



Technical Alliance

IMAM Costing in Northeastern Nigeria

Final Report

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Executive Summary

Key Messages

- The total annual cost to provide IMAM services in Borno, Adamawa and Yobe states was US\$78-114M, with US\$41-82M for the care of SAM and US\$30-56M for the care of MAM.
- For budgeting and resource mobilisation purposes, it is recommended to use the low quartile to mid-point estimates of US\$169-251 per case admitted for severe wasting treatment and US\$117-166 per case admitted for moderate wasting treatment.
- The average total cost to complete all phases of treatment when first admitted to:
 - a stabilisation centre - \$201-750
 - an outpatient therapeutic programme - \$190-495
 - a targeted supplementary feeding programme - US\$147-207
- Early detection and treatment will improve cost-efficiency and may yield overall cost savings.

Background

In the states of Borno, Adamawa, and Yobe (BAY) of northeastern Nigeria, an estimated 8.3 million people are in need of humanitarian assistance and 4.3 million people are projected to be acutely food insecure in 2023. In this region, integrated management of acute malnutrition (IMAM) programming is provided through inpatient care for cases of acute malnutrition (SAM) with complications using therapeutic milks and ready-to-use therapeutic food (RUTF), outpatient care for cases of uncomplicated SAM using RUTF, and outpatient care for cases of moderate acute malnutrition (MAM). IMAM is available in 89% to 100% of Local Government Areas (LGAs) in the BAY states, with most of the funding being mobilised through the Humanitarian Response Plan (HRP) coordination mechanism. The admissions to IMAM care sites are the highest since the initiation of the IMAM programme in 2009.

Study objectives

The primary purpose of this assignment was to establish the average programme unit cost for delivering IMAM services in Northeast Nigeria's BAY states. This work is expected to provide empirical data to support the 2024 HRP cost estimates and budgeting purposes. Analysis was done based on the current scenario and scale of IMAM service provision.

The questions guiding this study were as follows:

1. What is the total cost of providing IMAM services, disaggregated by key programme activity?
2. What is the cost-efficiency of providing IMAM services for each programme activity, expressed as cost per beneficiary admitted for care?
3. What is the cost-effectiveness of providing IMAM services, expressed as cost per beneficiary recovered from acute malnutrition?

Methods

This costing exercise was conducted using both programme experience and activity-based ingredients approaches in order to derive cost estimates. Data on programme admissions and discharges, historical expenditures, amount of resource use, unit costs, programme scale, and disease epidemiology were collected for a 12-month period between mid-2022 and late-2023.

Costs incurred by beneficiaries including societal economic costs were excluded from this analysis which used the institutional perspective. Six out of forty-five partners that implement IMAM and three UN agencies were selected for in-depth primary data collection. Cost and programme data capture form, key informant interviews, and observations of IMAM service delivered at each type of care site were administered to obtain cost and programmatic data. Programmatic data for the rest of the sector was collected from the Nutrition Sector 5Ws. Through an interactive process, the data from the sampled partners were harmonised into five cost categories: personnel, therapeutic/supplementary foods, supply chain, clinic supplies and operations, and training.

Results and Discussion

The IMAM programme cost an estimated US\$78-114 million annually across all implementing partners (excluding government-run facilities). This range reflects an extrapolation of the low quartile and midpoint cost estimates based on reported values from the six sampled implementing partners. There is a high degree of uncertainty of these estimates due to the many data gaps that could not be resolved, and reliable proxies were not available.

It cost an average of US\$169-251 per case of SAM admitted to a stabilisation centre (SC) or OTP, and US\$117-166 per case of MAM admitted to a targeted supplementary food programme (TSFP). It cost a sum total of US\$201-750 per case of complicated severe wasting to successfully complete all three phases of care (SC, OTP and TSFP). Meanwhile, it cost a total of US\$190-495 per case of uncomplicated severe wasting to successfully complete treatment in an OTP and TSFP. Using these values, compared to early detection and successful care at a TSFP, a child admitted to an OTP for treatment will cost 30-40% more to complete care, and a child admitted to an SC for treatment will cost three times as much to complete care. This suggests the importance of early detection and successful referral to the overall strategy of improving IMAM cost-efficiency.

For budgeting and resource mobilisation purposes, it is recommended to use the lower quartile to mid-point estimates of US\$169-251 per case admitted for severe wasting treatment and US\$117-166 per case admitted for moderate wasting treatment, multiplied by the anticipated total caseload.

At approximately half of total cost for the care of severe wasting, the main cost driver was the supplementary and therapeutic food. On the other hand, supplementary foods comprised 31% of total costs in the TSFP while clinic supplies and operational costs were 41%.

Limitations

These results reflect a snapshot in time for the BAY states and generalisability or extrapolation is not recommended. The results presented here should be viewed as provisional. There were considerable difficulties in obtaining complete data and there were wide variations in the values that were reported by the sampled implementing partners. It was not possible within the scope of this analysis to evaluate the accuracy or completeness and therefore expenditure data were generally taken at face value.

Recommendations

- **Projections for funding requirements** for 2024 should use the low quartile to mid-point programme unit costs estimates for SAM and for MAM care. These are US\$169-251 for SAM and US\$117-166 for MAM. Given the uncertainty of the cost estimates and the challenges with securing reliable and complete data, these estimates could be improved upon in the future.
- Continue efforts on the improvement of **early detection** to reduce the total cost per child to reach successful discharge and cure; providing care before wasting becomes severe or severe with complications is much less costly overall.
- Continue to provide technical and financial support for the buffer stock approach of **pre-positioning therapeutic and supplementary foods**. Consider resource requirements for the downstream cost of delivering product to care sites, particularly in remote or hard to reach areas that require costly transportation such as helicopters. Pre-positioning of required stock has the potential to reduce overall costs.
- Continue work on **supporting market-based approaches** for supplementary foods to allow for procurement of products as close as possible to the consumption/distribution sites. Such an approach may reduce supply chain costs, lower the risk of stock-outs, and support local markets.
- Continue to support implementing partners in IMAM **monitoring and reporting** to ensure high quality, and comparable, efficiency and effectiveness measurements. Evaluate reporting requirements and streamline or reduce the burden as much as possible.
- Use the results from this costing exercise and those from the recent TSFP costing¹ to continue work among the Nutrition Sector partners to further **harmonise and standardise** the ways costs are assigned and aggregated, as well as to **conduct subsequent analyses** to determine typical ranges for cost and/or resource quantities. A simplified cost capture form can be used for this type of analysis and can facilitate future cost modelling and improve the transparency of costs included.
- Identify options to **build on the work achieved for this costing exercise** and the recent TSFP costing² without the need to replicate the entire process while still protecting data confidentiality.

¹ [USAID Advancing Nutrition. \(2023\). Management of Moderate Wasting Using Local Foods. USAID Advancing Nutrition.](#)

² Ibid

Contents

Executive Summary	3
Contents	6
Acronyms	7
Background	8
IMAM programme overview	8
Study Design	12
Study objectives and research questions	12
Costing approach	13
Data collection	13
Data Entry and Analysis	14
Results	18
Programme	18
Cost, cost-efficiency, and cost-effectiveness	18
Cost drivers	20
Discussion	21
Limitations	22
Recommendations	23
References	25
Annexes	27
Annex 1 Terms of Reference	28
Annex 2 List of Organisations and Their Involvement in IMAM Activities	11
Annex 3 Study Protocol and Data Collection Tools	12
Annex 4 Supply Chain Diagrams	13
Annex 5 Detailed Cost Analysis Tables from Sampled Implementing Partners	19

Acronyms

BAY	Borno, Adamawa, and Yobe
CHIPS	Community Health Influencers, Promoters, and Services
CNM	Community Nutrition Mobilisers
CSB	Corn soy blend
ERP	Emergency Response Preparedness Plan
HRP	Humanitarian Response Plan
IMAM	Integrated management of acute malnutrition
LGA	Local Government Area
MAM	Moderate acute malnutrition (now called moderate wasting)
MUAC	Mid-upper arm circumference
NGN	Nigerian naira
OTP	Outpatient therapeutic programme
PBWGs	Pregnant and breastfeeding women and girls
RUSF	Ready-to-use supplementary food
RUTF	Ready-to-use therapeutic food
SAM	Severe acute malnutrition (now called severe wasting)
SC	Stabilisation centre
TSFP	Targeted supplementary feeding programme
UNICEF	United Nations Children's Fund
USD	United States dollar
WFP	World Food Programme
WHO	World Health Organisation

Background

In the states of Borno, Adamawa, and Yobe (BAY) of northeastern Nigeria, an estimated 8.3 million people are in need of humanitarian assistance and 4.3 million people are projected to be acutely food insecure in 2023.³ The August 2023 Integrated Food Security Phase Classification of Acute Malnutrition showed a decrease of 25% in the burden of wasting or acute malnutrition from 2 million (May 2022 – April 2023) to 1.53 million (May 2023 – April 2024) in the BAY states.⁴ The decrease is attributed to the increase of nutrition assistance during the lean season in response to the emergency response preparedness (ERP) plan⁵ developed in February 2023 in addition to other contributing factors such as decrease in displacements and cases of acute watery diarrhoea. The most recent Nutrition and Food Security Surveillance (NFSS) Jun/Jul 2023 showed that 10.3%, 4%, and 8% of children under 5 in the Borno, Adamawa, and Yobe states had acute malnutrition or wasting respectively. The number of children admitted for treatment for severe and moderate wasting has increased from a total of 365,927 in 2021 to 543,508 in 2022.⁶ Current monthly admission trends for acute malnutrition are 82% higher in 2023 compared to 2022 aggravated by increasingly prolonged lean seasons, worsening acute food insecurity, economic crisis, high prevalence of measles and outbreak of diphtheria and flooding. The increased coverage in early detection and treatment of acute malnutrition has also contributed to higher admission trends.⁷

IMAM programme overview

In Northeast Nigeria, the Integrated Management of Acute Malnutrition (IMAM) programme was piloted in 2009. Since then, the IMAM programme has been expanded to provide the treatment of severe and moderate wasting for children under 5 years of age in 24 out of a total of 27 Local Government Areas (LGAs) in Borno, all 21 LGAs in Adamawa, and all 17 in Yobe, representing a geographic coverage at the LGA level of 89%, 100%, and 100%, respectively. The Nigerian IMAM programme follows 2016⁸ and 2022 guidelines⁹ for community level screening and active case finding, inpatient care for complicated cases of severe wasting, outpatient therapeutic care for uncomplicated cases of severe wasting, and targeted supplementary feeding programme (TSFP) for moderate wasting ([Figure 1](#)).

³ [Humanitarian Needs Overview 2023](#)

⁴ [Nigeria \(Northeast and Northwest\): Acute Malnutrition Situation for May - September 2023 and Projections for October - December 2023 and January - April 2024 | IPC - Integrated Food Security Phase Classification; Nigeria \(Northeast and Northwest\): Acute Malnutrition Situation May - September 2022 and Projections for October - December 2022 and January - April 2023 | IPC - Integrated Food Security Phase Classification](#)

⁵ [Northeast Nigeria Nutrition Sector February 2023. Multi-risk Nutrition Emergency Response Preparedness \(ERP\) Plan](#)

⁶ [Nutrition Sector 5Ws 2022 and 2023](#)

⁷ [ibid](#)

⁸ Federal Ministry of Health, Nigeria Health Department (2016). National Guidelines for Inpatient Management of Severe Acute Malnutrition in Infants and Young Children in Nigeria

⁹ [Federal Ministry of Health Department of Family Health Nutrition Division Abuja-Nigeria. 2022. National Guidelines for Integrated Management of Acute Malnutrition.](#)

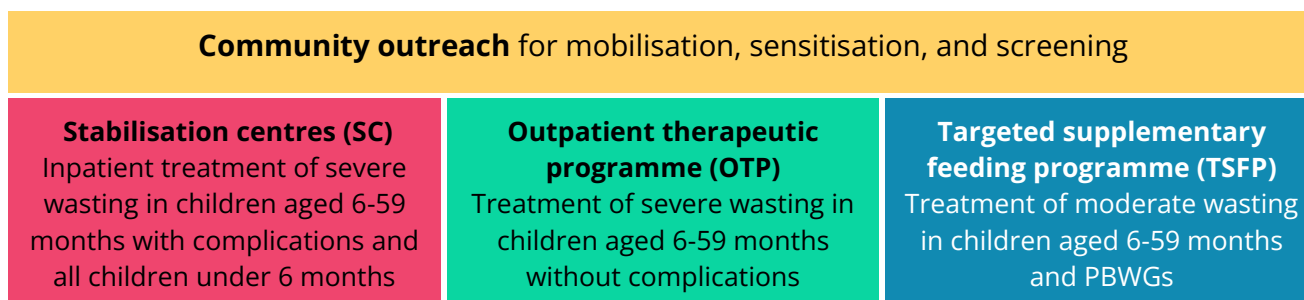


Figure 1: Components of the Nigeria IMAM programme

The IMAM programme activities are delivered at different types of healthcare facilities and at the community level, according to national protocol¹⁰ ([Table 1](#)). Inpatient SCs provide treatment through therapeutic milks and RUTF according to the national treatment protocol. OTPs, available at a variety of health care facilities or at the community level, provide treatment through a weight-based daily dosage of RUTF. The treatment of moderate wasting in a TSFP is provided through either pre-packaged “Tom Brown” porridge ([Box 1](#)) where care is provided at facility level. Where care is provided at the community level, women collect the grains and pulses from vendors, and then roast, mill and cook them together to prepare the porridge.

