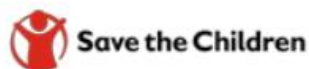


Integrated Evaluation Report of the WINNN Programme

Operations Research and Impact Evaluation

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Executive summary

This report integrates the findings of five years of research and evaluation conducted by ORIE on the WINNN programme¹. **The purpose of the report is to provide a high-level summary of WINNN's achievements during the period of the evaluation (2013–2016), as well as an overview of the key messages and recommendations that emerge from ORIE's research.**

This is done with reference to the Organisation for Economic Co-operation and Development/Development Assistance Committee (OECD/DAC) evaluation criteria (effectiveness, impact, sustainability, efficiency and relevance).

The WINNN programme

WINNN is an ambitious £52 million, six-year (2011–2017), DFID-funded programme to improve maternal and child nutrition in five states of northern Nigeria (Jigawa, Zamfara, Kebbi, Katsina and Yobe). WINNN was designed to support the piloting of a set of evidence-based nutrition-specific interventions (micro-nutrient supplementation, a community-based management of acute malnutrition (CMAM) programme, and infant and young child feeding (IYCF) interventions), and to support institutionalisation of the interventions within routine healthcare. This was expected to help raise the political profile of undernutrition and leverage government funding for nutrition. WINNN supported micro-nutrient supplementation at Maternal, Newborn, and Child Health Weeks (MNCHW events) across its five focal states, alongside government and other development partners (DPs). It was the only DP supporting the CMAM programme and the IYCF interventions in three focal Local Government Areas (LGAs) in each state. The WINNN-supported interventions were rolled out gradually, with support to MNCHW events the first to start in 2011 and IYCF interventions the last, in 2013. Roll-out was also staggered across the states.

ORIE's role

ORIE research was designed to improve WINNN programme implementation and influence Nigerian policy. This report draws on operations research, a mixed-methods impact evaluation, economic evaluation, and gender analysis. Baseline data for the impact evaluation were collected one year after WINNN started, and endline data were collected one year before the end of WINNN. Some changes may have occurred before the baseline and further changes are likely to have occurred after the final evaluation; **a resulting effect of this may be that the changes that occurred during the programme are underestimated.**

The context: Northern Nigeria

WINNN was implemented in a particularly challenging political, economic, social and physical environment. The burden of undernutrition is high in northern Nigeria. The health system is weak, under-resourced and understaffed, particularly in rural areas. The adverse fiscal situation in Nigeria since 2015, caused by the large drop in the price of oil, reduced the release of public funds for nutrition and triggered non-payment of health workers' salaries for much of 2015/16 in most WINNN states. Moreover, conservative norms and behaviours underpin resistance to change and many mothers lack autonomy in relation to child health.

¹ *Suggested citation:* Hansford, F., Visram, A., Jones, E., Ward, P. (2017), 'Integrated Evaluation Report of the WINNN Programme: Operations Research and Impact Evaluation', Oxford Policy Management, Oxford, UK

Key findings

Effectiveness

Mothers' attendance at MNCHW events and at IYCF counselling in the community increased significantly from baseline to endline in treatment LGAs, and WINNN helped counteract an overall drop in the proportion of children under five receiving Vitamin A in its focal LGAs. Coverage of key interventions – MNCHW event attendance, treatment of severe acute malnutrition (SAM) and community IYCF counselling – nevertheless remained low in treatment LGAs at endline. In the case of the CMAM programme and the IYCF interventions, the interventions were not expected to reach universal coverage in the focal LGAs. Coverage of the CMAM programme was also affected by the limited resources available to purchase ready-to-use therapeutic food (RUTF). **WINNN's approach was gender-sensitive and WINNN made concerted efforts to reach harder-to-reach groups**. Uptake of some interventions was nevertheless lower among mothers from the poorest households, mothers with no education, and adolescent mothers.

There were significant improvements over time in government planning, coordination, and forecasting across the WINNN-supported interventions due to WINNN support. Some problems in the quality of services – in comparison with expected protocols and models – nevertheless remained. Some factors associated with quality were outside WINNN's control.

Impact

There were some significant improvements in mothers' IYCF knowledge and practices from baseline to endline in treatment LGAs. Some but not all of the increases were attributable to WINNN. There is also evidence that WINNN helped to change fathers' attitudes and knowledge positively around the use of nutrition services and recommended IYCF practices. The proportion of children appropriately fed (exclusively breastfed and with appropriate dietary diversity) nevertheless remained low at endline in treatment LGAs. This may have been because IYCF counselling was not intended to reach the whole LGA population, because some work on complementary feeding started later in the programme, and because some mothers faced barriers to behaviour change, including resistance from husbands and older women in their communities.

There were no significant changes in the anthropometric status of children under three years from baseline to endline in treatment LGAs, and the levels of child stunting, wasting and underweight remained very high. This may have been due to the lack of complementary nutrition-sensitive interventions in the same LGAs to address the multiple determinants of malnutrition, low coverage of the WINNN-supported interventions, and insufficient time for programme effects to be detected in the evaluation.

Sustainability

Political commitment to, and funding for, nutrition work increased significantly at federal, state and LGA level from baseline to endline, supported by WINNN advocacy. WINNN supported strong civil society, community and media engagement, which strengthened service uptake, accountability and sustainability. **Significant progress was made in strengthening government capacity** to implement the nutrition interventions. A coherent policy framework exists, coordination and planning are stronger, the interventions have largely been incorporated into routine primary health care (PHC), and there is clear local ownership.

While significant progress has been made, challenges remain. These revolve around **insufficient public funding in relation to the scale of the problem and the cost of scaling-up the**

interventions, as well as the inadequate human resources in the primary healthcare system. There are also challenges around sustaining and motivating community volunteers (CVs). These challenges bring into question government capacity to fully institutionalise the interventions and sustain them in the long term.

Efficiency

The WINNN programme cost US\$ 52.3 million (£33.5 million) in Years 1–5. The CMAM programme received the largest portion of total expenditure by intervention (42%), largely due to the cost of RUTF, given the high burden of SAM and the high demand for treatment. Human resources have been the largest single cost category in the WINNN programme. **The cost structure for government is likely to be quite different. The human resource costs may be lower but significant investments in infrastructure and equipment, as well as in hiring and training more health workers and CVs, are likely to be important in order to deliver the services at adequate coverage and scale.**

The estimated costs per beneficiary of treatment at CMAM facilities and IYCF counselling compare favourably with estimates in similar programmes and in the National Strategic Plan of Action for Nutrition (NSPAN). **The WINNN-supported CMAM and IYCF interventions were found to be very cost-effective** relative to the World Health Organization's (WHO) CHOICE threshold for health interventions. The costs per disability-affected life year (DALY) averted and life saved were lower for the IYCF interventions than the CMAM programme. This is to be expected, as preventative interventions usually represent better value for money (VfM). Treatment at CMAM facilities is nevertheless necessary to address a large disease burden and reduce child mortality.

Relevance and alignment

WINNN's work was appropriately aligned with national and state-level strategy and institutions. It supported the integration of nutrition interventions into the government PHC system and built government capacity for implementation and coordination. It also supported the integration of nutrition work into health policy and wider national initiatives.

WINNN supported the implementation of a set of evidence-based nutrition-specific interventions designed to directly address the immediate determinants of child malnutrition (diet and disease) in northern Nigeria. Some of the principle design assumptions underlying the programme's theory of change (TOC) proved valid: health system capacity improved and nutrition interventions were largely integrated into the PHC system. The lack of complementary nutrition-sensitive interventions implemented alongside WINNN in its focal LGAs, which it was assumed would be in place in the programme design, meant that WINNN's achievements did not translate into the expected improvements in anthropometric indicators among children under three years at LGA level.

Recommendations

For DFID, DPs and donors working to improve nutrition in northern Nigeria and similar contexts

1. **Implement nutrition-sensitive interventions alongside nutrition-specific interventions** in order to address the underlying causes of child malnutrition. Create a common and flexible evaluation framework to allow for evaluation of the combined effects of nutrition-specific and nutrition-sensitive interventions.

2. **Use population-based coverage data as a core component of programme monitoring**, in order to understand the population coverage of interventions.

For the Nigerian government

3. **Increase public financing for nutrition interventions in order to tackle the huge burden of malnutrition in northern Nigeria.** Donor funding should not supplant government responsibility to fund nutrition interventions in the long term.
4. **Invest more in the design and implementation of multi-sectoral nutrition-sensitive interventions** in order to tackle the underlying causes of child malnutrition.
5. **Seek intermediary solutions to increase human resources for health** in order to sustain and scale up nutrition services with appropriate coverage and quality.
6. **Inaugurate the National Council on Nutrition**, in order to enhance inter-sectoral coordination and strengthen federal coordination of nutrition work in the states.

For implementers and funders of future nutrition programmes in northern Nigeria (Nigerian government, DFID, DPs, international Non-governmental Organisations (INGOs) and Civil Society Organisations (CSOs))

Micro-nutrient supplementation

7. **Explore ways to increase attendance at MNCHW events.** Build on and extend WINNN's social mobilisation strategies. Seek cost-effective ways to take MNCHW event services to more remote communities.
8. **Continue to explore other strategies to control micro-nutrient deficiencies, including Vitamin A supplementation among children.** These may include door-to-door services, food fortification and micro-nutrient powders for home use.

The CMAM programme

9. **Continue advocacy demonstrating the effectiveness and cost-effectiveness of the CMAM programme** to order to increase public funding to scale up treatment of SAM.
10. **Consider testing alternative ways of treating children with SAM, at least in the short term.** This might include integration of treatment into routine services, monthly rather than weekly visits to an outpatient therapeutic programme (OTP) site, and early detection and treatment of moderate acute malnutrition (MAM).
11. **Alternatively, if resources are available for a fuller community-based model, as the CMAM programme is intended to be,** strengthen active case-finding and defaulter tracking.
12. **Explore if the costs of locally produced RUTF can be reduced** to below the current costs of imported RUTF in order to reduce the cost of the CMAM programme.
13. **Training on CMAM-related activities should be integrated into the standard health curriculum for all health workers** if the CMAM programme is to be fully integrated into routine PHC provision.

IYCF interventions

14. **Continue advocacy demonstrating the importance and cost-effectiveness of IYCF counselling** to order to increase public funding to scale up the service.
15. **Continue to strengthen the behaviour change focus in IYCF counselling** by working with small groups of mothers with similar characteristics (maternal age, stage of child feeding, etc.). Continue to test ways to support mothers to adopt exclusive breastfeeding (EBF) and improve complementary feeding. Target relevant information at mothers, fathers and older women, all of whom play a role in child feeding.
16. **Find ways to further improve the reach and quality of community IYCF counselling.** Assess the effectiveness of the 'Care Group' model and of support groups for adolescent mothers. Continue to strengthen support groups for fathers. Develop separate spaces to work with grandmothers.

All nutrition interventions

17. Continue to test ways to **improve** access to nutrition interventions among **harder-to-reach women and adolescent girls**.

