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# Food Aid Quality Review

## Phase III Base Period Closeout Report: February 2016-January 2019



February 2016-January 2019

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Cover photo credit: FAQR Sierra Leone Four Foods Study participant and caregiver, 2018

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## Acronyms

ACF	Action Against Hunger
AMS	Agricultural Marketing Service
ASN	American Society of Nutrition (conference); American Society for Nutrition (group)
CAWec	Community Action for the Welfare of Children
CBO	Country Bureau Officer
CHW	Community Health Worker
CID	Center for International Development (Harvard)
CITE	Comprehensive Initiative on Technology Evaluation (MIT)
COR	Contracting Officer Representative
CRD	Commodity Reference Document
CRG	Commodity Reference Guide
CRS	Catholic Relief Services
CSB	Corn-Soy Blend
CSB+	Corn-Soy Blend Plus
CSWB	Corn-Soy Whey Blend
DCHA	Bureau for Democracy, Conflict and Humanitarian Assistance
DDL	Development Data Library (USAID)
DFSAs	Development Food Security Activities
DHMT	District Health Management Team
DMAP	Data Management and Analysis Plan
EB	Experimental Biology (conference)
EED	Environmental Enteric Dysfunction
EFSP	Emergency Food Security Program (USAID)
EML	Essential Medicines List
FACET	Food Assistance Cost-Effectiveness Tool
FACG	Food Aid Consultative Group
FANTA	Food and Nutrition Technical Assistance III Project
FAO	Food and Agriculture Organization (UN)
FAQR	Food Aid Quality Review
FBF	Fortified Blended Food; also Fortified Blended Flours
FEWS NET	Famine Early Warning Network
FFP	Office of Food for Peace (USAID)
FGIS	Federal Grain Inspection Service
FIQQ	Food Incident & Quality Questionnaire
FSMA	Food Safety Modernization Act
FSQA	Food Safety and Quality Assurance
FVO	Fortified Vegetable Oil
FY	Fiscal Year
GEIS	Global Evidence and Implementation Summit (conference)
GMP	Good Manufacturing Practices
GNC	Global Nutrition Coordination (U.S. Government)

HACCP	Hazard Analysis and Critical Control Points
HEAT	Hostile Environment Awareness Training
HEB	High-Energy Biscuit
HHL	Health and Humanitarian Logistics (conference)
ICN	International Congress of Nutrition
ICRC	International Committee of the Red Cross
IFAC	International Food Assistance & Security Conference
IFAD	International Fund for Agricultural Development (UN)
IFAFSC	International Food Assistance and Food Security Conference
IFT	Institute of Food Technologists
INFORMS	Institute for Operations Research and the Management Sciences
IRSS	<i>Institut de Recherche en Sciences de la Santé</i>
KSU	Kansas State University
LAZ	Length-for-Age
LNS	Lipid-Based Nutrition Supplement
LRP	Local and Regional (Food Aid) Procurement
MAM	Moderate Acute Malnutrition
MFFAPP	Micronutrient Fortified Food Aid Pilot Project
MIT	Massachusetts Institute of Technology
MOHSP	Ministry of Health and Social Protection
MOU	Memorandum of Understanding
MSF	<i>Médecins Sans Frontières</i>
MSU	Michigan State University
MUAC	Mid-Upper Arm Circumference
NGO	Non-Governmental Organization
NIH	National Institutes of Health
PDCAAS	Protein Digestibility-Corrected Amino Acid Score
PHU	Peripheral Health Unit
PI	Principal Investigator
POD	Personal Operations Division
POMS	Production and Operations Management Society
PPB	Project Peanut Butter
PVO	Private Voluntary Organization
QWICR	Quarterly Web-Interfaced Commodity Reporting
REFINE	Research Engagement on Food Interventions for Nutritional Effectiveness
RUF	Ready-to-Use Food
RUSF	Ready-to-Use Supplementary Food
RUTF	Ready-to-Use Therapeutic Food
SAM	Severe Acute Malnutrition
SBC	Social and Behavior Change
SBCC	Social and Behavior Change Communication
SC+	Super Cereal Plus
SNF	Specialized Nutritious Food

SNFP	Specialized Nutritious Food Product
SPRING	Strengthening Partnerships, Results and Innovations in Nutrition Globally
TOPS	Technical and Operational Performance Support
UN	United Nations
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
ViM	<i>Victoire sur la Malnutrition</i>
WASH	Water, Sanitation and Hygiene
WashU	Washington University in St. Louis
WBSCM	Web-Based Supply Chain Management
WFP	World Food Programme
WHO	World Health Organization
WHZ	Weight for Height Z-Score
WLZ	Weight for Length Z-Score

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## Executive Summary

In 2018, more than 800 million people were facing chronic hunger and an estimated 76 million people in 45 countries required emergency food assistance.<sup>1,2</sup> Although these numbers are stark, the humanitarian community continues to respond quickly and effectively to prevent countless malnutrition-related deaths. Great strides have been made in recent years to tailor food assistance, through in-kind food aid, cash, vouchers or local/regional purchase, to address nutrition concerns so that vulnerable populations become more resilient to future shocks.<sup>3</sup>

Ensuring that the U.S. Government has the proper tools and resources to act decisively in a cost-effective manner through humanitarian actions around the globe is a top priority. Since 2009, Tufts University's Friedman School of Nutrition Science and Policy has implemented a comprehensive Food Aid Quality Review (FAQR). Involving close engagement with the United States Agency for International Development (USAID), United States Department of Agriculture (USDA) and the U.S. Department of Defense's food research labs, the FAQR project has guided U.S. Government policies and programming on which foods to deliver to address different forms of malnutrition and how best to deliver foods to achieve lasting impact. Former USAID administrator Rajiv Shah called this the most significant series of changes to the U.S. food aid agenda since the 1960s.<sup>4</sup>

In FAQR's current phase of work, the project focuses on building and translating evidence from the field into institutionalized processes and actionable policies, and establishing tools, data-gathering and evidence-sharing platforms to support the U.S. Government's humanitarian agenda. FAQR continues to push the boundaries of knowledge and practice to help U.S. food aid products and programming meet the challenges of delivering food aid most efficiently, successfully and cost-effectively in the face of growing need for timely and coordinated food assistance.

***The current FAQR Phase III Base Period Closeout Report highlights Base Year (February 1, 2016-January 31, 2019) accomplishments, recommendations and future priorities.***

### I. EVIDENCE GENERATION:

#### *I.1. Field Studies*

##### *I.1.1. [Malawi](#)*

FAQR Phase III generated three high-level publications advancing the reach, uptake, and integration of research findings into program operations based on a study in [Malawi](#)

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<sup>1</sup> FAO, IFAD, UNICEF, WFP and WHO. 2018. The State of Food Security and Nutrition in the World 2018. Building climate resilience for food security and nutrition. Rome, FAO.

<sup>2</sup> FEWS NET (November 28, 2017). Global Food Security Alert. Retrieved from: [http://fewsn.net/sites/default/files/documents/reports/FEWS%20NET%20Global%20FS%20Alert\\_20171128\\_0.pdf](http://fewsn.net/sites/default/files/documents/reports/FEWS%20NET%20Global%20FS%20Alert_20171128_0.pdf)

<sup>3</sup> Aburto N.J. Food Assistance for Nutrition: The evidence on which we can agree. In: *Food Assistance for Nutrition Evidence Summit*. 2018.

<sup>4</sup> Remarks by former USAID administrator Rajiv Shah at the Center for Strategic and International Studies, April 10, 2013.

completed in FAQR Phase II. (Full report available [here](#)<sup>5</sup>). Since dissemination of the Malawi study results during Phase III, several FFP Development Food Security Activities (DFSAs) programmed FVO with messaging and are distributing CSB in packets containing one individual's monthly ration. This represents direct translation of study findings into implementation.

### *1.1.2. [Burkina Faso](#)*

The team completed research in [Burkina Faso](#) assessing the effectiveness and cost-effectiveness of the new Corn-Soy Whey Blend (CSWB) compared to three alternative products (corn-soy blend plus—CSB+, Super Cereal Plus—SC+ and ready-to-use supplementary food—RUSF) in the prevention of moderate wasting and stunting in children 6 to 23 months old. In addition to examining the cost-effectiveness of these products, the study evaluated the factors influencing effectiveness. The key findings of the study were: 1) the CSB+ arm was the most cost-effective regarding stunting at end line and number of months of wasting, and the CSWB arm was the least cost-effective; 2) none of the foods prevented declines in length-for-age (LAZ) or weight-for-length z-scores (WLZ) over time; and 3) sharing of foods was common in all arms of the study.

The study concluded that that the quality of programming and household use of food products delivered matter at least as much as the composition of products programmed. The adoption of these findings into future food aid programming has the potential to make FFP and partner interventions more cost-effective, allowing for better use of resources and greater impact.

### *1.1.3. [Sierra Leone](#)*

During Phase III, the FAQR team initiated research in [Sierra Leone](#) which sought to determine the relative cost-effectiveness of a range of supplementary foods (CSWB, CSB+, SC+ with amylase and RUSF) in the treatment of MAM in standard program settings. The study comparison was based on targeted food delivery to children 6 to 59 months old who were screened for MAM using mid-upper arm circumference (MUAC). The study was successfully completed, enrolling and treating 2,696 children.

#### *1.1.3.1. [Sub-studies](#)*

In addition to studying the cost-effectiveness of food products in achieving adequate MUAC, three sub-studies were conducted within the Sierra Leone study. The objectives of these studies were: 1) to compare the effect of the four foods on body composition (lean mass and fat mass); 2) to compare the effect of the four foods in the presence of environmental enteric dysfunction (EED) in children recovering from MAM; and 3) to compare the effects of the four supplementary foods on children's neurocognitive function and its evolution over the duration of their treatment.

Analyses and dissemination events are planned for 2019.

### 1.2. “Last Mile”

The “last mile,” defined as the section of the supply chain between delivery of food aid products at the main in-country warehouse and storage at the recipients’ homes prior consumption, is not well understood. The FAQR team reviewed evidence collected during FAQR’s three field studies and concluded: 1) donors should consider giving implementing partners more flexibility to use the resources available to them in-country, as program restrictions can prevent them from choosing the options most adapted to their environment; and 2) although “last mile” costs are relatively small compared to the overall cost of food assistance programs increasing “last mile” spending could improve their overall effectiveness.

### 1.3. Method for Assessing New Packaging Innovations

Packaging plays a key role in the protection of commodities throughout the supply chain and efforts are being made to improve the performance and functionality of the packaging of food aid products. The FAQR team drafted a method to guide stakeholders when assessing packaging options to guarantee that all constraints and every level of the supply chain have been considered. It included three components—cost evaluation, performance testing and functionality assessment—to compare the cost-effectiveness of each packaging option. The key recommendations derived from this activity is that a comprehensive approach must be taken to assess new packaging technologies including trials in the field to confirm the suitability of packaging options when exposed to “real” conditions in the field.

### 1.4. Research Engagement on Food Interventions for Nutritional Effectiveness (REFINE)

Significant research is being done on food aid for nutrition; however, sharing evidence and lessons learned remains limited and challenging. REFINE was established in 2012 to facilitate knowledge sharing and support consensus building on topics related to food aid for nutrition. A website ([www.REFINEnutrition.org](http://www.REFINEnutrition.org)) was developed to serve as a repository of ongoing research, published studies and other key documents relating to food-supported interventions. Two major analyses were completed which identified areas for further research related to food interventions and analyzed current methods in food aid research and steps needed to implement best practices in research on food aid for nutrition.

### 1.5. Food Aid Basket

FAQR was tasked with recommending updates and potential improvements to the mix of products available for procurement and use in USAID/FFP programs, often called the “food basket.” The food basket should contain a diverse range of cost-effective products suited to meet the nutritional needs of recipients and these products should be programmed as intended. FAQR identified: a) upgrades to existing products; b) cutting-edge research on product formulation and nutrition science, and updates to food standards that should guide product

development; c) a process for incorporating additional products into the food basket; and d) strategies for communicating food basket updates and changes to partners.

### [1.6. Food Matrices/Bioavailability](#)

In assessing the appropriateness of existing products for use in nutrition programs, it is critical to understand and account for the effect of food matrices on the delivery of nutrients from food within the body. The team gathered evidence on the bioavailability of nutrients within food aid products and identified the gaps in the product matrices which impede the potential for improved nutrient bioavailability. Key recommendations from this work highlighted the potential to improve energy density and protein digestibility, gut health, cognitive performance, bioavailability of micronutrients and shelf life.

### [1.7. Evidence Summit](#)

To facilitate sharing of and dialogue on the current state of evidence regarding food assistance for nutrition programming, the [Food Assistance for Nutrition Evidence Summit](#) was held in Washington, D.C. on June 27 and 28, 2018. Consensus was reached on the following five priority actions: 1) appropriate levels of funding are required for rigorous studies that document best practices for food assistance in all humanitarian contexts; 2) metrics of nutritional status need to go beyond physical growth of children; 3) multisectoral and multi-institutional collaboration and communication must be enhanced; 4) innovations should be promoted in product formulation, food packaging, food safety quality and food aid supply chain optimization tools; and 5) investments should increase in advanced data systems to capture reliable and comprehensive food assistance trends.

## **2. EFFICIENCY GAINS:**

### [2.1. Food Assistance Cost-Effectiveness Tool \(FACET\)](#)

The need for cost-effectiveness evidence to support better decision-making in food aid policy and programming is increasing. FAQR is developing the Food Assistance Cost-Effectiveness Tool (FACET) that supports evidence-based decisions for cost-effective programming of specialized nutritious foods (SNFs). FACET collates *the most recent empirical evidence* on SNF-specific impacts and costs. The tool helps identify data needs and monitoring, and evaluation gaps, while providing guidance on the selection of SNFs.

### [2.2. Supply Chain Optimization](#)

The food aid supply chain is complex and faces unique challenges. The team created a mathematical optimization tool for FFP food aid operations based on analysis of FFP Title II operations from April 2011 to September 2016. Results suggest that USAID/FFP is doing many things well. Eighty-three percent of commodities were shipped using liner carriers, which are substantially less expensive than other types of carriers. In addition, once products have been delivered by suppliers, most shipments are delivered to receiver countries within 30 days.

Focusing on better planning by using improved supply chain decision support tools could lead to significant cost-effectiveness gains and ensure that the right products reach the right beneficiaries at the right time.

### [2.3. Food Safety Quality Assurance Feedback Loop Pilot](#)

The current FFP food safety quality assurance feedback loop is not effective in its goal to prevent, detect and contain incidents in the food aid supply chain. FAQR developed a pilot tool called the [Food Incident & Quality Questionnaire \(FIQQ\)](#)<sup>6</sup> with the goal of creating a more streamlined and timely feedback system that catches and resolves issues and incidents more effectively. Full integration and scale-up of an improved feedback system has the potential to prevent incidents and do a better job at ensuring food safety.

### [2.4. Inter-Agency Harmonization](#)

It is critical that government agencies leading food aid decision-making be coordinated, harmonized and transparent in their actions. FAQR helped advance these efforts through the facilitation of annual meetings with the U.S. Government interagency group and the International Inter-Agency Working Group on SNFPs.<sup>7</sup> Both groups will continue to make progress in the areas of product specifications, processes for introduction of new products, food safety and quality, understanding field and programming issues, product and packaging improvements, and continued research and evidence generation.

## **3. INDUSTRY STANDARDS:**

### [3.1. Updated Specifications](#)

Food products are not standardized among food assistance agencies. In addition, there are no unified specifications for products that are meant to be equivalent when programmed and consumed. FAQR facilitated a process to update and/or develop specifications for Fortified Milled Rice, Corn-Soy Blend Plus, Fortified Vegetable Oil, Super Cereal Plus and High-Energy Biscuits.

### [3.2. Product Description Sheets and updates to FFP Portal](#)

There is great need for program implementers and other stakeholders to have access to information on U.S. food aid products. The FAQR team developed Food Aid Product Description Sheets to provide relevant, concise, up-to-date, useable and user-friendly information about 25 USAID food aid products. FAQR also reviewed the existing FFP Commodity Portal and conducted a landscape analysis of the existing site to propose a design and layout for the USAID/FFP website to make information on USAID food aid products more easily accessible.

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<sup>6</sup> <https://goo.gl/forms/DjNTuSa3pgx2i1vtI>

<sup>7</sup> [http://foodaidquality.org/sites/default/files/uploads/Inter-agency%20TOR\\_FINAL%20v1%20%2813%20Oct%202016%29.pdf](http://foodaidquality.org/sites/default/files/uploads/Inter-agency%20TOR_FINAL%20v1%20%2813%20Oct%202016%29.pdf)

### [3.3. New Product/New Supplier Application Form](#)

USAID/FFP currently does not have a formal process or application for reviewing new product or new supplier proposals. To help USAID/FFP establish a process for approving new products, FAQR designed mock-ups of paper-based and online product proposal forms. If this system is applied and scaled, there are great opportunities for efficiency gains and expansion of the current supplier base.

## **Future Priorities: FAQR Phase III Year 4**

Beginning in February 2019, FAQR Phase III will implement an Option Year (Year 4) that focuses on data analysis and dissemination of results from the Sierra Leone Treatment study, including the body composition, EED and cognitive function sub-studies, finalizing a report of lessons learned in nutrition research decision-making, design, implementation, and analysis, and completing scenario analyses from the supply chain optimization activities.

Additionally, the Year 4 activities will include:

- Continued updating and fine-tuning of the FACET tool, and the creation of an interactive user manual to facilitate broader use of the tool;
- Further elaboration of the supply chain optimization tool through additional scenario analysis and database construction;
- Redesign of the FFP commodity portal to meet the needs of a variety of stakeholders and make information on USAID food aid products easily accessible;
- Ongoing interagency harmonization support at international and U.S. Government levels;
- Maintenance of the REFINE site to continue conversations regarding research on food interventions for nutritional effectiveness; and
- Ensuring effective sharing of project outputs to relevant stakeholders through ongoing project communications.

## I. Background: FAQR PHASE III

The Food Aid Quality Review (FAQR) provides the United States Agency for International Development's (USAID) Office of Food for Peace (FFP) and its partners with actionable recommendations on ways to improve nutrition among vulnerable peoples for whom the direct distribution of food aid can make a significant impact. The *Food Aid Quality Review Project Phase III* ran from February 1, 2016 to January 31, 2019, with two option years (February 1, 2019 to January 31, 2021).

The first phases of FAQR involved reviews of nutrition science. FAQR Phase I recommendations were published in [Delivering Improved Nutrition: Recommendations for Changes to U.S. Food Aid Products and Programs](#)<sup>8</sup>. This report led to FAQR Phase II's focus on reformulating fortified blended foods (FBFs), the inclusion of lipid-based products in FFP's commodity list and testing new products under field conditions. A full summary of FAQR Phase II accomplishments is highlighted in the [Food Aid Quality Review Phase II Closeout Report](#)<sup>9</sup>.

FAQR Phase III responded to additional FFP priorities. The team continued to work closely with domestic and international collaborators: USAID, USDA and United Nations (UN) partners, all of whom are committed to strengthening the evidence base for use of specialized nutritious food products for nutrition. The framework shaping activities focused on: C.3.1 Research and Development—Improving Existing Products; C.3.2 Improved Programming; and C.3.3 Improved Process for Commodity Procurement and Quality Assurance along Supply Chain. This delineation and numbering scheme correspond with the Statement of Work outlined in *Section C: Statement of Work: Conclusion of the Food Aid Quality Review (FAQR): Final Phase of Implementation of the Food Aid Quality Review Phase III Program Contract, AID-OAA-C-16-00020*.

### **C.3.1 Research and Development—Improving Existing Products**

FAQR Phase III addressed a range of mission-critical issues, such as: how food matrices (“the nutrient and non-nutrient components of foods and their molecular relationship to each other”<sup>10</sup>) affect bioavailability of nutrients and digestibility of products; the potential for thermal/non-thermal processing technologies to improve food matrices; potential uses for existing products rarely used today, as well as new products (which could include point-of-use fortificant powders); and novel packaging technologies to improve resistance to infestation, shelf life and efficiency of handling; dual-use products for emergency response; and completion of the data collection, analysis and reporting on field studies assessing the effectiveness and cost-effectiveness of various newly-formulated food products.

### **C.3.2 Improved Programming**

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<sup>8</sup> [https://pdf.usaid.gov/pdf\\_docs/pnadz842.pdf](https://pdf.usaid.gov/pdf_docs/pnadz842.pdf)

<sup>9</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00M9B8.pdf](https://pdf.usaid.gov/pdf_docs/PA00M9B8.pdf)

<sup>10</sup> Source: United States Department of Agriculture: National Agricultural Library (<https://agclass.nal.usda.gov>)

The work on improving cost-effectiveness of various intervention designs includes strategy development for pre-positioned specialized nutritional products, guidance on options for deployment of specialized products, elaboration of a strategy for responding to food needs in the initial stages of a sudden onset emergency and the dissemination of a decision support tool to help include cost-effectiveness in the decision-making process of specialized food aid programming. The project generates improved technical guidance, sharing details on research protocols used in testing new products in the field and making further progress in harmonizing product specifications across donor agencies.

### **C.3.3 Improved Process for Commodity Procurement and Quality Assurance along Supply Chain**

The goal is to provide recommendations on institutional and industry processes for capacity building, including the institutionalization and strengthening of interagency technical collaborations, mechanisms to ensure greater policy and product harmonization (domestically and internationally), enhanced supply chain oversight, establishing stronger and more user-friendly quality assurance feedback loops, as well as promoting food safety and quality standards that can also be applied to local and regional food procurement.