¹⁰ Federal Ministry of Health Department of Family Health Nutrition Division Abuja-Nigeria. (2022). National Guidelines for Integrated Management of Acute Malnutrition.

Table 1: IMAM service delivery by facility type and programme scale, all implementing partners

IMAM Activity	Level of service delivery and/or facility type	Programme scale
SC	In-patient facility, hospital	54 care sites Peak admissions: 5,469, July 2023
OTP	Primary health care (PHC) facilities, health posts and other health facilities or via outreach	686 care sites Peak admissions: 51,574, September 2023
TSFP*	Health facilities or in the community	356 care sites providing RUSF (children) 224 care sites providing Tom Brown (children) 5 care sites providing CSB+/CSB++ (PBWGs) 16 groups providing Tom Brown (PBWGs) Peak admissions: 76,028 children and 1,693 women, September 2023

* TSFP “sites” are variably reported as the number of care sites, wards, or groups and therefore may underrepresent the actual total

Source: [Northeast Nigeria Nutrition Sector Dashboard based on the 5W August 2023](#)

Box 1: What are Tom Brown and Action Meal?

Tom Brown is a type of porridge consisting of a) cereals such as millet, sorghum, and/or maize, b) as soya beans, and c) groundnuts. Depending on the programming model, the Lead Mothers, role models from the community, are tasked with either purchasing the individual ingredients with vouchers and making Tom Brown on site or provided as a pre-packaged fortified powder called Action Meal.

Dosage:

- Tom Brown: 214 g per person per day
- Action Meal: 15 sachet per person per week

The admission criteria are based on both MUAC and weight-for-height z-score for children and MUAC for PBWGs. Children 0-6 months are admitted into SC if they have an inability to breastfeed, have a weight-for-length less than -3 z-score, or have bilateral oedema (+++). Children aged 6-59 months with severe wasting/acute malnutrition will be admitted to the SC if they have medical complications or to the OTP if without complications ([Table 2](#)). PBWGs who meet the admission

criteria and children 6-59 months who have moderate wasting / acute malnutrition are admitted into the TSFP.

Table 2: Admission and cured criteria for SC, OTP, and TSFP

	SC	OTP	TSFP
Admission criteria	<p>Children 6-59 months:</p> <ul style="list-style-type: none"> • MUAC < 115mm or WHZ <-3 <u>or</u> • bilateral oedema (+++) <u>or</u> • body weight <3.5kg <p>AND</p> <ul style="list-style-type: none"> • presence of medical complications including a lack of appetite <p>Children <6 months:</p> <ul style="list-style-type: none"> • inability to breastfeed <u>or</u> • WLZ <-3 <u>or</u> • nutritional oedema <u>or</u> • weight stagnation during growth monitoring 	<p>Children 6-59 months</p> <ul style="list-style-type: none"> • MUAC <115mm or bilateral oedema (+ or ++) or • WHZ<-3 z-score <p>AND</p> <ul style="list-style-type: none"> • no medical complications • passes the appetite test for RUTF 	<p>Children 6-59 months:</p> <p>MUAC ≥115mm and <125mm or WFH >-3 and <-2 with no oedema</p> <p>PBWGs: MUAC <230mm</p> <p>AND</p> <ul style="list-style-type: none"> • no medical complications • passes the appetite test for RUTF
Discharge criteria	Referred to OTP based on the return of appetite, beginning of loss of oedema and appearance of clinical recovery.	MUAC >125mm or WFH>-2 (based on admission metric) for 2 consecutive visits with sustained weight gain and no oedema	<p>Children: MUAC ≥125mm or WFH ≥-2 z-score for two consecutive visits (based on admission metric)</p> <p>PBWGs: MUAC is ≥ 230mm for two consecutive visits</p>

Sources: [Nigeria MoH 2016 National Guidelines for Severe Acute Malnutrition](#); [National Guidelines for Integrated Management of Acute Malnutrition, 2022](#); [WFP TSFP Guidelines, 2023](#).

There are multiple pathways through the IMAM programme depending on the severity of malnutrition at the initial screening (Figure 2). Typically, in Northeast Nigeria children who meet the discharge criteria from SCs are typically discharged as cured and then admitted into the OTP. Similarly, children who meet the discharge criteria from OTPs are discharged as cured and admitted to the TSFP for two months, in areas where a TSFP is available. However, in areas where no TSFP is available, children with moderate wasting will remain in the OTP programme until fully cured. Likewise, in areas with no OTPs, children who are admitted to an SC receive treatment until they are

fully cured from wasting, yet this is rather uncommon. Children under 6 months of age with SAM are admitted to an SC and remain in SC until they fully recover from wasting.

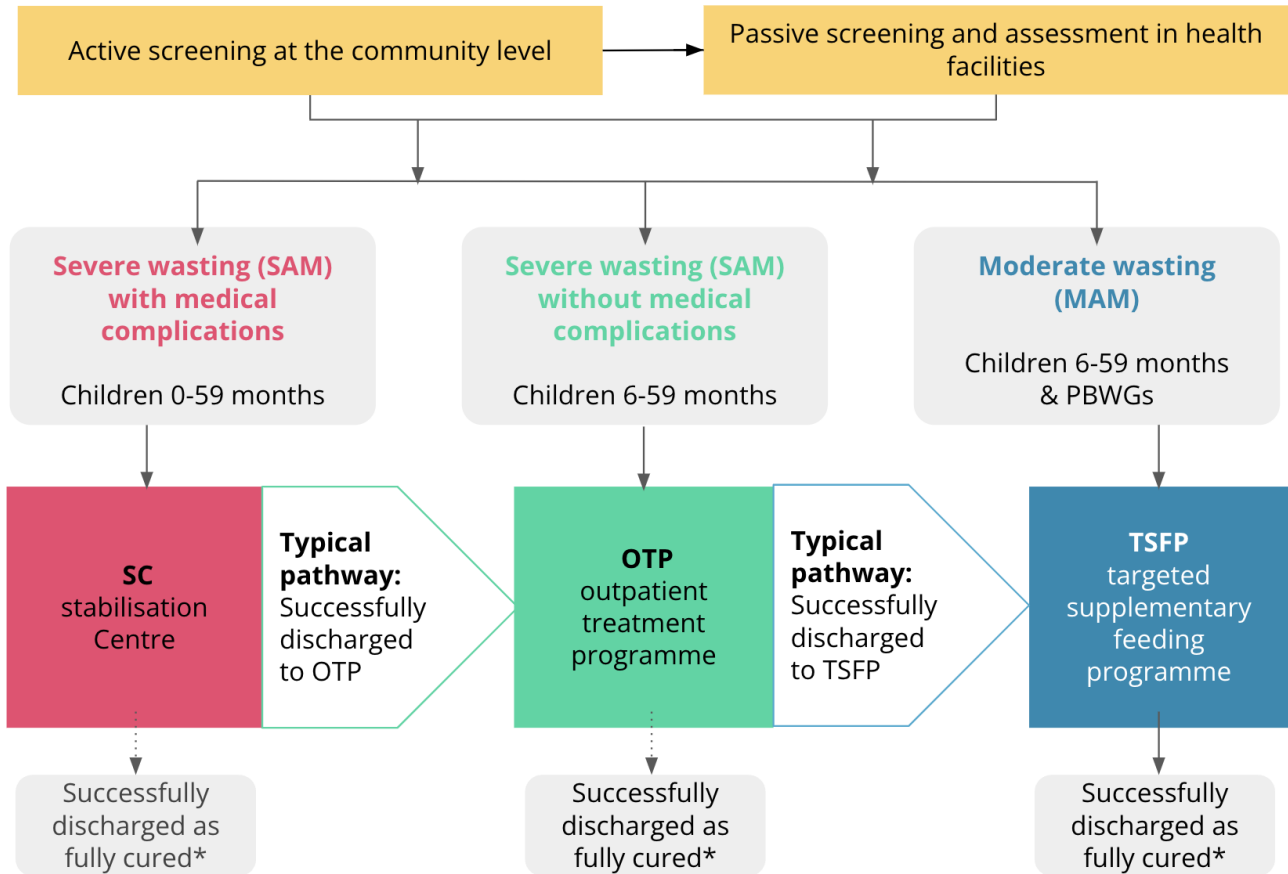


Figure 2: IMAM admission, transfer and discharge pathways

*Children under 6 months are admitted and discharged when fully cured of moderate wasting in SCs. In areas with no OTPs, children aged 6-59 months remain in the SC until fully recovered from moderate wasting. Likewise, children remain in the OTP in areas without an TSFP.

Study Design

Study objectives and research questions

The primary purpose of this assignment was to establish the average program unit cost for delivering IMAM services in Northeast Nigeria's BAY states. This work was expected to feed into the 2024 Humanitarian Response Plan (HRP) cost estimates. Analysis was done based on the current scenario and scale of IMAM service provision. The terms of reference for this exercise are in [Annex 1](#).

The questions guiding this study were as follows:

1. What is the total cost of providing IMAM services, disaggregated by key programme activity?
2. What is the cost-efficiency of providing IMAM services for each programme activity, expressed as cost per beneficiary admitted for care?
3. What is the cost-effectiveness of providing IMAM services, expressed as cost per beneficiary recovered from acute malnutrition?

Costing approach

This costing exercise was conducted using both programme experience and activity-based ingredients approaches to derive cost estimates¹¹. Quantitative and qualitative data were collected using multiple methods and data were cross-checked whenever possible. Since the primary purpose of this exercise was to inform the HRP budgeting, the costing exercise was conducted from an institutional perspective, so the analysis excluded costs incurred by the beneficiary and other societal economic costs. Data on programme admissions and discharges, historical expenditures, amount of resource use, unit costs, programme scale, and disease epidemiology were collected for a 12-month period between mid 2022 and late 2023, based on the availability of data of each partner¹². The study protocol can be provided upon request.

Data collection

Forty-five out of the 52 nutrition sector partners and observers are involved in the implementation of at least one component of IMAM service delivery ([Annex 2](#)). The members of the Northeast Nigeria IMAM Technical Working Group Taskforce¹³ selected six implementing partners (ACF, CRS, FHI360, IRC, JDF, and SCI) and the three UN agencies (WHO, UNICEF, and WFP) for detailed primary data collection.

Prior to in-person data collection, the cost analysis team reviewed relevant documents including relevant strategies, guidelines, evaluations and available programme data. One member of the costing team spent three weeks in late October 2023 in Maiduguri to collect primary and secondary data ([Table 3](#)), supported remotely by the other team member. Key informant interviews continued remotely throughout November and data validation was conducted in November and December 2023, with a final validation workshop in January 2024. Data collection tools are in [Annex 3](#).

¹¹ A programme experience approach is a top-down methodology that relies on expenditure records that are often reorganised to suit the needs for the cost analysis, whereas an activity-based ingredients approach is a bottom-up methodology based on determining the required resources and multiplying the number of necessary units by the unit cost of each resource.

¹² The starting and ending months varied slightly by reporting partner, but all reported for a 12-month period.

¹³ The taskforce is a subgroup of the IMAM Technical Working Group that was created to assist with this nutrition costing exercise.