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List of abbreviations

ANC	Antenatal care
c-IYCF	Community-based infant and young child feeding
CBO	Community-based organisation
CEA	Cost-effectiveness analysis
CIFF	Children's Investment Fund Foundation
CMAM	Community-based Management of Acute Malnutrition
CSO	Civil society organisation
CV	Community volunteer
DAC	Development Assistance Committee
DALY	Disability-Affected Life Year
DFID	Department for International Development
DP	Development partner
EBF	Exclusive breastfeeding
f-IYCF	Facility-based infant and young child feeding
FMoH	Federal Ministry of Health
GDP	Gross Domestic Product
HFS	Health Facility Survey
ICER	Incremental Cost-Effectiveness Ratio
IMF	International Monetary Fund
INGO	International non-governmental organisation
IPDs	Immunisation Plus Days
IYCF	Infant and Young Child Feeding
LGA	Local Government Area
LiST	Lives Saved Tool
LNO	Local Nutrition Officer
LTA	Local Technical Assistant
MAM	Moderate acute malnutrition
MBNP	Ministry of Budget and National Planning

MICS	Multiple Indicator Cluster Survey
MNCHW	Maternal, Newborn and Child Health Week
MUAC	Mid-upper arm circumference
NCFN	National Committee on Food and Nutrition
NNHS	National Nutrition and Health Survey
NPFN	National Policy for Food and Nutrition
NSPAN	National Strategic Plan of Action for Nutrition
OECD	Organisation for Economic Co-operation and Development
OPM	Oxford Policy Management
ORIE	Operations research and impact evaluation
ORS	Oral rehydration salts
OTP	Outpatient therapeutic programme
PHC	Primary health care
PNC	Post-natal care
RUTF	Ready-to-use therapeutic food
SAM	Severe acute malnutrition
SC	Stabilisation care
SCFN	State Committee on Food and Nutrition
SHAWN	Sanitation, Hygiene and Water in Nigeria
SNO	State Nutrition Officer
SOML	Saving One Million Lives
SQUEAC	Semi-Quantitative Evaluation of Access and Coverage
TOC	Theory of change
UNICEF	United Nations Children's Fund
VFM	Value for Money
WDC	Ward Development Committee
WHO	World Health Organization
WINNN	Working to Improve Nutrition in Northern Nigeria

Introduction

This report integrates the findings of five years of research and evaluation conducted by ORIE on the WINNN programme. **The purpose of the report is to provide a high-level summary of WINNN's achievements during the period of the evaluation (2013–2016) and an overview of the key messages and recommendations that emerge from ORIE's research.** This is done with reference to the OECD/DAC evaluation criteria (effectiveness, impact, sustainability, efficiency and relevance) as outlined in the framework in Annex A. The framework identifies a high-level evaluation question, and a set of sub-questions, for each DAC criterion. The framework distinguishes between primary and additional questions. Primary questions are those that ORIE was designed to answer and can provide a complete assessment. Additional questions are those that ORIE was not specifically designed to answer but where it nevertheless has some useful learning to offer. The evidence against the additional questions is less complete. The sources of evidence used to answer each question are also identified in the framework.

The report is organised around the OECD/DAC criteria, with each section presenting evidence, a discussion and key messages, against each of the high-level evaluation questions. The report closes with a set of recommendations for future nutrition programming in northern Nigeria.

The WINNN programme

WINNN is an ambitious £52 million, six-year, DFID-funded programme (2011–2017) to improve maternal, newborn and child nutrition in five states of northern Nigeria (Jigawa, Zamfara, Kebbi, Katsina and Yobe). WINNN was designed to support the piloting of a set of evidence-based, cost-effective nutrition-specific interventions through government systems in its five focal states. These interventions are: micro-nutrient supplementation, the CMAM programme and IYCF counselling. WINNN was designed to achieve this by building government systems and capacity for implementation, and ultimately by supporting institutionalisation of the interventions within routine healthcare systems. This was expected to help raise the political profile of undernutrition in Nigeria and leverage government to coordinate and fund nutrition programmes. WINNN supported micro-nutrient supplementation at MNCHW events² and worked to build political commitment across its five focal states. It supported CMAM-related services and IYCF-related services in three LGAs in each state. These LGAs are identified as 'focal' or 'treatment' LGAs in this report. CMAM-related and IYCF-related services were set up as demonstration sites and were not intended to reach universal coverage in the focal LGAs. Further information on WINNN, including the geographical coverage of each intervention, is found in Annex B.

Note that the IYCF interventions consist of two component parts: one at the facility level- the f-IYCF component and one at the community level-the c-IYCF component. Similarly, the CMAM programme also consists of two component parts: the treatment received at OTP facilities and treatment received at SC facilities. Throughout this report, the narrative refers to both the interventions as a whole or to its component parts as appropriate.

The WINNN-supported interventions were rolled out gradually, with micro-nutrient supplementation at MNCHW events the first to start in 2011 and the IYCF interventions the last, in 2013 (see Annex C). This needs to be considered when assessing progress across the different interventions. Roll-out was also staggered across the states, with MNCHW events and the CMAM programme introduced in Zamfara and Jigawa states first. The ways in which this,

² These are nationwide bi-annual events provided at specified health facilities concerned with the delivery of micro-nutrient interventions to pregnant women and children under the age of five.

and other factors, differentially affected progress in the states is considered in the full evaluation reports but not in this report for the sake of brevity.

WINNN worked alongside government and other DPs³ on MNCHW events and in its governance work, including efforts to strengthen nutrition policy, political commitment, public funding and civil society engagement. **Progress in these areas cannot be attributed to WINNN alone.** WINNN was the only DP supporting the CMAM programme and IYCF counselling in its focal LGAs.

WINNN compiled its own monitoring data in order to report against its logframe targets, sometimes drawing on data reported by state governments. The logframe indicators and end of Year 5 targets and achievements are shown in Annex D. The data provided by WINNN have not been reviewed by ORIE. We show WINNN's achievements against its cumulative targets at the end of Year 5 of the programme to coincide with the date of the endline evaluation data collection. WINNN continued to be implemented after the completion of the evaluation and may have met or exceeded targets that it missed at the end of Year 5.

ORIE

ORIE outputs were designed to improve the delivery of nutrition services by integrating research and evaluation findings into WINNN programme implementation, and to influence Nigerian policy via the dissemination of research and evaluation evidence. ORIE worked in four of the five WINNN states; it did not work in Yobe for security reasons, although limited evidence was collected in Yobe for the endline qualitative evaluation. Further information on ORIE can be found in Annex B.

This report draws on four types of research produced by ORIE: operations research, a mixed-methods impact evaluation, economic evaluation, and gender analysis. ORIE used a quantitative approach to evaluate the impact of the two WINNN interventions concentrated in the focal LGAs (the CMAM programme and the IYCF interventions), assessing impact on the entire LGA population. It used a qualitative approach to evaluate the contribution made by WINNN to state- and national-level changes in the implementation of MNCHW events in the five states, and in governance aspects of nutrition. A full list of ORIE studies is found in Annex E. Studies used for this report are marked with an asterisk in Annex E. A brief description of ORIE studies and their limitations is detailed in Annex F.

Baseline data for the impact evaluation were collected in 2013, one year after the commencement of WINNN, as ORIE was contracted after WINNN. Endline data were collected in 2016, one year before the end of WINNN, to allow time for dissemination of findings before the closure of the WINNN programme. This means that some changes may have occurred before baseline data were collected (although coverage was very low at this point) and further changes are likely to have occurred after the final evaluation. An effect of this more limited timeframe may be an underestimation of the changes that occurred during the programme.

³ Other DPs with which WINNN collaborated included international private and public donors, international financial institutions, and UN agencies.

The context: Northern Nigeria

WINNN was implemented in a particularly challenging political, economic, social and physical environment. Some of the challenges of working in this environment are detailed in Box 1. The ways in which these hindered implementation are considered in section 1.4.

Box 1: Northern Nigeria is a particularly challenging environment when it comes to improving maternal and child nutrition⁴

- The healthcare system is weak, fragmented and severely under-resourced and understaffed, with primary healthcare the weakest area
- There was very limited political support and resource allocation for nutrition at the beginning of the programme
- Insecurity in Yobe diverted political attention away from social sectors, including health and nutrition, and created serious food shortages
- A severe fiscal crisis from 2015, caused by the falling price of oil, impacted the allocation and release of government funds for nutrition
- The fiscal crisis led to non-payment of health worker salaries, which affected their attendance at work and their motivation
- Conservative attitudes and behaviours underpin heavy resistance to change in some households and communities
- Many mothers lack autonomy and decision-making power in relation to child health and nutrition and health-seeking behaviour
- Extremely poor maternal healthcare and nutrition, and the high rate of adolescent pregnancy, have serious knock-on effects for infant and child development
- Environmental health (including water and sanitation) is extremely poor
- Formal education is low in northern Nigeria, and especially among women

How to read the tables in this report

Sections 1 and 2 contain tables with quantitative indicators. The data are from the final quantitative impact evaluation. These tables contain the following columns:

- **Indicator name.** The population groups referred to in these indicators are:
 - ‘Mothers’ are girls/women aged 15–49 years⁵ with at least one child aged 0–36 months old at the time of the survey.
 - Pregnant girls/women are also aged 15–49 years.
 - The age of the children included in each indicator is given in the table.
- **Baseline.** This is the estimate in treatment LGAs at baseline. Numbers are rounded to the next whole number.
- **Endline.** This is the estimate in treatment LGAs at endline. Numbers are rounded to the next whole number.
- **Positive trend?** This column indicates whether there was a positive trend on this indicator in treatment LGAs from baseline to endline. ‘Not applicable’ (n/a) means data were not collected at baseline or the definition of the indicator changed from baseline to endline. The level of statistical significance of the differences in the baseline and endline estimates is denoted by asterisks (* at 5% level, ** at 1% level, and *** at 0.1% level).

⁴ The following sources were used for information in this box: Nigeria Demographic and Health Survey 2013; ORIE Gender Synthesis Report (Year 3); Qualitative Evaluation of the WINNN Programme – summary report: Operations Research and Impact Evaluation

⁵ We use the word ‘women’ for this population group throughout the report, even though those under the age of 18 are girls not women.

- **WINNN impact?** This column indicates whether WINNN had an impact on this indicator in treatment LGAs relative to control LGAs according to a difference-in-difference estimate (the difference in change between treatment and control LGAs from baseline to endline; the methodology used is described in the quantitative impact evaluation final report). 'Not applicable' (n/a) means data were not collected at baseline or the definition of the indicator changed from baseline to endline. The level of statistical significance is denoted by asterisks as outlined above.

The sample sizes for the data in these tables can be found in the final quantitative impact evaluation report. The numbers of households, mothers, children and communities in the baseline and endline surveys in treatment and control areas are shown in Annex F.

1 Effectiveness: Has WINNN achieved the intended service coverage, quality and equity?

Key messages (Effectiveness)

1. **Mothers' attendance at MNCHW events and at IYCF counselling in the community increased significantly from baseline to endline in treatment LGAs.** WINNN helped counteract an overall drop in the proportion of children under five receiving Vitamin A in its focal states
2. **Coverage of key interventions** – MNCHW event attendance, treatment of SAM and community IYCF counselling – **nevertheless remained low in treatment LGAs at endline**
3. **There were significant improvements over time in government planning, coordination, forecasting and supervision across the WINNN-supported interventions.** Some problems in the quality of services, compared with expected protocols and models, nevertheless remained. Some factors associated with quality were outside WINNN's control
4. **WINNN's approach was gender-sensitive and WINNN made concerted efforts to access some harder-to-reach groups,** particularly adolescent mothers

1.1 What has been the coverage of WINNN-supported interventions among the target population (micro-nutrient supplementation, the CMAM programme and the IYCF interventions)? How does it compare with the intended coverage?

