members
   - Community leaders
   - Community or religious organizations
   - Academic institutions
   - National, state, and local elected officials
   - Advocacy groups
   - Professional associations (e.g. nutritionists, pediatricians or pharmacists)
   - Skeptics, opponents, and staff of related or competing organizations

3. Primary users of the monitoring results
   - Program managers (e.g., within the Ministry of Health, an NGO, or UN agency)
   - Program administrators (e.g., within the Ministry of Health, an NGO, or UN agency)
   - Brand / product managers at a local manufacturer of the home fortification product

When program managers have developed a working list of stakeholders, they should ask identified stakeholders to brainwstorm and add to the list. Note that this often results in a very long list of potential stakeholders. Fortunately, not all stakeholders can, should or will want to be involved in all steps. Program managers should define which stakeholders will be involved in the planning, implementation, and analysis of monitoring data and determine the most efficient and useful process for involving each stakeholder. Decisions about stakeholder involvement can be made according to their needs and interests, authority over or control of project resources, or specific knowledge or skills.

Sometimes gathering stakeholders can be a challenge, so it is important to be strategic about their roles, participation, and time commitment. Stakeholders can change over the life of the program, so it is important to revisit the stakeholder list at intervals. This change in stakeholders over time can be due to new partners or donors joining the initiative (i.e. new types of stakeholders), or it can be the result of staff turnover. Many new partners, donors, or staff challenges historical memory and informational needs and priorities for data collection.

For stakeholders involved during the planning process, some key questions include (3)(1):

- What is important about this program?
- Who do you represent and why are you interested in this program?
- What would you like this program to accomplish?
- What are the critical questions to be answered during monitoring?
- How will you use the results of the monitoring?
- What resources (e.g. time, monitoring experience, analytical skills, funding, infrastructure) can you contribute to the monitoring?

Early in planning it is important to understand stakeholder financial commitment and available resources for the program monitoring as this will play a critical role in the choice, feasibility, and sustainability of different monitoring system designs and data sources.

3.3 Program Description

The next Framework step is to develop and agree upon a program description if this has not been done yet during the program design. If a program description already exists, then it should be reviewed with stakeholders and affirmed or revised, if necessary. Ideally a program description will include narrative text and a logic model (further described in the next section). The program description helps to:

- Ensure stakeholders have the same understanding of program activities and intended outcomes
- Ensure stakeholders and others agree which parts of the program should be part of the monitoring system
- Establish a foundation or framework from which monitoring indicators, tools, and activities can be developed

A program description for a home fortification program usually covers seven topics pertaining to the program: 1) statement of need, 2) expected effects, 3) context, 4) phase of development, 5) resources, 6) activities, and 7) logic model. See Appendix 4 for a discussion of the text components of a program description including examples from the fictional integrated IYCF/MNP project.

Key Point:

It is important to start by drafting a detailed program description, as this serves as the foundation for developing the monitoring system for a home fortification program.

3.3.1 Logic Models and Logical Frameworks

Logic models and logical frameworks (logframes) are useful tools to structure and organize information; additional tools include results frameworks (23) and other frameworks which are not discussed in this manual. Both tools can be used to convey information and expected processes in ways that are simple or complex. This manual tends to focus on logic models as tools to provide a high level strategic overview of a project and logframes as a tool to provide more detail, however, both tools can be used in various ways. Furthermore, for some projects a narrative description of the project processes and details of the monitoring and evaluation system might be preferred rather than developing logic models or logframes. Narrative descriptions that stakeholders understand and use are also effective for developing and implementing monitoring systems. Below are explanations of logic models and logframes, followed by an example of each using the fictional integrated IYCF/MNP project.

Table 3.1 describes some of the similarities and differences between logic models and logframes.

- Both tools have the same overall intent but use slightly different approaches.
- They should be created during the program planning phase, as the program is being developed, and referred to throughout the life cycle of the program for improved decision-making and management.

It is often useful to first develop the logic model as a strategic overview and agree on the fundamental elements of the program with stakeholders, and then extract elements from the model to develop the detailed logframe and add in the associated indicators and verification methods. The tools together are complementary and can be used for different purposes, but projects can also decide to only use one or the other.

Table 3.1 Some Similarities and Differences between Logic Models and Logical Frameworks (logframes)

Similarities	Differences
• Structure and organize information • Facilitate stakeholder agreement on the program strategy and how the program will work • Determine or predict the potential effectiveness of the strategy • Identify realistic program outputs, outcomes, and targets • Serve as a blueprint for program implementation • Serve as the framework for developing monitoring and evaluation tools and indicators • Act as the reference point for comparing the actual functioning of the program to the ideal functioning • Hold program administrators, managers, and stakeholders accountable for the performance of the program • Should be referred to throughout the life cycle of the project	Terms: • May use different terms to refer to the same thing Content: • Logic models lay out the "logic" and expected processes and program theory of the project • Logframes describe the expected intervention processes, but also include the associated indicators, source of verification of the indicators and assumptions and risks Length: • Logic models may be one page and higher level models or detailed and complex depictions of expected processes • Logframes are usually several to many pages long, and can similarly vary depending on the level of detail and complexity Uses and users: • Logic models are often concise and visual and thus can be a useful communication tool for advocacy and stakeholders • Logframes are typically used by those responsible for implementing and managing the project, including the monitoring and evaluation system

3.3.2 The Logic Model – An Illustration of How the Program Works

There are several different ways to structure and develop logic models[4]. *The WHO/CDC Logic Model for Micronutrient Interventions in Public Health* (4) is a generic logic model that can be adapted to any public health vitamin and mineral intervention (see Figure 4 in Chapter 8). The WHO/CDC logic model includes four hierarchical categories to describe the expected program processes: inputs, activities, outputs, and outcomes. Figure 2 is a logic model for the fictional integrated IYCF/MNP project adapted from the WHO/CDC logic model. For each category (input, activity, outputs, outcomes), there are multiple boxes describing the expected intervention processes and program theory. Later chapters show how indicators can be developed for some or all of these boxes in order to monitor the intervention and its intended outcomes.

Inputs

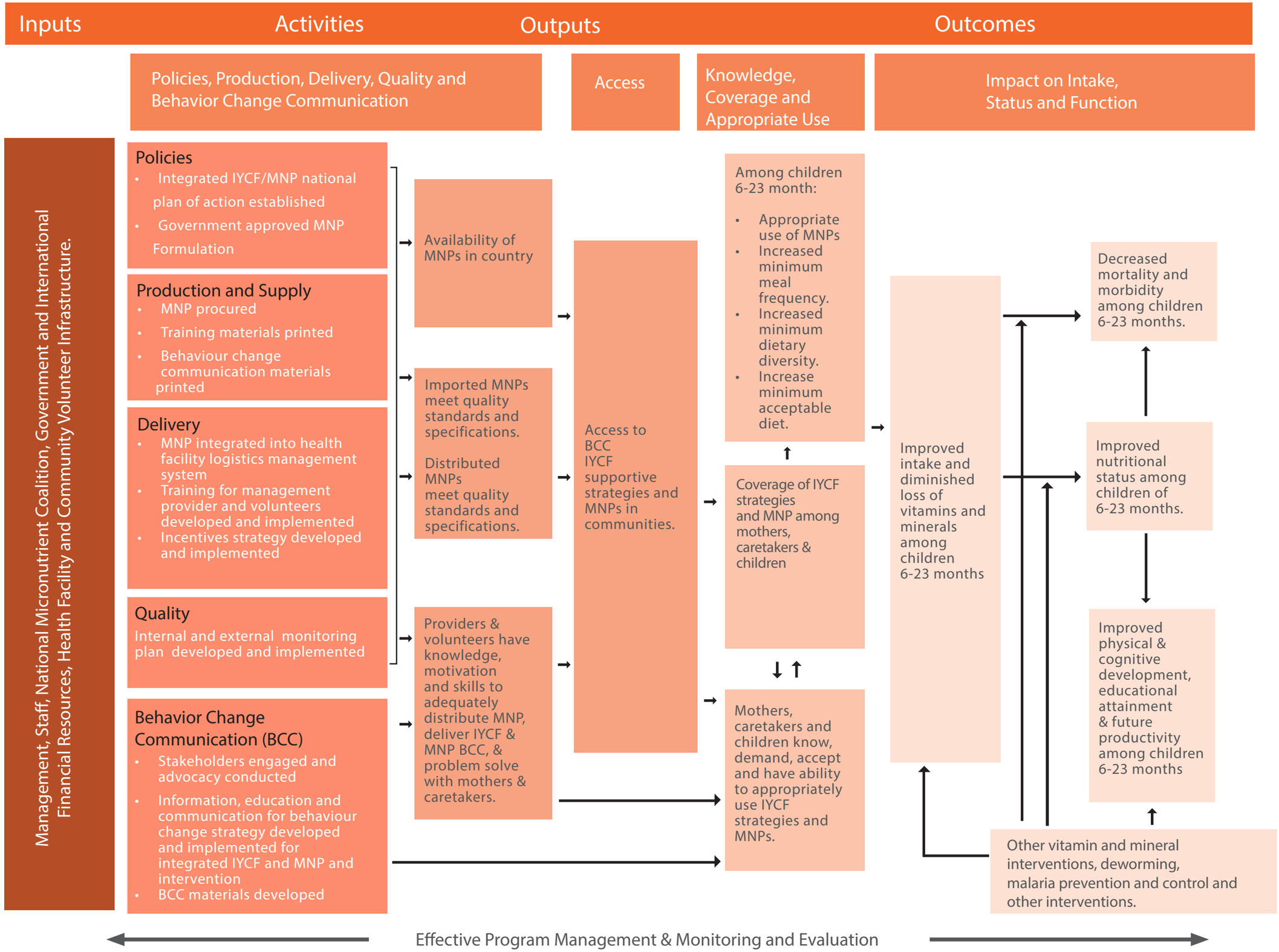
Inputs are the resources invested in the intervention. These include personnel (paid and voluntary), expertise, money, materials, partnerships, and direct and indirect support from organizations and communities that will be dedicated to the implementation of the program. These resources are used to carry out the program activities. When developing the list of **inputs** and resources for the logic model, ask yourself: "What funds, people, expertise, partnerships, products, information, infrastructure/facilities, equipment, and supplies do we need to carry out the activities for this project?"

- In the example IYCF/MNP project logic model in Figure 2, **inputs** include:

Management, staff, national micronutrient coalition, government and international financial resources, health facility and community volunteer infrastructure

[4]For examples of different ways to create logic models see (24)

Figure 2: Fictional Integrated Infant and Young Child Feeding (IYCF) and Micronutrient Powder (MNP) Project Logic Model



Activities

Activities are what the program does with the resources, that is, the mobilization and use of inputs to carry out the program work. **Activities** are the actions, processes, and events that are an intentional part of the program implementation, and are used to bring about the intended program outputs. They can include developing or procuring tools, strategies, technologies, products (MNPs or other home fortification products, promotional materials, and educational curricula), services (education and training, counselling, or health screening), and infrastructure (structure, relationships, and capacity) used to achieve the desired outputs.

– In the example IYCF/MNP project logic model, **activities** are grouped into five categories: policies, production and supply, delivery, quality, and behaviour change communication (BCC). Within those categories, the integrated IYCF/MNP project logic model includes the following specific **activities** for this example scenario:

Policies
* *Integrated IYCF/MNP national plan of action established*
* *Government approved MNP formulation*

Production and Supply
* *MNP procured*
* *Training materials printed*
* *Behavior change communication (BCC) printed*

Delivery
* *MNP integrated into health facility logistics management system*
* *Training for management, providers, and volunteers developed and implemented*
* *Incentive strategy developed and implemented*

Quality
* *Internal and external monitoring plan developed and implemented*

BCC
* *Stakeholders engaged and advocacy conducted*
* *Information, education and communication for behavior change strategy developed and implemented for integrated IYCF and MNP intervention*
* *BCC materials developed*

Outputs

Outputs are the direct results of program activities and may include types, levels, or targets of services or products to be delivered by the program. **Outputs** indicate if a program was delivered to the intended audiences at the intended "dose" and in the expected time period. A program **output**, for example, might be the number of MNPs distributed, classes taught, meetings held, or materials produced and distributed. Outputs could also include program participation rates, or hours of each type of service provided.

– In the integrated IYCF/MNP logic model example, there are two layers of outputs:

1. **Outputs** that are related to the supply and quality of MNP and IYCF strategies:
   * *Availability of MNPs in country*
   * *Imported MNPs meet quality standards and specifications*
   * *Distributed MNPs meet quality standards and specifications*
   * *Providers and volunteers have knowledge, =motivation, and skills to adequately distribute MNP, deliver IYCF and MNP BCC, and problem solve with mothers and caretakers*

2. **Outputs** that are related to Access among participants:
* Increased access to BCC, IYCF supportive strategies, and MNPs in communities

(Note: a more detailed explanation of the specific performance indicators for the outputs is found in the logframe in Appendix 5 and the indicator matrix in Appendix 7.)

Outcomes

Outcomes can be specific changes in program participants' knowledge, attitudes, behaviors, motivation, skills, decision-making, health and nutritional status, function, or other effects of the intervention. **Outcomes** are expected to result from program activities and are often expressed at an individual level. **Outcomes** may occur during or after an intervention, may be intended or unintended, and may be positive, negative, or neutral. When developing program 'outcomes' it is useful to ask: what changes do we expect to see in the intervention participants? (Note: the example logic model presented in this manual classifies 'impacts' as a type of outcome, whereas some other types of logic models list 'impacts' as a category that is distinct from outcomes).

One expected result in the integrated IYCF/MNP program example is a change in caretakers' behaviors and practices pertaining to child feeding. Under **'outcomes**,' the IYCF/MNP logic model highlights expected changes in caretaker knowledge, behaviors, and practices. The program example prioritized changes in certain feeding behaviors based on baseline data. Only these prioritized changes are included in the logic model, even though changes in other feeding behaviors (or maintenance of behaviors) are also expected and monitored. (Note: remember when developing logic models that the boxes can be more – or less – detailed depending on stakeholder needs and interests.)
-In the example IYCF/MNP project logic model, expected outcomes related to knowledge, coverage and appropriate use are:

Among children 6-23 months:
* Appropriate use of MNPs
* Increased minimum meal frequency
* Increased minimum dietary diversity
* Increased minimum acceptable diet

* Coverage of IYCF strategies and MNP among mothers, caretakers, and children

* Mothers, caretakers, and children know, demand, accept, and have ability to appropriately use IYCF strategies and MNPs

In the integrated IYCF/MNP logic model, there are also **outcomes** related to expected changes in the nutritional intake, and both short and long term biological and functional changes among participating children:

* Improved intake and diminished loss of vitamins and minerals among children 6-23 months
* Decreased mortality and morbidity among children 6-23 months
* Improved nutritional status among children 6-23 months
* Improved physical and cognitive development, educational attainment, and future productivity among children 6-23 months

The example integrated IYCF/MNP logic model also acknowledges the important role of effective program management and monitoring and evaluation throughout the life cycle of the project, as well as the contribution of other non-vitamin and mineral interventions, such as deworming and malaria prevention and control, to achieve the desired impact on nutritional and health status. It is important conceptually for all stakeholders to understand if other interventions are expected to contribute to the achievement of changes in nutrition and health status among participants. It might also be important politically that stakeholders have realistic expectations of the program package and its positioning within the broader nutrition policy framework of the country. The example logic model does not show any contextual or moderating factors that might support or undermine project implementation and activities. However, it is important to identify critical contextual factors during the planning phase and ideally monitor their influence on the intervention in order to understand how they influence program performance. Also, note that some dimensions of the project monitoring and evaluation may overlap with the **activities** in the Quality box focused on the internal and external monitoring plan because there is overlap between personnel management tools and dimensions of monitoring project quality and performance.

The fictional integrated IYCF/MNP logic model shows a logic model already developed. Table 3.2 below contains category definitions and a more comprehensive list of potential content that could be considered for each category when developing a logic model for an IYCF/MNP program. The list is not exhaustive and the appropriateness and applicability of the content depends on the local context and phase of development of the project.

To summarize, the **activities** and **outputs** represent the work carried out by program staff to implement the intervention; as a result, they are under greater control of the project. The **outcomes** reflect the expected effects of the intervention on the program participants; that is, if the activities and outputs are

implemented correctly, then these outcomes—changes in others—should result (de Regil et al. submitted). The relationships among the activities, outputs and outcomes are grounded in the **inputs**—the resources available to the project—and the context/moderating factors (not shown in the model). The presence or absence of these inputs and contextual factors can help or hinder implementation and/or the ability of the activities to achieve their intended outcomes. These inputs and moderators are typically "outside" the project and, thus not under its direct control. But they may be the key to whether the program is efficient and effective or not. The logic model assumes effective program management and project monitoring and evaluation are taking place.

There are a few additional points to consider:

* *While the relationships look one-way and static in the logic model figure, they actually may be dynamic and interact with each other.*
* *Do not worry about labels too much. Some outcomes here may be better thought of as outputs for other programs, and vice versa.*
* *The logic models (the boxes, arrows, and content) should be adapted to each context. It is acceptable and expected that they will look different from the example used in this manual.*

Table 3.2 Logic Model Category Definitions and Potential Content for a Fictional Integrated Infant and Young Child Feeding (IYCF) & Micronutrient Powders (MNP) Program for Children 6-23 Months of Age

Category & Definition	Fictional Integrated IYCF/MNP Program: Potential content*
Inputs: Resources invested in the intervention	• Personnel (paid and unpaid) • Content and technical expertise • Equipment and materials (hospitals, community clinics, other community infrastructure and resources) • Funding needs identified for next five years • Funding committed for next five years • Strategy developed and implemented to secure needed funding • Existing partnerships, such as an anaemia prevention task force, national nutrition cluster, Intervention Technical Advisory Committee • Direct and indirect support from organizations and communities such as Ministry of Health or Finance, United Nations agencies, non-governmental organizations (NGO), community based organizations (CBO) such as self-help groups or school child clubs
Activities: Actions, events, and processes of program implementation including the execution of inputs and performance of the intervention and staff.	Policy (at national or other levels, as appropriate) • Comprehensive IYCF policy including MNP consistent with international and national guidelines is developed, revised, established, or implemented • Policies to achieve the operational targets of the 2005 Innocenti Declaration are developed, revised, established, implemented, monitored, legislated, or enforced - Policy to appoint a national breast-feeding coordinator and multi-sectoral national breast-feeding committee is developed, revised, established, implemented, monitored, or legislated - Policy to assure that every facility providing maternity services fully practices all of the Ten Steps to Successful Breast-feeding in the Baby-Friendly Hospital Initiative is developed, revised, established, implemented, monitored, or legislated - Implementation of The International Code of Marketing of Breast-milk Substitutes is initiated, expanded, strengthened, monitored, or legislated

Table 3.2 : Continued

Category & Definition	Fictional Integrated IYCF/MNP Program: Potential content*
Activities: (continued)	- Policy for maternity protection consistent with the International Labour Organization (ILO) Maternity Protection Convention 183 is developed, revised, established, implemented, monitored, legislated, or enforced • National plan of action to implement the integrated IYCF/MNP program developed with and endorsed by stakeholders • MNP registered as a food, pharmaceutical product, or supplement • MNP formulation approved by government • MNP regimen approved by government
	Production & Supply • Local MNP branding developed, if relevant • MNP purchase contracted and procured • Behaviour change communication materials developed • Behaviour change communication materials procured • Training and refresher training materials developed for those involved in distribution, including management, providers, and volunteers • Training and refresher training materials procured
	Delivery • Delivery system strategy for the integrated intervention developed (at pilot, small or national scale, as appropriate) • Delivery system strategy(ies) piloted and then implemented • MNP integrated into existing supply distribution systems, if relevant • Training & refresher training strategy developed and implemented for management, providers & volunteers • Motivation strategy developed and implemented to maintain interest among those involved in distribution, particularly volunteers
	External & Internal Quality Control • Internal and external quality control plans developed that include reviews and enforcement of relevant policies and codes; as well as attention to production and supply, service delivery, and behaviour change communication strategies • Quality control plans integrated into existing government monitoring infrastructure and oversight • New supervision and oversight systems developed and implemented, as needed to implement the internal and external quality control plans
	Behaviour change communication • Behaviour change communication strategy developed and implemented, including primary data collection as needed for development and testing of strategy, behaviours by participants, and related materials and messages. Especially that all package labels and behaviour change communication are consistent with The International Code of Marketing of Breast-milk Substitutes and national requirements • Strategy to engage stakeholders and promote advocacy developed and implemented

Table 3.2 : Continued

Category & Definition	Fictional Integrated IYCF/MNP Program: Potential content*
Outputs: Direct effects or products of activities.	• Procured annual supply of MNP available in the country • Procured annual supply of training and refresher training materials available in the country • Procured annual supply of behaviour change communication materials in the country • Imported MNP meet quality standards and specifications • Distributed MNP maintain quality standards and specifications at all points of the distribution channel • Appropriate amounts/number of sachets of MNP available at all distribution points • Providers and volunteers available at distribution points or other intervention sites • Providers and volunteers trained to deliver MNP and with skills to counsel on improved IYCF and use of MNP • Providers and volunteers motivated to support intervention delivery • Maternity hospitals in the country achieve Baby Friendly designation • Policies and codes related to the provision and marketing of breast milk substitutes and maternity protections followed and enforced • MNP distributed to participant families with eligible children • Participant families counselled on and supported in improved IYCF practices and MNP use
Outcomes: Specific benefits or changes among intervention participants during or after the intervention including changes in behaviours, knowledge, attitudes, health and nutritional status, function, or other results of the intervention. Outcomes may be intended or unintended, positive, negative or neutral	• Mothers, caretakers and children know, demand, accept and have ability to appropriately use MNP and improved IYCF practices • Among families/caretakers with children 0-23 months, improved IYCF practices • Among families/caretakers with children 6-23 months, appropriate use of MNP • Improved intake of vitamins and minerals among children 0-23 months • Improved nutritional status among children 0-23 months • Decreased morbidity (diarrhoea, infections) and mortality among children 0-23 months • Improved physical and cognitive development, educational attainment, and future productivity among children 6-23 months
Other interventions: Other public health or social protection interventions that will contribute to achieving the changes of improved intake and diminished osses ofvitamins and minerals; decreased morbidity and mortality; improved nutritional status; and improved development performance and productivity	• Complementary IYCF interventions, potentially also including other home fortification products, carried out by partners that might co-occur among participants • Deworming interventions • Safe water system interventions • Malaria prevention and control interventions • Immunizations • Conditional cash transfer interventions • Food security interventions

* The list is not exhaustive and the appropriateness and applicability of the content depends on the local context and phase of development of the project.

3.3.3 Developing a Logical Framework (logframe) for a Program

The logical framework (logframe) describes in a table several aspects of the program and the monitoring system, including objectives, key activities, indicators of success, monitoring and evaluation approach, and important external factors outside the control of program implementers (5). This section contrasts the portion of the logframe that deals with the program logic of intervention processes. Later chapters discuss how the CDC Framework and the logframe approach identify indicators and data collection sources.

Logframes use a "cause and effect" logic that can be read from top to bottom or bottom to top. By consolidating information into a single table, the logframe forces program managers to identify and link indicators to important elements of the program (activities, outputs, outcomes.). A logframe can be very detailed and function as a program work plan, or it can be higher level and focus on the key indicators. It might also be useful to have different logframes over the life and phases of a program (e.g., one logframe for the pilot phase and then a revised logframe for the maintenance phase). There are several ways of developing a logframe and sometimes the terms used for the same concepts in logframes vary[5]. Here, the logframe approach of Population Services International (PSI) (5) is presented below in Table 3.3 and was adapted to the fictional integrated IYCF/MNP project (Appendix 5).

Table 3.3 Population Services International Logframe
Adapted from the PSI Logframe Handbook (5). Used with permission

Narrative Summary	Performance Indicators	Means of Verification	Assumptions & Risks
Goal Higher objective to which this project, along with others, will contribute.	Indicators to measure achievement of project Goal.	The source of data for Goal-level performance Indicators.	Risks regarding strategic impact.
Purpose Reason for doing this project. The impact of this project.	Indicators to measure achievement of project Purpose.	The source of data for Purpose-level Performance Indicators.	Risks regarding program-level impact.
Outputs The project deliverables for which the project can be held accountable.	Indicators that measure project Outputs.	The source of data for Output-level Performance Indicators.	Risks regarding design effectiveness.
Activities A summary of the main project Activities, organized by Output.	Indicators that measure project activities performance	The source of data for Activity-level Performance indicators.	Risks regarding implementation and efficiency.

[5]For example, in some logframe formats, the Goal is called Overall Objectives; the Purpose is called Specific Objective; and Outputs are called Expected Results.

In Table 3.3 the first column of the logframe resembles a logic model, but read from bottom to top rather than left to right, as in the example earlier in the chapter. The logframe also uses slightly different terms for some of the categories (see Table 3.4 for a comparison.)

Table 3.4 Matching Logic Model Categories with Logframe Categories

Logic Model		Logframe
Outcomes[a]	=	Goal
	=	Purpose
Outputs	=	Outputs
Activities	=	Activities
Inputs		*Not specifically mentioned in logframe*
Moderating Factors/Context	=	Assumptions and Risks

[a] Impacts are a type of outcome and correspond to the Goal in the logframe, but are not explicit in the logic model

Below discusses the logic of the intervention processes in the logframe: Goal, Purpose, Outputs, Activities, and Assumptions and Risks. The columns for performance indicators and means of verification[6] will be covered in later chapters.

Goal

The logframe "goal" is the broader objective to which the project, in addition to others, will contribute. The goal statement is broad enough that it is not expected that a single project will achieve it. The goal statement can usually be formulated from government agency or donor documents that summarize the strategic goals of project stakeholders. The goal is stated as a completed action in the future, and as a desired end, not as a means (a process). In the integrated IYCF/MNP project logframe (Appendix 5, summary below), the goal of the program is: "Improved nutritional status among children 6-23 months of age by 2015." This is the broader objective, which the national government and several donors are likely to be addressing through various projects.

Narrative summary	Performance Indicators	Means of Verification	Assumptions & Risks
Goals			
Improved nutritional status among children 6-23 months of age by 2015			- Funding commitment remains stable

[6] Sometimes the Means of Verification column is called Monitoring and Evaluation

Following are some tips to consider when developing the "goal" statement in the logframe.

Tips to Consider When Writing the Goal

(Adapted from the PSI Logframe Handbook (5). Used with permission.)

- The Goal is consistent with the government and/or donor's strategic development policy.
- The Goal is stated as a completed action in the future, using a strong action verb.
- The Goal is consistent with government and/or donor's mission statement, policy guidelines.
- The Goal represents sufficient justification for the project.
- Target groups are explicitly defined.
- The Goal is expressed as a desired end, not as a means (not as a process).
- The Goal is stated clearly in verifiable terms.
- The Goal is not a restatement or summary of the Purpose.

Purpose

The "purpose" describes the desired effect of the project. The desired effect is often a change in behavior by the project participants, although participant behavior change is not always the purpose of the project. The purpose is the reason why the project is being implemented, and what will change as a result of the outputs. In the integrated IYCF/MNP project logframe (Appendix 5, summary below), the purposes of the project are: "1. Caretakers improved IYCF practices and fortified complementary foods prepared in the home, and 2. Coverage of IYCF strategies and MNP among caretakers increased." Note that these purposes are similar to the outcomes in the example integrated IYCF/MNP logic model (Figure 2).

Narrative summary	Performance Indicators	Means of Verification	Assumptions & Risks
Purpose			
1. Caretakers improved IYCF practices and fortified complementary foods prepared in the home 2. Coverage of IYCF strategies & MNP among caretakers increased			Intervention continues to focus on priority IYCF indicators. Other key IYCF indicators performance remains high and adequate. If the other key IYCF indicators performance declines, then the emphasis of the IYCF component might need to be revised.

Following are some tips to consider when developing the "purpose" statement in the logframe.

Tips to Consider When Writing the Purpose

(Adapted from the PSI Logframe Handbook (5). Used with permission.)

The Purpose describes change in participant behavior, status, or performance.

- The participant is clearly identified.
- The Purpose contributes significantly to the Goal (though does not achieve it).
- The Purpose is realistic.
- The Purpose is not a restatement or reformulation of the Outputs.
- The Purpose is outside the implementers' control.
- The Purpose is formulated as a future completed action, and not as a process.
- The Purpose is precisely and verifiably defined in the Indicators column.
- The Purpose-to-Goal causal logic is direct and does not skip steps.
- The Purpose plus its Assumptions describe the necessary and sufficient conditions to achieve the Goal.

Outputs

Outputs can be defined as the program deliverables - or what the program managers and implementers are responsible for delivering by the end of the program. By definition, the purpose and goal can be affected by many external factors, and achievement of these results can be beyond the control of project managers. However, outputs are program results that are within the control of managers and implementers, and therefore, managers are held accountable for their delivery. When developing outputs in a logframe, the program should ask: "what needs to be accomplished in order to achieve the purpose?" In the integrated IYCF/MNP project logframe, an example of an output is: "1.1 Increased access to behavior change communication (BCC), IYCF supportive strategies, and MNP in communities." Additional outputs from the integrated IYCF/MNP logframe are found in Appendix 5. Also, note that the outputs in the logframe are similar to the outputs in the example integrated IYCF/MNP logic model (Figure 2).

Narrative summary	Performance Indicators	Means of Verification	Assumptions & Risks
Output 1.1			
Increased access to behavior change communication (BCC), IYCF supportive strategies, & MNP in communities			

Following are some tips to consider when developing the "output" statement in the logframe.

Tips to Consider When Writing the Outputs

(Adapted from the PSI Logframe Handbook (5). Used with permission.)

- All Outputs can be delivered by the project.
- Each Output is necessary to achieve the Purpose.
- All Outputs necessary for achieving the Purpose are included.
- Outputs plus their Assumptions produce the necessary and sufficient conditions for achieving the Purpose.
- Outputs are precisely defined and verifiable.
- All Outputs are feasible within the resources available.

Activities

Activities are the concrete actions that are required to produce each of the logframe outputs. Each output should be linked to one group or cluster of activities. Each group of activities should define the 5-10 activities that are necessary to produce the desired output. The integrated IYCF/MNP project logframe example in Appendix 5 shows the activities listed for each output. Note that the activities in the logframe are similar to the activities in the example integrated IYCF/MNP logic model (Figure 2). In the integrated IYCF/MNP program logframe, an example of an output/activity pair is:
Output 1.2: MNP available in country according to national plans
Activities 1.2: MNP supply ensured through appropriate policies and procurement

Narrative summary	Performance Indicators	Means of Verification	Assumptions & Risks
Output 1.2			
MNP available in country according to national plans			- Funding commitment remains stable
Activities 1.2			
MNP supply ensured through appropriate policies and procurement			- Stakeholders engaged and committed

Following are some tips to consider when developing the "activities" statement in the logframe.

Tips to Consider When Writing the Activities

(Adapted from the PSI Logframe Handbook (5). Used with permission.)

- Activities summarize the actions needed to accomplish each project Output.
- The relationship between the project resources and Activities is realistic.
- The vertical logic among Activities, Outputs, Purpose and Goal is realistic as a whole.

Note that in the logframe table format, for every level of the program, the performance indicators and sources of monitoring and evaluation data will be defined. These columns will be covered in detail in later chapters.

Assumptions and Risks

Assumptions are factors or conditions that are beyond the control of program managers and implementers, which can affect the overall performance of the program, and the achievement of the outputs, purpose, and goal. The ability of program administrators and managers to achieve the program goal, purpose, and outputs can greatly depend upon these assumptions holding true. Note that this is very similar to the role played by the inputs and moderators in the logic model. Although, typically, in the logframe you would only include assumptions that could directly affect the program, the design, or the program implementation (and not macro-level factors that would have widespread implications [e.g., political instability], which might show up as moderators in some logic models). While program managers cannot be held accountable for these assumptions (and they might not be easily measurable), they are responsible for monitoring changes in these assumptions to periodically assess the likelihood of achieving program objectives, and to make program adjustments, if necessary.

By adding the assumptions and risks component, logframes succinctly depict not just the "if/then" logic between each level, but the "if-and-then" logic of additional necessary and sufficient conditions for the "if" to produce the "then." When developing the assumptions for the logframe, start by considering:

- What conditions must exist in addition to the Activities, Output, Purpose and Goal in order to achieve the next level?
- Is this Assumption necessary to the logic of the project design? (Avoid assumptions which are unrealistic or not critical to the causal logic)
- Many conditions or factors are outside the control of the intervention. Focus on important assumptions that might seriously influence the ability to carry out the intervention or achieve expected results.

Assumptions should be stated:

- As specific, measurable conditions
- As positive conditions that must materialize if the project is to succeed
- As completed future actions
- Using strong action verbs

For example, in the IYCF/MNP logframe, one assumption is that "providers, volunteers and management are supportive of the intervention and interested in training/orientations." This assumption must hold true in order for Output 1.4 (Intervention staff (providers & volunteers) trained to have knowledge and motivation to adequately distribute MNP, deliver IYCF and MNP BCC, and problem solve with caretakers) to contribute to the achievement of the Purposes (1. Caretakers improved IYCF practices and fortified complementary foods prepared in the home, and 2. Coverage of IYCF strategies and MNP among caretakers increased).

Following are some tips to consider when developing the "assumptions" statement in the logframe.

Tips to Consider When Writing the Assumptions
(Adapted from the PSI Logframe Handbook (5). Used with permission.)

- Assumptions are stated as desirable, positive conditions.
- Assumptions are conditions over which the project does not have control.
- Assumptions are linked to the appropriate level.
- Assumptions are specific, measurable and incorporate quantity, quality and time.
- Assumptions can be monitored over time.
- Only critical Assumptions are included.
- Very low risk Assumptions are not included.
- High risk Assumptions should be monitored during project implementation so that necessary actions can be taken if warranted.