## **II. FAQR III Base Year Activities, Accomplishments, Recommendations and Next Steps**

### **C.3.1. Research and Development—Improving Existing Products**

#### **Food Matrices and Bioavailability (C.3.1.1, C.3.1.2, C.3.1.3)**

The wide array of food products in the food aid basket are composed of different food matrices.<sup>11</sup> These different food matrices result in different levels of nutrient release and absorption in the body. Thus, it is critical to understand and account for the influence of food matrices on the effective delivery of nutrients from food. The project examined evidence on how the composition and resulting matrix of food products affect the bioavailability, absorption and physiological utilization of nutrients, and proposed recommendations to improve the bioavailability of nutrients from food aid products.

The objective of this work was to determine the role of the food matrix on nutrient release. This has implications for energy, bioavailability, satiety, growth, the rate of macro- and micronutrient release and absorption.

<sup>11</sup> Food Matrix: The nutrient and non-nutrient components of foods and their molecular relationships, i.e. chemical bonds, to each other (USDA NAL Glossary, 2015)

## **Overview of Activities**

In order to achieve the objectives of this work, the team completed a literature review and conducted expert interviews and a [stakeholder meeting](#)<sup>12</sup> on the role of food matrices. The team gathered evidence on the bioavailability of nutrients in food aid products and identified the gaps in the existing food aid product matrices that could impede the potential for improved nutrient bioavailability. Recommendations were generated to improve food aid nutrient bioavailability using targeted experimentation. Processes and areas for improving the efficiency of nutrient delivery from these food matrices were also recommended.

## **Accomplishments**

- A literature review was completed on the science of food matrices and nutrient bioavailability. The keywords used for literature review were food and nutrient bioavailability, fortified foods, nutrient interactions, food aid, processing and nutrition, food matrices, anti-nutritional factors, and food matrices and nutrient bioavailability. Of the 300 articles reviewed, 129 were focused on food aid products.
- A stakeholder meeting to discuss the current state of science and practicalities of food aid products and future pathways to improve the bioavailability of nutrients from these products was held. (Full report available [here](#).<sup>13</sup>)
- Recommendations were made for strategies to improve the bioavailability and cost-effectiveness of food aid products, based on literature review, expert interviews and stakeholder meeting.
- Conducted targeted experiments to validate some recommendations on the addition of diastatic malt to FBFs. Lab experiments (Bostwick flow measurement and Rapid Visco Analyser tests) were conducted to optimize the addition level of diastatic malt to FBFs and to analyze the change in viscosity of porridge due to its addition. A proof of concept test on compaction of FBFs was also conducted in lab using a manually operated compacting machine.

## **Recommendations**

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<sup>12</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00T7SW.pdf](https://pdf.usaid.gov/pdf_docs/PA00T7SW.pdf)

<sup>13</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00T7SW.pdf](https://pdf.usaid.gov/pdf_docs/PA00T7SW.pdf)

<b>Recommendations to improve the bioavailability and cost-effectiveness of food aid products</b>	<b>Potential Impact</b>
Addition of diastatic malt <sup>14</sup> to FBFs	Improve energy density and protein digestibility and lower the phytate content <sup>15</sup> of fortified blended foods (FBFs)
Inclusion of toasted wheat germ as additional protein source	Lower protein cost while maintaining protein quality
Addition of omega-3 rich oils in FBFs, RUTFs, RUSFs and HEBs	Improve cognitive performance
Addition of oligosaccharides/prebiotics and antihelminthics in FBFs, RUTFs, RUSFs, and HEBs	Improve gut health and reduce parasitic infection
Use of synthetic amino acids and micronutrient forms specific to the matrix, such as ferric pyrophosphate in fortified rice and ferrous fumarate and NaFeEDTA in CSB+	Improve amino acid profile and increase bioavailability of micronutrients and amino acids
Use of mycotoxin mitigation strategy in FBFs, RUTFs, RUSFs and HEBs	Lower/reduce mycotoxin contamination <sup>16</sup> in food aid products by adding mycotoxin adsorbing agents like yeast cells
Compaction of FBFs	Help lower the volume of flour-based food aid products like FBFs and improve shelf life

### **Next Steps/Future Research Priorities**

- The recommendations must be assessed for effect on product stability and shelf life.

<sup>14</sup> Diastatic malt is malted (germinated and dried) and powdered cereal grain, in this case barley, with active enzyme activity within it.

<sup>15</sup> Lowering phytate content in foods is beneficial because phytates bind with mineral ions like iron, zinc, and calcium and make them unavailable for absorption in the body, i.e. it reduces mineral bioavailability.

<sup>16</sup> Mycotoxins are organic compounds produced by toxic fungi in the field or due to improper post-harvest conditions and practices. Mycotoxin contamination leads to higher food loss as the contaminated grains must be discarded. High exposure through ingestion of infected grains or foods made from them can cause acute toxicity and even death in humans. Lack of regulatory laws and ignorance of the problem may lead to consumption of contaminated grains.

- Field studies must be conducted to understand the cost-effectiveness of each recommendation, prioritizing metrics focused on nutrient bioavailability to allow for optimized formulations with greatest impact.

### **Food Aid Basket (C.3.1.4, C.3.1.5, C.3.1.8, C.3.1.7, C.3.1.10, C.3.2.2, C.3.2.3, C.3.2.4, C.3.2.5)**

The food products available for food aid operations should be fit-for-purpose: that is, able to be combined into various food baskets that are sufficient and appropriate to their programming context, consistent with current science and prevailing expert opinion on nutritional effectiveness and safety, and thought to be cost-effective for the intended nutrition outcomes.

This work aimed to provide USAID/FFP with recommendations on how to make food aid products fit-for-purpose.

## **Overview of Activities**

### *Food Aid Product Trend Analysis*

FAQR sought to provide recommendations to USAID/FFP on improvements to the products in the food aid basket. First, to understand current product composition and use of products, FAQR looked at both procurement trends and current programming. Overall, most food aid in recent years has gone to emergency programs, and the food resources dedicated to emergency operations have increased dramatically. In FY 2017, 92 percent (2.8 million MT) of programmed food products were allocated to emergency programs. This is double the amount that was programmed in FY 2016 (1.2 million MT). From FY 2011 through FY 2016, staple grains have accounted for an average 80 percent of total metric tons procured and 55 percent of costs, while SNFPs (excluding fortified vegetable oil) have accounted for 6 percent of procurement volume and 11 percent of costs. Of SNFPs, CSB and CSB+ have been the most procured SNFPs, accounting for 74 percent of the total metric tons of SNFPs procured.

### *Partner Perspectives on the Food Aid Basket*

To understand why certain food aid products are used more than others, to gain an understanding of how partners conceptualize, use and program food aid products, and to identify opportunities for product improvement, FAQR conducted a series of interviews and focus groups with 35 representatives from 11 of USAID/FFP's partner organizations. This feedback was synthesized into a [memo on partner perspectives related to the food aid basket](#)<sup>17</sup>.

### *Food Aid Ration Guidance*

To harmonize food aid ration guidance, minimize potential disagreements across existing sources of guidance and fill gaps in guidance relating to appropriate uses of SNFPs across

<sup>17</sup> <http://foodaidquality.org/sites/default/files/publications/USAIDFFP%20Partner%20Perspectives.pdf>

agencies and donors, FAQR compared three prominent reference resources used to guide food rationing decisions. This resulted in a memo outlining current ration guidance. FAQR also developed a “nutrient content table” outlining the nutrient content of each food aid product available for procurement. This can be a useful tool for making partners aware of the products and their nutrient content.

#### *Food Aid Innovations*

This work also sought to gain perspective on innovations, opportunities for food aid product improvements and new trends in food technology. All of this was accomplished through discussion with researchers, suppliers and other food aid stakeholders as well as ongoing literature review. Potential future product innovations that are being considered and researched include: i) novel grain bases for FBFs and RUFs (e.g. sorghum, rice, etc.); ii) novel legume ingredients for FBFs and RUFs (e.g. chickpea meal, lentil meal, etc.); iii) novel fat sources for LNSs (e.g. sesame paste, protein butter, etc.); iv) novel protein ingredients (e.g. caterpillar, cricket and shrimp powder, algae, etc.); v) individual protein or amino acid additives; vi) alternative milk powders, such as milk-fat globule membrane; vii) anti-parasitics; and viii) prebiotics and probiotic ingredients.

#### *Tools and Processes for New Food Aid Products, Ingredients and Suppliers*

Finally, the team sought to provide USAID/FFP with tools and processes to use when considering new products, ingredients and suppliers. To facilitate new product procurement and development, USAID/FFP was supported in forming an interagency relationship with USDA Agricultural Marketing Service. To help USAID/FFP establish a process for approving novel products, FAQR designed, prepared and presented mock-ups of paper-based and online product proposal forms. FAQR also completed a review called the Micronutrient-Fortified Food Aid Pilot Project (MFFAPP), which examined six potential products for inclusion in USAID/FFP programming, based on proposed questions to be asked of all products in the new proposal form.

### **Accomplishments**

- Produced a report of food aid procurement trends.
- Provided a recommendation on which MFFAPP products to consider for incorporation into USAID/FFP food basket.
- Conducted extensive scoping activities to learn the perspectives of the various stakeholders, including a [webinar cohosted with TOPS and the CORE nutrition working group](#)<sup>18</sup> and contributing to a “[Partner Perspectives Memo](#)”<sup>19</sup> presented to the USAID/FFP Nutrition team.
- Developed a memo aggregating existing guidance on appropriate uses of different food

<sup>18</sup> <https://coregroup.org/webinar/the-usaid-food-aid-product-mix-presentation-of-stakeholder-feedback/>

<sup>19</sup> <http://foodaidquality.org/sites/default/files/publications/USAIDFFP%20Partner%20Perspectives.pdf>

aid products for specific target groups and recommended ration quantities, presented to the International Inter-agency Working Group for Specialized Nutritious Food Products: “Memo for Discussion: Ration Guidance for Specialized Nutritious Food Products (SNFPs).”

- Created a nutrient content table for existing food aid products.
- Developed materials for USAID to use in reviewing new products and suppliers and proposed a process for reviewing and evaluating product and supplier proposals, presented to key staff in USDA and USAID.
- Held a side meeting on future directions and opportunities for food aid product innovations with key stakeholders at USDA-USAID International Food Assistance & Security Conference (IFASC).

### **Recommendations**

- Implement advanced data systems for tracking and sharing food aid information. This will allow USAID/FFP to track food aid programming in real time, monitoring and proactively responding to product-related issues and trends.
- Institutionalize a new product approval process based on the process FAQR and USAID/FFP has developed in partnership. This will create transparency, objectivity and accountability, while facilitating product innovations that could lead to more cost-effective programming.
- Modify the product mix to meet evolving global standards and program needs. The first step in making food basket changes is to institutionalize the processes for approving new products. Once a process is in place, changes to products should be driven by standards set by normative bodies *and* participant or program need. Improvements can best be achieved by partnering with the private sector and other stakeholders.
- Continue to host meetings and activities around the food basket. These should include meetings to establish business relationships for specialized nutritious food (SNF) production, research and development, presentations to ensure that partners are aware of all the products available for programming, the nutritional differences between products, and how they should be used, regular forums for sharing updates to the food basket, sustaining supplier and implementing partner engagement, and being a catalyst for collaborative problem-solving, and trainings on the basket of food aid products, principles to follow when making food choices, and how to use different food aid decision-making tools.

### **Next Steps/Future Research Priorities**

- Hold an annual Food Aid Basket Roundtable, asking each prime awardee organization to participate with at least one representative.

- Develop a training series on: a) what is in the basket of food aid products; b) what principles partners should follow when making food choices; and c) how to use different food aid decision-making tools.
- Reissue the A20 paste pouch, A28 rice bar and A29 wheat bar product specifications.
- Regularly update nutritional content information for all food aid products in the USDA Agricultural Research Service National Nutrient Database for Standard Reference and enhance other public communications to include PDCAAS score, omega-3 and omega-6 fatty acid content, grams of carbohydrate and grams of free sugar.
- Reach out to additional food manufacturers to explore their ability to supply high-demand SNF products.
- Continue working toward an online system for proposing new and innovative products and/or product updates.
- Implement a Web-based dashboard for agency (and possibly partner) use that visually represents important procurement trends and product use analysis in real-time.
- Establish a single USAID/FFP landing website and partner management system, and assign relevant staff to maintain the site.
- Institute a process to review and accept new products in the food aid product mix as well as identify and appoint key personnel to complete specific roles and identify a roster of external experts on whom to call when needed.
- Host regular conferences on food assistance programming.
- Finalize the development of HEB 2.0 so it can be programmed as soon as possible.
- Work with manufacturers to optimize the nutrient content and product shelf life of RUSF, making it appropriate for emergency response.

### **Food Aid Packaging and Innovation (C.3.1.6)**

The integrity of food aid commodities must be preserved from the date of manufacture until the end of its shelf life. Food aid products endure rough transport and storage conditions, often in high humidity and high heat environments over a long period of time. Packaging plays a key role in the protection of commodities throughout the supply chain. Although efforts are being made to improve the performance and functionality of the packaging of food aid products, the length of the supply chain and the multiple stakeholders involved make it challenging to identify a packaging solution that addresses the needs of every stakeholder at every step between production and consumption.

This work has provided USAID/FFP with recommendations regarding the approach to take when assessing potential packaging technologies for food aid products to ensure that all of the constraints and requirements are taken into consideration.

### **Overview of Activities**

The FAQR team conducted interviews with stakeholders at all levels of the supply chain to understand the current challenges associated with food aid packaging. USAID and USDA representatives, food aid vendors, packaging suppliers, transporters, implementing partners and researchers were consulted to develop a list of packaging-related challenges and constraints at every level of the food aid supply chain.

The FAQR team then drafted a method to guide stakeholders when assessing packaging options for food aid products to guarantee that all constraints have been considered. It included three components—cost evaluation, performance testing and functionality assessment—to compare the cost-effectiveness of each packaging option. A cost matrix was built based on information obtained from suppliers and transporters, plus data collected during FAQR’s field study in Burkina Faso. It included the food, packaging, operations, transport and storage costs.

A performance testing protocol was developed to replicate in a lab setting some of the challenges encountered by food aid products throughout the supply chain prior to being tested in the field. Tests included compression strength, vibration and drop testing to mirror storage, transport and handling, respectively. Finally, the key desirable functionalities for packaging options were identified during conversations with various stakeholders. The FAQR team then developed a scale to grade each component and calculate cost-effectiveness.

### **Accomplishments**

- Developed a comprehensive list of the packaging-related challenges associated with Fortified Vegetable Oil, Corn-Soy Blend Plus and Super Cereal Plus.
- Drafted a method to assist stakeholders in comparing the cost-effectiveness of different packaging options for food aid products.
- Tested the method for fortified vegetable oil. Six packaging options were compared following the method. Their cost-effectiveness was evaluated. Although this was a preliminary assessment and does not allow recommendation of a specific packaging technology, it highlighted the strengths and weaknesses of different options considered.
- Conducted extensive performance testing on oil packaging technologies to assess their performance when exposed to the conditions of the food aid supply chain. Provided suppliers and stakeholders with specific feedback on the weak points of their packaging options and the areas in most urgent need for improvement.

### **Recommendations**

- When assessing changes/innovations to packaging technologies for food aid, consequences at every level of the supply chain must be carefully considered.
- Packaging options should be assessed on the basis of overall cost-effectiveness rather than cost, performance or functionality alone.

- Trials in the field are needed to confirm the suitability of packaging options identified as potentially cost-effective when exposed to “real” field conditions before rolling out a change in packaging.

### **Next Steps/Future Research Priorities**

- More information is needed to accurately assess the cost burden of poor packaging. In light of this, collecting quantitative and qualitative data on losses and reconditioning<sup>20</sup> should be a priority.
- Suppliers should propose packaging options that address the challenges highlighted and submit them to the assessment method. The packaging options that appear promising should then be tested in the field.
- Shelf-life studies should also be conducted as part of any major product/packaging improvement or introduction to confirm that the food aid products maintain their nutrition profile and palatability from production until consumption.

### **Malawi Feasibility and Acceptability Study<sup>21</sup> (C.3.1.11)**

Some of the agencies implementing supplementary feeding programs choose to distribute foods with fortified vegetable oil (FVO) already included in the supplement (such as SC+) because of the concern that if oil is provided separately, it will be diverted to other uses instead of being incorporated into the porridge preparation.

A FAQR study in [Malawi](#) was completed in FAQR Phase II to assess the extent to which beneficiaries can be encouraged to use FVO<sup>22</sup> as instructed by implementing partners to prepare corn-soy blend (CSB)<sup>23</sup> porridge for beneficiary children. The study also assessed the impact of packaging changes (providing CSB in 2-kilogram packages with printed messages rather than in bulk), in conjunction with behavior-change messages on the correct use of CSB and oil, and on intra- and inter-household sharing. This Phase II study concluded that *it is possible* to get beneficiaries to prepare the porridge with higher amounts of FVO when FVO and CSB are distributed separately with intensive social and behavior change communication (SBCC). These results are operationally significant for agencies implementing supplementary feeding programs.

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<sup>20</sup> Reconditioning is the transfer of the foods in a new packaging to prevent losses because the original packaging was damaged.

<sup>21</sup> <http://foodaidquality.org/focus/field-research>

<sup>22</sup> Specification found at: <http://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdfiles/Comm-Operations/procurement-and-sales/export/pdfs/vol5.pdf>

<sup>23</sup> Specification found at: [https://www.fsa.usda.gov/Internet/FSA\\_File/wsb13.pdf](https://www.fsa.usda.gov/Internet/FSA_File/wsb13.pdf)

## **Overview of Activities**

During FAQR III, the team continued with secondary analyses using the Malawi field study data. Additional focus was on the dissemination of research findings through the publication of peer-reviewed manuscripts and the presentation of abstracts at the Experimental Biology conference.

## **Accomplishments**

- The following papers were published:
  - Program changes are effective and cost-effective in increasing the amount of oil used in preparing corn-soy blend porridge for the treatment of moderate acute malnutrition in Malawi (<https://onlinelibrary.wiley.com/doi/full/10.1111/mcn.12393>)
  - Self-report vs. direct measures for assessing corn-soy blend porridge preparation and feeding behavior in a moderate acute malnutrition treatment program in southern Malawi (<https://www.tandfonline.com/doi/full/10.1080/19320248.2017.1374902>)
  - Effective delivery of social and behavior change communication through a Care Group model in a supplementary feeding program (<https://jhpn.biomedcentral.com/articles/10.1186/s41043-017-0111-3>)
  - Preparation and presentation of corn-soy blend for moderately malnourished children in Malawi (<https://www.enonline.net/fex/55/csbmalawi>)
- The three abstracts were presented as posters at Experimental Biology. (See [Annex 3.4](#))

## **Recommendations**

- Increasing the ratio of added FVO in CSB porridge prepared by caregivers requires intensive SBCC.
- It is possible for caregivers to add the recommended amount of FVO to CSB porridge even when the FVO is delivered separately.
- Repackaged CSB in sealed packets containing one individual's monthly ration with printed messaging did not show a greater benefit with regard to added oil in CSB porridge when compared to a bulk ration.
- There were other advantages of the individual packets that included improved hygiene, more efficient distribution, and likability—these should be explored greater.
- Assessing the cost-effectiveness of any program change is important.

## **Next Steps/Future Research Priorities**

Further research is needed to assess the effectiveness and cost-effectiveness of these program changes in terms of their impact on growth outcomes.

### **Burkina Faso: Effectiveness and Cost-Effectiveness Study on Prevention of Wasting and Stunting Field Study<sup>24</sup> (C.3.1.12)**

There is a gap in evidence surrounding the impact and cost-effectiveness of food aid products in preventing moderate wasting and stunting.

The FAQR research in [Burkina Faso](#) assessed the effectiveness and cost-effectiveness of the new Corn-Soy-Whey Blend (CSWB) compared to three alternative products (CSB+, SC+ and RUSF) in the prevention of moderate wasting (moderate acute malnutrition or MAM), the prevention of stunting and the promotion of adequate growth in children 6 to 23 months old. In addition to examining the effectiveness and cost-effectiveness of these products, the study evaluated the factors influencing effectiveness as well as assessed the “last mile” (the final portion of the delivery process) in the food aid supply chain. The results of this research should allow USAID to make better-informed decisions about which of the four food aid products to use in their programs. This study also contributes to an evidence base to justify the need to incorporate social and behavior change messages, and how to address and quantify gaps in the “last mile” of the food aid delivery supply chain.

#### **Overview of Activities**

The Burkina Faso field study compared the cost-effectiveness of four supplementary foods in the prevention of stunting and wasting in children 6 to 23 months. The study took place in four communes of the Sanmatenga Province and was embedded into an existing blanket supplementary feeding program called “*Victoire sur la Malnutrition*” (ViM) run by ACDI/VOCA and Save the Children. Data were collected from July 2014 to December 2016. A total of 6,112 children were enrolled in the study and followed monthly with anthropometric measurements and morbidity surveys for the 18-month intervention period plus an additional three months’ post-intervention. In addition, a subset of recipient caregivers was selected to participate in in-depth surveys, in-home observations, or focus group discussions to gather data on factors that potentially influence the effectiveness of the four foods.

Results of the study were disseminated in both Burkina Faso and the United States. A dissemination of preliminary results was held in Kaya (the regional capital of Sanmatenga Province) for community research participants, ViM program staff and study enumerators. Subsequently, dissemination meetings for the research, policy and programming stakeholders were held in Ouagadougou and Washington, D.C. In addition, the results were presented at various conferences in the form of both oral and poster presentations and were written up in several manuscripts intended for publication in academic journals.