Summary of findings: *There were significant increases in the population covered in treatment LGAs on all indicators measured at baseline and endline, except Vitamin A supplementation among children, where WINNN successfully counteracted a negative trend. Increases in coverage, where they occurred, were largely attributable to WINNN's work in the treatment LGAs. Coverage at population level nevertheless remained low on all indicators. Low attendance at MNCHW events may be related to low use of health services generally in northern Nigeria. In the case of the CMAM programme and the IYCF interventions, these were demonstration services not intended to reach universal coverage in the target population.*

WINNN's monitoring data show that large numbers of women and children were reached by the WINNN-supported interventions and that the programme met or exceeded most of its logframe targets (see Annex D). With the exception of Vitamin A supplementation, WINNN's coverage targets were expressed in absolute numbers rather than as a proportion of the target population in its focal LGAs. **Because of uncertainties around population data, we cannot assess actual coverage, which is expressed as a proportion of the population in the evaluation, against intended coverage.**

Table 1: Proportion of mothers and children reached by MNCHW, CMAM and IYCF interventions in treatment LGAs

Indicator	Baseline	Endline	Positive trend?	WINNN impact?
MNCHW events				
Mothers who attended the last MNCHW event ¹	5%	15%	Yes***	Yes***
Children aged 6–35 months who received a Vitamin A drop in the last six months	38%	28%	No***	Yes***
CMAM programme				
Children aged 6–35 months with SAM who were ever taken to any health centre for treatment through the CMAM programme	n/a	18%	n/a	n/a
IYCF interventions				
Mothers who received IYCF counselling at the community or at a health facility ²	n/a	58%	n/a	n/a
Mothers who ever attended IYCF counselling in the community	8%	32%	Yes***	Yes***

Source: [Quantitative Impact Evaluation of the WINNN Programme – Volume 1: Operations Research and Impact Evaluation](#)

See note on how to read the table in the Introduction

Notes to table: 1: three states only (not Kebbi, where MNCHW events started later); at baseline this refers to attendance at the last MNCHW event; at endline it refers to attendance at any of the last two MNCHW events in Katsina and Zamfara, and the last MNCHW event in Jigawa; 2: at antenatal care (ANC) or post-natal care (PNC)

The data suggest that attendance at MNCHW events increased significantly in treatment LGAs from baseline to endline (from 5% to 15%) (Table 1). There were also significant increases in control LGAs, although the proportion remained lower at endline in the control LGAs (8%) than in the treatment LGAs. Increases across all LGAs were to be expected as WINNN worked to improve MNCHW event planning and implementation across its five focal states. WINNN provided additional support to MNCHW event social mobilisation in its focal LGAs, which may explain the larger increases in those LGAs.

MNCHW events are not a heavily branded campaign in northern Nigeria, and mothers responding to our survey may not always have known that they had attended such an event. This means we may underestimate attendance at the last MNCHW event.⁶ The proportion of children receiving Vitamin A in the six months prior to the survey may be a possible proxy for the level of MNCHW event attendance at endline, given that MNCHW events were the main source of distribution at endline. **This suggests that up to 28% of mothers may have attended the last MNCHW event⁷ (Table 1).** This was higher than in control LGAs (18%), and WINNN had a significant impact in treatment LGAs. This indicator nevertheless suggests that attendance overall remained low. WINNN and other DPs supporting MNCHW events have not yet found strategies to effectively overcome customary low usage of preventative health services in northern Nigeria.

WINNN data show that a large number of children received Vitamin A through WINNN-supported interventions (see Annex D). **The proportion of children receiving Vitamin A in the last six months in treatment LGAs nevertheless fell from 38% at baseline to 28% at endline (Table 1).** There was, however, a much larger drop in the proportion of children receiving Vitamin A in control areas (from 44% to 18%). Other surveys representative of northern Nigeria also indicate a

⁶ Sensitivity analyses showed that recall bias was not a problem.

⁷ It is also possible that someone other than the mother took a child to MNCHW event. This could account for some of the variance between mothers' attendance and children receiving Vitamin A.

drop in Vitamin A supplementation in recent years (NBS, UNICEF and UNFPA, 2013; NNHS 2014 and 2015). This may be due to the decline of Immunisation Plus Days (IPDs), at which Vitamin A was distributed house-to-house. WINNN helped counteract this effect in its focal LGAs, probably by increasing attendance at MNCHW events.

The WINNN-supported CMAM sites⁸ in the focal LGAs treated a large number of children with SAM (see Annex D). The large number of clients utilising CMAM-related services is contextualised by the high SAM burden, and was influenced by both WINNN-supported community sensitisation and the immediate and visible benefits of treatment at CMAM facilities. **Eighteen percent of children aged 6–35 months with SAM identified in the endline survey had been taken for treatment at CMAM facilities in focal LGAs at endline (Table 1).** This was low because the CMAM programme was piloted in a limited number of health facilities in each focal LGA, and the programme's budget for purchasing RUTF was limited. The services also treated some children resident outside the LGA, who are not captured in the survey data.

The proportion of mothers who received IYCF counselling, whether at a health facility or in the community, was significantly higher in treatment than control areas at endline (58% vs. 36%). There was a significant increase in the proportion of mothers who ever attended counselling in the community from baseline to endline in treatment LGAs (from 8% to 32% (Table 1)). The increase in treatment LGAs was attributable to WINNN (Table 1). While this represents good progress in a difficult context, coverage of IYCF counselling nevertheless remained relatively low at endline in the treatment LGAs. As with the CMAM programme, the WINNN-supported IYCF interventions were not intended to reach full coverage. Facility-based counselling was initially provided in five health facilities providing CMAM-related services, and some non-CMAM facilities, in each of its three focal LGAs. From late 2015, facility counselling was expanded to all facilities with ANC, and community counselling was provided in 10 communities in every ward, in the focal LGAs.

1.2 Have the WINNN-supported interventions been of an appropriate quality?

Summary of findings: *There were significant improvements over time in government planning, coordination, forecasting and supervision across the WINNN-supported interventions. There were also some problems with the quality of services compared to service protocols and models. There were stockouts of some government-supplied commodities in some facilities. Observance of national CMAM protocols was mixed, and there were long waiting times at OTP facilities on CMAM days. IYCF counselling at busy facilities was often brief and lacking in depth. Support groups for IYCF counselling in the community were not always implemented according to the intended model. These problems were due to inadequate staffing in health facilities, among other factors. Some of these factors were outside WINNN's control. WINNN instigated refresher training for health workers and CVs to improve service quality.*

ORIE research was not designed to assess the quality of the WINNN-supported interventions, but our data allow us to infer some aspects of quality. Below we examine the data on operational aspects of WINNN-supported interventions in relation to intended models, guidelines and protocols. WINNN's role was to support government to establish and implement these services, so some elements of quality were outside of WINNN's control.

⁸ WINNN supported a modified version of the CMAM programme given that community outreach (active detection of SAM) was limited. This is explained further in section 1.2.

Table 2: Proportion of pregnant women and children in treatment LGAs attending the last MNCHW event who received MNCHW event services at endline

Indicator	Endline
Proportion of mothers who went to the last MNCHW event¹ whose children received:	
Vitamin A drops	76%
Deworming pills	61%
Mid-upper arm circumference (MUAC) examination	45%
Proportion of pregnant women who went to the last MNCHW event¹ and received:	
Folic acid/iron folate	74%

Source: [Quantitative Impact Evaluation of the WINNN Programme – Volume 1: Operations Research and Impact Evaluation](#)

See note on how to read the table in the Introduction

Notes to the table: 1: this refers to attendance at any of the last two MNCHW events in Katsina and Zamfara, and the last MNCHW event in Jigawa (Kebbi is not included as MNCHW events had not started when baseline data were collected).

The qualitative evaluation identified significant improvements in MNCHW event planning, coordination and forecasting among government officials and health workers at endline compared to baseline (see section 3.3). It also identified a number of operational problems, such as late and uncertain release of government funds for MNCHW events in some states, stockouts of government-provided commodities in some facilities, and an inadequate number of health workers relative to the number of clients. **These factors may help to explain why not all pregnant women and children under five who attended the most recent MNCHW event in WINNN's focal LGAs received the expected supplements and services (see Table 2),** and why the proportion of children attending MNCHW events who received Vitamin A drops at endline fell from 93% at baseline to 76% at endline.

WINNN's data show that the recovery rate in WINNN-supported CMAM sites (children discharged with a MUAC measurement of over 12.5cm for two consecutive weeks) was above the international SPHERE standard of 75%⁹ (see Annex D). This indicates that the service was effective at treating children who were enrolled. The evaluation indicated that government coordination, planning, forecasting and supervision for CMAM-related services improved from baseline to endline (see section 3.3), but that observance of protocols was nevertheless mixed. The Health Facility Survey (HFS) found that temperature and appetite tests, hand-washing, and the distribution of amoxicillin on admission were not properly observed in many CMAM sites. The HFS attributed the problems to low staff–patient ratios at OTP facilities, the transfer of staff without training on CMAM-related services to OTP facilities, the use of casual staff, and shortages of some equipment, supplies and medicines at OTP facilities and stabilisation care (SC) facilities. They could also have been due to the reliance on CVs on CMAM days, since some evaluation informants indicated that CVs were not adequately prepared to undertake all tasks required. Refresher training provided by WINNN from 2015 onwards may have helped to improve observance of protocols since then.

Clients faced long waits on CMAM days due to the high demand for the service and inadequate staffing. The Semi-Quantitative Evaluation of Access and Coverage (SQUEAC) surveys for Katsina and Kebbi also indicated that limited community outreach on the CMAM programme may have contributed to the late presentation of SAM cases and increased default rates (Nzioka, 2016a; Nzioka, 2016b): active detection of SAM cases in communities (other than

⁹ See <http://www.sphereproject.org/>

through support groups) was not part of the CMAM model supported by WINNN due to the limited resources available for purchasing RUTF.

The qualitative evaluation found that IYCF counselling at health facilities and in communities underpinned changes in practices when delivered effectively. However, it also raised questions about the quality of IYCF counselling. In busy facilities in particular, the counselling was often very brief, provided to large groups of women, and sometimes lacked depth; in some instances, the benefits of adopting recommended practices were not explained.

WINNN expanded and strengthened counselling in communities via mothers' support groups in 2015/16. However, there were sometimes differences between the intended model and that implemented by CVs. In some communities, support groups were not convened on a regular basis, or the CVs found it difficult to maintain the same group of women. Furthermore, many groups included older women, which inhibited younger mothers from speaking. Qualitative research found that mothers who practised EBF were more likely to have received counselling in a health facility than in the community. This was largely due to the trust placed in advice given at health facilities. WINNN revised its Behaviour Change Strategy in early 2016 to improve implementation. This included a reduction in the number of mothers participating to the recommended 20 per group, targeting of groups for mothers at different stages in child feeding, and groups exclusively for adolescent mothers. WINNN also provided refresher training to CVs to shift their focus from awareness-raising to behaviour change counselling, and started to pilot a 'Care Group Model', in which 'mother leaders' visit households in their neighbourhood and promote dialogue and understanding around good IYCF practices among all household members. The supervision systems set up by WINNN helped to strengthen the implementation of the IYCF interventions, but the quality concerns identified above raise questions about the rigour of the supervision.

1.3 Has WINNN promoted equitable and gender-sensitive programming?

Summary of findings: *Mothers from the poorest households and from households furthest away from health facilities, adolescent mothers and mothers with no formal education were less likely to be reached by the WINNN-supported interventions, although WINNN sought ways to take services to some of these harder-to-reach groups. WINNN programming was gender-sensitive, and this helped to increase service uptake and behaviour change.*

WINNN's data suggest that the services the programme supported reached large numbers of women and children (see Annex D). Disaggregation of endline survey data in treatment LGAs suggests, however, that these services did not reach all kinds of households and mothers evenly. Attendance at the last MNCHW event was lowest among mothers from households in the lowest wealth quintile (9% vs 14% among households in other quintiles) and mothers with no formal education (12% vs 21% among mothers with some education). Attendance at community infant and young child feeding counselling (c-IYCF counselling) was also lowest among mothers from the poorest households (25% vs 34%) and mothers with no formal education (30% vs 40%). The differences were statistically significant at the 95% level.

Operations research on MNCHW events and the CMAM programme found that mothers from poorer households and/or in households further away from health facilities faced particular barriers in accessing facility-based nutrition services. These mothers were also likely to be among the least educated. For some mothers, a lack of cash to pay for transportation inhibited attendance at MNCHW events and CMAM days, whether due to poverty or their husbands' refusal to help with travel costs. This was particularly so for the repeated direct costs (travel and food, for

example) and/or opportunity costs (in forgone income) of going to a CMAM OTP or SC facility. The HFS found that 76% of clients at OTP facilities (on a particular day in August 2015) lived within a one-hour radius of the health facility, suggesting that families living further away from facilities with CMAM-related services were less likely to use the service.

Coverage of services was particularly low among adolescent mothers. Relative to the children of the oldest mothers (35 years and above), the children of these mothers were less likely to have received Vitamin A drops in the last six months (18% vs 33%), while their mothers were less likely to have ever attended c-IYCF counselling (23% vs 39%). These differences were significant at the 95% level. Our qualitative research found that the mobility of adolescents was particularly limited upon marriage, and that these mothers had particularly low autonomy around childcare and health-seeking behaviours relative to their husbands and mothers-in-law.