Table 3: Data collection sources and methods

Source	Description
Secondary data	
Expenditure or budget data	Requested from implementing partners in the form of aggregated tables and/or detailed transactions listings.
Programme data	Extracted from the 5W standardised reporting mechanism ¹⁴ and cross-checked against the primary data reported by the sampled partners.
Primary data	
Cost and programme data capture form	Used to collect quantitative data on admissions, programme scale, personnel, supply usage, supply chain, and training costs from the nine sampled partners. Eight out of nine partners replied. A simplified version was also developed on the ODK platform covering only admissions, programme scale, supply usage, and training costs for non-sampled implementing partners and 15 out of 45 organisations submitted a response.
Key informant interviews	A total of 58 technical, support and management staff were interviewed to understand the IMAM delivery approach, and to cross-check, contextualise and clarify data collected through other methods.
Observations	Observations of IMAM service delivered at each type of care site were done to identify any additional relevant information and shape key informant interviews. Visited one stabilisation centre, one OTP / TSFP with RUSF, and one Tom Brown programme site at the homes of two Lead Mothers

Data Entry and Analysis

All data provided by respondents or collected from secondary sources were entered into multiple worksheets in Microsoft Excel. Through an iterative process, the data were harmonised across respondents and structured according to the cost centres in [Table 4](#). In cases where cost data were not provided or were incomplete for some cost categories, proxy estimates were used based on averages by reporting partners. Programme scale data, including number of care sites and caseloads, for the sampled partners was requested as part of the primary data collection, while secondary data was pulled from the sector 5Ws dashboard for all other implementing partners.

¹⁴ [Northeast Nigeria Nutrition Sector 5W January-September 2023](#); [Nigeria Nutrition Sector Dashboard 5W January-December 2022](#)

Table 4: Cost categories

Cost Category	Detailed Cost Ingredients
Personnel	Personnel providing medical and other IMAM services and management personnel at all levels
Therapeutic / supplementary foods	F75, F100, ReSoMal, RUTF, RUSF, Tom Brown/Action Meal
Supply chain	Warehousing and transport for therapeutic and supplementary foods
Clinic supplies and operations	Job aids, clinic equipment, utilities, facility rental, rehabilitation, wage loss compensation or food given to caregivers
Training	Trainer salary, trainee time, transport and per diem, refreshments, hall hire and training materials

Personnel Costs: All personnel costs were included as reported by the sample implementing partners. Given the limited scope of this exercise, no additional primary data collection was carried out on personnel cost, such as time allocation interviews or detailed analysis of accounting data. In most cases, the implementing partners reported on the number of personnel performing IMAM-related duties, along with the approximate proportion of their time spent on IMAM duties, and average salaries for each role. Some of the sampled partners provided standard job grade salary grids and average salaries were taken from these documents. In some cases where complete information was not made available or was deemed to be an outlier (either implausibly high or low), proxies were used based on the average reported values from other implementing partners.

Therapeutic and supplementary foods: Implementing partners reported their usage of most food products in terms of the number of cartons. This was cross-checked against the volume or regular stock of F75, F100, ReSoMal and RUTF provided by UNICEF and buffer stock of these products provided by ACF according to their distribution records. UNICEF and ACF provided data on the annual expenditure and total volume of products procured allowing the costing team to derive unit cost per carton for regular and buffer stock for each product procured and supplied by UNICEF and ACF. To estimate the total expenditure for these therapeutic products, these unit costs were multiplied by the proportion of regular supply and buffer stock used by each implementing partner¹⁵. In the case where the reported number of cartons of RUTF per beneficiary was unrealistically large, the assumption of one carton per OTP beneficiary was used. The cost per carton was calculated from the total cost and metric tons for RUSF procured by WFP. In absence of reliable data for RUSF usage, it was assumed that the amount provided to each beneficiary was 90 sachets¹⁶. The usage of Tom Brown delivered through a market-based approach was counted in terms of number of recipients and a lump sum of the annual expenditure was provided.

¹⁵ The difference in unit price between the two organisations ranged from 5-17%.

¹⁶ Based on expert opinion and assuming an average of one sachet per day for 13 weeks.

Supply chain: Most partners reported supply chain costs and these were typically reported as a lump sum. In some cases, these costs were estimated using an ingredients method guided by the supply chain diagrams listed in [Annex 4](#). For the implementing partners that were not able to provide any data on their supply chain costs, a proxy was used based on an average cost from other sampled implementing partners. UNICEF provided a percentage of total product stock to estimate global freight, warehousing and other transportation related costs. WFP provided the expenditure cost for the transportation and warehousing of RUSF incurred between October 2022 to September 2023. To attribute the supply chain costs for RUSF for the sampled partners, the total expenditure was divided by the total RUSF beneficiaries across all implementing partners and then multiplied by the RUSF beneficiaries in the sample implementing partners. Some partners included the costs of logistics personnel, but most omitted this cost.

Clinic supplies and operations: Clinic supplies and operations were reported by implementing partners as lump sums disaggregated by routine medicines and tests, fixed site supplies, clinic operations, and compensation for caregivers. Not all sampled implementing partners were able to provide all of the requested cost data and proxies were used based on the average expenditure of other reporting partners.

Training costs were provided as lump sum values by UNICEF, WFP, four of the six sampled implementing partners, and 15 other implementing partners. Since the training costs were incurred by multiple partners and it is possible that some training costs were not captured, we aggregated all reported training costs and divided the sum by the total caseload of admissions across the BAY states to derive the cost per beneficiary for training. This is, however, likely an underestimate of the actual cost.

An attempt was made to extract cost data from accounting records, yet this was met with minimal success. It was difficult to secure permission to release this information to us and for this reason many partners were unable to provide the requested information. Furthermore, it was not possible to easily pull the required information from the accounting records that were provided¹⁷.

The cost horizon was one year, and no capital expenditures were reported by the sampled implementing partners; therefore, no inflation or adjustments were made to reported expenditures. Most data were reported in 2022 United States Dollar (USD), but in cases where it was reported in Nigerian Naira (NGN), a single conversion rate was applied based on the unofficial rate of 1000 NGN per 1 USD, as recommended by local key informants.

Joint costs, such as those for overall management and community outreach, were allocated to the estimates for the SC, OTP and TSFP based on the relative proportion of case admissions. Costs incurred by all sampled implementing partners were aggregated for each of the cost categories defined in [Table 4](#).

Cost analysis results are reported in terms of the measured low cost estimate which represents the totals as reported by the sampled implementing organisations, as well as a series of projected costs

¹⁷ Accounting records are structured according to financial management needs which are often different from costing needs. It is usually a time-consuming exercise to restructure accounting records for the purposes of costing. Occasionally, however, budget codes may align with the cost centres of a cost analysis and expenditures can therefore be easily pulled from accounting records.

representing a plausible low quartile, midpoint, high quartile, and maximum high cost estimates. The average low cost per admitted beneficiary was calculated for each cost category (see Table 4) and summed for each treatment modality in the IMAM programme. The average estimated low cost per beneficiary admitted for care for severe wasting, either at the SC or OTP was calculated based on a weighted average of the cost per beneficiary of each care modality. However, given the incompleteness of the reported data, the low estimates do not accurately represent the actual total expenditures. To estimate a plausible maximum cost estimate for each cost category, we used the disaggregated data from the sampled implementing partners and summed the highest reported cost per beneficiary estimates by any one implementing partner for each of the cost categories. The midpoint and quartile cost projections were based on simple arithmetic calculations intended as approximations given the lack of sufficient data to conduct statistical calculations and inability to remove outliers¹⁸.

Costs were excluded from the analysis if reliable proxies could not be used. The following costs were excluded or missing from the IMAM costing exercise, either due to methodological choices or challenges:

- Government incurred costs were excluded from this analysis because they are not funded by the HRP and, therefore, are not needed to achieve the objective of this analysis.
- The cost of Supercereal Plus and Supercereal or corn-soy blend supplementary foods (CSB++ or CSB+ and oil) were not included in this analysis as they are not widely used in the region¹⁹. Furthermore, these products are not used by any of the sampled implementing partners and therefore cost data was not available.
- The sampled implementing partners do not work in hard-to-reach sites where supplies require transportation via helicopters. Although this mode of transportation is not common, it may have a significant contribution to the cost of supply transportation.
- Few organisations were able to provide an estimate of the transportation cost for personnel, and routine monitoring and evaluation. Since it was not feasible to develop a proxy value from the data that was provided, these costs were excluded.
- Costs incurred by the WHO, including training and supervision, were not provided.

¹⁸ For many cost categories we received less than three data points and it was not possible to determine which, if any of them, were implausible.

¹⁹ ICRC is the main provider of CSB+ and oil to women but is not funded by the HRP and is therefore excluded from this analysis. Additionally, WFP only recently piloted the use of CSB+ and oil for women and a full year's worth of data was not available.

Results

Programme

In total, nearly 869,000 children and PBWGs were admitted and cared for by all implementing partners in the BAY states between October 2022 and September 2023, the slight majority (53%) of which were admitted to the TSFP (Table 5). Among the six sampled implementing partners, it was reported that just over 228,000 children and PBWGs were admitted for IMAM care between October 2022 and September 2023, with a large majority (64%) of cases being admitted to the OTP.

Table 5: Admissions and discharges between October 2022 to September 2023

	All implementing partners			Sampled implementing partners		
	Number of cases admitted	% of total	Number of cases discharged as cured	Number of cases admitted	% of total	Number of cases discharged as cured
SC	38,993	4%	33,426	13,573	6%	13,748*
OTP	372,497	43%	319,814	146,638	64%	127,933
TSFP**	457,445	53%	275,336	67,898	30%	54,530
TOTAL	868,935	100%	628,576	228,109	100%	196,211

*The number of cases discharged as cured was higher than the number of cases admitted; this difference is attributable to a variation over time in the incidence of wasting and the fact that it was not possible to collect admissions and discharge data from a cohort. ** Includes children and PBWGs treated via all TSFP modalities.

Sources: Data for the sampled implementing partners were reported through the primary data collection process. Data for all other implementing partners were from the Northeast Nigeria Nutrition Sector 5Ws October 2022-September 2023.

Box 2: Definition of discharged

In Nigeria, a case is considered “**discharged**” when they meet the discharge criteria for each IMAM stage of care but does not necessarily mean fully cured of wasting. For example, a child may be discharged and recorded as “cured” from SC and admitted into OTP for further treatment. Likewise, a child may be recorded as “cured” when discharged from an OTP and referred to a TSFP. In this report, we use the term “successfully discharged” to refer to those who have met the discharge criteria regardless of cure status.

Cost, cost-efficiency, and cost-effectiveness

Given the incompleteness of the available data, as discussed in the section below on limitations, these values should be understood as provisional. We provide a plausible range in cost estimates, with the minimum cost estimate representing the total values calculated based on the data provided, which were incomplete, and the maximum cost estimate based on the highest reported value from among the sampled implementing partners. We report the low quartile, midpoint and high quartile estimations to better represent the most likely range in total cost estimates. Detailed cost tables that also include the minimum and maximum values are presented in Annex 5.

We estimate the most plausible range in cost per admitted case for SAM is US\$169-251 and for MAM is US\$117-166, based on lower quartile and midpoint arithmetic estimates (Table 6)²⁰. Among the partners sampled for primary data collection, the IMAM programme cost just over US\$18.6M per annum to implement; the real cost, however, was likely higher given the data gaps. If extrapolated out to all partners²¹ providing IMAM services, the low quartile to midpoint projection range is US\$78-114M per annum, based on the reported caseload of 504,234 admissions from October 2022 to September 2023.

Table 6: Average low quartile, midpoint, and high quartile cost per beneficiary admitted for care

Cost categories	Admitted as SAM to SC & OTP cost/BNF			Admitted as MAM to TSFP cost/BNF		
	Q1	Mid	Q3	Q1	Mid	Q3
Personnel	\$ 33	\$ 46	\$ 59	\$ 21	\$ 28	\$ 35
Therapeutic foods	\$ 46	\$ 48	\$ 50	\$ 23	\$ 25	\$ 27
Supply chain	\$ 10	\$ 11	\$ 12	\$ 6	\$ 8	\$ 9
Clinic supplies & operations	\$ 78	\$ 145	\$ 211	\$ 66	\$ 104	\$ 142
Training	\$ 1	\$ 1	\$ 2	\$ 1	\$ 1	\$ 2
TOTAL	\$ 169	\$ 251	\$ 334	\$ 117	\$ 166	\$ 215

It was not possible to calculate valid cost-effectiveness results with the available data; however, an approximation may be estimated. We summed the approximate cost per “successfully discharged” beneficiary at each phase of IMAM care to determine a plausible range of the cost per beneficiary fully cured from acute malnutrition, using the low quartile and midpoint projections to represent the low and high values, respectively. It cost an estimated US\$201-255 per case successfully discharged from an SC, US\$190-288 per case successfully discharged from an OTP²², and US\$146-207 per case successfully discharged from a TSFP.