#### **Accomplishments**

- The key findings of the study were:

<sup>24</sup> <http://foodaidquality.org/focus/field-research>

- Overall, the CSB+, RUSF and SC+ arms showed similar effectiveness but carried different costs, making the CSB+ arm the most cost-effective both for preventing stunting at end-line and reducing the number of months of wasting.
- The CSWB arm was least cost-effective relative to CSB+ programmed with oil. Concerns regarding the bitter taste of CSWB after long-term exposure to storage in harsh field conditions may have impacted these findings.
- None of the foods prevented declines in length-for-age (LAZ) or weight-for-length z-scores (WLZ) over time. The CSWB arm showed a steeper decline in LAZ, and the RUSF arm showed a shallower decline in WLZ.
- Sharing of foods was common in all arms, but children in the CSWB arm seemed least likely to be consuming the product, which may explain the relatively poorer effectiveness in the CSWB arm.
- Quality of programming and household use of the food products matter at least as much as the composition of the products being programmed.
- The following reports made use of the data from this study:
  - A final report “Comparative cost-effectiveness of four supplementary foods in preventing stunting and wasting in children 6-23 months in Burkina Faso” was produced.
  - Data and experience from the Burkina Faso study contributed to the report “The last mile of food aid distribution: insights gained through FAQR’s field studies in Malawi, Burkina Faso and Sierra Leone.”
- The following papers are being submitted for publication:
  - Effectiveness and cost-effectiveness of four specialized nutritious foods in the prevention of stunting and wasting in children 6 to 23 months in Burkina Faso.
  - Insights in cost-effectiveness analysis: details, alternative estimation methods and sensitivity analyses for a supplementary feeding trial in Burkina Faso.
  - Behavioral factors influencing the effectiveness of four specialized nutritious foods in the prevention of stunting and wasting in children 6 to 23 months in Burkina Faso.
  - Comparison of fortified blended flours and lipid-based nutritional supplements in the displacement of breastfeeding and household complementary foods in children 6 to 23 months in Burkina Faso.
- Posters and oral presentations on Burkina Faso study results were presented at a variety of conferences and meetings. (See Annex [3.2](#) and [3.6](#) for further detail.)

## **Recommendations**

### *Product Choices:*

- All of the products used lend themselves to sharing. Future cost-effectiveness research is needed to determine whether sharing of each type of food product would be most

cost-effectively addressed through increasing dosage of the specific product or adding general household food assistance or by other means.

- Indications from this study are that lipid-based nutritional supplements such as RUSF may not be sufficiently more effective in the prevention of stunting and wasting than FBF to justify their considerably greater cost. This is an important consideration in product choice. Programs should consistently use the most cost-effective products for the prevention of stunting and wasting in blanket supplementary feeding programs. In this study, the most cost-effective ration was CSB+ with oil.
- CSB+ has no dairy ingredient; the other foods studied do. While no conclusion about the role of dairy can be made in this study, the option of continued programming of food aid (in blanket supplementation) without dairy should be considered.

#### *Program Choices:*

- Greater impact of food aid interventions depends on quality programming, not simply the choice of a food product. More research and evidence are needed on effective programming actions surrounding the delivery of food aid. Future studies should include the consideration of the impact of community participation, compliance, substitution, and diversion.
- The effectiveness of specialized nutritious foods depends on more than their biological efficacy. Social, environmental and behavioral factors must be taken into account in nutrition program design.
- The burden to volunteers working in distribution is great, as is the burden to the recipients themselves. Volunteer and recipient opportunity costs should be considered in program design. Consideration should be given to compensating community members helping to run food aid distribution programs for their time.
- Blanket supplementation alone may not be the most effective or cost-effective way to prevent wasting and stunting. Research to determine the optimum role of blanket supplementation to address malnutrition is needed.

#### *Experimental Products Research:*

- Storage of some products in suboptimal but realistic conditions may influence food quality and consumption. Due to this variable, shelf life studies on new (and existing) products should be rethought to consider true field conditions.
- Food science should play a role in the development of products and packaging. Interaction of different micro- and macronutrients in the food matrix may be key to palatability of foods.
- Continue to make investments in cost-effectiveness research to ensure that money is spent proficiently on food assistance. Efficacy studies alone would not have discovered the potential storage issues with CSWB and as such, results of this study underscore the importance of field studies in real-life situations.

### **Next Steps/Future Research Priorities**

- The question of how to improve programs to prevent stunting and wasting should be investigated, and research should include other social, environmental, and behavioral factors that affect malnutrition. Research should address the question of what additional or new programming components can improve blanket food supplementation regardless of product choice.
- Future cost-effectiveness research is needed to determine whether sharing of each type of SNF would be most cost-effectively addressed through increasing dosage of the specific SNF, adding general household food assistance or by some other mechanism.
- Potential concerns relating to constrained shelf life and the unpleasant taste of CSWB after lengthy storage should be explored.

### **Sierra Leone: Effectiveness and Cost-Effectiveness Study on Treatment of MAM Field Study**<sup>25</sup> (C.3.1.13, C.3.1.14)

There is a gap in evidence surrounding the cost-effectiveness of food aid products in treating moderate wasting.

The FAQR research in [Sierra Leone](#) sought to determine the relative effectiveness and cost-effectiveness of alternative supplementary foods in the treatment of moderate acute malnutrition (MAM) in normal program settings. The study comparison was based on targeted food delivery to children 6 to 59 months old who were screened for MAM using mid-upper arm circumference (MUAC). Study participants received one of four approximately isoenergetic test foods: SC+ with amylase, CSB+ and FVO, CSWB and FVO, or RUSF. The results of this study will guide decisions about what commodities to use in supplementary feeding programs and what factors need to be addressed to ensure maximum effectiveness in the treatment of moderate acute malnutrition.

### **Overview of Activities**

The Sierra Leone Four Foods Treatment study began enrolling beneficiaries into the supplemental feeding program in April 2017 in 29 PHUs in the Pujehun District of Sierra Leone. By the end of September 1, 2018 enrollment, the study registered approximately 2,695 beneficiary children. Though enrollment ended on September 1, 2018, treatment for enrollees and data collection over the follow-up period continued until November 24, 2018.

<sup>25</sup> <http://foodaidquality.org/focus/field-research>

Prior to the start of the intervention, the FAQR team carried out formative research to update the design of the picture-instructions that appeared on the bags for the fortified-blended flours. (Full report available [here](#).)

Development of a [counseling card booklet](#)<sup>26</sup> was another component in the overall intervention's design to assist caregivers with proper ration preparation and consumption. During the data collection phase, an independent consultant identified key social barriers that prevent beneficiary caregivers from following preparation instructions and from feeding the food exclusively to the beneficiary child. Key messages were developed to address these barriers. The counseling cards were then used to train more than 5,000 community health workers and lead mothers in Pujehun District.



**Image 1: Example of counseling card image for CSWB**

The survey research collected information about the feeding program, ration collection, instructions received, preparation and consumption behaviors, sharing, storage, dietary diversity, child feeding and breastfeeding, and other household information, programmatic information about the “last mile,” and post-intervention information on infant and young child feeding practices. Throughout the study, the field team gathered porridge samples from the respondents’ prepared porridge. These samples will be analyzed to aid in analysis of recipe and ration adherence.

### **Accomplishments**

<sup>26</sup>[http://foodaidquality.org/sites/default/files/uploads/Four%20Foods%20Study%20CSBP%20Counseling%20Cards%20Booklet\\_FINAL.compressed.pdf](http://foodaidquality.org/sites/default/files/uploads/Four%20Foods%20Study%20CSBP%20Counseling%20Cards%20Booklet_FINAL.compressed.pdf)

- Formative research to design the packaging of the foods was completed.
- Design and implementation of counseling cards to improve ration preparation and decrease sharing was completed.
- Data collection and entry was completed on November 26, 2018.
- Overall, 2,696 children enrolled into the study.

### **Next Steps**

- Analysis of data on the primary research outcome: graduation from MAM (achieving MUAC  $\geq$  12.5 cm by 12 weeks) or failure (death, development of severe acute malnutrition, transfer to hospital for inpatient care, failure to graduate from MAM by 12 weeks, default).
- Cost effectiveness analysis: evaluation of differences in cost per case of MAM successfully treated among the four arms.
- Analysis of other outcome measures: rates of weight, height and MUAC gain, change in WHZ, LAZ, and HAZ, WLZ  $\geq$  -2, time to graduation, and any possible adverse effects from the supplementary foods.
- Dissemination of results is anticipated in July, 2019. This will include presentations at meetings, completion of final reports and submission of publications to journals.

### **Sub-studies on Body Composition, Developmental Indicators and Environmental Enteropathy<sup>27</sup> (C.3.1.15)**

While supplementary foods have been used to treat children with MAM, supplementary feeding programs need to assess measures beyond anthropometric indicators. Three such measures are: change in lean mass (and fat mass)<sup>28</sup>, environmental enteric dysfunction (EED)<sup>29</sup> and neurocognitive function<sup>30</sup>.

In addition to studying the effectiveness and cost-effectiveness of the foods in achieving adequate mid-upper arm circumference (MUAC), three sub-studies were conducted within the Sierra Leone study. The objectives of these studies were: 1) to compare the effect of four foods on body composition (lean mass and fat mass) and the correlation of changes in body composition with measures of recovery (MUAC and WHZ); 2) to compare the effect of the four foods in the presence of (as well as on) environmental enteric dysfunction (EED) in children recovering from MAM; and 3) to compare the effects of the four supplementary foods on children's neurocognitive function.

<sup>27</sup> <http://foodaidquality.org/focus/field-research>

<sup>28</sup> Provides a better picture of the underlying mechanisms by which these foods improve nutrition status.

<sup>29</sup> A condition common in developing countries, characterized by physiological changes in the mucosa of the small intestine leading to alterations in barrier integrity and absorptive capacity, as well as inflammation.

<sup>30</sup> There is evidence linking malnutrition and impaired brain development, placing children at risk for lifelong cognitive, emotional and social deficits.

## **Overview of Activities**

**Body Composition:** The deuterium dilution technique of assessing body composition was used. Urine samples were collected before and after dosing with isotopically labeled water. The presence of deuterium in the urine samples is used to compare changes in body composition (lean mass and fat mass) among the four foods after four weeks of supplementation. Using the body composition data, it will be possible to examine the relationship between body composition and recovery as defined by WHZ and MUAC.

**EED:** Urine and stool samples were collected to detect EED using three biomarkers: 1) lactulose: mannitol ratio; 2) eighteen fecal host mRNA transcripts; and 3) three fecal host protein markers. For these biomarkers, urine samples for the lactulose: mannitol ratio and stool samples for fecal host mRNA transcripts and fecal host protein markers were collected. These biomarkers enable us to examine a wide variety of characteristics of the small intestine associated with EED. The dual sugar test will measure permeability (percentage lactulose recovery) and absorptive capacity (percentage mannitol recovery). The mRNA transcripts will measure cell maturation (CD53, CDX1 and REG1A), barrier function (MUC12), inflammation (BIRC3, HLA-DRA, PIK3API, S100A8 and TNF), transporter activity (AQP9), cell adhesion (SELL), viral/bacterial response (DEFA6, LYZ, REG3A), carbohydrate digestion (SI), fatty acid metabolism (DECRI), protein digestion (APCI), and antigen processing (IFI30)<sup>31</sup>. The fecal host protein markers measure permeability (AAT), and inflammation (MPO and NEP).

To provide evidence as to what may be driving the levels of EED detected by the different biomarkers, data were also collected to examine the microbiota profile of children of varying levels of EED and healthy children and on household WASH behaviors.

**Neurocognitive Function:** Eye tracking and observational tests were used to measure attention control and visual responsiveness as indicators of brain function in children 7 to 11 months. The tests were performed at the start of the supplementary feeding program and repeated after five weeks of treatment. Data analyses are currently underway to summarize test performance indicators, to examine changes in infant attention over the course of the treatment, and to perform preliminary comparisons of the changes in relation to the four supplementary foods.

## **Accomplishments**

- **Body Composition:** Samples were collected at enrollment for 570 subjects and at a second time point for 416 subjects.
- **EED:** Samples were collected at enrollment for 525 subjects and at a second time point for 277 subjects. Seventy household WASH observations were completed, and samples from 21 healthy subjects for microbiota profile were collected.

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<sup>31</sup> Ordiz, M.I., et al., "Environmental Enteric Dysfunction Is Associated With Poor Linear Growth and Can Be Identified by Host Fecal mRNAs." *Journal of Pediatric Gastroenterology and Nutrition*, 2016. 63(5): p. 453-459.

- **Neurocognitive Function:** The eye-tracking test was performed at enrollment for 206 subjects and at a second time point for 195 subjects. An automated system was created for off-site monitoring of data quality.

### **Next Steps**

#### **Body Composition**

- Complete laboratory analysis, statistical analysis, and report writing, and prepare manuscripts for publication.
- Test statistically whether there is a difference in the change in lean mass after four weeks of supplementation among the four food groups.
  - Examine whether this change in lean mass correlates with change in anthropometric outcomes (MUAC and WHZ) and recovery from MAM.
  - Consider the implications of these results to decide whether lean mass accretion as well as MUAC change should drive the choice of one food rather than another in future MAM treatment programs.

#### **EED**

- Complete laboratory analysis, statistical analysis, report writing and prepare manuscripts for publication.
- Examine statistically whether the presence of EED modifies the effect of the four foods on recovery from MAM.
  - Separate models will be run for EED using the different biomarkers: L:M ratio derived from the dual sugar test, fecal host mRNA transcripts and the fecal host protein markers.
  - If we find that the presence of EED modifies the effect of the study foods, then this finding calls for incorporating messages to address EED in future MAM treatment programs.
  - Ideas for how to address EED may be derived from results of the household WASH observations and exploration of the microbiota profile of study participants. For example, if children living in households with optimal WASH practices have lower EED, then this suggests that MAM treatment programs should focus on improving WASH behaviors. Similarly, if children with a diverse microbiota profile have lower EED, then this suggests targeting the microbiota possibly by altering treatment food composition.

#### **Neurocognitive Function**

- Complete analysis of eye tracking results and demographic data for the study on Neurocognitive Function. Examine associations between test scores, child nutritional status and the type of the supplementary food used.

- Examine the effects of MAM and the four supplementary foods on neurocognitive function in 7 to 11-month-old children.
- The results from this study will contribute to the understanding of supplementary food product effectiveness in terms of recovering neurocognitive function.
- This study is operationally important because program implementers typically rely on weight, height and MUAC as indicators for recovery, but there may be added value in assessing brain and cognitive function. If successful, the eye tracking tests that have been designed for this study may provide a quick, objective, and fully automated system for monitoring neurocognitive function and neurocognitive recovery in children with MAM.

### **C.3.2. Improved Programming**

#### **Commodity Reference Guide (C.3.2.1)**

As USAID/FFP food aid products have improved and the offerings expanded to meet the nutritional needs of beneficiaries, there is greater need for program implementers and other stakeholders to access and use well-presented information and resources to support effective selection and programming of U.S. food aid products.

The FFP Commodities Reference Guide (CRG) on the web portal<sup>32</sup> has changed little since its inception. USAID and the FAQR Phase III team worked together to create an updated and overhauled FFP Commodities Resource Portal to better showcase the U.S. food aid basket offerings and better share and present commodity information to stakeholders online. FAQR Phase III is working with USAID to ensure that the FFP Website Portal becomes a “one-stop shop” providing a unified, transparent source of information about USAID FFP products, programs and relevant processes that is user-friendly and easily navigated.

#### **Overview of Activities**

The purpose of the [Food Aid Product Description Sheets](#)<sup>33</sup> is to provide relevant, concise, up-to-date, useable, and user-friendly information about each food product or commodity distributed under Title II of The Food for Peace Act (25 products total). The individual Food Aid Product Description Sheets that make up a [guide](#)<sup>34</sup> are designed for USAID and its implementing partners, including program planners, managers, technical advisors, procurement and logistics specialists, as well as vendors and manufacturers wishing to sell these products to the U.S. Government.

To develop recommendations for changes to the USAID/FFP Commodity Resource Portal and CRG, FAQR interviewed FFP staff, stakeholders, and users of Commodity Portals. FAQR also

<sup>32</sup> <https://www.usaid.gov/food-assistance/resources/food-aid-product-descriptions>

<sup>33</sup> <https://www.usaid.gov/food-assistance/resources/food-aid-product-info>

<sup>34</sup> [https://www.usaid.gov/sites/default/files/documents/1866/FoodAidProduct\\_InfoGuide.pdf](https://www.usaid.gov/sites/default/files/documents/1866/FoodAidProduct_InfoGuide.pdf)

reviewed the existing FFP Commodity Portal and other food aid product supplier websites (e.g. WFP, food aid product suppliers), and conducted a [landscape analysis of the existing site](#)<sup>35</sup>, reviewing links and resources to identify needed changes and gaps to be addressed.

The team proposed and designed a new layout for the USAID/FFP website and the Food Aid Product Description Sheets which included new photographs of raw commodities and computer-generated graphics of primary packaging to represent the commodities accurately. The new guide, website and Food Aid Product Description Sheets launched with the new FFP website in February 2018.

### **Accomplishments**

- Created, developed, and finalized the [Food Aid Product Description Sheets](#)<sup>36</sup> (508 compliant<sup>37</sup>) to provide brief, consumer-friendly and accessible information about each food product in the improved food aid basket and to post on the updated FFP Portal.
- Supported and facilitated harmonization of food aid product specifications and standardization of formats and used them to develop and update the most current [Food Aid Product Description Sheets and FFP website](#)<sup>38</sup>.

### **Recommendations**

- Continue to enhance interactions between U.S. Government agencies, the private sector and international partners to standardize approaches, including the information featured on commodity specifications and Commodity Reference Documents (CRDs).
- Update the website, Food Aid Product Description Sheets, CRDs and other tools at least once a year or more frequently.
- Apply sufficient resources to manage the USAID/FFP Food Aid Product Information website so that the information posted stays current, easily accessible and incorporates relevant materials as they are developed.
- Set up small working group to conduct a quarterly landscape analysis of website and Food Aid Product Description Sheets to identify any broken links and update out-of-date information while considering new and updated CRDs and USAID specifications.
  - The specifications and links are hosted on the website and should be included in the regular updating and maintenance of the website to ensure information on all platforms is accurate and accessible.

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<sup>35</sup> <http://foodaidquality.org/sites/default/files/publications/Portal%20Landscape%20Analysis.pdf>

<sup>36</sup> [https://www.usaid.gov/sites/default/files/documents/1866/FoodAidProduct\\_InfoGuide.pdf](https://www.usaid.gov/sites/default/files/documents/1866/FoodAidProduct_InfoGuide.pdf)

<sup>37</sup> 508 Compliant means meeting the requirements of Section 508 of the Federal Rehabilitation Act which requires all U.S. Government web applications, websites, web pages and all attached files on the intranet and internet to have content that is accessible to people with disabilities. <https://www.section508.gov/manage/laws-and-policies>

<sup>38</sup> <https://www.usaid.gov/food-assistance/resources/food-aid-product-info>

- Create a flowchart for USAID/FFP staff to consult when updating links, nutrition information, programming and uses, (quarterly or more frequently as needed), nutrition information (as the specifications are updated or new product specifications come on line), website resources (quarterly or as new guidance/items need to be posted) and other relevant tools and information as needed.

### **Next Steps/Future Research Priorities**

- Create strategy and materials to communicate updates to specifications and information about commodities so potential users know about the changes as they occur.
- Ensure that website and tools are user-friendly and multifunctional for ease of use.
- Continue close collaboration between FAQR and USAID/FFP's web and technical team to hand over and ensure all FAQR evidence, tools and resources are incorporated into the website in FAQR Phase III Option Year I.

### **Research Protocol Guidance Document & REFINE (C.3.2.6)**

Significant research has been and is being done on food aid for nutrition, however, sharing evidence and lessons learned remains limited and challenging. Also, there is no clear guidance highlighting how researchers engaged in food aid for nutrition can maximize the comparability of their studies and the quality of their evidence by following best practices in study planning, design, and dissemination.

FAQR documented and shared experiences in conducting field research as a way to inform the research community of the types of challenges that are faced when conducting research on topics in food aid for nutrition in challenging environments, while seeking to maintain the highest standards of scientific rigor. Additionally, the [REFINE](#) knowledge-sharing mechanism catalogues research activity surrounding food-supported interventions, defines research gaps based on the literature and facilitates information and resource-sharing on innovations and research relevant to food-supported interventions. The ultimate goal of REFINE is to support better nutrition outcomes in both emergency and non-emergency contexts.

### **Overview of Activities**

REFINE was established in 2012 to facilitate knowledge-sharing and support consensus-building on topics related to food aid for nutrition. To support these aims, the REFINE website ([www.REFINEnutrition.org](http://www.REFINEnutrition.org)) was developed as a repository of ongoing research, published studies and other key documents relating to food-supported interventions. REFINE categorized information by searchable priority themes in order to stimulate dialogue and forge linkages among relevant research initiatives. To facilitate greater transparency in food aid research, promote interaction among researchers working in this field, and promptly disseminate research results, the REFINE team also developed and distributed Quarterly Resource Updates,

both through the REFINE stakeholder email list and through our social media outlet on Twitter (@REFINEnutrition).

REFINE collaborators generated reviews of research methods and themes in food-supported interventions; these are pending publication. A final output of the REFINE team under FAQR will be the “FAQR: Lessons Learned in Research Decision-Making, Design, Implementation, and Analysis” report, which will constitute a record of decision-making and lessons learned in study design, implementation and analysis through FAQR field-based research.