There were no discernible differences in attendance at the last MNCHW event or c-IYCF counselling, or distribution of Vitamin A drops, by sex of the child. This suggests there is no sex preference underlying caregivers' behaviour in relation to the use of nutrition services.

WINNN made concerted efforts to reach harder-to-reach groups over the course of the programme. In 2014, it started to support the government to set up fixed MNCHW event posts beyond health facilities, and in 2015 it introduced mobile teams to take MNCHW event services into more remote communities. Informants believed the mobile teams were important in increasing attendance in more remote areas at the most recent MNCHW events. WINNN also successfully encouraged Emirs in more distant communities in Zamfara to provide buses to transport mothers to CMAM days. However, the centralised nature of CMAM-related services, based in only a limited number of facilities, still inhibited uptake by households in distant communities. WINNN also attempted to reach out to adolescent mothers. In 2016, it started to promote IYCF support groups for adolescent mothers on their own, in order to create a safe space for them to learn without the presence of older women. Because this work started relatively recently, however, its effects may not have been captured in the endline evaluation.

WINNN also developed gender-sensitive strategies over the course of the programme as it sought ways to increase service uptake and behavioural change. These included engaging male community and religious leaders to promote and support nutrition interventions, developing gender-specific roles for female and male CVs, targeting messages about the importance of child nutrition directly at fathers, and setting up IYCF support groups for fathers. The evaluation recognised the importance of these strategies in changing attitudes among male leaders, increasing community acceptance of the nutrition interventions, reducing resistance to the use of services among some fathers, and enabling mothers to attend services and adopt recommended IYCF practices.

1.4 Which factors facilitated and hindered effective implementation of the WINNN-supported interventions?

Summary of findings: *WINNN's ability to support effective implementation of the nutrition interventions was hindered by a harsh sociocultural, economic and physical environment, political barriers, and a weak and severely under-resourced PHC system. It was facilitated by strong support from CSOs, CBOs, community members and the media, and by its own adaptive learning approach.*

A number of factors affected WINNN's ability to support the effective implementation of the nutrition interventions.

Factors which hindered effective implementation included:

A harsh sociocultural, economic and physical environment. Uptake of health services is extremely low in the northern states. The distance and costs involved in travelling to health facilities are barriers to service uptake, particularly in communities located far from a facility. Many poorer households lack the cash necessary to travel to health facilities and to buy appropriate foods for weaning children, or cannot afford the direct and opportunity costs associated with repeat visits to CMAM facilities. Conservative norms render culturally sensitive topics, such as family planning, adolescent marriage and pregnancy, and giving holy water to newborns, largely off-bounds. Fathers and grandmothers dominate decision-making around child health and nutrition in many households. Grandmothers tend to be the custodians of traditional infant feeding practices, while many men are resistant to women's use of services at health facilities. Younger mothers in particular lack autonomy in childcare decisions.

Political barriers. Political awareness and recognition of malnutrition were very low at baseline. Initial momentum in building political support stalled in the 2015 post-election period, with the President and governors in four WINNN states slow to make appointments. This created a vacuum in nutrition sector decision-making. Key nutrition stakeholders often lacked access to and influence over state governors, whose approval is needed for the release of nutrition funding. Low levels of funding for nutrition, compounded by the fiscal crisis from 2015 onwards, and the late release of funds in some states and LGAs, also compromised the quality of MNCHW events and CMAM-related services (see section 3.1 for more detail).

A weak and fragmented PHC system. The PHC system is severely under-resourced in northern Nigeria. Staffing was often found to be inadequate in the face of the large number of clients attending MNCHW events and CMAM days. High workloads and long waiting times had knock-on effects on the quality of services. This was compounded by low motivation and absenteeism among health workers due to the non-payment of salaries in 2015-2016. Coverage of the nutrition interventions was higher in the one WINNN state that was unaffected by non-payment of health workers. The HFS suggested that inadequate infrastructure, equipment and supplies at some CMAM centres prevented the correct observance of all national protocols.

Factors which facilitated effective implementation of nutrition services included:

Galvanised support of CSOs, CBOs and the media. WINNN's collaborative efforts with a range of DPs helped to mobilise the support of CSOs, CBOs and the media for nutrition sector advocacy. These actors played an important role in advocating to government, holding government to account, and overseeing and monitoring service delivery. Increased media coverage of nutrition increased awareness of the problem and the media played an important role in advocating for greater public funding in some states. The effect was greater in states where the media had greater independence (see section 3.2).

Strong community engagement. The involvement of male traditional and religious leaders strengthened community acceptance and uptake of nutrition services. Their direct communication with fathers was found to be effective at reducing the resistance of some fathers to the use of nutrition services. Weaker engagement by community leaders was identified in the qualitative evaluation as a key factor in communities where the uptake of IYCF counselling was lower. The high commitment of most CVs was fundamental to the development and delivery of the nutrition interventions. A high level of motivation among CVs was identified as a key factor in states where attendance at MNCHW events and community IYCF counselling, and knowledge of IYCF practices among mothers, were higher (see section 3.2).

An adaptive approach to programming. WINNN's strategies evolved over time in response to its own research and learning and to ORIE research findings. WINNN developed a sound appreciation of the political economy of nutrition, allowing it to target key political leaders and influence policy and funding. It developed a good understanding of cultural and gender dynamics, including household decision-making, and developed communications strategies and messages accordingly.

2 Impact: To what extent have the WINNN-supported interventions achieved the intended impact?

Key messages (Impact)

1. **There were some significant improvements in mothers' IYCF knowledge and practices (breastfeeding and complementary feeding)** from baseline to endline in treatment LGAs. Some but not all of the increases were attributable to WINNN
2. **There is qualitative evidence that WINNN strategies helped to change fathers' attitudes and knowledge positively** around the use of health and nutrition services and recommended IYCF practices
3. **The proportion of children appropriately fed (exclusive breastfeeding and dietary diversity) nevertheless remained low** at endline in treatment LGAs
4. **There were no significant changes in the anthropometric status of children under three years from baseline to endline in treatment LGAs.** This should not come as a surprise for a nutrition-specific intervention of short duration
5. **Evidence suggests that WINNN's activities resulted in two unintended positive outcomes** and one unintended negative outcome, which was related to inadequate staffing in the Nigerian health system

2.1 To what extent have the WINNN-supported interventions improved knowledge and practices among mothers/caregivers?

Summary of findings: *There were significant improvements in mothers' knowledge and practices regarding breastfeeding and complementary feeding from baseline to endline in the treatment LGAs. Some but not all of the improvements were attributable to WINNN's work in the treatment LGAs. Qualitative evidence also suggested positive changes in attitudes and knowledge among some fathers. The proportion of children appropriately fed nevertheless remained low at endline in treatment LGAs.*

There were significant increases in mothers' knowledge about breastfeeding from baseline to endline in treatment LGAs. Mothers' knowledge that only breastmilk should be given for the first six months increased from 37% to 45%, but the increase was not attributable to WINNN (Table 3). Mothers' knowledge that water should not be given to children under six months increased from 8% to 19%, and the increase was attributable to WINNN (Table 3). Knowledge that breastfeeding should start immediately or within one hour of birth was higher in treatment than control LGAs at endline (45% vs 31%), and the difference was statistically significant.

Table 3: IYCF knowledge and practices in treatment LGAs

Indicator	Baseline	Endline	Positive trend?	WINNN impact?
IYCF knowledge				
Proportion of mothers who knew that:				
Baby should receive only breastmilk for six months	37%	45%	Yes***	No
Water should not be given to children under six months	8%	19%	Yes***	Yes***
Baby should start breastfeeding immediately or within the first hour	n/a	45%	n/a	n/a
IYCF practices				
Early initiation (<24 hours) of breastfeeding (children 0–23 months)	64%	83%	Yes***	Yes**
Exclusive breastfeeding (children 0–5 months)	9%	20%	Yes***	No ²
Minimum dietary diversity ¹ (children 6–23 months)	15%	21%	Yes***	No

Source: [Quantitative Impact Evaluation of the WINNN Programme – Volume 1: Operations Research and Impact Evaluation](#)

See note on how to read the table in the Introduction

Notes to the table: 1: Children who receive food from four or more groups; 2: it is possible that this analysis was underpowered due to a small sample size.

IYCF practices also improved over time in the treatment LGAs. The proportion of children aged 0–23 months whose mothers started breastfeeding within 24 hours increased from 64% to 83%, and the increase was attributable to WINNN (Table 3). The proportion of children aged 0–5 months practising EBF increased from 9% to 20%, and the proportion of children with minimum dietary diversity (foods from four or more groups) increased from 15% to 21% (Table 3). There was, however, no statistically significant impact on EBF or dietary diversity in treatment areas relative to control areas that could be attributed to WINNN, although it is possible that the analysis on the EBF indicator was underpowered due to a small sample size. **Practices around early initiation were apparently easier to change than those around EBF.** Evidence from qualitative research suggested that this was helped by the realisation that early initiation promotes expulsion of the placenta.

The qualitative evaluation suggested that there were also positive changes in attitudes and knowledge among some fathers. After receiving information from a health worker at a health facility or a male CV or community leader at a mosque, market or other male space, some fathers were willing to support their wives to use the nutrition services and adopt recommended IYCF practices. In some cases they became advocates for change in the household, convincing older women (often their own mothers) of the benefits of recommended feeding practices.

These are important achievements given the difficult context in which WINNN was working (see Box 1 in the Introduction). **Nevertheless, overall the data presented here suggest that only a small proportion of children were appropriately fed at endline in the treatment LGAs** (about one-fifth, for both EBF and dietary diversity). This is despite evidence that IYCF counselling in facilities and communities was effective when delivered according to guidelines (see section 1.2).

There may be several reasons for this. **First, coverage of IYCF counselling was not intended to be universal** (see section 1.1). This means that the effects identified at LGA level in the evaluation

may have been diluted. **Second, WINNN stepped up its work on dietary diversity through food demonstrations in 2015.** This means there may have been insufficient time for the effects to take hold by the time the endline evaluation was conducted. **Third, qualitative research identified a number of barriers to the translation of knowledge into practice by mothers.** These included mothers' fears that their babies could dehydrate and die without water on a hot day, the resistance of husbands (particularly to EBF) and mothers-in-law (around infant feeding), and the inability to afford recommended foods for complementary feeding. The first of these may explain the apparent conflict related to breastfeeding knowledge (Table 3): while mothers understood the concept of EBF (giving only breastmilk for six months), they were unwilling to withhold water if they feared their babies may dehydrate or die.

2.2 To what extent have the WINNN-supported interventions improved the anthropometric status of children under three in target areas (prevalence of stunting, wasting and underweight)?

Summary of findings: *There were no statistically significant changes in the anthropometric status of children under three years from baseline to endline in the treatment LGAs, and the levels of child stunting, wasting and underweight remained very high. This may be due to the lack of complementary nutrition-sensitive interventions in the same LGAs, low coverage of the WINNN-supported interventions, insufficient time and contextual barriers.*

Table 4: Anthropometric status of children under three¹⁰ in treatment LGAs

Indicator	Baseline	Endline	Positive trend?	WINNN impact?
Proportion of children who are:				
Stunted (0–35 months)	52%	49%	No ¹	No
Wasted (6–35 months)	15%	18%	No	No
Underweight (0–35 months)	39%	39%	No	No

Source: [Quantitative Impact Evaluation of the WINNN Programme – Volume 1: Operations Research and Impact Evaluation](#)

See note on how to read the table in the Introduction

Notes to table: 1: As the difference from baseline to endline was not statistically significant, we see no positive trend on stunting.

There were no statistically significant changes in the anthropometric status of children under three years from baseline to endline in the treatment or control LGAs, and WINNN had no discernible impact on child anthropometric status. The levels of child stunting, wasting and underweight remained very high at endline (49%, 18% and 39% respectively in treatment LGAs) (see Table 4).