Accordingly, the cost modelling suggests that it cost between US\$201-750 to successfully complete all phases of care for a child who enters the IMAM programme at the SC, between US\$190-495 to

²⁰ With the data provided, it was not possible to reliably estimate the cost of treating a child at a TSFP separately from the cost of treating a PBWG, nor was it possible to reliably estimate the cost of care via RUTF versus Tom Brown.

²¹ Excluding government-run facilities.

²² Given the lack of data on the proportion of admissions to the OTP that were referrals from the SC and those that were direct admissions, it was not possible to calculate a cost per successful discharge for the SAM care component in aggregate.

successfully complete all phases of care for a child who enters at the OTP, and just US\$146-207 to successfully complete care for a child or PBWG who enters at the TSFP (Figure 3). No data were available on the proportion of children that follow each treatment pathway and it was not possible to estimate the differences in cost among the pathways. Furthermore, it likely costs more to treat a child to full cure at the SC, which is the most costly care modality out of the three approaches, compared to a child that is initially treated at the SC who then continues care at the OTP and finally at the TSFP.

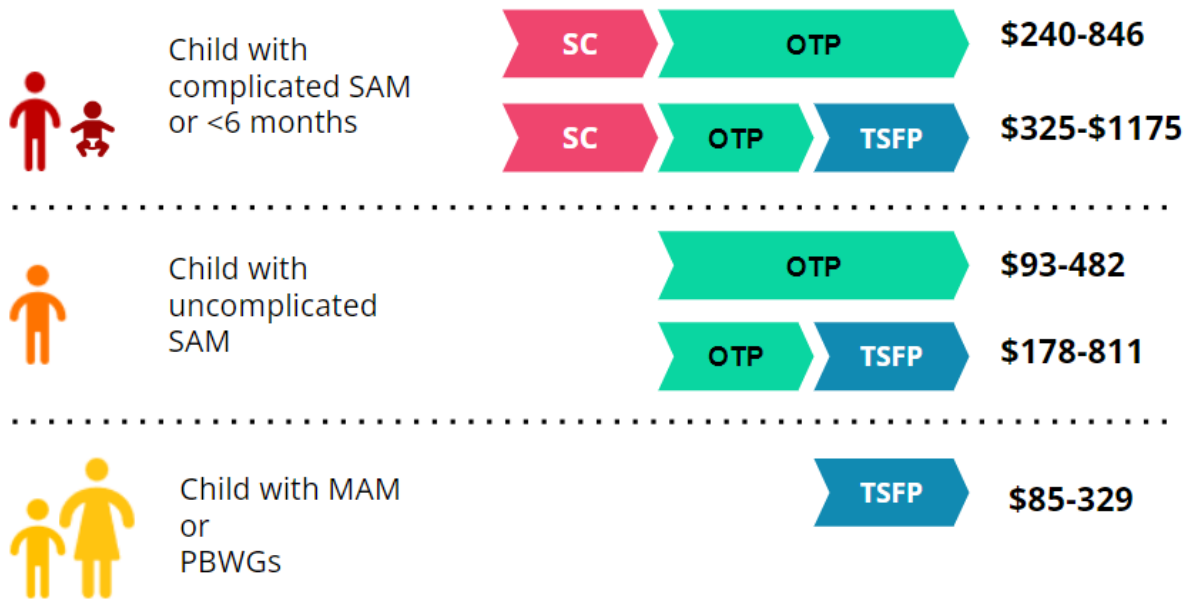


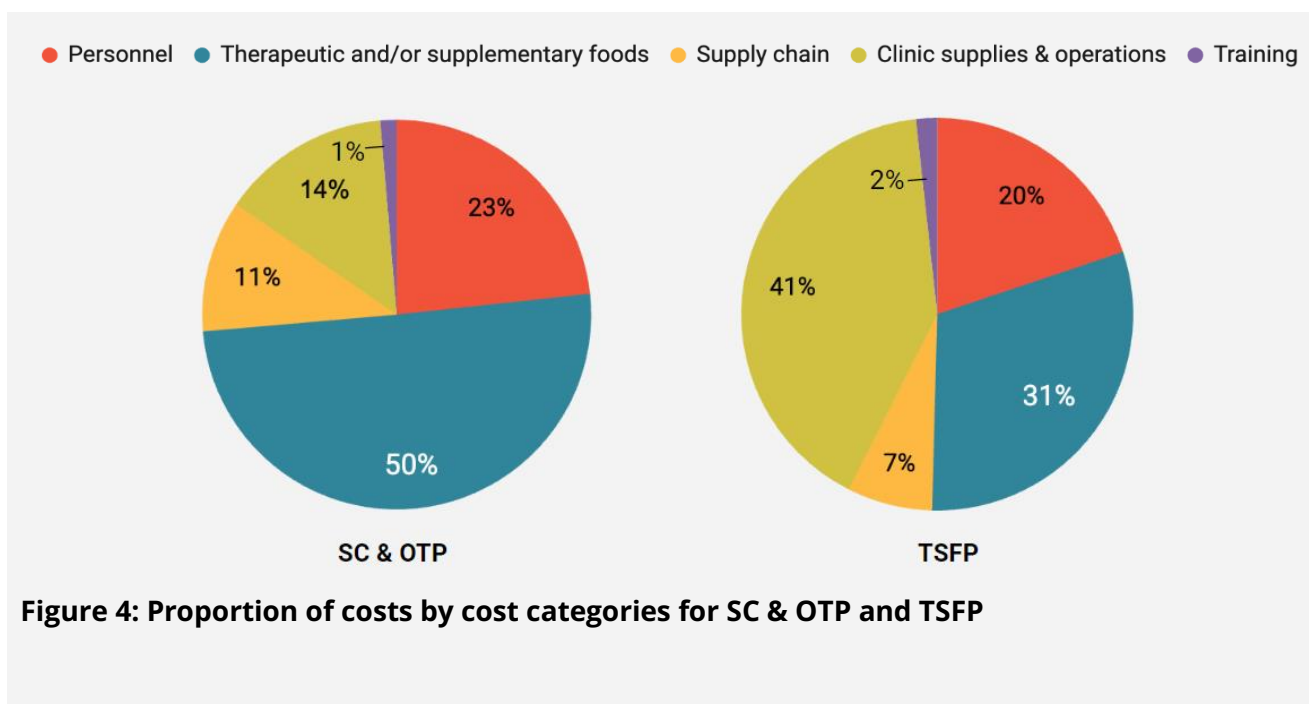
Figure 3: Comparison of the total cost to complete all phases of treatment, by category and care site type at initial admission, based on cost per successful discharge

Cost drivers

The main cost driver for the treatment of SAM was the cost of therapeutic foods, at 50% of total costs, rising to 61% when the supply chain cost to procure and deliver these foods is included (Figure 4). While the cost of personnel for SAM treatment was just 23%, this masks the fact that personnel cost is a much larger proportion of cost in the SC setting compared to the OTP setting owing to the need for continuous monitoring and care in contrast to the once weekly interaction between staff and beneficiaries in the OTP. Accordingly, personnel cost per admission was much higher in the SC compared to an OTP or TSFP by a factor of 15.

The cost of clinic supplies and operations was the largest cost driver for MAM care in the TSFP. This is due to the lower dosage of product provided, in instances where RUSF is the supplementary food, and partly due to the lower unit cost of supplementary food in the Tom Brown and Action Meal approaches.

Training was estimated to be just 1-2% of the total, yet it is likely that the full cost of training was not captured for this study.



Discussion

According to the analysis done on the expenditures reported by a sample of six out of 45 organisations implementing at least one component of IMAM, the estimated average extrapolated annual expenditure to provide IMAM care in the BAY states was US\$41-114M. The average programme unit cost was US\$169-251 per admitted SAM case and US\$117-166 per admitted MAM case. By comparison, other studies estimated the average institutional cost per case of SAM treated was US\$160 in 2014 (approximately US\$208 in 2023 USD)²³ and US\$174-468 per beneficiary admitted to a TSFP in 2022²⁴, which are similar to our midpoint estimates.

It was not possible to calculate valid cost-effectiveness results on the cost per case cured with the available data. Provisional approximations may be used based on cost modelling, however, using “successful discharge” rates and assumptions about the patient trajectory through the IMAM programme. Accordingly, it cost US\$201-750 to successfully treat a child that entered the IMAM programme at an SC, US\$190-495 to successfully treat a child that entered the IMAM programme at an OTP, and US\$146-207 to successfully treat a child or PBWG entering the IMAM programme at a TSFP. Using these values, compared to early detection and successful care at a TSFP, a child admitted to an OTP for treatment will cost 30-40% more to complete care, and a child admitted to an SC for treatment will cost three times as much to complete care. This suggests the importance of early

²³ [Frankel et al. \(2015\) Costs, Cost-Effectiveness, and Financial Sustainability of Community-based Management of Acute Malnutrition in Northern Nigeria. Results for Development.](#)

²⁴ [USAID Advancing Nutrition. \(2023\). Management of Moderate Wasting Using Local Foods. USAID Advancing Nutrition.](#)

detection and successful referral to the overall strategy of improving IMAM cost-efficiency, potentially leading to cost-savings overall.

Overall, the main cost drivers of the IMAM programme were supplementary and therapeutic foods, followed by clinic supplies and operations. This finding is consistent with other costing studies in Nigeria that found that the main cost driver was supplementary and therapeutic foods, accounting for 47% of total institutional costs in one study²⁵, and between 35-73% of institutional costs in another study²⁶.

Limitations

The estimates of total cost and programme unit costs are likely low given the incompleteness of the reported cost data. Assumptions had to be made and we used proxy values from other organisations to fill in data gaps. Since this analysis relied on reported aggregate values rather than on an analysis of expenditure data, it is likely an underestimate of real expenditures.

These results are not generalisable to other locations other than Northeast Nigeria and extrapolation within Northeast Nigeria should be done with caution. In-depth interviews were conducted with six out of 45 stakeholders, thus limiting the generalisability.

It was beyond the scope of this exercise to evaluate the reliability of the secondary data beyond considering face validity. For example, it was not possible to assess the accuracy of the reported discharged as cured rates, nor was it possible to assess the consistency in reporting methodology across implementing partners.

High variability across organisations for each cost category should not be interpreted as one organisation being more cost efficient than another, but rather in differences in the completeness of cost reporting, the ways in which costs were reported or aggregated, and other programmatic factors.

Ultimately, it was not feasible to present the TSFP cost by type of beneficiary (child or PBWG) or by TSFP supplementary food type (RUSF, Tom Brown pre-packaged, Tom Brown market-based) based on the available data. Given the multiple data gaps and need to rely on assumptions and proxies to fill in data gaps meant that any further disaggregation of the TSFP costs would not have yielded reliable estimates.

The estimated cost per beneficiary discharged should be treated with caution. There are some problematic methodological issues with dividing the total expenditure by the reported number of discharges as cured, both because of some anomalous data being reported and because this reporting may not reflect actual cure rates.

²⁵ [Frankel et al. \(2015\) Costs, Cost-Effectiveness, and Financial Sustainability of Community-based Management of Acute Malnutrition in Northern Nigeria. Results for Development.](#)

²⁶ [USAID Advancing Nutrition. \(2023\). Management of Moderate Wasting Using Local Foods. USAID Advancing Nutrition.](#)

Ultimately, the available data did not permit the calculation of cost-effectiveness estimates, as originally planned. Instead, approximations were modelled based on the arithmetic sum of the low quartile and midpoint estimates to complete all phases of IMAM care.

Recommendations

- **Projections for funding requirements** for 2024 should use the low quartile to midpoint programme unit costs estimates for SAM and for MAM care. These are US\$169-251 for SAM and US\$117-166 for MAM. Given the uncertainty of the cost estimates and the challenges with securing reliable and complete data, these estimates could be improved upon in the future.
- Continue efforts on the improvement of **early detection** to reduce the total cost per child to reach successful discharge and cure; providing care before wasting becomes severe or severe with complications is much less costly overall.
- Continue to provide technical and financial support for the buffer stock approach of **pre-positioning therapeutic and supplementary foods**. Consider resource requirements for the downstream cost of delivering product to care sites, particularly in remote or hard to reach areas that require costly transportation such as helicopters. Pre-positioning of required stock has the potential to reduce overall costs.
- Continue work on **supporting market-based approaches** for supplementary foods to allow for procurement of products as close as possible to the consumption/distribution sites. Such an approach may reduce supply chain costs, lower the risk of stock-outs, and support local markets.
- Continue to support implementing partners in IMAM **monitoring and reporting** to ensure high quality, and comparable, efficiency and effectiveness measurements. Evaluate reporting requirements and streamline or reduce the burden as much as possible.
- Use the results from this costing exercise and those from the recent TSFP costing²⁷ to continue work among the Nutrition Sector partners to further **harmonise and standardise** the ways costs are assigned and aggregated, as well as to **conduct subsequent analyses** to better determine typical ranges for cost and/or resource quantities. A simplified cost capture form can be used for this type of analysis and can facilitate future cost modelling and improve the transparency of costs included.
- Identify options to **build on the work achieved for this costing exercise** and the recent TSFP costing²⁸ without the need to replicate the entire process while still protecting data confidentiality.