Key points from Chapter 3:

- Seeking the input and involvement of program stakeholders from the beginning of planning helps to ensure that the results of monitoring activities will meet the information needs of primary users, are accepted as being credible, and are used to improve program operations.
- A detailed program description serves as the foundation for developing the monitoring system for a home fortification program.
- Logic models and/or logical frameworks (logframes) should be created during the program planning phase, as the program is being developed, and referred to throughout the life cycle of the program for improved decision-making and management.
- There are different ways to structure and develop logic models and logframes; there is no "one" right way.
- These tools are meant to be adapted and will look different for different projects. Do not overly worry about labels as some outcomes (or purposes) may be better thought of as outputs for other projects, and vice versa.
- Logic models and logframes represent complex processes that sometimes look static or unidirectional in the figures but are actually dynamic.

4 Focusing and Designing the Monitoring System

In this chapter :

- Focus the monitoring system design to address the needs of stakeholders and improve the project, including defining the purpose, users, and use of the data.
- Description of the key phases of a project.
- Review of internal and external monitoring systems.
- Integrating with existing data collection systems.
- Brief descriptions of different sources of program monitoring data and types of systems.
- Considerations related to quantitative and qualitative methods.
- Other factors to consider when designing the monitoring system.
- Need for periodic reality checks.

4.1 Focusing the Monitoring System Design

The third step in the CDC Framework is focusing the monitoring system design. The design of the monitoring system should be focused so that it addresses the elements of the program prioritized by stakeholders, and meets the information needs of stakeholders. These needs must be balanced with the time and resources that can be dedicated to implementing a monitoring system. To decide on the focus, ask these questions:

- the purpose and objectives of the monitoring system
- the persons who will use the monitoring results, and how the information can be catered to meet their needs
- ways in which the information and results will be used to make program adjustments

Clarity on this from the start will help with the remaining decisions:

- the type of monitoring system that would best meet the informational needs of the program, and whether linkages can be created with existing data collection systems
- data sources and locations where monitoring information will or can be collected
- methods for monitoring public health programs
- how often information is needed for decision making and timely program adjustments
- procedures and roles/responsibilities of those who will implement monitoring
- necessary resources for monitoring

4.2 Defining the Purpose of the Monitoring System

The purpose and use of the monitoring system will depend upon many factors, a key one being the stage of development of the program. See Box 4.1 for a description of these stages.

When the project is in the **planning phase:**

- The monitoring system should be developed along with the overall project during the planning phase
- Monitoring per se is generally not occurring, or is limited in scale
- Data collection activities may be aimed at
  - ► conducting a needs assessment (formative evaluation) to better understand the needs and magnitude of the problem that the program will address.
    - this is an important first step in program development as it provides the information necessary to create an appropriate and relevant intervention for the local context
  - ► carrying out small-scale feasibility or acceptability testing
    - to determine how to make the intervention, activities, messages, and materials work in a particular setting, and to support participants' acceptance and adherence to the program

See Box 4.2 for examples of potential questions to answer during different phases of the fictional IYCF/MNP project lifecycle.

When the project is in the **early to middle phases of project implementation:**

- Monitoring should be implemented as part of the project during the early implementation phase
- Problems should be identified and adjustments made *to the monitoring system* during early implementation to improve the performance of the system
  - ► With a functional monitoring system at the beginning of the implementation stage, managers can identify problems in the design or operation of the project, as well as the monitoring system, early on in the project's life cycle
- The breadth and depth of monitoring activities is often large
  - ► Activities tend to focus on assessing the functioning of key elements of the project (inputs, activities, outputs, and outcomes)
- The purpose of monitoring is to determine which elements of the project are and are not working well, by comparing performance indicators to predefined targets
- By identifying which elements of the project are and are not meeting targets, managers should make appropriate adjustments to the project to ensure that problems are corrected and the project will function well in the long-term

Assuming the project's performance indicators are positive during the implementation phase, and significant problems in the functioning of the project have been solved, the project and monitoring may enter the maintenance phase.

- The determination of when to switch from the implementation phase to the maintenance phase depends on a number of factors and is highly context specific.
- Some of the determining factors include the:
  - ► performance of the intervention during the implementation phase
  - ► resolution of identified implementation problems affecting coverage and adherence
  - ► resources available

Reminder:
Fictional Example of an Integrated Infant and Young Child Feeding (IYCF) / Micronutrient Powders (MNP) Project

Throughout this manual, monitoring concepts are discussed using the example of an integrated project designed to support improved infant and young child feeding (IYCF) practices and the use of micronutrient powders (MNPs) for home fortification.

- The project targets children 6-23 months of age and their caretakers.
- Government health care providers distribute MNPs and counsel caretakers on the use of MNP and improved IYCF practices
- The IYCF strategy is implemented with the help of community volunteers, and includes peer-to-peer counseling and modeling, community outreach activities for caretakers, and mass communication.
- The behavior change communication messages and activities focus on using locally available and affordable foods to improve IYCF practices, and emphasize increasing dietary diversity and meal frequency in order to improve the diet, and fortifying complementary foods prepared in the home using MNP.
- In the example program, the integrated package has already been developed and piloted, and is at national scale.

Box 4.1 Phases of a Program

There are generally three program phases: planning, implementation, and maintenance.

* The **planning phase** is the program development stage, during which program stakeholders are conducting all necessary activities to prepare for program implementation. These may include needs assessment and situational analysis, agreeing upon program objectives with stakeholders, designing the intervention and monitoring and evaluation plans, and conducting feasibility and / or acceptability testing (including pre-testing of messages and communications materials, and small-scale testing of the intervention among potential program participants in their homes in order to understand everyday experiences with the intervention to improve the intervention package).

* The **implementation phase** is the early to middle stages of program implementation and focuses on correcting problems in the system. This includes the pilot testing phase, including piloting the monitoring system. Program managers are focused on assessing what aspects of the program are and are not working well, and making adjustments to improve the program.

* During the **maintenance phase**, the program has been operating for a while, and ideally problems in the design or functioning of the program have been corrected. If issues in the performance of the program have been corrected, the focus shifts to maintaining a high level of performance for the long-term and potentially scaling up the intervention to new sites or regions.

When a program is scaled up and expanded to new regions, the pilot area may transition into the program maintenance phase. The new areas, to which the program has been scaled up, are implementing a program that is new for those regions, and therefore, they are in the implementation phase (as opposed to the maintenance phase of the pilot region).

- ► donor requirements

When the project is in the **maintenance phase:**

- Monitoring activities may be scaled back
  - ► The degree of scale back depends on a number of factors and is context specific
- Activities may focus on gathering data on a smaller set of key indicators to ensure long-term functioning and success of the program

In addition to the phase of the program, other factors can affect the purpose and objectives of the monitoring system. Ultimately, the purpose of the monitoring system will depend upon the information needs of the primary users, and what these users will do with the data. Therefore, a useful next step is to identify these users, and define their information needs and action plans.

Box 4.2. Potential Questions to Answer during Different Phases of the Fictional IYCF/MNP Project

Questions to answer during the Planning Phase:

1. Is the intervention needed? How can it be implemented given the local situation and capacity?
2. How can communities and volunteers be engaged to support improved IYCF and home fortification?
3. How can we improve delivery of the project to these children and families?
4. Will health care providers and volunteers support this intervention and be willing to participate in distribution and counseling?
5. Are the behavior change communication (BCC) strategies and materials for caretakers and families locally relevant and appropriate?
6. Will caretakers and families accept and use MNP?
7. Can caretakers improve IYCF practices using locally available foods?

Questions to answer during the Implementation Phase:

1. To what extent are planned activities accomplished?
2. Do caretakers of children 6-23 months have access to MNP, and IYCF and MNP BCC and support?
3. Does the MNP meet quality standards?
4. Do health care providers and community volunteers have the knowledge, skills, and motivation to implement the intervention?
5. Is there a sufficiently high coverage of the intervention strategies?
6. Are caretakers improving IYCF practices?
7. What is the level of caretaker adherence to MNP and are caretakers appropriately using MNP?
8. Is there high awareness among target caretakers about this intervention?
9. Do caretakers and children accept this intervention?
10. Do caretakers have the knowledge and skills needed to implement improved IYCF practices and home fortification using MNP?
11. Is there an improved intake among children 6-23 months of the micronutrients that are expected to be associated with changes in nutrition and health?

Questions to answer during the Maintenance Phase:

1. To what extent are planned activities accomplished?
2. Are indicators of long-term performance of the program (e.g., adequate supply, coverage, adherence, knowledge and awareness among caretakers) meeting targets?
3. If applicable, why are planned activities not accomplished and what can be done to improve the situation?
4. If applicable, why are indicators of long term performance not meeting targets and what changes are needed to meet targets?

4.3 Defining Users

An effective monitoring system provides users with the information they need to assess the performance of the program, and make appropriate adjustments to improve the program's functioning. Therefore, when developing a program monitoring system, a useful first step is to identify the information needs of the various users, and clarify the process through which stakeholders and primary users will use the monitoring data. Chapter 3 discussed how to identify program stakeholders and primary users.

It is useful to map out the various primary users of the monitoring system, and to answer the following questions:

- What information or data does each primary user need to assess the performance of the program?
  - ► For each user, what level of aggregation of the data is needed (i.e. national-, regional- or community-level data)?
- How will each primary user be involved in assessing the data and deciding upon programmatic adjustments or actions to take?
- How often does the data need to be reported?
- Who will implement the actions and adjustments?
- What processes or procedures will be established to ensure the data are analyzed, reviewed, and acted upon in a timely manner?
- What is the feedback loop to ensure information and results are shared (fed up and fed down between staff at all levels and management) with those who will take action and make management decisions?

It is important that the **feedback loop include two-way communication**. For example, program managers discuss monitoring results and program adjustments with program staff [e.g. health care providers or community volunteers], who will implement those adjustments, and then program staff feed their experiences with the actions / adjustments back to managers. It is useful to periodically, such as during annual reviews, have staff at all levels assess the feedback loop. In addition, it is helpful to periodically have staff complete satisfaction surveys and consider their job performance in order to identify issues or suggestions for improvement. These are components of personnel management but also improve the quality of monitoring and program effectiveness.

Table 4.1 below provides an example of how to map out the primary users of a monitoring system, the information needed by each user, and the procedures and processes for analyzing and acting upon the results. This example is based on the fictional integrated IYCF/MNP project, but in the interest of simplicity, it focuses on monitoring indicators pertaining to MNP distribution. The table shows that there are four main groups of primary users of the monitoring system:

- National-level program managers from the Ministry of Health and implementing NGO
- Regional-level program managers from the Ministry of Health and implementing NGO
- Local (community-based) health care providers and clinic administrators
- Local (community-based) health volunteers

It is important to note that:

- Each group of primary users may have different information needs, based on the areas of program functioning they will assess and performance indicators they will use. (See column 2 in Table 4.1)
- Each group of primary users has different needs for data aggregation, depending upon whether their management and implementation of the program occurs at the community-, regional-, or national-level. (See column 3)
  - ► Depending upon the design of the monitoring system, for some indicators and types of data, it may not be possible to collect data from every community and clinic. Thus, for some indicators it may not be possible to disaggregate the data by communities or individual clinics. For example, it may be feasible to collect information on product supply and MNP distribution coverage for every clinic using routine health system records, but it may not be realistic or cost-effective to collect information on caretakers' knowledge, practices, and behavior changes in every community.

Table 4.1 shows that monitoring results will be analyzed and acted upon during quarterly meetings that are held

with staff at each level of program implementation. The timing and frequency of data collection, analysis, and review will depend upon what system is feasible and useful within the context of each program, which is based on human and financial resources and existing infrastructure systems that can be dedicated to monitoring. The fifth column in Table 4.1 shows the process for implementing programmatic changes, based on monitoring results. Last, the table shows the feedback loop, whereby program implementers at the community level share their experiences with program managers at the regional level, who can in turn share their experiences with program managers at the national level. This feedback process is institutionalized through the quarterly meetings held between the different levels of program implementation staff.

4.4 Internal and External Monitoring Systems

Projects should always have internal monitoring systems, while the need for external monitoring systems is context specific. The next section discusses these systems and the difference between them.

4.4.1 Internal Monitoring Systems

Internal monitoring systems are systems where project staff have access to them, and generally actively manage them. Programs should always have an internal monitoring system. Internal monitoring systems may be designed to be part of routine program operations, or they may be separate activities that are specifically carried out to provide needed program monitoring information. Examples of internal monitoring systems include routine management information systems that manage health clinic records (e.g. program records kept at clinics distributing MNP), product distribution logs, or supply/inventory records, as well as data collected outside of routine systems, such as a short-term contract to collect qualitative data on an emerging issue or other special data collection activities.[7] Individuals who are considered "internal" to the program (i.e. program staff) are often responsible for collecting internal monitoring data as a part of their regular program duties. Table 4.2 describes potential strengths and weaknesses of internal monitoring systems.

4.4.2 External Monitoring Systems

External monitoring systems are those that are managed by individuals who are external to and independent from program management and staff. An independent team carrying out external monitoring is expected to provide an additional level of objectivity because these individuals are not involved in program implementation and are not perceived to have a vested interest in the results of the monitoring. See Table 4.2 for potential strengths and weaknesses of external monitoring systems. One way to efficiently collect external monitoring data is to integrate program indicator questions into regularly scheduled surveys (e.g., Demographic and Health Survey or Multiple Indicator Cluster Surveys), and in some cases, it might potentially be feasible to carry out secondary data analysis using existing datasets.

The choice of using external monitoring systems depends upon the information needs of stakeholders, financial and human resources that can be dedicated to monitoring, and what data sources and systems already exist in the environment in which the program operates. Box 4.3 gives an example of how internal and external systems could be used for program monitoring.

[7]For example, to examine specific issues such as: Why is coverage in District A much lower than others? Why are some sub-groups participating at such high levels (examine positive deviance, understand success) or low levels (examine negative deviance, understand problems)? Why is the BCC not resulting in expected behavior change? What are community perceptions of the project?

Table 4.1 Mapping Monitoring System Users, Information Needs, and Procedures for Data Review and Action

Monitoring system primary user	Information needed	Data aggregation level	Process for review and determining actions needed	Implementation of actions & adjustments	Feedback mechanism
National-level program managers from the Ministry of Health and implementing NGO	• Adequacy of MNP supply and delivery system • Number and quality of trainings for health care providers and community volunteers • MNP coverage and adherence for children 6-23 months • Coverage and effectiveness of behavior change communication strategies among caretakers	Data at the national-, regional-, and community (clinic)-level	National-level managers hold quarterly meetings to review and analyze data with regional-level managers, and decide upon actions/ adjustments to be implemented	National-level managers will supervise regional-level managers in the implementation of the program adjustments within their respective regions	Discusses monitoring results and program adjustments with larger group of program stakeholders (donors, coalition partners, etc.)
Regional-level program managers from the Ministry of Health and implementing NGO	• Adequacy of MNP supply and delivery system • Number and quality of trainings for health care providers and community volunteers • MNP coverage and adherence for children 6-23 months • Coverage and effectiveness of behavior change communication strategies among caretakers	Data at the regional- and community (clinic)-level	Regional-level managers hold quarterly meetings to review and analyze data with community-level health clinic administrators and health volunteers, and discuss actions / adjustments to be implemented at the clinics and in the communities	Regional-level managers will supervise community-level health care providers / administrators and volunteers in the implementation of the program adjustments within their respective clinics / communities	Feeds back experience to national-level manager during quarterly meetings
Local (community-based) health care providers and clinic administrators	• Adequacy of MNP supply and delivery system • Number and quality of trainings for health care providers and community volunteers • MNP coverage and adherence for children 6-23 months • Coverage and effectiveness of behavior change communication strategies among caretakers	Data at clinic-level (within the clinic's catchment area)	Following quarterly meetings, clinic staff and administrators discuss performance indicators for their clinic and consider ways to improve performance	Health care providers / administrators at each distribution clinic will implement the program changes	Feeds back experience to regional-level manager during quarterly meetings
Local (community-based) health volunteers	• MNP coverage and adherence for children 6-23 months • Coverage and effectiveness of behavior change communication strategies among caretakers	Data at the comunity-level	Volunteers discuss indicators within their communities and consider ways to improve performance	Community volunteers will implement the program changes	Feeds back experience to regional-level manager during quarterly meetings

Table 4.2 Potential Strengths and Weaknesses of Internal and External Monitoring Systems

Monitoring System Type	Potential Strengths	Potential Weaknesses
Internal	• Reduced cost and time when rely on: ► Existing tools & systems ► Tools & systems developed for program operations • Increased sustainability, simplicity, and acceptability when based on program operation records ► Minimal or no additional work for staff • Engages staff and program stakeholders in monitoring processes ► Supports ownership, acceptance, and use	• Potential sources of bias ► Systems that collect data only on program participants might not be representative of target population [a] ► If program staff collect data, there may be higher risk of bias if staff performance is based on these data ► May be higher risk that program staff will not evaluate the monitoring data objectively • Integrating into an existing weak system might be problematic if weaknesses cannot be addressed • Level of precision of data may not meet stakeholder needs • If based on routine program operations or integrated into existing systems, it may not be possible to collect all indicators ► For some indicators, may need to collect data through special tools or procedures, which could require more resources
External	• Staff expected to provide additional level of objectivity because they are not involved in program implementation ► Not perceived to have vested interest in results • Often used for impact evaluation and in other situations where perception of higher level of objectivity is valued or required [b]	• Increased cost • Increased time • Potential for less staff ownership if staff not involved in discussing results, deciding actions, or data suggest poor staff performance • Depending on methods, data collected could be biased (use of an external system does not preclude bias).

[a] For example, in a clinic-based monitoring system, it is likely that not all children eligible for the intervention will attend the clinic and those who do not attend may be systematically different from those who do. For example, they may be from families that live farther away from the clinics and have less access, or are of higher socioeconomic status or education and choose not to use the clinic.

[b] For example, a donor might require a periodic external assessment of program impact, coverage, or use, to independently validate or complement the information collected through internal monitoring systems.

Box 4.3. An Example of a Program Using Both Internal and External Monitoring

*Using the example of the integrated IYCF/MNP project with a focus on MNP coverage.

Internal and External Monitoring

Health care providers and administrators at government clinics are responsible for keeping a program log to track children 6-23 months of age in the clinic catchment area who are receiving MNP, as well as target children whose parents declined free MNP from the clinic. The MNP program log is filled out during the initial receipt of MNP and during subsequent clinic visits when MNP is given. The log contains the following information: child's name, child's date of birth and age, child's address, dates when first, second, and third MNP packages are given, number of unopened MNP sachets remaining from the previous 60 sachet MNP package (caretaker-report), and any adverse effects (caretaker-report). There are also fields in the log for health care providers to record caretaker refusals of MNP, and reasons for the refusals. Each quarter, health care providers use data from this log to fill out a program monitoring summary sheet with key indicators of program functioning (e.g. coverage: number and percentage of children 6-23 months in the clinic catchment area who have received the 1st, 2nd, or 3rd packages of MNP). Clinic administrators bring this data summary sheet to quarterly meetings with regional managers. At the meetings, clinic administrators and regional program managers discuss the data and decide whether program adjustments are necessary. This is an example of internal monitoring that is managed by the program.

Some key program monitoring indicators like coverage and adherence can be calculated from the internal monitoring data collected through program logs at the clinics. The individuals collecting this information (clinic staff) are the same people who are implementing the program. Thus, they have an inherent interest in collecting positive monitoring results, as positive results suggest a high level of performance among program staff. Also, the information in these clinic logs will be more complete for children whose caretakers visit the clinic all three times to receive the MNP packages. If a caretaker never visits the clinic to receive MNP, or visits once and never returns, the child's information will be incomplete in the log. Thus, the logs contain more information on children whose caretakers were more motivated to go to the clinic and receive MNP.

For these reasons, the donor requested that external monitoring also be performed for the program through the collection of periodic household surveys, which are representative of target children 6-23 months of age in each region in which the program operates. The program contracts with an external agency to design and implement the household surveys once a year. The agency designs and implements every aspect of the survey and then analyzes the data and writes the report independently from the program. This method of external monitoring is valued because the data collected is representative of the intervention target population, and judged to objectively reflect the intervention performance with fewer biases than the internal monitoring data. The information collected from external monitoring is compared to data from internal monitoring and also used to triangulate the internal monitoring data.

4.5 Identifying Existing Data Collection Systems

At the beginning of the planning process, work with stakeholders to identify existing data collection systems and tools in the geographic area within which the home fortification program operates that are relevant to the project. For example, if MNPs are distributed through government primary health clinics, program managers should strive to fully understand the existing data collection systems, procedures, and tools (forms) that are used within the primary health care system. For instance, some governments and Ministries of Health (MoH) have Logistics Management and Information Systems (LMIS) or Health Management Information Systems (HMIS), which house health system data. Having a better understanding of the existing MoH data collection systems could enable program managers to integrate the home fortification project monitoring system into existing data collection procedures within the health system, which contributes to the feasibility, acceptability, and sustainability of the monitoring activities.

4.5.1 Integrating the Monitoring System Into Existing Data Collection Systems

Ideally, home fortification program monitoring activities and tools should be complementary, and not duplicative, to existing data collection procedures. This minimizes the burden on program implementers and data collectors; reduces costs by not creating new parallel systems; and increases sustainability. Program managers should work closely with those who will collect monitoring data (particularly internal monitoring data) to develop a system that can be easily integrated into existing data collection procedures.

It might not be possible to integrate program monitoring into existing data collection systems while the program is still in the planning or small-scale early implementation phase, but it may be possible to integrate at a later date or when the program is operating at a larger scale. If this is planned, then when possible the system designed for the early implementation phase should ideally be similar to the existing system it will later integrate into in order to facilitate the eventual transition.

Key Point:
When data collection systems are nonexistent or insufficient

In some cases, it may not be possible to link to established monitoring systems if:

- These systems do not exist
- Are too weak or unreliable to be useful for program monitoring, or
- Are designed in a way that does not enable collection of the program's key indicators

In these cases, it may be necessary to develop a monitoring system specifically for the home fortification project.

Under these circumstances, monitoring is likely more costly, and it is important to budget sufficient resources for developing and maintaining the monitoring system for the life cycle of the project.

Reminder

When considering different sources and types of data for monitoring systems, assess whether and how the sources and types of data embody the standards and attributes of monitoring systems, as discussed in Chapter 2. What is most important and useful for the intervention?

Standards for Monitoring Systems:
- Utility
- Feasibility
- Propriety
- Accuracy

Attributes of Monitoring Systems:
- Simplicity
- Acceptability
- Representativeness
- Timeliness
- Stability
- Sustainability

(See appendix 2)

Integrating the data collection into established monitoring systems can also have the added benefit of strengthening these existing systems (e.g. by program investments in the system's technology infrastructure or capacity-building for data managers). However, in some cases, it may not be possible to link to established monitoring systems, if these systems do not exist, are too weak or unreliable to be useful for program monitoring, or are designed in a way that does not enable collection of the program's key indicators. In these cases, it may be necessary to develop a monitoring system specifically for the home fortification project. Under these circumstances, it is necessary to budget sufficient resources for developing and maintaining the monitoring system for the complete life cycle of the program. The ability to link to existing data collection systems is entirely context specific, and will require a thorough analysis of the data collection infrastructure in the program's environment.

4.6 Designing a Monitoring System: Sources of Data

There are many potential sources of program monitoring data, and the choice of data sources will largely depend upon what is feasible, needed, and useful in the local context. Examples of sources of program monitoring data include:

- Government (MoH) health Management Information Systems (MIS), collected through Health Management Information Systems (HMIS) and Logistics Management and Information Systems (LMIS)
  - ▶ This is typically part of an internal system.
  - ▶ An MIS may include data from:
    - Health clinic records (patient records, program records, and humanitarian aid inventory logs).
    - Growth monitoring records (kept by clinics or NGOs).
    - Product distribution logs and supply/inventory records (kept by an NGO or the MoH).
    - Government and program training and quality of intervention delivery documents (e.g. training session attendance records and post-training knowledge assessment tests).
- Media audits (counting the number of media "hits" and assessing the program messages communicated by the media). This could be part of an internal or external system.
- Sentinel sites. This is typically part of an internal system.
- Cross-sectional surveys. This could be part of an internal or external system.
  - ▶ Information may be collected through:
    - Household surveys (questionnaires for caretakers). This also includes national surveys (e.g. DHS, MICS, national nutritional status surveys), that are typically part of an external system.
    - Clinic surveys (questionnaires for health care providers).
    - Surveys of volunteers or other lay populations who support intervention delivery

New systems may also be designed exclusively for the intervention that 1) stand alone or 2) are integrated with some of the source of data mentioned above. Data collection could be ongoing, episodic, or on an "as-needed" basis using quantitative or qualitative methods (further discussed in a later section) depending on the purpose and focus of the monitoring. There is also an emergence of unique sources of monitoring information. For example, programs in some countries have experimented with innovative methods of collecting program information, such as using mobile phones to text information related to stock outs or coverage of services. It may be useful to "think outside the box" and develop creative methods for data collection that are catered toward the unique circumstances of your program. However, it is important to keep in mind that the use of new methods often requires special software, technology, or data management skills that existing staff might not possess and that require a steep learning curve to develop. When adopting new technology it is important to have ongoing access to staff with the expertise to manage these systems, or programs run the risk of not having the needed information collected, analyzed, or used.

Typically, multiple information sources will be used in a program monitoring system. The information sources can be identified by determining the sources from which data will be collected to calculate or verify the status of performance indicators, which are linked to the goal, purpose, outputs, and activities in the logframe (See Chapter 3). When considering potential data sources, assess whether and how the different data sources embody the standards and attributes (see Chapter 2) of monitoring systems and what is most important and useful for the current intervention. The following sections give a brief description of some data collection systems that can be useful for program monitoring. Routine internal monitoring needs to track supply procurement and supply chain management, as well as intervention delivery and quality. Typically data collection systems capable of collecting local level data track the supply chain and intervention delivery. Other types of systems, or specific data sources might track other components of the project, such as staff training, or special data collection for periodic surveys or involving qualitative methods. Box 4.4 includes an example of a market based distribution of MNPs and the collection and use of monitoring data from multiple sources.

Box 4.4. An Example of a Market-Based Distribution of MNP Integrating Multiple Sources of Monitoring Data

Background
In country X, there are high rates of stunting and wasting among children less than 5 years of age and the prevalence of anemia among children 6-23 months of age is 70%. Iron and vitamin A deficiency are estimated to be high but no recent data are available. Nearly half of all children are exclusively breastfed for the first six months of life. The purchasing power of the population is low and MNP is considered a low-cost option that families could purchase for their children in order to improve their micronutrient status.

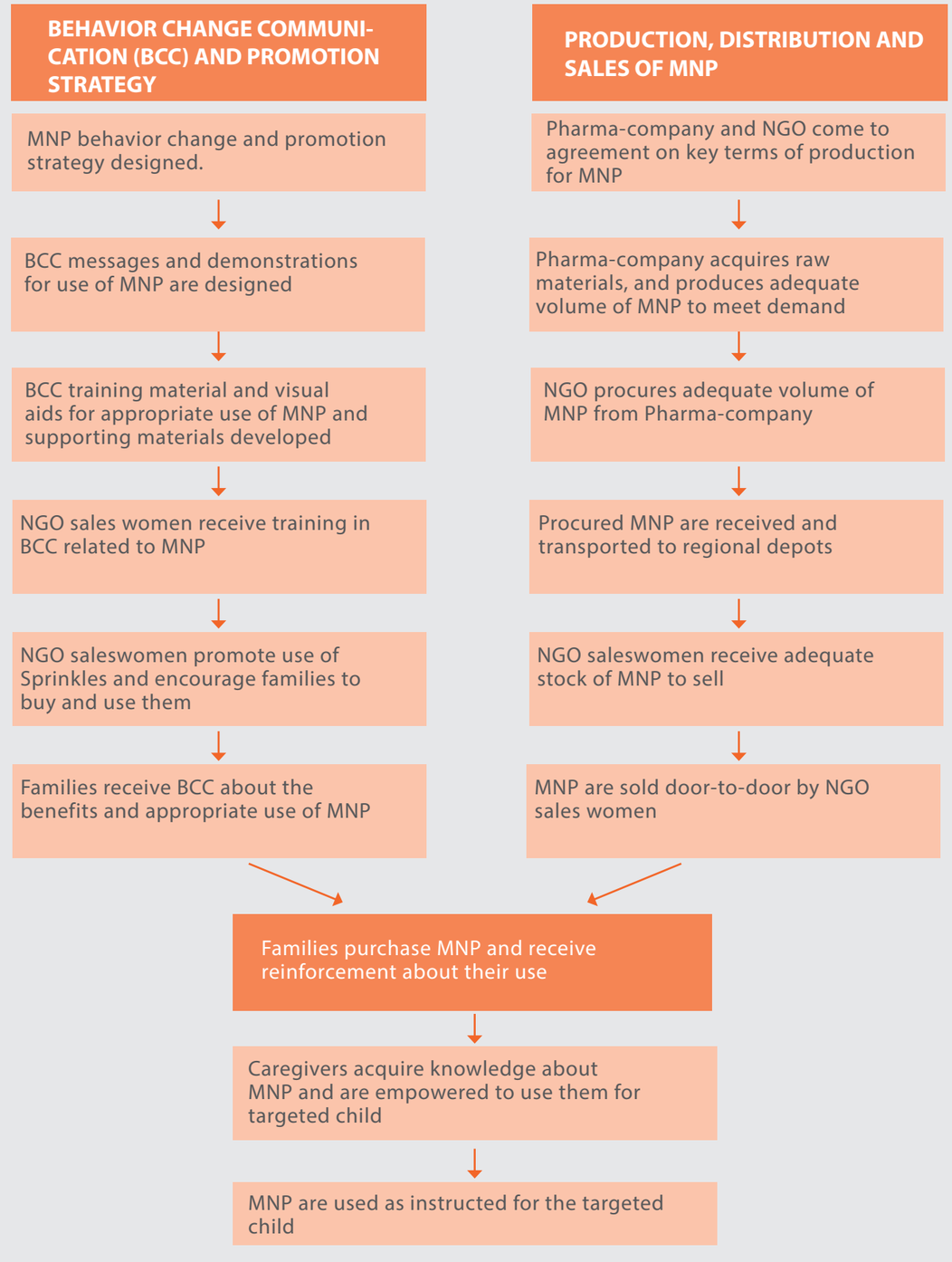
Organizations:
- Implementers
  - ▶ Non-governmental organization (NGO)
  - ▶ Pharmaceutical company
- External Organization
  - ▶ A third-party organization not involved in the implementation of the intervention independently assesses project processes and evaluates biological impact

Implementers Roles and Responsibilities:
- NGO
  - ▶ Train and support local saleswomen to sell MNP and support behavior change communication in the community
- Pharmaceutical company
  - ▶ Production and sales to end consumers through their pharmacies
  - ▶ Production and sales to institutions, such as above NGO, that then distribute it to the end consumers

Target Populations:
- Intervention targeting
  - ▶ Primary population of interest is children 6-23 months of age from lower-income households
  - ▶ Population expanded to children 6-59 months of age from all socio-economic strata in order to make the business model sustainable
  - ▶ Monitoring and evaluation of biological impact is limited to children 6-23 months of age from lower-income households

The next box describes the program theory outlining the expected project processes.

Box 4.4 continued : Program Theory Describing the Market-Based MNP Distribution



Box 4.4 continued: Summary of Monitoring Data Collection

- NGO
  - ► Relying on an existing internal program management information system for the reporting and collection of monitoring data, NGO collects quantitative internal monitoring data on sales by saleswomen, region and product accessibility
    - Saleswomen report sales data on a periodic basis to their supervisors, which is reported up the chain and logged, and then analyzed systematically by region and nationally
  - ► Data on target population and saleswomen awareness is also assessed by knowledge of information presented during trainings and in BCC campaigns

- Pharmaceutical company
  - ► Collects quantitative internal monitoring data on sales by pharmacies, region and product accessibility

- External third-party organization
  - ► Collects quantitative and qualitative data independently from the intervention staff
    - Quantitative surveys of NGO saleswomen prior to the impact assessment document their awareness about MNPs, training experiences, and sales
    - Quantitative surveys of households at baseline and endline assess household level awareness, purchase (coverage), and use of MNPs for children in the target age range, as well as biological impact
    - Qualitative data collection among NGO saleswomen explores the drivers of promotion and sales of MNPs, and at the household level examines determinants and dynamics related to purchase and use of MNPs

The next table describes the organizations responsible, source of various indicators and their use.

Monitoring by Organization, Source, Indicator title, and Use

Organization Responsible	Source	Indicator Titles	Use
Pharmaceutical company & pharmacies	Internal: pharmacy data systems	* Total sales/ region * Total production * Retail sales/ region (to the pharmacies) * Institutional sales (to NGO's or other organizations) * Quality control pass rate * Initiatives to respect the Code of Marketing of Breast-milk Substitutes	* Most indicators are continuous and provide monthly reports information on sales and trends * With reporting of sales per region, it can be anticipated where accessibility will likely be acceptable or low. * This system is very timely and allows for rapid course-corrections, if needed
NGO	Internal: NGO monitoring data	* Sales by saleswomen disaggregated to the level of sub-districts * Training of saleswomen held	These indicators are continuous, but collected and reported less frequently than the pharmacy data (semi-annually).
		* Pass rate of trainees * Retail awareness * Consumer awareness * MNP adherence	• They provide insight into the effectiveness of the local saleswomen distribution system with regard to awareness raising, sustained sales, adherence
Third party organization	External: • Baseline survey • Endline survey • NGO saleswomen survey • Qualitative data collection	* Coverage of NGO saleswomen network (the number of sellers) * Sales of MNPs by NGO saleswomen & barriers to sales * Consumer awareness, purchase and adherence * MNP nutritional impact	• These indicators are collected at specific time points (baseline, during implementation & endline) • They provide in-depth information on why the intervention package results in adequate coverage and adherence, or not. • If adequate coverage and adherence are achieved, the intervention is expected to produce nutritional and biological impact

4.6.1 Ministry of Health Management Information Systems

A Ministry of Health (MoH) Management Information System (MIS) is a structure through which health system data is collected and analyzed. Types of routine monitoring data collected through MIS potentially include health clinic records (e.g., patient records, program records, and humanitarian aid inventory logs), growth monitoring records, and product distribution logs or supply/inventory records. Typically these data can be collected even at the lowest administrative levels. There are several types of MIS:

Health Information System - A system that integrates data collection, processing, reporting, and use of the information necessary for improving health service effectiveness and efficiency through better management at all levels of health services (25).

