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For correspondence, contact:

Patrick Webb
Friedman School of Nutrition Science and Policy
Tufts University
150 Harrison Avenue
Boston, MA 02111
patrick.webb@tufts.edu
http://www.foodaidquality.org/form/contact-us
Acronyms

AMS          Agricultural Marketing Service
BMC          Beneficiary’s Mother/Caregiver
CAWeC        Community Action for the Welfare of Children
CBO          Country Bureau Officer
CRG          Commodity Reference Guide
CSB          Corn-Soy Blend
CSB+         Corn-Soy Blend Plus
CSWB         Corn-Soy-Whey Blend
DDL          Development Data Library (USAID)
DHMT         District Health Management Team
DMAP         Data Management and Analysis Plan
EED          Environmental Enteric Dysfunction
EFSP         Emergency Food Security Program (USAID)
FAQR         Food Aid Quality Review
FFB          Fortified Blended Food
FFP          Office of Food for Peace (USAID)
FSMA         Food Safety Modernization Act
FVO          Fortified Vegetable Oil
GMP          Good Manufacturing Practices
HACCP        Hazard Analysis and Critical Control Points
HEAT         Hostile Environment Awareness Training
HEB          High-Energy Biscuit
ICN          International Congress of Nutrition
IFAFSC       International Food Assistance and Food Security Conference
IFT          Institute of Food Technologists
IMAM         Integrated Management of Acute Malnutrition
IRB          International Review Board
IRSS         Institut de Recherche en Sciences de la Santé
KSU          Kansas State University
LNS          Lipid-based Nutrition Supplement
LRP          Local and Regional Food Aid Procurement
MAM          Moderate Acute Malnutrition
MCHN         Maternal and Child Health and Nutrition
MNP          Micronutrient Powders
MOHSP        Ministry of Health and Social Protection
MOU          Memorandum of Understanding
MSF          Médecins Sans Frontières
MSG          Mother Support Group
MUAC         Mid-Upper Arm Circumference
NASA         National Aeronautics and Space Administration
NGO          Non-Governmental Organization
OFDA  Office of Foreign Disaster Assistance (USAID)
PHU  Peripheral Health Unit
PPB  Project Peanut Butter
PVO  Private Voluntary Organization
REFINE  Research Engagement on Food Interventions for Nutritional Effectiveness
RUF  Ready-to-Use Foods
RUSF  Ready-to-Use Supplementary Food
RUTF  Ready-to-Use Therapeutic Food
SBCC  Social and Behavior Change Communication
SC+  Super Cereal Plus
SFP  Supplementary Feeding Program
TOPS  Technical and Operational Performance Support
UNICEF  United Nations Children’s Fund
USAID  United States Agency for International Development
USDA  United States Department of Agriculture
ViM  Victoire sur la Malnutrition
WashU  Washington University in St. Louis
WBSCM  Web Based Supply Chain Management
WFP  World Food Programme (United Nations)
WHO  World Health Organization
WHZ  Weight for Height Z-Score
TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acronyms</td>
<td>3</td>
</tr>
<tr>
<td>Executive Summary</td>
<td>7</td>
</tr>
<tr>
<td>I. Background: FAQR Phase III</td>
<td>13</td>
</tr>
<tr>
<td>II. Summary of Year 1 Accomplishments, Challenges and Lessons Learned</td>
<td>14</td>
</tr>
<tr>
<td>III. Future Priorities: FAQR Phase III Year 2</td>
<td>36</td>
</tr>
<tr>
<td>C.3.1. Research and Development—Improving Existing Products</td>
<td>36</td>
</tr>
<tr>
<td>C.3.2. Improved Programming</td>
<td>38</td>
</tr>
<tr>
<td>C.3.3. Improved Process for Commodity Procurement and Quality Assurance along Supply Chain</td>
<td>39</td>
</tr>
<tr>
<td>Annex 1. Food Aid Quality Review Phase III Acknowledgements</td>
<td>40</td>
</tr>
<tr>
<td>Annex 2. Summary of FAQR Phase III Deliverables and Activities</td>
<td>43</td>
</tr>
<tr>
<td>2.1 Meetings/Events (36)</td>
<td>43</td>
</tr>
<tr>
<td>2.2 Presentations (7)</td>
<td>50</td>
</tr>
<tr>
<td>2.3 Reports (6)</td>
<td>51</td>
</tr>
<tr>
<td>2.4 Publications (2)</td>
<td>51</td>
</tr>
<tr>
<td>2.5 Publications Pending (6)</td>
<td>52</td>
</tr>
<tr>
<td>2.6 Datasets (1)</td>
<td>52</td>
</tr>
<tr>
<td>2.7 Scientific Poster Abstracts Presented (2)</td>
<td>52</td>
</tr>
<tr>
<td>2.7.1 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)</td>
<td>52</td>
</tr>
<tr>
<td>2.7.2 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)</td>
<td>54</td>
</tr>
<tr>
<td>2.8 Scientific Poster Abstracts Pending Presentation (4)</td>
<td>56</td>
</tr>
<tr>
<td>2.8.1 Experiences of Beneficiary Caregivers in a Supplementary Feeding Program in Southern Malawi (Accepted for presentation at Experimental Biology 2017)</td>
<td>56</td>
</tr>
<tr>
<td>2.8.2 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 (MAM) (Accepted for presentation at Experimental Biology 2017)</td>
<td>56</td>
</tr>
</tbody>
</table>
2.8.3 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 (Accepted for presentation at Experimental Biology 2017) ................................................................. 56

2.8.4 Effective Delivery of Social-Behavioral Change Communication through a Care Group Model in a Supplementary Feeding Program: A Descriptive Analysis (Accepted for presentation at Experimental Biology 2017) ................................................................................................. 56

2.9 Session Symposia at the 2017 International Congress of Nutrition (ICN), Buenos Aires (2) ......................................................................................................................................................... 56

2.9.1 Title: “Food Aid Research: Update on Food Aid for Preventing and Treating Undernutrition,” Thematic Area: Track 8: Agriculture, Food Science and Safety ........................................ 56

2.9.2 Title: “Addressing Child Malnutrition: Newer Measures to Advance Prevention and Treatment Outcomes,” Thematic Area: Track 1: Advances in Nutrition Research ............................................................... 56

Annex 3. Summary Table of FAQR Phase III USAID Deliverables and Status ........................................ 57
Annex 4. Malawi Feasibility and Acceptability Study ......................................................................................... 61
Executive Summary
The scale of humanitarian crises continues to grow in 2017. In addition to the 65 million people displaced by conflict or droughts—more than at any time since World War II—there are millions of mothers, infants and children in 40 countries of the world who require food assistance just to stay alive. Roughly 100 million people received food assistance in 2016, and the United States is the largest food aid donor in the world. It invested $10 billion (U.S. dollars) in food assistance activities between 2011 and 2015, saving millions of lives and laying the foundations for economic stability.

Since 2009, Supported by the 2008 U.S. Farm Bill, a team of food aid practitioners, researchers and U.S. Government collaborators have implemented a deep and comprehensive Food Aid Quality Review (FAQR). Involving close engagement with USAID and USDA, as well as the U.S. Department of Defense’s food research labs, the FAQR project has had huge successes in guiding U.S. Government policies and programming guidance on what foods to deliver to address different forms of malnutrition, and how best to deliver foods in ways which achieve lasting impact. The FAQR team draws on best practices from the field and evolving lab-based evidence on nutrient needs. The overarching challenge addressed through the FAQR project is to ensure that food aid achieves results as quickly and cost-effectively as possible.

The FAQR project has been led by Tufts University’s Friedman School of Nutrition Science and Policy through two initial phases—FAQR Phase I (April 2009-September 2011) and Phase II (October 2011-January 2016). The first phases of FAQR involved reviews of nutrition science, and recommendations were published in Delivering Improved Nutrition: Recommendations for Changes to U.S. Food Aid Products and Programs¹. This report led to FAQR Phase II’s focus on putting science-based recommendations into practice—from reformulating products to better deliver key nutrients to beneficiaries, to identifying the most cost-effective programming, to promoting innovations in packaging and delivery. This has been called the most significant series of changes to the US food aid agenda since the 1960s.²

A final phase of work, Phase III (February 2016-January 2019), has now been initiated, focusing on building and translating evidence from the field into institutionalized processes and actionable policies. Over these few years, FAQR will continue to push the boundaries of knowledge and practice to help U.S. food aid products and programming to be able to meet the challenges of delivering food aid most efficiently, effectively, and cost-effectively in the face of growing need for timely and coordinated food assistance. The goal is to establish information systems, tools, data-gathering and evidence-sharing platforms which will support government-wide actions and public-private

¹ pdf.usaid.gov/pdf_docs/pnadz842.pdf
² Remarks by former USAID administrator Rajiv Shah at the Center for Strategic and International Studies, April 10th, 2013
engagement around food aid for coming decades. Ongoing field research and industry engagement is aimed at making durable changes in the food aid agenda. The way we do business—from designing food products to delivering them to beneficiaries—has to be based on proven lessons of what works well and where things can be improved.

Phase III Priority Areas include:

1. Researching the effectiveness and cost-effectiveness of new food products;
2. Studying improved packaging and delivery approaches to enhance logistics and maintain product quality;
3. Organizing consultative and expert meetings synthesizing state-of-the-art evidence on food-based nutrition delivery;
4. Defining and disseminating improved field tools for calculating the cost-effectiveness of alternative foods and programming approaches;
5. Exploring food technology innovation in food product processing;
6. Enhancing supply chain oversight;
7. Establishing stronger and more user-friendly food quality assurance; and
8. Facilitating institutional harmonization and enhanced processes.

The current FAQR Phase III Annual Report highlights Project Year 1 (February 1, 2016-January 31, 2017) accomplishments, challenges and lessons learned.

Accomplishments (in Phase III Year 1)

Supply Chain Optimization

Analysis of several years of USAID/FFP procurement data has begun, aiming to identify quick wins in optimizing logistics decisions along the FFP supply chain. An improved USAID/FFP supply chain will positively affect the number of beneficiaries reached, total amount of commodities sent, lead times, total cost of the program, and integrity of products once they reach the end-user. The USAID/FFP team is attending the Supply Chain Leader Development Program certificate course and is planning on attending the 2017 Health and Humanitarian Logistics Conference. This activity contributes to USAID/FFP’s rethinking of their approach to supply chain management and oversight.

Completed Data Collection for the Burkina Faso Study

FAQR Phase III completed data collection for the Burkina Faso cost-effectiveness study of prevention of stunting and moderate acute malnutrition. The findings from this research will allow USAID to make more informed decisions about which types of food aid products they should use in various contexts. There will be an evidence base to justify how 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.
Malawi Feasibility Study Results

The Malawi feasibility study assessed the cost-effectiveness of program changes aimed at achieving a target ratio of oil to corn soy blend (CSB) in porridges prepared by children’s caregivers. We provided an increased oil ration and intensive social behavior change communication (SBCC) (delivered through a Care Group Model) to caregivers of children under 5 enrolled in a moderate acute malnutrition (MAM) treatment program in Malawi. The results demonstrate that enhanced SBCC combined with increased oil ration can increase use of oil in the porridge. These results are important because a higher level of oil in CSB porridge achieves greater calorie density for a given volume to support enhanced physiological growth of the child. This addresses the concern that fortified blended foods may not be able to deliver the same energy density as alternative lipid-based foods (e.g. RUSFs).

The assessment of the SBCC component concluded that messages delivered through the Care Group Model were effectively communicated among healthcare workers, care group volunteers, and caregivers and in conjunction with an additional oil ration, resulted in overall program effectiveness, increasing the oil added to porridge. Since the Care Group Model was shown to be a successful way to deliver SBCC messages on food preparation and child feeding practices, its use may contribute to increased effectiveness of supplementary feeding programs. The insights generated also highlight perceived benefits of repackaging CSB into smaller bags for direct distribution to beneficiaries: improved food hygiene, correct amount of CSB received, and streamlined distribution.

This research informs the next generation of food products for nutrition, and several Title II Development Project’s operations have already incorporated these results. The manuscript reporting the main findings from the Malawi Feasibility Study was published in the journal Maternal & Child Nutrition and there are several other publications and case studies pending.

Research Engagement on Food Interventions for Nutritional Effectiveness (REFINE)

The US government’s promotion of transparency (open access) and the use of evidence based best practices is in line with demand for rigorous data on food aid costs and benefits. There are many dozens of ongoing studies worldwide on food aid for nutrition, but no one-stop-shop for guidance on what topics are being covered, by whom, and what knowledge gaps remain. FAQR therefore established the world’s first online portal for tracking and reporting on food aid research. A redesigned Research Engagement on Food Interventions for Nutritional Effectiveness (REFINE) website was launched October 2016. The REFINE website is a user-friendly knowledge-sharing mechanism that disseminates emerging evidence relevant to food assistance and thus far has been visited by over 300 unique viewers.

4 http://www.refinenutrition.org
**Challenges and Lessons Learned**

**Delays in Production of Commodities for Sierra Leone Treatment Study**

The project experienced significant delays in production of study commodities, fortified blended foods (FBFs) and lipid-based Ready-to-Use Supplementary Food (RUSF) due to commodities testing results outside of specification and logistical delays. These delays have resulted in a delayed timeline for the start of the Sierra Leone Treatment Study. The delays provided important lessons learned for commodity procurement moving forward, including the need for a longer production timeline.

**Changing Landscape of Humanitarian Aid**

Although poverty is falling globally, nutrition is not improving everywhere. The average length of time for conflict-related displacement is now 26 years, with approximately 60 percent of individuals receiving aid for more than eight consecutive years. There is no indication that these statistics will begin to trend downward any time soon. The U.S. needs to continue to play a lead role in ensuring that starvation, hunger and malnutrition do not go unheeded. But it also must continue to take the lead on bringing cutting-edge academic research and industry processes together to ensure that food aid works. The FAQR team must be agile in activities and responsive in its focus in order to fully realize these changes. The evolving face of humanitarian aid is addressed through the FAQR work on strategies for responding to emergencies, dual-use food aid products, and supply chain optimization for the early stages of sudden-onset emergencies.