²⁷ [USAID Advancing Nutrition. \(2023\). Management of Moderate Wasting Using Local Foods. USAID Advancing Nutrition.](#)

²⁸ Ibid

Future research provides an opportunity to further refine the IMAM estimates given the data gaps and proxies used. Additional analysis can further help understand programmatic implications for decision making. The following are suggested further analyses to explore.

- **Improve cost estimates along the supply chain**, guided by the diagrams in Annex 6 to obtain better estimates of the transportation and warehousing cost incurred by the implementing partners. A detailed understanding of the fully supply chain costs through to the last mile delivery is a notable gap in the global literature on IMAM costing.
- **Estimate the potential cost averted** through a) early detection and/or enhanced default tracing; b) the adoption of some simplified approaches such as the reduced single sachet RUTF dosage; c) market-based supplementary food approaches versus pre-packaged products (wherever market and security conditions allow)
- **Model the cost of adopting some of the recommendations in the new 2023 WHO guidelines**²⁹ on treatment for wasting, which includes the prioritisation of specially formulated foods for children aged 6-59 months at high risk of severe wasting³⁰.

²⁹[World Health Organisation \(WHO\). \(2023, November 20\). WHO guideline on the prevention and management of wasting and nutritional oedema \(acute malnutrition\) in infants and children under 5 years.](#)

³⁰ It was initially anticipated that this costing exercise would cost out a scenario based on the WHO 2023 Guidelines, however the in-country roll out has yet to be discussed and the details of which recommendations would be adopted was not clear therefore it was not possible to project the costs for this scenario.

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Annexes

Annex 1 Terms of Reference

Technical Support Team ¹ Terms of Reference (ToR) In-depth Technical Support

Post Title	CMAM Costing Advisor		
Supervisor in country	John Mukisa		
Country/location	Nigeria, Maiduguri		
Modality	In-country <input type="checkbox"/>	Remote <input type="checkbox"/>	Combination <input checked="" type="checkbox"/>
Estimated start date	2nd of October 2023		
Estimated end date	31 st of January 2024		
Estimated duration	8 weeks/48 days		

1. BACKGROUND

Northeast Nigeria states of Borno, Adamawa and Yobe (BAY states) are experiencing a severe food and nutrition crisis for the fourth consecutive year aggravated by, a) acute food insecurity – 4.3 million people projected to be acutely food insecure for a fourth consecutive year and food consumption gaps continue to widen, b) high prevalence of measles and acute watery diarrhea (AWD), c) limited access to basic health, hygiene and sanitation services, and d) conflict-induced displacements – Borno hosts 1.8 million (82%) of the 2.2 million Internally Displaced People (IDPs) across BAY states and majority (55%) of IDPs in Borno live among host communities.

It was projected that 2 million children under 5 years would be acutely malnourished in 2023, including nearly 700,000 severe acute malnutrition (SAM) cases². In addition, 178,000 pregnant and lactating women will likely suffer from acute malnutrition between January and December 2023. According to the Aug/Sep 2022 Nutrition & Food Security Surveillance (NFSS), the prevalence of acute malnutrition among children under 5 years in Borno increased from 11.8% in 2021 to 12.3% in 2022

¹ The Global Nutrition Cluster Technical Alliance (GNC Technical Alliance or the Alliance) is an initiative for the mutual benefit of the nutrition community, and affected populations, to improve the quality of nutrition in emergency preparedness, response and recovery. The Alliance's Technical Support Team (TST) is co-led by Action Against Hunger Canada and UNICEF and funded by USAID/BHA, SIDA, Irish Aid and UNICEF. The TST exists to provide technical expertise to improve nutrition outcomes in emergencies, in terms of quick responses to queries, longer term support (in-country or remote) and through consultant recommendations or other capacity strengthening initiatives. GNC Technical Alliance services are available to any nutrition actor including governments, national and international NGOs, UN agencies, Red Cross/Crescent Societies and others. More information can be found here: ta.nutritioncluster.net.

² IPC Acute Malnutrition Analysis. 2022. [Nigeria \(Northeast and Northwest\): Acute Malnutrition Situation May - September 2022 and Projections for October - December 2022 and January - April 2023](#)

and from 6.1% to 7.2% in Adamawa during the same period. In 2022, the prevalence of acute malnutrition in Yobe (10.6%) decreased compared to 2021 (14.1%) but it is still above the acceptable threshold. Borno (12.3%) recorded its highest prevalence of acute malnutrition since the start of the nutrition surveillance in 2016³.

Trend analysis of admission data from nutrition facilities across the BAY states indicates that the number of SAM children admitted during January to May of 2023 in health facilities for the treatment of SAM with and without complications has on average increased by 33% and 16% respectively compared to the same period in 2022. In Borno, the number of complicated cases has increased by 60% compared to the same period in 2022.

The [Northeast Nigeria Nutrition Sector](#) was established in 2015 following the recommendation by the Humanitarian Country Team (HCT) to adopt the sector approach. The Sector is co-chaired by State Primary Health Care Development Agency (SPHCDA) and UNICEF. UNICEF is the Sector Lead Agency while Action Against Hunger (AAH) seconds a Deputy Nutrition Sector Coordinator. The Sector currently has 37 partners composed of government (1), national NGOs (21), international NGOs (16), and UN agencies (4). There are also two observers (MSF and ICRC) and six key donors (BHA, BMZ, ECHO, Embassy of Japan, FCDO, and GAC). The Strategic Advisory Group (SAG) and four technical working groups (TWGs) were established under the Nutrition Sector to support its operations: Community-based Management of Acute Malnutrition (CMAM), Infant and Young Child Feeding in Emergencies (IYCF-E), Assessment & Information Management, and Cash & voucher assistance (CVA) for nutrition.

The overall objective of the Nutrition Sector response is to provide integrated preventive and treatment services to mitigate a deterioration in the nutrition situation and support recovery for those already malnourished. The package of services includes early detection and treatment of acute malnutrition through inpatient care, Outpatient Therapeutic Programme (OTP), and Targeted Supplementary Feeding Program (TSFP); Blanket Supplementary Feeding Programme (BSFP); distribution of micronutrient supplementation, and protection, promotion, and support of appropriate maternal, infant, and young child nutrition (MIYCN). In 2023, the Sector targets to reach 2.4 million women and children with an estimated budget of US\$ 133.2 million based on an activity-based costing approach⁴.

In 2022, an activity-based costing approach also known as unit-based costing (as opposed to a project-based approach) was adopted by the Humanitarian Country Team (HCT) and used in developing the 2023 Humanitarian Response Plan (HRP). The Nutrition Sector's response costs include the procurement and distribution of specially formulated foods (SFF), drugs and equipment. As a service-oriented response, it requires huge investment in technical support, capacity building, nutrition supplies, logistics (clearance, warehouse, handling, and transport) and program management. Recent high levels of inflation and a rise in the cost of living have

³ [Northeast Nigeria Nutrition & Food Security Surveillance \(NFSS\), Round 12, 2022](#)

⁴ [Nigeria Humanitarian Response Plan 2023 \(February 2023\)](#)

resulted in demands to increase salaries or incentives to attract and retain qualified nutrition staff, especially in rural and hard-to-reach areas. Therefore, the cost per beneficiary requires to be routinely reviewed considering the high inflation rate in Nigeria.

In developing the 2023 HRP, the lack of robust data on how the cost drivers for nutrition are determined and reviewed, i.e., shared costs of office management, technical support, infrastructure and equipment, programme management, etc. created many challenges especially within the sector in building consensus on unit costs for the various activities. Similarly, for implementing partners who rely on supplies procured by core pipeline managers (F-75, F-100, RUTF, RUSF, MNP, CSB++, CSB+, Plumpy'Doz, Routine Medication, etc.), it was challenging to estimate the proportion covered by commodities and logistics.

Therefore the Northeast Nigeria Nutrition Sector is seeking the support of the GNC Technical Alliance TST to determine consensus-driven costs for CMAM delivery (SAM and MAM treatment), to support the budgeting of the nutrition sector response for the 2024 Northeast Nigeria HRP.

2. PURPOSE

The CMAM costing advisors will work closely with the Northeast Nigeria Nutrition Sector and CMAM Costing Working Group to establish the average unit cost for delivering SAM and MAM treatment services in Northeast Nigeria. The cost estimation will include cost of supplies, logistics, program and administrative components from UN agencies and NGOs. This work is expected to feed into the 2024 HRP costing.

The advisors will ensure international standards, best practices, and global learning are brought to this exercise. More specifically, based on the new WHO guidelines on the management of acute malnutrition in children under five years, different scenarios will be considered the costing analysis:

1. Current scenario (for 2024 HRP costing): Management of children with SAM with RUTF and management of children with MAM with RUSF
2. Scenario using RUTF for the management of children with SAM and Specially Formulated Foods (SFFs) for the management of children with high-risk MAM (identified based on criteria stipulated in the new WHO guidelines)

3. SCOPE OF DUTIES AND RESPONSIBILITIES: TECHNICAL ADVISORS

Under supervision of the Nutrition Sector Coordinator, in close collaboration with the CMAM Cost Analysis Task Force and the Nutrition Sector Strategic Advisory Group, the Advisors will accomplish the following tasks in three phases:

	Activities	Deliverable
Phase One: Study Inception		
1	Partner consultation to include bilateral meetings with key partners (SMoH, SPHCDA, UNICEF, WFP and WHO), and two group meetings, i.e., the sector forum and the donor	Inception report with:
	group meeting. This will lead to the exhaustive listing of partners that contributed to service delivery.	Detailed cost analysis protocol;
2	Review and discussions of programming at BAY states level, with exhaustive identification of cost drivers.	Data collection template
3	Detailed cost analysis protocol, indicating and explaining: <ul style="list-style-type: none"> • Choice of the methods (ingredient approach, expenditure approach, or mixed, or others); • List of partners involved in the response in the study period; • Cost drivers to be considered; • The design/structure of the costing tool to be used; • Analysis plan 	
4	Elaboration of data collection template	
5	Orientation of relevant partners in the use of the data collection template, and submission. Ideally, submission will be done directly to the consultant only.	
Phase Two: Data collection and management		
6	Consolidation of partner submissions	Completed costing tool with preliminary results
7	Control of data exhaustivity (number and completion of submissions)	
8	Control of data quality (internal and external consistency)	
9	Feedback to partners, with request for corrections and/or explanations where needed	
10	Data analysis, conform to the data analysis plan.	
Phase Three: Reporting and validation		
11	Develop a study report with the following structure <ul style="list-style-type: none"> • Executive summary • Background • Justifications • Methods and approaches • Results • Conclusions • Recommendations 	Report of validation workshop with partners Final study report
12	Plan and conduct with partners a validation meeting of the costs analysis report	
13	Finalize the study report as per recommendations of the validation meeting, in close collaboration with the CMAM Cost Analysis Task Force	

9	Feedback to partners, with request for corrections and/or explanations where needed								
10	Data analysis, conform to the data analysis plan.								
11	Develop a study report with the following structure <ul style="list-style-type: none"> ● Executive summary ● Background ● Justifications ● Methods and approaches ● Results ● Conclusions ● Recommendations 								
12	Plan and conduct with partners a validation meeting of the costs analysis report								
13	Finalize the study report as per recommendations of the validation meeting								
14	Develop 2-page “how to” brief								

Any leave (e.g., RnR) of any key personnel (e.g., in-country supervisor) during the technical support period or any key events (e.g. national holidays) that might affect the availability of key staff and the support, should be highlighted here: nothing applicable.

The Deputy Nutrition Sector Coordinator will be available whenever the Sector Coordinator is away on RnR.