Health Management Information System - An information system specially designed to assist in the management and planning of health programs, as opposed to delivery of care (25).

Logistics Management and Information System - A system for the collection of data on product inventory (e.g. MNP stock, distribution, expiration, emergency order points, etc.) to ensure accountability for the movement products throughout the health system supply chain, and effective supply chain management through timely procurement and distribution.

If considering a MoH MIS, it is important to assess the suitability to provide some or all of the monitoring information for the intervention. There are potential benefits and weaknesses to consider.

Linking program monitoring and data collection to existing MoH MIS can enable programs to:

- Reduce the cost of data collection because it is carried out via existing systems
- Take advantage of well-run and experienced systems, when they exist
- Optimize supply chain management so that adequate quantities of products (e.g., MNPs) are procured and delivered, and expired products and stock outs are minimized.
  - ► Procurement timelines and supply chain can

be challenging and need to be closely monitored. They are fundamentally important for home fortification projects because without the products there is no distribution so expertise in monitoring logistics management is important.
- Institutionalize ongoing data collection for the program, and enhance sustainability of monitoring
- Ensure the MoH (a key program partner) has a sense of ownership over monitoring results
- Strengthen the MoH MIS through investments in the data collection infrastructure and capacity building for MoH staff

There may be some drawbacks of linking program monitoring to a MoH MIS:

- Existing data collection tools/infrastructure may limit the type of information collected and may not meet program needs.
  - ► For example, if the distribution of MNPs to each child in a geographic area is counted via tick marks by date or campaign, but the program prefers information on the name, age of child, and date of MNP distributions to monitor that the program is reaching the children of the appropriate age at the expected intervals.
- The MoH's system/schedule/protocol for analyzing and reporting on data may determine the frequency with which monitoring results are assessed.
  - ► If information is not collected electronically and summarizing is tedious, or staff do not have time to collect and summarize the information in addition to their normal duties, then data management and analysis might be perceived as burdensome or might not be carried out in a timely way.
- If data quality or management is poor and it is not possible to improve it through the project, then the quality of the monitoring data will also be poor.
  - ► This may be a particular concern for collecting height and weight data because anthropometry measurement requires standardization, and with frequent staff turnover, maintaining sufficient trainings and quality can be challenging. Furthermore, the equipment needs the calibration validated periodically, which might not be institutionalized in current practice, and equipment gets worn with use and may be costly to repair or replace.
- If the intervention is not distributed entirely through the MoH facilities and infrastructure, then there could be data gaps or limitations to relying on MIS.
  - For example, if distribution includes both health facilities and community volunteers but the community volunteers do not report their activities or do not report reliably, then there may be data gaps.
- The data collected through MIS are typically not representative of the target population because MIS do not collect information from those who do not visit the health facilities.
  - ► There are typically important differences between those who visit health facilities and those who do not, e.g., they might live farther away and/or be of lower socioeconomic status, or might be of higher socioeconomic status and pay for their health care services from private health professionals.
- MIS often use projected census data to estimate population sizes, and these figures are used as the denominator in developing estimates.
  - ► Sometimes this results in estimates that are greater than 100% and are challenging to interpret, such as reporting coverage of MNPs in a district as 118%. Program resources may then be used to investigate whether the coverage greater than 100% is due to the incorrect denominator, or another cause (such as eligible children getting MNPs more frequently than they should or distribution of MNPs to ineligible children).

Keep in mind two last points about MIS:

- NGOs and other organizations delivering interventions may have their own MIS that collects health clinic records (e.g., patient records, program records, and humanitarian aid inventory logs), growth monitoring records, product distribution logs or supply/inventory records.
  - ► The potential strengths and weaknesses described for the MoH MIS might also apply to existing systems run by NGOs, other agencies, or projects.
  - Typically MoH MIS are developed for a large scale and scope (for use with many services and interventions), which might not be the case for those developed for NGOs, other agencies, or individual projects.
- Monitoring the training of staff and the quality of intervention delivery are key functions to support the training, skills and motivation of delivery staff. Documentation of staff trainings and quality of intervention delivery, such as attendance at training sessions, post-training knowledge assessments, tests, or observations of individual or group sessions might be part of MoH MIS or could be collected and managed through other systems.
  - ► It is not unusual for external contractors to be hired to carry out staff trainings. They may also collect and maintain all monitoring data and submit periodic reports to the project. In these situations, it is important to include in the contract that pre-post tests or other assessments of training quality are reported and the monitoring database including this information is transferred to the project.

4.6.2 Mass Media Audits

Paying for mass media communication strategies (such as radio, TV, newsprint, or websites) as part of the intervention package may be important for wider dissemination of the intervention to primary and secondary audiences. Mass media can also be costly to develop and disseminate. It is useful to monitor to know if it is worth the cost, in addition to whether audiences are receiving the messages, as expected. Media audit analyses are tailored to be specific to the media used but for a project could typically include:

- Assessing the frequency of exposure to the media source by primary and secondary audiences in a survey
- Retention of messages among primary and secondary audiences (e.g., if they saw or heard the message, do they remember the main point?) in a survey or through qualitative methods
- Documentation of dissemination (e.g., time, date, & channel each spot airs or is run) by the producer/distributor, but also additional validation by another source that the messages were disseminated
- Counting the number of hits on a website, using website software for this purpose

Exposure of the target audience to the mass media components of an intervention package are an aspect of coverage (exposure) and should be collected when possible. If a survey is being developed and these questions can be included as one objective of data collection while campaigns are running or shortly thereafter then it is likely a good use of resources. Paying an organization solely to collect this information is likely beyond the resources and needs of a small project.

4.6.3 Sentinel Monitoring

Sentinel monitoring is the monitoring of indicators in the general population or in selected subpopulations at "sentinel sites" (e.g. communities, health clinics, schools, or work sites), which have been purposefully selected because they are sites where large numbers of the target population of interest can be easily accessed in specific geographic areas or communities (26). This design of selecting locations (sentinel sites) for monitoring has potential strengths and weaknesses that should be carefully considered before deciding to move forward with a sentinel monitoring design. Some of these are described in Table 4.3. (27)

Data from sentinel monitoring is not statistically representative of the situation among the overall target population. However, the data can provide a picture of the general situation, and can track trends and changes in the indicators of interest over time in order to monitor the implementation and progress of the program. The data and resulting information from sentinel sites can be sufficient for detecting long-term trends in indicators of interest and for making decisions to strengthen program implementation (26).

Potentially, sentinel monitoring can be a practical, cost-effective way to determine whether the program is achieving its objectives. Sentinel sites can be defined in various ways, such as specific geographic areas (e.g., community sentinel sites) or specific facilities (e.g., a hospital or school). The data collection in sentinel sites can vary depending on needs and resources. For example data collection systems could involve:
- Integration within an existing MIS of an institution
- Development of new routine data collection

systems for the sentinel sites
- Implementing periodic surveys of participants (at institutions) or of households in sentinel communities

If sentinel site data collection is integrated into and institutionalized as a part of routine practice it can be a sustainable system to collect information that might not be collected otherwise. When sentinel sites are established in a facility (e.g., hospital or a school) and carried out by existing staff, the anticipated costs are lower because the expectation is that the data collection can leverage existing infrastructure and resources. If entirely new systems need to be established or external data collectors are needed, either in a facility or for a community household survey for example, then the costs will likely be higher.

There are some weaknesses to consider with a sentinel site monitoring system. This design does not provide representative data of the target population, and there is the possibility that the presence of the monitoring system could introduce additional biases if the population changes as a result of the system. There is also a risk that problems only occurring in some areas are not reflected or identified through the sentinel sites selected[8]. As in other types of systems, the personnel need regular (re)training and high staff turnover might introduce additional training and quality challenges. If the data collection is burdensome (or perceived as such) there is a risk that this might limit staff ability or motivation to collect the data or could negatively affect data quality.

Table 4.3 Some Strengths and Weaknesses of Sentinel Site Monitoring Systems

Strengths	Weaknesses
• The sentinel sites are selected strategically • May lower the cost of monitoring *May not need to "search" for participants *May not need specialized data collection teams • Can build data collection into routine practices *More frequent data collection is feasible • Allows for collection and analysis of trend data • Can provide data not readily available from other sources • May be more sustainable than other systems if lower cost and institutionalized into routine practice	• Data are not representative of the target population • Could miss areas with special problems • Less control of data quality *Need regular staff training, especially if staff turnover is high • Less flexibility with types of data collected • Monitoring responsibilities can overburden sentinel site staff *This might also result in lower data quality • Potential bias because sentinel site population may "learn" from being continually monitored • These weaknesses might limit sustainability

Within the context of a home fortification program, sentinel monitoring could potentially be used to collect timely information on MNP coverage among the population, caretaker adherence, caretakers' knowledge, attitudes, and practices pertaining to MNP, and the impact of the intervention among children 6-23 months. Sentinel sites could be selected, for example, by choosing health clinics that serve populations as similar as possible to the program's target population. The location of the selected sentinel sites should be selected strategically and reflect geographic factors that could affect the program (e.g. rural vs. urban or northern vs. southern regions of the country). It may also be useful to stratify the selection of sentinel sites by other factors, such as socioeconomic status of the population served by that clinic (e.g. average SES vs. low-income). Caretakers of children 6-23 months who attend these sentinel health clinics could then be randomly selected to participate in interviews and other data collection activities. The interviews and data collection activities at the sentinel sites could be carried out either by health care providers at the clinics or by external data collectors.

[8]The number of sites per geographic area is based on homogeneity of population in the area.

4.6.4 Cross-Sectional (point-in-time) Surveys

Cross-sectional surveys are commonly used for collecting program monitoring information. For monitoring home fortification programs, surveys can be conducted among program participants (i.e. caretakers) to assess a variety of topics, including:
- Receipt of MNP
- Coverage of intervention package components including behavior change communications activities and materials for IYCF and MNP
- Adherence to MNP
- Knowledge, attitudes, and practices pertaining to IYCF and MNP
- Experiences with IYCF and MNP

Often surveys of caretakers and children 6-23 months of age are collected at households. However, depending on the target group and objectives of the survey, it might be appropriate for a home fortification program to collect survey data at other locations. For example, with a home fortification program implemented at daycares or schools, it might be appropriate to sample from target children at those locations.

Surveys can also be conducted among those involved in delivering the intervention package, such as health care professionals / clinics and volunteers, to assess:
- Knowledge and skills for distributing MNP and counseling caretakers on MNP and IYCF practices
- Experiences with implementing the program

Surveys among health care professionals or others involved in intervention delivery might be collected at clinics or other distribution points, while community level volunteers might be interviewed at their house or at regularly occurring meetings of volunteers.

Representative Population-Based Surveys

A representative population based survey (such as 30x30 cluster survey) provides estimates of key monitoring indicators related to program implementation and effectiveness, such as prevalence of nutritional status, coverage of the intervention package, adherence, and the proportion (percentage) of participants with certain knowledge, attitudes, or practices. When well designed and implemented, these surveys produce valid estimates for key outcome indicators. Designing and implementing a high quality population-based survey requires time and expertise, including knowledge of how to design the survey and appropriately sample the population of interest, implement the data collection, manage and analyze the data, and write the report. Survey data collection often involves additional staff (e.g., survey manager, interviewers, and drivers) and may require resources beyond the normal program operating budget. Also, the data are rarely available immediately at the completion of fieldwork and a report may take several months or longer to finalize. When a high quality survey is implemented, the time and resources are often justified because of the high quality data produced. Funders might also require the periodic collection of population-based surveys to generate estimates of key outcomes. For more information on designing and implementing cross sectional surveys please see Gorstein et al. (8).

Monitoring Surveys Using Lot Quality Assurance Sampling (LQAS)

Lot Quality Assurance Sampling (LQAS) is a survey sampling methodology that enables an assessment of program performance in various supervision areas (program implementation areas), based on key performance indicators. LQAS provides monitoring data for lower level supervision or administrative areas, in which population-based representative surveys would be prohibitively expensive and time consuming to implement. This method provides program monitoring data for key dichotomous (e.g., yes or no) indicators, and indicates whether supervision areas are performing above or below certain pre-established thresholds for the key indicators. LQAS enables program supervisors to monitor and identify which supervision areas have low performance (e.g., low

coverage) and require programmatic adjustments or additional supervision and support. Data collection for LQAS surveys can be conducted by supervisors, or other program staff within an administrative level, and adjustments can be made rapidly based on predefined action plans developed for this system.

The LQAS method is based on small, randomly selected samples for each supervision area in which the program is implemented. The results of this sampling method provide useful information for identifying program supervision areas that need improvement, but this sampling method does not result in useful estimates for indicators in each supervision area. However, when the data are aggregated at regional and/or national levels and appropriately weighted, they can provide representative estimates of coverage and other dichotomous indicators that are suitable for reporting purposes. While the sample size in a given supervision area is smaller than a cross-sectional, population-based cluster survey, if data are collected from many supervision areas then the total sample size among all the supervision areas might be greater than that needed for a cross-sectional population based cluster survey. Keeping this in mind, in general, because of the small sample sizes per supervision area, and thus lower costs, it may be feasible to implement an LQAS survey more frequently compared to other survey methods.

It is important to note that only dichotomous indicators can be used with the LQAS method. As with any survey, careful supervision and oversight are required to carry out a high quality LQAS survey. The methods to design, implement, and analyze a LQAS survey system are complex. Furthermore, LQAS requires appropriate random sampling, or the results might be biased. If there is not an existing high quality sampling frame from which to randomly select the sample in each supervision area, then time and resources must be used to create one, which will likely add additional barriers and complexity to a LQAS survey. LQAS is a sampling method combined with benchmarks that could be used for program monitoring surveys conducted among a variety of stakeholders, including caretakers, health care providers, and volunteers. For more information on using LQAS see (28).

Applying the LQAS method to monitoring for the example integrated IYCF/MNP program

Below is an abbreviated example of steps to design and conduct a LQAS monitoring survey for the fictional IYCF/ MNP program:

- Define "supervision areas" (administrative units / areas of program implementation) for the program. In this example, health clinic catchment areas are supervision areas.
- Determine the sample size taking into consideration benchmarks and the acceptable alpha and beta errors. If multi-stage sampling is involved to select the supervision areas, then include the design effects in the calculation. In this example the sample size is 19, which 92% of the time correctly identifies supervision areas that have reached their targets.
- Identify the sampling frame for a supervision area, such as mapping supervision areas and randomly selecting households with eligible children, or relying on existing comprehensive sampling frames. In this example, health clinic registrars include all children less than five years of age in communities and the data are regularly updated and comprehensive. Thus, the health clinic registrars are a good sampling frame and will be used to randomly select the necessary number of children 6-23 months of age in each supervision area so their caretakers can be invited to participate in the survey interview.
- Select dichotomous indicators, and set performance benchmarks for each indicator (e.g., 80% MNP coverage among target children)
- For each indicator, identify supervision areas that are performing at or above the established benchmark, and those that are performing below the established benchmark
- Identify priority supervision areas (needing programmatic adjustments) by identifying those not reaching an established performance benchmark for certain program indicators

4.7 Representativeness of Monitoring Data

When designing the monitoring system and selecting sources of monitoring data, an important consideration is whether it is necessary for the data to be "representative" of the target group of program participants (e.g. all children 6-23 months of age). This decision is based on the purpose of the monitoring system, questions being answered, intended use of the data, and resources available. As mentioned in previous sections of this chapter, typically MoH MIS and sentinel site systems are not representative of the target population. For data to be statistically representative of a target group, it must either include all members of the population of interest, or it must be collected using methods specifically designed to result in a representative sample. For more information on how to carry out representative sampling methods see (29).

Statistically representative data allows you to generalize results and conclusions to the larger population of interest. For some monitoring indicators and questions, it is necessary to have an accurate picture of the entire group of people who are targeted by the program. For example, representative data may be needed if you want to know how successful the program is in reaching target children (i.e. program coverage), because you must have an accurate sample of all target children (program participants and nonparticipants) to know what percentage you were able to reach with the intervention package. Some monitoring systems, especially those that rely on information collected only from program participants, can still provide useful programmatic information, but it is important to critically consider what information is being collected, the expected uses (and analyses required) and the limits of the information. It is also useful to keep in mind that representative data does not answer all questions and may not be able to explain why certain results were found or causes of poor program performance.

In some cases, collecting representative data can be more costly and time-consuming than nonrepresentative data, as it generally requires more complex designs. However, for some indicators, such as program coverage or use, this may be the only method of obtaining accurate information. For other indicators of program performance, such as caretakers' acceptance of MNP, experiences with MNP, or practices pertaining to the use of MNP, it may be more important to obtain richer, more in-depth information through qualitative methods that do not generate representative data. The choice of whether or not to obtain representative data will depend upon the monitoring questions and indicators, available resources, and informational needs of program stakeholders.

4.8 Use of Quantitative and Qualitative Mixed Methods

Monitoring data can be collected using quantitative and qualitative methods, which are often complementary and provide different types of information for improving program effectiveness. The phrase "mixed methods" refers to the use of both quantitative and qualitative methods in a given data collection design. In general, as an intervention moves from planning to implementation and then maintenance phases, it is expected that mixed quantitative and qualitative methods will be used in program monitoring to improve program performance.

Quantitative data is information that can be measured and expressed on a numerical scale. It consists of numerical figures that can be counted, and then summarized and presented in tables, charts, histograms, and graphs. Quantitative data is collected using a variety of methods, for example: survey questionnaires, databases, clinic records, and product distribution or inventory logs. Quantitative information often answers the question: **How** is the program performing? For example, quantitative monitoring data can tell us that only 50% of caretakers have reported they fully adhered to the recommended MNP dosing regimen.

Qualitative information is not numerical in nature. It is often intended to be richer, more contextual or in-depth information that can answer the question: **Why** is the program performing in this way? Collecting qualitative information can help explain the results of quantitative data collection. For example, qualitative monitoring information (e.g. focus groups with mothers) can tell us that caretakers are not adhering to the recommended dosing regimen because they do not have the knowledge, skills or motivation to manage the potential side effects of MNP use. Qualitative monitoring information is collected using a variety of

methods, including focus group discussions, in-depth interviews, key informant interviews, direct observation, content analysis of program documents, and open-ended questions on questionnaires.

Depending on the objectives, mixed methods designs might use quantitative and qualitative methods to examine the same question or different questions, and the results might be combined, triangulated (examining similarities and differences among different data sources), or cross-validated. Generally, large-scale programs require some quantitative assessment of change attributable to project activities, while qualitative data provide context and a basis for interpretation and identification of actions (13). Mixed methods offer the possibility of gaining both the reach of quantitative methods and the depth of understanding through qualitative methods. The decision of whether to use qualitative or quantitative methods to answer certain monitoring questions depends upon the questions being asked and local program context. However, following are some general guidelines to use when considering these two forms of data collection.

Quantitative information may be more appropriate if you want to:

- Collect data that are representative or generalizable to the larger population (although not all quantitative data are representative and generalizable)
- Quantify certain performance indicators (e.g. coverage of MNP distribution [% of children 6-23 months who have received at least one package of MNP])
- Be able to track trends in the program's performance over time

Qualitative information may be more appropriate if you want to:

- Understand why the program is functioning in a certain way (or why not)
- Further explore quantitative results
- Carry out a more in-depth exploration of caretakers' knowledge, attitudes, perceptions, and everyday experiences with the intervention, as well as the reasons behind certain ideas or perceptions.
- Understand how the project works for different types of caretakers/users, including targeting intended users and explore who adheres to the intervention (or not) and in what circumstances.
- Collect in-depth information from intervention staff and volunteers supporting the intervention on their experiences with the intervention
- Obtain information to improve the design of surveys (e.g. developing relevant questions and response options for questionnaires, or using cognitive interviewing techniques to improve questionnaire validity, content, and comprehension)
- Allow program participants' "voices" to be heard. (Do program participants feel that the program is meeting their needs?)

Table 4.4 below provides a brief description of several qualitative monitoring methods, as well as suggestions for the types of information that would be collected using each method. Other types of qualitative methods not discussed in the table include content analysis of program documents, freelisting, pile sorting, scaling, photo narrative, and storytelling. There are many resources for different qualitative methodologies, some include (30, 31, 32). Similar to quantitative data, designing and implementing high quality qualitative data collection requires expertise and may take considerable time to collect, analyze, and summarize the findings.

Table 4.4 Description of Qualitative Monitoring Methods (30-32)

Method	Brief definition	Types of information to collect using this method
Group Interviews	Focus Group Discussion: - Type of group interview - Groups are homogenous and typically involve ~5-10 participants carefully preselected according to desired characteristics - The interview process is formalized and structured, usually private - Group discussion is managed by a moderator / facilitator usually following a semi-structured interview guide - Participants may receive incentives or food/beverage as part of their participation Group Discussion: - Type of group interview - Less control over who is present in the group and participates in the discussion. - Group discussions often occur in public settings and group size varies widely - Group discussions are a less structured and formalized interview process compared to focus group discussions - May follow an interview guide - Group discussions may be spontaneous and opportunistic	- Understand normative patterns of ideas, attitudes, expectations, or behavior - Develop survey instrument questions or responses - Explain or expand on quantitative survey findings - Use when want to collect data on group interaction and conversations about specific topics. The conversation, and sometimes debate, about the topics provides insight into wider cultural processes and how people perceive and make decisions about the topics being discussed.
Open-ended in-depth and key informant interviews	- Types of individual interviews - Participants are invited to participate because they have knowledge or experiences relevant to the interview. Key informants are often selected because they have specific information, experiences, or hold certain positions of power or knowledge. Participants may be interviewed repeatedly over time - Formality and structure range from informal (conversational and no interview guide) to formal (clear interview setting using semi-structured interview guides) - In depth interviews allow for the collection of in-depth details about a specific topic and the exploration of in-depth new topics that arise during the interview	- Collect in-depth information on personal experiences or topics that might be sensitive or too detailed to collect in front of others - Explore new areas where the interviewer knows little about the topic in advance - High adherence (positive deviance) to MNP and / or non-users of MNP in order to identify new strategies to support adherence and coverage

Table 4.4 Description of Qualitative Monitoring Methods (30-32)

Method	Brief definition	Types of information to collect using this method
Observation	- What the data collector directly observes - Reflects the perspectives (lens) & understanding of the observer - Can also be a quantitative method	- Observation of participant practices (e.g., observation of MNP preparation and use in the home). - Observation of service delivery as part of quality assurance (e.g., observation of volunteer training sessions, of counseling sessions with mothers, or the completion of the MNP registrar by volunteers or clinic staff) - Observation of product storage practices (e.g., observation of MNP in warehouse to ensure stored appropriately to maintain MNP quality)
Open-ended questions on questionnaires	- Structured open-ended interview questions, including in questionnaires used in surveys - Allows for the standardized collection of open-ended questions among a large number of participants	- Questions about experiences, behaviors, opinions, and values

4.9 Other Factors to Consider When Designing the Monitoring System

In choosing a monitoring system design, the feasibility, sustainability, environment within which the program will operate, and other context-specific factors must be considered. Monitoring system designs for a home fortification program can vary based on a number of contextual factors that will be different for each country:

1. *The nature of the home fortification distribution and delivery system.* The monitoring design, tools, and procedures can be very different depending on how the home fortification intervention is distributed. For example, in an emergency setting during a natural disaster, there may be no existing monitoring system to link into, and it may be necessary to develop simple, efficient monitoring tools specifically for the emergency project context in the short term; if the emergency situation continues over a longer period of time, the system and tools might change as the emergency response in this specific context matures and evolves. In comparison, in established refugee camps, inserting new program monitoring into existing systems might be relatively straightforward because of the MIS infrastructure already in place to manage the camp. Similarly it might be possible to integrate monitoring for a new large-scale project with distribution through government clinics into an existing MIS infrastructure at the clinics. In contrast, the design and nature of monitoring for a market-based model distributing MNP through small stores might require the development of an entirely new system to be effective.

2. *The scope of the program.* The design, depth, and breadth of the monitoring system would be quite different if home fortification products are distributed through a more comprehensive, integrated IYCF or maternal and child nutrition program involving multiple intervention strategies, than if it is distributed through a vertical program that focuses only on the distribution of a single home fortification product.

3. *Target group.* Monitoring information sources and data collection tools can vary depending upon the age group of people who are targeted by the home fortification program (e.g. 6-23 months of age, versus older children). For example, external monitoring for an MNP project targeting children 6-23 months of age may include a household survey with a questionnaire for caretakers. However, external monitoring for a program that distributes MNP to 3- to 5-year-old children during lunchtime in preschools may include a survey of preschool teachers.

4. *Program management and leadership.* The roles and responsibilities of program management and program leadership, the nature of supervision and the institutional culture influence how the program is implemented and how monitoring is designed and managed. Clear identification of roles and responsibilities is a necessary step in designing a monitoring system.

5. *Resources available.* The financial and human resources that are available for program monitoring will play a significant role in the choice and feasibility of different monitoring system designs and data sources. If the project has very limited resources to dedicate to monitoring, it may be necessary to focus only on internal program monitoring, or to link program monitoring with existing monitoring activities within the larger system. When developing the project proposal and budget, it is important to consider the amount of human and financial resources that will be needed for monitoring at different phases, and to ensure that adequate funds are allocated to sustain monitoring activities throughout the life of the project. This also includes budgeting for expected periodic special data collection (e.g., qualitative data or KAP surveys) even if the objectives of the data collection are not yet defined. The appropriate amount of funds needed to implement a monitoring system will vary depending upon the scale and phase of the project, monitoring design, existing data collection infrastructure, and data collection activities that are chosen, as well as other local context-specific factors. However, as a rule of thumb, generally up to 10% of the overall project budget should be used to support monitoring activities. As with other elements of the project budget, cost information pertaining to monitoring activities should be carefully gathered to ensure the budget contains adequate funds.

6. *Local cultural or religious practices.* The cultural and religious practices in the local context can affect the way in which monitoring activities are carried out. For example, in some cultures, there may be sensitivities regarding women leaving the household to participate in focus groups, or male interviewers speaking with women of the household without the presence of the husband.

7. *Ownership.* Important factors that can contribute to the sustainability of the monitoring system are who has ownership of the system (i.e. the person(s) responsible for managing the various elements of the system) and where the system is housed. The "ownership" of the system will depend upon the structure of program management and implementation, as well as expertise, skills, and resources of the different stakeholders. For example, if a project is implemented through a partnership between the Ministry of Health (MoH) and an implementing NGO, depending upon their resources and expertise, either of these partners (or both) may take responsibility for managing the monitoring system and ensuring the results are used for program decision-making. It is important to consider where the monitoring system will be housed early on in the process of designing monitoring activities, as this can influence how the information is managed, analyzed and used. For example, it may seem reasonable to house the monitoring system for the home fortification program within the nutrition department of the MoH, if this is the department of the MoH that has the greatest degree of involvement in the implementation of the program. However, if staff members within the nutrition department do not have data management and analysis skills, or time to do the data management and analysis, then the data may not be analyzed properly (or at all), and the information may not be used to inform project decision-making. It is important to house the monitoring system within a department that has the appropriate human resources for managing and analyzing the data in a timely manner. While

the monitoring system may be housed in a department that is not directly responsible for project implementation, it is important to ensure close collaboration between those responsible for managing and analyzing the data, and those responsible for reviewing and acting upon the data. It is also useful to recognize that ownership and location of the monitoring system can change over the life span of the program, as new stakeholders and donors transition in and out of the program.

4.10 Periodically Do a Reality Check

Once a monitoring system is designed, it is important to step back with stakeholders and carry out a reality check. The pilot of the intervention and monitoring system will allow for critical appraisal of what is feasible, useful, and what needs to be revised with the monitoring system. It is important to periodically assess the scope, priorities, usefulness, and cost of the monitoring system with stakeholders, especially when transitioning between stages of a project.

Key points from Chapter 4:

- The design of the monitoring system should be focused so that it addresses the elements of the program prioritized by stakeholders, and meets the information needs of stakeholders.
- There are at least three phases of a program (planning, implementation, and maintenance). The focus of a monitoring system varies by the phase of the program.
- Include feedback loops that ensure information and results are shared (fed up and fed down) between staff at all levels and management.
- Internal monitoring systems are required; external systems are not always necessary.
- At the beginning of the planning process, work with stakeholders to identify the existing data collection procedures and tools and assess whether it is feasible to integrate project monitoring into existing systems.
- Quantitative and qualitative monitoring data are complementary and provide different types of information for improving program effectiveness.
- Multiple factors should be considered when designing the monitoring system, including the nature of the intervention delivery system, scope of the program, target groups, program management and leadership, resources available, local cultural or religious practices, and ownership of the system.
- Periodically, do a reality check on the scope, feasibility, sustainability and cost of the monitoring system.

5 Selecting and Using Program Monitoring Indicators

In this chapter :

- Using logic models and logical frameworks to develop monitoring indicators
- Indicator matrix tool
- 6 key questions to answer before selecting an indicator
- Characteristics of good indicators and other factors to consider about indicators
- Issues to consider when developing indicators for training, behavior change, coverage and adherence

5.1 Gathering Credible Evidence

The fourth step in the CDC Framework (1) is *Gathering Credible Evidence.* An effective monitoring system should gather information about important elements of the performance and functioning of a program, and the data and results from the monitoring should be perceived as credible and relevant by the stakeholders and primary users of the information. Having credible monitoring data strengthens the conclusions that can be drawn about the performance and functioning of a program, and will enhance the likelihood that appropriate adjustments will be made to improve program operations.

The following aspects of monitoring systems can affect perceptions of credibility:

- Selecting and/or developing valid and reliable indicators that are relevant for assessing the performance of the program. Using standard indicators when they exist.
- Selecting relevant data sources to ensure a comprehensive assessment of the program (discussed in Chapter 4)
- Generating data, which are reliable, valid, and informative for their intended use. High-quality data are generated through appropriate instrument design, data-collection procedures, training of data collectors, source selection, coding, data management, and routine error checking.
- Choosing an appropriate quantity of data to be collected (i.e., amount of information required), so that stakeholders can have confidence in the results
- Selecting appropriate and feasible logistical procedures (timing, and physical infrastructure for gathering and analyzing data)

5.2 Selecting Appropriate Program Monitoring Indicators

This chapter focuses on the selection of appropriate program monitoring indicators. Indicators are measures and quality standards used to determine whether a program is achieving its objectives. Data collected for performance indicators are compared to predefined targets to assess the functioning of the program, in terms of the key elements – inputs, activities, outputs, and outcomes. Additionally, analysis of trends provides information about performance of the program throughout its life cycle. Assessing performance indicators against benchmarks allows program managers to determine necessary adjustments to improve program functioning. While there are not yet evidence-based indicators specifically for home fortification programs, there are guidelines and sources of information that may be useful during the selection and development of program performance indicators.

Reminder

Throughout this manual, monitoring concepts are discussed using the example of an integrated project designed to support improved infant and young child feeding (IYCF) practices and the use of micronutrient powders (MNPs) for home fortification.

- The project targets children 6-23 months of age and their caretakers.
- Government health care providers distribute MNPs and counsel caretakers on the use of MNP and improved IYCF practices.
- The IYCF strategy is implemented with the help of community volunteers, and includes peer-to-peer counseling and modeling, community outreach activities for caretakers, and mass communication.
- The behavior change communication messages and activities focus on using locally available and affordable foods to improve IYCF practices, and emphasize increasing dietary diversity and meal frequency in order to improve the diet, and fortifying complementary foods prepared in the home using MNP.
- In this example project, the integrated package has already been developed and piloted, and is at national scale.

5.2.1 Using Logframes and Logic Models to Develop Monitoring Indicators

Often, the process of selecting monitoring indicators begins with developing performance indicators to measure the key elements within the program logic model (i.e. inputs, activities, outputs, and outcomes) and/or the program logframe (i.e. goal, purpose, outputs, and activities). A logic model may not have performance indicators within the model, but monitoring indicators can be easily developed for boxes in the model. Objectives at all levels of the logframe — Goal, Purpose, Outputs, and Activities — are measured with performance indicators. The performance indicators describe and measure achievement of the project objectives, in terms of how much (quantitative), how well (qualitative), and when (time). Setting targets for the indicators enables the program to measure the achievement of objectives for each of these elements within the logframe and logic model.

For some performance indicators, the definitions, calculations, and interpretation are simple, but for others they are complex. For example, a simple indicator might be based on a yes or no response, while a complex (composite) indicator might be calculated based on the results of multiple questions asked during a survey. For simple indicators, generally all the information needed to understand how to collect, calculate and interpret is available in the logframe. For complex indicators, additional information or detail is needed and only indicator titles are listed in the column because of the space restrictions of the logframe format. In these cases where it is not practical to include all of this detail in the logframe, then other companion tools are needed that allow for comprehensive indicator descriptions. This manual describes one such tool, the indicator matrix, further below.