### **Accomplishments**

- Launched updated [REFINE website](#).
- Built out REFINE database to include 432 studies.
- Effectively tracked ongoing studies through to publication.
- Used REFINE resources to develop literature reviews and deliverables for the FAQR team and relevant meetings and events, including the 2017 International Congress of Nutrition and the Inter-Agency Working Group on SNFPs.
- Published a scan of research methods used in food aid for nutrition studies.
- Published a scan of research themes in food aid for nutrition studies.
- Supported increased research prioritization around food aid products through collaboration with No Wasted Lives.

### **Recommendations**

- Continue to maintain REFINE as a critical knowledge-sharing tool in the dissemination and harmonization of research on food aid for nutrition.
- Collaboration should be facilitated between the REFINE team and an assigned USAID/FFP member(s) with the responsibility of keeping up-to-date on food aid for nutrition research.

### **Next Steps/Future Research Priorities**

- REFINE will complete the “FAQR: Lessons Learned in Research Decision-Making, Design, Implementation, and Analysis” report (formerly titled the Research Protocol Guidance Document) with the aim to share decision-making rationale and lessons learned in study design, implementation and analysis of research in food aid for nutrition.
- Funders, researchers, and programmers should continue the prioritization of rigorous research on food aid for nutrition.
- Based on an analysis of food aid research themes and gaps, further research is needed on: the cost-effectiveness of alternate program approaches (especially considering mixed modalities), product impacts on long-term and intergenerational nutrition outcomes, multisectoral and behavioral programming components, and non-anthropometric outcome measures, emergency contexts and urban settings

- Based on the results from the food aid methods scan, research funders and researchers should facilitate a sector-wide discussion on how to implement best practices in food aid for nutrition research. This includes harmonizing methods, metrics, reporting and keywords in publications.

### **Cost-Effectiveness (C.3.2.7)**

The demand for cost-effectiveness evidence to support better results in food aid policy and programming is increasing. However, there is a research gap in generating robust cost-effectiveness evidence and a policy gap in using cost-effectiveness and precision in programming decision-making.

The workstream addressed the policy gap using cost-effectiveness in decision-making by developing the Food Assistance Cost-Effectiveness Tool (FACET) that supports evidence-based decisions for cost-effective programming of specialized nutritious foods (SNFs). Evidence was also generated on cost-effectiveness through the FAQR field studies. Lessons learned from the field research, the methods used to collect and to analyze cost data, and cost-effectiveness estimates were synthesized to guide recommendations for future cost-effectiveness research.

### **Overview of Activities**

#### **Food Assistance Cost-Effectiveness Tool (FACET)**

FACET is a web-based interactive tool developed to support evidence-based decision-making in the design and implementation of more cost-effective SNF programming. The tool's other main objective is to build staff capacity around cost-effectiveness through training and use of the tool, to identify data needs and research/programmatic monitoring and evaluation gaps. The current version of FACET covers three types of nutrition programming purposes that involve SNFs: 1) treatment of moderate acute malnutrition (MAM); 2) treatment of severe acute malnutrition (SAM); and 3) prevention of undernutrition to reduce the prevalence among children of stunting, wasting and underweight.

#### **Cost-Effectiveness Field Research**

In conjunction with the FAQR Field Research in Burkina Faso (Cost-Effectiveness of Four Specialized Foods for Prevention of Stunting and Wasting) and Sierra Leone (Cost-Effectiveness of Four Specialized Foods for Treatment of MAM), cost-effectiveness research was conducted, data analyzed and robust study methods were developed.

### **Accomplishments**

#### **Food Assistance Cost-Effectiveness Tool (FACET)**

- USAID/FFP (multiple divisions and teams) and selected partner organizations (UN agencies and NGOs) provided abundant feedback on FACET. Their suggestions were incorporated into the tool when feasible.

- FACET offers a *conceptual framework* that explicitly includes the two key factors that need to be considered to enhance the efficiency of SNF programming: the expected impacts (or benefits) of alternative SNF choices, and their respective costs per treated beneficiary.
- Implementation of food assistance programs generally requires input from *multiple actors*. Because of this, FACET provides a “convening point” for personnel involved in different aspects of the decision-making for food assistance programs.
- FACET pools and makes immediately available to users *the most recent evidence* on the ranges of SNF-specific impacts and costs. It then allows users to select values from these evidence-based ranges, or to input their own estimates. By showing how all the data points fit in the calculation of cost-effectiveness, the tool helps identify data needs and research/ programmatic monitoring and evaluation gaps.
- FACET has a user-friendly interactive interface that allows users to immediately “see” *the estimated cost and cost-effectiveness consequences* of their choice of product, coverage, dosage, cost and desired/expected impact as they work through the guided decision-making framework.
- FACET allows users to conduct and to save the results of multiple scenarios (e.g. using different SNF products to address a specific child nutrition problem) in order to compare among product options and to conduct sensitivity analyses.

### **Cost-Effectiveness Field Research**

- The cost-effectiveness findings from the field studies provide evidence directly relevant to inform SNF programming choices.
- The cost-effectiveness research and analytical methods used in the field studies (e.g. the use of realistic price data, direct observation for time use, various sensitivity analyses, and multiple costing perspectives, disaggregating costs by program component or activity) provide useful insights for future cost-effectiveness research in food assistance for nutrition and highlight why incorporating a cost-effectiveness lens to research in this area is necessary.

### **Recommendations**

#### **Food Assistance Cost-Effectiveness Tool (FACET)**

- USAID/FFP should designate a point position to take ownership of FACET and to be charged with integrating the tool into USAID/FFP decision-making at relevant divisions of USAID/FFP and other partner organizations.
  - The position would conduct training in the use of the FACET tool, the interpretation of the results generated by the tool, and integration of tool results into decision-making processes within FFP offices and among FFP partners.

### **Cost-Effectiveness Field Research**

- USAID/FFP should continue to support food assistance and nutrition research with robust consideration of cost-effectiveness in both product and programming choices.

### **Next Steps/Future Research Priorities**

#### **Food Assistance Cost-Effectiveness Tool (FACET)**

- FAQR will revise and finalize the FACET tool in the FAQR III Option Year I.
- FAQR will develop accompanying materials (user manual, training video, infographics) to facilitate training and use of the tool, and the interpretation of tool results.
- FAQR will work with USAID/FFP to help ensure the long-term sustainability of FACET. This will include hosting training/workshops and dissemination events with USAID/FFP and partner organizations to build awareness and capacity.

#### **Cost-Effectiveness Field Research**

- Complete a cost methodology report summarizing the cost methods and examples of cost matrices used in FAQR field studies.
- Publish the cost-effectiveness findings and distilled methods for the Sierra Leone field study, contributing to the literature on using field-based cost data/methods to inform programming decisions related to treatment of MAM using alternative SNFs.

### **Knowledge Sharing (C.3.2.8)**

FAQR Phase III communicated research findings, best practices and recommendations to a variety of stakeholder groups using a communications and research uptake and sustainability strategy. Communications efforts ensured that knowledge generated by FAQR Phase III activities was disseminated to enable evidence-based policy and practice, and documented the impact of FAQR's research on policymakers, their institutions, programs and various implementing partners.

#### **Overview of Activities**

FAQR Phase III communicated outcomes, lessons learned and recommendations through a variety of communications channels, most notably through the redesigned [FAQR website](http://www.foodaidquality.org)<sup>39</sup>. The website was updated regularly to make FAQR reports, publications and outputs widely available. It also served as a tool to publicize FAQR activities. In addition, FAQR outputs were shared through a variety of dissemination pathways including Twitter and a number of Listservs, and by partnering with the Tufts University Friedman School of Nutrition Science and Policy, and USAID/FFP communications teams to promote key outputs.

<sup>39</sup> [www.foodaidquality.org](http://www.foodaidquality.org)

The FAQR team made multiple presentations which provided updates on progress toward FAQR Phase III objectives, an overview of results from FAQR III research workstreams and recommendations for future activities and research priorities. See [Annex 3.2](#) for a list of key presentations.

Finally, the FAQR team implemented a Strategic Communications Plan and Research Uptake and Sustainability Strategy to guide knowledge sharing efforts and track reach, uptake, and sustainability of outputs.

### **Accomplishments**

- Launched updated FAQR website in January 2017.
  - Website analytics for three base years are outlined in Table 1: [www.foodaidquality.org](http://www.foodaidquality.org) Website Analytics

<b>Table 1: <a href="http://www.foodaidquality.org">www.foodaidquality.org</a> Website Analytics</b>			
	<b>Total number of Sessions<sup>17</sup></b>	<b>New Sessions<sup>18</sup></b>	<b>Average Pages Per Session<sup>19</sup></b>
<b>February 2017- January 2018</b>	2,435	1,410	(average) 2.98
<b>February 2018- January 2019</b>	5,059	3,362	(average) 2.43

- Maintained FAQR Twitter handle (@foodaidquality) to share FAQR activities and outputs and engage with the wider food aid community.
  - Twitter analytics for three base years are outlined in Table 2: @foodaidquality Twitter Analytics

<b>Table 2: @foodaidquality Twitter Analytics</b>					
<b>Total Followers: 192</b>					
	<b>Tweets</b>	<b>Retweets</b>	<b>Likes</b>	<b>Link Clicks</b>	<b>Tweet Impressions</b>
<b>February 2017- January 2018</b>	98	77	121	101	37,623
<b>February 2018- January 2019</b>	97	152	346	252	96,361

- Held thirty total presentations to share FAQR outputs. [Key presentations included:](#)
  - The Burkina Faso Field Study disseminations in Burkina Faso and the United States.

- The Food Assistance for Nutrition Evidence Summit including presentations on FAQR's work on food matrices and bioavailability, cost-effectiveness research, food safety and quality, the prevention study in Burkina Faso, and supply chain optimization.
- Sierra Leone field study closeout presentation in Pujehun District, Sierra Leone.
- Packaging results presentation at the Michigan State University Packaging Workshop.
- Presentation on FAQR's field studies at the Tufts University Friedman Seminar.
- Oral and poster presentations at multiple conferences including Experimental Biology (EB), the American Society of Nutrition (ASN), the Health and Humanitarian Logistics (HHL) conference, and Global Evidence and Implementation Summit (GEIS).

### **Recommendations**

- FAQR Phase III outputs should continue to be shared widely and promoted by USAID/FFP and partners as applicable.
- Future USAID/FFP research projects should continue to prioritize staff time dedicated to knowledge sharing. Developing a Strategic Communications Plan and Research Uptake and Sustainability Strategy at the beginning of the project should guide knowledge-sharing activities.

### **Next Steps/Future Research Priorities**

- FAQR III knowledge-sharing activities will continue in Option Year I. Focus will be on dissemination of all FAQR III outputs and sustainability of outputs and content currently housed on the FAQR website.

### **Evidence Summit (C.3.2.9)**

Since FAQR Phase I began in 2009, considerable evidence has been generated on the nutritional effectiveness and cost effectiveness of specialized food-aid items in terms of products, processes and programming. However, a forum has not been available to disseminate this evidence and assess the state of knowledge.

The Evidence Summit, held on June 27 and 28, 2018, provided a forum to synthesize the current state of research on food aid for nutrition, facilitate dialogue on key policy and program-relevant findings and identify priority domains for future studies.

### **Overview of Activities**

To facilitate sharing of, and dialogue on, the current state of evidence programming of food assistance for nutrition, the [Food Assistance for Nutrition Evidence Summit](#) was held in Washington, D.C. on June 27 and 28, 2018. The two-day event served as an opportunity to

synthesize the current state of research on food assistance for nutrition, discuss the relevance to policy and programmatic decision-making, and identify critical evidence gaps. The Evidence Summit consisted of presentations, panels, lightning talks, demonstrations, discussions, and poster/table displays covering:

- Current evidence on food assistance programming that has maternal and child nutrition or micronutrient deficiencies as explicit outcomes of interest;
- Future needs for assistance on development of nutritionally-enhanced products and programming, and optimizing resource allocations;
- Cost-effectiveness research innovations in packaging, ingredients, formulations and processing of food aid products;
- Research methods and metrics to measure nutrition impacts, cost-effective operations and additional ancillary goals;
- Food aid supply chain optimization; and
- Food aid safety and quality.

### **Accomplishments**

- The Evidence Summit had more than 250 attendees, representing researchers, policymakers, donors, U.S. Government agencies, implementing partners and industry. Participants represented a variety of countries including the U.S., Bangladesh, Ethiopia, France, Haiti, Burkina Faso, Italy, Japan, Liberia and the U.K.
- The Evidence Summit featured 100 speakers and presenters, including three keynote speakers: USAID's Thomas Staal, author Roger Thurow, and U.S. Representative Jim McGovern.
- Outputs following the Evidence Summit included: [a website featuring all presentation slides, videos of keynote speakers and plenary sessions, resource materials](#); a [policy brief](#)<sup>40</sup>; [meeting summary report](#)<sup>41</sup>; [meeting summary published in the Emergency Nutrition Network Field Exchange \(September 2018\)](#)<sup>42</sup>; and a pending publication of progress and future directions for advancing nutrition in the international food assistance agenda.

### **Recommendations**

Dialogue at the Evidence Summit led to consensus on the following five priority actions:

- More funding is required for studies that document best practices for food assistance in all humanitarian contexts, with attention to measurable impact on maternal and child nutrition.

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<sup>40</sup>

[http://foodaidquality.org/sites/default/files/uploads/Evidence%20Summit%20Policy%20Brief\\_FINAL%2011.19.18.pdf](http://foodaidquality.org/sites/default/files/uploads/Evidence%20Summit%20Policy%20Brief_FINAL%2011.19.18.pdf)

<sup>41</sup>

[http://foodaidquality.org/sites/default/files/uploads/Evidence%20Summit%20Summary%20Report\\_FINAL\\_12.19.18.pdf](http://foodaidquality.org/sites/default/files/uploads/Evidence%20Summit%20Summary%20Report_FINAL_12.19.18.pdf)

<sup>42</sup> <https://www.enonline.net/fex/58/foodassistancefornutrition>

- Metrics of nutritional status need to go beyond physical growth of children to include brain development, gut health and body composition to provide a more in-depth physiological understanding of malnutrition.
- Multisectoral and multi-institutional collaboration and communication must be enhanced.
- Innovations should be promoted in product formulation, food packaging, food safety quality and food aid supply chain optimization tools.
- Investments should increase in advanced data systems to capture reliable and comprehensive food assistance trends.

### **Next Steps/Future Research Priorities**

- A venue for a regular Evidence Summit to review evidence and research priorities in food assistance for nutrition is necessary.
- [The Evidence Summit](#) highlighted key areas where there is a gap in current evidence:
  - Nutrient-specific requirements and overall quality;
  - Programming design and implementation;
  - Optimal combination of food assistance modalities;
  - Product formulation, dosage and packaging;
  - Combined and simplified treatment of acute malnutrition;
  - Emergency contexts and nexus between emergency and development; and
  - Better (new) metrics are needed for measuring nutrition.

### **C.3.3. Improved Process for Commodity Procurement and Quality Assurance along Supply Chain**

#### **Interagency Harmonization (C.3.3.1, C.3.3.3, C.3.3.4)**

There is a persistent lack of communication and harmonization among U.S. and international agencies related to food aid.

FAQR facilitated coordination among U.S. agencies, and across U.S. and international agencies. This was achieved through meetings, a formal memorandum of understanding (MOU), formation of working subcommittees, and developing formalized mechanisms for collaboration and institutionalization.

#### **Overview of Activities**

In FAQR Phase III, annual meetings were held with the U.S. Government interagency group (comprised of representatives from USAID, USDA, and NIH) and the International Inter-Agency Working Group on SNFPs (USAID, UNICEF, WFP, MSF, ACF and ICRC), with FAQR serving as secretariat. Additional consultations were facilitated with individuals and small groups

to discuss specific harmonization activities and specific issues as they arose, and to plan upcoming meetings.

The International Inter-Agency group agreed to formal [terms of reference](#)<sup>43</sup> for the group and set up institutionalization and communication structures. The U.S. Government interagency group continued dialogue regarding the motivations for continued efforts and mechanisms to move towards institutionalization.

Both the U.S. and international groups have identified similar issues of relevance including: product specifications, process for introduction of new products, food safety and quality, understanding field and programming issues, product and packaging improvements, and continued research and evidence generation.

### **Accomplishments**

- There has been a positive evolution of group dialogue, improved collaboration, group ownership and engagement for both the U.S. Government and international groups.
- The International Inter-Agency group made progress on key institutionalization steps including: agreeing to a Terms of Reference, developing meeting [communiques](#)<sup>44</sup> and a new member application process.
- Movement on areas of collaboration have led to efficiency gains and identification of areas of mutual interest, such as:
  - For the International Inter-Agency group, this includes: harmonized RUF specifications, accepting new member organizations (ACF and ICRC), and greater participation of programming technical representatives.
  - For the U.S. Government group this includes: USDA participating in auditing, collaboration on food safety testing with FGIS/AMS, and growing membership through inclusion of other U.S. Government agencies/departments.

### **Recommendations**

- For the U.S. Government interagency group, institutionalization and ownership of the group is a critical next step for continuing collaboration. This will include:
  - Identifying steering/planning committee members;
  - Developing the road map/institutionalization framework and responsibilities/steps for moving forward; and
  - Linking to other multisectoral all-of-government nutrition, food safety, food aid working groups.
- For the International Inter-Agency group, focus should be on the following activities:
  - Establishing a process for secretariat transition;

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<sup>43</sup> [http://foodaidquality.org/sites/default/files/uploads/Inter-agency%20TOR\\_FINAL%20v1%20%2813%20Oct%202016%29.pdf](http://foodaidquality.org/sites/default/files/uploads/Inter-agency%20TOR_FINAL%20v1%20%2813%20Oct%202016%29.pdf)

<sup>44</sup> <http://foodaidquality.org/focus/interagency-harmonization>

- Communicating interagency activities to the larger food aid community; and
- Defining the group's scope vis-a-vis other international collaborations (e.g. No Wasted Lives) and creating linkages to other international groups.
- For both groups:
  - Agencies need to dedicate resources to advancing priorities;
  - The structure for each harmonization group should be robust, since agency membership changes/rotates frequently. Organizing principles should be created (for the U.S. group) and maintained (for the international group) to motivate each group; and
  - The ongoing need for collaboration should be paramount regardless of organizational structures that may change.

### **Next Steps/Future Priorities**

- Develop a roadmap/framework for institutionalization of the U.S. Government group;
- Identify key contacts/members for specific issues by going through a process of agency mapping for both the U.S. Government and international interagency groups;
- Agree to a secretariat transition plan for both the U.S. Government and international inter-agency groups;
- Emphasize and identify agency commitments to funding/resource needs for both the U.S. Government and international interagency groups; and
- Seek opportunities and resources for the U.S. Government interagency group to be involved in supporting meetings that allow for multi stakeholder dialogue/engagement.

### **Harmonized Commodity Specifications (C.3.3.2)**

Food aid products are not harmonized among agencies and there are no unified specifications for products that are meant to be equivalent when programmed and consumed by beneficiaries. This activity reinforces the work completed under the Commodity Reference Guide (C.3.2.1).

Significant progress was made during FAQR Phase II to harmonize product specifications and availability with WFP. The work in FAQR Phase III streamlined and unified U.S. food aid products and production practices and harmonized them with international practices.

### **Overview of Activities**

FAQR III supported USAID/FFP and partners in reviewing and updating all U.S. agency CRG, CRDs, CIDs, and technical specifications.

FAQR compared USAID and USDA specification documents to WFP and UNICEF technical specifications, conducted research and searched for literature to support changes, and held consultations with WFP, UNICEF, USDA, and USAID to receive input. Changes to the specifications included updating the microbiology and contaminant requirements and packaging

performance requirements among other items. Five FFP priority commodity specification documents were developed or updated: [Fortified Milled Rice](#)<sup>45</sup>, Corn-Soy Blend Plus, Fortified Vegetable Oil, [Super Cereal Plus](#)<sup>46</sup> and [High-Energy Biscuits](#)<sup>47</sup>.

### **Accomplishments**

- Organized a working group including members from USAID/FFP, USDA, WFP and UNICEF to collaborate on harmonization activities.
- Developed the U.S./WFP Food Aid Specifications Comparison Matrix Template. The Excel-based matrix served the harmonization efforts as it provided an easy way to present and compare the current and emerging product requirements.
- Developed fully updated specification documents for [Fortified Milled Rice](#)<sup>48</sup>, Corn-Soy Blend Plus, Fortified Vegetable Oil, [Super Cereal Plus](#)<sup>49</sup> and [High-Energy Biscuits](#)<sup>50</sup>.