**Future Priorities: FAQR Phase III Year 2**

**“Last Mile” Analysis**

Analysis of data collected from in-depth interviews in Burkina Faso on the “last mile” of food distribution, that is, delivery of food from the warehouse to the distribution point and the process of distribution to beneficiaries, will contribute insights on the perceptions, opinions and experiences of food aid program staff members related to the last mile of food aid delivery. Data from these interviews will allow USAID to identify problems and address gaps in food aid delivery.

**“Scorecard Report”**

The “Scorecard Report” will highlight the anticipated sustainable achievements of FAQR and the importance for continued research on how best to make food aid fit for purpose. These include U.S. food aid products redesigned to be fit-for-purpose and new products introduced; industry-standard product specifications and accelerated shelf-life testing assessments for new
products established; global standards set for food aid (aligning UN and U.S. agencies); open access evidence on successful food aid products and programming protocols initiated; innovations in food aid packaging; and cost-effectiveness tools and approaches applied to all food aid programming choices. The “Scorecard Report” will be a key tool for USAID/FFP during negotiations for the 2018 Farm Bill.

2017 International Congress of Nutrition (ICN)

FAQR Phase III will organize two sessions at the 2017 International Congress of Nutrition (ICN). One session on “Addressing Child Malnutrition: Newer Measures to Advance Prevention and Treatment Outcomes” will emphasize the importance of alternative measures to assessing health status as growing evidence demonstrates that child malnutrition reflects much more than an insufficiency of calories or other nutrients. New approaches, as well as outcome measures, are needed to make an impact on this issue. The second session, “Food Aid Research: Update on Food Aid for Preventing and Treating Undernutrition” will seek to share advances and challenges in food aid research, inform new paradigms of food aid products and programs, and elucidate remaining questions in the field of food aid.

Food Aid Packaging

FAQR is gathering evidence on existing and potential packaging innovations. A consultative process, involving multiple stakeholder groups, is supporting the collection of data on packaging technologies, processing approaches, prices and supply constraints. Recommendations to USAID will support choices that better protect nutrients in nutritionally-enhanced food aid products and improve value-for-money to US taxpayers as a result.

Institute of Food Technologists (IFT) 2017

FAQR Phase III will host a roundtable at the 2017 Institute of Food Technologists (IFT) conference. The roundtable, involving experts from the field of food technology, will identify knowledge areas and gaps in knowledge and provide a way forward to improve food aid products in relation to food science and technology. Thematic areas of consultation will include: raw material selection for food aid products, formulation/food structure changes, alternate/new processing technologies, sensory profile of products, and other technological developments that would enable the design of products that are acceptable to beneficiaries and offer enhanced bioavailability of nutrients. The proceedings of this roundtable will be published, promoting transparency related to this research area.

Health and Humanitarian Logistics Conference 2017

The 2017 Health and Humanitarian Logistics Conference will explore challenges and solutions for building efficient and effective supply chains for health and humanitarian challenges. FAQR’s proposed conference workshop will explore how food aid stakeholders conceive cost-
effectiveness, what tools exist to measure cost-effectiveness and how stakeholders successfully use cost-effectiveness data.

**Dissemination of Results from the Burkina Faso Study**

In Project Year 2, FAQR Phase III will disseminate results from the Burkina Faso study of cost-effectiveness of alternative products for the prevention of stunting and moderate acute malnutrition through publications, presentations and dissemination events in Burkina Faso and the United States. These dissemination activities will translate study results into implementation and policy recommendations.

**Data Collection for the Sierra Leone Treatment Study**

Data collection will begin during FY 2017 for the Sierra Leone Treatment Study. This will include data collection for the main study on the cost effectiveness of four food products in treatment of moderate acute malnutrition (MAM) and three sub-studies focusing on body composition, environmental enteropathy and neurocognitive developmental indicators. The results of this study will guide decisions about what commodities to use in supplementary feeding programs in particular contexts and populations, and what factors need to be addressed to ensure maximum effectiveness in the treatment of moderate malnutrition.
I. Background: FAQR PHASE III

The United States Agency for International Development’s (USAID) Office of Food for Peace (FFP) awarded the Food Aid Quality Review Phase III contract to Tufts University’s Friedman School of Nutrition Science and Policy for the period covering Feb. 1, 2016 to Jan. 31, 2019, with two option years. The Food Aid Quality Review (FAQR) provides USAID and its partners with actionable recommendations on ways to improve nutrition among vulnerable people for whom the direct distribution of food aid can make a significant impact.

The first phases 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. 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.

FAQR Phase III responds to additional (new) FFP priorities. The team will continue to work closely with several domestic and international collaborators: USAID, USDA and UN partners, all of whom are committed to strengthening the evidence base for use of specialized food products for targeted nutrition goals.

The framework shaping current work focuses on: Research and Development—Improving Existing Products, Improved Programming, and Improved Process for Commodity Procurement and Quality Assurance along Supply Chain. The Summary of Year 1 Accomplishments, Challenges and Lessons Learned, and Future Priorities section of this report is presented under these three rubrics. This delineation and numbering scheme also corresponds 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 is examining such mission-critical issues as: how food matrices (“the nutrient and non-nutrient components of foods and their molecular relationship to each other”) affect bioavailability of nutrients and digestibility of products; the potential for thermal/non-thermal processing technologies to improve food matrices; potential roles for existing products which are rarely used today, as well as new products (which may include 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,

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5 pdf.usaid.gov/pdf_docs/pnadz842.pdf
6 pdf.usaid.gov/pdf_docs/PA00M9B8.pdf
analysis and reporting on field studies which assess the effectiveness and cost-effectiveness of various newly-formulated food products.

**C.3.2 Improved Programming**

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 dissemination of cost calculation tools. The project is generating improved technical guidance, sharing details on research protocols used in testing new food aid products in the field and making further progress in harmonizing product specifications.

**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 which can also be applied to local and regional food procurement.

**II. Year 1 Accomplishments, Challenges and Lessons Learned**

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

<table>
<thead>
<tr>
<th>C.3.1.1 Examining appropriateness of food matrices</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.3.1.2 Extrusion systems</td>
</tr>
<tr>
<td>C.3.1.3 Thermo-processing</td>
</tr>
</tbody>
</table>

The wide array of food products in the food aid basket creates different food matrices. The different food matrices result in different levels of nutrient release and absorption in the body. Thus, it is essential to understand and take into account food matrices as they influence effective delivery of nutritious food. The project will examine evidence on how the composition and structure of food products affect the bioavailability, absorption and physiological utilization of nutrients.

The objective of this work is to determine the role of food structure on nutrient release to the gut, which has implications for satiety, rate of nutrient release and absorption.
Accomplishments

A literature review examined the current knowledge base and existing research gaps regarding improving the effectiveness of food aid products related to bioavailability and food matrices. A review of more than 150 articles divided under different sub-topics such as food structures, processing, in-vitro and in-vivo bioavailability, macro-and micronutrients, processing aids and Bostwick flow have indicated that there are complex mechanisms by which food matrices affect nutrient release and absorption by the body. One recent study\(^8\) showed that use of phytase enzyme to dephytinate cereal/legume-based porridges resulted in increased iron absorption when the porridge was prepared with water. When the same wheat-based porridge was made with milk, the enhancing effect of dephytinization on iron absorption was decreased or completely removed. Another study\(^9\) showed that zinc sulfate increased the bioavailability of iron from fortified rice as compared to zinc oxide.

The FAQR Phase III team developed a protocol for Bostwick testing\(^10\) on Fortified Blended Foods (FBFs) being used in field studies in Burkina Faso and Sierra Leone. This test will measure the viscosity of porridges being prepared in the field. The information will be used to interpret the amount of FBF porridge solids consumed by a beneficiary. The amount of solids consumed will directly indicate the amount of FBF ingested. A thin or thick water-based food matrix affects ingestion and sensory perception for FBFs and can be correlated to health outcomes for beneficiaries.

Stakeholder engagement is crucial for identifying new processing methods and technologies. The team visited the U.S. Army Natick Laboratories for a second round of in-person discussions and it has corresponded with the National Aeronautics and Space Administration (NASA). These consultations provided information about food processing and packaging methods that are proving effective to meet the needs of respective stakeholder beneficiaries. Based on stakeholder engagement thus far FAQR is exploring the translation of these applications to the world of food aid products and is shaping areas of inquiry for further stakeholder consultations.

Challenges and Lessons Learned


Existing literature related to food matrices and processing technology for food aid products specifically is extremely limited. Because of this, it was necessary for the research team to look outside of the food aid realm to industries with a broader understanding of the overall topic. This has included experts from the food, livestock feed and pet food industries. Additionally, looking outside the food aid arena requires an interpretation of findings and how they relate to food aid products. Moving forward, looking at overall trends in the effect of food matrices on nutrient bioavailability and connecting with experts in the area of food structures and nutrient bioavailability will be helpful in providing recommendations and identifying research gaps.

Available studies testing the role of food matrices and nutrient bioavailability have focused on foods like infant formula, vegetables, bread and breakfast cereals, among others. Due to differences in the food products being tested for bioavailability and the differences in methods used, it is very challenging to extrapolate the results to food aid products. FAQR Phase III will need to identify trends in bioavailability measurements of nutrients and reach out to experts to understand these trends. This will help to provide greater direction to what bioavailability measures should be used to understand nutrient behavior in food aid products.

C.3.1.4 Building out the food basket with existing commodities
C.3.1.5 Assessment of new products and technologies for an improved food basket
C.3.1.8 Incorporating new products developed by USDA’s micronutrient research
C.3.1.7 Dual use products for emergency response
C.3.1.10 New formulations for specialized food products

The current list of food aid products is suboptimal; there is no systematic process for maintaining the list of products and suppliers approved for use in FFP programs and no source of technical guidance regarding foods and rations.

The project’s work will recommend an updated list of food aid products to meet USAID/FFP’s needs, and will propose a systematic and transparent process for updating this product list, including individual product modifications, product additions or product removals.

Accomplishments

A desk review of new products, technologies and dual-use products has been initiated through consultations with USAID/FFP and a review of documentation on how USAID has used food aid products over time. This will inform recommendations for how USAID/FFP can update the list of products in the food aid basket to meet current needs.

Suppliers provided insights on areas for and barriers to innovation in food aid products during a side meeting at the 2016 International Food Assistance and Food Security Conference (IFAFSC) in Des Moines, IA. A list of food aid products currently approved by USAID was compiled, and
a data collection plan was developed to understand “how and why” food aid products were added to the current list.

USAID has been pursuing a new policy for accepting new suppliers of food aid and for managing modifications to individual products and the overall product mix available for FFP programming. Draft minimum requirements have been proposed, aimed at establishing minimum criteria to be met by any new supplier, new product or product modification in order to be considered for approval by USAID/FFP. The team is also developing a draft flow chart, aimed at decision makers, delineating the decision points for accepting a new or modified product once product suppliers demonstrate that they have met all the minimum requirements.

A protocol for accelerated shelf life trials for fortified rice was drafted. Accelerated shelf life trials are an important final step before accepting new specialized nutritious food products into the USAID food aid basket.

**Challenges and Lessons Learned**

The Fortified Rice Accelerated Shelf Life Study was reconceptualized multiple times and has not yet been implemented due to funding limitations. Similar challenges have also been found with high-energy biscuit (HEB) shelf life studies. This indicates the need for continued coordination of effort and resource support between suppliers, USAID and WFP, as these trials and results are critical for understanding how to program a new food product.

**C.3.1.6 Infestation and Food Aid Packaging**

The integrity of food aid commodities must be insured from the date of manufacture until the end of the shelf life. Packaging plays a key role in the protection of commodities throughout the supply chain and must therefore be optimized. Losses have been estimated to be around one percent or about 10,000 tons of food aid commodities per year, mostly because of packaging failure or inadequacy.

The overall objective of this work is to provide USAID/FFP with recommendations regarding the appropriate packaging technologies to be used in order to optimize preservation of the commodities throughout the supply chain and shelf life.

**Accomplishments**

Food aid packaging must be able to withstand rough transport and storage conditions, often in high humidity, high heat environments over a long period of time. FAQR generated a list of the major issues related to the current food aid packaging. These issues include pest infestation, mold contamination, nutrient losses, packaging leakage and breakage, transportability and storability, and environmental impact. The team attended conferences, visited warehouses and ports, and has had contact with both vendors of foods in the USAID food basket and their packaging suppliers. This provided valuable insights on: (a) packaging technologies to investigate further, including innovations in bulk packaging, moisture-proof packaging, packaging resistant to
infestation; (b) stakeholders to involve in future research and consultations; and (c) how to craft overall recommendations regarding packaging technologies for food aid products.

**Challenges and Lessons Learned**

Literature and published information on packaging technology for food aid are limited, making interviews to understand packaging-related loss and the range of potential packaging solutions essential to the success of this work. Furthermore, initial research showed that considering the entire supply chain is crucial to the success of packaging recommendations. Workshops and interviews with those across the supply chain will be necessary to gather the necessary diverse perspectives and considerations.

Finally, supplier constraints, including the desire to choose the least costly option, currently dictate packaging decisions. Therefore, the most effective packaging technologies are not always chosen due to cost considerations. Commodity suppliers will need to be closely involved in developing evidence-based recommendations so that the packaging options considered and recommended are compatible with suppliers’ constraints.

**C.3.1.9 Strategy for assessing cost-effectiveness of new modalities of response to emergencies**

See C.3.3.5

**C.3.1.11 Finalization of all reports on Malawi feasibility of changes in packaging and messaging study on improved targeting (See Annex 4 for a full study summary)**

Agencies implementing supplemental feeding programs prioritize distribution of supplementary foods with 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 and not incorporated into the porridge preparation.

A study in Malawi was initiated and completed in FAQR Phase II. The study assessed the extent to which beneficiaries can be encouraged to use oil as instructed by implementing partners to prepare corn-soy blend (CSB) 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 achieve high rates of compliance with recommended FVO: CSB ratio in porridge preparation and to increase the FVO: CSB ratio significantly, even when FVO and CSB are distributed separately. The average amount of oil per 100 grams of CSB in Intervention Group

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I was 28 grams. In Intervention Group 2 it was 25 grams, compared with 12 grams in the control group (and with only 7 grams in the intervention group at baseline).