5. EXPECTED DELIVERABLES: Technical Advisors

- Inception report with:
 - Detailed cost analysis protocol
 - Data collection template
- Completed costing tool with preliminary results
- Report of validation workshop with partners
- Final study report
- 2-page “how to conduct a costing exercise” brief
- End of mission report
- Performance evaluation form (PEF)

6. SCOPE OF DUTIES AND RESPONSIBILITIES: Other parties

HOST ORGANIZATION (UNICEF NIGERIA)

The hosting agency in country will be UNICEF and commit to the following:

1. Supporting the Technical Advisor in obtaining visa.
2. Allocation of office space and access to standard office equipment including printer
3. Routine orientation upon arrival including
 - Airport pick up and include name/ of driver along with contact information for a second person from the host agency.
 - Security briefing within 48 hours.

- Administration briefing and set up.
 - ToR briefing of host organization responsibilities.
4. Inclusion of the technical Advisor under the same security and medical evacuation arrangements as other staff. In that regard (and when relevant), a Letter of Understanding (LoU) will be signed between UNICEF and the implementing agency, including outlining roles and responsibilities, prior to any travel.

IN-COUNTRY SUPERVISOR (JOHN MUKISA, NE NIGERIA NUTRITION SECTOR COORDINATOR, UNICEF)

1. Supervisor and Technical Advisor review ToR as soon as possible and make any necessary ToR updates and agree on reporting and feedback cycles.
2. Appointment of a focal point person(s) in-country (could be the in-country supervisor) during the whole period of in-country support while the Technical Advisor is delivering his/her assignments.
3. Arrange for focal point person to provide any background and demographic and contextual information relevant to the assessment/survey. Towards the end of the assignment, the in-country supervisor will provide an assessment of the Technical Advisor's work in consultation with the Technical Advisor through the Performance Evaluation Form. This should be completed within 5 days after the end of the support.
4. Participate in the post-support webinar (if relevant) – a 1½ hour remote session with interested parties globally (GNC, NGOs, UN agencies, donors, others) to foster information sharing, follow up of actions from the support and discussion on the situation in the country; this includes presenting one slide on the background situation in the country and the reasons for the initial request as well as participation in the discussion.
5. Complete the user-satisfaction survey and share with relevant stakeholders that were actively involved in the Technical Advisor's support.

IN-COUNTRY MENTEE (IFUK-IBOT JOHN ALA, ACTION AGAINST HUNGER)

1. Work collaboratively with the technical advisor and other stakeholders to develop the protocol and data collection tools
2. Support with data collection and data analysis process
3. Support the development of the final study report
4. Participate in the final validation meeting
5. Act as custodian of the "how to" brief and act as focal point for costing exercises for the sector going forward

TECHNICAL BACKSTOP (SUZANNE BRINKMANN, INTERNATIONAL MEDICAL CORPS)

1. Timely support in every and any aspect of the technical support as and when needed, to ensure optimal quality and alignment with international standards.
2. Review key deliverables during drafting stage, before sharing with in-country counterparts.
3. Schedule regular (frequency to be determined with Advisor) discussions with Advisor to update and discuss technical support.
4. Review End of Mission report.

5. Take part in relevant briefings and debriefings.

IMPLEMENTING ORGANIZATION (ACTION AGAINST HUNGER CANADA)

In the event that the Implementing Organization (the Advisor's contracting agency) is different than AAH Canada (holder of travel budget) and facilitates payments that will be covered by AAH Canada, upon submission of an Invoice and all supporting documents (receipts, expense reports, boarding passes, etc.), AAH Canada shall process payment in order to reimburse the Advisor's contracting agency for incurred cost. All invoices must be submitted within 30 days of completion of the in-country support. Payment of the invoice will be made within 30 days of receiving the invoice and AAH Canada reserves the right to withhold payment for invoices that are 60 days past the completion of the in-country support.

CONSORTIUM LEAD AGENCY (AAH CANADA)

In the event that the Advisor provides in country support and Advisor's contracting agency is different than AAH Canada (holder of travel budget) or does not have travel costs included in their budget, upon submission of an Expense report and all supporting documents (receipts, boarding passes, hiring agency per diem policy, etc.), AAH Canada shall process payment in order to reimburse (the Advisor) for incurred cost. Expense report shall be completed in AAH Canada template which shall be shared upon travel by AAH Canada. Per diem rate will be based on the hiring agency per diem policy, but it will be limited to and not exceeding the AAH Canada rate for the country of travel. All Expense reports must be submitted within 30 days of completion of the in-country support. Payment of the Expense report will be made within 30 days of receiving the expense report and AAH Canada reserves the right to withhold payment for expense reports that are 60 days past the completion of the in-country support.

7. GENERAL TERMS FOR TECHNICAL SUPPORT

1. The GNC Technical Alliance and implementing organization will hold the possibility to withdraw the Technical Advisor if there is not enough support and commitment from the hosting agency and/or in-country supervisor. In this respect, the responsible agency will have to reimburse all costs related to the in-country support by the Technical Advisor that were covered by GNC Technical Alliance grants.
2. Gender and GBV risk mitigation will be a cross-cutting concern across all support provided by the GNC Technical Alliance. The Technical Advisor will ensure this happens and that any opportunities for any gender/GBV related support are identified and discussed with the country team. It is expected that country level stakeholders are open to this, embrace it, and contribute actively to it.
3. Efforts to enhance the role and power of local and national organizations (especially women led or women's rights focused organizations) in nutrition responses is a key objective of the TST. Therefore, during the development, implementation and follow up, all parties (including TST, requesting organization) all reasonable efforts should be made to explore all possible opportunities for local organizations to lead or at least be involved in the technical support. Most importantly this includes the development of the ToR, but also could include, for

example, involvement (preferably leading) on the development of any products and involvement in training.

4. Any intellectual property (IP) developed during the course of this support will be jointly owned by both the GNC Technical Alliance and the country and/or organization requesting the support. This means that the tools and resources developed can be freely used, shared and distributed without informing the other, including posting it on relevant websites (GNC Technical Alliance, cluster, organizational, etc.). If there is any particular piece of work that cannot be treated in this way and should be entirely owned by the country and/or organization, this should be discussed during the support and confirmed in writing (email) to ensure the Alliance does not unintentionally share the specific work.
5. As a means to acknowledge the support of the GNC Technical Alliance and its donors, the GNC Technical Alliance and donor logos should be included in any or all materials produced by or with the support of the Technical Advisor, unless there is specific security reasons for not doing so. While the Technical Advisor will ensure these are in place and according to requirements, the supervisor should support these efforts.

In-country support only:

1. While agreements on who covers costs for all travel, time and accommodation will be outlined in the budget section below, in case the Technical Advisor is requested to conduct an activity that should be paid for with GNC Technical Alliance resources, UNICEF Nigeria agrees to facilitate and make payments related to aforementioned activity and will get reimbursed upon specific procedures, also outlined in the budget section below.

Annex 2 List of Organisations and Their Involvement in IMAM Activities

#	Name of organisation	State	IMAM activity			
			SC	OTP	TSFP	C/O
1	Government	Adamawa				
		Borno				
		Yobe				
2	Action Against Hunger	Borno				
		Yobe				
3	ActionAid	Yobe				
4	ALIMA	Borno				
		Yobe				
5	Catholic Relief Services	Borno				
6	Christian Aid	Borno				
7	FHI360	Borno				
8	IMC	Borno				
9	INTERSOS	Borno				
10	IRC	Adamawa				
		Borno				
11	MDM	Borno				
12	Mercy Corps	Borno				
13	Plan International	Borno				
		Yobe				
14	PUI	Borno				
15	Save the Children	Borno				
		Yobe				
16	Society Family Health	Borno				
17	AHSF	Borno				
18	CARITAS	Borno				
19	CBI	Borno				
20	CHABASH	Adamawa				
		Yobe				
21	DANUWA	Adamawa				
22	Five Teams Empowerment Initiative	Borno				
23	FRAD FOUNDATION	Borno				
24	Goal Prime	Borno				
25	GREENCODE	Borno				
26	Jireh Doo Foundation	Yobe				
27	LABDI	Adamawa				
28	LPF	Borno				
29	Mary Dinah Foundation	Yobe				
30	Monclub	Borno				
31	NRM	Borno				
32	ICRC	Adamawa				
		Borno				
33	MSF OCB	Borno				

SC – stabilisation centre; OTP – outpatient therapeutic programme; TSFP – targeted supplementary feeding programme; C/O – community outreach

Annex 3 Study Protocol and Data Collection Tools

The below files are available upon request.

Study protocol

Data Collection Instrument 1: Key Informant Interviews - Programme Managers

Data Collection Instrument 2: Observations - SC, OTP, TSFP Care Staff

Data Collection Instrument 3: Transportation of Supplies and Personnel & Warehousing

Data Collection Instrument 4: Data Capture Form - Organisational and Care Site Data

Annex 4 Supply Chain Diagrams

Where are supplies procured?

Consumables are procured by UNICEF for the whole sector. ACF also procures buffer stock for F75, F100, RUTF, and ReSoMal for the eight organisations funded by BHA. RUTF is predominantly procured locally, but ACF has also procured RUTF through international suppliers in the last 12 months ([Figure A6.1](#)).

For TSFP programming, RUSF is procured by WFP. In the CRS, SCI and ACF's TSFP programming, the market based approach is predominantly used. This means vendors are preselected to provide the ingredients for Tom Brown in the local areas near the a group of the lead mother's homes. JDF procures pre-packaged Tom Brown (known as Action Meal) from national vendors.

Who is responsible for the transportation and warehousing of supplies?

[Figure A6.1](#) shows the transportation pathway of consumables and warehousing of supplies incurred by UNICEF for the regular stock and ACF for the buffer stock. These costs are incurred by UNICEF above the central state government warehouse (CMS). Whereas buffer stock bypasses the CMS and is stored at the ACF buffer warehouses for Borno and Yobe. This warehouse only stores buffer stock. ACF is responsible for the transportation and warehousing of the buffer stock including the global freight, transportation from the port in Lagos to the state level ACF buffer warehouses.

Downstream from the CMS and buffer stock warehouses the cost of transportation (mostly by trucks) and warehousing is incurred by the government, UNICEF and partners. These pathways vary across partners in terms of number of trucks, care sites and warehouses. This information was detailed by the six sampled implementing partners ([Figures A6.2](#)).

For Action Meal, the supplier is responsible for the transportation to JDF's warehouse (or office). From there, JDF brings the supplies to the TSFP sites using personal transportation. For the market-based approach Tom Brown, Lead Mothers are paid full costs to pick up the local ingredients from specified vendors back to their home where programming is conducted.

Figure A6.1: Typical pathway of procurement, transportation, and warehousing of consumables for SC and OTP incurred by UNICEF and ACF buffer stock programme