In the example logframe developed for the fictional IYCF/MNP project in Appendix 5, each element of the logframe (goal, purpose, outputs, and activities) has an associated set of performance indicators or indicator titles, which together define and measure attainment of the objectives for that program element. On the next page there is an example from the IYCF/MNP project logframe showing the purposes and the performance indicators in the first two columns:

In the example on the next page, attainment of the program purpose—caretakers improved IYCF practices and fortified complementary foods prepared in the home—will be measured by collecting data on caretakers' knowledge and practices pertaining to the specific IYCF behaviors and MNP use. Each of these performance indicators has an associated target, which enables program managers to determine whether the objective has been attained. When used in combination, the performance indicators for a certain level of the logframe (e.g. purpose) should fully measure the concepts or objective at that level.

Often in the literature, indicators are described as being process indicators and outcome (or impact) indicators. Process indicators measure the implementation of project activities and outputs and provide information on whether the program is being implemented according to plan. Outcome indicators measure changes that occur among participants and are the effects of project activities and outputs. These indicators generally reflect the outcomes category in the logic model or purpose and goal in the logframe.

When developing a performance indicator, ask the following questions:

- How do we define success or achievement of this program objective?
- What information do we need to measure achievement?
- What information do we need to determine if the program is on track and performing according to plan?
- For each indicator, what is the specific threshold above or below which we know we need to take action to improve the functioning of the program? Or, what is the specific target above or below which we can say this objective has been achieved?

When possible, and if they exist, it is ideal to use recommended indicators for the concept being assessed. For example, there are guides on IYCF practice indicators, such as the World Health Organization's *Indicators for Assessing Infant and Young Child Feeding Practices* (33,34) that provide detailed information on the collection and the definitions, calculations, and interpretation of IYCF indicators. For home fortification programs this evidence base is under development

Narrative summary	Performance Indicators[a]	Means of Verification	
Purpose			
1. Caretakers improved IYCF practices and fortified complementary foods prepared in the home 2. Coverage of IYCF strategies & MNP among caretakers increase	1. Minimum meal frequency for children 6-23 months Target: increase 25% (percentage points, PP) from baseline 2. Minimum dietary diversity for children 6-23 months Target: increase 25% (PP) from baseline 3. Minimum acceptable diet for children 6-23 months Target: increase 25% (PP) from baseline 4. Appropriate use of MNPs Target: 75% of caretakers report giving child 60 MNP sachets for last distribution Target: ≤ 25% households with observed unopened sachets each survey among children who received sachets > 60 days ago 5. Adequate knowledge among mothers of key IYCF messages included in the BCC strategy Target: increase 35% (PP) from baseline 6. Mothers aware of key benefits of MNPs Target: 90% each survey 7. Mothers knowledgeable of correct and appropriate use of MNPs Target: 90% each survey 8. Coverage target of IYCF counseling among caretakers of children 6-23 months Targets: - 90% of caretakers receive home visit from community health volunteers who provide counseling and information on IYCF practices every six month - 90% of caretakers receive counseling at the health clinic on improving IYCF practices every six months 9. Coverage target of MNP distribution for children 6-23 months Targets: - 90% received ≥ 1 package of 60 MNP - 80% received ≥ 2 packages of 60 MNP - 70% received all 3 packages of 60 MNP	1-3, & 5. Baseline source: DHS 2010 1-9. DHS 2015 1-7. Annual external monitoring survey 8-9. MoH MIS & annual external monitoring survey	

[a] Indicators or indicator titles. See Appendix 7 Indicator Matrix for the complete calculation of each indicator

and does not yet exist, so developing performance indicators will generally involve working with program stakeholders to determine the most appropriate way to measure project performance and achievement of objectives in the local context. This process of involving stakeholders is important for the monitoring results to be deemed credible and relevant, and used to improve project performance. Additionally, development agencies and governments may have their own preferred framework of indicators for IYCF and vitamin and mineral programs, which can also be used to help guide the selection of indicators for the home fortification project. Appendix 6 includes examples of survey questions for the MNP component of an integrated program focused on knowledge, attitudes and behaviors among mothers/caretakers of eligible children. The questions in Appendix 6 are included only as examples and starting points and are not "recommended" by any agency; questions should be adapted to be consistent with specific program content, needs, and survey length.

Last, the Means of Verification column within the logframe defines the sources of data to calculate or verify the status of performance indicators. Sometimes this column is also referred to as "Monitoring and Evaluation." Each performance indicator listed in the second column should be matched to a data source in the Means of Verification column of the logframe. Examples of these information sources include: government/MoH databases or Management Information Systems (MIS), clinic records, product distribution logs or supply/inventory records, household surveys (sub-national and national, such as Demographic Health Survey (DHS), Multiple Indicator Cluster Survey (MICS)), clinic surveys, qualitative methods (e.g., focus groups, in-depth interviews, observations), government and program documents, and media audits. Note that various monitoring system designs and sources of data were discussed in Chapter 4 of this manual.

Following are some tips to consider when developing the "performance indicators" in the logframe.

Tips to Consider When Writing the Performance Indicators

(Adapted from the PSI Logframe Handbook (5). Used with permission.)

- The Indicators are specific in terms of quantity, quality, time, cost, location, and target group.
- The Indicators measure the achievement of project objectives.
- The Indicators measure change at each level (Goal, Purpose, Output, and Activity).
- All Indicators are independent from those at higher and lower levels.
- Means of verification are available and affordable/cost effective.
- Necessary leading Indicators are specified to evaluate Purpose-level achievement before the end of the project.

5.2.1.1 Indicator Matrix

An indicator matrix is useful to organize information on project indicators and serves as a blueprint for monitoring these indicators. The matrix contains performance indicators for each element of the logframe (goal, purpose, outputs, and activities), and specifies how each is defined and calculated, the data collection methods / sources of data, the frequency and timing of data collection, and the target. The logframe and indicator matrix should be periodically reviewed to ensure that the indicator definitions and periodicity of the indicators are useful and meeting program needs. In Appendix 7 is an indicator matrix developed for the fictional IYCF/MNP project that includes detailed information on each of the performance indicators in the example project logframe.

5.2.2 Six Key Questions to Answer for Each Specific Indicator

When identifying and developing indicators for a monitoring system, it is important to be able to answer the following six questions for each specific indicator. If it is not possible to answer all of the six questions, then the indicator might not be useful or important to collect, or it might not be feasible

to collect and report the indicator. Note that these concepts were previously discussed in Chapter 4 when considering the purpose, user, and use of the monitoring system.

1. **For whom is the indicator collected?**
   This indicator might be collected for one person (e.g., program manager), or multiple people (e.g., program manager and supply manager).
   Specific questions to consider when answering this question:
   - Who will use the information to assess program performance and make the necessary program adjustments?
   - Who are the primary users at each level of program operations (e.g. local health clinic administrators, regional program managers, program managers and administrators at the national level within the MoH or NGO)?
   - Who among the larger group of stakeholders are interested in the monitoring results for this indicator?

2. **What will the person(s) do with the information?**
   Specific questions to consider when answering this question:
   - What is the process through which the primary users will assess the information and decide upon actions to take?
   - How will feedback on program changes be communicated to each level of program administration?

3. **How will the indicator be collected?**
   Specific questions to consider when answering this question:
   - What existing data collection systems/tools could be linked into in order to collect data for this indicator?
   - What data collection tools, methods, and activities are needed to assess this indicator?
   - Who will be responsible for collecting the data or information on this indicator?
   - What resources will they need to collect the data for this indicator?

4. **How often will the indicator be collected?**
   Specific questions to consider when answering this question:
   - What frequency of data collection is needed for reporting to primary users and stakeholders?
   - What frequency of data collection is realistic and feasible?
   - What frequency of data collection would not overburden staff?
   - What is the cost of collecting the data, and how frequently can we afford to collect the data?

5. **Who will compile and analyze the data?**
   Specific questions to consider when answering the question:
   - Who will work with data collectors in the field to manage and analyze the data?
   - What resources do they need to manage and analyze the data (i.e. database software, statistical software, etc.)?
   - What skill set, experience, or expertise does this person need to have?

6. **Who will report the results to stakeholders and primary users of the monitoring system?**
   Specific questions to consider when answering the question:
   - Once the data have been analyzed, who will write up the results?
   - What format will they use to present the results (e.g. report, PowerPoint presentation, data tables/charts)?
   - What is the most appropriate format for reporting the results to different stakeholder groups or audiences?

An indicator matrix, or similar tool, can be useful for organizing this detailed information about performance indicators. However, a comprehensive monitoring plan is generally needed to capture all of the details pertaining to each monitoring indicator.

5.2.3 Characteristics of Good Indicators

The monitoring and evaluation literature mentions several characteristics of good program monitoring indicators. It is useful to consider these characteristics when developing and selecting indicators, **recognizing it is not always possible, necessary, or useful for indicators to embody all of these characteristics.** Acronyms are sometimes used to describe these characteristics. For example, one interpretation of the SMART acronym stands for **S**pecific, **M**easureable, **A**chievable, **R**elevant and **T**ime-bound. Each of these terms is further described below:

Specific – A specific indicator is one that is defined in a very clear and precise manner. For example, the following is an indicator title and is not precisely defined: "coverage of MNP among target children." Specifically defined this indicator could be stated as: "percentage of children 6-23 months of age living in the program region who received at least one package of MNP during the reporting period." When possible and appropriate, it is also useful to describe an indicator as a ratio, with a numerator and a denominator:

Numerator: Number of children 6-23 months of age living in the program region who received at least one package of MNP during the reporting period

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Denominator: Number of children 6-23 months of age living in the program region during the reporting period

It is useful to have a few simple ratios, like the one above, to monitor key aspects of the program. Using simple ratios for reporting monitoring data can enable field staff to easily identify problems or changes in key performance indicators, which allows for rapid feedback and programmatic decision making (13).

Measurable – Indicators should be measurable and when possible include benchmarks, targets, and criteria to determine when targets are met. For example, a child's height and weight are directly measurable. Receipt of communications materials (e.g. a program brochure) is an indicator that can be measured by interviewing caretakers. For some indicators you may need to find a way to make them measurable. For example, caretakers' knowledge of optimal infant and young child feeding practices could be measured and quantified by creating a set of questions for caretakers to answer on knowledge and practices.

Achievable – It should be possible to achieve the target set for the indicator during the life span of the program. If it is not possible to achieve the target for this indicator, then the target is not a useful measure of the program's performance. One cannot conclude that the program is performing poorly and requires adjustments if the indicator target is not achievable.

Relevant – The indicator should be relevant to the performance of the program, and should accurately reflect the concept it is intended to measure. For program monitoring indicators to be relevant, they should be formulated based on the stated goal, purpose, outputs, and activities in the program logframe.

Time-bound – To be meaningful in assessing program performance, indicators should be formulated in a way that specifies the time period for which the data applies.

The monitoring and evaluation literature also contains other commonly mentioned characteristics of good indicators. These include:

Practical – An indicator should be designed in a way that it is logistically feasible to measure, and data collection does not overburden staff and program participants. Additionally, for an indicator to be practical, it must also be affordable to measure. Sometimes it is prohibitively expensive to collect data for certain indicators, and alternative indicators that might be less sensitive or specific but for which it is less expensive to collect information, must be selected.

Simple – It can be costly to collect data for overly complex monitoring indicators, and complex indicators can also overburden program staff and data collectors. Therefore, an indicator should be as simple as possible, while still providing the information needed to adequately assess program performance and attainment of objectives. Monitoring indicators, particularly internal monitoring indicators that are collected by program staff, should not involve overly complex data collection procedures or calculations, as this increases the likelihood that mistakes will be made, or staff will become frustrated with the monitoring system. One way to help simplify monitoring procedures for staff members is to develop simple forms that can be used to collect or aggregate monitoring data, including straightforward formulas or instructions for calculating indicators.

Quantifiable – When possible, an indicator should be quantifiable or expressed as a number. Quantifying indicators can help program managers to compare monitoring results to predefined targets, and to track trends over time in program performance. For some indicators, it is useful for them to be constructed as proportions since they can often tell you more than absolute numbers. For example, knowing the coverage

of MNP among the target group of children (i.e. % of children 6-23 months who received at least one MNP package) can be more useful than knowing the absolute number of children 6-23 months who received MNP. In other cases, the absolute number may be more important, for example if the indicator deals with costs or procurement.

Valid – An indicator should be valid, meaning it accurately reflects the concept it is supposed to measure.

Variable – For an indicator to be useful there must be variation in the data between participants and over time (13). If the indicator does not vary between participants or over time, then even if it is valid, it may not be useful for discriminating between those who have benefited from the program and those who have not, determining whether or not the program is performing well, and identifying priorities for program adjustments (13). For example, if 95% of mothers initiate breastfeeding in the population at baseline then there is virtually no variation in the indicator between participants. It is important to track the indicator over time to ensure it does not decrease, but it is likely less useful for identifying who benefited from the program.

Reliable – Reliability, in relation to performance indicators, refers to the consistency of the measurement. Indicators should be reliable, meaning that the results will be the same if the measurement is taken by different people (e.g. interviewers or data collectors), or at different points in time (provided that the variable, or concept being measured, stays constant over time). If an indicator or instrument can produce the same results when it is repeatedly measured at various points in time and by various data collectors, it is considered to be reliable. For example, if the height of a child is measured in the morning, and then the height is measured again later that day by the same data collector using exactly the same instruments and techniques, it is expected that the height value will be very close (reliable), usually within a few mm.

Last, when describing expected change using percentages be clear about the **percentage difference**, which is a frequent source of confusion.

- Include "percentage point" or "PP" when describing subtraction (or addition) of one percentage to another, e.g., Iron deficiency will be reduced from 40% to 30% (10 PP) by 2015.
- Using "percentage points" makes it clear that it is not a relative change, which is a fraction based on the original value, e.g., Iron deficiency at baseline is 40% and will decline 25% by 2015 to 30%.

5.2.4 Guidance for Selecting Indicators for Home Fortification Programs

The World Health Organization and the U.S. Centers for Disease Control and Prevention are developing an indicator resource called the WHO/CDC Electronic Catalogue of Indicators for Micronutrient Intervention Programmes. This interactive web database will provide a source of process and impact indicators used in monitoring and evaluation of micronutrient interventions (including food fortification, vitamin and mineral supplementation, home (point-of-use) fortification, and food-based and behaviour change interventions). This resource should be available soon at http://www.who.int/vmnis.

Additionally, several countries are beginning to implement monitoring systems for programs that include distribution of MNPs and other home fortification products, and information on these monitoring systems should be available in the future.

5.2.4 Verifying or Triangulating the Data

Occasionally for very high priority indicators, it is useful to consider collecting data for an indicator using more than one source of information because the accuracy or validity of an indicator is unknown or in question. In these cases, additional sources of data for that indicator may help verify and validate the information obtained from the first data source. Using an example from the fictional integrated IYCF/MNP project, which includes routine distribution of MNP through governmental health clinics, information on MNP coverage among the target population is gathered using project records kept by health clinic staff who distribute MNP. These project records contain information on the number of children 6-23 months of age in the clinic's catchment area, and the number of children who received one, two, and three packages of MNP. From this information, MNP coverage is calculated. However, project staff members, who may have an interest in seeing positive results, collect this information and the clinic does not have complete information on eligible children who do not attend the clinic. Therefore, it may be important to verify this information by using another source of data on MNP coverage. Data are also available from a representative household survey of children 6-23 months that included caretaker questions about receipt of MNP. This survey provided additional information about MNP coverage and will be triangulated, or compared, with the results obtained from clinic records. If the results are very different using these two data sources, it may be important to investigate the reasons why and explore ways to improve the accuracy and quality of monitoring data. If the results are similar using the two sources, it may be decided to use just one source to obtain the data for that indicator in the future.

Verification can also be useful when using mixed methods for monitoring (i.e. both qualitative and quantitative data collection methods). For example, when new or unexpected findings emerge from qualitative data collection, it may be useful to include these findings in a quantitative survey in order to understand the prevalence or breadth of this finding in the project area, as well as verify on a larger scale the information obtained through qualitative methods. Findings from quantitative surveys can also be verified or explored in more depth by using qualitative methods, which are able to explore the meaning associated with certain survey findings in a more comprehensive manner. Section 5.8 discusses assessing adherence and various methods that can be used to triangulate data.

5.2.5 Indirect and Proxy Indicators

Some indicators are more challenging to collect than others. Challenges may be associated with the procedures, activities, or resources necessary to collect the data, which then limits the program's ability to include the indicator in program monitoring because it is prohibitively expensive, difficult, or impractical. In this case, indirect indicators (sometimes this also includes proxy indicators) can be used to measure the underlying concept. For example, the most accurate way of measuring caretaker adherence to MNP may be to have direct observation of use by trained observers. However, while it may provide the most accurate information, this method would be time-consuming and impractical for both caretakers and program staff. Therefore, often programs use other less direct methods to measure caretaker adherence to MNP such as:

- Self-reported adherence (caretakers report adherence at the clinics or during household surveys)
- Counting the number of full (unused) sachets in the home during a household survey interview

Indirect indicators can also be useful to determine if caretakers are properly preparing the food with MNP. The optimal method may be to directly observe caretakers as they prepare food with MNP, but this method can be time-consuming and burdensome for caretakers and data collectors, and difficult to carry out with large or representative samples. However, another option could be to interview a sample and ask questions relating to their knowledge and practices. For example, one proxy indicator is to ask caretakers whether they noticed any change in the taste or color of food when they added the MNP. If caretakers say that the food tasted bad/metallic (assuming they tried the food), or that the food changed color, it is a good indication that the MNP is not being properly prepared into the food. MNP should not change the taste or color of food if it is added to food that is not too hot, and if the food is fed to the child right after the MNP is added (and not left to sit for long periods).

5.2.6 Selecting One indicator to Represent Multiple Steps of a Process

Prioritizing and strategically selecting indicators is important when developing an efficient, feasible, and sustainable monitoring system. It can be burdensome and is not always necessary to have an indicator for every activity or step in a process. Selecting one indicator that represents multiple steps of a process, without having to measure each step in the process separately, can be a useful approach. For example, if one of the activities is to

revise the National IYCF Plan of Action to include the MNP strategy, the selected indicator for that activity could state: "Date when revised integrated IYCF/MNP National Plan of Action approved." This indicator represents multiple steps that lead to the achievement of this activity or objective. The steps included:

- Gathering stakeholders to meet and discuss the strategy
- Creating a draft of the revised plan for discussion among stakeholders
- Revising the plan based on feedback
- Securing stakeholders' agreement on the final plan, and
- Submitting the plan to the MoH and securing their approval

However, there might be good reason to keep separate indicators for one or all the steps. For example, if one step is particularly challenging or if there is concern that without monitoring the steps they will not occur.

5.3 Indicators for Monitoring the Stability, Integrity, and Quality of the Home Fortification Product

Home fortification projects should consider whether and how to monitor the stability, integrity, and quality of the home fortification product. Quality issues should be detected as early as possible in the supply chain, for example it is better to identify problems at the production facility rather than at the central distribution point or at the participant households. The later in the supply chain quality problems are detected, the greater the effort and cost will be to recall the product or react and communicate about the issues. Furthermore, perceptions of poor quality among participants are important threats to the acceptability of the product and can be challenging to overcome.

Quality testing and monitoring is usually conducted at manufacturing sites, by the manufacturer and/or government regulatory authorities. National regulatory bodies, which grant certification to health, nutrition, and pharmaceutical products, generally have standard procedures to confirm that the products meet quality and safety standards. However, it may be necessary for the project to conduct additional monitoring to ensure that the integrity and stability of the product is maintained once it is distributed to field sites and households, and projects should follow up on field reports that suggest problems with the product.

In the past, some countries that distributed MNP reported problems with the powder clumping, suggesting problems with the packaging. This affected the usability of the product, and caretakers' acceptance of the product. These issues were resolved by reviewing packaging procedures and guidelines with the manufacturer to ensure the package was appropriate for maintaining the quality of MNP. If there are any issues with the integrity or usability of the product, they can be discovered through periodic monitoring of the product's integrity once it reaches distribution points and households, as well as having a system in place to follow up on complaints.

Lipid-based Nutrient Supplements (LNS), especially those made in small factories, may require testing on a frequent basis to ensure that the integrity of the product is maintained. Compared to MNPs, LNS products are much more likely to face stability related issues due to the ingredients used. LNS may also be more affected than MNPs in very hot and humid conditions. Using a standard formula, the shelf life for some of the more common LNS products is 18-24 months, but the stability of a product is not as certain if the ingredients, such as type of oil used, or micronutrient composition is altered. In these circumstances, the shelf life of the product may be shortened. Due to the shortened shelf-life of modified products, some program managers open and taste the product on a frequent basis (e.g. every 2-3 months) or send a random sample of the product for external quality verification at a mid-way point of the shelf-life. If needed, these types of monitoring procedures should be built into the monitoring system.

5.4 Considerations for Developing Indicators for Delivering the Intervention

The intervention personnel, including volunteers, play a critical role in effective delivery of the intervention package. Thus, once the training and behavior change communication (BCC) packages and materials are developed, monitoring should focus on the quantity and quality of trainings and intervention delivery, as well as the flow of information and feedback about opportunities to improve performance. Data collection methods to collect this information might be quantitative or qualitative. For example, indicators can monitor the:

- Quantity of trainings, intervention delivery, supervision, & recognition of good staff performance
  - ▶ Initial trainings & refresher trainings for management, providers and volunteers
  - ▶ Geographic distribution of trained providers and volunteers
  - ▶ Supportive supervisory visits
  - ▶ Providers & volunteers with good or improved performance recognized as part of motivation strategy
  - ▶ Group or individual meetings held with mothers/caretakers or families to deliver the BCC and troubleshoot problems
- Quality of trainings and intervention delivery
  - ▶ As part of the training, scores on knowledge or skills test (e.g., self administered individual tests or group responses to facilitator check lists)
  - ▶ After the trainings, scores on administered surveys of knowledge or practice
  - ▶ Observation checklists to assess staff performance during training and in the field on a spot-check basis, including observations of meetings held with mothers/caretakers or families to deliver the BCC and troubleshoot problems
  - ▶ Supervisor re-visits to a subset of households or group meetings as part of assessing provider and/or volunteer staff performance
  - ▶ Supervisor referrals for additional provider and/or volunteer trainings
- Internal communication - two-way flows of information and feedback to improve intervention delivery and management
  - ▶ Time at regularly held meetings (e.g., monthly staff meeting) for staff and/or volunteers to seek advice and feedback from peers and supervisors on problems encountered with intervention delivery
  - ▶ Systematic, periodic capture of front-line staff feedback (e.g. at monthly staff meetings)
  - ▶ Periodic surveys of staff satisfaction, motivation, and views of their own job performance; results are shared and discussed with management and staff
  - ▶ Systematic, periodic reporting of monitoring results and needed changes to staff at all levels

Appropriate content and good quality training strategies that are interactive and grounded in adult learning theories provide a foundation to improve the knowledge, motivation and skills of those involved in intervention delivery. It is important to recognize that the delivery staff may have no prior experience with or knowledge of nutrition and home fortification, especially integrated IYCF/MNP projects, which require quality behavior change communication (BCC) strategies and counseling to be carried out effectively. Thus the training content, quality, and training approaches should be carefully selected and monitored as they are fundamental to the intervention.

In Figure 2, the logic model program theory shows that those who deliver the intervention (providers and volunteers) play a critical role in three areas of intervention delivery:

- Distributing MNPs
- Delivering the IYCF and MNP behavior change communication, and
- Problem solving and supporting mothers and caretakers in their efforts to adopt and complete the intervention

Providers and volunteers need knowledge, motivation, and skills to carry out these roles, which are developed and reinforced through trainings, supportive supervision, and a focus on improving the quality of intervention delivery (or maintaining high quality). The role of motivation is crucial because there may be resistance among providers or volunteers if they do not perceive the intervention as important, it is overly complicated and difficult to deliver, or the additional work is perceived as an uncompensated burden. Sometimes monitoring indicators of motivation among staff are overlooked or undervalued, but they are just as important as knowledge and skills to effectively deliver the intervention and are key areas to monitor.

5.5 Considerations for Developing Indicators Related to Expected Changes in Knowledge, Motivation, and Skills among the Target Population

For home fortification, and particularly integrated IYCF/MNP projects, exposure to the intervention package is expected to result in changes to knowledge, motivation and skills among the target populations. In Figure 2, the logic model program theory shows that the mothers, caretakers, and children[9] who receive the behavior change communication and other intervention package strategies should then:

- Know about IYCF and MNPs
- Demand the intervention package
- Accept the intervention package
- Be able to appropriately use IYCF strategies and MNPs

In this program theory each of these aspects (know, demand, accept, and appropriate use) is necessary and they must **all** occur in order to lead to high coverage and adherence. Each aspect is necessary but by itself (e.g., only increasing knowledge) is insufficient to produce high coverage and adherence. This has implications for the intervention content and delivery methods, which need to be purposefully developed to change each of these aspects. Monitoring indicators should examine whether these changes are occurring as expected.

The methods used and types of information collected may vary by the phase of the project. During the early phases of program implementation, it is usually important to collect more comprehensive and in depth information on knowledge, demand, acceptability, and skills to appropriately use the home fortification intervention using mixed qualitative and quantitative methods among mothers and caretakers. This is to monitor that the project is producing the expected results among participants and to resolve any problems early before scaling up. During latter stages of program implementation and maintenance, it might be sufficient to focus on a few indicators collected using only quantitative methods. Appendix 6 includes some examples of survey questions for the MNP component of an integrated program that assesses knowledge, motivation, and skills of mothers and caretakers.

When monitoring knowledge, motivation and skills of the primary target audience, it may be important to also monitor the exposure to the intervention package and effects among secondary audiences (those who influence or have power over the primary target populations) because they may influence the primary target audiences' motivations or ability to accept and adopt the intervention. For example, after being exposed to the intervention package a mother might:

- Understand what the MNP is and the health benefits promoted for her child
- Collect the MNP and want to give it to her child
- Know how to prepare and serve correctly, and
- Like the effects in her child

But if another household or community member disagrees (e.g., husband, mother-in-law, community leader) she might not be able to continue giving the MNP to the child and carrying out improved IYCF practices. Thus it may be important to monitor indicators of attitudes, knowledge, motivation or skills among secondary audiences as well as primary audiences.

In the fictional IYCF/MNP intervention example, formative data collection and monitoring during early implementation explored household decision making and the influence of secondary audiences, as well as other community and household supports and barriers to the proposed intervention, to ensure no changes or additional strategies were needed to support the intervention as it got established. Now at national scale, the role of secondary audiences is not explicitly conveyed in the logic model in Figure 2. The performance indicators for Activity 1.1 in the logframe describe the mass communication (radio) activities meant to reach both primary and secondary audiences, and the social mobilization and orientation meetings to be held with key stakeholders and community groups. Some of the example questions in Appendix 6 also explore supports and barriers to coverage and adherence, including the role of secondary audiences.

[9] In this example, this box of the logic model groups children with the mothers and caretakers for simplicity because child knowledge, acceptability and demand may influence coverage and adherence. However, stakeholders have agreed that the primary focus is on changes that occur among the mothers and caretakers and this is the priority for monitoring. The logic model can also be drawn to separate out changes that occur in mothers and caretakers vs. children.

5.6 Considerations for Developing Coverage Indicators

Coverage is a key indicator because it assesses the proportion of people who are targeted by the intervention package that actually receive it. If coverage is lower than anticipated, then the expected health effects will likely not occur and the intervention will not be effective.

Receipt (coverage) of the home fortificant is an important program indicator, for example ≥70% of the target population receives 60 sachets of MNP every six months. Often there is "one" primary coverage indicator that is used for reporting in annual reports or to donors. However, from a program perspective the home fortification strategies are usually only one component of an intervention package, e.g., in addition to the IYCF strategies and behavior change components. Thus it is important to also assess exposure of the target population to all components of the intervention package. For example, this could include:

- Exposure to mass communication strategies (heard radio announcements, saw billboards)
- Participated in at least one group meeting with volunteers every six months
- Participated in at least two individual counseling sessions with providers and/or volunteers every six months
- Received 60 sachets of MNPs every six months
- Given companion literature when received the MNP sachets

Furthermore, in some projects, participants are supposed to receive the home fortificants in several batches, e.g., 60 sachets every six months for children 6-23 months of age. In addition to "≥70% of the target population received 60 sachets of MNP every six months," coverage indicators could measure the proportion of participants who received the expected number of batches they were eligible to receive over the intervention period or a part of the time period. For example, in the fictional IYCF/MNP project children should have received:

- One batch of sachets at 6 months of age
- A second batch at 12 months of age, and
- A third (and last) batch at 18 months of age

Taking into consideration age, indicators could examine the proportion of children who received 100% of the batches of MNPs they were eligible (one batch, two batches or three batches depending on age) over the last 12 months or 18 months, for example. It is not unusual for coverage of second or third batches to be lower than the first batch. In the program theory, children are expected to receive three batches of MNP sachets (180 total) and change IYCF behaviors in order to improve their nutrition and health status. If participants do not return for the second or third batches of MNP sachets then their status is unlikely to improve as expected so it is important to also monitor these coverage indicators.

5.6.1 When there are Multiple Sources for Coverage Indicator Estimates

Typically coverage is collected through routine internal systems by intervention staff or through self-reports in surveys of the target population. Usually routine health or intervention systems do not collect coverage data that are representative of the target population because they only include information for those who visited the health facility or intervention site; as a result, these individuals might be more likely to have received the intervention or otherwise be different from the rest of the target population.

If designed to be representative of the population and implemented appropriately, household surveys among the target population would include those who did and did not go to the health facility and be free of other biases related to the selection of survey participants. Carrying out additional surveys may be an extra expense that requires contracting staff with special skills and the time to complete the survey.

It is not unusual to have coverage estimates from both a routine health system and from another source (e.g., representative household survey). Typically the coverage estimates are higher in a routine system than in a representative survey because of the biases described above, as well

as others (e.g., lack of current census data to accurately project the expected denominators). It is useful to compare the estimates, and when possible, try to understand the cause of any differences. When more than one source of coverage data is available but only "one" coverage estimate is to be reported for annual reports or donor reports, then a decision needs to be made from which source to report the estimate as reporting different estimates from different sources (that use different methods) every year is difficult to interpret and is usually not comparable. Some issues to consider include:

- Coverage indicators the source produces
- Quality of the data
- Representativeness
- Periodicity of the data collection
- Institutionalization of the system

If a system cannot produce the indicator desired, then it will not serve as the reporting source. Sources with the highest quality data and that are representative of the target population are preferred, but might not be collected regularly or within the periodicity needed for reporting. Sources that are institutionalized within the Ministry of Health or intervention infrastructure might report more regularly and be more sustainable for the long term. It is important for users of the coverage estimates to understand the strengths and biases of the data source(s).

5.7 Considerations for Developing Indicators of Status and Functional Outcomes

The purpose of home fortification interventions is to improve health and nutritional status and functional outcomes. Several questions often arise when developing indictors for these outcomes:

- What indicators of status and function should be included?
- What change is reasonable to expect under programmatic conditions and time frames?

The primary indicators to assess changes in status or function should be based in the program description, logic model and/or logframe. What are the expected effects (goal and purposes) of the intervention? Keep in mind:

- To review the programmatic literature for the outcomes and magnitudes of change that have been documented under programmatic conditions for similar interventions.
  - ▶ If little or no programmatic literature exists for the home fortificant (e.g., LNS or CFS) or the target group in question (e.g., MNPs among pregnant women), remember that compared to research the magnitude of change is expected to be less under programmatic conditions because research is carried out under more controlled conditions than are found in programmatic settings.
- Most of the evidence base for MNPs examines changes in anemia and iron status among young children.
  - ▶ Collecting hemoglobin to assess anemia in the field is low cost and logistically easy, so it is sometimes preferred to other indicators of iron status.
  - ▶ Iron deficiency is the single largest cause of anemia, but anemia is also caused by deficiencies of other micronutrients, such as vitamin A or B vitamins, and non-nutritional causes including infections (malaria, hookworm, and HIV) or blood disorders.
  - ▶ Interventions that are specifically aiming to improve iron status (vs. anemia) should consider measuring iron indicators to avoid concluding an intervention was ineffective if hemoglobin and anemia values do not change.
- For integrated interventions, the expected changes in status or function may be different (or the magnitude of effect may be greater) than for a vertical (single) home fortification strategy.
  - ▶ For example, MNPs alone have not been shown to decrease stunting in young children, but when integrated in an IYCF/MNP intervention stunting reductions are possible.

5.8 Considerations for Developing Adherence[10] Indicators in a Program Setting

Measuring adherence (and appropriate use) is a key component of intervention monitoring. Because projects frequently propose various methods to assess adherence, some of which are only appropriate for research settings, it is useful to identify methods most appropriate for programmatic conditions, as well as critically consider the issues, strengths and weaknesses of the different approaches. This section on adherence is the focus of the remainder of this chapter.

Measures of adherence attempt to document the actual intake of home fortification products by the target population in order to confirm that the products are being consumed as recommended. It is also important to assess whether they are being used appropriately and in accordance with the instructions and messages disseminated through behavior change communication activities. In addition to not consuming all of the home fortification products as recommended, other examples of inappropriate use (and consequences) can include:

- Giving home fortification products to infants less than six months of age who should still be exclusively breastfeeding
- Giving one MNP sachet per meal for each of the three meals in a day, instead of only giving one MNP sachet per day
- Sharing the home fortification product with someone other than the target child
- Giving two MNP sachets in one day in order to make up for missing a sachet the previous day
- Reducing the intake of other vitamin and mineral rich foods because the home fortification product is perceived to provide all the of the vitamin and minerals necessary for good health and development

While they can be challenging to measure, adherence and appropriate use can be assessed through various quantitative and qualitative indicators exploring practice and knowledge. The challenges associated with measuring adherence cover various domains and include but are not limited to:

- Long recall periods when the delivery system has few contact points between distributions of the product
- Socially desirable reporting of intake
- Burden on caretakers and program staff to collect high quality data
- Additional complexities with indicators found in flexible dosing regimens

[10] See Appendix 1 for a comparison of the terms adherence and compliance.