It should come as no surprise that the WINNN nutrition-specific intervention did not improve population-level child anthropometry in the three-year period measured. The determinants of malnutrition are complex and multidimensional. They include poverty, food insecurity, poor healthcare, poor water and sanitation, low levels of formal education, gender

¹⁰ Note that ORIE data are for children 0–35 months (6–35 months in the case of wasting) while the WINNN targets are for children 0–59 months. ORIE sampled children in this age bracket for two reasons: (1) children in this age group will have been fully exposed to the WINNN programme; and (2) we would expect the interventions to have the largest effect in the first 1,000 days of a child's life. Thus, the sampling strategy maximised the chances of detecting an impact on anthropometric indicators. As most surveys report anthropometrics for children aged 0–59 months, and most malnutrition occurs among children under two years, prevalence estimates are likely to be higher here than in surveys of children 0–59 months in northern Nigeria.

inequality, and conflict and insecurity (Teller and Alva, 2008). A recent systematic analysis of progress in reducing stunting and underweight in 141 developing countries concluded that **a combination of nutrition-specific and nutrition-sensitive interventions is generally required, particularly where coverage of nutrition-specific interventions is low** (Stevens *et al.*, 2012), as it was in the treatment LGAs (see section 1.1). This is particularly so in a challenging environment like northern Nigeria, where high levels of poverty and infectious disease, poor maternal healthcare and nutrition, poor environmental health, low levels of formal education, and conservative gender roles and norms all contribute to the high burden of malnutrition. Yet the WINNN programme was not accompanied by a suitable range of nutrition-sensitive interventions in its focal LGAs; this is discussed further in section 5.2.

Interventions to reduce malnutrition also require significant time. The WINNN interventions were rolled out over time from 2011, with some interventions implemented only from 2013 (see the diagram in Annex C). The endline evaluation was conducted in 2016. It is possible that full population coverage of the WINNN-supported interventions over a longer period would eventually have triggered a degree of improvement in child anthropometry.

2.3 Has WINNN resulted in any unintended positive or negative outcomes?

Summary of findings: *Evidence suggests that WINNN's activities resulted in two unintended positive outcomes (increased use of ANC services and increased child immunisation) and one unintended negative outcome (a reduction in the availability and/or quality of health services for patients at non-CMAM facilities on CMAM days).*

In terms of unintended positive outcomes, there is evidence to suggest that **WINNN's promotion of nutrition interventions through routine government health services may have increased the use of routine ANC services.** ANC attendance (defined as at least one visit during pregnancy) increased from 43% to 56% in treatment areas from baseline to endline, and the impact was attributable to WINNN. This increased attendance may have been because WINNN mobilised women to go to health facilities for MNCHW events and CMAM-related services, and because women were instructed on the benefits of ANC during community IYCF counselling. Respondents in the ORIE Operations Research study on the CMAM programme believed that the CMAM-related services brought people into the PHC system where they received other services, including immunisation, treatment for infections, and preventative/educational services (ANC, IYCF, HIV counselling and family planning).

There is also evidence of **significant increases in child immunisations in treatment and control LGAs from baseline to endline.** This includes BCG, measles, DPT/PENTA and polio (the vaccines necessary for full immunisation of children aged 12–35 months), although the increase in BCG vaccination was not statistically significant. Although increasing immunisation was not a primary objective of WINNN, and WINNN did not provide vaccines, the increases may have been due to increased attendance at MNCHW events across the states, which WINNN supported, as well as attendance at CMAM days in the case of the measles vaccine.

WINNN's interventions may also have generated one unintended negative effect. To cope with the large number of clients at OTP facilities on CMAM days, some governments instigated a system of staff transfers, bringing in health workers from other facilities. The HFS found that on average 28% of staff at OTP facilities on a CMAM day in August 2015 were from a different facility, rising to 75% in one state. This resulted in a reduction of services, or facility closure, on that day in the facilities 'lending' their staff, which may, in turn, have impacted the availability and/or quality of health services for other patients. The high number of clients at particularly busy OTP facilities also

meant that patients who came for other, non-CMAM-related services were sometimes turned away. The problem is indicative of a larger issue in the Nigerian health system, that of inadequate staffing, rather than a shortcoming in WINNN implementation.

3 Sustainability: Has WINNN contributed to the institutionalisation of nutrition work in its focal states?

Key messages (Sustainability)

1. **Political commitment to, and funding for, nutrition sector work increased significantly at federal, state and LGA level** from baseline to endline. WINNN advocacy supported this achievement
2. **WINNN has supported strong civil society, community and media engagement with nutrition work**, which supports service uptake, local accountability and the sustainability of the interventions
3. **Significant progress has been made in strengthening government capacity to implement and sustain the nutrition interventions**. A coherent policy framework exists, coordination and planning are stronger, the interventions have been incorporated into routine PHC, and there is clear local ownership
4. **While significant progress has been made, challenges remain**. These revolve around insufficient public funding and inadequate human resources for health, which present a challenge for full institutionalisation and sustainability

3.1 What contribution has WINNN made toward improving political commitment to nutrition? What strategies were used to influence political commitment?

Summary of findings: *Political commitment to, and public funding for, nutrition sector work increased significantly at federal, state and LGA level from baseline to endline. WINNN advocacy in collaboration with other DPs supported this achievement. Nutrition is nevertheless still largely perceived as a donor-funded issue, and public financing is so far greatly inadequate in relation to the scale of malnutrition and the level of funding needed to sustain the nutrition interventions at scale.*

The qualitative evaluation found good signs of growing political support for nutrition sector work among political leaders, legislators and key senior officials at federal and state level. WINNN contributed strongly to this achievement, working in close partnership with other DPs and with funds from several sources, including the Gates Foundation, the Children’s Investment Fund Foundation (CIFF) and the European Union. The increased commitment is evidenced by public fund allocation, statements recognising the importance of nutrition, growing leadership for nutrition work, and the approval of nutrition policies and plans. While the CMAM programme had received greatest attention at the time of the baseline, appreciation for the IYCF interventions as a cost-effective preventative approach had increased by endline.

Table 5: Public financing for nutrition at federal, state and LGA level (Nigerian Naira)

Indicator	National	Zamfara	Jigawa	Katsina	Kebbi	Yobe
Allocation to nutrition in state budget 2013	n/a	20 mil	100 mil	0	185 mil	0
Allocation to nutrition in state budget 2016	n/a	100 mil	135 mil	180 mil	100 mil	121 mil
Federal/state fund release for nutrition 2013	0	8.5 mil	11 mil	23 mil	185 mil	0
Federal/state fund release for nutrition 2016	31.8 mil*	26.4 mil	21 mil	49 mil	42 mil	21 mil
LGA monthly nutrition funding established	n/a	102,000	217,000	250,000	100,000	0

* The recorded federal budget allocation is for the WINNN focal ministries only (Ministry of Budget and National Planning (MBNP) and Federal Ministry of Health (FMoH))

Source: [Qualitative Evaluation of the WINNN Programme – summary report: Operations Research and Impact Evaluation](#)

Supported by WINNN advocacy, funded budget lines for nutrition had been established in all five states at endline. This is a notable achievement and contrasts with the limited public financing for nutrition seen at baseline. The allocation of state funds to nutrition and the release of funds for nutrition both increased from baseline to endline in four of the five WINNN focal states. The exception was Kebbi, where the allocation and release both fell, but the release remained among the highest.¹¹ The total released in all states except Kebbi increased from NGN¹² 42.4 million at baseline to NGN 117.4 million at endline (Table 5). Approved releases for CMAM-related services alone were threefold higher in the WINNN states than in several non-WINNN states¹³ for which data were available in 2016. Three states have also committed to scale up CMAM-related- and IYCF-related services, including leveraging funds for this.

LGA monthly funding for nutrition has been established in four states, and was consistently released in three states in 2016. Again, this achievement was supported directly by WINNN. At endline, the LGA nutrition funding ranged from NGN 100,000 to NGN 250,000 per month per WINNN LGA, with the exception of Yobe, where there was no LGA funding (Table 5). While these values are small relative to need, this was an improvement on baseline when there was no funding in any of the LGAs. State legislators have voiced commitments to develop legislation to institutionalise the LGA funding in all five states.

WINNN also supported progress with federal financing for nutrition. WINNN's focal ministries (FMoH and MBNP) released NGN 31.8 million for nutrition in 2016, up from baseline when no funds were released (Table 5). The federal government also integrated the cost of CMAM-related services into the basic costing for PHCs, under the 'One PHC per Ward' initiative. This helps to institutionalise and mainstream financing for the CMAM programme.

WINNN was expected to increase political commitment so that government would, after WINNN, commit sufficient funding for the scaled-up implementation of the nutrition interventions. It has made important contributions in this regard, particularly given the ongoing fiscal crisis and the challenges of the political transition in 2015. **The values released to date are, however, grossly inadequate in relation to the scale of maternal and child malnutrition in northern Nigeria and the estimated cost of addressing it.** The NSPAN (2014–2019) estimated a financing gap over five years of US\$786 million based on a full costing of 10 nutrition interventions and a fiscal space analysis of potential funding.¹⁴ In 2016, the 12 northern Nigerian states, where the majority of children with SAM live (NNHS, 2015), provided just over US\$1.5 million for CMAM-related services. This is clearly insufficient to tackle the problem of SAM at scale. WINNN spent on average US\$4.4 million a year in five WINNN states to treat a modest proportion of children with SAM in the WINNN LGAs, although services that are integrated into routine government systems should cost somewhat less than in the WINNN programme.

Due in part to the lack of adequate and consistent government funding, the evaluation concluded that it is 'not yet clear that political commitment is sufficient to lead the response to malnutrition in the future' ([Qualitative Evaluation of the WINNN Programme – summary report: Operations Research and Impact Evaluation](#)). Government officials raised concerns that government alone would not be able to fund the high costs of the CMAM programme, particularly the cost of RUTF, and the late release of public funds for MNCHW events has had knock-on effects on planning and the availability of commodities. Nutrition is still largely seen as a donor-funded issue, with the majority of funds coming from DPs. It may be necessary to continue to draw

¹¹ Higher allocations and releases in Kebbi were due to the purchase of RUTF by the earlier state administration.

¹² Budget information for Nigeria is presented in local currency (Naira) due to fluctuations in the exchange rate against the US dollar and British pound. Other financial information is presented in US\$ to facilitate comparison with other international studies.

¹³ Bauchi, Gombi, Kano and Sokoto.

¹⁴ Based on costing of a package of 10 nutrition interventions and an estimated increase in funding of US\$ 126 million from 2014 to 2017, in addition to the cost of sustaining the interventions at current levels of coverage (NSPAN, 2014:25).

on donor funding for some years, but this should not supplant government responsibility in the long term.

The evaluation identified a number of strategies used or supported by WINNN that helped to increase political commitment and funding. Direct, targeted advocacy by WINNN and CSOs (including use of data and photos, and taking political leaders to visit CMAM sites to evidence the severity of malnutrition) helped to raise the profile of nutrition. WINNN's engagement with senior civil servants helped to create an internal government platform for advocacy toward political leaders, and high-level engagement with state governors was critical for securing the allocation and release of nutrition funding. The development of costed nutrition plans with the state committees on food and nutrition (SCFNs) helped to demonstrate the intended use of funding. Increased media reporting on nutrition also helped to raise awareness and commitment among political leaders. Evidence from the WINNN-supported interventions also demonstrated what was possible and effective within a given level of resources.

3.2 What contribution has WINNN made to civil society and community support for nutrition work? How has this increased uptake of services and strengthened government commitment?

Summary of findings: *WINNN played an important role in increasing civil society, media and community support for nutrition work nationally and in the focal states. These actors have helped to increase uptake of nutrition services by sensitising communities, increasing community acceptance and resolving problems. They have helped to strengthen political commitment by supporting advocacy, creating oversight and holding government accountable to citizen feedback.*

The qualitative evaluation found that civil society engagement in nutrition work had expanded significantly at both national and state levels at endline. WINNN played an important role in the establishment of key platforms such as CS-SUNN and the Civil Society Alliance for Nutrition, successfully advocated for civil society inclusion in the National Committee on Food and Nutrition (NCFN) and some SCFNs, and supported increased media reporting on malnutrition in all five states. CSOs and the media have, in turn, played pivotal roles in national and state-level advocacy, approval of the National Policy for Food and Nutrition (NPFN) and the movement for its adoption in the states, and increased support for nutrition in the national legislature. Working with other DPs and funding sources, such as the Gates Foundation, CIFF and DFID's State Accountability and Voice Initiative, WINNN promoted CSO and media engagement by providing training and financial support, convening discussion forums, supporting the development of advocacy workplans, and supporting CSO dialogue with government.