**These results are operationally significant for agencies implementing supplementary feeding programs, as this study found that by providing sufficient FVO and strong social and behavior change communication (SBCC), it is possible to get beneficiary’s mothers/caregivers (BMCs) to prepare porridge with high ratios of FVO: CSB.**

**Accomplishments**

During the first year of FAQR Phase III, the team continued the process of knowledge sharing and dissemination of results. This was achieved through the publication of “Program changes are effective and cost-effective in increasing the amount of oil used in corn soy blend porridge for treatment of moderate acute malnutrition in Malawi” in the journal *Maternal & Child Nutrition* and a poster presentation at the 2016 Experimental Biology conference entitled, “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.” Data used for the main findings paper was uploaded to the USAID Development Data Library (DDL). The following manuscripts were submitted for publication:

- Analyzing the relationship between the SBCC intervention and flow of communication through the Care Group Model in changing behaviors in CSB porridge preparation.
- Comparing self-report versus direct measures of CSB preparation and feeding behavior.
- A case study base on focus group discussions regarding perceived positive and negative aspects of repackaging CSB from 25 kilogram sacks to 2 kilogram bags.

**Challenges and Lessons Learned**

There were challenges with data collected during in home interviews during the Malawi study. This has influenced the data collection methods and management system put in place for the Burkina Faso and Sierra Leone studies.

**C.3.1.12 Conclusion of cost-effectiveness studies of prevention of stunting and moderate acute malnutrition (Burkina Faso) (See Annex 5 for a full study summary)**

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

The FAQR research in Burkina Faso is assessing the effectiveness and cost-effectiveness of the new Corn-Soy-Whey Blend (CSWB) compared to three alternative products (CSB+, SC+ with

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Amylase 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. In addition to examining the effectiveness and cost-effectiveness of these four products in the prevention of MAM and stunting, the study is evaluating the determinants of effectiveness as well as assessing the “last mile” in the food aid supply chain. The results of this research will allow USAID to make informed decisions about which of the four food aid products to use in their programs. There will also be an evidence base to justify how 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.

**Accomplishments**

FAQR Phase III completed all data collection for the Burkina Faso cost-effectiveness of prevention of stunting and moderate acute malnutrition study.

Anthropometric data collection of 6,117 children was completed to compare the effectiveness of the four different food aid products in the prevention of stunting and wasting.

Fat content analysis of 709 porridge samples from the field (47% of intended) was completed. Porridge sample analysis provides verification of whether or not beneficiary mothers are following the oil to flour ratio recommendations in preparing porridge with the food aid products.

FAQR completed 2,263 surveys, qualitative interviews and focus group discussions to gather data on food aid product consumption, usage, acceptability, and related behaviors and knowledge (85% of intended). These surveys, qualitative interviews and focus group discussions will allow the project to understand the determinants of effectiveness of the different food aid products in the prevention of moderate acute malnutrition and stunting.

A costing matrix has been developed to calculate the costs of programming each of the four foods in the study. The team will be able to use the matrix, along with anthropometric data, to calculate the cost-effectiveness of each of the four foods, by calculating the cost per case of MAM and of stunting averted for each of the foods.

In-depth interviews were designed to solicit experiences with and perspectives about the “last mile” of food distribution from key players in the distribution process. In the next few months, representatives from the Victoire sur la Malnutrition (ViM) blanket supplementary feeding program will be interviewed in order to assess perceptions, opinions and experiences of food aid distribution program staff members about the last mile of food aid delivery. We will also obtain suggestions from the staff members for improving the last mile distribution process, based on their experiences in the ViM program.
Challenges and Lessons Learned

Data collection involves analyzing samples of CSB porridge to quantify the fat content and verify porridge preparation methods. FAQR Phase III found discrepancies in measurement between the main lab for porridge analysis and the quality control lab. The source of the discrepancy was insufficient porridge homogenization during collection in the field. Data analysis will need to consider the pattern of discrepancies between the lab and the control lab when conducting data analysis. Lessons for collecting porridge samples have been applied in Burkina Faso and are part of the training for data collection in the upcoming study in Sierra Leone.

The project faced several commodity procurement challenges including disposal of excess commodities due to inaccurate projections and shelf life issues with CSWB resulting in reports of bitterness. These challenges indicate a need to work with implementing partners to get the most accurate beneficiary projections possible, have a system to understand the source of projection errors and a clear disposition plan which meets the needs of all partners involved. Additionally, the team received reports of bitter CSWB. This reinforces the need for FAQR Phase III’s work to address supply chain, packaging and improve feedback loops. Commodity issues will be incorporated into cost-effectiveness calculations in the losses section of the costing matrix.

C.3.1.13 Cost-effectiveness of four food products in moderate acute malnutrition (MAM) treatment study (Sierra Leone) (See Annex 6 for a full study summary)

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

The FAQR research in Sierra Leone seeks 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 is based on targeted food delivery to children 6 to 59 months who are screened for MAM using mid-upper arm circumference (MUAC). Study participants will receive 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 in particular contexts and populations, and what factors need to be addressed to ensure maximum effectiveness in the treatment of moderate malnutrition.

Accomplishments

After devoting significant time to identifying potential treatment study locations, Pujehun district of Sierra Leone was selected for implementation of the FAQR Phase III Treatment study. The
study is a cluster-randomized, quasi-experimental, intent-to-treat design with 28 peripheral health units (PHUs) divided into four groups of seven, each assigned to one study food. In collaboration with the study partner, Washington University in St. Louis (WashU), a rigorous process of data collection was set up following consultations with the Pujehun District Health Management Team (DHMT). The final list was completed and agreed upon in January 2017, and shared with all partners and stakeholders.

In July 2016, FAQR Phase III conducted acceptability trials of the three study FBFs in Sierra Leone. The findings of these trials helped to establish that beneficiaries will consume porridge made from the flours and allowed the project to develop cooking instructions for the commodity packaging in collaboration with beneficiaries. A report of findings, “Cooking Instruction Development and Acceptability Tests of Corn-Soy Blend Porridges: Pujehun District, Sierra Leone,” provides additional insight on the acceptability trial.

Commodities for the research were procured as outlined in Table 1.

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn-Soy-Whey Blend (CSWB)</td>
<td>7 MT</td>
</tr>
<tr>
<td>Corn-Soy Blend Plus (CSB+)</td>
<td>7 MT</td>
</tr>
<tr>
<td>Super Cereal Plus with amylase (SC+ with amylase)</td>
<td>11 MT</td>
</tr>
<tr>
<td>Fortified Vegetable Oil (FVO)</td>
<td>8 MT</td>
</tr>
<tr>
<td>Ready-to-Use Supplemental Food (RUSF)—procured by WFP</td>
<td>8 MT</td>
</tr>
<tr>
<td>Ready-to-Use Therapeutic Food (RUTF)—procured by WFP</td>
<td>22 MT</td>
</tr>
</tbody>
</table>

The protocol for the study received approval from the Sierra Leone Ethics Board and the Tufts University and WashU IRBs.

14 [http://pdf.usaid.gov/pdf_docs/PA00MM2P.pdf](http://pdf.usaid.gov/pdf_docs/PA00MM2P.pdf)
Formal contracts with the local implementing partners in Sierra Leone were formed. WashU and Project Peanut Butter (PPB) will be responsible for the management and implementation of the Supplementary Feeding Program (SFP) for the length of the study. They have successfully established their office in Pujehun, identified and trained staff for clinic operations and conducted sensitization activities with both the DHMT and the PHU staff at each of the designated 28 PHUs. Caritas Bo will be responsible for the implementation of the survey research which includes: 5,320 enrollment forms, 1,680 beneficiary caregiver in-depth interviews, 24 focus group discussions, 448 in-home observations, 56 community health worker in-depth interviews, 200 lead mother in-depth interviews, 56 observations of caregivers at the PHU, and other cost-effectiveness-related data collection. Over the last year, they hired and trained their field-based survey staff, established offices in Pujehun, and began community sensitization activities to prepare communities for the start of the study.

A memorandum of understanding (MOU) was signed with a Sierra Leonean non-governmental office (NGO) conducting nutrition activities in Pujehun District. The Community Action for the Welfare of Children (CAWeC) currently implements the mother support group (MSG) model for conducting integrated management of acute malnutrition (IMAM) activities in Pujehun District. Over the course of the study, CAWeC staff will assist in integrating messages about appropriate food preparation and handling into their staff training and social and behavior change communication (SBCC) activities from the PHU to the individual community level. A period of community sensitization regarding the study and supplemental feeding clinics will begin in the project Year 2 with the full support of the District’s government.

**Challenges and Lessons Learned**

FAQRP Phase III has experienced significant delays in production of study FBFs due to commodities having testing results outside of specification. These delays provide important lessons learned for commodity procurement moving forward, including the need for a longer production timeline. In addition, there were delays in the production of RUSF for the study.

**C.3.1.15 Implement three new sub-studies on body composition, developmental indicators and environmental enteropathy**

*While a number of different supplementary foods have effectively treated children with MAM, there is recognition that supplementary feeding programs need to assess outcomes in addition to*
anthropometric indicators. Three such outcomes are change in lean mass (and fat mass)\textsuperscript{15}, environmental enteric dysfunction (EED)\textsuperscript{16} and neurocognitive function\textsuperscript{17}.

In addition to the effectiveness and cost-effectiveness components, three-sub-studies will be nested within the Sierra Leone study. The objectives of these studies are: 1) to compare the effect of the four foods on changes in body composition (lean mass and fat mass) and correlation of 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 and recovery.

**Accomplishments**

In Year 1, FAQR Phase III finalized methods, study protocol and data collection tools for the three sub-studies.

The body composition study will use a deuterium dilution technique. Urine analysis will determine what type of weight (lean or fat mass) is being gained depending on which of the four foods is being consumed.

The environmental enteropathy study will use both a dual sugar test and messenger RNA (mRNA) test. The dual sugar test will establish the presence or absence of environmental enteric dysfunction (EED) and answer the question: does EED modify the effect of the four foods. The mRNA test will examine seven host mRNA transcripts to help to develop a scale for EED. The test is used to assess gut function including inflammation and gut permeability.

The neurocognitive developmental indicators study will examine neurocognitive function and recovery in moderately malnourished (MAM) children. This will be done through a battery of novel eye tracking tests of saccadic reaction time to assess specific neurocognitive functions in 6 to 24-month-old children. These will be validated against behavioral indicators of cognitive development.

**Challenges and Lessons Learned**

Constraints relating to the study environment made some methods for the body composition analysis not practical (e.g., blood specimens). For the EED sub-study, there were challenges in choosing between an older (dual sugar test) and a new (mRNA) method. This was due to

\textsuperscript{15} Provides a better picture of the underlying mechanisms by which these foods improve nutrition status.

\textsuperscript{16} 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.

\textsuperscript{17} There is evidence linking malnutrition and impaired brain development, placing children at risk for lifelong cognitive, emotional, and social deficits.
uncertainty surrounding whether mRNA can be used to develop a scale of EED severity. Using a combination of both methods was determined to be the best way forward as it will allow for richer data and a contribution to the field regarding measurement methods.

In designing the neurocognitive study for developmental indicators, there were uncertainties in how implementation of some aspects of the designed sub-study would work in the study context due to lack of electricity and space requirements for the study. An alternative strategy was adopted by adding a small-scale pilot study to the design that can help to reduce uncertainties and adjust study processes.

**C.3.2. Improved Programming**

**C.3.2.1 Commodity Reference Guide**

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 which will support effective programming of U.S. food aid products.

The FFP Commodities Resource Portal\(^{18}\) has not changed since its inception in early 2000. USAID and the FAQR Phase III envision the creation of an updated and overhauled FFP Commodities Resource Portal to raise the profile of the U.S. food aid basket and better share and present commodity information to stakeholders online. The Portal will also be a “one-stop shop” providing a unified, transparent source of information that is user-friendly and easily navigated.

**Accomplishments**

FAQR Phase III undertook a landscape analysis of the current Commodities Resource Portal and consulted with USAID/FFP regarding the design, purpose, and use of the current portal and the vision for a new portal that meets USAID and other stakeholder needs. This information will be used to craft recommendations for an updated Commodities Resource Portal.

The existing FFP fact sheet templates, food aid supplier fact sheets and commercial food industry fact sheets, were reviewed, leading to a proposed new template design that is modernized, simplified and more consistent with commercial standards. Updated, redesigned CRG fact sheets will be featured on the USAID/FFP Commodities Resource Portal as part of a broader redesign to position FFP’s work and investments in food aid product formulation and updates.

**Challenges and Lessons Learned**

The Commodity Resource Portal redesign is constrained by USAID/FFP website limitations, including how prominently the portal can be featured on the overall USAID website and the amount of information that can be included on the portal. The project must work within these constraints, while prioritizing crucial information. The overall design should take into account this structure. Additionally, there is no USAID/FFP budget available for this redesign, so recommendations must be implementable without requiring additional resources.

In implementing project activities, the project found that CRG fact sheets are minimally used since potential fact sheet users are obtaining necessary information on USAID food aid products from other sources or from internal tools. This indicates the need for interagency coordination, including consultation with USDA regarding domestic fact sheets, and stakeholder consultation to ensure the redesigned template meets user needs.

### C.3.2.2 Deployment of new specialized products

### C.3.2.3 Long-term strategy for sudden onset emergency response

### C.3.2.5 Food and ration technical guidance

See C.3.1.4

### C.3.2.4 Technical advisory group

The United States Agency for International Development (USAID) does not have an institutionalized method for assessing new evidence related to the effectiveness of food aid products and ingredients for improving population-wide nutrition in emergency and non-emergency contexts.

After wide consultation with many US and international stakeholders on politically-feasible and institutionally-sustainable options for establishing a new inter-agency technical advisory group on food aid, it was decided that the most likely option will be to strengthen and seek to formalized the current system of twice yearly meetings of US organizations involved in the broad food aid agenda, that is currently hosted by the FAQR activity. Recommendations on ways to achieve this will be made to USAID and USDA.

### C.3.2.6 Documentation and dissemination for protocols

There is no clear guidance on how researchers can maximize the comparability of their studies and the quality of their evidence by following best practices in research planning, design, and dissemination.

The Phase III work will address this issue by creating research protocol guidance on how to undertake food aid research.