Home Fortification Dosing Regimens

The dosing regimen for MNP and other home fortification products is not standard. The optimal dose and regimen for MNP (number of sachets and schedule for use) is not known. However, the World Health Organization 2011 MNP guideline for children 6-23 months established that the minimum MNP dose is 60 sachets consumed every six months, starting at six months of age when complementary feeding is introduced, and continuing at least until 24 months of age. The HF-TAG suggests that a target of 90 sachets per six months period (equivalent to 15 per month, or 3-4 per week) is likely reasonable for most situations.

Example dosing regimens and descriptions include:

Daily – consumption of the product every day for a certain period of time
Every other day – consumption of the product every other day for a certain period of time
Flexible – consumption of the product according to the caretaker's preferred schedule within a certain period of time, while not exceeding the maximum intake guidelines per day (e.g., no more than one sachet a day)

Duration and Periodicity:

Regimen durations vary by product and program. Regimens may be continuous or periodic, where intake of the home fortification product stops for a specified time period and then resumes. Periodic use can be complicated and logistically challenging to implement and monitor. For example, a MNP program for children 6-23 months may have the following periodicity:

* A six-month-old child starts daily MNP intake and continues for two months
* The child then has no supplementation for four months
* At 12 months of age the child resumes daily MNP intake for two months
* Then the child has no MNP intake for the next four months
* At 18 months of age the child resumes daily MNP intake for two months, and after completing the two-month cycle has finished the complete regimen

All methods have weaknesses, but there are two quantitative methods to measure adherence in a large-scale, programmatic setting that are programmatically feasible and reasonable to consider in most settings:

1. **Self-report** of the participant (or caretaker)
2. **Counting full/unopened product** (e.g., sachets or pots) at participant homes.

Other methods are generally only considered in research settings or are too unreliable

Table 5.2 below presents the strengths and weaknesses of several methods of collecting adherence information, using the example integrated IYCF/MNP program with a focus on MNPs in the examples. The following paragraphs discuss some of these methods.

A common method to assess adherence in a program setting is asking participants or caretakers to **self-report** their use of MNP in a survey (i.e. self-reported adherence). This method generally involves the least amount of time and effort for caretakers and data collectors, as it does not require caretakers to adapt their daily behaviors (i.e. save empty sachets or mark use on calendars), and data collectors do not have to count sachets. However, there is often a potential for social desirability bias (e.g., the caretaker may answer in a certain way to please the interviewer). This may particularly be the case if the interviewer is the health care provider who counseled the caretaker on MNP use, or if the health care provider scolds the caretaker for reporting non-use. Additionally, with recall and self-report, caretakers may have the tendency to round their answer (i.e. so that the last digit ends in 0 or 5) regarding the number of products (e.g., sachets) consumed. There may also be problems associated with long recall periods, which can further decrease the accuracy of this measurement.

Another method is to have data collectors observe and **count the full, unopened products** (e.g., sachets or pots) that are in the home during a household survey. Depending on the delivery system and regimen, it may be challenging to try to calculate a quantifiable adherence indicator (e.g. % adherence) based on the number of products (e.g., sachets) remaining in the home, because operationalizing this concept can be difficult with "flexible administration" regimens, and children may receive the product at varying points in time (discussed in detail in the next section). However, in some cases, this method could be used to create a meaningful indicator. For example, if a program gives children 90 MNP sachets every six months along with biannual vitamin A capsules and instructs caretakers to use 3-4 per week (~15 a month) for six months, a useful indicator could potentially be: percentage of households with full MNP sachets remaining every six months. This data would be collected prior to the next vitamin A capsule/MNP distribution and the indicator would provide information on the range of adherence to MNP intake every six months. However, just because MNP sachets are no longer remaining in the house, does not necessarily indicate that they were used by the target child. For example, the sachets could have been given to neighbors, shared with other children in the household, or thrown away.

In the early intervention phase while programs are piloting and getting established, it is often useful to collect both self-report and observed full sachets in the household to triangulate the results and better understand patterns of use. As more data are collected, it may be possible to determine the most useful methods for a given context and then limit data collection to that method.

Other methods to measure adherence include directly observed use, saving empty or used product (e.g., sachets or pots), and marking a piece of paper or calendar to document use. While direct observation of the use of home fortification products may provide a high degree of accuracy for measuring adherence, this method is not practical in a large-scale, project setting. Even if a small sample of households is selected for observation, the time and resources needed to implement direct observation, as well as the burden on caretakers, make this an impractical method of quantitatively measuring adherence in a project setting. Additionally, observing participants may cause them to change normal practice. Direct observation to estimate the number of home fortification products consumed by participants is generally only considered in research settings, if at all. However, direct observation of caretakers' use of the product can be useful during the planning phase of a program (as a part of formative data collection) in order to understand participants' experiences with home fortification products and their ability to appropriately prepare and use the products, or as part of special data collection procedures to resolve problems during the implementation or maintenance phase.

Sometimes in research settings, adherence to home fortification products is measured by asking caretakers to save the empty, used product (e.g., sachets, pots) and bring them back to the health clinic or distribution point when they receive their next package (batch) of home fortification product. In a programmatic setting, however, it may be culturally inappropriate to ask participants to save their trash (e.g., used sachets or pots), and on a large scale saving or returning the empty product packaging is not a valid method for documenting adherence. In addition to the additional burden on caretakers and poor adherence data this produces, this also introduces new behaviors (e.g. storing used sachets, remembering to bring them to receive the next package or batch of products) that must be promoted as a part of the intervention. In addition, counting empty sachets or pots may be time-consuming and impractical for intervention staff members who would collect this data, and could create additional barriers that limit caretakers' willingness to return to collect the next batch or seek other clinic services. Additionally, similar to counting full sachets, counting empty sachets is not necessarily a reliable or valid indicator of the target child's consumption and appropriate use of the product, because the product could be shared with other children or adults, mixed into the bowl of food for the entire family, opened and the contents thrown away, or consumed without saving the product.

Another method of measuring adherence often considered is to ask caretakers to mark on a calendar or check boxes on a paper when they use the home fortification product. The benefit of this method is that it does not depend upon a caretaker's memory to self-report use over a period of time (and therefore lessens recall issues). Also, it is possible that asking caretakers to mark their use on a calendar may help increase adherence, if it serves as a reminder to use the product. However, this is a problematic indicator of use and adherence. This method would introduce additional behaviors (remembering to mark the calendar/paper after use, saving the calendar/paper, potentially remembering to bring the records with them to collect the next batch of product) that must be promoted as a part of the intervention, and may involve additional challenges among populations with low literacy. Further, caretakers may mark the calendar or paper without actually using the home fortification product if they know the records will be reviewed by an interviewer, and they feel pressure to do what is socially desirable. This approach has been tried in various settings and the collective experience has been that caretakers do not reliably mark the calendar/paper, or they lose it, and therefore it is not a reliable way to document adherence for program monitoring purposes.

Table 5.2 Strengths and Weaknesses of Various Methods of Assessing Adherence (Using the Example Integrated IYCF/MNP Program with a Focus on MNPs)

Method of Assessing Adherence	Strengths	Weaknesses
Self report either A. At the clinic B. During household survey or monitoring visit	- Involves the least amount of time and effort for caretakers and data collectors	May have problems with reliability or validity of indicator in reflecting a specific child's consumption of MNP, including: • Long recall periods and regimens may reduce validity and reliability of caretaker recalls • Socially desirable reporting of intake might result in over reporting intake and not mentioning sharing of sachets • Socially desirable reporting might mean caretakers could misreport coverage and use of sachets when they never really received the package of sachets
Counting full/unopened sachets in the home during a household survey or monitoring visit	- Does not rely on the memory of caretakers who are trying to remember use over a long recall period - May be useful to validate self-report	May have problems with reliability or validity of indicator in reflecting a specific child's consumption of MNP, including: • Sachets could be shared with other children/adults -mixed into the bowl of food for the entire family • The sachet is thrown away without being consumed • It may be possible to ask survey questions to overcome these limitations, but socially desirable reporting may still be a limitation.
Direct observation of MNP consumption (i.e. Directly Observed Therapy (DOT) A. Volunteers or health workers observe intake at household every day	- Typically a high degree of validity and accuracy of the measurement - Know that the target child consumed the MNP (not another household member or individual) - May be useful to validate self-report	- Time-consuming, expensive, and impractical - Places too much burden on caretakers and data collectors - Not appropriate for a large-scale, programmatic setting; this method is generally only used in research studies, if at all to assess adherence to use among the population - May introduce large bias due to being observed
Caretakers save empty/used sachets and either: A. Interviewers come to the house to count empty sachets during a survey or monitoring visit B. Caretakers bring empty sachets to the clinic when they come to receive the next batch of sachets	- Does not rely on the memory of caretakers who are trying to remember use over a long recall period - May be useful to validate self-report	- At large scale, it is not a valid indicator because families do not remember to save or bring in the packaging. This method is generally only used in research studies, if that. - This includes additional behavior changes to introduce in the intervention (remember to save empty sachets after use, potentially remember to bring with them to collect next batch of sachets). - Problems with validity of indicator in reflecting a specific child's consumption of MNP, including:

Table 5.2: *Continued*

Method of Assessing Adherence	Strengths	Weaknesses
		* Sachets could be shared with other children/adults * Mixed into the bowl of food for the entire family * Opened and the contents thrown away (empty sachets does not mean that the target child consumed the MNP) * Opened and consumed and the sachet thrown away (as normal practice with trash or if not motivated to save) - Asking people to keep empty sachets (trash) may not be culturally appropriate or sensitive, and is an additional behavior to introduce in the intervention. - May overburden staff to receive, count and dispose of empty sachets - In the case of option A, all caretakers are asked to save the empty sachets, but only a small number visited at the household (considerable effort by all caretakers to assess only a small sample of caretakers). It is also complicated for programs to select only a small number of households and ask them to save sachets, which reduces feasibility
Caretakers mark on a calendar or a piece of paper with boxes to check each time they give MNP to their child: A. interviewers come to the house to count marks on calendar or paper during household survey or monitoring visit B. caretakers bring calendar or marked paper to the clinic when they come to receive the next batch of sachets	- Does not rely on the memory of caretakers who are trying to remember use over a long recall period - May increase adherence if marking calendar / paper serves as a reminder to give the MNP to child - May be useful to validate self-report	Problems with reliability or validity of indicator in reflecting a specific child's consumption of MNP, including: - Caretakers may mark the calendar or paper without actually using the MNP if they know the calendar will be reviewed by a surveyor, and they feel pressure to do what is socially desirable. - They may use the product and forget or not be motivated to mark the calendar or paper. * This requires easy access to pencils or pens * This might have additional challenges in low literate populations * This includes additional behavior changes to introduce in the intervention (remember to mark calendar/paper after use, save the calendar/paper, potentially remember to bring with them to collect next batch of sachets). * Potentially need to save calendar/paper for long periods of time

5.8.1 Calculating and Interpreting Adherence with a Flexible Regimen

One of the difficult aspects of measuring adherence to home fortification products in a program setting is finding indicators that will produce results that can be interpreted in the same way for all program participants. This can be especially challenging when the regimen for using MNP or other products is "flexible," meaning caretakers can give the MNP according to any schedule they prefer, so long as they do not use more than one sachet per day (or other instructions as directed by the program), and they use all the sachets provided within a specified time period (often 4-6 months, although the time periods may be shorter). This is referred to as "flexible administration" because caretakers have the flexibility to find a usage schedule that works for them. One study has shown higher adherence with a flexible schedule (35) and there is growing interest in recommending "flexible" administration in program settings so it is useful to consider potential challenges with monitoring adherence with a flexible regimen.

It can be difficult to interpret adherence indicators with flexible regimens unless the recall period covers the entire regimen time frame (e.g., 4-6 months). However, it is challenging for caretakers to accurately recall the consumption of 60 or 90 sachets of MNPs or other home fortification products over multiple months. Therefore, having caretakers recall their children's MNP consumption over shorter time periods can be a more valid recall of intake, but it is difficult to interpret this information. As an example, an MNP program gives children 90 sachets of MNP every six months and instructs caretakers to give the sachets according to any schedule they prefer (so long as they give no more than one sachet per day) and use all 90 sachets within the six months. Such a program might want to collect the following types of indicators because the shorter recall period would be more valid than a six-month recall.

1. Percentage of children 6-23 months who caretakers report consumed MNP in the 24 hours prior to the survey interview
2. Number of days during the 7 days prior to the survey interview that caretakers report children 6-23 months consumed MNP
3. Percentage of children 6-23 months who caretakers report consumed 15 MNP sachets over the previous 30 days prior to the survey interview

In this example with flexible administration, the recall period is shorter than six months and none of the indicators provide a measure of overall adherence; the caretakers could have been fully adherent even if they did not give MNP to their child within the last 24 hours, the last 7 days, or the last 30 days. For example, the caretakers may choose to give MNP every day for one week and then take one week off, or the caretakers might be interviewed before or after fully completing the regimen and still be within the flexible regimen time frame. Thus, the caretakers could be fully adherent with MNP, but this fact would not be captured using these indicators.

With flexible administration it is challenging to develop a standard way of calculating adherence within a shorter time frame that will be valid, meaningful, and comparable across all participants. Additionally, it can be particularly difficult to find an adherence indicator that is comparable across participants if children receive the product at different times (rolling delivery) and then take it flexibly (e.g. if each child receives MNP starting when he/she turns 6 months old and then every six months after that). Having a schedule to distribute MNP to all children at the same time, for example twice a year with vitamin A capsules, can enable easier comparisons of adherence information, even if flexible administration is used.

For flexible or prescribed intake (e.g., daily, every other day or 3-4 times a week) regimens, more frequent distribution of smaller amounts of home fortification products (e.g., 15 sachets monthly on an ongoing basis between the ages of 6 - 23 months) can enable analysis of meaningful indicators of short term use (e.g., over the last month that reflect use of the last amount received) that may be more valid than recalls of use over 4 to 6 month periods.

While ability to measure adherence should not be the main criteria used to determine the distribution schedule or other regimens for a program intervention, when developing the monitoring system and indicators, it is necessary to consider how the distribution schedules / regimens influence the ability to monitor adherence or other key indicators.

5.8.2 Collecting Adherence Information over the Project Lifecycle

Poor adherence is common and should be expected; therefore, providing adequate support for adherence to interventions is critical for effective program implementation. Given the limitations of the various methods for collecting adherence information, improving methods to assess adherence in programmatic settings is an important area for future research. It is also important to consider that the type of adherence and usage information that will be collected may vary by the phase of the program.

During the **early stages of program implementation**:

- It may be important to collect more comprehensive information on adherence and usage of home fortification products using mixed qualitative and quantitative methods
- The purpose of collecting extensive information on adherence and usage during this stage of the program is to identify any issues pertaining to whether caretakers are using the product and if they are using it properly.
- If problems are found, they can be addressed with appropriate adjustments to the program
  - For example, adjusting communications activities, community outreach, counseling, or educational materials

During the **latter stages of the implementation phase, and during the maintenance phase** it may be decided that it is no longer necessary to explore adherence and usage using in-depth qualitative methods, and that it is sufficient to measure adherence using a few simple indicators collected through quantitative methods.

Key points from Chapter 5:

- Assessing performance indicators against benchmarks allows program managers to determine necessary adjustments to improve program functioning.
- A logic model may not always have performance indicators within the model, but monitoring indicators can be easily developed for boxes in the model.
- Objectives at all levels of the logframe — Goal, Purpose, Outputs, and Activities — are measured with performance indicators.
- An indicator matrix describes performance indicators and specifies how each is defined and calculated, the data collection methods / sources of data, the frequency and timing of data collection, and the target.
- If it is not possible to answer each of the following six questions when developing an indicator, then the indicator might not be useful or important to collect, or it might not be feasible to collect and report the indicator.
  1. For whom is the indicator collected?
  2. What will the person(s) do with the information?
  3. How will the indicator be collected?
  4. How often will the indicator be collected?
  5. Who will compile and analyze the data?
  6. Who will report the results to stakeholders and primary users of the monitoring system?
- There are many general characteristics of good indicators that are useful to consider when developing and selecting indicators but keep in mind that it is not always possible, necessary, or useful for indicators to embody all the characteristics.
- It is important to monitor the stability, integrity, and quality of the home fortification product in order to identify any problems as early as possible in the supply chain.
- Monitoring indicators should focus on the quantity and quality of trainings and intervention delivery, as well as the flow of information and feedback about opportunities to improve performance and should follow the program theory to confirm that key activities or changes are occurring as expected according to the theory.
- Coverage indicators should monitor all of the strategies in the intervention package, not only coverage of the home fortificants.
- Review the programmatic literature for the outcomes and magnitudes of change that have been documented under programmatic conditions for similar interventions. For integrated interventions, the expected changes in status or function may be different (or the magnitude of effect may be greater)

than for only a vertical home fortification strategy.

- The most feasible and reasonable methods to assess adherence in project settings include self-report by users or caretakers and counting unopened /full product in eligible participant homes. Other methods are generally only considered in research settings or have poor validity or reliability in programmatic settings, especially when projects go to scale.

6 Management, Analysis, and Use of Monitoring Data

In this chapter :

- Developing a monitoring plan that describes how data will be managed, analyzed and used to improve project performance
- Identifying appropriate monitoring staff
- Mapping out the two way flow of information in the system
- Ensuring appropriate resources
- Disseminating results
- Using data to improve projects

6.1 Using Monitoring Information to Improve Program Performance

In the previous chapters, we discussed the process of planning for and designing monitoring systems, as well as collecting data on performance indicators. Next, it is necessary to document what will be done with the information once it is collected, and how the information will be used to improve the performance of the program. It is useful to develop a comprehensive plan that outlines the protocol and procedures for managing, analyzing, and using the data once it is collected. If such a plan is not in place at the beginning of the project, the monitoring information may not be analyzed and reviewed in a timely manner, and project adjustments may not be made in time to improve project performance early on.

The monitoring plan should be reviewed periodically (e.g., annually or during key phases of the project (between the pilot and scaling up to new areas) to confirm that the scope, priorities, usefulness and cost are justified and sustainable.

6.2 Developing a Comprehensive Monitoring Plan

A comprehensive monitoring plan includes the various project monitoring tools: the logic model, logframe, and indicator matrix and a detailed description of how the data will be collected, managed, analyzed, and used once it is collected. For each type of monitoring data collected through different systems, the comprehensive monitoring plan should include the following information.

1. Human resource needs, including the skills and expertise needed for the monitoring tasks, and the specific person(s) designated to:
   - Manage the data, and if necessary, compile the data at distribution points and conduct data entry and data cleaning
   - Analyze the data
   - Write up the results in the most useful form (e.g. reports, presentations, tables, or charts)
   - Report on the results and share the information with stakeholders

2. Description of how the data and information will be managed, analyzed, and moved from one administrative level to the next and back again

3. Description of the timing and frequency of data collection, analysis, and reporting

4. Description of the training and refresher training plans for monitoring staff

5. Resources (including financial, material, and technology resources) that are needed for each monitoring activity, and resources needed for each level of data management

An example format for a monitoring plan includes:
- Title Page, preface, acknowledgements and credits
- Table of contents
- Introduction or Overview
- Intended use and users
- Project description
- Monitoring focus and design
- Methods
- Data management, analysis and interpretation
- Use, feedback loop, and dissemination
- Annual training/refresher training
- Annual reality check
- Timelines
- Resources

Key Points for Identifying Monitoring Staff:

- Staff members should have the necessary skills and expertise to manage and analyze the data
- For internal monitoring tasks, monitoring staff members are usually individuals involved in program implementation, and have access to the data
- Appropriate individuals to manage monitoring tasks may change as the monitoring system evolves during the different program phases
- When linking to an existing data collection system, monitoring staff may already be in place
- Location of the monitoring system influences decisions regarding monitoring staff

6.2.1 Human Resources: Assigning Responsibility for Analyzing and Using the Monitoring Data

One of the first considerations when developing a plan for managing and using monitoring data is deciding which person(s) will be responsible for data collection, data management, data analysis, and acting upon the data at each level of the program.

For a monitoring system to be successful:
- Specific individuals should be responsible for each of these activities (data collection, management, analysis, and acting upon data).
- A mechanism should be established to hold individuals accountable for carrying out these activities.

The assigned individuals can be staff working within the program, specialists working outside the program, or a combination of the two. It is also possible that if monitoring activities are integrated into an existing data collection system, such as the Ministry of Health Management Information System (MIS), there are already individuals who have been assigned the responsibility of managing and analyzing the data collected through the system. In these circumstances, the program may be required to work with existing specialists within the system for the analysis and reporting of program data.

When individuals have been identified:

- Secure their full support and agreement (and that of their bosses), to ensure that they are willing and able to carry out their assigned monitoring tasks.
- Training and refresher training is key to support skills, ability, knowledge, and motivation to carry out these tasks.
- Depending on the circumstances, it might be necessary to incentivize the monitoring staff for carrying out these monitoring activities if these are extra responsibilities added to their regular duties. The mechanism and need for compensating and /or motivating staff members involved in the monitoring system will vary by context.

6.2.1.1 Considerations for Identifying Appropriate Monitoring Staff

A primary consideration for hiring staff is whether the person has the appropriate skills and experience necessary to carry out the assigned monitoring activity. All individuals involved in program monitoring will have to be trained to carry out their tasks.

- Some tasks require selecting people with specific skills and expertise needed for these activities.
  - ► This is especially important for more complex tasks, such as data analysis using statistical software programs, or analysis of qualitative data. These are very specific skills, and it may be impractical to teach someone these skills just for the purpose of monitoring one project.

- For some monitoring tasks, the primary consideration may be the person's role in the program and proximity to the data sources, such as compiling and reviewing information from the health clinics' program logs.
  - ► Compiling data from health clinic logs is a fairly routine, ongoing task
  - ► The staff to complete can be trained to do so, thus the most important consideration is identifying a sustainable method of collecting this information on an ongoing basis.
  - ► It is likely that the people who are already working with the program at the appropriate level of program administration, and who work closely with those who record the information on a daily basis, may be appropriate individuals for this task.

- The most appropriate individuals to manage certain monitoring tasks may change as the monitoring system evolves during the different phases of the project and the project matures
  - ► As the project matures and monitoring needs change, accordingly the types of expertise needed to manage these monitoring activities may also change.
  - ► Earlier phases of the project may involve the collection of more data overall, and specifically more qualitative data, than latter project phases.
    - Therefore, it may be important in the

early project phases to have additional staff members who can assist with data management for the larger volumes of data collected, as well as specialists who can analyze and interpret the results of qualitative information.

- ► As the monitoring data volume and types of data collected vary as the program matures, a lower level of staffing might be appropriate during the latter project phases.
- ► As stakeholders map out how the monitoring system will evolve throughout the life of the project, it is useful to also determine how the need for expertise and human resources for the monitoring system will change.

- If the monitoring system is integrated into an existing data collection system, such as the Ministry of Health MIS, program managers may need to work with existing specialists within the system for the analysis and reporting of project data. There are benefits and drawbacks to this situation.
  - ► When program monitoring is integrated into an existing data collection system
    - The project can benefit from the skills and expertise of the existing specialists.
    - It is likely that these specialists will not need a great deal of additional training to manage and analyze the project monitoring data.
    - These units might already have computers and needed software packages, and the authority to handle confidential records, if necessary.
  - ► The drawback to this situation is that the project is dependent upon the existing specialists to analyze the data in a timely manner so that program adjustments can be made.
    - If there is a weak system in place and improvements cannot be made to the system, the data management and analysis for the project may similarly suffer.
    - Sometimes it is difficult to secure cooperation and coordination between relevant departments and agencies in order to integrate a project monitoring system into an existing data collection system.
- Selecting individuals to manage and analyze the monitoring data is closely linked with deciding where data collected through the monitoring system will be housed.
  - ► Making strategic choices regarding where to house the monitoring system and who should have ownership and responsibility for managing the various monitoring activities will contribute to the sustainability of the system.
  - ► Decide early on in the design process where the monitoring system will be housed as this effects how the information is analyzed and used.
  - ► Housing a monitoring system for a home fortification project within a nutrition or health department of the MoH could be problematic if the staff members are hired for their programmatic health or nutrition knowledge and not their monitoring or analytic skills.
    - If staff members within the department do not have the necessary skills, there may be significant barriers to the implementation of timely, high-quality data management and analysis, and ultimately, this will affect the use of the data for programmatic decision-making.
    - It might be necessary to hire staff with this expertise to work in the nutrition or health department.
  - Housing a monitoring system in a department where there are specialists with the appropriate skills and expertise can be strategic.
    - For example, this could include the MoH's epidemiology or health system information units, or the M&E unit within the NGO.
    - If the monitoring system is housed in a department that is not directly responsible for project implementation, there needs to be close collaboration between those responsible for managing and analyzing the data, and those responsible for interpreting and acting upon the data.
      - * Processes and procedures should be in place so that monitoring data can be analyzed in a timely manner, and then reported to program managers and administrators who can determine appropriate actions.

6.2.2 Developing a Manual of Operations for Data Management and Analysis

A manual of operations that details how the data will be managed and analyzed is required to document all procedures, and supports training staff, quality, institutionalization and the institutional memory of the system. This description should include:

- Details on how the data will flow from one program administrative level to the next and back again, and how information and results will be communicated to each level of the program
- An analytic plan describing standard procedures for data entry, cleaning, and analysis; standardizing analytic procedures can include creating standard coding for statistical programs in order to facilitate data cleaning and checking, as well as consistent and timely analysis and reporting
- Information on how each indicator is calculated (can be referenced from the indicator matrix)
- Data entry and management tools that will be used (e.g. log books/records, data summary forms, or databases)
- Technology that will be used for data management and analysis (e.g. statistical software, database software, qualitative data analysis software, and word processing software)
- References to resources for analyzing certain types of data (e.g. resources for analyzing anthropometric data)
- Templates of reporting formats, including table shells[11] or presentation shells to be completed
- Channels for disseminating monitoring results to key audiences

6.2.2.1 Mapping Out the Flow of Information

As discussed in Chapter Four, the manual describes how to map out the various primary users of the monitoring system and develop a feedback loop to ensure the data are of adequate quality, analyzed, reviewed, and acted upon in a timely manner. When developing a description of how project data will be managed, it is useful to map out the flow of information (indicators or reports) from one level of project administration to the next and back again. The comprehensive monitoring plan should contain a description and illustrations of how the data will be compiled and managed, and how it will move throughout the administrative levels.

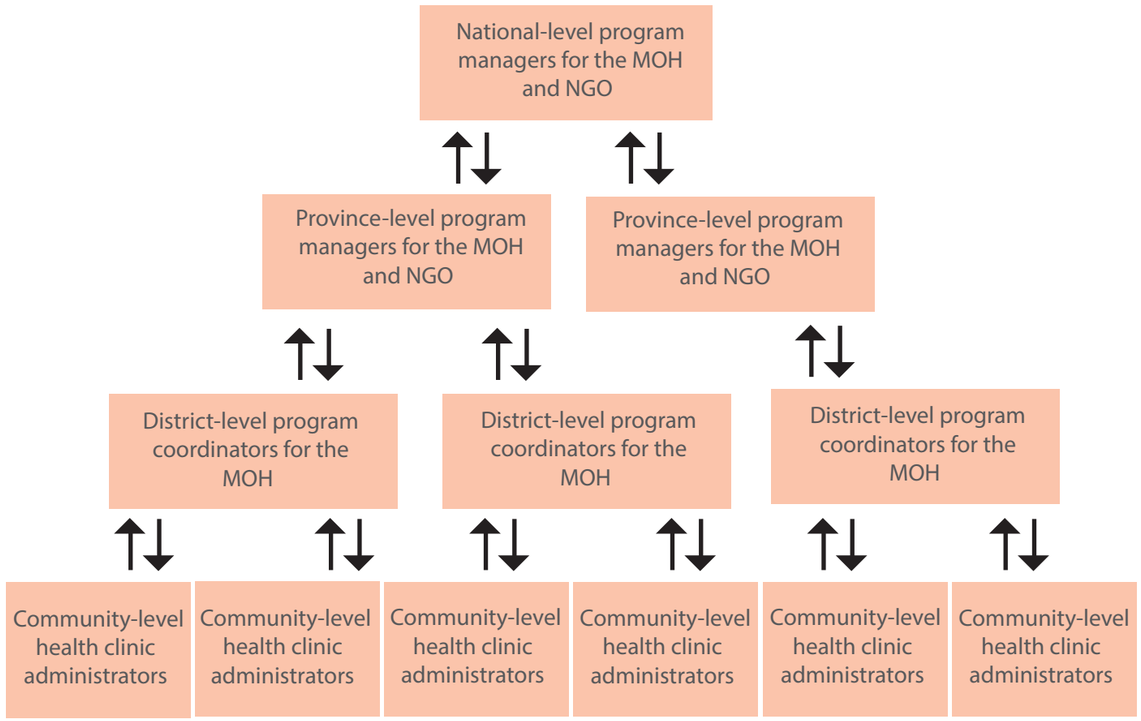
Figure 3 below contains an example of a diagram, which illustrates how internal monitoring data, collected through program logs at the health clinics, moves from one administrative level to the next and back again in the fictional national scale IYCF/MNP program. The indicators reported may be tailored to each administrative level.

- Community-level health clinic administrators compile program data for key monitoring indicators for their clinic by transferring data from the program logs (which are filled out daily by health care providers) to quarterly internal monitoring reports.
  - ► The quarterly reports are sent to district-level Ministry of Health program coordinators
- District-level program coordinators aggregate and review the data for all clinics in their district.
  - ► The district-level quarterly reports are sent to the province-level program managers who work for the MoH and partner NGO
- Province-level program managers aggregate and review the data for all districts in their province.
  - ► The province-level quarterly report is sent to national-level program managers working for the MoH and partner NGO.

At each administrative level, managers review the monitoring data for the area for which they are responsible, in order to identify ways that program implementation may be improved in their administrative unit. Additionally, administrators at each level hold quarterly meetings with administrators at the next level, in order to review the monitoring results and decide upon actions to take to improve the performance of the project. These quarterly meetings are also an opportunity to foster a culture of learning among peers and share information, experiences and lessons learned laterally among provinces, districts and communities.

[11] Table shells are completely formatted tables that do not yet have any data. Similarly, presentation shells are formatted presentations that do not yet include data.

Figure 3. An example of how project monitoring data might flow



It is important to note that while project data tends to flow in one direction (from community-level administrative units up to the national level), information and results are communicated in both directions. The flow of information in a monitoring system is multidirectional, and mechanisms should be in place to ensure that information and results are communicated to each level of the system, as appropriate programmatically and statistically. These principles apply whether the project is at pilot or sub-national scale or at national scale.

6.2.3 Description of the Timing and Frequency of Data Collection, Analysis, and Reporting

For each type of monitoring data, the comprehensive monitoring plan should also contain a detailed description of the timing and frequency of data collection, analysis, and reporting. When developing this description, the indicator matrix is useful because it specifies the timing and frequency of data collection for each indicator. In general, the aim should be to collect and analyze monitoring data frequently enough that timely programmatic adjustments can be made, while not burdening monitoring staff members with overly frequent data collection and analysis. The frequency of data collection must be feasible and realistic in order for the monitoring system to be sustainable. Timing and frequency might vary by stage of the program.

For some data sources, the project may not have a choice regarding the timing of data collection and analysis. With data sources such as the MICS or DHS, the timing of data collection will be defined by the organizations implementing the surveys. The same is often true of data collected and reported through the Ministry of Health Management Information Systems (MIS).

6.2.4 Ensuring Appropriate Resources to Manage and Analyze the Data

The monitoring plan should include a description of the resources that are needed for each monitoring activity, and resources needed for each level of data management.

- Ensure that there are adequate financial resources within the project budget to secure the material, technology, and human resources needed to carry out monitoring activities, and to sustain the monitoring system throughout the life of the project.
- Additional resources might be needed for some activities, such as complex surveys or qualitative analyses that may be periodic non-routine activities; budget for them in advance even if objectives of such data collection are not yet explicitly defined.
  - Also, complex surveys and qualitative analysis activities not only require special technical skills and software to analyze, but are also very time consuming; therefore, it is prudent to recognize that it will be inconvenient or impossible for program staff to carry out these activities in addition to their regular duties.
  - This manual will not provide detailed explanations on conducting analyses of different types of data; however, other resources are available to support the appropriate analysis of survey data (8) and qualitative data (36).

The technology used to collect and analyze monitoring data should be appropriate for the setting. For example, using computers and databases to collect data at the community-level may seem to be the most efficient option, but such a system may not be appropriate or stable in field situations where staff members have poor computer skills, there are frequent electricity outages, or there is no internet connection.

- The choice of technology for a monitoring system should always be realistic and sustainable for the local field conditions.
- If it is necessary to use sophisticated technology for data management and analysis (e.g. statistical software, database software, or qualitative data analysis software), ensure that monitoring staff members have adequate skills and expertise to work with this technology.

6.3 Reporting on and Disseminating the Results

Developing a plan for how monitoring results will be reported and disseminated to stakeholders is a critical step in ensuring that the results are used to improve the performance of the program. To the extent that it is possible, there should be standard

reporting formats that are easy to use and adapted for each reporting cycle, in order to facilitate timely, high-quality reporting.

6.3.1 Reporting Needs of the Program Stakeholders

An important consideration is the reporting needs of each stakeholder who will review the monitoring results. The level of program administration within which the person works determines the level of aggregation of data that is needed for that individual.