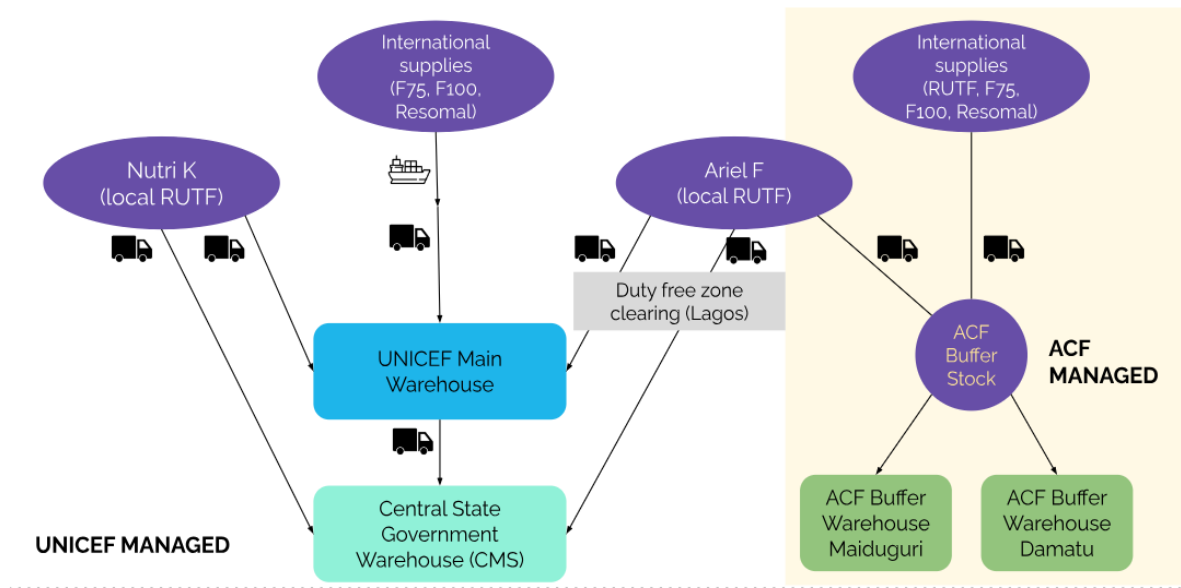
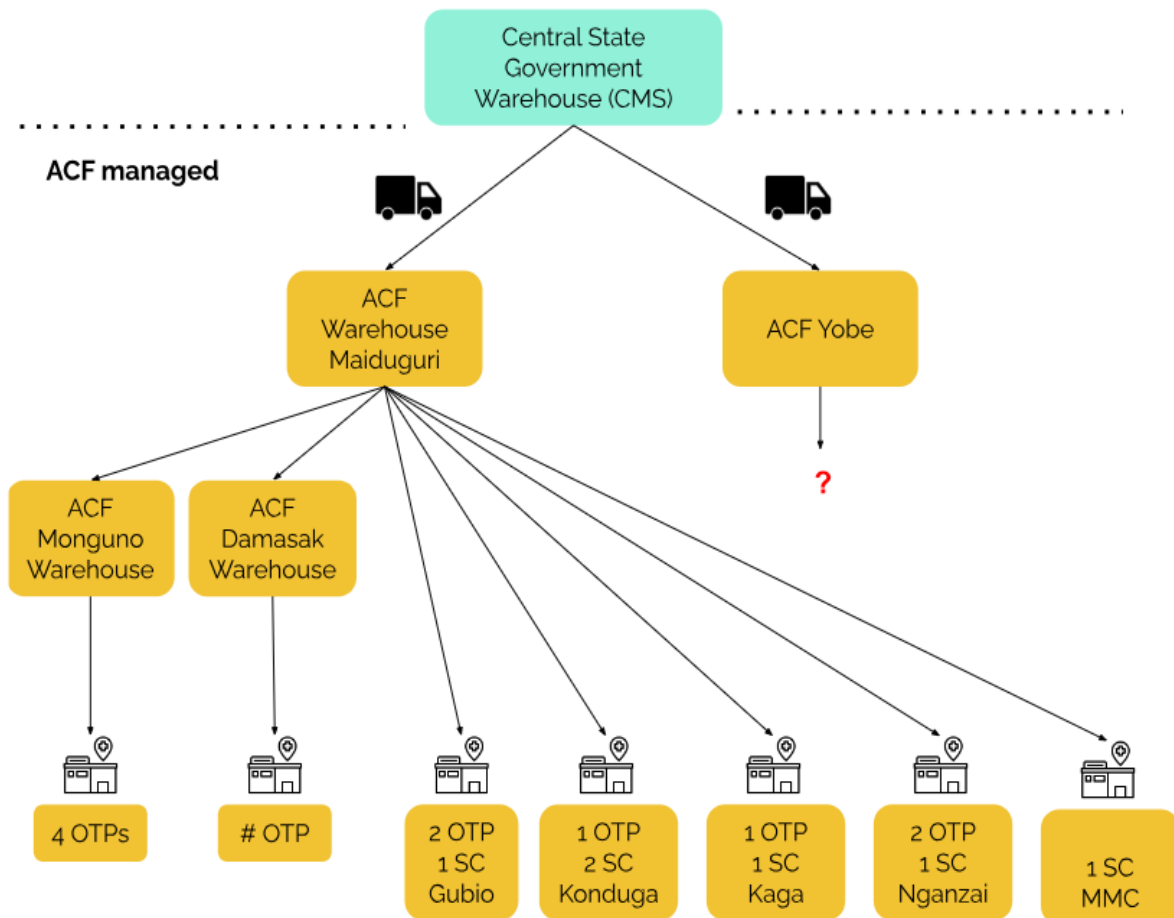
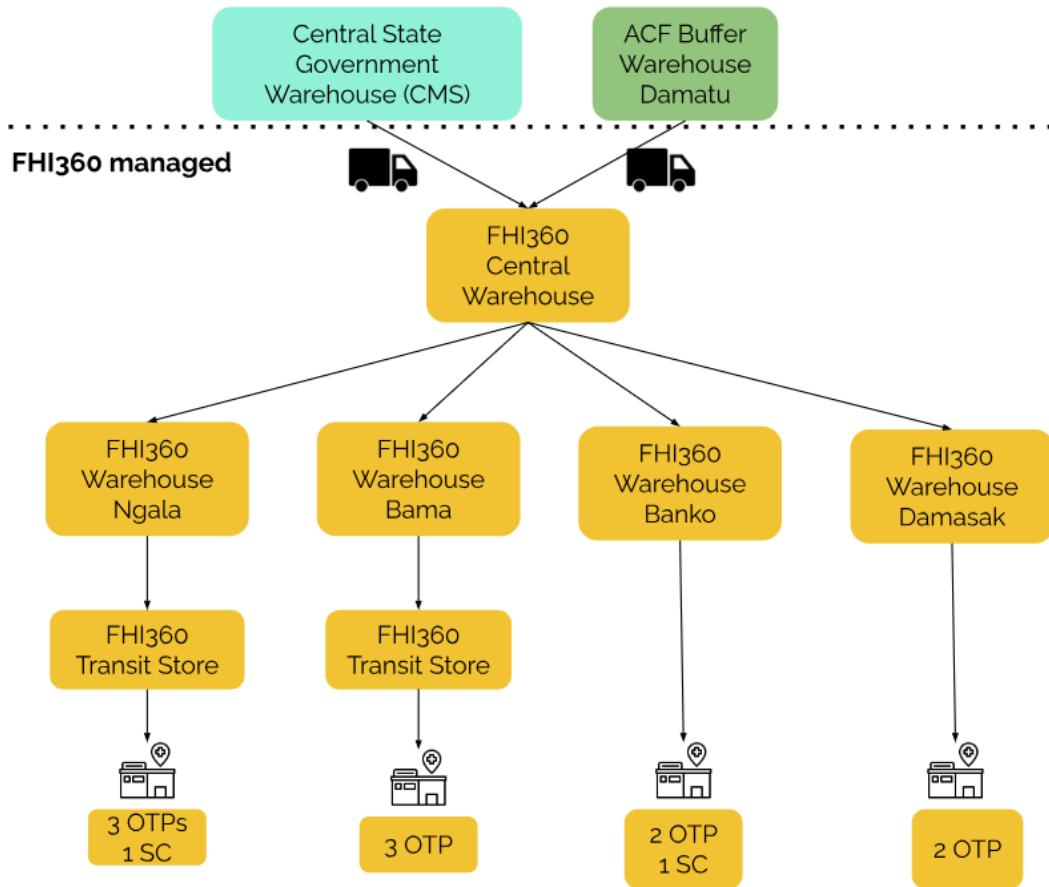


Figure A6.2 Typical pathway for transportation and warehousing managed by the implementing partners