### **Recommendations**

- Continue the consultative process to identify and agree upon areas of harmonization (this includes identifying areas of agreement, nonagreement and potential compromise).
  - Involve all relevant U.S. Government agencies, especially USDA/AMS, which oversees specifications for products purchased for domestic and international food and nutrition programs;
  - Continue to coordinate product specific harmonization working groups, especially for the SNPs;
  - Continue product specific supplier meetings. This will encourage suppliers and government stakeholders to communicate transparently and exchange ideas to improve products, bioavailability of nutrients, packaging and functionality (e.g. elements to be included in next generation products such as probiotics and antihelminthic compounds);
  - Continue to incorporate input from formal and informal U.S. Government and International Inter-Agency working group meetings and collaboration. Continue to update the evidence base through regular review of the relevant literature on specification elements to be updated;
  - Continue to update formats to match industry standards for specifications and templates;
  - Establish a regular schedule for updating the specifications, to align with the supplier meetings;

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<sup>45</sup> <https://www.usaid.gov/documents/1866/food-peace-fortified-milled-rice-specification>

<sup>46</sup> <https://www.usaid.gov/documents/1866/food-peace-supercereal-plus-specification-0>

<sup>47</sup> <https://www.usaid.gov/documents/1866/food-peace-high-energy-biscuits-specification>

<sup>48</sup> <https://www.usaid.gov/documents/1866/food-peace-fortified-milled-rice-specification>

<sup>49</sup> <https://www.usaid.gov/documents/1866/food-peace-supercereal-plus-specification-0>

<sup>50</sup> <https://www.usaid.gov/documents/1866/food-peace-high-energy-biscuits-specification>

- Use the USAID/FFP website and associated newsletters, and Food Aid Consultative Group meetings to update stakeholders on newly revised specifications, how to program foods, and other issues; and
- Update the Food Aid Product Description Sheets and web pages on the USAID/FFP website when specifications are updated, nutrition information changes or other alterations are made that change the product.

### **Next Steps/Future Research Priorities**

- Facilitate a consultative process to adopt specifications and templates via harmonization platforms for all products that could be integrated into the U.S. Interagency and International Working Group mandates and consultations along with a designated small working subgroup for this purpose.
- Institute a process to update the Food Aid Product Description Sheets and FFP portal with specifications as soon as they are updated, revised, or created and review them quarterly as part of the regular maintenance of the USAID/FFP Food Aid Product Information website.
- Develop terms of reference for a designated FFP team member to conduct regular updates and reviews of the FFP website, the Food Aid Product Description Sheets, tools, and resources based on revised specifications, CRDs, program priorities, updated processes due to reorganization, etc.

### **Supply Chain Optimization (C.3.1.9, C.3.3.5)**

There are many challenges faced by USAID/FFP throughout the food aid supply chain. Food aid must take a complex journey to reach the end beneficiary at the correct time. Optimizing the supply chain through improved planning through analytics has the potential to save FFP millions of dollars annually, while also efficiently responding to recipient needs.

Recommendations to improve the current supply chain were developed by analyzing data on commodity procurement, prepositioning, shipment, transfer modality, storage and handling, including the “last mile” of distribution to beneficiaries.

### **Overview of Activities**

Since each supply chain is unique in terms of institutional regulations, operational size, etc., understanding the FFP food aid operations was the first step of the supply chain optimization activities. The team created a mathematical optimization model for FFP food aid operations based on analysis of FFP Title II operations from April 2011 to September 2016. The supply chain model was continually improved based on findings from further data analysis. A report describing the operational details of USAID/FFP Title II food aid operations and establishes an evidence base for potential system improvements was developed. Prepositioning data provided by USAID was also examined and findings were shared with USAID.

The team collaborated with implementing partners to obtain data on inland country food aid distribution in Ethiopia. An optimization tool based on the mathematical model was created using Open Source Solvers and Excel as input/output software, necessary input (data) tables for the tool were also prepared. The team created a procurement data report and one initial scenario analysis with the optimization tool. Results were shared with USAID.

### **Accomplishments**

- Analyzed available data sets and highlighted possible improvement points in the FFP supply chain.
- Produced a detailed report of procurement and ocean transportation data from April 2011 to September 2016.
- Built a supply chain optimization tool and conducted initial scenario analyses.
- Collaborated with major partner agencies (WFP and CRS) to obtain necessary data to expand the operational knowledge and create meaningful scenarios to be tested with the optimization tool.

### **Next Steps/Future Research Priorities**

- In FAQR Option Year I the team will continue to generate and run strategic scenarios.
- FAQR will analyze a historical onset emergency response case and use it to build a supply chain scenario for the emergency that can then be adapted to other situations.
- FAQR will work with USAID/FFP to determine a process for handing over the supply chain optimization tool.

### **Food Safety and Quality Assurance (C.3.3.6)**

USAID/FFP is modernizing its Food Safety and Quality Assurance (FSQA) approach, transitioning from a reactive approach to a more preventive approach to food safety. The current FFP FSQA feedback loop is not effective in its goal to prevent, detect and contain incidents in the food aid supply chain.

FAQR reviewed aspects of USAID/FFP's supply chain oversight, including assessing the existing FFP food safety and quality feedback loop, and reviewed identified best practices from other food-aid and commercial supply-chain oversight. The project provided recommendations for improvements and redesign.

### **Overview of Activities**

The team reviewed aspects of FFP's supply chain oversight and assessed existing Food Safety and Quality Assurance (FSQA) feedback systems to identify best practices from U.S. Government, international and commercial industry supply chain oversight. FAQR conducted two sets of informant interviews with U.S. agency staff and partners on current FSQA feedback loops in use: USAID Programs Operations Division (POD) and Quarterly Web-Interfaced

Commodity Report (QWICR), USDA Web-Based Supply Chain Management (WBSCM) and World Food Programme's Feedback Loop. Based on these reviews, FAQR provided recommendations for improvements and redesign of the current USAID Feedback Loop, with the goal of creating a more streamlined and timely feedback system that catches and resolves issues and incidents more effectively. FAQR developed a multiplatform pilot tool called the [Food Incident and Quality Questionnaire \(FIQQ\)](#)<sup>51</sup> based on these recommendations and obtained feedback on the tool through key informant interviews with implementing partners, FFP and stakeholders.

### **Accomplishments**

- Developed the Food Safety and Quality Assurance Feedback System Analysis Report with recommendations for the development of a timely feedback system that catches and resolves issues and incidents more effectively.
- Developed a [pilot multiplatform system](#) for reporting which can be used by multiple stakeholders throughout the supply chain, to obtain timely feedback and be able to identify incident trends.<sup>52</sup>
- Conducted pilot tests of the FIQQ tool through key informant interviews at different points along the supply chain. The FIQQ tool was revised several times as it was developed, based on feedback from the field to ensure the system is fit for purpose, gathers all the necessary information and is easy to use. It should be able to be modified into a mobile app that could accept barcodes and other innovations going forward (see recommendations).

### **Recommendations**

- Adopt a reporting module to track FSQA incidents and issues throughout the entire supply chain, from producers and suppliers all the way through the "last mile" to the consumers.
  - The FIQQ was designed to obtain information similar to that in WBSCM's complaint module for domestic USDA/AMS food purchases and could be adapted to this purpose.
- Include domestic programming feedback loops, such as WBSCM, as part of the interagency agenda to highlight reporting systems that are currently in use and which could be applied to the international food aid supply chain.
  - Continue consultations (product-specific supplier meetings) USAID/USDA meetings with suppliers around product evolution, packaging, etc.
- Develop the FIQQ into a mobile app with barcode scanning to meet the needs of both USDA and USAID FSQA feedback on products in the international supply chain.

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<sup>51</sup> <https://goo.gl/forms/DjNTuSa3pgx2i1vtI>

<sup>52</sup> <https://goo.gl/forms/DjNTuSa3pgx2i1vtI>

### **Next Steps/Future Research Priorities**

- FFP should continue its broader consultations and efforts to review the use of the FSQA by implementing partner commodity managers.
- FFP should continue to prioritize a move toward use of barcodes.
- Determine how the FIQQ platform can be adapted to a mobile app and integrated with the WBSCM complaints module.

### **Local and Regional Purchase (C.3.3.7)**

USAID is interested in local and regional procurement (LRP) of food aid commodities and products. FSQA measures need to be applied to LRP-sourced products. While they are subject to FSQA requirements in the country where they are produced, they also must meet the U.S. standards as mandated in the Food Safety Modernization Act (FSMA) if the products are to be purchased by FFP.

FAQR Phase III supported FFP in the transition from Good Manufacturing Practices (GMP) to Hazard Analysis and Critical Control Points (HACCP) and in maintaining the same standards of food safety and quality in both U.S.-sourced and internationally-sourced food aid commodities.

### **Overview of Activities**

Activities included review of Commodity Requirements Documents, fine-tuning of start-up audit processes and the development of protocols for food safety inspections under the new systems. To date, USAID/FFP has mainly used LRP for the purchase of bulk grains for its emergency activities, only recently instituting a USAID mechanism for global procurement of processed SNFP products, starting with high-energy biscuits (HEB) in 2016/2017.

### **Accomplishments**

- FAQR supported the harmonization of auditing, sampling, and the inspection of processing facilities according to the FSMA and facilitated the planning and participation in LRP supplier visits and consultations.

### **Recommendations**

- Prioritize food safety and quality assurance aspects of globally-sourced products (through LRP).
- Continue to institutionalize improvements in Food Safety and Quality Assurance for U.S. sourced products.

### **Next Steps/Future Research Priorities**

- Continue work with the Food Safety Working Group which is established under the U.S. Government Global Nutrition Coordination (GNC) unit.

- Set up a sub-working group as part of the U.S. Interagency consultative process and/or the GNC unit to study and develop a FSQA approach for LRP with an emphasis on SNFP products.

### **“Last Mile”**

The “last mile,” defined as the section of the supply chain between delivery of food aid products at the main in-country warehouse and storage at the recipients’ homes prior to consumption, is not well understood. When the commodities are handed over to implementing partners upon arrival in-country, USAID loses oversight of the food aid products and activities.

FAQR Phase III generated site-specific and aggregate estimates of “last mile” costs, challenges, and opportunities, based on the FAQR field research in three regions—southern Malawi, northeastern Burkina Faso and southern Sierra Leone—to better understand and address challenges that arise at the end of the supply chain.

### **Overview of Activities**

The FAQR team reviewed data collected during FAQR’s three field studies to contribute to the “last mile” knowledge building. Information was extracted from interview transcriptions and focus groups with implementing partners, recipients and program volunteers, and from cost data collected during the three studies. The FAQR field staff also shared their insight to assist in the interpretation of the qualitative data from program staff, volunteers and beneficiaries. The “last mile” is unique to each program. Although there are no one-size-fit-all solutions, there are common challenges in all settings. This workstream highlighted key themes that need to be addressed when considering the cost-effectiveness of food assistance programs.

### **Accomplishments**

- The interviews and data collected as part of the three FAQR field studies were summarized. Key challenges and opportunities were highlighted in a final report, using illustrative examples pulled from the studies.

### **Recommendations**

- Donors should consider giving implementing partners more flexibility to use the resources available to them in-country. Implementing partners and recipients are resourceful and have learned to optimize the resources available to them. However, program restrictions can prevent them from choosing the options most adapted to their environment.
- “Last mile” decisions should be driven by cost-effectiveness rather than cost alone. “Last mile” costs are relatively small compared to the overall cost of food assistance programs, but investing in improvements in the “last mile” of food aid handling could improve the effectiveness of the programs.

- Examples discussed with implementing partners involved in FAQR field studies include:
  - Enabling implementing partners to place “call forwards” more frequently could reduce the time the foods spend in storage in-country, thus reducing the risks of damage and infestation;
  - Allowing implementing partners to choose transporters based on their reputation and performance rather than on cost alone could significantly improve in-country transport; and
  - Paying workers from the communities instead of relying on volunteers could significantly reduce the burden on the communities and keep them engaged throughout the program.

### **Next Steps/Future Research Priorities**

- Implementing partners and researchers should be encouraged to share their “last mile” experiences to contribute to the “last mile” knowledge building. The FAQR studies provided great insight on “last mile” operations, but the challenges and opportunities discussed are context-specific and therefore do not present a comprehensive overview of the “last mile.”
- Better reporting of “last mile” challenges and opportunities would allow donors and other stakeholders to better address common challenges and thus would lead to improved food aid programs over time.

## Annex I. Food Aid Quality Review Phase III Acknowledgements

The Food Aid Quality Review Phase III would like to acknowledge contributing research staff, consultants and partners:

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## Annex 2. FAQR Phase III Project Year 2 Activity Infographic

# FAQR PHASE III CLOSEOUT REPORT

## Food Aid Quality Review Project

February 2016 - January 2019



USAID

FROM THE AMERICAN PEOPLE

### Phase III: Three Years at a Glance

<p style="font-size: 2em; font-weight: bold; text-align: center;">74</p> <p style="text-align: center;">Formal Meetings &amp; Events Were Attended</p> 	<div style="text-align: center;">  <div style="border: 2px solid #004a87; border-radius: 15px; padding: 5px; display: inline-block; font-size: 2em; font-weight: bold;">54,390</div> </div> <p style="text-align: center;">People Were Reached by <b>30</b> Presentations &amp; Displays</p>	<p style="text-align: center;">Disseminated</p> <div style="text-align: center;"> <div style="border: 1px solid #004a87; padding: 5px; display: inline-block; font-size: 2em; font-weight: bold;">44</div>  </div> <p style="text-align: center;">Reports &amp; Publications</p>	<p style="text-align: center;">Achieved Greater <b>Product Specification Harmonization</b></p>  <p style="text-align: center;">Fortified Milled Rice Corn Soy Blend Plus Fortified Vegetable Oil Super Cereal Plus High Energy Biscuits</p>
<p style="font-size: 2em; font-weight: bold; text-align: center;">2,696</p>  <p style="text-align: center;">Children Were Enrolled &amp; Treated for MAM in a Sierra Leone Field Study</p>	<p style="text-align: center;">Burkina Faso Study Findings Showed</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p style="font-size: 1.5em; font-weight: bold; color: #004a87;">Composition</p> <p style="font-size: 0.8em;">of the Food Products Being Used</p> </div>  <div style="text-align: center;"> <p style="font-size: 1.5em; font-weight: bold; color: #004a87;">Quality</p> <p style="font-size: 0.8em;">of Programming &amp; Household Usage</p> </div> </div>		<p style="font-size: 2em; font-weight: bold; text-align: center;">6</p> <p style="text-align: center;">Barriers to Nutrient Bioavailability Identified through Literature Review</p> <ol style="list-style-type: none"> <li>1. Micronutrient Bioavailability</li> <li>2. Shelf Life</li> <li>3. Energy Density</li> <li>4. Protein Digestibility</li> <li>5. Gut Health</li> <li>6. Cognitive Performance</li> </ol>
<p style="text-align: center;">At Study Entry</p> <p style="font-size: 2em; font-weight: bold; text-align: center;">525</p>  <p style="text-align: center;">Body Composition Samples</p>	<div style="text-align: center;"> <p style="font-size: 0.8em;">Cost Evaluation</p>  <p style="font-size: 0.8em;">Suggested Method for Assessing Food Aid Packaging Outcomes</p> <div style="display: flex; justify-content: space-around; font-size: 0.8em;"> <div style="text-align: center;">  <p>Functionality Assessment</p> </div> <div style="text-align: center;">  <p>Performance Testing</p> </div> </div> </div>		<p style="font-size: 2em; font-weight: bold; text-align: center;">570</p>  <p style="text-align: center;">Environmental Enteric Dysfunction Samples</p>
<p style="font-size: 2em; font-weight: bold; text-align: center;">206</p>  <p style="text-align: center;">Neurocognitive Function Measures Were Collected</p>	<p style="text-align: center;">Malawi Study Findings</p>  <p style="text-align: center;">Informed USAID/FFP Programming Guidance</p>		<p style="text-align: center;">Established That</p> <p style="text-align: center; font-size: 1.5em; font-weight: bold; color: #004a87;">INCREASING</p> <p style="text-align: center;">Food Aid Last Mile Spending Could</p> <p style="text-align: center; font-size: 1.5em; font-weight: bold; color: #004a87;">IMPROVE</p> <p style="text-align: center;">Program Effectiveness</p>
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p style="font-weight: bold;">FoodAidQuality</p> <div style="border: 1px solid #004a87; padding: 5px; display: inline-block;"> <p style="font-size: 1.5em; font-weight: bold;">192</p> <p style="font-size: 0.8em;">total tweets</p> </div> </div> <div style="text-align: center;">  <p style="font-weight: bold;">REFINEnutrition</p> <div style="border: 1px solid #004a87; padding: 5px; display: inline-block;"> <p style="font-size: 1.5em; font-weight: bold;">433</p> <p style="font-size: 0.8em;">total tweets</p> </div> </div> </div>		<div style="border: 1px solid #004a87; padding: 5px; display: inline-block; font-size: 1.5em; font-weight: bold;">131,984</div> <p style="font-size: 0.8em;">potential views</p>	

Learn More: [www.foodaidquality.org](http://www.foodaidquality.org)

## Annex 3. Summary of FAQR Phase III Deliverables and Activities

### 3.1 Meetings/Events (75 total for Years 1, 2 and 3)

The table below represents select meetings and events attended or hosted by FAQR team members either to present components of the project or to interact with other individuals or teams to exchange key information.

#### Year 1 (February 2016-January 2017)

<b>Meeting/Event (35)</b>	<b>Purpose</b>
<b>FAQR Phase III Kick-Off Call</b> <i>March 2, 2016</i>	The Tufts FAQR team held a Phase III kick-off call to provide an overview of FAQR Phase III activities and introduce all collaborators.
<b>FAQR Phase II Close-Out and Phase III Start-Up Conference Call</b> <i>March 2, 2016</i>	FAQR held a conference call with USAID/FFP to discuss the remaining Phase II deliverables and the Phase III start-up activities. These activities include the Phase III Work Plan, comprehensive management plan, and marking and branding guidelines.
<b>International Association of Operative Millers Conference, Columbus, OH</b> <i>April 5-7, 2016</i>	FAQR Senior Food Technologist attended the International Association of Operative Millers Conference and Expo.
<b>Session with USAID/FFP, Washington, D.C.</b> <i>April 7, 2016</i>	The FAQR team met with USAID/FFP to work on the FAQR Phase III Work Plan.
<b>Supply Chain and Costing Work Plan Meeting, Boston, MA</b> <i>May 23-24, 2016</i>	Global Food and Nutrition, Northeastern University and FAQR Senior Cost Specialist met at Tufts to discuss the FAQR Phase III Work Plan related to supply chain oversight. Topics included finalizing the Work Plan, beginning to draft a concept note and reviewing documents related to the work stream.
<b>Field Staff Meeting, Burkina Faso</b> <i>May 28, 2016</i>	FAQR Field Research Director in Burkina Faso, together with IRSS, held an all field staff meeting to discuss plans for post-intervention follow-up.
<b>International Food Aid Inter-Agency Harmonization Meeting, Rome, Italy</b> <i>May 31-June 1, 2016</i>	FAQR team members participated in the ninth International Inter-Agency Harmonization meeting. The purpose of the meeting was to: review accomplishments since the April 2015 meeting; to discuss the Terms of Reference of the food aid inter-agency working group, to define the main goals, objectives, outputs, criteria for organization membership and working rules; to discuss the harmonization of programming guidance around food aid and nutrition delivery; to discuss inter-agency involvement in research harmonization; to discuss CODEX and World Health Organization (WHO) updates; and to discuss MNP updates.
<b>Working Meeting with USAID and WFP, Rome, Italy</b> <i>May 30 &amp; June 2, 2016</i>	FAQR acted as secretariat for working meetings with USAID and WFP to identify overlapping work streams and activities between agencies.