- Program managers and administrators (primary users of the monitoring data) usually need a comprehensive report with detailed results for each source of monitoring data.
  - ► A full picture of the results supports informed, appropriate decisions about adjustments to improve the functioning of the program.
  - ► The most useful format for communicating monitoring results to primary users may be detailed reports, data tables, charts, and graphics.
- A program coordinator working at the district-level may need the results disaggregated by community-level health clinics to determine which clinics in the district are performing well, and which clinics need additional support.
- A program manager working at the national level may only need the monitoring data disaggregated by district or province.
  - ► Their task is to make higher-level decisions about the overall functioning of the program, and to decide upon adjustments that should be implemented across all program sites to improve program performance.
- Other stakeholders, such as coalition partners, national advisory groups, or donors, may need higher-level summaries of the data and conclusions that have been drawn about the functioning of the program and whether the program is on track to achieve its objectives.
  - ► The most useful format for reporting information to this audience may be visual presentations and simple, concise charts and graphics.

Establish a mechanism so that monitoring results and information will be f**ed back to each program administrative level that contributes data to the system.**

- Data collection for a monitoring system should not be purely "extractive," meaning data is collected from lower levels of the program operations and then analyzed and kept at the higher levels of program administration without feedback to the community level.
- Extractive data collection can result in a lack of ownership of the monitoring system among program staff at the community-level.
  - ► When this happens, staff can feel that the results are not credible, useful, or are a burden, which can jeopardize the sustainability of the monitoring system.

Key Points for Reporting and Disseminating Results:

- Facilitate timely, high-quality reporting by using standard reporting formats
- Tailor reporting formats and level of detail to stakeholder needs and interests
- Report results back to the administrative levels that contributed information

6.3.2 Frequency of Reporting Monitoring Results

Carrying out data collection and analysis too frequently can overburden staff members, and jeopardize the sustainability of the monitoring system. The same is true for reporting activities.

- Developing useful materials for communicating program monitoring results can be very time-consuming, so it is important to create a realistic, feasible schedule/plan for reporting the information.
- If it takes a long time for full reports to be finalized and monitoring results disseminated, then it could limit the ability to make timely decisions about program adjustments.
  - ► In some cases, it may be better to start discussing preliminary results with stakeholders in advance of the full report being finished, in order to decide upon actions to take so that issues can be solved early on. Then, when full reports are available, stakeholders can reconvene to discuss the more comprehensive monitoring results and decide if further actions are needed.
  - ► It may be useful to prioritize indicators and ask data analysts to analyze and report the critical indicators first, and then work on the indicators of secondary importance later. Because often data analysts are not directly involved in program implementation and management, they may need guidance regarding the priorities for data analysis.
  - ► As is the case with other aspects of monitoring, the frequency of reporting will likely vary by stage of the program, with more frequent reporting during the planning and implementation phase, and potentially less frequent reporting at the maintenance phase. At a minimum, monitoring reports should be produced annually, while more frequent reporting (twice a year, quarterly, or monthly) might be possible and encouraged, depending upon the system.

6.4 Ensuring the Data are Used to Improve Program Performance

Steps five and six of the CDC Framework (1) involve using the monitoring data to assess the program's performance, and ensuring that actions are taken, when necessary, to improve the functioning of the program. The case study in Box 6.1 below provides a concrete example using the fictional IYCF/MNP project to illustrate ways in which a monitoring system uses data to improve program performance over the life cycle of the project.

Step five in the framework is 'justifying conclusions:'

- Conclusions formed from monitoring information are justified when they are based on data that have been objectively compared to the standards set by stakeholders.
- Stakeholders and primary users of the monitoring information can set predefined thresholds (benchmarks) for each performance indicator, above or below which action must be taken to improve the functioning of the program.
- Setting threshold points before the monitoring data are collected helps to ensure that stakeholders will perceive the conclusions to be objective and justified; however, it is important to keep in mind that the threshold points are not immutable, and should be interpreted together with other contextual factors.

It is not uncommon for monitoring systems to identify a problem, but no action is taken to correct it. One reason for this is that the specific actions that should be taken to resolve the problem and resources to do so are not clearly defined. It can be useful to strategize before data are collected, to determine the initial specific actions that should be taken in different likely scenarios of program performance. A decision tree could be created, to map out concrete actions, which will be the first steps implemented for each scenario of the key performance indicators.

Step six in the CDC Framework (1) is 'ensuring use and sharing lessons learned.' Careful planning and effort are needed to ensure that lessons learned from monitoring are used to make informed decisions and to implement appropriate measures to improve the functioning of the program. Program managers should consider how the results will be disseminated and to whom, making sure that all relevant stakeholders are involved in the process of reviewing and acting upon the results. Supporting the use of monitoring results depends upon the following:

- From the beginning, include appropriate stakeholders in identifying information needs and monitoring objectives and methods
- Select a design for the monitoring system that will facilitate utilization of the data by the primary users
- Rehearse with stakeholders how potential findings would affect decision-making and translate into action
- Throughout the monitoring process, facilitate discussions with primary users and stakeholders to give and receive ongoing feedback
- Establish a clear process that is routinized for reviewing the data and results with stakeholders, and deciding upon actions to take
- Follow-up with primary users after the monitoring

results have been discussed and concrete actions have been agreed upon, to ensure that important lessons learned have not been overlooked or forgotten
- Communicate the lessons learned from monitoring to relevant audiences in a timely and unbiased manner, and use a reporting method (i.e. verbal presentation or written report) that will meet the information needs of the audience

It can be particularly useful for program staff at the same administrative level to meet and discuss experiences and overcoming challenges as a way to support the use of monitoring results and motivate project staff.

6.4.1 Establishing a Process for Reviewing and Acting Upon Monitoring Results

A key factor that determines whether monitoring results are used to improve program performance is whether a clear process has been established for reviewing and acting upon the results and sharing the results.

- Establish a process to review and act upon results, such as at annual, bi-annual, or quarterly meetings with program administrators, staff and other stakeholders to discuss and review the results.

- Define a clear process for summarizing the decisions and actionable steps that are determined in these meetings, and disseminating them (particularly if those involved in program implementation at the field-level do not participate in the meetings).

- Facilitators and barriers might only become known at the local level after starting early implementation and might not be routinely collected in data collection systems.
  - ► Periodic meetings are an important venue to share and reflect on these issues and develop appropriate responses.
  - ► This information is crucial and should be kept updated and shared so that it is taken into account when projects expand or make revisions.

- The type of monitoring data being assessed will determine the participants of the periodic review meetings.
  - ► If data on program process indicators (e.g. MNP supply, or coverage of MNP and BCC activities) are being reviewed, then the most likely participants would be program managers and administrators at various levels of the program. These are the stakeholders who would be in the best position to make adjustments in the implementation of the program to improve process indicators.
  - ► If data on outcome or impact indicators are being reviewed, then higher-level stakeholders, such as national advisory committees or coalition partners may be involved, as these performance indicators relate to the overall strategy and program theory.

Box 6.1: Case Study : How Findings are Used to Improve a Project

This case study walks through an example showing how a monitoring system's findings were used to improve a project. For this exercise, please refer back to the fictional example of the integrated IYCF/MNP project; in the interest of simplicity, the case study focuses on the project's monitoring indicators pertaining to MNP coverage and adherence.

Objectives of the Monitoring System During the Implementation Phase

During the implementation phase of the IYCF/MNP project, monitoring activities were intensive. The purpose of monitoring at this stage was to take a comprehensive look at the different elements of the program, and determine what was and was not working well in order to make adjustments and improve the long-term functioning of the project. A wide variety of indicators pertaining to the MNP intervention were monitored at this stage of the project. The monitoring indicators fell into the following categories:

- Adequacy of the product supply (i.e., number of product stock-outs)
- Coverage of MNP distribution
- Caretakers' adherence to the MNP intervention
- Coverage and quality of trainings for health care providers and community volunteers
- Coverage and effectiveness of communications / educational activities and materials for caretakers (as measured by caretaker practices and behavior changes)
- Coverage and effectiveness of mass media activities

Box 6.1 : Case Study Continued

The monitoring activities early on in the implementation phase of the IYCF/MNP project revealed the following problems pertaining to MNP distribution and use:

1. **Inadequate supply of the product** (i.e., frequent stock-outs of the product at government health clinics); supply monitoring information suggests this was caused by:
   a. Poor inventory management skills of clinic staff who were not sending required reports on time

2. **Low coverage of MNP;** supply and qualitative monitoring data suggests this was caused by:
   a. Inadequate supply at clinics
   b. Lack of awareness among target caretakers about the availability of MNP at local clinics and the need to return for the next batch of 60 sachets every 6 months
   c. Insufficient outreach to target caretakers (low coverage of home visits by community volunteers)

3. **Issues influencing caretaker adherence with the intervention;** qualitative and quantitative monitoring information suggests this was caused by:
   a. Fears about the safety of the product, and other perceptions about the product
   b. Inadequate information on managing the potential side effects of MNP use
   c. Concerns about MNP changing the taste of food, which suggests the food is not being properly prepared with MNP
   d. Concerns about the branding and images used with the packaging

After analyzing the data, it appeared that the clinic stock-outs, low MNP distribution coverage, and issues influencing caretaker adherence were likely related to:

1. Quality of trainings and motivation for health care providers. (Post-training knowledge tests showed adequate knowledge and skills; however this did not seem to translate into adequate performance in project implementation).
2. Community volunteers report that they did not have enough time to visit all target households and this influenced coverage of interpersonal behavior change communication strategies.
3. Ineffective communications and educational activities and materials for caretakers and needed revision to some MNP preparation messages and images
4. Low coverage of mass media outreach as few caretakers had heard the radio advertisements

In response to these problems that had been identified, the following changes were implemented:
(See Table 6.1 below, which maps out how programmatic adjustments were made based on monitoring data)

1. Retrained health care providers with an emphasis on inventory management skills and understanding any issues that might limit health care providers' ability or motivation to carry out inventory management tasks
2. Recruited additional community volunteers to increase coverage of home visits and implemented an incentive strategy to recognize high performing volunteers and support their motivation
3. Revised communications materials to include more useful information on the management of constipation and diarrhea during MNP use, an emphasis on the safety of the product, and revised images used with MNP branding to address concerns
4. Ran advertisements for MNP on additional radio channels, with an emphasis on where to get MNP and to return every 6 months for the next batch of 60 sachets.

Table 6.1. Case study 1: Issues, Causes and Solutions.

Identified Issues →	Related Issues →	Underlying Causes →	Solutions / Program Adjustments
1. **Inadequate supply** of the product (frequent stock-outs at clinics)	A. Poor inventory management skills of clinic staff	A. Insufficient training or motivation for health care providers / clinic staff	A. Retrain health care providers / clinic staff with an emphasis on inventory management skills & supporting timely reporting
2. **Low coverage** of MNP distribution	B. Inadequate supply at clinics (stock-outs) C. Insufficient outreach (low coverage of home visits by community volunteers) D. Lack of awareness among target caretakers about MNP	B. Poor inventory management skills of clinic staff caused by insufficient training or motivation C. Community volunteers report that they don't have enough time to visit all target households D. Same as C. above and low coverage of mass media outreach (few caretakers have heard the radio advertisements)	B. Same as A. above C. Recruit additional community volunteers to increase coverage of home visits & implement incentive strategy D. Same as C. above and run MNP radio spots on more channels
3. **Low adherence** with MNP	E. Fears about the safety of the product, and other perceptions about the product and branding F. Caretakers' lack information on how to manage side effects of MNP use G. Caretakers' lack knowledge of the importance of adding MNP to food that is cool, mixing into sufficient quantity of food to hide powder for 6-8 month olds, and feeding immediately	E. Same as C. above and effectiveness of communications and educational activities and materials for caretakers F. Same as C. & E. above G. Same as C. & E. above	E. Same as C. above and revise communications materials to include more information on preparation, safety, and diarrhea & constipation management, revise branding images F. Same as C. & E. above G. Same as C. & E. above

Box 6.1: Case Study Continued

The following rounds of monitoring data showed the programmatic changes were successful in improving the monitoring performance indicators pertaining to MNP coverage and adherence. With these adjustments, the project performance and functioning were enhanced throughout the remainder of the implementation phase.

Objectives of Monitoring System During the Maintenance Phase

Major issues in the design and functioning of the program were solved during the implementation phase, and the monitoring data showed the project was then performing well based on objectives and performance indicators. The project had been running for two years, and there were two years left for the project's existing funding. The project then entered the maintenance phase, and the focus shifted to maintaining a high level of performance for the long-term. The purpose of monitoring during this phase was to gather data on a smaller set of prioritized key indicators, which defined the long-term functioning and success of the program. At this stage in the project, coverage and quality of trainings for health care providers and community volunteers, the effectiveness of communications and educational activities and materials for caretakers, and the coverage and effectiveness of mass media activities were all satisfactory. For those three areas, the initial problems in the system had been resolved, and the project expected to maintain a high level of performance in the future. Therefore, monitoring activities were scaled back to focus on these core areas of program performance pertaining to MNP distribution:

- Adequacy of the product supply (i.e., number of product stock-outs)
- Coverage of MNP distribution
- Caretaker adherence to the intervention

Monitoring continued for the three areas of program performance throughout the remainder of the project. If problems were found in any of the three areas, the scope of monitoring activities would be expanded to enable more comprehensive assessment of the causes for poor performance in order to make appropriate project adjustments. New issues that might affect these three areas include, for example, maintaining motivation and interest among staff and caretakers, and new concerns about the MNP product.

In summary, the monitoring system identified problems and resolved them during the implementation phase, and the scope of monitoring activities changed over the life cycle of the program.

Key points from Chapter 6:

- A monitoring plan should include the various project monitoring tools (e.g., logic model, logframe, indicator matrix), and describe the required:
  - ► Human resources and skills
  - ► Training
  - ► Timing and frequency of data collection
  - ► How data will be managed, analyzed and used.
- Selecting appropriate monitoring staff and conducting periodic training is critical. For complex tasks that require special skills (analysis using statistical software programs or analysis of qualitative data), it is usually better to identify staff that already have this expertise instead of trying to carry out on the job training.
- It might be best to house the monitoring system in a department where there are specialists with the appropriate skills and expertise to manage and analyze the data in a timely manner. Ensure close collaboration between those responsible for managing and analyzing the data and those responsible for interpreting and acting on the data.
- Strategic choices about where to house the monitoring system, ownership, and responsibility for the various activities will contribute to sustainability of the system
- The flow of information in a monitoring system is multidirectional and systems should be in place to ensure information and results are communicated to each level of the system
- Facilitate timely, high-quality reporting by using standard reporting formats
- Tailor report formats and level of detail to stakeholders needs
- Report results back to all administrative levels that contributed information
- Establish a process for reviewing the results and summarizing the decisions and actionable steps to improve performance

7 Planning for the Future Scale-up and Sustainability of the Monitoring System

In this chapter :

- Planning for how the monitoring system will change during the project lifecycle
- Considerations that influence the scale-up and sustainability of the monitoring system

Monitoring activities should continue throughout the project lifecycle so that issues can be identified and addressed during all stages and enable effective project implementation. Supporting the future scale-up and sustainability of the monitoring system requires finding the right balance between resources that can be dedicated to monitoring and the collection of useful information to inform program management and decision-making.

7.1 Describe How the Monitoring System will Change as the Project Expands

Home fortification projects are usually implemented in phases, starting with a small-scale pilot project in one region or area of the country and eventually scaling up to other areas. When designing the monitoring system, it is important to consider objectives and implementation of the system when the project is extended to new areas.

- When problems with the pilot project have been resolved, and monitoring results show that the project is functioning well, the project may be ready for scale-up to new areas or regions.
  - ► Scale-up often occurs when the pilot locations have entered the program maintenance phase
  - ► The focus in those areas has shifted toward maintaining a high level of performance for the long-term
  - ► Facilitators and barriers might only become known at the local level after starting early implementation, but this information is crucial and should be kept updated so that it is taken into account when projects expand or make revisions

- During scale-up, the new areas are implementing a project that is new for them, and thus, they are starting in the implementation phase, not in the maintenance phase.
  - ► A high level of project performance is not always maintained when projects are extended, particularly in the early stages of scale-up
  - ► However, the new areas should have benefitted from the changes made and lessons learned in the pilot regions

- During the initial scale-up to new areas, for a short period of time it may be important to plan for the collection of a broader scope of indicators and data collection activities in order to ensure that the program will still perform well when it is operating on a larger scale.
  - ► For example, misperceptions and rumors can quickly undermine adherence among participants.
    - During the initial scale-up phase in new areas, a monitoring system might collect both qualitative and quantitative information for indicators related to acceptability and understanding of this new intervention among participants.
    - When monitoring data show appropriate levels of acceptability and understanding among participants, this information could be collected only periodically using quantitative methods.
  - ► Similarly, monitoring during the initial scale-up might focus on areas of program performance that were problematic during the pilot phase and thus merit additional attention during the scale-up phase.
    - Once the project is established in the new regions, the monitoring objectives, methods, and indicators can potentially be narrowed.

- During the life cycle of the program, if there are significant changes to the intervention package or target population, the monitoring plan should be adapted accordingly.

- When scaling-up the monitoring system, consider what data sources and data collection methods are realistic and feasible for a monitoring system that is being implemented across multiple regions or program sites.
  - ► It may be decided that when the monitoring system is scaled-up nationwide and in the maintenance phase, it will only include data that are collected through the Ministry of Health Management Information System because:
    - this system is institutionalized within the Ministry of Health infrastructure
    - it is the least costly and most sustainable for the long term.

- Ideally, one of the finished products of the monitoring system pilot will be complete documentation, including a comprehensive manual of procedures for all components of the monitoring system, which can be used to facilitate scale up to new regions.

Reminder: Phases of a Program

There are generally three program stages: planning, implementation, and maintenance.

* The planning phase can be defined as the program development stage, during which program stakeholders are conducting all activities that are necessary to prepare for program implementation. For example, these may include carrying out a needs assessment and situational analysis, agreeing upon program objectives with stakeholders, designing the intervention and monitoring and evaluation plans, and conducting feasibility and / or acceptability testing (including pre-testing of messages and communications materials, and small-scale testing of the intervention among potential program participants in their homes in order to understand everyday experiences with the intervention to improve the intervention package).

* The implementation phase is the early to middle stages of program implementation, which includes the pilot testing phase (including piloting the monitoring system) before taking the program to scale. During the implementation phase, program managers are generally devoting a great deal of time to assessing what aspects of the program are and are not working well, and making adjustments to improve the functioning of the program. The focus of this phase is correcting any problems in the system.

* During the maintenance phase, the program has been operating for a while, and ideally problems in the design or functioning of the program have been corrected by this stage. If issues in the performance of the program have been corrected by this phase, the focus shifts to maintaining a high level of performance for the long-term and potentially scaling up the intervention to new sites or regions.

Benefit of Phased Implementation of Programs:

Compared to starting a program at national scale from the beginning, phased implementation of a program gives managers the opportunity to identify and correct any issues with the functioning of the program before taking it to scale. Ideally, this results in a higher performing and more efficient program and monitoring system.

7.2 Sustainability of the Monitoring System

The project and monitoring system should be designed with sustainability in mind from the beginning. As a program enters the maintenance phase, sustainability is an important objective for both the project and the monitoring system. Throughout this manual, we have discussed many factors that can influence the sustainability of a monitoring system. Sustainability is more likely when there is careful planning and consideration of several key aspects of the monitoring system throughout the project life cycle:

- Human and financial resources that are dedicated to program monitoring.
  The ability to sustain monitoring activities throughout the life cycle of the project will depend upon whether or not sufficient financial and human resources have been committed to monitoring throughout the life of the project.
  - When seeking project funding, accurately estimate the cost of long-term project monitoring, and ensure that the proposed project budget accurately reflects these monitoring costs.
  - Project staff members (e.g. program managers at the MoH or NGO) should always be assigned the responsibility of managing the implementation of the monitoring system.

- Staff turnover and changing ownership of the project can result in gaps in the implementation of the monitoring system, and sometimes this can result in the monitoring system being abandoned altogether.
- The impact of staff turnover on the sustainability and quality of the monitoring system can be mitigated by maintaining and updating a comprehensive manual of operations for the system and institutionalizing regular training and refresher training.
- Budgeting for training and periodic refresher training of staff is critical to maintain continuity, quality and motivation.

▶ It is particularly important to consider resources dedicated to the monitoring system if the implementation of the project changes hands.
- For example, if the management and financing of the project shifts from an international NGO to the Ministry of Health:
  * Program administrators should consider how this will affect the resources available for monitoring, and whether adequate resources can be dedicated to continue the monitoring activities at current levels.
  * If resources for monitoring are more limited, it may be important to narrow the scope, focus or methods of the data collection activities so that monitoring can be sustained with the available resources.

• Level of commitment of program staff members to continue data collection activities.

If monitoring activities are complex, or require a considerable amount of time and effort, the program staff members' level of interest and motivation to continue data collection activities may diminish over time. This can be a barrier to the sustainability of the monitoring system.

▶ To support sustainability of the monitoring system, it may be necessary to find ways to continue to incentivize and motivate staff members to carry out their data collection tasks.

▶ It is useful to include monitoring activities as a major component of staff work plans, because this supports the institutionalization of monitoring activities and the accountability of staff members.

▶ If the data collection activities are overly burdensome for program staff, it may be useful to simplify the monitoring procedures so that motivation does not diminish in the latter stages of the program.

▶ It helps the motivation of monitoring staff when they feel that the data gathered through the monitoring system are useful and meet their information needs.

▶ Throughout the project, it is beneficial to periodically assess whether the monitoring data continue to be useful in identifying problems and improving project performance. Staff members will be more motivated to collect data that are informative and relevant.

• *The monitoring system should continue to meet the information needs of stakeholders for the life of the program.*

It is also beneficial to periodically assess whether the information needs of stakeholders have changed and whether the monitoring system meets current information needs.

▶ This enables the monitoring system to function more efficiently by only collecting information that stakeholders continue to need and use.

▶ When moving between program stages or transitioning the monitoring system from one agency to another, it is important to continue to meet the needs of all stakeholders and not only those of the agency implementing and managing the monitoring system.

▶ Enthusiastic stakeholders can be important advocates for the continued support of monitoring systems that meet their needs.

• *Planning for sustainability of monitoring from the beginning.*

Planning for the sustainability of the monitoring system should occur early on, when designing the system.

▶ While the performance indicators, data sources, and data collection methods may evolve as the program phases and objectives of the monitoring system change, when possible, it is useful to implement from the beginning data collection activities that can be sustained throughout the life cycle of the project.
- Additionally, having some degree of continuity in the data collection activities can help ensure that the project staff members are not overburdened by frequently changing monitoring procedures.

▶ Establishing data collection systems can require a significant investment of time and human and financial resources. Therefore, it is ideal to invest in data collection systems that can provide useful information during all program phases.

▶ Scalability and sustainability should be considered during all phases of monitoring system development or adaptation.

▶ A comprehensive monitoring plan – which includes a program description, logic model, logical framework, and indicator matrix, developed at the beginning of a project – should continue to be updated throughout the life cycle of the project, as needed, to reflect ongoing changes to the project and monitoring system.

• *Where the monitoring system is housed and transitioning institutionalization of the monitoring system to new agencies.*

The decision of where to house the monitoring system can have significant implications for the long-term sustainability of data collection, analysis, and reporting.

▶ Transferring the implementation of a monitoring system from one organization to another (e.g. from an NGO to the MoH) can be difficult and may lead to sustainability issues without adequate consideration of staff, resources, and the ability of the institution to maintain the system.

▶ When deciding where to house the monitoring system, it is useful to consider the longer-term plan for the management and financing of the program.
- If it is envisioned that the government will eventually take over these functions, it may be best to invest early in housing the monitoring system within the MoH, and building the capacity of MoH specialists to manage data collection and analysis activities for the life of the project.
- Securing agreement among the potential government or MoH departments on where the monitoring system should be housed can also be a challenge and capacity and sustainability should be discussed when negotiating these decisions.

• *Simplicity of data collection, analysis, and reporting procedures.*

As discussed throughout this manual, developing simple and useful monitoring indicators, and using simple, feasible procedures for the collection, analysis, and reporting of data will help ensure that the monitoring activities can be sustained for the duration of the project and are useful.

▶ Overly complex indicators, data collection or reporting procedures can be too costly to sustain, and can affect the motivation of staff to continue monitoring activities.

▶ In the early phases of the project, such as the pilot, it may be necessary to use data collection methods that require more time, money, and expertise to implement.
- However, as a project enters the maintenance phase, if major problems in the functioning of the program have been identified and corrected, simpler data collection methods, data management, and reporting procedures should be easier and less costly to sustain.
- If during the maintenance phase monitoring data suggests new problems are emerging, then activities should be expanded to understand and resolve these new problems.

▶ A detailed monitoring plan supports the implementation of a monitoring system and timely use of the information to improve program performance during all phases of the program implementation.
- Describing expected changes to the monitoring system during different phases of the project (related to available resources, data collection and management, and reporting and use of the data) supports the effective implementation and longer term sustainability of the monitoring system.

Key points from Chapter 7:

- Objectives of the monitoring system and scope of monitoring activities often vary by stage of the project.
- When designing the monitoring system for the pilot, keep in mind future plans to scale-up and consider what data sources and data collection methods are realistic and feasible for a monitoring system that will eventually be implemented across multiple regions or program sites.
- During the scale-up to new areas, at the beginning it may be important to plan for the collection of a broader scope of indicators and data collection activities in order to ensure that the program will still perform well when it is operating on a larger scale and in a new area. Once established and performing well, the scope and activities can potentially be narrowed.
- A comprehensive manual of procedures for all components of the monitoring system is useful to facilitate scale up to new regions and supports the institutionalization of the monitoring system and sustainability.
- Sustainability of the monitoring system is grounded in:
  - Planning for sustainability of the monitoring system from the beginning of the project
  - Sufficient human and financial resources dedicated to program monitoring throughout the project lifecycle
  - Planning for transitions in stages of the project, management, staff, and monitoring responsibilities
  - Staff commitment to monitoring activities
  - Meeting the needs of stakeholders throughout the project lifecycle
  - Careful attention to where the system is housed and prioritizing simplicity of all monitoring data collection activities and reporting

8 Summary of the Steps, Tasks and Tools to Develop a Monitoring System for Home Fortification Interventions

The previous chapters have reviewed the Steps in the CDC Framework (1) to develop and implement a monitoring system for interventions including home fortification strategies. Chapter 8 includes a Table summarizing the primary tasks to complete at each Step, as well as supportive tools. Examples and discussion of these tasks and Steps can be found in the chapters or appendices. The tools to be adapted or completed are found after the summary table and include worksheets[12], the WHO/CDC logic model (4), and templates of a logframe[13] and indicator matrix. Workgroups and stakeholders can photocopy these pages or reproduce/adapt the materials electronically to fit the needs and for ease of use for each project.

Steps	Tasks	Tools*
1. Engage stakeholders	Identify potential stakeholders: • Those involved in program operations and partners • Those served or affected by the program • Primary users of the monitoring results	Worksheet #1 (see p102)
	Assess stakeholder interest, needs, resources, and contributions.	
	Define which stakeholders will be involved in the planning, implementation, and analysis of monitoring data	
	Determine the most efficient and useful process for involving each stakeholder	
2. Describe the project	Describe the project including the: • Statement of need • Expected effects • Context • Stage of development • Resources • Activities	Worksheet #2 (see p103)
	Develop a logic model to describe how the home fortification project is supposed to work	Adapt the WHO/CDC logic model (Figure 4, see p106-107) to the project
	Develop a logical framework	Fill in the narrative summary (first column) and the risks & assumptions (last columns)of the logical framework (template, see p105)
3. Focus and design the monitoring system	Define the primary purpose of the monitoring system	Worksheet #3 (see p108)
	Identify the users of the monitoring system	
	Define the use of the data	
	Identify existing data collection systems	
	In addition to the internal monitoring system, consider whether an external monitoring system is needed	
	Determine the appropriate design of the monitoring system and source(s) of data	
4. Gather credible evidence	Use the logic model and logframe to develop monitoring indicators. For each potential indicator answer the following questions: • For whom is the indicator collected? • What will the person(s) do with the information? • How will the indicator be collected? • How often will the indicator be collected? • Who will compile and analyze the data? • Who will report the results to stakeholders and primary users of the monitoring system?	Fill in the performance indicators and means of verifications (two middle columns) of the logical framework (template, see p105)
	Develop an indicator matrix to describe how each indicator is defined and calculated, the data collection methods / sources of data, the frequency and timing of data collection, and the target	Fill in the indicator matrix (template, see p109) to provide more detail for each indicator
5. Justify conclusions, ensure use, and share lessons learned	Develop a comprehensive plan that outlines the protocol and procedures for managing, analyzing, and using the data once it is collected This ideally includes: • Assigning responsibility for analyzing and using the monitoring data • Developing a manual of operations with a detailed description of how the data will be managed and analyzed • Mapping out the various primary users of the monitoring system and developing a feedback loop to ensure the data are analyzed, reviewed, and acted upon in a timely manner • Describing the resources that are needed for each monitoring activity, and resources needed for each level of data management • Developing a plan for how monitoring results will be reported and disseminated to stakeholders and tailored to their needs • Defining a clear process to review and act upon the results	Worksheets 4 & 5 (see p110-111)
6. If the intention is to scale up, plan for the future scale-up and sustainability of the monitoring system	Plan and design for sustainability from the planning phase by: • Assessing the human and financial resources that are dedicated to program monitoring • Assessing the level of commitment of program staff members to continue data collection activities • Assessing whether the monitoring system continues to meet the information needs of stakeholders during the life of the program • Considering where the monitoring system is housed • Aiming for simplicity of data collection, analysis, and reporting procedures	Worksheet #6 (see p112)

[12]Worksheets are adapted from the CDC Physical Activity Evaluation Handbook (3).
[13]Adapted from the PSI logframe format (5). Used with permission.

Examples of these tools can be found in the chapters. Worksheets are adapted from the CDC Physical Activity Evaluation Handbook (3).

Worksheet 1: Engaging Stakeholders

1. Identify stakeholders

- List partners and those involved in program operations

- List those who are served or affected by the project

- List the decision makers for the program

- List the primary users of the monitoring results

2. Describe how you will assess your stakeholders' interests, needs, resources, and contributions throughout the planning process.

Worksheet 2: Describe the Project

1. Draft a statement of need that defines the problem that the home fortification project addresses and how the project will address this problem.

- What is the nature of the problem?

- What causes the problem?

- What are the consequences of the problem?

- Which populations are affected?

- What is the magnitude of the problem?

- What changes or trends are occurring?

- How will the program address the problem?

2. Describe the expected effects of the project and what the project must accomplish to be considered successful.

3. Describe the context and the setting and environmental factors (e.g., history, geography, politics, social and economic conditions) within which the project operates.

- Is the project linked to other programs or ongoing efforts?

- Would any contextual factors potentially influence the functioning of the project or ability to achieve objectives?

4. Describe the stage of development of the project (planning, implementation or maintenance).

5. Describe the resources available including the time, human resources, technology, equipment, information, money, infrastructure, and other assets available to implement the project.

Logical Framework Template[14]

Instructions: For Step 2. Fill in the Narrative Summary and the Assumptions & Risks columns.
For Step 4. Fill in the Performance Indicators and the Means of Verification columns. For each potential indicator consider the following questions:

- *For whom is the indicator collected?*
- *What will the person(s) do with the information?*
- *How will the indicator be collected?*
- *How often will the indicator be collected?*
- *Who will compile and analyze the data?*
- *Who will report the results to stakeholders and primary users of the monitoring system?*

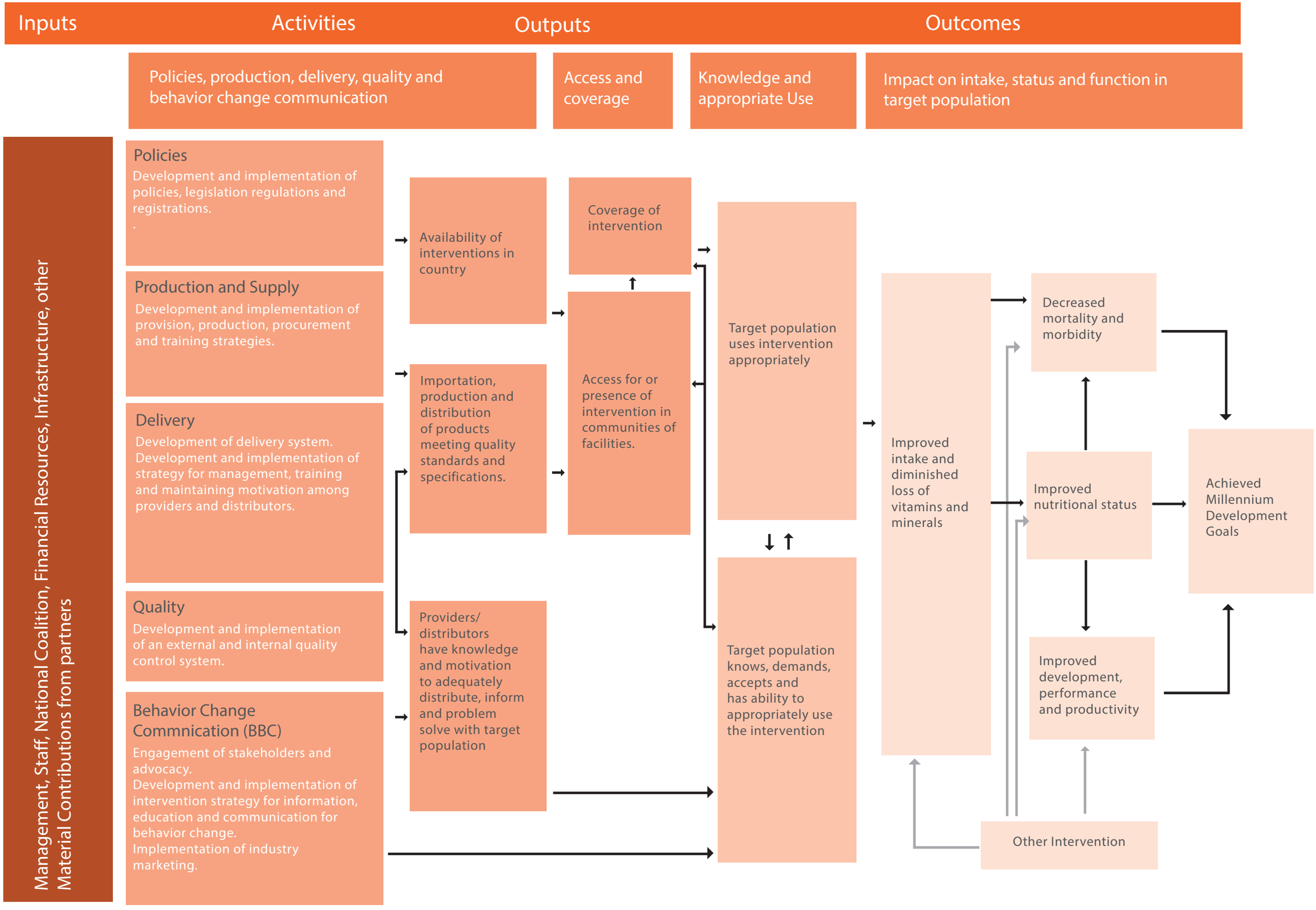
Add rows for additional purposes, outputs or activities as needed

Narrative summary	Performance Indicators	Means of Verification	Assumptions & Risks
Goal			
Purpose			
Output 1.1			
Activity 1.1			
Output 1.2			
Activity 1.2			
Output 1.3			
Activity 1.3			

[14] Adapted from the PSI logframe format (5). Used with permission

Figure 4 is a generic logic model that can be adapted to any micronutrient intervention in public health.