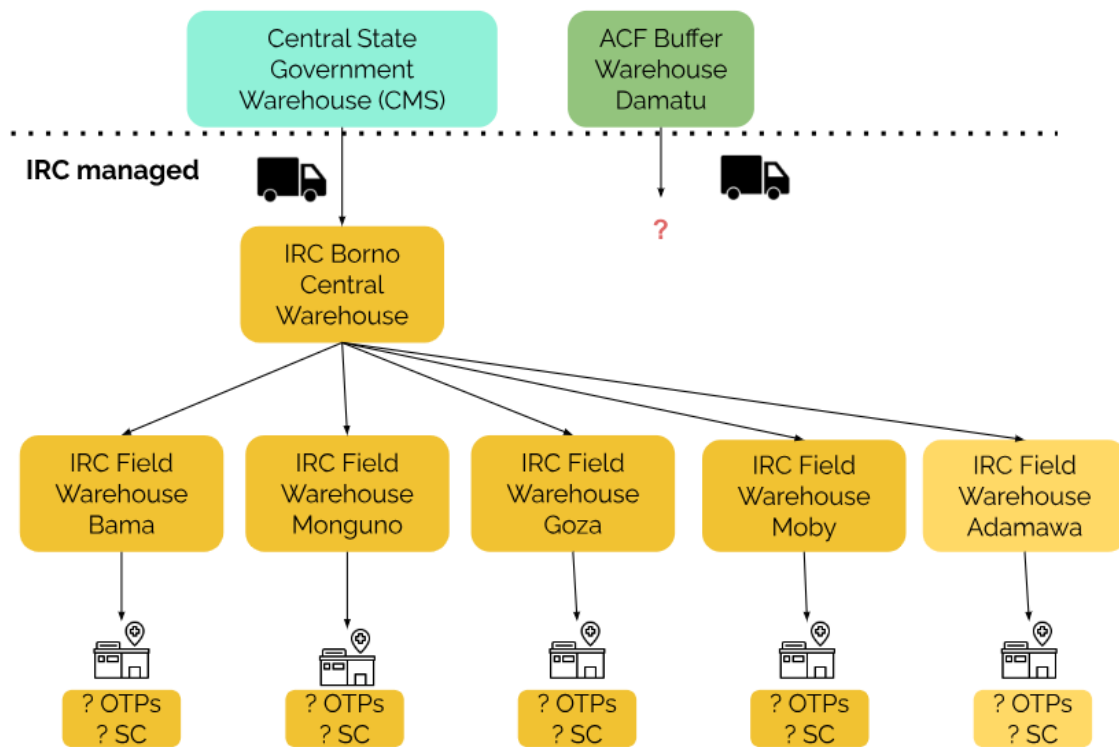
a) ACF



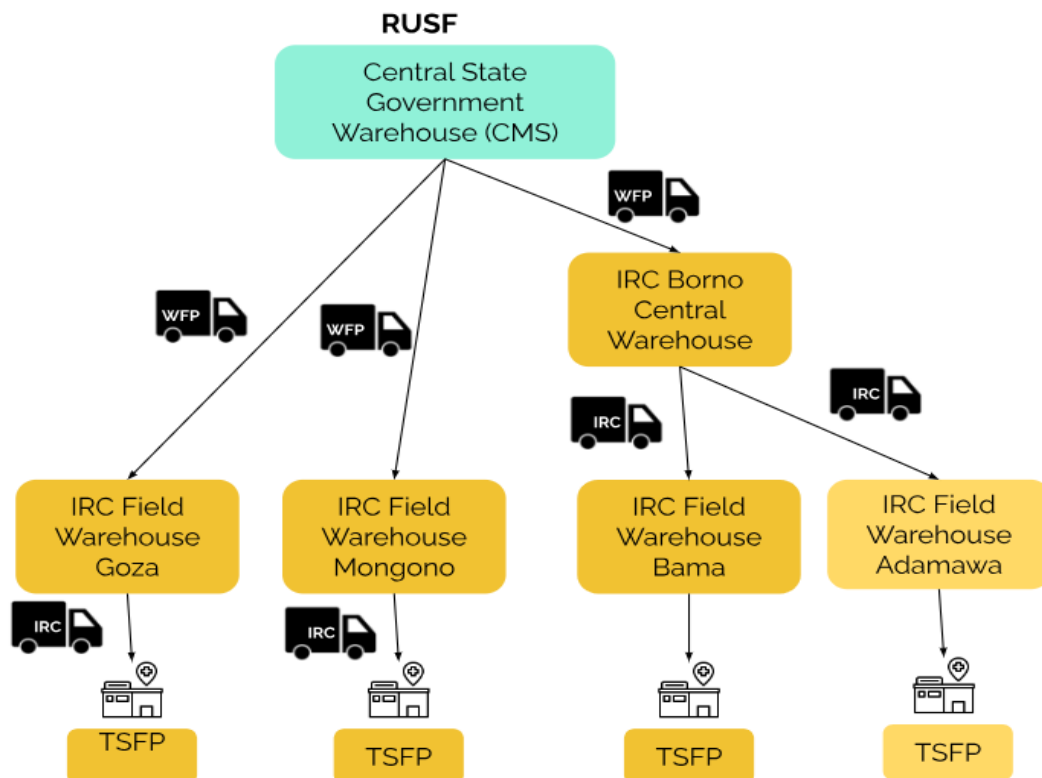
b) FHI360



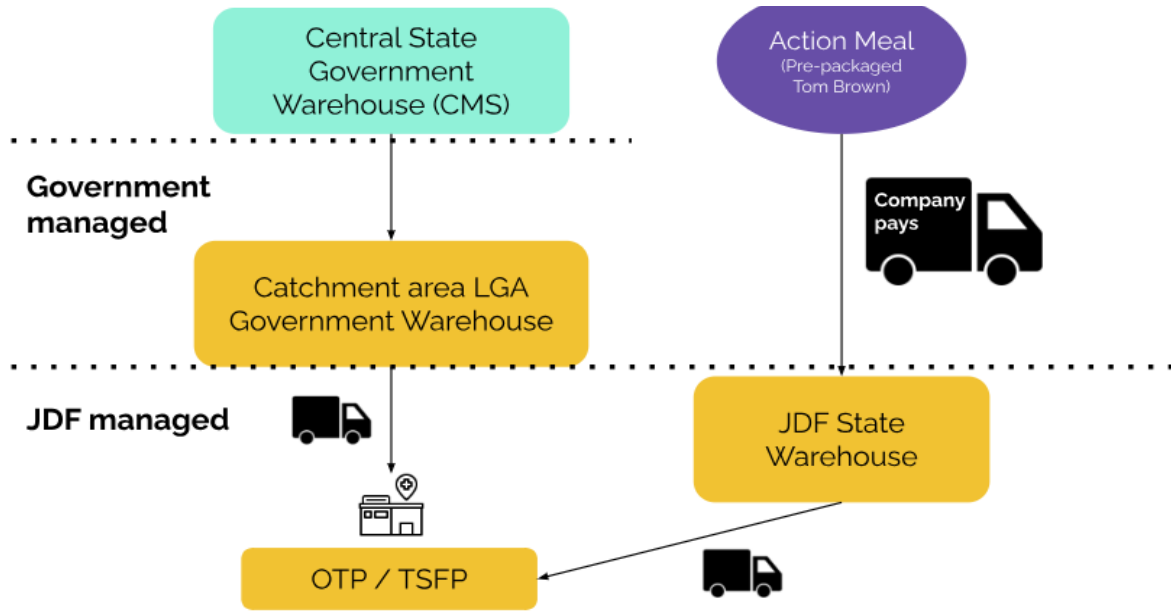
d1) IRC (OTP & SC supplies)



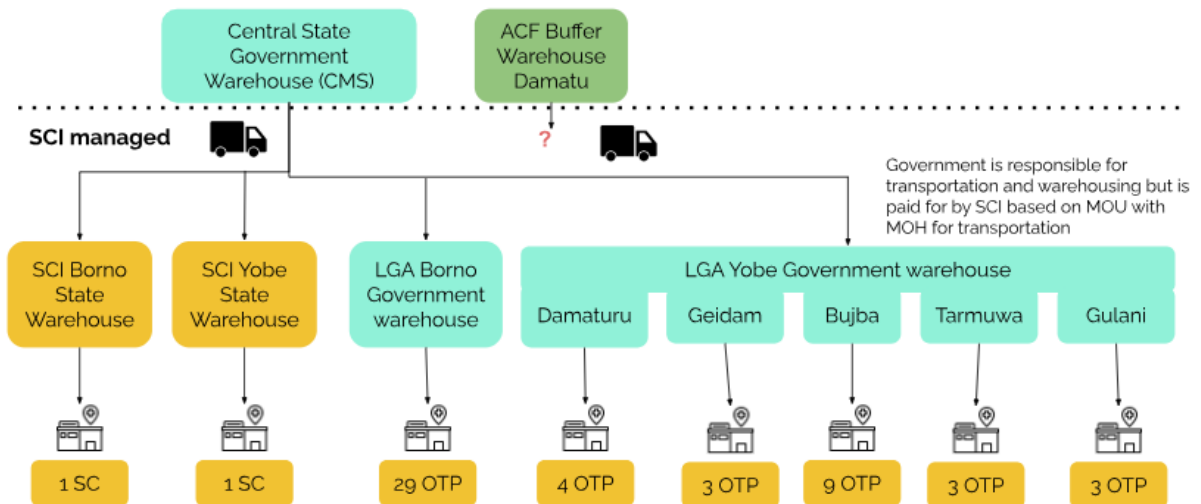
d2) IRC RUSF



e) JDF



f) SCI



Annex 5 Detailed Cost Analysis Tables from Sampled Implementing Partners

IMAM cost category	Cost (USD)	Proportion of total	Measured minimum cost/BNF admitted	Projected lower quartile cost/BNF admitted	Projected midpoint cost/BNF admitted	Projected upper quartile cost/BNF admitted	Projected maximum cost/BNF admitted
Personnel - Management	\$ 1,366,518	7%	\$ 5.99	\$ 7.78	\$ 9.58	\$ 11.37	\$ 13.17
Personnel - Community outreach	\$ 395,724	2%	\$ 1.73	\$ 10.27	\$ 10.27	\$ 14.53	\$ 18.80
Personnel - Technical / medical	\$ 2,404,389	13%	\$ 10.54	\$ 20.73	\$ 20.73	\$ 25.83	\$ 30.93
Therapeutic & supplementary foods	\$ 8,432,680	45%	\$ 36.97	\$ 39.00	\$ 41.04	\$ 43.08	\$ 45.11
Supply chain	\$ 1,853,851	10%	\$ 8.13	\$ 9.25	\$ 10.37	\$ 11.49	\$ 12.62
Clinic supplies & operations	\$ 3,844,414	21%	\$ 16.85	\$ 774.75	\$ 132.64	\$ 190.54	\$ 248.43
Training	\$ 271,761	1%	\$ 1.19	\$ 1.34	\$ 1.49	\$ 1.64	\$ 1.79
TOTAL	\$18,569,337	100%	\$ 81.41	\$ 153.76	\$ 226.12	\$ 298.48	\$ 370.84

SC cost category	Cost (USD)	Proportion of total	Measured minimum cost/BNF admitted	Projected lower quartile cost/BNF admitted	Projected midpoint cost/BNF admitted	Projected upper quartile cost/BNF admitted	Projected maximum cost/BNF admitted
Personnel - Management	\$ 81,311	4%	\$ 5.99	\$ 7.78	\$ 9.58	\$ 11.37	\$ 13.17
Personnel - Community outreach	\$ 23,546	1%	\$ 1.73	\$ 6.00	\$ 10.27	\$ 14.53	\$ 18.80
Personnel - Technical / medical	\$ 1,199,570	60%	\$ 88.38	\$ 117.68	\$ 139.26	\$ 160.85	\$ 182.43
Therapeutic & supplementary foods	\$ 188,185	9%	\$ 13.86	\$ 15.54	\$ 17.23	\$ 18.91	\$ 20.59
Supply chain	\$ 29,972	1%	\$ 2.21	\$ 2.51	\$ 2.81	\$ 3.11	\$ 3.42
Clinic supplies & operations	\$ 475,580	24%	\$ 35.04	\$ 66.44	\$ 97.85	\$ 129.29	\$ 160.66
Training	\$ 16,170	1%	\$ 1.19	\$ 1.34	\$ 1.49	\$ 1.64	\$ 1.79
TOTAL	\$ 2,014,335	100%	\$ 148.41	\$ 203.52	\$ 258.64	\$313.76	\$ 368.88

OTP cost category	Cost (USD)	Proportion of total	Measured minimum cost/BNF admitted	Projected lower quartile cost/BNF admitted	Projected midpoint cost/BNF admitted	Projected upper quartile cost/BNF admitted	Projected maximum cost/BNF admitted
Personnel - Management	\$ 878,455	7%	\$ 5.99	\$ 7.78	\$ 9.58	\$ 11.37	\$ 13.17
Personnel - Community outreach	\$ 254,388	2%	\$ 1.73	\$ 6.00	\$ 10.27	\$ 14.53	\$ 18.80
Personnel - Technical / medical	\$ 812,778	7%	\$ 13.27	\$ 25.37	\$ 37.48	\$ 49.59	\$ 61.69
Therapeutic & supplementary foods	\$ 6,833,396	57%	\$ 46.60	\$ 48.58	\$ 50.57	\$ 52.55	\$ 54.53
Supply chain	\$ 1,499,073	13%	\$ 10.22	\$ 11.22	\$ 12.22	\$ 13.21	\$ 14.21
Clinic supplies & operations	\$ 1,485,335	12%	\$ 10.13	\$ 79.60	\$ 149.08	\$ 218.55	\$ 288.03
Training	\$ 174,699	1%	\$ 1.19	\$ 1.34	\$ 1.49	\$ 1.64	\$ 1.79
TOTAL	\$ 11,938,124	100%	\$ 81.41	\$ 166.12	\$ 250.83	\$ 335.54	\$ 420.25

SC/OTP weighted average (SAM) cost category	Cost (USD)	Proportion of total	Measured minimum cost/BNF admitted	Projected lower quartile cost/BNF admitted	Projected midpoint cost/BNF admitted	Projected upper quartile cost/BNF admitted	Projected maximum cost/BNF admitted
Personnel - Management	\$ 959,766	7%	\$ 5.99	\$ 7.78	\$ 9.58	\$ 11.37	\$ 13.17
Personnel - Community outreach	\$ 277,935	2%	\$ 1.73	\$ 6.00	\$ 10.27	\$ 14.53	\$ 18.80
Personnel - Technical / medical	\$ 2,012,348	14%	\$ 12.56	\$ 19.41	\$ 26.26	\$ 33.11	\$ 39.96
Therapeutic & supplementary foods	\$ 7,021,581	50%	\$ 43.83	\$ 45.78	\$ 47.74	\$ 49.70	\$ 51.66
Supply chain	\$ 1,529,045	11%	\$ 9.54	\$ 10.48	\$ 11.42	\$ 12.36	\$ 13.30
Clinic supplies & operations	\$ 1,960,915	14%	\$ 12.24	\$ 78.49	\$ 144.74	\$ 210.99	\$ 277.24
Training	\$ 190,870	1%	\$ 1.19	\$ 1.34	\$ 1.49	\$ 1.64	\$ 1.79
TOTAL	\$ 13,952,459	100%	\$ 87.09	\$ 169.29	\$ 251.49	\$ 333.70	\$ 415.90

TSFP (MAM) cost category	Cost (USD)	Proportion of total	Measured minimum cost/BNF admitted	Projected lower quartile cost/BNF admitted	Projected midpoint cost/BNF admitted	Projected upper quartile cost/BNF admitted	Projected maximum cost/BNF admitted
Personnel - Management	\$ 406,752	9%	\$ 5.99	\$ 7.78	\$ 9.58	\$ 11.37	\$ 13.17
Personnel - Community outreach	\$ 117,790	3%	\$ 1.73	\$ 6.00	\$ 10.27	\$ 14.53	\$ 18.80
Personnel - Technical / medical	\$ 392,041	8%	\$ 5.77	\$ 6.74	\$ 7.70	\$ 8.66	\$ 9.62
Therapeutic & supplementary foods	\$ 1,411,099	31%	\$ 20.78	\$ 23.01	\$ 25.23	\$ 27.45	\$ 29.68
Supply chain	\$ 324,806	7%	\$ 4.78	\$ 6.34	\$ 7.90	\$ 9.45	\$ 11.01
Clinic supplies & operations	\$ 1,883,499	41%	\$ 27.74	\$ 65.92	\$ 104.10	\$ 142.28	\$ 180.46
Training	\$ 80,891	2%	\$ 1.19	\$ 1.34	\$ 1.64	\$ 1.64	\$ 1.79
TOTAL	\$ 4,616,878	100%	\$ 68.00	\$ 117.13	\$ 166.26	\$ 215.39	\$ 264.52

SC & OTP	Estimated minimum cost	Projected lower quartile cost	Projected midpoint cost	Projected upper quartile cost	Projected maximum cost
Cost per admitted patient	\$ 229.82	\$ 369.65	\$ 509.47	\$ 649.30	\$ 789.13
Cost per successfully discharged patient	\$ 239.83	\$ 391.34	\$ 542.85	\$ 694.37	\$ 845.88

OTP & TSFP	Estimated minimum cost	Projected lower quartile cost	Projected midpoint cost	Projected upper quartile cost	Projected maximum cost
Cost per admitted patient	\$ 149.41	\$ 283.25	\$ 417.09	\$ 550.93	\$ 684.77
Cost per successfully discharged patient	\$ 177.98	\$ 336.25	\$ 494.52	\$ 652.79	\$ 811.06

SC & OTP & TSFP	Estimated minimum cost	Projected lower quartile cost	Projected midpoint cost	Projected upper quartile cost	Projected maximum cost
Cost per admitted patient	\$ 297.82	\$ 486.77	\$ 675.73	\$ 864.69	\$ 1,053.65
Cost per successfully discharged patient	\$ 324.50	\$ 537.19	\$ 749.87	\$ 962.56	\$ 1,175.24