<p><b>Humanitarian Technology 2016 Conference, Boston, MA</b> <i>June 7-9, 2016</i></p>	<p>The FAQR Project Manager attended the Humanitarian Technology conference, which brings together scientists, engineers, technologists and policymakers from across academic, government, industry and non-government organizations to discuss, share and promote current research and recent accomplishments across all aspects of technology, from science to systems, that have a global humanitarian impact. The FAQR team followed up with a number of contacts made during the conference, including: MIT colleagues working on packaging technologies, ProvisionGARD, GrainPro, WFP and USAID procurement division and SurveyCTO.</p>
<p><b>Supply Chain Meeting, Boston, MA</b> <i>June 8, 2016</i></p>	<p>Dr. Ozlem Ergun, Northeastern University, and Greg Olson, USDA, met with members of the Tufts team to discuss the supply chain work stream and determine USDA/USAID needs.</p>
<p><b>Meetings with USAID/FFP, Washington, D.C.</b> <i>June 20-22, 2016</i></p>	<p>The FAQR worked with USAID/FFP on defining the Phase III work streams and their outputs.</p>
<p><b>Small Business Summit, Washington, D.C.</b> <i>June 23, 2016</i></p>	<p>The FAQR Project Manager represented FAQR Phase III at the Small Business Summit to explore potential small businesses that can provide services to FAQR and to learn about new small business regulations.</p>
<p><b>Food Matrices Meeting, Washington, D.C.</b> <i>June 27-29, 2016</i></p>	<p>FAQR Senior Food Technologist and Food Engineer met with USAID/ FFP's Rufino Perez and the FAQR Project Manager to discuss the Phase III Work Plan related to food matrices including finalizing the Work Plan, beginning to draft a concept note and reviewing documents related to the work stream.</p>
<p><b>Sierra Leone Startup and Formative Research Trip</b> <i>July 7-28, 2016</i></p>	<p>The FAQR Project Manager and Field Research Manager traveled to Sierra Leone from July 7-28, 2016 to complete two overarching tasks: 1) conduct formative research with regard to acceptability of the corn-soy blended flours which will be used in the Four Foods Study; and 2) develop a clear understanding of ground-level realities in Pujehun to begin planning for start-up activities.</p>
<p><b>Meeting with USAID Food for Peace, Ouagadougou, Burkina Faso</b> <i>July 22, 2016</i></p>	<p>The Burkina Faso FAQR team met with the Food for Peace office in Ouagadougou to provide study updates and discuss the disposition plan for excess commodities.</p>
<p><b>Sierra Leone Treatment Study Planning Meeting, Boston, MA</b> <i>August 2-5, 2016</i></p>	<p>Members of the FAQR team met in Boston to update the Treatment study data management and analysis plan (DMAP), discuss treatment study startup, finalize study timeline and finalize plans for project startup.</p>
<p><b>Meeting with World Food Program, Burkina Faso</b> <i>August 2, 2016</i></p>	<p>The Field Research Director for the Burkina Faso FAQR, and the ACDI/VOCA ViM team met with the WFP in Burkina Faso to discuss possibilities for transferring excess commodities to their care.</p>
<p><b>Hostile Environment Awareness Training (HEAT), United Kingdom</b></p>	<p>The Field Research Director for the Burkina Faso study attended training on Hostile Environment Awareness, led</p>

<i>August 15-19, 2016</i>	by Clarity Security in the United Kingdom. This training included information on what to do during active shooter situations, kidnappings, carjackings, grenade attacks and other environmental threats. It also included intensive first-aid training and a simulation exercise where participants were put into tense situations to test their ability to react to adversities of different types.
<b>Meetings on Phase II Cost Projection Tool and the Phase III Decision Support Cost Tool for FAQR Phase III, Davis, CA</b> <i>August 23-24, 2016</i>	The FAQR Senior Cost Specialist and Cost Specialist/Data Analyst met to review the existing cost model and new data available, to develop a plan to build a new model, and to propose meaningful ideas (on paper) based on the two models. They conducted exploratory analysis of new data available to populate the cost tools to inform decision-making in planning the next steps. These included: 1) updating the Phase II cost tool; 2) preparing a paper based on the Phase II cost tool; 3) building the Phase III Decision Support Cost Tool; and 4) preparing a second paper based on the Phase III Decision Support Cost Tool.
<b>Food Aid Basket and Commodity Management Systems Work Stream Meetings with USAID and Global Food and Nutrition, Washington, D.C.</b> <i>August 30-31, 2016</i>	FAQR held a meeting with USAID/FFP and partners at Global Food and Nutrition in Washington, D.C. to discuss specific work streams within the grant. The topics of the meeting were specific to the Food Aid Safety & Quality Systems Work Stream, the Commodity Management System Work Stream and the Food Basket Work Stream. By the close of the meeting, participants had attained a joint understanding and vision of what the Commodities Reference Portal should be, received feedback necessary for finalizing the fact sheet template, developed a mutual understanding of food basket work stream deliverables and reviewed REFINE website branding.
<b>Meeting with Red Cross, Burkina Faso</b> <i>September 19, 2016</i>	The Field Research Director for the Burkina Faso FAQR and the ACDI/VOCA ViM team met with the Red Cross in Burkina Faso to discuss possibilities for transferring excess commodities to their care.
<b>FAQR Team Meeting, Boston, MA</b> <i>September 28-29, 2016</i>	FAQR met in Boston for a team meeting. The purpose of the meeting was to share updates on progress made within each work stream during FY 2016, begin to lay out work stream plans for FY 2017, review key strategies for an effective project and identify areas of overlap among work streams and synergy potential.
<b>International Food Assistance and Food Security Conference, Des Moines, IA</b> <i>October 10-12, 2016</i>	FAQR team members attended the International Food Assistance and Food Security Conference (IFAFSC) in Des Moines, IA. FAQR also set up a table at two afternoon networking sessions to provide conference participants with the opportunity to learn more about FAQR. Additionally, the team organized a side meeting for suppliers and U.S. Government representatives from USDA and USAID. The purpose of the meeting was to hold an open discussion to highlight progress and elicit input on product innovations, share perspectives on directions for

	product innovations and address pathways and opportunities to translate research findings into product innovations.
<b>Burkina Faso Field Research Director visit, Boston, MA</b> <i>October 15-November 1, 2016</i>	The Burkina Faso Field Research Director visited Boston to meet with the FAQR team to discuss the Burkina Faso prevention study. Her visit objectives were to: 1) discuss next steps in data entry, cleaning and analyses; 2) discuss ideas for results dissemination; 3) familiarize data team with the datasets and begin formulating data analyses plans; 5) write and submit abstract for Experimental Biology conference; 6) meet with new FAQR partners in other work streams; and 7) discuss next steps in cost analyses.
<b>Project Administrator trip, Sierra Leone</b> <i>October 17-31, 2016</i>	The FAQR Project Administrator traveled to Sierra Leone to conduct financial and award management training with local research firm Caritas Bo. Additionally, she assisted the Field Research Manager in negotiating and drafting a Memorandum of Understanding (MOU) with Community Action for the Welfare of Children (CAWeC), provided logistical and procurement support for study startup, clarified contract terms with Project Peanut Butter (PPB) and met with local USAID representatives.
<b>Supplier Visits, Midwestern US</b> <i>October 31-November 3, 2016</i>	FAQR Senior Food Technologist and USAID/FFP's Rufino Perez visited food aid commodity suppliers in the Midwest to discuss food quality and safety challenges, packaging technologies, supply chain and existing feedback systems for issues which occur along the supply chain. Vendors visited were: Didion Milling, Cambria & Markesan, WI; Incobrasa Industries, Ltd., Gilman, IL; Columbus Vegetable Oils, Des Plains, IL; and Bunge Milling, Danville, IL.
<b>PACK EXPO International Trade Show, Chicago, IL</b> <i>November 7-8, 2016</i>	The FAQR Senior Food Technologist, attended the PACK EXPO International Trade Show in Chicago, IL. The Expo provided an opportunity to connect with vendors and identify current trends in packaging technology useful to the activities and deliverables of the food aid protection/packaging work stream.
<b>Cost Specialist/Data Analyst Trip, Sierra Leone</b> <i>November 3-26, 2016</i>	The Cost Specialist/Data Analyst, visited Sierra Leone where she developed the startup cost data collection guide, collected some initial startup costs with implementing partners and fine-tuned cost data collection protocols in the following cost categories: startup, storage, and transportation. She also visited PHUs and met with WFP officers at the Freetown Port and Kenema warehouse to prepare for storage and transportation costing.
<b>Co-PI Trip, Burkina Faso</b> <i>November 26-December 16, 2016</i>	The Co-PI traveled to the prevention study in Burkina Faso. The objectives of this trip were as follows: 1) meet with local ViM program partners, Save the Children and ACDI/VOCA about the closeout of the study and next steps; 2) meet with local research implementation partner about closeout procedures and next steps for data entry

	and analyses; 3) begin planning process for results dissemination; and 4) provide FFP with study updates.
<b>Food Aid Consultative Group (FACG) Meeting, Washington, D.C.</b> <i>December 12, 2016</i>	FAQR team members attended the fall FACG Meeting at the National Press Building in Washington, D.C. Dina Esposito shared parting remarks on FFP's progress, growth and humanitarian assistance's changing nature due to conflicts and displacement. FAQR learned how USAID will be introducing a supply chain management team into its office.
<b>Supply Chain Meeting with USAID/FFP, Washington, D.C.</b> <i>December 13, 2016</i>	The FAQR team met with Greg Olson and other USAID/FFP staff to review currently-available supply chain data and to discuss the supply chain model, country context, current data needs, FFP tools and resources useful for framing the supply chain data. The meeting started with an update on progress made as part of the FAQR Supply Chain work stream. John Lamm from USAID/Emergency Food Security Program (EFSP) shared their tools and experiences with data. USAID Country Bureau Officers (CBOs) for Uganda and Ethiopia gave general information about the in-country process related to procurement and supply chain management. Additionally, commodity prepositioning logistics were discussed.
<b>Sierra Leone Sub-Studies (Body Composition and Environmental Enteropathy) Planning Meeting, Boston, MA</b> <i>January 3, 2017</i>	Members of the FAQR team met in Boston to review and finalize the sub-study protocols, discuss sub-study startup and logistics, and finalize sub-study timeline.
<b>Co-PI trip, Sierra Leone</b> <i>January 6-18, 2017</i>	The Co-PI traveled to the treatment study in Pujehun, Sierra Leone. The objectives of this trip were as follows: 1) meet with local partners, Ministry of Health and Social Protection (MOHSP), Project Peanut Butter (PPB), Caritas Bo, CAWeC, and WFP about study startup and next steps; 2) meet with Washington University Co-PI Dr. Mark Manary regarding study coordination and implementation; 3) participate in PHU scouting trips; and 4) provide USAID partner in country with study updates.
<b>Year 2 Planning Meeting with USAID/FFP, Washington, D.C.</b> <i>January 25, 2017</i>	The FAQR team met with COR Rufino Perez and Elizabeth Brown to discuss the Year 2 Work Plan and Phase III work stream priorities.
<b>International Integrated Pest Management and Fumigation Safety Training, Manhattan, KS</b> <i>January 24-26, 2017</i>	FAQR Food Matrices Senior Research Assistant attended a training organized by PCI, Department of Grain Science and Industrial Fumigant Company, which was funded by the TOPS program on USAID's environmental assessment for fumigation of food aid commodities. The training highlighted different types of warehouse pests and types of fumigants and pesticides to be used specifically for pest control in food aid commodities. The course also introduced best practices for commodity management to prevent losses from insects and pests by using safe and

	effective pesticides. This helped in understanding the environmental impact of fumigation in warehouses.
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### Year 2 (February 2017-January 2018)

<b>Meeting/Event (29)</b>	<b>Purpose</b>
<b>Visit to Natick Army Laboratories Combat Feeding Program, Natick, MA</b> <i>January 27, 2017</i>	The FAQR team visited Natick Army Laboratories in Natick to share information regarding FAQR Phase III's research areas and to discuss Natick's research regarding innovations in food processing, packaging technology, supply chain management and food matrices/bioavailability. FAQR Phase III team members identified overlap/synergy areas for follow-up.
<b>The Packaging Conference, Tampa, FL</b> <i>February 6-8, 2017</i>	FAQR Senior Food Technologist attended the Packaging Conference in Tampa. The conference provided an opportunity to connect with packaging engineers and vendors, and identify current trends in packaging technology useful to the activities and deliverables of the food aid protection/packaging work stream.
<b>Midwest Conference on Swine Nutrition, Omaha, NE</b> <i>March 13-15, 2017</i>	The Senior RA for Food Matrices and Bioavailability attended the Midwest Conference on Swine Nutrition in Omaha. It was of particular interest to the food matrices team because swine's digestion pathway has been considered the closest to human digestive system. The current knowledge on swine feed, its impact on the pigs' digestion and absorption of nutrients will be beneficial to the work stream.
<b>U.S. Government Interagency Coordination Meeting, Washington, D.C.</b> <i>March 28, 2017</i>	The Interagency meeting brought together 35 representatives from several U.S. Government agencies, offices and branches within USAID, USDA, National Institutes of Health (NIH) and others. The meeting focused on ongoing interagency efforts that streamline, facilitate and support continuing U.S. Government quality improvement activities related to food aid products, programs and processes. The meeting also included discussion of mechanisms to institutionalize interagency collaboration. Interagency stakeholders developed a list of high priority areas for ongoing and future interagency collaboration.
<b>Sierra Leone Treatment Study Start-Up Meeting, Pujehun, Sierra Leone</b> <i>April 19, 2017</i>	A start-up event to mark the official launch of the Sierra Leone treatment study was held on April 19, 2017 and provided a formal introduction to the study design, objectives and implementing partners. The event was attended by community leaders, the Pujehun District Council, Pujehun District Medical Team, representatives from USAID/Sierra Leone's Office of Food for Peace and the Director of the Food and Nutrition Security Directorate in the Sierra Leone's Ministry of Health and Sanitation.

<p><b>CORE Group Meeting, Baltimore, MD</b> <i>April 20, 2017</i></p>	<p>The FAQR Project Manager attended the CORE Group Meeting in Baltimore. Through the theme of "Integrated Approaches: The Social &amp; Behavior Change (SBC) Key to Community Health," the Project Manager learned about SBC applied to nutrition programming and shared the FAQR work focused on SBC for food aid products.</p>
<p><b>New England Food Technology Forum, Boston, MA</b> <i>May 2, 2017</i></p>	<p>FAQR attended the New England Food Technology Forum where new foods and new technologies for food processing, storage and safety were showcased. Although technologies were mainly targeted to the commercial world and not directly applicable to food aid, the Forum offered some valuable insight into the current innovation trends in food technology.</p>
<p><b>MSU Packaging Workshop, East Lansing, MI</b> <i>May 23-25, 2017</i></p>	<p>The FAQR team attended the MSU Packaging Workshop which gathered more than 50 food aid suppliers, packaging suppliers, researchers and partners to discuss food aid packaging. The main challenges associated with packaging were confirmed and highlighted. Efforts to improve packaging will be organized around several focus groups in the following proposed areas: 1) oil packaging; 2) paper bags; 3) infestation; 4) systematic information gathering; and 5) shelf-life studies.</p> <p>The main challenge raised during the workshop was the lack of data and therefore the difficulty to quantify losses, prioritize areas in most urgent need of improvement and evaluate the cost implication of the packaging system. The importance of taking a cost-effectiveness approach and of considering the economic impact of packaging decisions and innovations was also mentioned.</p>
<p><b>Food Aid Consultative Group (FACG) Meeting, Washington, D.C.</b> <i>June 1, 2017</i></p>	<p>Members of the FAQR team attended the FACG meeting during which the current famines/food emergencies and food security responses were discussed as well as the proposed U.S. Government FY 2018 budget, carrying forward and program implications.</p>
<p><b>Food Safety Supply Chain Conference, Rockville, MD</b> <i>June 5-6, 2017</i></p>	<p>Hosted at the U.S. Pharmacopeial Convention, the Food Safety Supply Chain Conference was an opportunity to learn from industry leaders about new tools, technologies and techniques to monitor food safety/quality in the global food supply chain.</p>
<p><b>U.S. House Agriculture Committee, Public Hearing on The Next Farm Bill, Washington, D.C.</b> <i>June 7, 2017</i></p>	<p>FAQR attended the House Agriculture Committee public hearing on June 7 to learn from international food aid stakeholders and to discuss the future of international food aid as part of ongoing work to revise the 2018 Farm Bill.</p>
<p><b>Inter-Agency Working Group on Specialized Nutritious Food</b></p>	<p>The International Inter-Agency Working Group for Specialized Nutritious Food Products (SNFPs) met in Copenhagen, Denmark on June 12 &amp; 13, 2017. The</p>

<p><b>Products Meeting, Copenhagen, Denmark</b> <i>June 12-13, 2017</i></p>	<p>meeting was attended by representatives from USAID, the World Food Programme (WFP), United Nations Children’s Fund (UNICEF), Médecins Sans Frontières (MSF) and the World Health Organization (WHO). The FAQR team serves as the group’s secretariat. Details of the meeting can be found in the meeting communique on the <a href="#">FAQR website</a><sup>53</sup>.</p>
<p><b>USAID/WFP Meeting, Copenhagen, Denmark</b> <i>June 14, 2017</i></p>	<p>FAQR helped coordinate a side meeting between USAID/FFP and WFP during the International Inter-Agency meeting in Copenhagen. Topics included programming strategy, updates on use and development of fortified rice, high-energy biscuit (HEB) reformulation, joint auditing and updates on the FAQR Treatment study in Sierra Leone.</p>
<p><b>Co-PI Monitoring Visit, Pujehun, Sierra Leone</b> <i>July 9-22, 2017</i></p>	<p>The Co-PI visited the Sierra Leone Treatment Study for a monitoring visit. The trip’s objective was to monitor and evaluate the quality of data collection for the main study and the environmental enteric dysfunction and body composition sub-studies.</p>
<p><b>Neurocognitive Consultant Trip to Sierra Leone, Pujehun, Sierra Leone</b> <i>July 27-August 11, 2017</i></p>	<p>The Neurocognitive Consultant visited Pujehun, Sierra Leone to train the field research assistants on use of the eye-tracking machine and other testing methods for the neurocognitive function sub-study, and to begin to test the function of the machine in the field. The pilot part of the neurocognitive sub-study was launched after the visit, in August 2017.</p>
<p><b>Super Cereal Plus (SC+) &amp; Corn-Soy Blend (CSB) Specification Update Workshop, Washington, D.C.</b> <i>August 8, 2017</i></p>	<p>FAQR attended the SC+ and CSB Specifications workshop with USAID/FFP and supplier representatives. Discussion focused primarily on costs, data collection/use, packaging and questions regarding supply chain efficiencies.</p>
<p><b>USAID/FFP Mid-Project Meeting, Washington, D.C.</b> <i>August 9, 2017</i></p>	<p>The FAQR team met with the USAID/FFP COR and COR Alternate in Washington, D.C. to review the progress made by each work stream, evaluate planned activities for the second half of the project and look at outputs and deliverables for each work stream.</p>
<p><b>FAQR Team Meeting, Boston, MA</b> <i>August 23-25, 2017</i></p>	<p>The Annual FAQR team meeting was held in Boston, MA from August 23-25. It provided team members with an opportunity to receive updates from each work stream on the status of activities and future work plans. Additionally, team members met in smaller work stream groups to make progress on key areas of work. Finally, the team began to create a Research Uptake Strategy for the FAQR Phase III project to ensure dissemination of FAQR Phase III outputs across a wide range of platforms and stakeholders. The team also spent time developing ideas for the 2018 FAQR Evidence Summit.</p>

<sup>53</sup> [http://foodaidquality.org/sites/default/files/uploads/10th%20Inter-Agency%20Harmonization%20Meeting%20Communique\\_Final\\_reformatted.pdf](http://foodaidquality.org/sites/default/files/uploads/10th%20Inter-Agency%20Harmonization%20Meeting%20Communique_Final_reformatted.pdf)

<p><b>FANTA Knowledge-Sharing Meeting, Washington D.C.</b> <i>September 6, 2017</i></p>	<p>The Co-PI and Project Manager attended the FANTA Knowledge-Sharing Meeting. The event highlighted the project's research and multisectoral nutrition activities and innovations over the last six years, and the impact of its work at the global, country and community levels.</p>
<p><b>CORE Group's Global Health Practitioner Conference, Baltimore, MD</b> <i>September 25-29, 2017</i></p>	<p>The Project Manager attended the Core Group's Global Health Practitioner Conference. The conference provided FAQR with the opportunity to learn about a new Nutrition Reference Guide which will be a helpful future tool for the team to determine which nutrition-specific tools and approaches to use for programming and research. The Project Manager also participated in the nutrition working group and was able to promote REFINE and FAQR activities as well as contribute to the work plan for the upcoming year to include FAQR initiative on food aid design and programming.</p>
<p><b>SPRING Nutrition Conference, Washington, D.C.</b> <i>October 4, 2017</i></p>	<p>SPRING hosted a learning event in Washington, D.C. to share key lessons learned and results achieved over the past six years, along with a wide range of tools developed to strengthen evidence-based nutrition programming.</p>
<p><b>Site Visit to Edesia Nutrition, Kingstown, RI</b> <i>October 6, 2017</i></p>	<p>FAQR visited Edesia Nutrition's new facility in Rhode Island and discussed the potential for future research collaboration. Edesia expressed interest in working with FAQR on possible formulation testing and packaging trials.</p>
<p><b>Supplier Meetings for Fortified Milled Rice and Fortified Vegetable Oil, Houston, TX</b> <i>October 31-November 3, 2017</i></p>	<p>USAID/FFP, in partnership with USDA, WFP and U.S.-based suppliers of two products (Fortified Milled Rice, Fortified Vegetable Oil), met to discuss the private/public partnership of these entities. The fortified milled rice meeting focused on the changes in the specifications the suppliers would be seeing in the next 3-6 months, the approval of 2 technologies (coated rice kernels and extruded rice kernels) to fortify rice and the continued effort to scale up the use of fortified milled rice in programming. The fortified vegetable oil meetings focused on issues concerning food safety and quality issues of the product and packing.</p>
<p><b>Supplier Meetings for Fortified-Blended Flours (FBFs) and Ready-to-Use Foods (RUFs), Washington, D.C.</b> <i>November 8 &amp; 9, 2017</i></p>	<p>USAID/FFP in partnership with USDA and U.S.-based suppliers of two products (FBFs and RUFs) met to discuss the private/public partnership of these entities. These meetings are a continuation of meetings that have been regularly held between USAID/FFP, USDA and suppliers. The FBFs meeting focused on changes to the products packaging (bags) specifically and a prototype of a new bag was presented. There were also discussions on FBF specifications changes related to microbiological testing and requirements as well auditing frequency. The RUF meeting focused on forecasting and contractual issues that were explained from both parties, as well as branding and auditing concerns from the suppliers.</p>

<p><b>Meeting with Ajinomoto, Boston, MA</b> <i>November 22, 2017</i></p>	<p>Representatives from the food and chemical corporation Ajinomoto traveled to FAQR's Boston office to give a presentation on a ready-to-use food product formulated with Ajinomoto-manufactured amino acids, rather than whole proteins. They presented information about the company, details about the product itself and the results from a recent effectiveness trial which used this new product.</p>
<p><b>Sierra Leone National Nutrition Fair, Freetown, Sierra Leone</b> <i>November 23-25, 2017</i></p>	<p>This was the first national nutrition fair to be held in Sierra Leone. FAQR and four foods study partner organizations were represented as part of the Pujehun delegation to the Fair.</p>
<p><b>Food Aid Consultative Group (FACG) Meeting, Washington, D.C.</b> <i>December 7, 2017</i></p>	<p>This semi-annual meeting provided an update on current and projected budgets for USAID/FFP, USDA/McGovern-Dole and USDA/Food for Progress. Research was presented from MIT's Comprehensive Initiative on Technology Evaluation (CITE) group on possible improvement to packaging for bagged products. FEWS NET provided global food security and nutrition update with projections for 2018 for humanitarian assistance needs.</p>
<p><b>USAID Sierra Leone Site Visit, Pujehun, Sierra Leone</b> <i>December 11, 2017</i></p>	<p>Representatives of the Sierra Leone Missions' USAID Food for Peace office, visited Pujehun town and district. They were able to visit a supplementary feeding program site, a counseling card training and meet with the field survey team.</p>
<p><b>FAQR III Project Year 3 Work Plan Review Meeting with USAID/FFP, Washington, D.C.</b> <i>January 29-30, 2018</i></p>	<p>The FAQR team met with USAID/FFP to provide an update on progress toward FAQR deliverables in Project Year 2, review the FAQR Project Year 3 Work Plan and discuss planned activities for FAQR Project Year 3.</p>