Figure 4. WHO/CDC logic model for micronutrient interventions in public health (4)



Worksheet 3: Focus and Design the Monitoring System

1. What is the primary purpose of the monitoring system?

2. Identify the users of the monitoring system.

3. Define the use of the data.

4. Identify the existing data collection systems.

5. In addition to the internal monitoring system, consider whether an external monitoring system is needed. Why or why not?

6. Describe the design (or potential design) of the monitoring system and source(s) of data.

Indicator Matrix Template

Instructions: For Step 4. Fill in the indicator matrix for each of the Performance Indicators in the logical framework. Add rows as needed.

Concept	Performance Indicator	Calculation of Indicator (Operational Definition)	Data Collection Methods / Data sources	Frequency and Timing of Collection	Target
Goal					
Purpose					
Output 1.1					
Activity 1.1					
Output 1.2					
Activity 1.2					
Output 1.3					
Activity 1.3					

Worksheet 4: Justify Conclusions and Data Management

1. Who will analyze the data and who will coordinate this effort? Define a realistic timeline to complete this task.

2. Who will assist with interpreting the data and writing up the analysis? Who will help judge whether the conclusions are credible and accurate? Define a realistic timeline to complete this task.

3. Who will develop a manual of operations with a detailed description of how the data will be managed and analyzed? Define a realistic timeline to complete this task.

4. Who will identify the resources that are needed for each monitoring activity, including the resources needed at each level of data management? Define a realistic timeline to complete this task.

5. Describe a process and timeline to periodically step back with stakeholders to carry out a reality check on the system. The purpose of the reality check will be to critically assess if the monitoring system is feasible, useful, and if anything needs to be revised. Make assignments for who will lead and participate in the reality checks.

Worksheet 5: Ensure Use, & Share Lessons Learned

1. Map out the various primary users of the monitoring system and describe the feedback loop to ensure the data are analyzed, reviewed and acted upon in a timely manner.

2. Define a clear process and timeline where individuals are accountable for reviewing and acting upon the results.

3. Identify who will develop the detailed plan for how monitoring results will be reported and disseminated to stakeholders and tailored to their needs. Define a realistic timeline to complete this task.

Worksheet 6: Planning for the Future, Scale-Up and Sustainability

1. Describe the human and financial resources currently dedicated to this project and/or projected to be available for the project.

2. Do a reality check

- Is this level of investment appropriate for scaling up?

- Are more or fewer resources needed to achieve project goals?

- Is this level of human and financial resources feasible and sustainable in the future?

3. How do staff feel about continuing to collect monitoring data and maintain the system?

4. Does the monitoring system still meet the needs of stakeholders?

- If not, what data and adjustments are needed

5. Is the monitoring system housed in the best location for effectiveness? For scaling up? For sustainability?

6. How can systems related to data collection, analysis or reporting be simplified or streamlined?

Appendices

Appendix 1: What is the difference between adherence and compliance?

Only the term *adherence* is used in this manual. The terms *adherence and compliance* are often used interchangeably to describe the degree to which participants consume a product (e.g., drug or supplement) or adhere to an intervention in accordance with the recommended use. While the terms are related, there are conceptual differences between the terms, and some of these differences vary by discipline or content area (e.g., clinical practice vs. public health vs. infectious disease vs. chronic disease vs. prevention). These differences between the terms are reflected in the frameworks used to support sustained use and adoption of interventions and how intervention staff conceptualize and approach adherence.

Use of the word *compliance* emerged decades ago as a term in the biomedical field to describe the degree to which patients obeyed physician instructions. The term emerged from a clinical setting but has also been widely used in public health and preventive settings. *Compliance* was criticized as reflecting an authoritarian power structure that expected patients to passively follow physician instructions, and where often patients were blamed for not obeying physician instructions (37).

Use of the term *adherence* emerged as a cultural shift to reframe the issue from a unidirectional, paternalistic (and often judgmental) paradigm to one that recognized that the patient is an active and powerful participant in the patient-provider dynamic. In *adherence* frameworks, and those that emerged since, use of the term adherence acknowledges that the participant and provider (or those delivering the intervention) have a more equal power relationship. In this approach, the participant is recognized as having the right to make an informed decision and chooses (or not) to adhere to the intervention, and the provider (or intervention) advises and supports adherence, as compared to expecting compliance. In these frameworks, there is recognition of and focused efforts to address the multi-faceted and multi-level individual, inter-personal and systematic factors that influence adherence, as well as the various dimensions of "adherence" that reflect complex and long term regimens (37,38). Behavior change strategies developed as part of intervention packages are grounded in these frameworks, which guide the design and implementation of the strategies. While adherence might be defined as a dichotomous indicator in some contexts, there are many dimensions of adherence and they usually cannot all be reflected in one indicator.

Limited-adherence is the norm and a significant, complex problem in both clinical and public health settings. This field has continued to evolve and other approaches and terms have also emerged (e.g., *concordance*, which often explicitly includes an (consensual) agreement between participant and provider about taking treatment), but none is perfect. Recent work in this area tends to center on shared responsibility between patient & provider (or participant and intervention), goal setting, and supporting patients/participants (37).

Appendix 2: Standards for Effective Monitoring Systems

Adapted from the CDC Framework for Program Evaluation in Public Health (1)

Box A: Utility Standards[1]

The following utility standards help a monitoring system to serve the information needs of intended users:

A. **Stakeholder identification**. Persons involved in or affected by the monitoring system should be identified so that their needs can be addressed.

B. **Credibility.** The persons involved in gathering monitoring data should be trustworthy and competent for findings to achieve maximum credibility and acceptance.

C. **Information scope and selection.** Information collected should address pertinent questions regarding the program and be responsive to the needs and interests of clients and other specified stakeholders. Monitoring should be planned, conducted, and reported in ways that encourage follow-through by stakeholders to increase the likelihood of the monitoring results being used.

D. **Values identification.** The perspectives, procedures, and rationale used to interpret the findings should be carefully described so that the bases for value judgments are clear.

E. **Report clarity.** Monitoring reports should clearly describe the program being monitored, including its context and the purposes, procedures, and findings of the monitoring so that essential information is provided and easily understood.

F. **Report timeliness and dissemination.** Substantial interim findings and monitoring reports should be disseminated to intended users so that they can be used in a timely fashion.

Box B: Feasibility Standards[1]

The following feasibility standards help a monitoring system to be realistic, prudent, diplomatic, and frugal:

A. **Practical procedures.** Monitoring procedures should be practical to keep disruption to a minimum and avoid overburdening staff members.

B. **Political viability.** During planning and conduct of monitoring activities, consideration should be given to the varied positions of interest groups so that their cooperation can be obtained and possible attempts by any group to curtail monitoring activities or to bias or misapply the results can be averted or counteracted.

C. **Cost-effectiveness.** The monitoring system should be efficient and produce valuable information to justify expended resources.

[1] The Program evaluation standards: how to assess evaluations of educational programs. Thousand Oaks, CA.: Joint Committee on Standards for Educational Evaluation. 1994.

Box C: Propriety Standards[1]

The following propriety standards help monitoring activities to be implemented legally, ethically, and with regard for the welfare of those involved in the monitoring as well as those affected by its results:

A. **Service orientation.** The monitoring should be designed to assist organizations in addressing and serving effectively the needs of the targeted participants.

B. **Formal agreements.** All principal parties involved in monitoring should agree in writing to their obligations (i.e., what is to be done, how, by whom, and when) so that each must adhere to the conditions of the agreement or renegotiate it.

C. **Rights of human subjects.** The monitoring activities should be designed and conducted in a manner that respects and protects the rights and welfare of human subjects.

D. **Human interactions.** Those conducting the monitoring activities should interact respectfully with other persons associated with the monitoring, so that participants are not threatened or harmed.

E. **Complete and fair assessment.** The monitoring should be complete and fair in its examination and recording of strengths and weaknesses of the program so that strengths can be enhanced and problem areas addressed.

F. **Disclosure of findings.** The principal parties involved in monitoring should ensure that the full findings with pertinent limitations are made accessible to the persons affected by the monitoring and any others with expressed legal rights to receive the results.

G. **Conflict of interest.** Conflict of interest should be handled openly and honestly so that the monitoring processes and results are not compromised.

H. **Fiscal responsibility.** The allocation and expenditure of resources should reflect sound accountability procedures by being prudent and ethically responsible, so that expenditures are accountable and appropriate.

1 Program evaluation standards: how to assess evaluations of educational programs. Thousand Oaks, CA.: Joint Committee on Standards for Educational Evaluation. 1994.

Box D: Accuracy Standards[1]

The following accuracy standards help monitoring activities to convey technically adequate information regarding the determining features of merit of the program:

A. **Program documentation.** The program being monitored should be documented clearly and accurately.

B. **Context analysis**. The context in which the program exists should be examined in enough detail to identify probable influences on the program.

C. **Described purposes and procedures.** The purposes and procedures of the monitoring should be described in enough detail to identify and assess them.

D. **Defensible information sources.** Sources of information used in program monitoring should be described in enough detail to assess the adequacy of the information.

E. **Valid information.** Information-gathering procedures should be developed and implemented to ensure a valid interpretation for the intended use.

F. **Reliable information.** Information-gathering procedures should be developed and implemented to ensure sufficiently reliable information for the intended use.

G. **Systematic information.** Information collected, processed, and reported during monitoring should be systematically reviewed and any errors corrected.

H. **Analysis of quantitative information.** Quantitative information should be analyzed appropriately and systematically so that monitoring questions are answered effectively.

I. **Analysis of qualitative information.** Qualitative information should be analyzed appropriately and systematically to answer monitoring questions effectively.

J. **Justified conclusions.** Conclusions reached should be explicitly justified for stakeholders' assessment.

K. **Impartial reporting**. Reporting procedures should guard against the distortion caused by personal feelings and biases of any party involved in the monitoring to reflect the findings fairly.

[1] Program evaluation standards: how to assess evaluations of educational programs. Thousand Oaks, CA.: Joint Committee on Standards for Educational Evaluation. 1994.

Appendix 3: Attributes of an Effective Surveillance System

From the CDC Updated Guidelines for Evaluating Public Health Surveillance Systems (2)

Simplicity – in order for a monitoring system to be accepted and implemented, the indicators, data collection procedures and tools, and methods for analyzing and interpreting the data, must be simple and easy to use. If overly complicated monitoring designs, tools, and procedures are developed, project staff and stakeholders may be unwilling or unable to implement and use the monitoring system. Staff members involved in implementing a home fortification project are typically very busy with the day-to-day operations of the project. The monitoring design and activities should be simple enough that they do not overburden busy staff members, as this may decrease their willingness and ability to complete the tasks associated with the monitoring system. To the extent that it is possible, monitoring activities and tools should be integrated with existing data collection procedures and tools (for example, existing data collection forms at local health clinics related to immunizations, community growth monitoring or antenatal care).

While the design for monitoring systems should be as simple as possible, in some cases, more complex designs are necessary in order to get the type of data that are needed to assess certain elements of the project. For some components of the project, a higher degree of precision in data collection may be needed for an accurate assessment or there may be no other way to collect certain types of information (e.g., adherence), and this can affect the complexity of the monitoring design. For example, in some instances the project may want to collect knowledge, attitudes and practices (coverage, adherence) data that are statistically representative of the target population by conducting a representative household survey. Such a design is a more complex form of monitoring, and potentially more time-consuming and costly, but may be necessary to ensure confidence that the results are an accurate reflection of the target population.

Flexibility – ideally the monitoring system should be sufficiently flexible so that it can be easily adapted to changing information needs or operating conditions with little additional time, personnel, or allocated funds. Data collection tools and procedures should be developed in a way that enables new indicators to be easily added. Also, project managers should be flexible in their approach to the monitoring system, and should review the functioning of the monitoring system periodically to determine what is and is not working well. If it is found that monitoring indicators, tools, or procedures are overly complicated for staff members to use, or the data collected are not useful, the monitoring system should be adapted.

Acceptability – a monitoring system must be acceptable to participants and project staff members in order for them to be willing to participate in the collection, analysis, and use of data. The acceptability of a monitoring system depends upon several other attributes: the relevance and usefulness of the information collected, the quality and credibility of data collected, the simplicity of the system and ease of implementation, and involvement of stakeholders in developing the system.

Representativeness – while data collection procedures for monitoring systems do not always necessitate sampling that is statistically representative of the target population, the data should be sufficiently representative of participants and intervention processes to be deemed credible and accurate. Sampling procedures for monitoring systems will depend upon the objectives of data collection, and may involve a tradeoff between rigor/precision, representativeness, and available time and resources.

Timeliness – a monitoring system should enable timely collection, analysis, and interpretation of data, so that the results can be fed back to and discussed with stakeholders, who can then make timely recommendations for project adjustments. Program monitoring data loses their value if they are not analyzed and acted upon in a timely manner. The ultimate goal of monitoring is to improve the functioning and performance of the project, and this necessitates efficient data processing, interpretation, and decision-making.

Stability – a monitoring system should be stable, which refers to its reliability (i.e., the ability to collect, manage, and provide data properly without failure) and availability (the ability to be operational when it is needed). One way that stability can be achieved is through the use of technology that is appropriate for field conditions. For example, automated collection, data entry, and processing of data using computers and database software may be the most efficient, but such a system may not be appropriate or stable in field situations where staff have poor computer skills, there are frequent electricity outages, or there is no internet connection. The choice of technology for a monitoring system should always be realistic and sustainable for the local field conditions and appropriate backup systems should be developed to manage potential technology failures.

Sustainability – monitoring is generally conducted on an ongoing basis, throughout the life cycle of the project. Therefore, one essential goal of the monitoring system should be sustainability. Factors contributing to the sustainability of a monitoring system include:

- It is deemed acceptable by users and stakeholders
- It is simple and easy to implement
- The data collected are credible and useful for making programmatic decisions
- It is cost-effective
- It uses technology that is appropriate for the setting
- It is integrated into existing monitoring systems

Appendix 4: Brief discussion of the components of a program description and example text based on the fictional integrated IYCF/MNP program for young children 6-23 months of age

A program description for a home fortification program usually covers seven topics pertaining to the program: statement of need, expected effects, context, stage of development, resources, activities, and logic model. The example below illustrates the seven components of a program description using examples from a fictional integrated project to improve IYCF and distribute MNP to children 6-23 months of age.

Statement of Need

A statement of need defines the problem that the home fortification project addresses and describes how the project will address this problem. When developing the statement of need, it may be useful to review existing government or NGO data, background and assessment reports, or situation analyses, such as recent national health and nutrition surveys (e.g., the Demographic and Health Survey, Multiple Indicator Cluster Survey, or Living Standards Measurement Survey). Asking the following questions can help define the problem and the need for the program. *(Example answers to these questions are provided as a reference. These brief examples were developed based on the fictitious integrated IYCF/MNP project; however, an actual statement of need would likely be more detailed and context specific.)*

Q: What is the nature of the problem?
A: The 2008 National Nutrition Survey demonstrated that 69% of children 6-23 months of age consumed only cereal-based foods in the 24 hours before the survey, only 14% consumed a food rich in vitamin A and 17% consumed any animal based food product. In this country, young children suffer from nutrient insufficiency because the complementary foods that are affordable and available for families are usually poor quality and inadequate to meet the growth and development needs of young children. The majority of families have access to an adequate amount of food, so children are able to obtain sufficient calories. However, the majority of children 6-23 months of age receive insufficient micronutrients and high-quality protein, due to the consumption of foods with low nutritional value. This nutritional insufficiency is exacerbated by the common occurrence of infectious diseases, with helminth infection particularly prevalent in this population.

Q: What causes the problem?
A: In this country, 48% of families face household food insecurity, and are not able to afford high quality, protein-rich or micronutrient-rich foods (National Nutrition Survey, 2008). Meat, eggs, fruits, vegetables, and fortified complementary foods are often unaffordable or inaccessible for these families.

Q: What are the consequences of the problem?
A: Insufficient nutrition (including inadequate calories, protein, or micronutrients) can have a detrimental effect on the health, growth, and development of young children. Inadequate nutrition can lead to improper growth, characterized by stunting, wasting, or underweight. It can also lead to micronutrient deficiencies (i.e. iron, vitamin A, and zinc deficiencies),

which are associated with a range of problems, including impaired immunity, vision problems, and impaired cognitive development. These health and development consequences of poor nutrition can have a lasting impact on the child's health, educational attainment, and productivity in adulthood, which has implications for the human development and economic productivity of the nation.

Q: Which populations are affected?
A: The consequences of poor nutrition are pronounced among children 0-23 months of age, as this is a period of rapid growth and development, and therefore is a period characterized by high nutritional needs. During this period of rapid growth and increased nutritional needs, children 6-23 months of age are at the greatest risk of developing iron deficiency anemia and stunted growth.

Q: What is the magnitude of the problem?
A: In this country, initiation of breastfeeding and continued breastfeeding at 12 and 24 months of age are all above 85%. Less than 50% of children 6-23 months of age consumed the minimum dietary diversity or minimum acceptable diet the previous day. Similarly, only 60% of children 6-23 months of age consumed the minimum meal frequency. Nationwide, 40% of children 6-23 months of age have iron deficiency. Among children 6-23 months, the prevalence of growth stunting is 45%, the prevalence of wasting is 5%, and the prevalence of underweight is 15%.

Q: What changes or trends are occurring?
A: There has been no improvement over the last decade in the prevalence of anemia among children 6-36 months. Additionally, recent regionally representative surveys indicate that anemia may be worsening in certain regions of the country.

Q: How will the program address this problem?
A: The integrated IYCF/MNP project will improve the nutritional value of complementary foods prepared in the home and quality of the diet by implementing a strategy to support improved IYCF practices, including the use of MNPs. The strategy includes clinic counseling and support, peer-to-peer counseling and modeling, community outreach activities to caretakers, and mass communication. The intervention package focuses on using locally available and affordable foods to improve infant and young child feeding practices, and emphasizes increasing dietary diversity and meal frequency. Caretakers will also receive 60 MNP sachets every six months to give target children; the sachets are easy-to-use and can be mixed with foods to fortify them with one daily requirement of essential micronutrients.

Expected Effects (program outputs and outcomes)

The description of expectations outlines what the program must accomplish to be considered successful (i.e., program effects), and organizes this information by specificity of the outcome (i.e. broad or long-term outcomes versus specific or immediate outcomes).

Goal: The overall goal of the project is to improve the nutritional status of children 6-23 months of age, and thereby enhance their health, physical and cognitive development, educational attainment, and future productivity.

Purposes:
- Caretakers improved IYCF practices and fortified complementary foods prepared in the home.
- Coverage of IYCF strategies and MNP among caretakers increased.

Outputs:
- Access to behavior change communication (BCC), IYCF supportive strategies, and MNP in communities increased
- Ensured availability of MNP in country
- Ensured imported and distributed MNPs meet quality standards and specifications
- Intervention staff (providers and volunteers) knowledge and motivation to adequately distribute MNP, deliver IYCF and MNP BCC and problem solve with caretakers increased

Context

A description of the project's context would include the setting and environmental influences (e.g., history, geography, politics, social and economic conditions) within which the project operates, as these factors can affect the functioning of the project and the likelihood that the project will achieve the predefined objectives. It could also include a description of how the project is linked to other programs or ongoing efforts, as other initiatives with similar missions can contribute to the achievement of the broader goal. Following are examples of statements that could be included in the context section of the program description:

- The economic conditions in the country have been slowly deteriorating since 1991, when the country gained independence. Household food insecurity and the percentage of families living below the poverty line have steadily risen in the last two decades with 48% of households' food insecure during the 2008 National Nutrition Survey.

- The health system infrastructure has also been deteriorating since the country gained independence. The government frequently does not have sufficient funds to pay the salaries of primary health care providers, and staffing at primary care clinics continues to be inadequate. In the last year, 93 clinics shut down due to lack of funds for staff salaries and lack of medical supplies.

- The political stability of the country has worsened over the past two years, since the military coup in 2009. The political instability has had profound effects, including: staff turnover at various ministries (including the Ministry of Health), insufficient budgetary funds for the provision of public services (including health care and education), lack of maintenance of roads and infrastructure in the country, and customs and border control problems.

- Our program, which focuses on implementing a strategy to support improved IYCF practices and the use of MNPs, fits within the larger national nutrition policy and specifically the Infant and Young Child Feeding Strategy. The Ministry of Health, international agencies, and several NGOs are implementing nutrition programs, including: household food security initiatives, vitamin A capsule distribution, flour fortification, and interventions supporting improved IYCF practices.

Stage of Development

There are generally three program stages: planning, implementation, and maintenance. The planning phase can be defined as the project development stage, during which project stakeholders are conducting all activities that are necessary to prepare for project implementation. For example, these activities may include carrying out a needs assessment and situational analysis, agreeing upon program objectives with stakeholders, designing the intervention and monitoring and evaluation plans, and conducting feasibility and / or acceptability testing (including pre-testing of messages and communications materials, and small-scale testing of the intervention among potential program participants in their homes in order to understand everyday experiences with the intervention to improve the intervention package).

The implementation phase is the early to middle stages of project implementation, which includes the pilot testing phase (including piloting the monitoring system) before taking the project to scale. During the implementation phase, project managers are generally devoting a great deal of time to assessing what aspects of the project are and are not working well, and making adjustments to improve the functioning of the project. The focus of this phase is correcting any problems in the system.

During the maintenance phase, the project has been operating for a while, and ideally problems in the design or functioning of the project have been corrected by this stage. If issues in the performance of the project have been corrected by this phase, the focus shifts to maintaining a high level of performance for the long-term and potentially scaling up the intervention to new sites or regions. It is important to continue monitoring during the maintenance phase in order to identify new or emerging issues that require attention. Additionally, positive monitoring results and recognition of good performance may be an important means of maintaining staff and stakeholder motivation.

As a project is rolled out, the various geographic areas of project implementation will be in different stages. When the project is scaled up

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and expanded to new regions, the pilot area may transition into the maintenance stage. The new areas, to which the project has been scaled up, are implementing a project that is new for those regions, and therefore, they are in the implementation phase (as opposed to the maintenance phase of the original pilot region).

For the example IYCF/MNP project:
This project is in the implementation phase and has just completed the first year of national level scale up. The emphasis of monitoring activities and management is to assess what aspects of the project are and are not working well, and make adjustments to improve the functioning of the project with a focus on correcting any problems in the system.

Resources

A description of resources would include the time, human resources, technology, equipment, information, money, infrastructure, and other assets available to implement project activities. Following are examples of statements that could be included in the resources section of the program description for an integrated IYCF/MNP project with routine distribution of MNP through government health clinics:

Funding

- $14.5 million in donor funding has been secured to support project implementation for four years, with a commitment from the national government to co-finance and cover 50% of program expenses for years 3 and 4 of the program.

Physical Infrastructure

- 500 governmental health clinics participating in the distribution of MNP and counseling on improved IYCF practices and MNP use.

Staff

- Dedicated project staff include: administrators at the headquarters and field office levels, two project managers in the NGO field office, fifteen project coordinators throughout the five regions where the program is being implemented, one M&E specialist in the field office, one procurement and logistics specialist, and government in-kind support of over one thousand government health care providers and community health volunteers trained by the project.

Technical Assistance

- National Nutrition Advisory Committee comprised of stakeholders from the National Micronutrient Task Force, the intersectoral nutrition cluster, and the IYCF/MNP project technical advisory workgroup

Intervention Package, Materials, and Supplies

- The MNP has been procured in an amount sufficient to cover the target population 6-23 months for two years. Funding has been secured to cover procurement for years 3 and 4 of the project.
- Behavior change communication strategy including materials (leaflets, flip charts, posters, testimonials, radio spots, jingles, calendars, billboards) have been developed, and a supply has been printed to cover the entire target population for this project.
- Training curricula have been developed for primary health care providers and community volunteers who will be involved in project implementation.

Activities

The explanation of project activities describes what the project does to affect change, including specific steps, strategies, and actions that are laid out in logical sequence. It describes how each project activity relates to another and highlights the program's hypothesized mechanism or theory of change (by stating why it is believed that project activities will lead to expected changes). When describing the mechanisms and theory of change, it is important to identify facilitators and barriers that might influence the practical ability to carry out activities and achieve expected changes so that these can be adequately managed during implementation. Facilitators and barriers might only become known at the local level after starting early implementation, but this information is crucial and should be kept updated so that it is taken into account when projects expand or make revisions. The explanation of project activities can be thought of as a narrative containing a detailed description of the project logic model (which is discussed in chapter 3).

For the example IYCF/MNP project:
The activities to develop and implement the IYCF/MNP project include policy development and approval; securing the production and supply of all products and materials necessary to implement the intervention; delivery and distribution of the intervention package; internal and external quality assurance; and development and implementation of the behavior change component of the intervention package. The activities are outlined in the logic model presented in Figure 2 of chapter 3 and the logframe in Appendix 5. A narrative text can also accompany these documents.

Logic model

The program description can include a logic model, which is a visual depiction of the core components of the project that maps the relationships between program resources, activities that will take place, and outputs and outcomes that may result. Logic models are discussed in detail in chapter 3, including Figure 2 of Chapter 3 which presents an example of a fictional logic model for an integrated project focusing on strategies to support improved IYCF practices, including the use of MNPs. A generic logic model for micronutrient interventions that can be adapted to a home fortification intervention is also presented in Figure 4 of Chapter 8.

Appendix 5: An example of a logical framework for the fictional integrated IYCF/MNP program for young children 6-23 months of age, 2011-2015

Narrative summary	Performance Indicators[a]	Means of Verification[b]	Assumptions & Risks
Goal			
Improved nutritional status among children 6-23 months of age by 2015	1. Prevalence of anemia in children 6-23 months reduced from 70% to 40% 2. Prevalence of stunting in children aged 6-23 months reduced from 45% to 37%	1-2. Baseline source: DHS 2010[c] 1-2. Follow up source: DHS 2015	• Funding commitment remains stable
Purposes			
1. Caretakers improved IYCF practices and fortified complementary foods prepared in the home 2. Coverage of IYCF strategies & MNP among caretakers increased	1. Minimum meal frequency for children 6-23 months Target: increase 25% (percentage points, PP) from baseline 2. Minimum dietary diversity for children 6-23 months Target: increase 25% (PP) from baseline 3. Minimum acceptable diet for children 6-23 months Target: increase 25% (PP) from baseline 4. Appropriate use of MNPs Target: 75% of caretakers report giving child 60 MNP sachets for last distribution Target: Among children who received sachets > 60 days ago, ≤ 25% households with observed unopened sachets each survey 5. Adequate knowledge among mothers of key IYCF messages included in the BCC strategy Target: increase 35% (PP) from baseline 6. Mothers aware of key benefits of MNPs Target: 90% each survey Targets:	1-3, & 5. Baseline source: DHS 2010 1-9. DHS 2015 1-7. Annual external monitoring survey 8-9. MoH MIS & annual external monitoring survey	• Intervention continues to focus on priority IYCF indicators. Other key IYCF indicator % remains high and adequate. If the other key IYCF indicators performance declines, then the emphasis of the IYCF component might need to be revised.
Goal			
	7. Mothers knowledgeable of correct and appropriate use of MNPs Target: 90% each survey 8. Coverage target of IYCF counseling among caretakers of children 6-23 months - 90% of caretakers receive home visit from community health volunteers who provide counseling and information on IYCF practices every six months -90% of caretakers receive counseling at the health clinic on improving IYCF practices every six months 9.Coverage target of MNP distribution for children 6-23 months every six months Targets: - 90% received ≥ 1 package of 60 MNP - 80% received ≥ 2 packages of 60 MNP - 70% received all 3 packages of 60 MNP		
Output 1.1			
Increased access to behavior change communication (BCC), IYCF supportive strategies, & MNP in communities	1. Government agrees to include MNP in MoH delivery system 2. Appropriate levels of MNP supply received at each level of the health care distribution system 3. Minimum of 1 trained provider in each community level clinic 4. Minimum of 1 trained volunteer in each zone (lowest administrative level)	1. MoH letter directing addition of MNP to MoH delivery system product list 2. MoH MIS 3. MoH documentation of staff training 4. MoH documentation of volunteer training	

Appendix 5: *(continued)* An example of a logical framework for the fictional integrated IYCF/MNP program for young children 6-23 months of age, 2011-2015

Narrative summary	Performance Indicators[a]	Means of Verification[b]	Assumptions & Risks
Activities 1.1			
Intervention package delivered in communities according to national plans	1. Addition of MNP into MoH delivery system recording system 2. MNP receipts from the MoH stores/warehouses throughout country show appropriate level of MNP stock every quarter Target: 90% of stores/warehouses 3. Social mobilization & orientation meetings of key stakeholders and community groups per administrative level every 6 months achieved Target: 2 meetings per month per level 4. 250 radio messages on air per station per administrative level per month 5. MNPs promoted in accordance with the national code for infant and young child nutrition 6. BCC strategy developed, including materials 7. Formative data collection to develop BCC strategy and materials 8. Receipts from the MoH stores / warehouses throughout country show appropriate level of IYCF / MNP leaflets in stock every quarter	1. Health facility stock books include row for MNP 2. MoH MIS supply reports 3. Office records 4. Radio contract on file 5. Office records 6. Strategy document on file. Materials developed 7. Reports of data collection 8.MoH MIS supply reports	• International manufacturer delivers procured MNP per contract agreement • MoH delivery system functions effectively and adequate supply is available where expected and needed • All families have access to radios, volunteers and health facilities
Output 1.2			
MNP available in country according to national plans	1. Adequate supply of MNP received at central warehouse	1. Government delivery certificates show quantity of MNP received in country	

Narrative summary	Performance Indicators [a]	Means of Verification[b]	Assumptions & Risks
Activities 1.2			
MNP supply ensured through appropriate policies and procurement	1. IYCF National Plan of Action revised to integrate MNP strategy 2. MNP component of the intervention is in accordance with the National Plan of Action for infant and young child feeding 3. Government designates MNP as food, pharma, or supplement 4. Government determination of MNP formulation approved 5. Government determines MNP regimen 6. Adequate supply of MNP procured annually	1. Revised Integrated IYCF/MNP National Plan of Action on file 2. Ruling by Government expert committee on file. Monitoring records of implementation 3. Designation on file 4. Determination on file 5. Determination on file 6. Signed letter/contract	Stakeholders engaged and committed
Output 1.3			
Imported and distributed MNPs meet quality standards & specifications	1. Monitoring plan integrated into government supervision structure, where appropriate 2. Quality assurance ensures imported MNPs meet quality standards every shipment (batch) 3. MNPs stored in appropriate conditions at all storage and distribution points based on HFTAG specifications	1. Integration complete 2. Government issued certificates of compliance on file 3. Monitoring reports	
Activities 1.3			
MNP monitoring plan developed & implemented	1. Internal monitoring plan developed	1. Monitoring plan on file 2. New systems established	

Appendix 5: *(continued)* An example of a logical framework for the fictional integrated IYCF/MNP program for young children 6-23 months of age, 2011-2015

Narrative summary	Performance Indicators[a]	Means of Verification[b]	Assumptions & Risks
Activities 1.3			
	2. New systems created where necessary to implement monitoring plan 3. MNP added into government systems to review quality assurance of imported products 4. Facilities adopt appropriate storage procedures for MNPs based on HFTAG specifications	3. MNP added to forms and procedures 4. Monitoring reports	
Output 1.4			
Intervention staff (providers & volunteers) trained to have knowledge & motivation to adequately distribute MNP, deliver IYCF & MNP BCC, & problem solve with caretakers	1. Providers and volunteers have adequate knowledge & skills on IYCF counseling Target: 75% each for providers & volunteers 2. Providers and volunteers have adequate knowledge & skills on MNP distribution & counseling Target: 75% each for providers & volunteers	1-2. Training check-lists of participant knowledge and skills and training reports. 1-2. Supportive supervision visits with checklists	• Providers, volunteers and management are supportive of intervention and interested in training/ orientations • Supportive supervision visits focus on improving quality and are not punitive
Activities 1.4			
Capacity building materials developed and trainings and orientations implemented	1. Training materials and refresher training materials developed 2. Training of trainers completed 3. Training and orientations completed with new staff every six months Target: 90% of providers, volunteers, health facility management	1. Materials printed 2. Training reports 3. Meeting minutes 4. Meeting minutes 5. MoH MIS supply reports	• Ongoing funding exists to support refresher trainings. • New staff are easily identified and trained
Activities 1.4			
	4. Refresher trainings and orientations completed annually with existing staff – Target 90% of providers, volunteers, health facility management 5. Receipts from MoH stores / warehouses throughout country show appropriate levels of training and refresher training materials in stock every quarter 6. Incentive system implemented to support volunteer motivation over time 7. Performance recognition and incentives distributed to support volunteer motivation	6. Office records 7. Office records	

a Indicators or indicator titles. See Appendix 7 Indicator Matrix for the complete calculation of each indicator.
b Some indicators are collected and reported using more than one source, for example in Purposes 1 and 2. Keep in mind data from different sources might not be comparable to each other, or may have different strengths or weaknesses. Additional sources of data for an indicator might help verify or validate the data collected and may be reasonable to consider including in the monitoring plan for high priority indicators.
c The DHS takes place every five years and reports these indicators. If the DHS was not already collecting and reporting this information, then these indicators from this source would not be included in the monitoring plan

Appendix 6: Example micronutrient powder (MNP) questions for a survey with mothers/ caretakers of eligible children focused on knowledge, attitude, practices, and experiences

Notes:

- The first column describes the measurement focus of the question in that row, which is not normally included in a questionnaire.
- Replace <MNP Name> with local name for MNP
- Community health worker = CHW
- Questions included as examples and must be adapted for each data collection system and programmatic context. Local needs and appropriate length of survey may vary considerably.