Accomplishments
During the first year of FAQR Phase III, the team established the following basic components necessary for food aid research: comprehensive study planning and preparation; a rigorous research design, most often involving groups randomly assigned to the treatments being compared; a data quality assurance plan; a data management and analysis plan; and a predetermined but flexible results dissemination strategy.

**Challenges and Lessons Learned**

There was a challenge in the initial conceptualization of the food aid research guidance protocol. The usefulness of a stand-alone document was assessed. It was decided that a comprehensive document with guidance for the initial research preparation phase as well as the post-implementation phase is needed.

**C.3.2.7 Cost-effectiveness tools**

The call for using cost-effectiveness evidence to support better decision-making in food aid policy and programming is increasing. However, there is a research gap in generating cost-effectiveness estimates. Furthermore, there is a policy gap in factoring effectiveness into cost-only programming decision-making.

The research gap on cost-effectiveness evidence is first addressed through FAQR's field studies. Then, building upon lessons learned from the field research methods in cost data collection and cost-effectiveness analysis, guidance documents will be generated and workshops organized on cost-effectiveness methodology for future cost-effectiveness research. Furthermore, the project will link field research results with policy change and will address the policy gap by producing deliverables which will support better decision-making by considering cost-effectiveness in selecting specialized food aid commodities for nutrition programming.

**Accomplishments**

The cost data collection plan for FAQR Phase III’s field study in Sierra Leone was developed in project Year 1, based on the approach developed for the Burkina Faso prevention study.

The decision support tool developed during FAQR Phase II was re-evaluated, leading to the decision to add functions and components. Producing a clearly defined decision support deliverable which could effectively promote the consideration of cost-effectiveness in decision-making of specialized food aid programming is an important contribution to program operations.

The project engaged in knowledge-sharing activities with other researchers working on cost-effectiveness studies. Cost-effectiveness methodology and interpretations of cost-effectiveness results warrant further work.

**Challenges and Lessons Learned**
In designing the cost-effectiveness decision support tool, FAQR Phase III found that the purpose of and audience for the tool must be clearly defined. In order to more effectively target the tool toward this identified audience, the project plans to conduct stakeholder interviews and a literature review to understand how decisions are made and what existing cost-effectiveness data can be combined. These pieces of information will be used to determine what type of tool would be useful in supporting decisions that consider cost-effectiveness evidence.

Additionally, changing timelines in the implementation of the treatment study in the field has necessitated flexibility in the cost data collection design.

C.3.2.8 FAQR II “Scorecard Report” and FAQR Communications

It is challenging to communicate FAQR’s sustainable outcomes to a wide range of stakeholders.

FAQR Phase III will address this by communicating outcomes, lessons learned and recommendations to a variety of stakeholder groups using a diversity of communication tools. Communications efforts will ensure that knowledge generated by FAQR Phase III’s activities is disseminated effectively to enable evidence-based policy and practice.

Accomplishments

Multiple presentations were made which provided: (a) an overview of results from FAQR I & II; (b) key objectives of FAQR Phase III; and (c) progress toward making food aid more cost-effective and of longer-lasting positive impact. FAQR Phase III confirmed presentation of two sessions at the 2017 International Congress of Nutrition (ICN) on “Addressing Child Malnutrition: Newer Measures to Advance Prevention and Treatment Outcomes” and “Food Aid Research: Update on Food Aid for Preventing and Treating Undernutrition.”

A draft “Scorecard Report” was prepared, aimed at informing the USAID/FFP agenda for the 2018 Farm Bill. The “Scorecard Report” – in the form of a series of hand-outs -- highlights the anticipated sustainable achievements of FAQR including: (a) U.S. food aid products redesigned to be fit-for-purpose and new products introduced; (b) industry-standard product specifications and accelerated shelf-life testing assessments for new products established; (c) global standards set for food aid (aligning UN and U.S. agencies); (d) open access evidence on successful food aid products and programming protocols initiated; (e) innovations in food aid packaging; and (f) cost-effectiveness tools and approaches applied to all food aid programming choices.

A fully revamped Research Engagement on Food Interventions for Nutritional Effectiveness (REFINE)\(^ \text{19} \) website was launched October 2016. REFINE is a website which facilitates knowledge and resource sharing by making information on innovations and research relevant to

\(^ {19} \) [http://www.refinenutrition.org](http://www.refinenutrition.org)
food-supported interventions easily accessible. The updated website enables this aim. Table 2 summarizes key statistics related to REFINE for Project Year 1. A complementary social media strategy via Twitter enables FAQR Phase III to reach a wider audience with research on food aid products, processes and programs.

<table>
<thead>
<tr>
<th>Table 2: REFINE Statistics FAQR Phase III Year 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studies tracked</td>
</tr>
<tr>
<td>Publications in REFINE library</td>
</tr>
<tr>
<td>Update newsletters</td>
</tr>
<tr>
<td>Total @REFINEnutrition tweets</td>
</tr>
</tbody>
</table>

Finally, FAQR Phase III adopted a strategic communications plan that offers a long-term vision for how the project will communicate project impacts. This strategy included launching an updated FAQR website, providing an engaging platform which demonstrates and makes available to a variety of stakeholders the achievements of FAQR with a focus on giving access to results useful to policy makers, programmers, researchers and industry.

**Challenges and Lessons Learned**

Challenges in gathering information for updates to the FAQR website indicate that there is a need for stronger institutional knowledge sharing systems. Operationalization of the Strategic Communications Plan will provide the entire activity with defined channels for communication and sharing of outputs.

**C.3.2.9 Evidence Summit**

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

The Evidence Summit will provide a forum for disseminating evidence generated by FAQR and other research to stakeholders, promoting evidence-based policymaking and practice within the food aid agenda.

**Accomplishments**

FAQR Phase III began to conceptualize the themes and structure for an Evidence Summit to be held in Project Year 3 to share evidence with a wide audience on the cost-effectiveness of specialized foods in the context of the results of implementation of FAQR recommendations on

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products, processes and programming. The Evidence Summit will bring together experts/researchers, policy makers, programmers and industry to understand the current state of knowledge, identify the evidence gaps, highlight current tools available for use by programmers and discuss evidence-based recommendations for future research, practice and policy.

**Challenges and Lessons Learned**

The Evidence Summit will be an opportunity to share FAQR findings as well as a tool to engage other researchers in disseminating results relevant to these areas related to food aid in practice. The workshop will be framed around translating research into decision-making.

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

| C.3.3.1 Continuation of institutionalization of a process for ensuring periodic interagency technical consultation |
| C.3.3.3 Continuation of process for strengthening of current interagency technical advisory groups |
| C.3.3.4 Continuation of strengthened consultative processes |

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

During Phase II, FAQR facilitated coordination between U.S. agencies, and across U.S. and international agencies. This was achieved through meetings, formal MOUs, formation of working subcommittees, continuity of engagement (repeat attendance), active involvement in the discussions focused on problem-solving and willingness to think about issues going beyond their own immediate responsibility. FAQR Phase III continues these efforts.

**Accomplishments**

FAQR Phase III planned, hosted and provided follow-up for a U.S. interagency meeting. In addition, a number of planning meetings and consultations with USAID, USDA and other key stakeholders were facilitated to identify priorities for the U.S. government interagency working group as the next step toward institutionalization. In Project Year 1 there was a push toward more frequent, issue-specific ongoing working groups as part of this process, beyond the two regularly scheduled U.S. interagency meetings per year. A U.S. interagency meeting was planned for March 28, 2017, focused on food aid research, product development, food safety and elements of institutionalization.
USAID Food Aid Quality Review Phase III Year 1 Annual Report  Feb. 2016-Jan. 2017

FAQR now serves as secretariat for the International Interagency Harmonization Group and held a meeting in Rome in June 2016 with representatives from USAID/FFP, USAID/Office of Foreign Disaster Assistance (OFDA), Médecins Sans Frontières (MSF), WFP and the United Nations Children’s Fund (UNICEF) in attendance. The International Interagency Harmonization Group has agreed to harmonized RUF specifications and finalized a Terms of Reference for the interagency group. Additionally, the group has finalized an interagency work plan template that will be updated on a semiannual basis to reflect progress on the group’s priority areas. CODEX guidelines for RUTF development and food aid safety, and quality audits were two additional areas identified for representatives to address in smaller working groups.

Challenges and Lessons Learned

FAQR Phase III has found that the composition of interagency members (both for U.S. government and international interagency activities) is critical to ensuring actionable progress on interagency coordination priority items. However, coordination of time for interagency meetings and receiving feedback from interagency members can be challenging. Furthermore, there are several ongoing activities that fall under the auspices of the interagency groups, yet there is no system in place to document and report regularly on activity progress. This process is being systematized through a workplan and interagency communication strategy. In addition, these logistical challenges underscore the importance of institutionalizing these efforts so that meetings and working groups continue after FAQR Phase III is no longer available to serve as secretariat.

These challenges indicate that as part of institutionalization for both groups it will be beneficial to set approximate dates for meetings on an annual or semiannual basis, as this will make scheduling meetings easier. For the U.S. interagency group, having an internal secretariat may be able to hold participants more accountable for feedback along a specified timeline.

C.3.3.2 Development of harmonized commodity specifications and templates

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.

Significant progress was made during FAQR Phase II to harmonize product specifications and availability with WFP. This work is part of the broader FAQR Phase III agenda to streamline and unify U.S. food aid products and production practices with international practices.

Accomplishments

FAQR Phase III developed, piloted and reviewed with international interagency harmonization stakeholders a U.S./WFP Food Aid Specifications Comparison Matrix Template (“Matrix”). The Matrix was populated with priority products and includes the following sections: ingredients,
macronutrients, particle size, additional requirements (product characteristics and potential contaminants, including indicators of spoilage [peroxide values], contamination [e.g., lead and cadmium levels], organoleptics and cooking time), microbiology testing, minerals, vitamins, shelf life, packaging and quality assurance.

Expansion of procurement mechanisms and product sourcing from both U.S. and international suppliers mean that products must meet the same set of standards so that suppliers are not advantaged or disadvantaged based on location and products are functionally equivalent in programming and accepted by multiple agencies and programmers. Therefore, there is a need for harmonized specifications that apply to U.S. and non-U.S. sourced products that are in line with industry practice standards. The Matrix will aid and inform USAID and other U.S. government stakeholders during ongoing intra-agency food aid product harmonization efforts and is an easy way to present and compare current and emerging product requirements.

**Challenges and Lessons Learned**

Some aspects of commodity specifications which differ between U.S. and WFP specifications will require special attention regarding harmonization due to both policy and technical considerations; continuing or new issue-specific discussion may be needed to resolve these matters.

Ongoing effort is needed to ensure that suppliers are included in recommendations for harmonized specifications and templates. For example, international harmonization stakeholders have expressed interest in “end of shelf life” specifications for food aid products, although suppliers cannot control supply chain conditions and would likely not be comfortable providing these specifications as they cannot guarantee foods will be kept in optimal conditions for achieving these “end of shelf life” specifications along the supply chain. These issues highlight the need for supplier input in understanding the implications of changes to specifications that come about through harmonization efforts.

In addition, interest in shelf life testing of food aid commodities and components (e.g., micronutrient premix) and ongoing discussion of revising specifications to accommodate product deterioration due to supply chain conditions may inform both specifications and supply chain decisions.

**C.3.3.5 Improved supply chain oversight**

*There are many challenges faced by USAID/IFFP throughout the food aid supply chain.*

*This issue will be addressed by analyzing challenges to commodity production, prepositioning, shipment, transfer modality, storage and handling, including the “last mile” of distribution to beneficiaries. The work will analyze key concerns relating to potential threats to food safety and cost-effectiveness, where*
“effectiveness” is defined in terms of timely delivery of products to their final destination in good condition.

Accomplishments

In the first year of FAQR Phase III, efforts to craft recommendations for improved supply chain oversight began with a review of existing analytical tools for supply chain modeling with a focus on how decision tools improve the entire value system.

Analysis of USAID/FFP procurement data from 2011-2016 are being analyzed as the basis for optimization modelling. Ethiopia and Uganda were identified as countries of interest for a deeper case study.

Additionally, the USAID/FFP team is attending the Supply Chain Leader Development certificate program and is planning on attending the 2017 Health and Humanitarian Logistics Conference, demonstrating that following conversations with the research team, underpinning USAID/FFP's rethinking of their approach to supply chain management and oversight.

Challenges and Lessons Learned

FAQR Phase III found that determining end users of the supply chain optimization model is challenging, yet crucial, to guide the design of the decision support tool. This process must involve multiple stakeholder perspectives and be mindful of how a tool can be designed which will actually be useful and usable for implementing organizations. Furthermore, interpretation of data and feedback to inform existing gaps in the model required many exchanges with USAID/FFP stakeholders creating a strong communication link.

Expanding purchasing mechanisms for food aid products, including Blanket Purchase Agreements and rollout/challenges of RUF and HEB food aid products purchased directly by USAID (instead of through USDA), may increase additional elements to the supply chain which must be considered by the model.

C.3.3.6 Food safety and quality assurance feedback loop

The food safety and quality assurance feedback loop is not effective as it stands to prevent, detect and contain incidents.

The project will review aspects of FFP’s supply chain oversight, including assessing the existing food safety and quality feedback loop, and review and identify best practices from commercial supply chain oversight, and will provide recommendations for improvements and redesign.

Accomplishments
Informant interviews were conducted with U.S. agencies staff and partners about current food safety and quality feedback loops. FAQR also reviewed commercial industry supply chain oversight feedback loops for lessons that might be applied to the USAID/FFP feedback loop. This review contributed to a draft of the Food Safety and Quality Assurance Feedback Loop Assessment. This draft describes key aspects of the current USAID/FFP supply chain oversight and relevant commercial industry supply chain oversight feedback loops, with draft recommendations for the development of a timely, effective feedback system which catches and contain incidents more quickly.

Draft recommendations for a feedback loop system aim to: 1) address current feedback issues; 2) prevent and contain incidents; 3) provide feedback in a timely manner; 4) incorporate best practices in commercial practice that are relevant to the food aid supply chain; 5) improve traceability of food aid product incidents; 6) identify incident issues (packaging, ingredients, storage, etc.); 7) include incident tracking, including data on results/resolution, with data sharable and searchable; 8) engage supply chain stakeholders, especially food aid organizations/beneficiaries and suppliers/vendors; and 9) provide a unified feedback loop for U.S., international and local and regional food aid procurement (LRP) suppliers providing products to USAID.