### Year 3 (February 2018-January 2019)

Meeting/Event (11)	Purpose
<p><b>Neurocognitive Consultant Visit, Sierra Leone</b> <i>February 7-14, 2018</i></p>	<p>The neurocognitive consultant visited Pujehun District, Sierra Leone to assess neurocognitive sub-study progress and prepare the team for the transition from the pilot to the principal study. The principal neurocognitive study, aims to recruit 66 well-nourished controls and 264 MAM (66/group). The team updated software for data collection, revised questionnaires and data collection forms, and conducted refreshment training with the local study personnel. The principal study was started after the visit in February 2018.</p>
<p><b>Workshop for USAID/FFP on the Decision Support Tool (Remote)</b></p>	<p>An online mini-workshop on the FAQR Decision Support Tool was organized for USAID/FFP nutrition advisors. A</p>

<i>March 8, 2018</i>	walk-through of the beta version of the interactive tool interface was presented during the workshop and attendees had the opportunity to use the tool on their own while asking questions and providing feedback based on their user experience.
<b>Meeting with USAID/FFP Program Operations Division (POD) on the Supply Chain Optimization Tool, Washington, D.C.</b> <i>March 20, 2018</i>	The FAQR presented an update on the analysis of current data and the ideal data content to feed the supply chain optimization tool. An example case of the sudden onset emergency response to 2016's Hurricane Matthew in Haiti was identified. Additionally, the importance of having a database design for the FFP system was highlighted.
<b>Co-PI Visit, Sierra Leone</b> <i>March 17-27, 2018</i>	The Co-PI conducted a monitoring visit of the Four Foods Treatment study. During the 10 days in the field, she observed PPB's clinic operations, the data collection for each of the three sub-studies, field survey data collection carried out by Caritas Bo, and the procedures for data management.
<b>U.S. Army Natick Soldier Research, Development and Engineering Center (Natick Labs) Review Panel, Natick, MA</b> <i>May 8, 2018</i>	The Food Matrix RA visited Natick Labs as a panelist to review and provide feedback on 10 food technology-based future projects currently being planned by the Combat Feeding Directorate under the Fiscal Year 2019-2020 Early Applied Research Portfolio.
<b>U.S. Government Inter-Agency Harmonization Meeting, Washington, D.C.</b> <i>May 22, 2018</i>	The FAQR team facilitated planning and organizing the 11 <sup>th</sup> USAID-USDA Inter-Agency Working Group meeting with representatives from U.S. Government agencies, offices and branches within USAID and USDA, as well as other food aid players. Presentations included: USAID and USDA agency updates; food aid product research updates; product updates and development, new product introduction and packaging issues; latest developments in food safety, auditing and testing; current supplier and procurement issues; and discussion about options for sustaining the Inter-Agency Working Group collaboration going forward.
<b>Meeting with Washington University in St. Louis on Sierra Leone Four Foods Study, Boston, MA</b> <i>June 12, 2018</i>	The Washington University in St. Louis Co-PI and research team, Tufts University PI and research team, and a representative from Caritas Bo met to discuss progress of the Four Foods Treatment Study and to begin planning for the study closeout and dissemination activities.
<b>Michigan State University (MSU) Packaging Workshop, East Lansing, MI</b> <i>August 14-15, 2018</i>	The FAQR team presented their proposed method for assessing packaging options at the 2 <sup>nd</sup> Food Aid Packaging Solutions Workshop at Michigan State University. The meeting was attended by approximately 70 stakeholders including USAID and USDA representatives, WFP

	representatives, food aid vendors, packaging suppliers, researchers and implementing partners.
<b>International Inter-Agency Working Group Meeting, Brussels, Belgium</b> <i>September 10-11, 2018</i>	The 11 <sup>th</sup> International Inter-Agency Working Group meeting was held in Brussels, Belgium on September 10 & 11, 2018 with FAQR serving as the secretariat. The Group reviewed annual progress toward defined objectives, including reviewing the agencies' accomplishments since the June 2017 meeting and providing updates on the harmonized ready-to-use food (RUF) specifications and recent Codex and World Health Organization (WHO) activities relevant to specialized nutritious food products. The Group reviewed applications for two new member organizations—the International Committee of the Red Cross (ICRC) and Action Against Hunger (ACF)—to the Inter-Agency Working Group. They shared perspectives on programming considerations and research related to SNFPs as well as discussed potential for new formulations of “next generation” RUFs. The Group continued discussions on food safety and quality including storage and transport practices, and joint inspection and auditing. Finally, time was dedicated to drafting interagency talking points related to inclusion of SNFPs on the essential medicines list (EML).
<b>FAQR Team Meeting, Boston, MA</b> <i>October 3-5, 2018</i>	The Annual FAQR team meeting was held in Boston from October 3-5. It provided team members with an opportunity to receive updates from each work stream on the final status of activities, key findings, recommendations and next steps/future priorities.
<b>Humanitarian Fortified Vegetable Oil Suppliers Meeting, Chicago, IL</b> <i>November 1, 2018</i>	The FAQR team presented their proposed method for assessing the cost-effectiveness of packaging options at the Fortified Vegetable Oil (FVO) Suppliers Meeting. The meeting gathered the current USAID FVO vendors and several packaging suppliers to discuss possible improvements to the packaging of FVO and the best way forward. The FAQR presented their assessment of the current 4-liter tin cans and of 4 potential alternative packaging options. It included cost and functionality comparisons and the results of laboratory testing that was conducted to evaluate the performance of the different options.

### 3.2 Presentations (30 total for Years 1, 2 and 3)

The table below represents key presentations delivered by members of the FAQR team.

#### Year 1 (February 2016-January 2017)

Presentations (7)	Purpose	Est. Number of Attendees
<b>EB 2016 Conference, San Diego, CA</b> <i>April 2-6, 2016</i>	The FAQR team presented two posters at EB 2016: (1) <a href="#">A Tale of Two Measures: Self-Report and Lab-Assessed Values in Amount of Oil Added to CSB Porridge Prepared by</a>	14,000 conference attendees

	<a href="#"><u>Caregivers of Children with Moderate Acute Malnutrition in Southern Malawi</u></a> , and (2) <a href="#"><u>The Role of Dairy in the Comparative Effectiveness and Cost of Fortified Blended Foods Versus Ready-to-Use Foods in Treatment of Children with Moderate Acute Malnutrition</u></a> .	
<b>Presentations with USAID/FFP, Washington, D.C.</b> <i>June 20-22, 2016</i>	The FAQR team presented FAQR Phase I and Phase II accomplishments and ongoing/planned FAQR Phase III activities to USAID/FFP senior management, FFP staff and USDA	25
<b>TOPS Dissemination Presentation, Washington, D.C.</b> <i>September 8, 2016</i>	The FAQR team held a meeting for food assistance PVOs hosted by the TOPS Program to discuss findings from FAQR Phase II and plans for FAQR Phase III.	19
<b>International Food Assistance and Food Security Conference, Des Moines, IA</b> <i>October 10-12, 2016</i>	FAQR Principal Investigator (PI) and USAID/FFP's Rufino Perez provided an overview of main outcomes of previous phases (FAQR I and II), key objectives of the current phase (FAQR Phase III) and offered a look at specific contributions in the attempt to make food aid more cost-effective and of longer-lasting positive impact. A specific example of research on fortified rice was also provided in the session.	Approximately 100
	Additionally, the team organized a side meeting for suppliers and U.S. Government representatives from USDA and USAID on product innovations. Kansas State University (KSU) FAQR Food Engineer Sajid Alavi gave a short presentation on extrusion technology and its link to product innovation.	38
<b>MIT Tech Conference, Cambridge, MA</b> <i>November 10-12, 2016</i>	FAQR Co-PI participated in a panel presentation at the MIT Technology and Development Conference focused on bringing technology and innovation to work in the developing world. The presentation focused on FAQR's work on analyzing the cost-effectiveness of specialized nutritious food aid products for treating and preventing MAM and why this analysis is crucial to assessing the overall effectiveness of these foods.	50
<b>Burkina Faso Brown Bag Presentation at ACDI/VOCA, Washington, D.C.</b> <i>November 16, 2016</i>	Burkina Faso FAQR Field Research Director and Co-PI gave a brown bag presentation to colleagues from ACDI/VOCA and Save the Children on the status of the prevention research study in Burkina Faso. The presentation focused on the study objectives, collaboration with ACDI/VOCA and Save the Children, and discussion about how the results will be useful to future programming.	25
<b>FAQR Phase III Year 2 Presentation with USAID/FFP, Washington, D.C.</b> <i>January 25, 2017</i>	The FAQR team presented FAQR Phase III activities and sustainable outputs to USAID/FFP Senior Management and FFP staff.	8

**Year 2 (February 2017-January 2018)**

<b>Presentations (14)</b>	<b>Purpose</b>	<b>Est. Number of Attendees</b>
<b>3<sup>rd</sup> International Congress on Hidden Hunger, Stuttgart, Germany</b> <i>March 20-22, 2017</i>	FAQR Science Research Specialist, attended the 3 <sup>rd</sup> Congress Hidden Hunger in Stuttgart and gave a presentation on “Environmental Enteric Dysfunction as a Causative Factor in Stunting and Wasting: Treatment Trials in Africa,” which included an overview of the FAQR Sierra Leone treatment study and sub-study on EED.	300
<b>Experimental Biology, Chicago, IL</b> <i>April 22-26, 2017</i>	<p>The FAQR Co-PI, data team and partners at Global Food and Nutrition attended the 2017 Experimental Biology Conference in Chicago from April 22-April 26. Five posters were presented on the following topics:</p> <p>1) Cost-Effectiveness Protocol for the Sierra Leone Treatment Study; 2) Design and Baseline Characteristics of the Burkina Faso Prevention Study; 3) Delivery of Social-behavior Change Communication through the Care Group Model in Malawi; 4) Experiences of Beneficiary Caregivers in a Supplementary Feeding Program in Southern Malawi; and 5) Accelerated Shelf-Life Studies: Testing Micronutrient Stability of New and Upgraded Food Aid Products. (<a href="#">See Annex 2.7 for Poster Abstracts</a>).</p> <p>Participation in the Experimental Biology conference provided FAQR Phase III with a unique opportunity to publicize FAQR studies to a diverse scientific community. The FAQR Co-PI also received the Kellogg International Prize in Nutrition Lectureship in recognition of her work to advance the field of nutrition science and policy through a variety of projects including FAQR.</p>	14,000
<b>Presentation on FAQR accomplishments to USAID/FFP, Washington, D.C.</b> <i>May 4, 2017</i>	The FAQR Principal Investigator, Co-PI and Project Manager presented insights from the first year of the FAQR Phase III project to USAID/FFP senior staff and the USAID Wider Nutrition Group. This was an opportunity for the FAQR team to share findings from the first year of the project and receive input on USAID/FFP priorities.	30
<b>Burkina Faso Prevention Study Preliminary Results Dissemination, Kaya, Burkina Faso</b> <i>May 9-10, 2017</i>	FAQR, in collaboration with the Victory against Malnutrition (ViM) program and <i>Institut de Recherche en Sciences de la Santé</i> (IRSS), hosted a dissemination of preliminary descriptive results and insights from the Burkina Faso prevention of MAM and stunting study in Kaya, Burkina Faso on May 9 & 10, 2017. More than 300 participants attended the	300

	dissemination event, including representatives from the communities involved in the study, health and nutrition promoters, data collection agents and community authorities.	
<b>Health and Humanitarian Logistics Conference, Copenhagen, Denmark</b> <i>June 7-9, 2017</i>	<p>FAQR organized a workshop as part of the 2017 Health and Humanitarian Logistics (HHL) Conference on maximizing food aid supply chain cost-effectiveness with panelists from WFP and World Vision. Two important issues which the workshop sought to address were:</p> <p>i) how to fill significant evidence and data gaps; and  ii) what tools and frameworks could be used to improve predictive modeling.</p> <p>The session presented four food aid supply chain cost-effectiveness frameworks currently used by development and humanitarian organization decisionmakers at different levels. These included FAQR's Decision Support Tool and Supply Chain Optimization model, WFP's optimization model and World Vision's "last mile" tool.</p> <p>A common theme was the importance of developing tools tailored to customer needs that are user-friendly and tailored to address specific situations and contexts.</p> <p>The team also presented a poster on "Accelerated Shelf-Life Studies and Micronutrient Stability of Food Aid Products: Implications for the Humanitarian Supply Chain." The poster shared the results of the FAQR Phase II accelerated shelf-life studies to determine the vitamin and mineral stability and integrity of corn-soy whey blend (CSWB), super cereal plus (SC Plus), corn-soy blend plus (CSB+) and ready-to-use supplementary food (RUSF) over their intended shelf life.</p>	50
<b>2017 Institute of Food Technologists (IFT) Meeting, Las Vegas, NV</b> <i>June 25-26, 2017</i>	<p>A roundtable discussion was organized on "Improving the Nutritional Value of Foods in the USAID Food Aid Basket: Optimization of Macro and Micro Nutrients, Food Matrices, Novel Ingredients and Food Processing Technologies" on June 25, 2017 during the annual Institute of Food Technologists (IFT) meeting. The presentations and discussions focused on food aid products and food matrices, processing and bioavailability of nutrients and the impact on nutrition, challenges and the way forward to improve the nutritional quality of food aid products. During the day-long event, ideas were collected and discussed among scientists and</p>	37 roundtable participants 19,000 total IFT conference attendees

	<p>researchers, industry stakeholders and government agencies. The focus throughout was on the latest science and practice relating to delivering bioavailability of nutrients in foods.</p> <p>FAQR’s Food Technologist gave a presentation on “Product Innovation for Humanitarian Food Assistance Interventions” as part of the symposium on “Dietary Protein for Food and Nutrition Security: Challenges and Opportunities.” The significance and impact of FAQR’s activities were shared with the audience, with an emphasis on the improvements that followed FAQR Phase I’s recommendations, as well as a presentation of current studies and FAQR Phase III activities.</p> <p>The team presented a poster: “Accelerated Shelf-Life Studies and Micronutrient Stability of Food Aid Products: Implications for the Humanitarian Supply Chain” (<a href="#">See Annex for Poster Abstracts.</a>)</p>	
<p><b>TOPS Knowledge Sharing Meeting, Washington, D.C.</b> <i>July 19-20, 2017</i></p>	<p>The FAQR team held a session at the TOPS Knowledge Sharing Meeting entitled, “What to Consider when Programming Food Aid Products: Operational Research Findings from the Food Aid Quality Review (FAQR) Project.” The session provided more than 80 participants with key findings from the FAQR field research studies on the following themes of: (a) diversion of food aid products (sharing, giving away or selling); (b) behaviors surrounding food aid products in the household; and (c) messages and education on beneficiary uses of food aid products.</p> <p>Key presentation messages emphasized that food aid programming efforts should be focused toward beneficiary adherence in order to achieve intended impact. Programs should consider within-household sharing when determining ration amounts. In addition, challenges to proper preparation, consumption and use of the product should be well-understood when designing programs. It was acknowledged that effectiveness of specialized food aid products requires context-specific social behavior change communication which involves formative work and strong understanding of the local environment.</p> <p>Following the presentation of results, participants had a chance to discuss the findings and how the</p>	<p>80</p>

	<p>results related to their own experiences in food aid programming plus efforts to increase effectiveness and cost-effectiveness in programming. Participants also identified future research areas based on the findings presented and discussed.</p> <p>In addition to the FAQR session, the Cost Specialist hosted a lunchtime discussion on the Decision Support Tool in order to receive feedback on the beta version of the tool from food aid program staff.</p>	
<p><b>USAID Burkina Faso Preliminary Results, Washington, D.C.</b> <i>August 10, 2017</i></p>	<p>The Co-PI presented preliminary results from the Burkina Faso study to USAID/FFP Representatives. Results shared included preliminary effectiveness results, describing the relative effectiveness of the 4 foods in preventing stunting and wasting in children 6-23 months and preliminary cost-effectiveness results describing which of the 4 foods appears to be most cost-effective at preventing cases of child stunting and wasting.</p>	10
<p><b>International Congress of Nutrition (ICN), Buenos Aires, Argentina</b> <i>October 15-20, 2017</i></p>	<p>The FAQR team attended the International Congress of Nutrition (ICN) in Buenos Aires. FAQR hosted symposia, presented posters and attended relevant sessions. For further information see <a href="#">Annex 2.6 for Poster Abstracts</a> and <a href="#">Annex 2.8 for a Summary of ICN Symposia</a>.</p>	400 total symposia participants; 1,500-2,000 attendees to the ICN conference
<p><b>Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, Houston, TX</b> <i>October 22-25, 2017</i></p>	<p>FAQR presented on the team's work on supply chain optimization at the annual INFORMS conference in Houston. The session was attended by stakeholders from academia, industry, U.S. Government organizations and implementing partners. It reviewed the impact data analytics can have on supply chain operations. The team showed examples gained from data analysis on how seasonality/service level might affect overall commodity cost.</p>	25
<p><b>ACF Research for Nutrition Conference, Paris, France</b> <i>November 13, 2017</i></p>	<p>FAQR participated in the Action Against Hunger (ACF) Research for Nutrition Conference in Paris and presented a poster "Who are we really feeding with specialized food aid products" which summarized descriptive statistics about sharing practices among beneficiaries of a blanket supplementary feeding program from the FAQR prevention study in Burkina Faso. <a href="#">See Annex 2.6 for the Poster Abstract.</a></p>	200

<p><b>Webinar “The USAID Food Aid Product Mix: Presentation of Stakeholder Feedback”</b> <i>November 16, 2017</i></p>	<p>In partnership with the CORE Group Nutrition Working Group, FAQR presented the responses gathered during a series of interviews with development, nutrition and health practitioners working on USAID-funded programs which use food aid. In these interviews, FAQR examined questions like: ‘Does the mix of available food aid products meet programming needs?’ ‘Is guidance on their use helpful and sufficient?’ ‘How can donors better communicate about food aid with implementing partners?’ FAQR presented responses to these questions, elicited feedback from participants on their experience with these issues and explored possible solutions with participants.</p>	35
<p><b>Burkina Faso Dissemination, Ouagadougou, Burkina Faso</b> <i>January 11, 2018</i></p>	<p>In collaboration with IRSS, the FAQR team presented initial study results to the Burkina Faso Ministry of Health, other Ministries, and non-governmental organizations involved in nutrition policy and programming in Burkina Faso. The results presented described the relative effectiveness and cost-effectiveness of the four foods in the prevention of stunting and wasting, as well as factors potentially influencing effectiveness. Discussion of the results and Q&amp;A sessions followed the presentation.</p>	150
<p><b>Burkina Faso Dissemination, Washington, D.C.</b> <i>January 31, 2018</i></p>	<p>The FAQR team presented results from the Burkina Faso field study on the prevention of stunting and wasting to USAID, USDA and many non-governmental organizations who intervene in the realm of nutrition policy and programming. After a welcome session in which important study collaborators were presented, results were given on the comparative effectiveness of the 4 foods in the prevention of stunting and wasting, comparative cost-effectiveness and the factors influencing the effectiveness results. A culminating presentation focused on “lessons learned” in this study and what still needs to be found out. Presentations were followed by Q&amp;A sessions and discussion of the implications of these results.</p>	75

### **Year 3 (February 2018-January 2019)**

<b>Presentation (9)</b>	<b>Purpose</b>	<b>Est. Number of Attendees</b>
<p><b>Future of Food and Nutrition, Boston, MA</b> <i>April 6-7, 2018</i></p>	<p>The Burkina Faso Field Research Director presented the main findings of the study at this student-led international research conference.</p>	35
<p><b>Production and Operations Management Society</b></p>	<p>The FAQR supply chain team presented high-level data findings and highlighted transfer modality options used in the supply chain optimization model</p>	25

<b>(POMS) Meeting, Houston, TX</b> May 4, 2018	prepared for USAID/FFP supply chain operations as part of the “Humanitarian Operations and Crisis Management” session.	
<b>CORE Group Global Health Practitioner Conference, Bethesda, MD</b> June 4-7, 2018	This year’s CORE Group Global Health Practitioner Conference had the overall theme “Community Health Action for the Humanitarian-Development Nexus.” The Cost Specialist/Data Analyst presented a summary of the FAQR Decision Support Tool (now renamed FACET) then walked through the interactive web interface at the New Information Circuit. Potential users from a number of implementing partners and research institutes attended and provided tool feedback.	30
<b>American Society for Nutrition (ASN) Meeting, Boston, MA</b> June 9-12, 2018	<p>The FAQR team participated in the 2018 American Society for Nutrition (ASN) meeting in Boston, MA. Six posters and one oral presentation were given.</p> <p><i>Oral Presentation:</i></p> <ul style="list-style-type: none"> <li>• Comparative Effectiveness and Cost-Effectiveness of Four Supplementary Foods in the Prevention of Stunting and Wasting in children 6-23 months in Burkina Faso</li> </ul> <p><i>Posters:</i></p> <ul style="list-style-type: none"> <li>• <a href="http://foodaidquality.org/sites/default/files/publications/ASNposterMobileData.pdf">A Mobile Data Collection Tool Using Android Tablets for In-Home Observations in Sierra Leone Improves Data Quality<sup>54</sup></a></li> <li>• <a href="http://foodaidquality.org/sites/default/files/publications/ASNposterBurkinaRationUseBehaviors.pdf">Behaviors Surrounding Ration Use in a Blanket Supplementary Feeding Program in Burkina Faso<sup>55</sup></a></li> <li>• <a href="http://foodaidquality.org/sites/default/files/publications/ASN%20Poster_SBCC.pdf">Formative Research to Tailor Counseling Messages for a Supplementary Feeding Program in Sierra Leone Reveals Link Between Knowledge, Social Stigma and Recipe Adherence<sup>56</sup></a></li> <li>• <a href="http://foodaidquality.org/sites/default/files/publications/CommunityClusterASN.pdf">Community Cluster Approach: Its Added Value in Surveys Conducted at Rural Community Level<sup>57</sup></a></li> <li>• <a href="http://foodaidquality.org/sites/default/files/publications/CommunityClusterASN.pdf">Evaluating Opportunity Cost of Caregivers’ Time and its Impact on Comparative Cost-</a></li> </ul>	3,600