Community engagement in the implementation of nutrition interventions also increased due to WINNN. Various community actors, including traditional and religious leaders, town announcers, and Ward Development Committee (WDC) members played important roles in social mobilisation for MNCHW events in WINNN's focal LGAs. Male community leaders also played an important role in increasing uptake of CMAM-related services, and showed their support for recommended IYCF practices. WDCs and other local organisations played an important role in the oversight of CMAM-related services and the collection of citizen feedback on MNCHW events and the CMAM-programme at town hall meetings. They also participated in regular monitoring visits to CMAM sites and mobilised community members to collaborate on amenities such as water, shade and latrines. WINNN helped to increase community engagement by identifying clear roles for community leaders and organisations, and involving them in programme decisions and frontline service delivery from early on.

WINNN's ability to engage CVs was essential to the delivery of all WINNN-supported interventions, particularly in the context of an understaffed health service. They assisted with social mobilisation for MNCHW events and CMAM-related services, and community sensitisation on the prevention and treatment of severe malnutrition, and delivered IYCF counselling in facilities and communities. After some early problems with attrition, especially among male CVs, most remained committed as the programme matured and their contributions were increasingly recognised in their communities. WINNN evolved strategies to attract and retain CVs, including involving them in service-level decisions, providing supportive training and supervision, and promoting recognition of their work in their communities. There are nevertheless concerns over sustaining motivation in the long term, given the lack of compensation and incentives in the face of direct and indirect costs (e.g. foregone income) borne by the CVs.

The effect of engaging multiple civil society and community actors was to increase uptake of services by sensitising communities on the importance of using nutrition services, increasing community acceptance of new interventions and helping with resolution of frontline problems. It also helped to strengthen political commitment, by supporting advocacy, creating oversight of the quality of services and holding government accountable to citizen feedback. **These effects should contribute to the long-term sustainability of the WINNN-supported interventions.**

3.3 To what extent has WINNN strengthened government capacity to implement and sustain the interventions over time?

Summary of findings: *Significant progress has been made in strengthening government capacity to implement and sustain the nutrition interventions. A coherent policy framework exists, and coordination and planning are stronger at federal and state levels and across the three interventions. There is clear local ownership among state and LGA officials, and the interventions have been incorporated into routine PHC. WINNN has made important contributions to this progress. Serious challenges nevertheless remain, with current levels of public funding and health facility staffing inadequate to sustain existing levels of service provision, let alone take them to scale, without WINNN support.*

DFID's central aim in funding the WINNN programme was to build government systems and capacity for the implementation of nutrition interventions and ultimately to institutionalise them within routine health care services. This was to be done by piloting the delivery of nutrition services within existing routine health services, while also strengthening coordination and planning mechanisms at national and state levels.

At endline there is a coherent policy framework at federal level, with the revised NPFN, the comprehensive and costed NSPAN and national guidelines for MNCHW events, the CMAM programme and the IYCF interventions all approved. At state level, where there were no nutrition policies or plans at baseline, all five states had developed five-year Nutrition Strategic Plans of Action by endline, with these approved in two states, and all five states had begun adoption of the NPFN. The qualitative evaluation noted that WINNN made a strong contribution to this achievement through direct technical inputs, advocacy and the engagement of CSOs.

National and state coordination mechanisms for nutrition work were notably stronger at endline than at baseline. The NCFN is now functional and has a budget line and the active participation of most government ministries. It played a key role in the approval of the NPFN and is actively monitoring and coordinating nutrition programmes across sectors. There are, however, still some capacity challenges at the NCFN, including insufficient staffing, and some evaluation informants questioned the NCFN's capacity to fully take charge of nutrition coordination. WINNN has contributed to the establishment or revitalisation of the SCFNs in all five states. In three states, the SCFNs now meet quarterly and have become a driving force for nutrition sector advocacy, and

there is a high sense of ownership by state officials. The state governments have not yet taken over funding of the SCFNs, however, which is a concern for sustainability. At LGA level, local committees on food and nutrition (LCFNs) so far exist only in Katsina and Zamfara, where they provide an institutional link into communities. The qualitative evaluation noted that WINNN played a key role in strengthening these coordination mechanisms, through advocacy, capacity-building and technical assistance.

Federal coordination and oversight of state-level work has strengthened since baseline, particularly in 2016. WINNN contributed to this achievement through capacity-building and support to key ministries. A key challenge for federal coordination with the states is the limited federal financing for such work, and DPs currently fill the gap through their work at all levels. The renewed push for a National Council on Nutrition would create a high-level platform for federal oversight of the nutrition sector. The approved NPFN provides for the establishment of the Council, and places the Vice President as its chair.

The qualitative evaluation observed improved planning and coordination across all three nutrition interventions. For MNCHW events, planning and coordination improved in four of the five states, and at LGA level. There were, however, still some problems with stockouts of key supplies. For the CMAM programme, planning and coordination were found to improve, with strong forecasting in two states. Forecasting skills were weaker in three states, alongside insecure LGA funding; WINNN was providing additional training at endline. WINNN has helped to institutionalise monthly state and LGA-level coordination meetings for the CMAM programme and the IYCF interventions, as well as community-level meetings for CVs focusing on the IYCF interventions. Evaluation informants felt confident that the states and LGAs mostly have the capacity to take over coordination of the interventions, although concerns remain around secure government financing for this.

Improved planning and coordination were underpinned by WINNN's activities to strengthen capacity within the health system. These included: comprehensive cascade training for LGA officials and for health workers; the establishment of comprehensive supervision systems, which helped to strengthen oversight, motivation and service quality; and real-time monitoring in the case of MNCHW events. The evaluation noted, though, that the quality of supervision had been variable, in part due to insufficient staffing and inadequate funds for transportation.

The qualitative evaluation found that the IYCF-related and CMAM-related services are now routinely provided within PHC services in the focal facilities, and MNCHW events are provided bi-annually in each focal state. It also found that state and LGA officials express clear ownership of the interventions and systems they implement, and that many health workers appreciate the need for nutrition interventions and their integration into routine PHC services. This is important in terms of the institutionalisation and future sustainability of the interventions. WINNN's contribution to building government ownership and capacity are particularly noteworthy given the challenges within the health system described in section 1.4, and particularly the serious shortage of health workers.

Despite significant progress in incorporating nutrition services into routine primary healthcare provision, serious concerns remain around government capacity to take the nutrition interventions to scale, or even to sustain them at their current level, without the support and resources WINNN has provided. Current levels of health facility staff are too low to meet the demand for MNCHW events, the CMAM programme and the IYCF interventions, and to assure quality, even at the current levels of coverage. Current levels of funding for nutrition – from government and donors combined – fall well below the estimated costs of delivering the nutrition services at scale.

4 Efficiency: Were WINNN-supported interventions cost-efficient and cost-effective?

Key messages (Costs, cost-efficiency and cost-effectiveness)

1. **WINNN human resources have been the largest single cost category in the WINNN programme.** The cost structure for government is likely to be quite different. Human resource costs may be lower, but significant investments in other areas are likely to be important in order to deliver the services at adequate coverage and scale
2. **The CMAM programme received the largest portion of total expenditure by intervention.** This was largely due to the cost of RUTF, given the high burden of SAM and high demand for treatment
3. **The estimated costs per beneficiary of treatment at CMAM facilities and IYCF counselling compare favourably** with estimates in similar programmes/the NSPAN
4. **The WINNN-supported CMAM and IYCF interventions were found to be very cost-effective** relative to the WHO-CHOICE threshold for health interventions

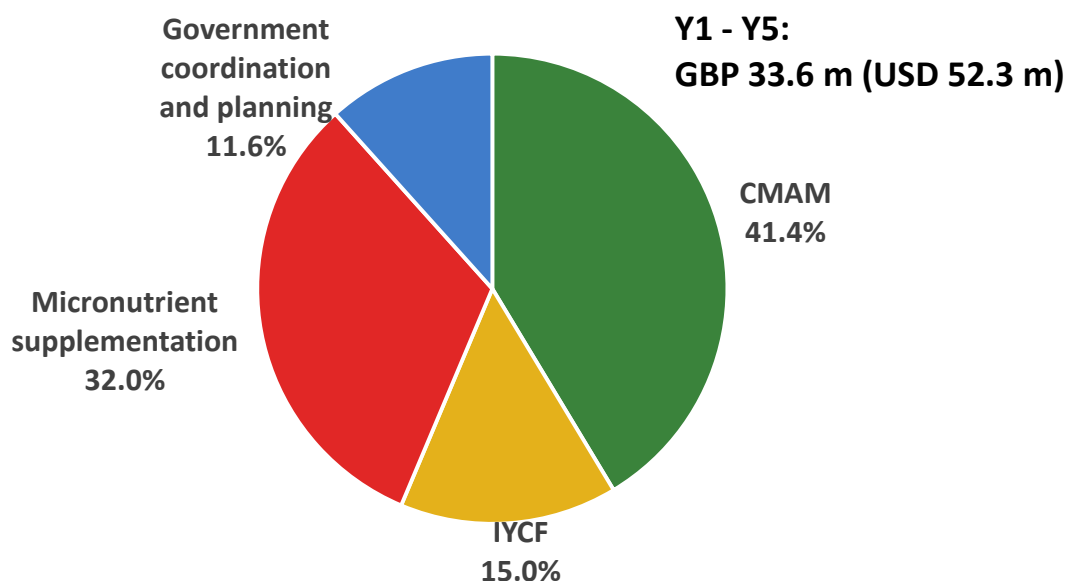
All analyses in this section cover costs during years 1 to 5 of the WINNN programme (September 2011–August 2016). Each estimate in these analyses is underpinned by a number of assumptions and information from many sources. These can be found in the original reports ([Full costing of the WINNN Programme: ORIE](#) for sections 4.1–4.3; [Cost Effectiveness of the WINNN Programme: ORIE](#) for section 4.4). Annex G presents further detail on the methodology and data sources used in the costing and economic evaluation studies.

The cost-efficiency and cost-effectiveness analyses take both a societal and a health services perspective. This means that the calculation of costs takes into account the non-reimbursed costs and opportunity costs incurred by CVs and the out-of-pocket and opportunity costs to households of accessing healthcare. These can represent a significant burden in developing countries and are important in a full economic analysis.

4.1 What were the costs and cost drivers of the WINNN-supported interventions?

Summary of findings: *The WINNN programme cost US\$52.3 million (£33.5 million) over five years. The CMAM intervention received the largest portion of expenditure overall and in every year except Year 5, followed by micro-nutrient supplementation, the IYCF interventions services and support to government planning and coordination. Human resources constituted the largest cost driver, followed by RUTF and F75/F100 therapeutic milk for the CMAM programme, and other medical commodities. The cost structure for government to fully take over and scale up these nutrition services is likely to be quite different, with some costs lower and other costs higher than in the WINNN programme.*

The total cost of the WINNN programme across years 1 to 5 was US\$52.3 million (£33.6 million). The CMAM programme received the largest portion of total expenditure (41%), followed by micro-nutrient supplementation (32%), the IYCF interventions (15%), and support to government planning and coordination (12%) (Figure 1). The relative expenditure on each intervention remained the same across all years with the exception of Year 5, when expenditure on micro-nutrient supplementation was higher than expenditure on the CMAM programme. This may have been due to varying timing of the procurement of commodities for each intervention (with bulk procurement inflating costs in a particular year), along with annual variations in contributions from the states and LGAs to micro-nutrient supplementation.