**Challenges and Lessons Learned**

USAID/FFP has minimal information on how the feedback loop system was used and institutional memory on food aid product incidents from the last five years is limited. Currently, incidents are only reported if the monetary value of damaged food aid products meets or exceeds a minimum value threshold. Few incidents trigger use of the feedback system and because they are so rare, PVOs and other supply chain stakeholders do not know about the current feedback system. The new feedback system will be designed to capture incidents regardless of monetary value of damaged food aid products, because incident data can be used to inform product research and development in addition to containing and preventing future food safety and quality incidents (including in-country through to the “last mile”).

Real time feedback systems can be extremely expensive and funding for a new USAID/FFP feedback loop system is uncertain. Therefore, for successful implementation, FAQR Phase III recommendations must be realistic given budgetary constraints. To be explored is a system for linking food aid incident reporting into existing feedback systems (for example, Web Based Supply Chain Management [WBSCM] or USDA complaint system or bar code development) and consider developing a student innovation challenge for a mobile app feedback loop system.

**C.3.3.7 Food safety and quality assurance in U.S.-procured and locally/regionally-procured products**

USAID/FFP is transitioning from Good Manufacturing Practices (GMP) to a Hazard Analysis and Critical Control Points (HACCP) approach to food safety in its food aid supply chain. Simultaneously, USAID
food aid procurement is adapting to include more local and regional food aid procurement (LRP) as a modality to provide the right product at the right time in the right place.

**FAQR Phase III will support the transition from GMP to HACCP and assist in maintaining the same standards of food safety and quality in both U.S.-sourced and internationally-sourced food aid commodities.**

**Accomplishments**

Food safety and quality sections of Commodity Requirements Documents have been updated and incorporated this information into the Specifications Matrix created as part of C.3.3.2.

FAQR Phase III worked with USAID in developing a plan and priorities for ongoing local and regional food aid procurement (LRP) supplier visits. Additionally, they aided in the preliminary work to facilitate a series of small food safety working group meetings, and planning for the facilitation of a focused interagency harmonization session on auditing, sampling and inspection of processing facilities with participation from USAID, Agricultural Marketing Service (AMS) and WFP.

Currently, FSMA and CODEX apply different food regulatory standards relevant to food aid products and ingredients. Therefore, U.S. and international suppliers must meet different standards. Understanding how these standards are applied to food aid products is essential so that: (a) suppliers are not advantaged or disadvantaged based on location; (b) products are functionally equivalent in terms of programming; and (c) multiple agencies and programmers accept products.

**Challenges and Lessons Learned**

USAID/FFP is developing relationships with local suppliers as part of their LRP efforts. However, supplier visits and add-on food safety/quality meetings have been limited due to cancellations and postponements. Building successful working relationships with overseas suppliers to address food safety and quality standards takes time and multiple interactions. Therefore, in Year 2, activities will continue and intensify to lay additional groundwork to interact with suppliers and establish the LRP food safety and quality working group.

In Year 1, FAQR Phase III identified several trends which may affect the activities in this area moving forward. The new Administration’s policies indicate a potential reemphasis of in-kind food assistance and a move away from LRP of food aid products. Furthermore, potential roll back/modifications to the Food Safety Modernization Act under the new Administration may impact U.S. food aid production guidelines which also affect international suppliers.
Finally, food aid product advancements and ingredients, e.g., probiotics/amylase, new staple grains and Ready-to-Use Foods (RUFs) made with locally and/or regionally-sourced ingredients that are not peanut-based will require new food safety and quality assurance discussions.

**FAQR Administration**

**Accomplishments**

*Efficient Transition from Phase II to Phase III*

Fifteen new team members and three new sub-contracting partners were brought on board for Phase III, reflecting the increased complexity and scope of activities to be addressed.

FAQR Phase III started with a series of in-depth meetings and consultations to ensure that the project delivers outputs that serve the needs of USAID/FFP. This involved vetting a series of concept notes for project work as well as final deliverables. The ultimate end product is a suite of outputs that enable USAID/FFP to be more efficient, make a more cost-effective impact, and address major policy issues.

**Challenges and Lessons Learned**

*Managing a Growing Team and Complex Scope of Work*

With the new FAQR Phase III scope of work and growing team, management of a robust information and communication system is needed to ensure successful delivery of outputs. A toolkit was developed to guide staff on division of tasks. Several key items are instrumental within this toolkit, including: templates for reports, briefers and presentations, “how-to” documents to guide processes and establish basic principles, monthly reporting templates to track progress and visuals to demonstrate how the elements of FAQR work are interconnected. Additionally, detailed work plans guiding activities and a comprehensive management plan have been developed. This toolkit, along with a management system, has led to a successful and productive project Year 1.

**III. Future Priorities: FAQR Phase III Year 2**

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

<table>
<thead>
<tr>
<th>C.3.1.1</th>
<th>Examining appropriateness of food matrices</th>
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<tbody>
<tr>
<td>C.3.1.2</td>
<td>Extrusion Systems</td>
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<tr>
<td>C.3.1.3</td>
<td>Thermo-processing</td>
</tr>
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- Host roundtable at 2017 Institute of Food Technologists (IFT) with experts. FAQR Phase III will identify knowledge areas and gaps in knowledge and provide a way forward to improve food aid products in relation to food science and technology. The team plans to publish the proceedings of this roundtable.
- Complete literature review to establish the current state of knowledge related to these topics and food aid products

| C.3.1.4 Building out the food basket with existing commodities |
| C.3.1.5 Assessment of new products and technologies for an improved food basket |
| C.3.1.7 Dual use products for emergency response |
| C.3.1.8 Incorporating new products developed by USDA’s micronutrient research |
| C.3.1.10 New formulations for specialized food products |

- Complete desk and qualitative review of products, technologies and dual-use products. This will help provide recommendations for new supplier and products standards and decision tree for USAID/FFP

- Make recommendations on a food aid emergency response strategy

| C.3.1.6 Infestation and Food Aid Packaging |

- Gather evidence for existing packaging technologies and develop recommendations through a consultative process (i.e., workshop with stakeholders, task force for packaging revision)

- Ensure collaboration and coordination of FAQR Phase III work with other research groups working on new packaging technologies

- Continue to work with suppliers as a key stakeholder group producing useful research and development on packaging

| C.3.1.9 Strategy for assessing cost-effectiveness of new modalities of response to emergencies |

- See C.3.3.5

| C.3.1.11 Finalization of all reports on Malawi feasibility of changes in packaging and messaging study on improved targeting (See Annex 4 for a full study summary) |

- Publish the remaining manuscripts and case study on the Malawi results and widely disseminate findings through various channels of communication (listservs, newsletters, press releases, presentations, etc.)

| C.3.1.12 Conclusion of cost-effectiveness studies of prevention of stunting and moderate acute malnutrition (Burkina Faso) (See Annex 5 for a full study summary) |

- Finish collecting cost data, calculate program cost and conduct cost effectiveness data analyses

- Disseminate results in Burkina Faso and Washington, DC

- Prepare manuscripts for publication and posters/conference presentations and final report for USAID

| C.3.1.13 Cost Effectiveness of Four Food Products in moderate acute malnutrition (MAM) Treatment Study (Sierra Leone) (See Annex 6 for a full study summary) |

| C.3.1.14 Timing of treatment study in country |

- Start data collection for the treatment study

- Develop and implement SBCC component for the supplemental feeding program

| C.3.1.15 Implement three new sub-studies on body composition, developmental indicators and environmental enteropathy |

- Body Composition and environmental enteropathy study: begin and complete data collection, lab analysis and interpretation of findings

- Neurocognitive study: build capacity for the proposed study and use of technologies at the study site in Sierra Leone, implement the pilot study, evaluate the results and
implementation experiences from the pilot study and use these results to design the main neurocognitive sub-study.

### C.3.2. Improved Programming

#### C.3.2.1 Commodity Reference Guide
- Finalize landscape analysis of FFP Commodity Portal, develop recommendations, hold stakeholder consultations on recommendations
- Create draft of CRG factsheets, conduct survey/stakeholder consultations to solicit feedback on new design, general usage and internal tools used in programming products, update template based on feedback, and create fact sheets for all products
- Develop protocol updating of fact sheets (USAID/FFP led)

#### C.3.2.2 Deployment of new specialized products

#### C.3.2.3 Long-term strategy for sudden onset emergency response

#### C.3.2.5 Food and ration technical guidance
- See C.3.1.4

#### C.3.2.4 Technical advisory group

#### C.3.2.6 Documentation and dissemination of research protocols
- Disseminate research protocol guidance for use by researchers and USAID partners
- Disseminate the Malawi and Burkina Faso research protocol and data management, and analysis plans as models

#### C.3.2.7 Cost-effectiveness tools
- Analyze cost and cost-effectiveness data from Burkina Faso for dissemination events
- Finalize the cost matrix and collect cost data from the field study in Sierra Leone
- Conduct literature review and stakeholder interviews to understand their decision-making processes and determine their needs in order to create a cost-effectiveness decision support tool

#### C.3.2.8 FAQR III “Scorecard Report” and FAQR Communications
- Complete the FAQR Phase III “Scorecard Report” and engage in dissemination to USAID/FFP, key stakeholders and congressional staffers
- Continue to identify and share on-going and published studies on specialized nutritious food products and food-supported interventions via the REFINE website, email and Twitter feed
- Develop a research uptake strategy to promote the use and sharing of evidence and best practice among key stakeholders
- Explore a sustainability plan for REFINE post-FAQR
- Plan and host two sessions at ICN 2017
- Implement strategic communications plan and develop processes for communicating FAQR Phase III accomplishments and outputs

#### C.3.2.9 Evidence Summit
- Finalize the proposal for the Evidence Summit, including outputs, sessions, speakers
- Finalize key logistical decisions including date and venue
### C.3.3. Commodity Procurement and Quality Assurance along Supply Chain

**C.3.3.1** Continuation of institutionalization of a process for ensuring periodic interagency technical consultation

**C.3.3.3** Continuation of process for strengthening of current interagency technical advisory groups

**C.3.3.4** Continuation of strengthened consultative processes

- Host interagency consultation meetings: U.S. government in March 2017 and international interagency harmonization in June 2017
- Coordinate small working groups on priority topics
- Continue discussions related to institutionalization of both U.S. government and international group after FAQR Phase III

**C.3.3.2** Development of harmonized commodity specifications and templates

- Finalize Matrix and Report prior to June 2017 international harmonization meeting
- Create specifications for six additional priority products based on new template

**C.3.3.5** Improved supply chain oversight

- Develop Excel-based decision support tool for supply chain optimization
- Report on current FFP supply chain informed by completed data analysis and provide recommendations to improve the supply chain

**C.3.3.6** Food Safety and Quality Assurance Feedback Loop

- Review, revise and finalize Food Safety and Quality Assurance Feedback Loop Assessment and make recommendations to USAID/FFP for adopting the process

**C.3.3.7** Food safety and quality assurance in U.S.-procured and locally/regionally-procured products

- Facilitate small food safety and quality key stakeholder group meeting(s)
- Facilitate international interagency meeting on food safety and harmonization of processes for auditing, sampling, and related tasks.
Annex 1. Food Aid Quality Review Phase III Acknowledgements

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

**Principal Investigators**

<table>
<thead>
<tr>
<th>Principal Investigator</th>
<th>Co-Principal Investigator</th>
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<tbody>
<tr>
<td>Patrick Webb, PhD</td>
<td>Beatrice Roger, PhD</td>
</tr>
<tr>
<td>Principal Investigator (PI)</td>
<td>Co-Principal Investigator</td>
</tr>
<tr>
<td>Alexander McFarlane Professor of Nutrition</td>
<td>Professor, FPAN Program Director</td>
</tr>
<tr>
<td>Friedman School of Nutrition</td>
<td>Friedman School of Nutrition</td>
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<td>Tufts University</td>
<td>Tufts University</td>
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**Research Staff and Consultants (domestic)**

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<th>Research Staff and Consultant (domestic)</th>
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<tr>
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<tr>
<td>Irwin Rosenberg, MD</td>
</tr>
<tr>
<td>Science Research Specialist</td>
</tr>
<tr>
<td>Professor</td>
</tr>
<tr>
<td>Friedman School of Nutrition</td>
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<tr>
<td>Tufts University</td>
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<tr>
<td>Ken Chui, PhD</td>
</tr>
<tr>
<td>Biostatistician</td>
</tr>
<tr>
<td>Assistant Professor</td>
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<tr>
<td>Friedman School of Nutrition</td>
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<tr>
<td>Tufts University</td>
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<tr>
<td>Shelley Walton</td>
</tr>
<tr>
<td>Project Manager</td>
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<tr>
<td>Friedman School of Nutrition</td>
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<td>Tufts University</td>
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<tr>
<td>Lindsey Ellis Green</td>
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<td>Project Administrator</td>
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<td>Friedman School of Nutrition</td>
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<tr>
<td>Stephen Vosti, PhD</td>
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<tr>
<td>Consultant</td>
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<tr>
<td>Costing Specialist</td>
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</tbody>
</table>
Michael Joseph
Senior Research Assistant
Friedman School of Nutrition
Tufts University

Maria Wrabel
REFINE Research Assistant
Friedman School of Nutrition
Tufts University

Kristine Caiafa
Research Assistant
Friedman School of Nutrition
Tufts University

Gloria Guevara Alvarez
Communications Research Assistant
Friedman School of Nutrition
Tufts University

Agathe Roubert
Research Assistant
Friedman School of Nutrition
Tufts University

Yue Huang
Communications Research Assistant
Friedman School of Nutrition
Tufts University

Research Staff and Consultants (Burkina Faso)

Ilana Cliffer
Field Research Director
Friedman School of Nutrition
Tufts University

Adéline Kologo
Consultant
Field Research Assistant

Research Staff and Consultants (Sierra Leone)

Stacy Griswold
Field Research Manager
Friedman School of Nutrition
Tufts University

Isabel Potani
Field Research Assistant
Friedman School of Nutrition
Tufts University