Measurement of	No	Questions and Filters	Coding Categories	Skip
Awareness	1.	Have you ever heard of <MNP Name>? **(Show sample sachet)**	Yes.....1 No.....2 Don't know.....98 Refuse to answer.....77	} Next section
Knowledge	2.	What is <MNP Name>? **(Multiple answers possible)**	Sachet of vitamins and minerals.....1 Something added to the food of young children.....2 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	
Knowledge	3.	At what age should you start giving a child <MNP Name>	Month (Completed)..... ☐☐ Others (Specify)..... 96 Refuse to answer..... 77	
Knowledge	4.	At what age does a child no longer need to take <MNP Name>?	After 23 months/2 years completed.....1 Before 2 years .....2 Other (Specify).....96 Don't know.....98 Refuse to answer.....77	
Knowledge	5.	How many sachets of <MNP Name> should a child consume in a day?	1 sachet a day.....1 More than 1 sachet a day.....2 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	
Knowledge	6.	To what size/portion of food should <MNP Name> be added?	Small portion a child can eat all of.....1 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	
Knowledge	7.	Should <MNP Name> be added to food that is cooking or hot	Yes.....1 No.....2 Don't know.....98 Refuse to answer.....77	
Knowledge	8.	One sachet of <MNP Name> is meant for how many children?	One child.....1 More than one child.....2 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	
Knowledge	9.	Should <MNP Name> be added to liquids?	Yes.....1 No.....2 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	
Knowledge	10.	What are the benefits of using <MNP Name>? **(Multiple answers possible)**	No benefits.....1 Increased appetite.....2 Increased energy and activity.....3 Mental development/ Make child clever/smarter.....4 Increased immunity (less sick).....5 Make child healthy.....6 Make child stronger.....7 Physical growth.....8 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	
Opinion	11.	Who needs to know about <MNP Name> in order to give <MNP Name> to the young children? **(Multiple answers possible)**	Mother of child.....1 Father of child.....2 Mother-in-law (of mother).....3 Father-in-law (of mother).....4 Mother (of mother).....5 Father (of mother).....6 Other family members.....7 Friends.....8 Community leaders.....9 Lay community health workers.....10 Staff at health facilities.....11 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	
Knowledge	12.	To what types of food should <MNP Name> be added? **(Multiple answers possible)**	Soft foods (not specified).....1 Porridge..... 2 Mashed rice and sauce.....3 Liquids.....4 Solid foods.....5 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	

Measurement of	No	Questions and Filters	Coding Categories	Skip
Knowledge	13.	Within what time after adding <MNP Name> to food should it be fed to the child?	Feed immediately.....1 Feed within 30 minutes.....2 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	
Coverage	14.	Did you get <MNP Name> sachets for your child (Name)?	Yes.....1 → No.....2 Don't know..... .....98 Refuse to answer.....77	16
Barriers to MNP coverage	15.	Why did you not get <MNP Name> sachets for your child (Name)? **(Multiple answers possible)**	I did not know I was supposed to get <MNP Name> for my child.....1 My child does not need <MNP Name>.....2 I heard <MNP Name> causes side effects (e.g., stool changes, nausea).....3 I do not know enough about <MNP Name>..... 4 My family does not want me to give <MNP Name> to my child.....5 I do not know where to get <MNP Name>.....6 I lack transportation to the health facility / CHW house.....7 The health facility/ CHW is not accessible.....8 Stock out at the health facility /CHW when I went to get <MNPName>.....9 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	23
Barriers to MNP coverage	16.	**The last time** you got <MNP Name> sachets, how much time did it take you to pick up the sachets from the time you left your house until you returned home? **(Write in minutes if it took less than one hour)**	Minutes ☐☐ Hours ☐☐ Don't know.....98	
Coverage	17.	How many times have you ever gotten <MNP Name> sachets for the child (Name)?	1 time.....1 2 times.....2 3 times.....3 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	
Coverage	18.	How long ago was the **last time** you got <MNP Name> sachets for the child (Name)? **(Write in days if it is less than a week, write in weeks if less than a month, otherwise write in months)**	Days..... ☐☐ Weeks..... ☐☐ Months..... ☐☐ Don't know..... 98	
Check question # 18: If they only got <MNP Name> one time then skip questions #19 & #20 and go to question #21. If the child received two or three batches of <MNP Name>, then go to question #19.				
Strategies to support MNP coverage	19.	Did anyone remind you to go back and pick up the next batch of <MNP Name> sachets for the child (Name)?	Yes.....1 No.....2 Don't know.....98	21
Strategies to support MNP coverage	20.	Who reminded you to go back and pick up the next batch of <MNP Name> sachets for the child (Name)? (Multiple answers possible)	CHW.....1 Health facility staff.....2 Family member.....3 Friend/Neighbour.....4 Others (Specify).....96 Don't know.....98	
Fidelity of program implementation	21.	The last time you got <MNP Name>, how many sachets of <MNP Name> were you given for the child (Name)?	60 sachets (2 boxes).....1 30 sachets (1 box).....2 Other (Specify).....96 Don't know.....98 Refuse to answer.....77	
Coverage	22.	The last time you got <MNP Name>, where did you get the <MNP Name> sachets?	CHW.....1 Health Facility.....2 Health Facility outreach clinic /EPI clinic.....3 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	
Attitude & Barriers to coverage	23.	Do you think <MNP Name> is easily accessible to you?	Yes.....1 No.....2 Don't know.....98 Refuse to answer.....77	

Measurement of	No	Questions and Filters	Coding Categories	Skip
Attitude & Barriers to coverage	24.	From where would you prefer to get <MNP Name> sachets? **(Multiple answers possible)**	CHW.....1 Health Facility.....2 Outreach clinic/EPI clinic.....3 During Biannual Vitamin A distribution campaign days.....4 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	
Exposure to intervention components & Fidelity of program implementation	25.	Did a health facility staff ever give you information/education about <MNP Name>?	Yes.....1 No.....2 Don't know.....98 Refuse to answer.....77	
Exposure to intervention components & Fidelity of program	26.	Have you received information about <MNP Name> by attending a community meeting led by a CHW?	Yes.....1 No.....2 Don't know.....98 Refuse to answer.....77	
Exposure to intervention components & Fidelity of program implementation	27.	Have you ever been given a <MNP Name> leaflet **(Show the leaflet)**	Yes.....1 No.....2 Don't know.....98 Refuse to answer.....77	} 29
Exposure to intervention components & Fidelity of program implementation	28.	If yes, may I see the leaflet please? **(Observe the date documented on the leaflet and write the date)**	Date of <MNP Name> receipt on front of: _____ DD MM YY 99/99/99 if left blank No leaflet shown.....0	
Exposure to intervention components	29.	Have you ever heard a radio announcement about <MNP Name>?	Yes.....1 No.....2 Don't know.....98 Refuse to answer.....77	} 32
Exposure to intervention components	30.	Did you hear the <MNP Name> radio announcement yesterday?	Yes.....1 No.....2 Don't know.....98 Refuse to answer.....77	
Exposure to intervention components & recall of main messages	31.	What did the radio announcement say? **(Multiple answers possible)**	<MNP Name> is for brain development.....1 <MNP Name> makes child active/strong....2 <MNP Name> increases appetite.....3 <MNP Name> reduces anemia.....4 <MNP Name> is for free.....5 <MNP Name> is for children 6-23 months..6 <MNP Name> is available from CHW and health facilities..... 7 <MNP Name> contains vitamins and minerals.....8	
			Others (Specify).....96 Don't know.....98 Refuse to answer.....77	
Adherence	32.	Has the child (Name) ever consumed <MNP Name>?	Yes.....1 No.....2 Don't know.....98 Refuse to answer.....77	} 38
Adherence	33.	From the **last batch** of <MNP Name> sachets received, has the child (Name) consumed any of them?	Yes.....1 No.....2 Don't know.....98 Refuse to answer.....77	} 35
Adherence	34.	From the **last batch**, how many of the <MNP Name> sachets did the child (Name) consume?	Number of sachets consumed..... □□ Don't know.....98 Refuse to answer.....77	If no sachets consumed, correct #33 go to 35
Opinion, experience	35.	Did the child (Name) like <MNP Name>?	Yes, likes <MNP Name>.....1 No, does not like <MNP Name>.....2 Child does not know <MNP Name> is in food.....3 I do not know if child likes <MNP Name> .....4 Refuse to answer.....77	
Motivators of adherence	36.	What were the positive effects after using <MNP Name>? **(Multiple answers possible)**	Increased appetite.....1 Increased energy and activity.....2 Mental development/Make child clever/smarter.....3 Increased immunity (less sick).....4 Make child healthy.....5 Make child stronger.....6 Physical growth.....7 No positive effects.....8 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	
Barriers to adherence	37.	What were the negative effects after using <MNP Name>? **(Multiple answers possible)**	Black stool.....1 Loose stool.....2 Constipation.....3 Vomiting.....4 Nausea.....5 No negative effects.....6 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	

Measure-ment of	No	Questions and Filters	Coding Categories	Skip
Barriers to adherence	38.	What are the barriers to give 60 sachets of <MNP Name> to the child? **(Multiple answers possible)**	None.....1 Need to put in small quantity of food.....2 Causes loose stools.....3 Cause dark (black) stools.....4 Causes vomiting.....5 Child rejects food/dislikes taste.....6 Need to share with other children.....7 Difficult preparation.....8 Difficult to remember to use.....9 Don't trust <MNP Name> .....10 I don't know enough about <MNP Name> .....11 Increased appetite is a problem.....12 Family doesn't support use of <MNP Name>.....13 Stock out at health facility or CHW.....14 CHW not available when I went to get it or heath facility closed.....15 Other (Specify).....96 Don't know.....98 Refuse to answer.....77	
Barriers to adherence	39.	Did you feel pressure to share <MNP Name> with children other than this child (Name)?	Yes.....1 No.....2 Don't know.....98 Refuse to answer.....77	
Adherence	40.	Please show me any <MNP Name> sachets you have in your house right now. **(Observe)**	No. of unopened sachets..... ☐☐ Don't know.....98 Refuse to answer.....77	
Check responses to questions #34 & #40: If the response for question #34 is "60 sachets" and question #40 is "0 sachets", then go to #41. Otherwise, go to question #42.				
Strategies to support high adherence	41.	From the last batch of <MNP Name> sachets received, please describe the supports and motivations that helped you give all 60 sachets to the child (Name)? (Multiple answers possible)	Increased appetite.....1 Increased energy and activity.....2 Mental development/make child clever/smarter .....3 Increased immunity (less sick).....4 Make child healthy.....5 Make child stronger.....6 Physical growth.....7 Child did not experience side effects..8 Child liked <MNP Name>.....9 Support from husband.....10 Support from mother-in-law.....11 Support from friends/neighbors.....12 Support from FCHV.....13 Support from HF staff.....14 Others (Specify).....96	end of quest-ions

Measurement of	No	Questions and Filters	Coding Categories	Skip
			Don't know.....98 Refuse to answer.....77	end of quest-ions
Strategies to support adherence	42.	From the **last batch** of <MNP Name> sachets, why did you not give all 60 sachets of <MNP Name> to the child (Name)? **(Multiple answers possible)**	Need to share with other children.....1 My child does not need <MNP Name> .....2 I'm lazy and just didn't give them all.....3 Forgot to give them.....4 Difficult preparation.....5 Don't trust <MNP Name>.....6 I don't know enough about <MNP Name>.....7 Causes loose stools.....8 Cause vomiting.....9 Child had illness (not side effect of <MNP Name> use) that caused me to stop giving <MNP Name>..10 Increased appetite is a problem.....11 Child rejects food with <MNP Name>.....12 Family members (husband, mother-in-law) don't support use of <MNP Name> .....13 Stock out at health facility or CHW, not available when I went to get it.....14 Change in my routine caused me to stop giving (e.g., travel, sickness).....15 Had received <MNP Name> less than 60 days ago .....16 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	
Strategies to support adherence	43.	What would help to support or motivate you to start or continue giving <MNP Name> to the child (Name)? **(Multiple answers possible)**	Observing positive effects in other children.....1 Approval from my husband or family.....2 My child not rejecting the food with <MNP Name>....3 Information about the benefits of <MNP Name> /Why my child needs.....4 Information about how to use <MNP Name>.....5 Information about how to resolve side effects of <MNP Name>.....6 Others (Specify).....96 Don't know.....98 Refuse to answer.....77	

Appendix 7: Example of an indicator matrix for the fictional integrated IYCF/MNP program for children 6-23 months of age

Concept	Performance Indicator	Calculation of Indicator (Operational Definition)	Data Collection Methods / Data sources	Frequency and Timing of Collection	Target
Goal:					
Improve nutritional status among children 6-23 months of age by 2015	1. Prevalence of anemia in children 6-23 months	**Numerator:** # of children 6-23 months with anemia[a] **Denominator:** # of children 6-23 months who are surveyed	**Numerator:** • Baseline: DHS 2010 • Follow-up: DHS 2015 **Denominator:** • Baseline: DHS 2010 • Follow-up: DHS 2015	DHS 2010 & 2015	Reduced from 70% to 40% (30PP) by 2015
	2. Prevalence of stunting in children aged 6-23 months	**Numerator:** # of children 6-23 months who are stunted[b] **Denominator:** # of children 6-23 months who are surveyed	**Numerator:** • Baseline: DHS 2010 • Follow-up: DHS 2015 • Denominator: • Baseline: DHS 2010 • Follow-up: DHS 2015	DHS 2010 & 2015	Reduced from 45% to 37% (8PP) by 2015
Purposes:			**Purposes:**		
Caretakers improved IYCF practices and fortified complementary foods prepared in the home	1. Minimum meal frequency for children 6-23 months	**Numerator:** # of children 6-23 months who receive minimum meal frequency[c] **Denominator:** # of children 6-23 months who are surveyed	**Numerator:** • Baseline: DHS 2010 • Follow-up: Annual external monitoring survey • DHS 2015 **Denominator:** • Baseline: DHS 2010 • Follow-up: Annual external monitoring survey • DHS 2015	• DHS 2010 & 2015 • Annual data collection beginning 12 months after program implementation	Increase 25% (PP) from baseline by 2015
Coverage of IYCF strategies & MNP among caretakers increased	2. Minimum dietary diversity for children 6-23 months	**Numerator:** # of children 6-23 months who receive minimum dietary diversity[d] **Denominator:** # of children 6-23 months who are surveyed	**Numerator:** • Baseline: DHS 2010 • Follow-up: Annual external monitoring survey • DHS 2015 **Denominator:** • Baseline: DHS 2010 & 2015 • Follow-up: Annual external monitoring survey • DHS 2015	• DHS 2010 & 2015 • Annual data collection beginning 12 months after program implementation	Increase 25% (PP) from baseline by 2015
	3. Minimum acceptable diet for children 6-23 months	**Numerator:** # of children 6-23 months who receive minimum acceptable diet[e] **Denominator:** # of children 6-23 months who are surveyed	**Numerator:** • Baseline: DHS 2010 • Follow-up: Annual external monitoring survey • DHS 2015 **Denominator:** • Baseline: DHS 2010 • Follow-up: Annual external monitoring survey • DHS 2015	• DHS 2010 & 2015 • Annual data collection beginning 12 months after program implementation	• Increase 25% (PP) from baseline by 2015

a Anemia defined as hemoglobin <110 g/L (or <11.0 g/dL) adjusted for altitude;
b Stunted defined as length-for-age Z score <-2.0
c Minimum meal frequency = proportion of breastfed and non-breastfed children 6–23 months of age who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more (See reference for further details on this definition (2).)
d Minimum dietary diversity = received foods from 4 or more food groups during the previous day (2)
e Minimum acceptable diet: For breastfed children 6–23 months of age = had at least the minimum dietary diversity and the minimum meal frequency during the previous day; For non-breastfed children 6–23 months of age = received at least 2 milk feedings and had at least the minimum dietary diversity not including milk feeds and the minimum meal frequency during the previous day. (2)

Concept	Performance Indicator	Calculation of Indicator (Operational Definition)	Data Collection Methods / Data sources	Frequency and Timing of Collection	Target
Purpose			**Purposes:**		
Caretakers improved IYCF practices and fortified complementary foods prepared in the home	4. Appropriate use of MNPs: % of caretakers who report giving child 60 MNP sachets from last MNP distribution	**Numerator**: # of caretakers of children 6-23 months who report giving child 60 MNP sachets from last MNP distribution **Denominator:** # of caretakers of children 6-23 months who are surveyed	**Numerator:** • DHS 2015 • Follow-up: Annual external monitoring survey **Denominator:** • DHS 2015 • Follow-up: Annual external monitoring survey	• DHS 2015 • Annual data collection beginning 12 months after program implementation	75% each survey
Coverage of IYCF strategies & MNP among caretakers increased	4. Appropriate use of MNPs: % of households with observed unopened sachets each survey	**Numerator:** Among children who received sachets > 60 days ago, # of households with observed unopened sachets each survey **Denominator:** # of households surveyed among children who received sachets >60 days ago	**Numerator:** • DHS 2015 • Follow-up: Annual external monitoring survey **Denominator:** • DHS 2015 • Follow-up: Annual external monitoring survey	• DHS 2015 • Annual data collection beginning 12 months after program implementation	≤ 25% each survey
	5. Adequate knowledge among mothers of key IYCF messages included in the BCC strategy	**Numerator:** # of mothers of children 6-23 months who correctly answer a set of IYCF knowledge questions based on key messages included in the BCC strategy **Denominator:** # of mothers of children 6-23 months who are surveyed	**Numerator:** • Baseline: DHS 2010 • Follow-up: Annual external monitoring survey • DHS 2015 **Denominator:** • Baseline: DHS 2010 • Follow-up: Annual • external monitoring survey • DHS 2015	• DHS 2010 & 2015 • Annual data collection beginning 12 months after program implementation	Increase 35% (PP) from baseline by 2015
	6. Mothers aware of key benefits of MNPs	**Numerator:** # of mothers of children 6-23 months who can correctly identify at least 3 benefits of MNPs **Denominator:** # of mothers of children 6-23 months who are surveyed	**Numerator:** • DHS 2015 • Follow-up: Annual external monitoring survey **Denominator:** • DHS 2015 • Follow-up: Annual external monitoring survey	• DHS 2015 • Annual data collection beginning 12 months after program implementation	90% each survey
	7. Mothers knowledgeable of correct and appropriate use of MNPs	**Numerator**: # of mothers of children 6-23 months who score ≥ 80% on a set of knowledge questions pertaining to MNP use **Denominator**: # of mothers of children 6-23 months who are surveyed	**Numerator:** • DHS 2015 • Follow-up: Annual external monitoring survey **Denominator:** • DHS 2015 • Follow-up: Annual external monitoring survey	• DHS 2015 • Annual data collection beginning 12 months after program implementation	90% each survey
	8. Coverage target of IYCF counseling among caretakers of children 6-23 months	**Numerator:** # of caretakers who receive home visit with IYCF counseling from community health volunteer during the last 6 month period	**Numerator:** • DHS 2015 • Follow-up: MoH MIS and annual external monitoring survey	• DHS 2015 • Data will be collected from the MoH MIS every six months	90% from MIS every six months 90% each survey

Concept	Performance Indicator	Calculation of Indicator (Operational Definition)	Data Collection Methods / Data sources	Frequency and Timing of Collection	Target
Purposes:					
Caretakers improved IYCF practices and fortified complementary foods prepared in the home	% of caretakers who receive home visit from community health volunteer (who provide IYCF counseling and information) every 6 months	**Denominator:** # of caretakers who are surveyed	**Denominator:** • DHS 2015 • Follow-up: MoH MIS and annual external monitoring survey	• Data will be collected through the external monitoring survey annually beginning 12 months after program implementation	
Coverage of IYCF strategies & MNP among caretakers increased	8. Coverage target of IYCF counseling among caretakers of children 6-23 months % of caretakers who receive counseling at the health clinic (on improving IYCF practices) every 6 months	**Numerator:** # of caretakers who receive counseling at the health clinic on improving IYCF practices during the last 6 month period Denominator: # of caretakers who are surveyed	**Numerator:** • DHS 2015 • Follow-up: MoH MIS and annual external monitoring survey **Denominator:** • DHS 2015 • Follow-up: MoH MIS and annual external monitoring survey	• DHS 2015 • Data will be collected from the MoH MIS every six months • Data will be collected through the external monitoring survey annually beginning 12 months after program implementation	90% from MIS every six months 90% each survey
	9. Coverage target of MNP distribution for children 6-23 months % received ≥ 1 package of 60 MNP	**Numerator:** # of children 6-23 months who received ≥1 package of 60 MNP during the last 6 month period **Denominator:** # of children 6-23 months surveyed/assessed	**Numerator:** • DHS 2015 • Follow-up: MoH MIS and annual external monitoring survey **Denominator:** • DHS 2015 • Follow-up: MoH MIS and annual external monitoring survey	• DHS 2015 • Data will be collected from the MoH MIS every six months • Data will be collected through the external monitoring survey annually beginning 12 months after program implementation	90% from MIS every six months
	9.Coverage target of MNP distribution for children 12-23 months % received ≥2 packages of 60 MNP	**Numerator:** # of children 12-23 months who received ≥ 2 packages of 60 MNP **Denominator:** # of children 12-23 months surveyed/assessed	**Numerator:** • Baseline: DHS 2010 • Follow-up: Annual external monitoring survey • DHS 2015 **Denominator:** • Baseline: DHS 2010 • Follow-up: Annual • external monitoring survey • DHS 2015	• DHS 2010 & 2015 • Annual data collection beginning 12 months after program implementation	80% from MIS every six months
	9. Coverage target of MNP distribution for children 18-23 months % received all 3 packages of 60 MNP	**Numerator:** # of children 18-23 months who received all 3 packages of 60 MNP **Denominator:** # of children 18-23 months surveyed/assessed	**Numerator:** • DHS 2015 • Follow-up: MoH MIS **Denominator:** • DHS 2015 • Follow-up: MoH MIS	• DHS 2015 • Data will be collected from the MoH MIS every six months	70% from MIS every six months
Output 1.1 and Activities 1.1:			**Output 1.1 and Activities 1.1:**		
Output 1.1 **Increased access to behavior change communication (BCC), IYCF supportive strategies, & MNP in communities**	1. Government agrees to include MNP in MoH delivery system	Yes/No	MoH letter directing addition of MNP to MoH delivery system product list	One-time collection of this indicator	-

Concept	Performance Indicator	Calculation of Indicator (Operational Definition)	Data Collection Methods / Data sources	Frequency and Timing of Collection	Target
Output 1.1 and Activities 1.1:			**Purposes:**		
	2. Appropriate levels of MNP supply received at each level of the health care distribution system	**Numerator:** # of MNP packages received for the region/catchment area **Denominator:** # of MNP packages needed for the population of children 6-23 months in that catchment area	MoH MIS	Quarterly	>95% every quarter
	3. Minimum of 1 trained provider in each community-level clinic	# providers trained per community-level clinic	MoH documentation of staff training	Collected after the initial training and then annually	≥1 per clinic each year
	4. Minimum of 1 trained volunteer in each zone (lowest administrative level)	# volunteers trained per zone	MoH documentation of volunteer training	Collected after the initial training and then annually	≥1 per zone each year
Output 1.1 and Activities 1.1:			**Output 1.1 and Activities 1.1:**		
Activities 1.1 1.1.1 Intervention package delivered in communities according to national plans	1. Addition of MNP into MoH delivery system recording system	Yes/No	Health facility stock books include row for MNP	One-time collection of this indicator	-
	2. MNP receipts from the MoH stores / warehouses throughout country show appropriate level of MNP stock every quarter	**Numerator:** # of MNP packages in stock for the region covered by the warehouse **Denominator:** # of MNP packages needed for the population of children 6-23 months in the region covered by the warehouse	MoH MIS supply reports	Quarterly	90% of stores / warehouses with appropriate levels every quarter
	3. Social mobilization & orientation meetings of key stakeholders and community groups per administrative level every 6 months achieved	# meetings held per administrative level	Office records	Twice a year (every 6 months)	2 meetings per month per level
	4. Number of radio messages on air per station per administrative level per month	# radio messages aired (calculated by station, administrative level, and month)	Radio contract on file	Quarterly	250 radio messages on air per station per administrative level per month
	5. MNPs promoted in accordance with the national code for infant and young child nutrition	Yes/No	Office records based on review of BCC strategy and materials	One-time collection of this indicator	-
	6. BCC strategy developed, including materials	Yes/No	Strategy document on file. Materials developed.	One-time collection of this indicator	-
	7. Formative data collection to develop BCC strategy and materials	Yes/No	Reports of data collection	One-time collection of this indicator	-
	8. Receipts from the MoH stores / warehouses throughout country show appropriate level of IYCF / MNP leaflets in stock every quarter	**Numerator:** # of leaflet in stock for the region covered by the warehouse **Denominator:** # of leaflets needed for the population of children 6-23 months in the region covered by the warehouse	MoH MIS supply reports	Quarterly	90% of stores / warehouses with appropriate levels every quarter

Concept	Performance Indicator	Calculation of Indicator (Operational Definition)	Data Collection Methods / Data sources	Frequency and Timing of Collection	Target
Output 1.2 and Activities 1.2:			**Purposes:**		
Output 1.2 MNP available in country according to national plans	1. Adequate supply of MNP received at central warehouse	**Numerator:** # of MNP packages received by the national warehouse (for the specified time period) **Denominator:** # of MNP packages needed for the population of children 6-23 months in the country (for the specified time period)	Government delivery certificates show quantity of MNP received in country & MoH data verifies number of eligible children in country	Data collection based on schedule for importing MNP (most likely annually)	100% every year
Activities 1.2 MNP supply ensured through appropriate policies and procurement	1. IYCF National Plan of Action revised to integrate MNP strategy	Yes/No	Revised Integrated IYCF/MNP National Plan of Action on file	One-time collection of this indicator	-
	2. MNP component of the intervention is in accordance with the national code for infant and young child nutrition	Yes/No	Ruling by Government expert committee on file. Monitoring records of implementation	One-time collection of this indicator	-
	3. Government designates MNP as food, pharma, or supplement	Yes/No	Designation on file	One-time collection of this indicator	-
	4. Government determination of MNP formulation approved	Yes/No	Determination on file	One-time collection of this indicator	-
	5. Government determines MNP regimen	Yes/No	Determination on file	One-time collection of this indicator	-
	6. Adequate supply of MNP procured annually	**Numerator:** # of MNP packages ordered/ procured (for the specified time period) **Denominator:** # of MNP packages needed for the population of children 6-23 months in the country (for the specified time period)	Signed letter/contract & MoH data verifies number of eligible children in country	Annual	100% every year
Output 1.3 and Activities 1.3:			**Output 1.3 and Activities 1.3:**		
Output 1.3 Imported and distributed MNPs meet quality standards & specifications	1. Monitoring plan integrated into government supervision structure, where appropriate	Yes/No	Integration complete	One-time collection of this indicator	-
	2. Quality assurance ensures imported MNPs meet quality standards every shipment (batch)	Yes/No	Government issued certificates of compliance on file	Data collection based on schedule for importing MNP (most likely annually)	-
	3. MNPs stored in appropriate conditions at all storage and distribution points based on HFTAG specifications	**Numerator:** # of monitoring reports at all storage and distribution points showing MNP stored according to HF-TAG specifications **Denominator**: # of monitoring reports at all storage and distribution points	Monitoring reports	Inspections twice-yearly (every six months)	100% every year

Concept	Performance Indicator	Calculation of Indicator (Operational Definition)	Data Collection Methods / Data sources	Frequency and Timing of Collection	Target
Output 1.3 and Activities 1.3:			**Purposes:**		
Activities 1.3 1.3.1 MNP monitoring plan developed & implemented	1. Internal monitoring plan developed to support quality control of MNP	Yes/No	Monitoring plan on file	One-time collection of this indicator	-
	2. New systems created where necessary to implement monitoring plan	Yes/No	New systems established	One-time collection of this indicator	-
	3. MNP added into government systems to review quality assurance of imported products	Yes/No	MNP added to forms and procedures	One-time collection of this indicator	-
	4. Facilities adopt appropriate storage procedures for MNPs based on HFTAG specifications	> 1 person at each facility assigned responsibility for ensuring appropriate MNP storage procedures adopted and followed	Monitoring reports	Inspections twice-yearly (every six months)	100% every year
Output 1.4 and Activities 1.4:			**Output 1.4 and Activities 1.4:**		
Output 1.4 Intervention staff (providers & volunteers) trained to have knowledge & motivation to adequately distribute MNP, deliver IYCF & MNP BCC, & problem solve with caretakers	1. Providers and volunteers have adequate knowledge & skills on IYCF counseling	**Numerator:** # of providers (or # of volunteers) who scored ≥ 80% on a knowledge test pertaining to IYCF counseling **Denominator:** # of providers (or # of volunteers) who took a knowledge test pertaining to IYCF counseling	Training check-lists of participant knowledge and skills.	Collected after the initial training and then annually	75% each for providers & volunteers
	2. Providers and volunteers have adequate knowledge & skills on MNP distribution & counseling	**Numerator:** # of providers (or # of volunteers) who scored ≥ 80% on a knowledge test pertaining to MNP distribution and counseling **Denominator:** # of providers (or # of volunteers) who took a knowledge test pertaining to MNP distribution and counseling	Training check-lists of participant knowledge and skills.	Collected after the initial training and then annually	75% each for providers & volunteers
	3. Providers and volunteers have adequate knowledge & skills on IYCF counseling	**Numerator:** # of providers (or # of volunteers) who scored ≥ 80% on supervisor checklist of knowledge & skills pertaining to IYCF counseling during supportive supervision visit each quarter **Denominator:** # of providers (or # of volunteers) who received supportive supervision visit each quarter	Supportive supervision visits with checklists	Collected during supervision visits (at least one quarterly)	75% each for providers & volunteers

Concept	Performance Indicator	Calculation of Indicator (Operational Definition)
Output 1.4 and Activities 1.4:		
	4. Providers and volunteers have adequate knowledge & skills on MNP distribution & counseling	**Numerator:** # of providers (or # of volunteers) who scored ≥ 80% on a supervisor checklist of knowledge & skills pertaining to MNP distribution and counseling during supportive supervision visit each quarter **Denominator:** # of providers (or # of volunteers) who received supportive supervision visit each quarter
Activities 1.4 Capacity building materials developed and trainings and orientations implemented	1. Training materials and refresher training materials developed	Yes/No
	2. Training of trainers completed	Yes/No
	3. Training and orientations completed with new staff every six months	**Numerator:** # new staff (providers, volunteers, and health facility management) who are trained during the time period **Denominator:** # new staff (providers, volunteers, and health facility management) who join the program during that time period
	4. Refresher trainings and orientations completed annually with existing staff	**Numerator:** # staff (providers, volunteers, and health facility management) who are trained/participate in the orientation during that year **Denominator :** # staff (providers, volunteers, and health facility management) who participate in the program during that year
	5. Receipts from the MoH stores / warehouses throughout country show appropriate level of training and refresher training materials in stock every quarter	**Numerator:** # of training materials in stock for the region covered by the warehouse **Denominator:** # of training materials needed for the population of providers, volunteers and health facility management in the region covered by the warehouse

Data Collection Methods / Data sources	Frequency and Timing of Collection	Target
Purposes:		
Supportive supervision visits with checklists	Collected during supervision visits (at least one quarterly)	75% each for providers & volunteers
Materials printed	One-time collection of this indicator	-
Training reports	One-time collection of this indicator	-
Meeting minutes & training reports	Twice a year (every six months)	90% of new providers, volunteers, health facility management
Meeting minutes & training reports	Annually	Target 90% of providers, volunteers, health facility management
MoH MIS supply reports	Quarterly	90% of stores / warehouses with appropriate levels every quarter

Concept	Performance Indicator	Calculation of Indicator (Operational Definition)	Data Collection Methods / Data sources	Frequency and Timing of Collection	Target
Output 1.4 and Activities 1.4:			**Purposes:**		
Activities 1.4 Capacity building materials developed and trainings and orientations implemented	6. Incentive system implemented to support volunteer motivation over time	Yes/No	Office records	One-time collection of this indicator	-
	7. Performance recognition and incentives distributed to support volunteer motivation	**Numerator:** # of volunteers who achieved performance based recognition/incentive level per quarter who received performance recognition or incentive **Denominator:** # of volunteers who achieved performance based recognition/incentive level per quarter	Office records	Quarterly	90% of performance recognitions and incentives distributed every quarter

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