Figure 1: Total programme expenditure by WINNN intervention, 2011/12 to 2015/16

Source: [Full costing of the WINNN Programme: Operations Research and Impact Evaluation](#)

Of total expenditure, capital costs accounted for 5% and recurrent costs accounted for 95%. Capital expenditure included the cost of vehicles, medical equipment, computers, generators and furniture. The largest recurrent costs were human resources (33%) (79% of which were for WINNN staff, and staff shared with other programmes), RUTF and therapeutic milks (23%), other medicines (13%), and WINNN monitoring and evaluation (M&E) (10%).

In the micro-nutrient supplementation and CMAM interventions, commodities were the largest cost drivers (42% and 55% respectively of total expenditure in each). RUTF alone constituted 99% of the expenditure on commodities for the CMAM programme. The cost of human resources was the second largest driver in these interventions (26% and 25% respectively). **In the IYCF interventions and WINNN's work to strengthen government coordination and planning, human resources were the largest cost driver (52% and 57% respectively).** In the case of micro-nutrient supplementation and support for government coordination and planning, this expenditure represents the DFID-funded share of activities. WINNN also used funds from other sources for these components of its work (see section 3.1).

The cost structure for government to fully take over and scale up these nutrition services is likely to be quite different. For example, in the WINNN programme human resources have been the largest single cost driver. This is not surprising given that WINNN staff have worked intensively to set up or strengthen government systems, to build capacity to implement new services, and to create an enabling political and policy environment. Some of these costs will fall away, and some remaining costs will be lower to government (for example, government salaries compared with those of WINNN). On the other hand, government will need to invest more in infrastructure and equipment, as well as in hiring and training more health workers, in order to sustain the services that have been established and to extend the services into new LGAs with adequate coverage and quality. It may also need to provide some form of financial compensation to CVs in the long term in order to sustain a community-based workforce.

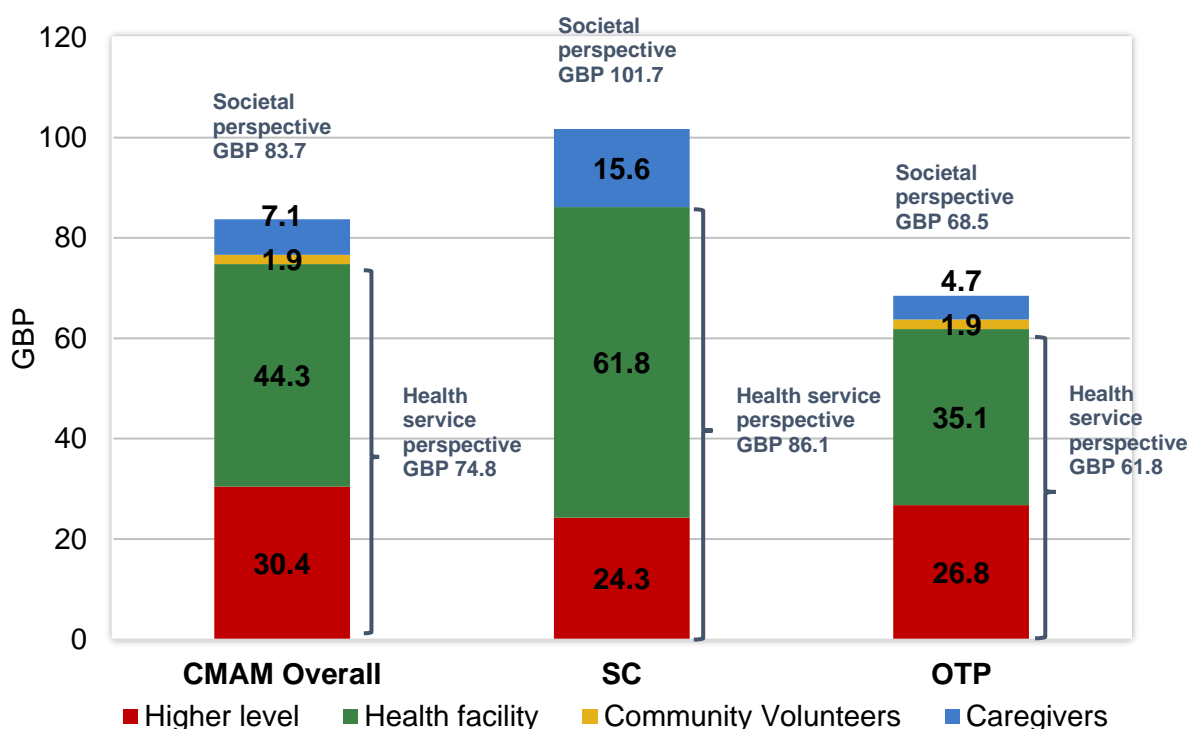
The CMAM intervention would likely continue to be the highest cost to government across the nutrition interventions, at least while the SAM burden remains high. This is to be expected, as curative services like the CMAM programme are usually more costly than preventative services such as micro-nutrient supplementation and IYCF counselling. The CMAM programme brings significant health and economic benefits, reducing mortality among SAM

children by about 10% compared to routine health services without therapeutic feeding.¹⁵ As was discussed in section 3.1, current government funding falls far short of the amount needed to treat the present burden of SAM.

4.2 What was the cost per SAM child treated in the WINNN-supported CMAM programme?

Summary of findings: The average overall cost of treating a child with SAM in the CMAM programme (OTP and SC components combined) was US\$117 (£75)¹⁶ from a health services perspective and US\$131 (£84) from a societal perspective. This compares well with an estimate of cost per child in another CMAM programme supported by the UN Children’s Fund (UNICEF) in northern Nigeria. RUTF is the largest cost driver. The societal perspective indicates that the cost of accessing treatment represents a significant financial burden for caregivers and may be prohibitive for the poorest households.

Figure 2: Cost per child treated in the CMAM facilities by type of service and cost centre



Source: [Full costing of the WINNN Programme: Operations Research and Impact Evaluation](#)

Notes to Figure: SC – stabilisation care; OTP - outpatient therapeutic programme

The average overall cost of treating a child with SAM in the CMAM programme (OTP and SC components combined) was US\$117 (£75) from a health services perspective and US\$131 (£84) from a societal perspective (Figure 2). This is based on the assumption that 15% of SAM cases were treated in SC facilities and then referred back to OTP facilities, while the remaining 85% of SAM cases were treated only in an OTP facility.¹⁷

¹⁵ Assuming treatment with RUTF at CMAM facilities results in an estimated mortality of less than 10% (Bahwere *et al.*, 2012), which compares with an estimated mortality of 18% or more among untreated children with SAM (Vella *et al.*, 1993), giving an estimated 10% reduction in mortality.

¹⁶ WINNN programme costs have been converted from US dollars to British pounds using the average of representative rates for September 2011 to August 2016 (USD/GBP 1.56) (Source: International Monetary Fund (IMF)).

¹⁷ The assumption is based on evidence from FHI 360 (2012).

The largest share of the overall cost was incurred at the health facility level (RUTF, F75/100 milks, routine medicines, health worker time, and facility rent and utilities) (53%). RUTF alone (procurement, storage and transportation) constituted 35% of the overall cost per child and was the largest cost driver.

Higher-level costs associated with programme implementation were the next largest share of the overall cost per child (36%). The large majority of these (33% of the total cost per child) were WINNN programme costs. Staff and consultant costs were the largest single category of WINNN costs (18% of the total cost per child). State and LGA costs (training, supervision, planning, M&E and reporting at OTP and SC facilities) constitute only 4% of the total cost per child.

The next largest share of the total cost of treating a child is borne by caregivers (out-of-pocket expenses and the opportunity cost of the time spent at a facility) (8%). **Finally, the cost to CVs of working on the CMAM intervention** (opportunity costs and expenses for which they are not reimbursed) makes up 2% of the total cost of treating a child.

The cost of treating a child in an SC facility is significantly higher than the cost of treating a child in an OTP facilities from both a health systems perspective and a societal perspective (Figure 2). This is to be expected. The more intensive treatment in a SC facility involves more staff time on the part of more highly qualified (and therefore more highly paid) staff, and incurs greater overhead costs. The additional cost is necessary to recuperate children with SAM and additional complications.

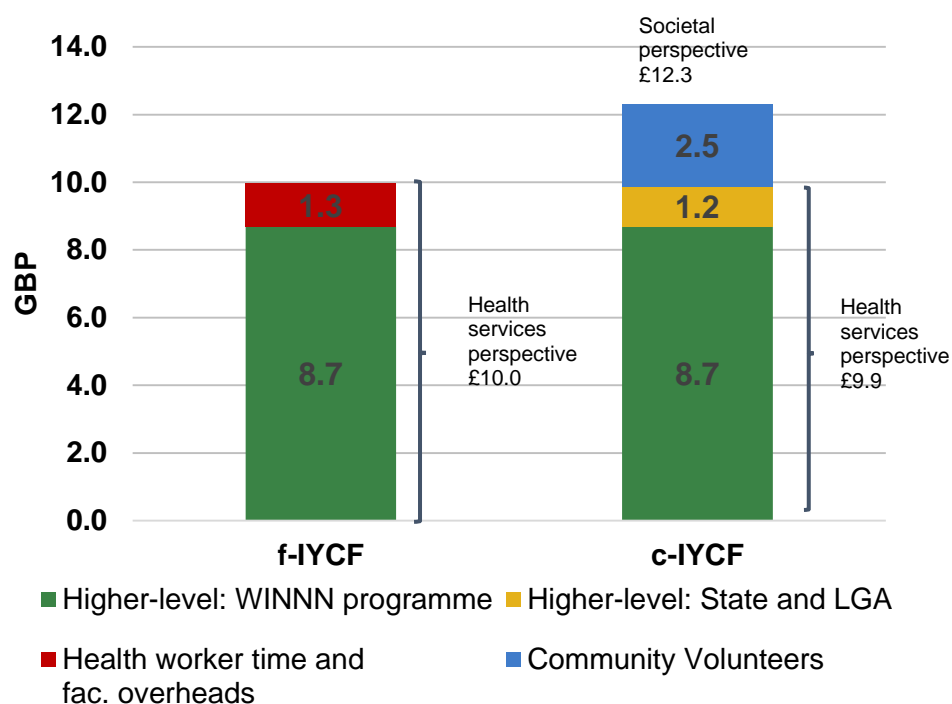
The CMAM-related services place a high financial burden on caregivers in terms of both direct and opportunity costs. While these costs represent a small proportion of the overall cost per child, they are likely to represent a significant burden to most households using the service, given the high levels of poverty in northern Nigeria, and may prohibit the poorest households from seeking treatment for their children. Moving forward, it may be helpful to consider ways of reducing the costs to caregivers. These may include requiring less frequent visits to OTP sites to collect RUTF and making treatment for SAM available in more facilities, in order to reduce travel time and costs. These are discussed in more detail in the Recommendations section.

The cost per beneficiary estimates are not dissimilar to other studies. Frankel *et al.* (2015) estimated a similar societal cost per child (US\$123) in a CIFF-funded CMAM programme supported by UNICEF in other northern Nigeria states. Bachmann (2009) estimated a higher health perspective cost per child of US\$203 in Zambia. The NSPAN estimates a lower cost of US\$80 per child. The variation among these estimates may be due to both programmatic and methodological differences.

4.3 What was the cost per mother counselled in the WINNN-supported IYCF interventions?

Summary of findings: *From a health services perspective, the average cost per mother counselled was US\$16 (£10) in the facility-based IYCF component and US\$15 (£10) in the community-based IYCF component. From a societal perspective, the average cost per mother counselled was US\$19 (£12) in the community-based IYCF component. There are no studies of similar IYCF interventions to allow a comparison of the cost per beneficiary, but the cost compares well with estimates in the NSPAN.*

Figure 3: Cost per mother reached in the IYCF interventions by type of service and cost centre



Source: [Full costing of the WINNN Programme: Operations Research and Impact Evaluation](#)

Notes to Figure: f-IYCF – health-facility IYCF counselling; c-IYCF – community IYCF counselling

The average cost per mother counselled¹⁸ in the facility-based IYCF component from a health services perspective was US\$16 (£10). Of this total, 87% was for WINNN programme costs (training, social mobilisation, planning and coordination, M&E, advocacy and policy development) and the other 13% was for health facility-level costs (health worker salaries, facility rent and utilities) (Figure 3). The cost of health worker time may be overestimated. CVs also provide counselling at some health facilities, at no cost to the government, but their time is not included in the estimate because information on the extent of their involvement was not available. A societal perspective estimate is not provided because CV time could not be estimated, and mothers incur negligible costs as counselling is provided when they are attending other facility-based services.