Akriti Singh
Senior Field Research Assistant
Friedman School of Nutrition
Tufts University

Jukka Leppänen
Consultant
Neurocognitive Sub-Study

Sidie Sahid Sisay
Consultant
Field Research Assistant/Cost Data Collection
**Subcontracting Partners**

*Global Food & Nutrition*
Nina Schlossman, President
Leah Koeppel, Program and Research Coordinator

*ACDI/VOCA*
Robert Rosengren, Senior Technical Director
Carlos Soto, Project Coordinator
Régis Terrien, Deputy Chief of Party

*Save the Children, USA*
Beatrice Scheuermann, Program Manager
Suzanne Berkey, Senior Director

*Institut de Recherche en Sciences de la Santé (IRSS)*
Laetitia Ouedraogo, Co-Investigator
Seni Kouanda, Co-investigator

Hermann Lanou, Co-Investigator
Augustin Zeba, Co-Investigator

*Northeastern University*
Ozlem Ergun, Co-Investigator
Keziban, Tasci, Research Assistant

*Washington University in St. Louis*
Mark Manary, Co-Investigator
Donna Wegner, Project Administrator
Meghan Callaghan, Project Coordinator
Elizabeth Cimo, Data Analyst

*Caritas Bo*
Memuna Sawi, Co-investigator, Njala University
David Yambasu, Executive Director
Patrick Dauda, Finance Officer
## Annex 2. Summary of FAQR Phase III Deliverables and Activities

### 2.1 Meetings/Events (36)

<table>
<thead>
<tr>
<th>Meeting/Event</th>
<th>Purpose</th>
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<tbody>
<tr>
<td><strong>FAQR Phase III Kick-Off Call</strong>&lt;br&gt;March 2, 2016</td>
<td>The Tufts FAQR team held a Phase III kick off call to provide an overview of FAQR Phase III activities and introduce all collaborators.</td>
</tr>
<tr>
<td><strong>FAQR Phase II Close-Out and Phase III Start-Up Conference Call</strong>&lt;br&gt;March 2, 2016</td>
<td>FAQR held a conference call with USAID/FFP to discuss the remaining Phase II deliverables and the Phase III start-up activities. The start-up activities include the Phase III Work Plan, comprehensive management plan, and marking and branding guidelines.</td>
</tr>
<tr>
<td><strong>International Association of Operative Millers Conference in Columbus, OH</strong>&lt;br&gt;April 5-7, 2016</td>
<td>FAQR Senior Food Technologist attended the International Association of Operative Millers Conference and Expo.</td>
</tr>
<tr>
<td><strong>Session with USAID/FFP in Washington, DC</strong>&lt;br&gt;April 7, 2016</td>
<td>The FAQR team met with USAID/FFP to work on the FAQR Phase III Work Plan.</td>
</tr>
<tr>
<td><strong>Supply Chain and Costing Work Plan Meeting in Boston, MA</strong>&lt;br&gt;May 23-24, 2016</td>
<td>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.</td>
</tr>
<tr>
<td><strong>Field Staff Meeting in Burkina Faso</strong>&lt;br&gt;May 28, 2016</td>
<td>FAQR Field Research Director in Burkina Faso, together with IRSS, held an all field staff meeting to discuss plans for post-intervention follow-up.</td>
</tr>
<tr>
<td><strong>International Food Aid Inter-Agency Harmonization Meeting in Rome, Italy</strong>&lt;br&gt;May 31-June 1, 2016</td>
<td>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.</td>
</tr>
<tr>
<td><strong>Working Meeting with USAID and WFP in Rome, Italy</strong></td>
<td>FAQR acted as secretariat for working meetings with USAID and WFP to identify overlapping work streams.</td>
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<td>Event Description</td>
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<td>Humanitarian Technology 2016 Conference in Boston, MA</td>
<td>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.</td>
</tr>
<tr>
<td>Supply Chain Meeting in Boston, MA</td>
<td>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.</td>
</tr>
<tr>
<td>Meetings with USAID/FFP in Washington, DC</td>
<td>The FAQR worked with USAID/FFP on defining the Phase III work streams and their outputs.</td>
</tr>
<tr>
<td>Small Business Summit in Washington, DC</td>
<td>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.</td>
</tr>
<tr>
<td>Food Matrices Meeting in Washington, DC</td>
<td>FAQR Senior Food Technologist, and Food Engineer, met with 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.</td>
</tr>
<tr>
<td>Sierra Leone Startup and Formative Research Trip</td>
<td>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.</td>
</tr>
<tr>
<td>Meeting with USAID Food for Peace, in Ouagadougou, Burkina Faso</td>
<td>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.</td>
</tr>
<tr>
<td>Sierra Leone Treatment Study Planning Meeting in Boston, MA</td>
<td>Members of the FAQR team met in Boston to update the Treatment study data management and analysis plan (DMAP), discuss treatment study startup, finalize the</td>
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| **Meeting with World Food Program in Burkina Faso**  
*August 2, 2016* | The Field Research Director for the Burkina Faso FAQR, and the ACDI/VOCA ViM team met with the World Food Program in Burkina Faso to discuss possibilities for transferring excess commodities to their care. |
| **Hostile Environment Awareness Training (HEAT) in the United Kingdom**  
*August 15-19, 2016* | The Field Research Director for the Burkina Faso study attended training on Hostile Environment Awareness, led by Clarity Security in the United Kingdom. This training included information on what to do during active shooter situations, kidnappings, carjacking, grenade attacks and other environmental threats. It also included intensive first-aid training and a simulation exercise whereby participants were put into situations to test their ability to react to adversity of differing forms. |
| **Meetings on Phase II cost projection tool and the Phase III decision support cost tool for FAQR Phase III in Davis, CA**  
*August 23-24, 2016* | 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 paper ideas 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. |
| **Food Aid Basket and Commodity Management Systems Work Stream Meetings with USAID and Global Food and Nutrition in Washington, DC**  
*August 30-31, 2016* | FAQR held a meeting with USAID/FFP and partners at Global Food and Nutrition in Washington, DC 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. |
| **Meeting with Red Cross in Burkina Faso**  
*September 19, 2016* | 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. |
<p>| <strong>FAQR Team Meeting in Boston</strong> | FAQR met in Boston for a team meeting. The purpose was to study timeline and finalize plans for project startup. |</p>
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<tr>
<th>Event</th>
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<tr>
<td><strong>MA</strong> <em>September 28-29, 2016</em></td>
<td>of the team 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 potential for synergy.</td>
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<tr>
<td><strong>International Food Assistance and Food Security Conference in Des Moines, IA</strong> <em>October 10-12, 2016</em></td>
<td>FAQR team members attended the International Food Assistance and Food Security Conference (IAFSCC) 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.</td>
</tr>
<tr>
<td><strong>Project Administrator trip to Sierra Leone</strong> <em>October 17-31, 2016</em></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Burkina Faso Field Research Director visit to Boston, MA</strong> <em>October 15-November 1, 2016</em></td>
<td>The Burkina Faso Field Research Director, visited Boston to meet with the FAQR team to discuss the Burkina Faso prevention study. The objectives of her visit were as follows: 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.</td>
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<tr>
<td><strong>Supplier Visits in the Midwestern U.S.</strong> <em>October 31-November 3, 2016</em></td>
<td>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 in Cambria and Markesan, WI; Incobrasa Industries,</td>
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</tr>
</tbody>
</table>
| **PACK EXPO International Trade Show in Chicago, IL**  
*November 7-8, 2016* | 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. |
| **Cost Specialist/Data Analyst Trip to Sierra Leone**  
*November 3-26, 2016* | The Cost Specialist/Data Analyst, visited Sierra Leone where she developed the start-up cost data collection guide, collected some initial start-up costs with implementing partners and fine-tuned cost data collection protocols in the following cost categories: start-up, 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. |
| **Co-PI Trip to Burkina Faso**  
*November 26-December 16, 2016* | 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 close-out of the study and next steps; 2) meet with local research implementation partner about close-out procedures and next steps for data entry and analyses; 3) begin planning process for results dissemination; and 4) provide FFP with study updates. |
| **Food Aid Consultative Group (FACG) Meeting in Washington, DC**  
*December 12, 2016* | FAQR team members attended the fall FACG Meeting at the National Press Building in Washington, DC. Dina Esposito shared parting remarks on FFP's progress, growth and the changing nature of humanitarian assistance due to conflicts and displacement. FAQR learned how USAID will be introducing a supply chain management team into its office. |
| **Supply Chain Meeting with USAID/FFP in Washington, DC**  
*December 13, 2016* | 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 and 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 process in-country related to procurement and supply |
<table>
<thead>
<tr>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sierra Leone Sub-Studies (Body Composition and Environmental Enteropathy) Planning Meeting in Boston, MA January 3, 2017</td>
<td>Members of the FAQR team met in Boston to review and finalize the sub-study protocols, discuss sub-study startup and logistics, and finalize the sub-study timeline.</td>
</tr>
<tr>
<td>Co-PI trip to Sierra Leone January 6-18, 2017</td>
<td>The Co-PI traveled to the treatment study in Pujeahun, 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.</td>
</tr>
<tr>
<td>Year 2 Planning Meeting with USAID/FFP in Washington, DC January 25, 2017</td>
<td>The FAQR team met with COR Rufino Perez and Elizabeth Brown to discuss the Year 2 Work Plan and Phase III work stream priorities.</td>
</tr>
<tr>
<td>International Integrated Pest Management and Fumigation Safety Training in Manhattan, KS January 24-26, 2017</td>
<td>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.</td>
</tr>
<tr>
<td>Visit to Natick Army Laboratories Combat Feeding Program in Natick, MA January 27, 2017</td>
<td>The FAQR team visited Natick Army laboratories in Natick, MA to share information regarding FAQR Phase III’s research areas and to discuss Natick Labs' research regarding innovations in food processing, packaging technology, supply chain management and food matrices/bioavailability. FAQR Phase III team members identified areas of overlap and synergy for follow-up.</td>
</tr>
</tbody>
</table>
### 2.2 Presentations (7)

<table>
<thead>
<tr>
<th>Presentation</th>
<th>Purpose</th>
<th>Est. Number of Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Presentations with USAID/FFP in Washington, DC</strong></td>
<td>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</td>
<td>25</td>
</tr>
<tr>
<td><strong>TOPS Dissemination Presentation in Washington, DC</strong></td>
<td>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.</td>
<td>19</td>
</tr>
<tr>
<td><strong>International Food Assistance and Food Security Conference in Des Moines, IA</strong></td>
<td>FAQR Principal Investigator (PI) and Rufino Perez provided an overview of main outcomes of previous phases (FAQR I &amp; 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. 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.</td>
<td>Approximately 100</td>
</tr>
<tr>
<td><strong>MIT Tech Conference in Cambridge, MA</strong></td>
<td>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</td>
<td>50</td>
</tr>
</tbody>
</table>
effectiveness of these foods.

<table>
<thead>
<tr>
<th>Event</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burkina Faso Brown Bag Presentation at ACDI/VOCA in Washington, DC</td>
<td>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.</td>
<td>25</td>
</tr>
<tr>
<td>FAQR Phase III Year 2 Presentation with USAID/FFP in Washington, DC</td>
<td>The FAQR team presented FAQR Phase III activities and sustainable outputs to USAID/FFP Senior Management and FFP staff.</td>
<td>8</td>
</tr>
</tbody>
</table>

2.3 Reports (6)


2.4 Publications (2)


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21 All reports, unless indicated, can be accessed through the USAID Development Experience Clearinghouse (DEC): [https://dec.usaid.gov/dec/home/Default.aspx](https://dec.usaid.gov/dec/home/Default.aspx)

2.5 Publications Pending (currently under journal review) (6)
• Repackaged CSB with printed behavior change messaging: a case study of caregivers’ perceptions from a supplementary feeding program in Southern Malawi
• Self-report vs. direct measures for assessing porridge preparation and feeding behavior in a MAM treatment program in Southern Malawi
• Effective delivery of social-behavioral change communication through a care group model in a supplementary feeding program
• Managing Moderate Wasting in Sierra Leone: Insights from a Four Food Trial Terminated Due to Ebola
• Making Food Aid Fit-for-Purpose in the 21st Century: A Review of Recent Initiatives Improving the Nutritional Quality of Foods Used in Emergency and Development Programming
• Infant Nutrition and Fortification Challenges

2.6 Datasets (1)
• 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: 312-1 (Submitted to DDL on January 9, 2017)

2.7 Scientific Poster Abstracts Presented (2)
2.7.1 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)

Breanne Langlois¹, Beatrice Rogers¹, Lauren Wilner¹, Devika Suri¹, Kwan Ho Kenneth Chui¹, Gray Maganga¹, Shelley Walton¹, Jocelyn Boiteau¹, Irwin Rosenberg¹ and Patrick Webb¹
¹Friedman School, Tufts University, Boston, United States

Objective: To compare self-reported with laboratory-assessed grams oil per 100 grams Corn-Soy Blend (CSB) in porridge prepared by caregivers of beneficiary children receiving the food as treatment for moderate acute malnutrition.

Methods: This was a secondary analysis of an effectiveness study conducted in Southern
In 2014 assessing two interventions designed to increase the amount of oil added to CSB porridge prepared by caregivers, with a target of 30 grams added oil per 100 grams CSB. The Control Group received standard monthly ration: 1 liter oil, 8 kilograms CSB in bulk. Intervention groups received 2.6 liters oil, 8 kilograms CSB provided either in bulk (Group 1) or in 4 2-kilogram packages with printed messages (Group 2) and social behavior change communication to meet added oil target (Groups 1 and 2). Data were collected through structured interviews with caregivers and lab analysis of porridge samples. Paired sample t-tests compared oil added to CSB porridge (oil gram per 100 grams CSB) from self-report and lab analysis within each study group (Wilcoxon when appropriate); ANOVA test assessed the mean difference (self-report–lab value) between the study groups. Bland-Altman plots were used to display the discrepancy between the two measures.