<sup>54</sup> <http://foodaidquality.org/sites/default/files/publications/ASNposterMobileData.pdf>

<sup>55</sup> <http://foodaidquality.org/sites/default/files/publications/ASNposterBurkinaRationUseBehaviors.pdf>

<sup>56</sup> [http://foodaidquality.org/sites/default/files/publications/ASN%20Poster\\_SBCC.pdf](http://foodaidquality.org/sites/default/files/publications/ASN%20Poster_SBCC.pdf)

<sup>57</sup> <http://foodaidquality.org/sites/default/files/publications/CommunityClusterASN.pdf>

	<p><a href="#">Effectiveness of Supplementary Foods to Prevent Child Undernutrition in Burkina Faso<sup>58</sup></a></p> <ul style="list-style-type: none"> <li>• <a href="#">U.S. Food Safety Modernization Act Standards Now Being Applied to Food Aid Products for Nutrition and Humanitarian Response</a></li> </ul>	
<p><b>Health and Humanitarian Logistics Conference, Dubai, United Arab Emirates</b> July 18-19, 2018</p>	<p>The FAQR team hosted a session at the Health and Humanitarian Logistics conference in Dubai on “Food Aid Optimization and “Last Mile” Distribution.” The FAQR team presented the supply chain optimization model, pointing out that the data needs to feed the tool, giving advance planning scenario analysis and related cost effect to the system based on scenario analysis. Colleagues from Massachusetts Institute of Technology (MIT) also presented on their work on supply chain and distribution.</p>	15
<p><b>2018 Institute of Food Technologists (IFT) Meeting, Chicago, IL</b> July 18, 2018</p>	<p>The FAQR Food Technologist presented on “The Role of Academic Research on Global Agriculture, Food and Nutrition” at the IFT International Division’s session “<i>United Nations Agencies and the Role of Food Technology in Supporting Global Food Security.</i>” The presentation covered the role of the Food Aid Quality Review in assisting USAID (and USDA) to update the foods in the U.S. Food Aid basket to reflect the latest scientific evidence in terms of protein, starch, fat content and micronutrient levels. This work supported the revision of the specifications of existing products based on the latest evidence and also, the harmonization of food specifications with those of international agencies including UNICEF, WFP and WHO.</p>	40
<p><b>Friedman Speaker Series, Boston, MA</b> October 17, 2018</p>	<p>The Friedman Speaker Series is the primary venue for intellectual exchange at the Friedman School of Nutrition Science and Policy at Tufts University. The Burkina Faso Field Research Director and the Co-PI of FAQR gave a seminar presentation entitled “Guiding USAID toward more effective food assistance for nutrition impacts, results from the Food Aid Quality Review (FAQR) field studies.”</p>	100
<p><b>Four Foods MAM Treatment Study Closeout Event,</b></p>	<p>The Four Foods Treatment Study Team members from Caritas Bo, Project Peanut Butter, Tufts University and the Washington University in St.</p>	250

<sup>58</sup> <http://foodaidquality.org/sites/default/files/publications/ASN2018OpportunityCost.pdf>

<b>Pujehun, Sierra Leone</b> <i>October 20, 2018</i>	Louis presented on data collection methods and final study implementation activities for community stakeholders in Pujehun District. Stakeholder representatives included the Ministry of Health and Sanitation, WFP, DHMT, District Council and other study implementation participants.	
<b>Global Evidence and Implementation Summit (GEIS) 2018, Melbourne, Australia</b> <i>October 22-24, 2018</i>	The FAQR Cost Specialist/Data Analyst presented FACET with an aim to integrate a cost-effectiveness framework with sound evidence into policy and programming decisions in international food assistance. The Cost Specialist also delivered an elevator pitch for the poster on FAQR cost-effectiveness field research, attracting abundant attendee interest.	45

### 3.3 Reports (34)<sup>59</sup>

- Quarterly Technical Reports to USAID (12): February 2016-December 2018
- Food Aid Quality Review Phase III Annual Report: Year 1, March 2017
- Food Aid Quality Review Phase III Annual Report: Year 2, March 2018
- Schlossman, Nina; Johnson, Quentin; Koepfel, Leah; and Wood, Lauren. 2016. [Introduction of New and Improved Food Aid Products, 2011-2015: Lessons Learned and Recommendations. A report from the Food Aid Quality Review](#), managed by Tufts University's Friedman School of Nutrition Science and Policy. Boston, MA. [http://pdf.usaid.gov/pdf\\_docs/PA00MJG7.pdf](http://pdf.usaid.gov/pdf_docs/PA00MJG7.pdf)
- Quee, Daniel; Tucker, Harrison; Koroma, Mariatu; Griswold, Stacy; Walton, Shelley; Suri, Devika; Langlois, Breanne; Rogers, Beatrice. 2016. [Cooking Instruction Development and Acceptability Tests of Corn-Soy Blend Porridges: Pujehun District, Sierra Leone](#). A report from the Food Aid Quality Review, managed by Tufts University's Friedman School of Nutrition Science and Policy. Boston, MA. [http://pdf.usaid.gov/pdf\\_docs/PA00MM2P.pdf](http://pdf.usaid.gov/pdf_docs/PA00MM2P.pdf)
- Food Aid Quality Review Phase III Annual Report: Year 1, March 2017
- [Maximizing Food Aid Supply Chain Cost Effectiveness: A Report from the Food Aid Quality Review Workshop at the 2017 Health and Humanitarian Logistics Conference. 2017.](#)
- Schlossman, Nina; Koepfel, Leah; Fisk, Rebecca and Johnson, Quentin. 2017. *Food for Peace Commodities Resource Portal: A Landscape Analysis. A Report from the Food Aid Quality Review*, managed by Tufts University's Friedman School of Nutrition Science and Policy.

<sup>59</sup> All reports, unless indicated, can be accessed through the USAID Development Experience Clearinghouse (DEC): <https://dec.usaid.gov/dec/home/Default.aspx#>

Boston, MA.

- Joseph, Michael; Alavi, Sajid; Johnson, Quentin; Mohamedshah, Farida; Walton, Shelley; and Webb, Patrick. 2018. *Improving the Nutritional Value of Foods in the USAID Food Aid Basket: Optimization of Macro and Micronutrients, Food Matrices, Novel Ingredients and Food Processing technologies*. Report to USAID: Tufts University, Boston, MA<sup>60</sup>
- Walton, Shelley; Green, Lindsey; Learned, Elisabeth; Caiafa, Kristine; Suri, Devika; Cliffer, Ilana; Shen, Ye; Joseph, Michael; Langlois, Breanne; Wrabel, Maria; Roubert, Agathe; Schlossman, Nina; Bridges, Mandy; Tasci, Keziban; Ergun, Ozlem; Rogers, Beatrice; and Webb, Patrick. 2018. *Summary of Food Assistance for Nutrition Evidence Summit*. Boston, MA: Tufts University.
- Policy Brief: Current State of the Evidence: Advancing Food Assistance for Nutrition Programming. 2018. Available: [http://foodaidquality.org/sites/default/files/uploads/Evidence%20Summit%20Policy%20Brief\\_FINAL%2011.19.18.pdf](http://foodaidquality.org/sites/default/files/uploads/Evidence%20Summit%20Policy%20Brief_FINAL%2011.19.18.pdf)
- Suri, Devika and Rosenberg, Irwin. 2018. *Beyond Z-scores: Measures to Advance Prevention and Treatment Outcomes in Child Malnutrition. Summary of Proceedings from a Symposium at the International Congress of Nutrition, Buenos Aires, Argentina on October 16, 2017*. Report to USAID. Boston, MA: Tufts University. Available: [https://pdf.usaid.gov/pdf\\_docs/PA00TBMB.pdf](https://pdf.usaid.gov/pdf_docs/PA00TBMB.pdf)
- (Pending Approval) Caiafa, Kristine; Walton, Shelley; Rogers, Beatrice Lorge; Webb, Patrick. 2019. *Improvements to the USAID/FFP Food Basket: Product Upgrades and Innovations, Processes for Modifying the Food Basket, and Communications with Partners*. Report to USAID. Boston, MA: Tufts University.
- (Pending Approval) Brief: The Food Basket & Emergency Response: An Information Brief Prepared by the Food Aid Quality Review (FAQR) Phase III. January 2019.
- (Pending Approval) Roubert, Agathe; Johnson, Quentin; Walton, Shelley; Webb, Patrick. 2018. *Proposed Method for Assessing the Suitability of Packaging Options for Food Aid Products: The Case of Fortified Vegetable Oil*. Report to USAID. Boston, MA: Tufts University.
- (Pending Approval) Roubert, Agathe; Johnson, Quentin; Walton, Shelley; Webb, Patrick. 2018. *Food Aid Packaging Challenges and Opportunities: A Review of the Packaging for Fortified Vegetable Oil, Corn Soy Blend Plus, and Super Cereal Plus*. Report to USAID. Boston, MA: Tufts University.
- (Pending Approval) Roubert, Agathe; Cliffer, Ilana; Griswold, Stacy; Shen, Ye; Suri, Devika; Langlois, Breanne; Maganga, Gray; Walton, Shelley; Rogers, Beatrice; Webb, Patrick. 2018. *The Last Mile of Food Aid Distribution: Insights Gained through FAQR's Field Studies in Malawi, Burkina Faso, and Sierra Leone*. Report to USAID. Boston, MA: Tufts

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<sup>60</sup>[http://foodaidquality.org/sites/default/files/publications/Food%20Aid%20Quality%20Review\\_HHL%20Workshop%20Report\\_Final\\_12.27.17%5B1%5D.pdf](http://foodaidquality.org/sites/default/files/publications/Food%20Aid%20Quality%20Review_HHL%20Workshop%20Report_Final_12.27.17%5B1%5D.pdf)

University.

- (Pending Approval) Joseph, Michael; Alavi, Sajid; Johnson, Quentin; Walton, Shelley; Webb, Patrick. 2018. *Food Matrices: A review of Critical Factors Impacting Nutritional Bioavailability*. Report to USAID. Boston, MA: Tufts University.
- (Pending Approval) Joseph, Michael; Alavi, Sajid; Johnson, Quentin; Walton, Shelley; Webb, Patrick. 2019. *Enhancing the Nutrient Bioavailability of Food Aid Products*. Report to USAID. Boston, MA: Tufts University.
- (Pending Approval) Joseph, Michael; Griswold, Stacy; Alavi, Sajid; Green, Lindsey; Johnson, Quentin; Walton, Shelley; and Webb, Patrick. 2019. *Effect of Cooking Methods and Formulation of Fortified Blended Foods on the Food Matrix and Nutrient Bioavailability: An Experiment from The Food Aid Quality Review, Sierra Leone Four Foods Study*. Report to USAID. Boston, MA: Tufts University.
- (Pending Approval) Schlossman, Nina; Bridges, Mandy; Johnson, Quentin. November 2018. *USAID Food for Peace Food Safety & Quality Assurance Feedback Loop Analysis. A report from the Food Aid Quality Review, managed by Tufts University's Friedman School of Nutrition Science and Policy*. Boston, MA.
- (Pending Approval) Brief: USAID/FFP Food Safety & Quality Assurance Feedback Loop: A Proposed Questionnaire and Database for Collection of Food Aid Quality Incidents.
- (Pending Approval) Cliffer, Ilana; Suri, Devika; Langlois, Breanne; Shen, Ye; Nikiema Ouedraogo, Laetitia; Zeba, Augustin; Lanou, Hermann; Garanet, Franck; Vosti, Stephen; Walton, Shelley; Green, Lindsey; Chui, Ken; Rosenberg, Irwin; Webb, Patrick; Rogers, Beatrice. 2018. *Comparative Cost-effectiveness of Four Supplementary Foods in Preventing Stunting and Wasting in Children 6-24 Months in Burkina Faso*. Report to USAID. Boston, MA: Tufts University.

### **3.4 Publications (10)**

- Rogers Beatrice; Wilner Lauren; Maganga Gray; Walton Shelley; Suri Devika; Langlois Breanne; Chui Ken, Boiteau, Jocelyn; Vosti Stephen; Webb Patrick. 2016. "Program Changes are Effective and Cost-effective in Increasing the Amount of Oil Used in Preparing Corn-Soy Blend Porridge for Treatment of Moderate Acute Malnutrition: An FAQR study in Malawi." <http://onlinelibrary.wiley.com/doi/10.1111/mcn.12393/full>
- Suri Devika; Moorthy Denish; Rosenberg, Irwin. 2016. "The Role of Dairy in the Comparative Effectiveness and Cost of Fortified Blended Foods Versus Ready-to-Use Foods in Treatment of Children with Moderate Acute Malnutrition: A Narrative Review." <http://www.ncbi.nlm.nih.gov/pubmed/26936209>
- Rogers, Beatrice; Webb, Patrick; Boiteau, Jocelyn; Langlois, Breanne; Maganga, Gray; Walton, Shelley; Suri, Devika. "[Preparation and Presentation of Corn-Soy Blend for](#)

[Moderately Malnourished Children in Malawi.](http://www.ennonline.net/fex/55/csbmalawi) *Field Exchange*, 55, July 2017. p. 26.  
www.ennonline.net/fex/55/csbmalawi<sup>61</sup>

- Langlois, Breanne; Suri, Devika; Wilner, Lauren.; Walton, Shelley; Chui, Ken; Caiafa, Kristine; Rogers, Beatrice. (2017). "Self-report vs. Direct Measures for Assessing Corn-Soy Blend Porridge Preparation and Feeding Behavior in a Moderate Acute Malnutrition Treatment Program in Southern Malawi." *Journal of Hunger & Environmental Nutrition*, 1-12. doi:10.1080/19320248.2017.1374902
- Wilner, Lauren ; Suri, Devika; Langlois, Breanne; Walton, Shelley; Rogers, Beatrice. (2017). "Effective Delivery of Social and Behavior Change Communication through a Care Group Model in a Supplementary Feeding Program." *Journal of Health, Population and Nutrition*, 36(1). doi:10.1186/s41043-017-0111-3
- Webb, Patrick; Caiafa, Kristine; Walton, Shelley. (For the Food Aid Quality Review Group), "[Making Food Aid Fit-for-Purpose in the 21<sup>st</sup> Century: A Review of Recent Initiatives Improving the Nutritional Quality of Foods Used in Emergency and Development Programming.](https://doi.org/10.1177/0379572117726422)"<sup>62</sup> *Food and Nutrition Bulletin*, Vol. 38, Issue 4. December 2017. p. 574-584. <https://doi.org/10.1177/0379572117726422>
- "[Programme News: Tufts University-based Food Aid Quality Review activities.](https://www.unscn.org/uploads/web/news/UNSCN-News42-with-Programme-News.pdf)" *UNSCN News 42*, A Spotlight on the Nutrition Decade, July 2017. p. 144.<sup>63</sup>
- Joseph, Michael; Alavi, Sajid; Johnson, Quentin. Complementary Foods and Global Fortification Challenges. *The World of Food Ingredients*. February 2017.
- "Meeting Summary: Food Assistance for Nutrition: Evidence Summit." *ENN Field Exchange 58*, September 2018.  
<https://www.ennonline.net/fex/58/foodassistancefornutrition>
- Caiafa, Kristine; Dewey, Kathryn; Michaelsen, Kim; de Pee, Saskia; Collins, Steve; Rogers, Beatrice; El-Kour, Tatyana; Walton, Shelley; Webb, Patrick. 2018. Food Aid for Nutrition: Narrative Review of Major Research Topics Presented at a Scientific Symposium held October 21, 2017 at the 21<sup>st</sup> International Congress of Nutrition in Buenos Aires, Argentina. Available:  
<https://journals.sagepub.com/eprint/K9NCP5cOVxRSe9FrAJZy/full>

### 3.5 Datasets (2)

- Malawi Dataset: Corn-Soy Blend (CSB) and Fortified Vegetable Oil (FVO) Feasibility Study of Caregivers of Children Enrolled in a Moderate-Acute-Malnutrition (MAM) Treatment Program in Malawi, Tracking Number: 312-I (Submitted to DDL on January 9, 2017)
- Malawi Dataset: Malawi In-home Observation Data, Tracking Number: 312-IA (Submitted to DDL on August 22, 2017)

### 3.6 Scientific Poster Abstracts Presented (19)

<sup>61</sup> <http://www.ennonline.net/fex/55/csbmalawi>

<sup>62</sup> <http://journals.sagepub.com/doi/full/10.1177/0379572117726422>

<sup>63</sup> <https://www.unscn.org/uploads/web/news/UNSCN-News42-with-Programme-News.pdf>

- [A Tale of Two Measures: Self-Report and Lab-Assessed Values in Amount of Oil Added to CSB Porridge Prepared by Caregivers of Children with Moderate Acute Malnutrition in Southern Malawi](#) (Presented at Experimental Biology 2016)
- [The Role of Dairy in the Comparative Effectiveness and Cost of Fortified Blended Foods Versus Ready-to-Use Foods in Treatment of Children with Moderate Acute Malnutrition](#) (Presented at Experimental Biology 2016)
- [Costing Methods for a Cluster-Randomized Cost-Effectiveness Trial Comparing the Performance of Four Supplementary Foods in Treating Sierra Leonean Children with Moderate Acute Malnutrition](#) (Presented at Experimental Biology 2017)
- [Design and Baseline Characteristics of a Study Comparing Four Supplementary Foods in the Prevention of Stunting and Wasting Among Children 6-23 Months in Burkina Faso](#) (Presented at Experimental Biology 2017)
- [Experiences of Beneficiary Caregivers in a Supplementary Feeding Program in Southern Malawi](#) (Presented at Experimental Biology 2017)
- [Effective delivery of social-behavioral change communication through a care group model in a supplementary feeding program: a descriptive analysis](#) (Presented at Experimental Biology 2017)
- [Accelerated Shelf-Life Studies and Micronutrient Stability of Food Aid Products: Implications for the Humanitarian Supply Chain](#) (Presented at the Health and Humanitarian Logistics Conference 2017 and IFT 2017)
- [Research Methods Used to Determine Cost-Effectiveness of a Supplementary Feeding Trial to Prevent Child Undernutrition in Burkina Faso](#) (Presented at ICN 2017)
- [Methods for rigorous in-home observation conducted during a food aid cost-effectiveness trial in Burkina Faso](#) (Presented at ICN 2017)
- [Changes in household food insecurity between enrollment and exit from a blanket supplementary feeding program for children 6-23 months old in Burkina Faso](#) (Presented at ICN 2017)
- [Accelerated Shelf-Life Studies: Testing Micronutrient Stability of New and Upgraded Food Aid Products](#) (Presented at ICN 2017)
- [Who are we really feeding with specialized food aid products?](#) (Presented at ACF Research for Nutrition Conference, November 2017)
- [A Mobile Data Collection Tool Using Android Tablets for In-Home Observations in Sierra Leone Improves Data Quality](#) (Presented at ASN 2018, June 2018)
- [Behaviors Surrounding Ration Use in a Blanket Supplementary Feeding Program in Burkina Faso](#) (Presented at ASN 2018, June 2018)
- [Formative Research to Tailor Counseling Messages for a Supplementary Feeding Program in Sierra Leone Reveals Link Between Knowledge, Social Stigma and Recipe Adherence](#) (Presented at ASN 2018, June 2018)
- [Community Cluster Approach: Its Added Value in Surveys Conducted at Rural Community Level](#) (Presented at ASN 2018, June 2018)

- [Evaluating Opportunity Cost of Caregivers' Time and its Impact on Comparative Cost-Effectiveness of Supplementary Foods to Prevent Child Undernutrition in Burkina Faso](#) (Presented at ASN 2018, June 2018)
- [U.S. Food Safety Modernization Act Standards Now Being Applied to Food Aid Products for Nutrition and Humanitarian Response](#) (Presented at ASN 2018, June 2018)
- [Lessons Learned from Cost-Effectiveness Research for Specialized Nutritious Food Assistance in West Africa](#) (Presented at GEIS 2018, October 2018)

### **3.7 Session Symposia at the 2017 International Congress of Nutrition (ICN), Buenos Aires (2)<sup>64</sup>**

- [“Food Aid Research: Update on Food Aid for Preventing and Treating Undernutrition”](#) Thematic Area: Track 8: Agriculture, Food Science and Safety
- [“Addressing Child Malnutrition: Newer Measures to Advance Prevention and Treatment Outcomes”](#) Thematic Area: Track I: Advances in Nutrition Research

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<sup>64</sup> <https://foodaidquality.org/icn>