Results: A total of 584 caregivers participated: n=192 in Group 1; n=196 in Group 2; n=196 in the Control Group. The mean ± SDs of added oil (in gram per 100 grams CSB) from self-report and lab analysis, respectively, were: 30±9 and 28±16 (Group 1), 30±9 and 25±15 (Group 2), 15±9 and 12±10 (Control). Estimated added oil from self-report was significantly higher than lab analysis within each study group (p<0.05 for all). Among the study groups, the mean differences between the measures of added oil (reported–lab) were not significant (p=0.56). A cluster of observations in the intervention groups had abnormally high fat content in lab assessed values; sensitivity analysis excluding this cluster showed mean lab values of added oil were reduced to 22±12 in both intervention groups, causing differences in self-report versus lab to become significantly larger in the intervention groups compared to control (p=0.002). Bland-Altman plots revealed a clear bias between the two measures in the intervention groups: participants tended to over-report the amount of oil used, but as the lab-assessed amount increased (i.e., as their behavior changed towards using more oil) there was a shift towards under-reporting. This was less evident in the control group. Both self-report and lab-assessed values showed the same relationships among the study groups, with Groups 1 and 2 having more added oil than the Control.

Conclusion: Caregivers in the intervention groups reported what they were instructed to do, regardless of whether lab analysis reflected the targeted behavior change. While self-report was not as reliable as the lab measure, both conveyed that intervention group caregivers added more oil to porridge than the control group. Laboratory analysis was critical to determine the precise magnitude of added oil to CSB porridge.
2.7.2  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)

Devika Suri¹, Denish Moorthy² and Irwin Rosenberg¹
¹ Tufts University, Friedman School of Nutrition Science and Policy, Boston, MA, USA
² Strengthening Partnerships, Results and Innovations in Nutrition Globally (SPRING), Arlington, VA, USA

Objective: Recent meta-analyses found treating young children with MAM using ready-to-use foods (RUF) versus fortified blended foods (FBF) resulted in higher recovery rates and weight gain. This analysis aimed to compare studies of RUF and FBF with and without dairy to determine whether the addition of dairy to these food supplements modified the comparative effectiveness and cost of treatment.

Methods: A review of literature on the comparative effectiveness of FBF and RUF in treatment of MAM was conducted. Outcomes of recovery from MAM, weight gain and length gain were compared among study cohorts, which included FBF with dairy (FBF+), FBF without dairy (FBF-), RUF with dairy (RUF+) and RUF without dairy (RUF-). Data on recovery from MAM was pooled among the four supplement categories. The cost per 500 kilocalories of each category of food supplement was averaged among studies that reported cost data.

Results: Among the seven studies included, nine RUFs were tested, of which five contained dairy, and nine FBFs were tested, of which three contained dairy. Children treated with RUF+ had higher recovery rates compared with FBF- in five out of five study cohorts, higher weight gain in four out of four, and significantly higher length gain in one out of four. Children treated with RUF+ vs. FBF+ had higher recovery rates in one out of two study cohorts, with no differences in weight or length gain. No differences were found in the two studies comparing RUF- and FBF+. Finally, children treated with RUF- had higher recovery rates compared with FBF- in one of two studies, higher weight gain in two out of two, and no differences in length gain. Recovery from MAM among the seven studies was 65 percent (FBF-), 79 percent (FBF+), 82 percent (RUF-) and 80 percent (RUF+). Four of the seven studies included cost data; on average per 500 kilocalorie costs were $0.15 (FBF-), $0.18 (FBF+), $0.17 (RUF-) and $0.35 (RUF+).

Conclusion: Our results suggest that the addition of dairy to FBF make it comparative in effectiveness to both RUF with and without dairy, but does not appear to be a factor between the RUF categories. RUF with dairy was twice the cost per kilocalorie compared with the other food supplement categories. Cost-effectiveness analysis will be useful to help determine the
most appropriate food supplement for treatment of MAM.
2.8 Scientific Poster Abstracts Pending Presentation (4)

2.8.1 Experiences of Beneficiary Caregivers in a Supplementary Feeding Program in Southern Malawi (Accepted for presentation at Experimental Biology 2017)

2.8.2 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 (MAM) (Accepted for presentation at Experimental Biology 2017)

2.8.3 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 (Accepted for presentation at Experimental Biology 2017)

2.8.4 Effective Delivery of Social-Behavioral Change Communication through a Care Group Model in a Supplementary Feeding Program: A Descriptive Analysis (Accepted for presentation at Experimental Biology 2017)

2.9 Session Symposia at the 2017 International Congress of Nutrition (ICN), Buenos Aires (2)

2.9.1 Title: “Food Aid Research: Update on Food Aid for Preventing and Treating Undernutrition,” Thematic Area: Track 8: Agriculture, Food Science and Safety

2.9.2 Title: “Addressing Child Malnutrition: Newer Measures to Advance Prevention and Treatment Outcomes,” Thematic Area: Track 1: Advances in Nutrition Research
## Annex 3. Summary Table of FAQR Phase III USAID Deliverables and Status

<table>
<thead>
<tr>
<th>Corresponding Activity Number in Contract SOW</th>
<th>Deliverable</th>
<th>Target Submission Date</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>Overall Deliverables</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Comprehensive Management Plan</td>
<td>2016 May</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Quarterly Progress Reports</td>
<td>Quarterly</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Annual Report</td>
<td>2017 March</td>
<td>X</td>
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<tr>
<td></td>
<td>Project Year 1 Work Plan</td>
<td>2016 April</td>
<td>X</td>
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<tr>
<td></td>
<td>Project Year 2 Work Plan</td>
<td>2017 March</td>
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<tr>
<td></td>
<td>Project Year 3 Work Plan</td>
<td>2018 March</td>
<td></td>
</tr>
<tr>
<td>C.3.1.1, C.3.1.2, C.3.1.3</td>
<td>Work Stream: Food Matrices</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Literature Review</td>
<td>Q2 FY 2017</td>
<td></td>
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<tr>
<td></td>
<td>Report on Bostwick Testing Results and Analysis</td>
<td>FY 2018</td>
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<tr>
<td></td>
<td>Manuscripts (1-3) on key topic areas (peer-reviewed and popular)</td>
<td>FY 2018</td>
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<tr>
<td></td>
<td>Food Matrices Final Report: Final recommendations for priority areas, gaps,</td>
<td>FY 2018</td>
<td></td>
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<tr>
<td></td>
<td>and future investments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.3.1.4, C.3.1.5, C.3.1.8, C.3.1.10, C.3.1.7, C.3.2.2, C.3.2.4, C.3.2.5</td>
<td>Work Stream: Food Aid Basket</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Report 1: Strategy for responding to sudden onset emergencies, deployment</td>
<td>Q4 FY 2017</td>
<td></td>
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<tr>
<td></td>
<td>of sudden onset emergency foods, decision tree matrix on dual use products</td>
<td></td>
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<tr>
<td></td>
<td>Report 2: Process for adding new products, modifying products, subtracting</td>
<td>Q4 FY 2017</td>
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<tr>
<td></td>
<td>products, information on making new products public, new food innovations,</td>
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<td></td>
<td>food and ration technical guidance</td>
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<td></td>
<td>Guidance on standards and process of accepting new suppliers or new or</td>
<td>FY 2018</td>
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<tr>
<td></td>
<td>modified foods, ingredients or packaging</td>
<td></td>
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<tr>
<td></td>
<td>Scientific Advisory Team (linked with yellow and pink work stream)</td>
<td>Q3 FY 2017</td>
<td></td>
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<tr>
<td></td>
<td>Protocol on Accelerated Shelf-Life Tests for Fortified Rice</td>
<td>Q2 FY 2017</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Manuscript (1): Accelerated Shelf-Life Study Results from CSBs</td>
<td>FY 2017</td>
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<tr>
<td></td>
<td>Matrix of all products currently in the food aid basket and classified</td>
<td>FY 2018</td>
<td></td>
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<tr>
<td></td>
<td>into relevant programming categories (as a mechanism for providing guidance</td>
<td></td>
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<tr>
<td></td>
<td>on appropriate use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Stream: Commodity Management System: Commodity Specifications, Complaint/Supply Chain Database, Product Sheets, Commodity Historical (volumes, inventory, prices, etc.), Approved Suppliers List, Commodity Reference Guides</td>
<td></td>
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<td></td>
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<tr>
<td>---------------------------------------------------------------</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Landscape analysis of current USAID FFP resources available through the FFP website</td>
<td>Q2 FY 2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>List of recommendations for USAID FFP resources for an improved portal</td>
<td>Q3 FY 2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portal Implementation Strategy</td>
<td>Q4 FY 2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portal Template</td>
<td>Q4 FY 2017</td>
<td></td>
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</tr>
<tr>
<td>Commodity Reference Guide Fact Sheet Template</td>
<td>Q1 FY 2017 X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Work Stream: Food Aid Packaging Solutions: Innovative packaging materials, sizes and forms will improve resistance to insect and rodent infestation, reducing product losses, resulting in improved cost-effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literature review on packaging technology (e.g., number on actual food wastage, prep reports, internal reports to USAID and WFP)</td>
</tr>
<tr>
<td>Publication (1): Successful Food Packaging technologies</td>
</tr>
<tr>
<td>Report and visual highlighting infestation issues and solutions/recommendations (components should include: technology currently in use, range of options for new or improved technology, recommendations)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Work Stream: Food Aid Safety and Quality Systems: Food safety and quality auditing and monitoring, supply chain assessment (D2D: delivery-to-delivery, meaning practices from the moment that products are delivered at manufacturing sites to the final delivery of product to end users), product performance feedback loop, last-mile, food safety and quality capacity building, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report detailing the current FFP supply chain and recommendations to improve the supply chain (what would be the “ideal” supply chain, strategy for prepositioning)</td>
</tr>
<tr>
<td>Report on insights on the use of prepositioned inventory and suggested improvements</td>
</tr>
<tr>
<td>Report on in-country supply chains for Ethiopia and Uganda, data prepared for the decision support tool</td>
</tr>
<tr>
<td>Develop an Excel-based decision support tool from the mathematical model</td>
</tr>
<tr>
<td>Manuscripts (1-2): Supply Chain</td>
</tr>
<tr>
<td>C.3.3.6</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Report with recommendations for improvements and/or redesign to enhance efficiency, effectiveness of the quality feedback loop/system</td>
</tr>
<tr>
<td>Parameters for developing an application for a feedback loop (i.e., what functionalities it should include)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C.3.3</th>
<th><strong>Quality Assurance for Local and Regional Procurement-Overlapping with TOPS Commodity Task Force</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>MOU or list of priority areas for food safety and quality key stakeholders group</td>
<td>Q3 FY 2017</td>
</tr>
</tbody>
</table>

### Work Stream: Tools for Cost-Effectiveness

<table>
<thead>
<tr>
<th>C.3.1.9</th>
<th><strong>Cost-Effectiveness in Response to Emergencies (linked with Supply Chain)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Report on insights on Emergency Operations and suggested improvements</td>
<td>Q4 FY 2017</td>
</tr>
<tr>
<td>Manuscript (1): Supply Chain (Emergency Settings)</td>
<td>FY 2018</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C.3.2.7</th>
<th><strong>Decision Support Tool</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision Support Tool</td>
<td>FY 2018</td>
</tr>
<tr>
<td>Manuscript (1-2): Demonstration Papers of the tool (how and why) with case scenarios --Using Cost-effectiveness to Support Decision Making in Specialized Food Aid Nutrition Programming; (Consider) Cost Drivers Analysis using Phase II model</td>
<td>FY 2018</td>
</tr>
</tbody>
</table>

### Cost Methodology

| | --- |
| Cost Matrix Template with Annotated Examples from FAQR cost-effectiveness field studies | FY 2018 |
| Manuscript (1-2): Final Methodology Paper on Costing and Cost-effectiveness for all three FAQR field studies in Malawi, Burkina and Sierra Leone; (possible) published Cost-Effectiveness Research Protocol for Sierra Leone | FY 2018 |
| Manuscript (1): General methods paper on cost-effectiveness: discusses CE methods, interpretation of CE results, and how to use CE evidence to influence policy and programming from the researchers’ perspective | FY 2018 |

### Work Stream: Field Research

<table>
<thead>
<tr>
<th>C.3.1.11</th>
<th><strong>Malawi Study-Feasibility</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Manuscript (1): Main Findings</td>
<td>Q1 FY 2017</td>
</tr>
<tr>
<td>Manuscript (1): Sharing and Leakage</td>
<td>Q2 FY 2017</td>
</tr>
<tr>
<td>Manuscript (1): SBCC</td>
<td>Q2 FY 2017</td>
</tr>
<tr>
<td>Case Study-Packaging</td>
<td>Q2 FY 2017</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C.3.1.12</th>
<th><strong>Burkina Faso Study-MAM and Stunting Prevention</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Report</td>
<td>Q2 FY 2018</td>
</tr>
<tr>
<td>Cleaned Dataset</td>
<td>FY 2018</td>
</tr>
<tr>
<td>Manuscripts (7)</td>
<td>FY 2018</td>
</tr>
<tr>
<td>Case Studies</td>
<td>FY 2018</td>
</tr>
<tr>
<td>C.3.1.13, C.3.1.14, C.3.1.15</td>
<td>Treatment of MAM Study</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Final Report</td>
<td>FY 2019</td>
</tr>
<tr>
<td>Final Report on Sub-Study EED</td>
<td>FY 2019</td>
</tr>
<tr>
<td>Final Report on Sub-Study Neurocognitive</td>
<td>FY 2019</td>
</tr>
<tr>
<td>Final Report on Sub-Study Body Composition</td>
<td>FY 2019</td>
</tr>
<tr>
<td>Cleaned Dataset</td>
<td>FY 2019</td>
</tr>
<tr>
<td>Sub-Study Manuscripts (6)</td>
<td>FY 2019</td>
</tr>
<tr>
<td>Manuscripts (7)</td>
<td>FY 2019</td>
</tr>
<tr>
<td>Case Studies</td>
<td>FY 2019</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C.3.2.6</th>
<th>Research Protocols</th>
</tr>
</thead>
<tbody>
<tr>
<td>Published Malawi Protocol and DMAP</td>
<td>FY 2018</td>
</tr>
<tr>
<td>Published Burkina Faso Protocol and DMAP</td>
<td>FY 2018</td>
</tr>
<tr>
<td>Published Sierra Leone Protocol and DMAP</td>
<td>FY 2018</td>
</tr>
<tr>
<td>Manuscript (1): Research Protocol Guidance Document (linked with REFINE)</td>
<td>FY 2018</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C.3.3.1, C.3.3.3</th>
<th>Work Stream: Interagency Communications and Consultations and Harmonization</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Focused</td>
<td>Final Proposal for Institutionalizing Interagency Group FY 2018</td>
</tr>
<tr>
<td>U.S.-Global Focused (Harmonization)</td>
<td></td>
</tr>
<tr>
<td>U.S.-Global Meetings</td>
<td>Semi-Annual Ongoing</td>
</tr>
<tr>
<td>Work Stream: Knowledge Sharing (Scorecard Report, Evidence Summit, REFINE, Website, FAQR Communications)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>FAQR II “Scorecard Report”</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAQR Phase II Close-Out Report</td>
<td>Q4 FY 2016 X</td>
</tr>
<tr>
<td>Summary and Full Scorecard</td>
<td>Q2 FY 2017</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C.3.2.9</th>
<th>Evidence Summit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toolkit Items</td>
<td>FY 2019</td>
</tr>
<tr>
<td>Manuscripts (2): Proceedings from Evidence Summit</td>
<td>FY 2019</td>
</tr>
</tbody>
</table>

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<td>Manuscripts (2): Proceedings from EED Colloquium Publication and New Research Colloquium</td>
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</tbody>
</table>

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<thead>
<tr>
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<tr>
<td>Resource Updates</td>
<td>Quarterly Ongoing</td>
</tr>
<tr>
<td>REFINE Website</td>
<td>Q3 FY 2016 X</td>
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<tr>
<td>Scientific Advisory Team (linked with dark blue and pink work stream)</td>
<td>Q3 FY 2017</td>
</tr>
<tr>
<td>Sustainability Plan for REFINE (ideas: adopted by CMAM Forum or other resource sharing platforms)</td>
<td>FY 2018</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C.3.3.4</th>
<th>FAQR Communications</th>
</tr>
</thead>
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<tr>
<td>New FAQR Website</td>
<td>Q2 FY 2017</td>
</tr>
<tr>
<td>Press releases, policy briefs, and other communication materials</td>
<td>Ongoing Ongoing</td>
</tr>
</tbody>
</table>
Annex 4. Malawi Feasibility and Acceptability Study
Tufts University collaborated with Catholic Relief Services, Africare, Project Concern International and Save the Children to conduct a study related to the recommendations of the Food Aid Quality Review (FAQR), completed in 2011. The study support was provided by the USAID Office of Food for Peace (USAID/FFP).

The study aims were:

1. To evaluate the effect of: (a) additional fortified vegetable oil (FVO) ration and preparation messaging; and (b) providing repackaged corn-soy blend (CSB) in 2 kilogram quantities with printed preparation messaging

2. To evaluate the cost per treated child and cost-effectiveness of the intervention via cost per household preparing porridge with target ratio of 30 grams FVO to 100 grams CSB

3. To evaluate the determinants of effectiveness, i.e., increased oil to CSB ratio in porridge, based on programmatic function and communication of instructions from health workers and care group lead mothers to beneficiary’s mothers and caretakers

Background
The FAQR report recommended that, in order to achieve the nutritional goals of Maternal and Child Health and Nutrition (MCHN) programs using CSB, the CSB should be prepared and consumed with oil in the ratio of 30 grams oil to 100 grams CSB. Most programs using CSB also distribute oil, but we are unable to determine whether the oil is consistently distributed with CSB in MCHN programs, and whether the foods are distributed with instructions to prepare them together or whether mothers do prepare them together. Before implementing a blanket recommendation, it was our goal to test the feasibility of this recommendation from both the awardee (procurement, distribution) and beneficiary (preparation and consumption) points of view. Surveys of awardees in 2009 suggested that the appropriate use of CSB (prepared appropriately, restricted to babies and pregnant/lactating women, and not shared within the household) might be promoted if the CSB were provided directly to beneficiaries in individual packages containing a month’s supply of CSB, and marked with appropriate messages: pictures and words.

Study Design
The first stage of the study involved working with the PVO procurement and program staff to ensure that oil and CSB were available at the same time in sufficient quantities and could be distributed together. We worked with program staff and outside consultants to develop locally-acceptable recipes for CSB+ oil. A sample of communities with MCHN programs were chosen,
and the intervention (consistent provision of CSB with oil, teaching of recipes using CSB with oil and appropriate behavioral support) was implemented. Tufts and locally-contracted researchers interviewed program staff involved in procurement and supply chain management as well as program staff, and beneficiaries, to assess the feasibility and acceptability of the provision of CSB with oil, and identify barriers and problems.

In the second stage of the study, CSB was repacked and distributed in new, smaller packages in half of the sample communities, with the other half continuing with their normal distribution. In preparation for this stage, Tufts researchers arranged for the production/packaging of a sufficient supply of CSB in the new packages, and contracted with local communications specialists to develop appropriate messages. Tufts and locally-contracted researchers collected information from program staff on their perception of the feasibility and impact of the change, and interviewed beneficiaries to determine how they used the CSB and whether their use changed with the change in packaging/messaging. We tracked the effect on intra-household sharing through self-report and observations of consumption among family members.

In addition to interviews and focus group discussions, we collected samples of porridge as prepared in the beneficiary household in order to assess the proportion of oil. We also conducted market observations to determine whether increased distribution of oil affects availability and price in the market and whether market access affects beneficiary mothers’ compliance with the recommended preparation method. We conducted a small number of in-home observations to observe beneficiary mothers’ practices with respect to storage, preparation, and feeding of children. This information was collected at baseline and during each subsequent round of data collection.

Background
Tufts University completed a review of Title II commodities and their uses under the Food Aid Quality Review (FAQR) in October 2011 (see www.foodaidquality.pbworks.com for more information). The FAQR report recommended improvements in the formulation of existing Fortified Blended Food (FBF) products used in Title II programming by including a dairy ingredient, improving the micronutrient premix and preparing CSB consistently with fortified vegetable oil in the recommended ratio of 30 grams oil to 100 grams CSB. The FAQR Report also recommended strengthening the evidence base for innovations in products and programming and testing the effectiveness and cost-effectiveness of any recommended program or commodity modifications.

Tufts University is collaborating with ACDI/VOCA and Save the Children in Burkina Faso, District of Sanmatenga to conduct an assessment of the effectiveness, cost and cost-effectiveness of these recommended changes to CSB. Institut de Recherche en Sciences de la Santé (IRSS) is working with Tufts University to carry out data collection. The study compares isocaloric amounts of the four foods:

1) Corn Soy Blend 14 (CSB14), with whey protein concentrate and enhanced micronutrient profile, prepared with fortified vegetable oil (FVO);
2) Ready-to Use Supplementary Food 1 (RUSF1), a generic Lipid-Based Nutrient Supplement (LNS) product aligned with WHO recommendations for treatment and prevention of moderate acute malnutrition;
3) Supercereal Plus (CSB+/SC+), the FBF used by WFP, which has an enhanced nutrient profile, dairy ingredient (non-fat dry milk) and oil already embedded into the CSB; and
4) Supercereal (CSB+/SC) prepared with FVO.

Type of Study
Prospective, cluster-randomized, effectiveness trial

Problem to be Studied
Prevention of moderate acute malnutrition (MAM) and stunting in children

Objective
To test the relative effectiveness and cost-effectiveness of four supplementary foods in the prevention of MAM and stunting in normal programmatic settings
**Study Design**
The study is cluster-randomized collecting information on participating children. We assigned Food Distribution Points to one of the four arms. Enrollment of children was done on a rolling basis, from August 2014 to June 2015. We enrolled children continuously until the required sample size was reached. The study is an effectiveness trial, meaning that we will study the programs’ operation and the beneficiary households’ compliance with recommendations regarding preparation and consumption of the supplementary food.

**Prevention of MAM and Stunting**
The comparison is based on the preventive model: distribution of the food supplement to at-risk children 6 to 23 months. All study arms deliver the same services to children and their households, except for the difference in the food supplement and the messages that go along with that particular supplement. The subjects in this study are children 6 to 23 months of age whose mothers are enrolled in the supplementary feeding program operated by Save the Children, coordinated by ACDI/VOCA in the District of Sanmatenga. ACDI/VOCA and Save the Children are responsible for delivering and distributing the food supplements. IRSS, along with the Tufts University team, are responsible for screening and enrolling children into the supplementary feeding program, and collecting data. The total number of children is approximately 6,000 (1,500 per arm).

The study follows children from the age of 6 months (when distribution of the food supplement intended for children’s consumption is initiated) to 24 months. We follow up with children monthly up to four months post-intervention to assess their growth and health status.

The study collects data on effectiveness and cost-effectiveness through growth measurements, individual interviews, focus group discussions, and observations. The study also collects water samples and CSB porridge samples to further validate results.

Primary outcomes to be measured are incidence of acute malnutrition and incidence of stunting. Secondary outcomes include rate of recovery, time to recovery, compliance with recommended methods of preparation and allocation of the food supplement.

Cost-effectiveness will assess differences among the four study arms in cost per case of MAM, per case of stunting, and per case of linear growth faltering averted (that is, relative to the intervention with the highest rates).

IRSS is conducting anthropometric measurements, individual interviews, focus group discussions, and observations. Tufts University worked with IRSS to train enumerators in data collection (qualitative and quantitative) and data analysis. Tufts University also trained enumerators to measure length, weight, and MUAC of children enrolled in the research study.
These skills are valuable assets in any future nutrition and maternal and child health research activities. Tufts works collaboratively with the IRSS senior researchers on the design and implementation of the study.

Background
The proposed research seeks 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 results of this study will guide decisions about what commodities to use in supplementary feeding programs in particular contexts and populations, and what factors need to be addressed to ensure maximum effectiveness in the treatment of moderate malnutrition.

Tufts University, Washington University in St. Louis, School of Medicine, Sierra Leone Ministry of Health and Sanitation, Project Peanut Butter, Caritas Bo, World Food Programme (WFP), and the United States Agency for International Development (USAID) are collaborating to conduct an assessment of the effectiveness, cost and cost-effectiveness of food aid commodities in treating moderate acute malnutrition (MAM) in young children. The study comparison is based on a targeted food delivery to children 6 to 59 months who are screened for MAM. Study participants will receive one of four approximately isoenergetic test foods:

1. Super Cereal Plus (SC+) with amylase
2. Corn-Soy Blend Plus (CSB+) and oil
3. Corn-Soy-Whey Blend (CSWB) and oil (CSWB is a new product which is a modified version of CSB)
4. Ready-to-Use Supplementary Food (RUSF, lipid-based)

**Type of study:** This will be a prospective, randomised, controlled study of the effectiveness of various approaches to managing moderate acute malnutrition in young children. This study is not a clinical trial.

**Study Design**
Peripheral Health Units (PHU) will be selected within the Pujehun District in Sierra Leone. These 28 PHUs and the villages they serve will be used as the study sites to test the effectiveness of four supplementary foods in the treatment of MAM. The PHUs will be grouped into four to represent each food or arm of the study. The study is targeting approximately 5,320 children in total: 1,250 children per arm. Children will be enrolled and graduated based on mid-upper arm circumference (MUAC); weight and height will be recorded as well and will also be used in final analysis. Locations (communities, clinics) will be assigned to one of the four arms (that is, foods to be tested). The foods distributed as part of the study will require a safe storage location.

**Treatment of MAM**
The Project Peanut Butter and Caritas Bo teams will have staff at each PHU during the food distribution to collect data and distribute food. Supplementary food rations will be delivered for up to 12 weeks from enrollment (enrollment takes place when a child is diagnosed with MAM in accordance with a mid-upper arm circumference ([MUAC] >11.5 cm and ≤12.5 cm). Children will be asked to return to the PHU every two weeks for follow-up, where caretakers report on the child’s clinical symptoms and use of the food at home, growth measurements are
reassessed, until they reach one of the primary outcomes listed below. A ration of supplementary food sufficient for two weeks (14 days) will be distributed at each visit. Children will be monitored for relapse after discharge.

The primary outcome measures are recovery from MAM (achieving MUAC ≥ 12.5 cm by 12 weeks) once or failure (death, development of severe acute malnutrition, transfer to hospital for inpatient care, failure to recover from MAM by 12 weeks, default). Secondary outcome measures include rates of weight, height, and MUAC gain, time to graduation, and any possible adverse effects from the supplementary foods. Cost effectiveness will assess differences among the four study arms in cost per case of MAM recovered.

The research team, led by Caritas Bo and Tufts University, will randomly select a subsample of caregivers of enrolled children for in-depth interviews and in-home observations, which will take place in the participants' home. In addition, the research team will conduct focus group discussions with a smaller subsample of caregivers, to take place in a central and convenient location. The purpose of the in-home observations is to observe aspects of the family's preparation and consumption of the ration that they would be unlikely to be able to report during focus groups or individual interviews, because respondents may not be conscious of their actions. All interviews, observations, and focus group discussions will be administered by trained research assistants. The team will also conduct interviews with community health volunteers working in the PHUs and the catchment villages they serve.

**Sub-Studies**
The research team, led by Tufts University and Washington University in St. Louis, will also implement three sub-studies: 1) a study comparing body composition (fat mass and fat-free mass) achieved by one of the four foods in children recovered from MAM; 2) a study measuring neurocognitive recovery of children with MAM; and 3) a study assessing the effectiveness of each of the four foods in healing non-specific gut inflammation, environmental enteric dysfunction (EED) seen in conjunction with MAM.

All methods are safe for children and have been validated previously in many research sites.

**Expected Value of Effectiveness Study Results**
This study will benefit the food assistance community by providing new research on the cost and cost-effectiveness of supplements to treat MAM, where effectiveness is measured in terms of growth outcomes.

Besides the long-term and broader benefits, this work will benefit a large number of young children in the Sierra Leone population. This study will directly benefit Sierra Leone by improving the nutrition of its children and providing education on children's nutrition. The enrolled child will have enough study food provided at home for the recovery from moderate acute malnutrition when consumed along with the regular diet and will be monitored regularly during recovery. This may result in fewer complications (i.e., diarrhea, respiratory illnesses) as the child recovers. Medical treatments that are needed will be provided during these follow-up visits.