The average cost per mother counselled in the community-based IYCF component from a societal perspective was US\$19 (£12). Of this total, 70% was for WINNN programme costs (as above), 10% was for state and LGA costs (supervision, planning, M&E and reporting) and 20% was for CV costs (opportunity costs and non-reimbursed expenses) (Figure 3). Again, the costs to mothers were considered negligible as they attend group meetings locally and only once per month. **The cost per mother from a health services perspective was US\$15 (£10). This is very similar to the cost of the facility-based service from a health services perspective.**

A focused literature review identified no costing studies of similar IYCF interventions¹⁹ in other settings that would allow a comparison of the costs per beneficiary. The NSPAN suggests a cost of US\$5 per child for community nutrition programmes involving behaviour change communication and growth promotion, based on a study undertaken in Asia in 1999 (Mason *et al.*,

¹⁸ The IYCF interventions also targets husbands and mothers-in-law. They are not included as beneficiaries in the cost per unit calculation as they are not recorded consistently in WINNN monitoring data.

¹⁹ Studies by Chola *et al.* (2011) in Uganda and Nkonki *et al.* (2014) in South Africa provide cost per mother estimates, but these are much higher than the estimates for the WINNN-supported intervention because the interventions are much more intensive peer support programmes.

1999). There are many substantive and methodological differences between the programmes under study and the two sets of estimates. One important difference is the unit of analysis: ORIE estimates a cost per mother reached, while the NSPAN is an estimate of cost per child. Many mothers will have more than one child under the age of two, so the cost per child of the WINNN intervention would be lower.

4.4 Were the WINNN-supported CMAM and IYCF interventions cost-effective?

This section presents cost-effectiveness analyses for the CMAM and IYCF interventions. Cost-effectiveness analysis (CEA) provides information to allow decision-makers to compare health interventions in terms of VfM and allocate resources among competing interventions. The analysis compares costs and outcomes in two scenarios: one with and the other without the intervention under study. **Definitions and details on the methodology used in the CEA – including the outcome measures (DALYs, lives saved, and the incremental cost-effectiveness ratio (ICER)) and the decision tree modelling approach) – are presented in Annex G.**

4.4.1 Was the WINNN-supported CMAM programme cost-effective?

Summary of findings: *The ICERs for the CMAM programme were US\$48 (£31) per DALY averted and US\$1,778 (£1,138) per life saved from a societal perspective, and US\$43 (£28) per DALY averted and US\$1,606 (£1028) per life saved from a health services perspective. These estimates compare well with estimates in recent studies of CMAM programmes in northern Nigeria and other countries, and suggest that the WINNN-supported CMAM programme was ‘very cost-effective’ using the WHO threshold for cost-effectiveness.*

The CEA for the CMAM programme compared costs and outcomes in two scenarios. The first was ‘CMAM programme implemented’ in focal LGAs in which WINNN supported the CMAM-related services. In this scenario, children under five with SAM in focal LGAs may have accessed treatment at CMAM facilities, received non-CMAM-related treatment (outpatient or inpatient treatment without therapeutic feeding), or received no treatment. The second scenario was ‘CMAM programme not implemented’ in non-focal LGAs, where children under five with SAM may have received non-CMAM-related treatment (outpatient or inpatient treatment without therapeutic feeding) or no treatment. The data sources and assumptions used for each model parameter (outcome probabilities and costs) are shown in Annex G.

Table 6: Cost-effectiveness results for the WINNN-supported CMAM programme in WINNN focal LGAs (societal perspective)

Scenarios	Cost (US\$/£) per child ¹	DALYs per child	Proportion alive
CMAM programme implemented scenario	US\$23/£15	30.1	81.4%
CMAM programme not implemented scenario	US\$3/£2	29.7	80.3%
Difference	US\$20/£13	0.4	1.1%
		Cost (US\$/£) per DALY averted	Cost (US\$/£) per life saved
ICER	-	US\$48/£31	US\$1,778/£1,138

Source: [Cost Effectiveness of the WINNN Programme: Operations Research and Impact Evaluation](#)

Table 6 shows the cost-effectiveness results for the CMAM programme in WINNN’s focal LGAs in four northern states from a societal perspective. The cost per child was US\$20 (£13) higher, the DALYs per child was 0.4 DALYs higher, and the proportion of children alive was 1% higher in the

CMAM programme implemented scenario. **The ICER was US\$48 (£31) per DALY averted and US\$1,778 (£1,138) per life saved. From a health services perspective, the ICERs were slightly lower – US\$43 (£28) and US\$1,606 (£1,028) – because the costs borne by CVs and caregivers are not included.**

The ICER per DALY averted estimate suggests that the WINNN-supported CMAM programme was ‘very cost-effective’ using the WHO threshold for cost-effectiveness.²⁰ The WHO-CHOICE approach suggests that an intervention is ‘very cost-effective’ if the ICER per DALY averted is below the value of *per capita* Gross Domestic Product (GDP). Nigeria’s *per capita* GDP was US\$2,617 in 2015 (World Bank, 2016).

These estimates are somewhat higher than estimates of another recent study of CMAM in northern Nigeria. Frankel *et al.* (2015) estimated ICERs of US\$30 per DALY averted and US\$1,117 per life saved from a societal perspective. The lower estimates are likely explained by the different methodology used to estimate costs, which produced a lower cost per child treated, and different assumptions around programme coverage and mortality outcomes.

The estimates compare favourably with estimates in recent studies of CMAM in other countries. Using a health services perspective, Wilford *et al.* (2012) estimated an ICER of US\$42 per DALY averted and US\$ 1,365 per life saved in Malawi, while Bachmann (2009) estimated an ICER of US\$53 per DALY averted and US\$1,760 per life saved in Zambia. From a societal perspective, Puett *et al.* (2012) estimated an ICER of US\$29 per DALY averted and US\$1,344 per life saved in southern Bangladesh. The estimates from southern Bangladesh are lower because the model was assumed to be implemented by community workers, so the costs of outpatient staff and overheads were not included.

4.4.2 Was the WINNN-supported IYCF intervention cost-effective?

Summary of findings: *The ICERs for the WINNN-supported IYCF intervention were US\$30 (£19) per DALY averted and US\$1,102 (£706) per life saved from a societal perspective and US\$26 (£16) per DALY averted and US\$948 (£607) per life saved from a health services perspective. These estimates suggest that the intervention was ‘very cost-effective’ using the WHO threshold for cost-effectiveness.*

The CEA for the IYCF interventions compared costs and outcomes in two scenarios. The first was ‘WINNN-IYCF interventions implemented’ in focal LGAs in which WINNN supported IYCF services. In this scenario, mothers of children under two years may or may not have been exposed to facility- or community-based IYCF counselling. The second scenario was ‘WINNN-IYCF interventions not implemented’ in LGAs in which WINNN did not support the IYCF interventions services. In this scenario, mothers of children under two years may or may not have been exposed to facility- or community-based IYCF counselling in routine primary healthcare or programmes not supported by WINNN. The population of interest for breastfeeding practices was children under the age of two. Exposure to IYCF counselling was defined as the mother’s attendance at IYCF counselling sessions in the community or at ANC or PNC at a health facility for any of her children aged 0–35 months. The data sources and/or assumptions used for each model parameter (outcome probabilities and costs) are shown in Annex G.

The analysis assesses the ICERs per DALY averted and lives saved by age five. The probability of mortality for different breastfeeding practices at age 0–5 months (child is exclusively, predominantly or partially breastfed or not breastfed) and at age 6–23 months (continued breastfeeding or not) was modelled using the Lives Saved Tool (LiST).²¹ LiST quantifies the increased risk of mortality based on evidence that suboptimal breastfeeding is strongly related to a heightened risk of diarrhoea, pneumonia and mortality (Lamberti *et al.*, 2011; Horta and Victora, 2013; Walker *et al.*, 2013). **The analysis uses a difference-in-difference methodology to**

²⁰ See www.who.int/choice/costs/en/

²¹ See www.livessavedtool.org/

assess changes in costs and outcomes between the two scenarios between baseline (2013) and endline (2016) data collection. The ICERs are calculated as a ratio of the difference-in-difference estimate of cost and difference-in-difference estimate of deaths averted.

Table 7: Cost-effectiveness results for the WINNN-supported IYCF interventions in WINNN focal LGAs (societal and health services perspectives)

Incremental analysis	Societal perspective	Health services perspective
Difference-in-difference estimate of costs between WINNN and non-WINNN LGAs	US\$6/£4	US\$5/£3
Difference-in-difference estimate of deaths averted per live birth between WINNN and non-WINNN LGAs	0.005	0.005
ICER for cost per life saved	US\$1,102/£706	US\$948/£607
ICER for cost per DALY averted	US\$30/£19	US\$26/£16

Source: [Cost Effectiveness of the WINNN Programme: Operations Research and Impact Evaluation](#)

Table 7 shows the cost-effectiveness results for the IYCF interventions in WINNN's focal LGAs in four northern states. The cost per mother was US\$6 (£4) higher in WINNN LGAs than non-WINNN LGAs from a societal perspective and US\$5 (£3) higher from a health services perspective. The difference in mortality (deaths averted) between WINNN LGAs and non-WINNN LGAs was 0.005 per live birth (meaning a lower mortality rate in WINNN focal LGAs). **From a societal perspective, the ICER was US\$30 (£19) per DALY averted²² and US\$1,102 (£706) per life saved. From a health services perspective, the ICER was US\$26 (£16) per DALY averted and US\$948 (£607) per cost for life saved.** As was the case with the CMAM programme, the costs and ICERs in the health services perspective are slightly lower, as the costs borne by CVs are not included.²³

Using the WHO threshold for cost-effectiveness described in section 4.4.1, the ICER per DALY averted estimate suggests that the WINNN-supported IYCF interventions was 'very cost-effective'. As no cost-effectiveness studies of similar IYCF interventions in other settings were found it is not possible to benchmark the cost-effectiveness estimates of the WINNN-supported IYCF interventions.

The ICERs per DALY averted and lives saved are lower for the IYCF interventions than for the CMAM intervention. Preventative interventions usually represent better VfM and can help to reduce the need for treatment. However, treatment for SAM among young children with the CMAM programme remains very cost-effective and addresses a large disease burden. Both interventions result in large lifetime survival and health gains for the children who benefit and should be considered by policymakers and funders as interventions that offer value for money in terms of improving child health outcomes.

The cost-effectiveness analyses indicate that the CMAM and IYCF interventions were both cost-effective, even though the impact evaluation pointed to a lack of effect on some key outcome and impact indicators. This is because the CEA estimates the effect of the intervention on treatment pathways (disability and mortality) in the long term using specific parameters²⁴ to calculate the expected benefits, while the impact evaluation estimates the population-level effect of the intervention during the lifetime of the intervention.

²² LiST does not allow for estimation of DALYs averted. We assumed 37 DALYs lost per premature death (i.e. the same as for the CMAM programme) in order to convert per life saved to per DALY averted. This is a conservative estimate (i.e. a possible overestimate) given that the SAM condition is likely to have a higher disability weight compared to conditions due to suboptimal breastfeeding.

²³ The costs borne by caregivers are not included in the societal perspective of the IYCF interventions cost-effectiveness analysis because they are considered negligible (see section 4.3).

²⁴ In most cases these parameters are mean estimates at one point in time without taking uncertainty into consideration.

5 Relevance and alignment: Was the WINNN programme relevant to national requirements, priorities and strategies?

Key messages (Relevance and alignment)

1. **WINNN's work was appropriately aligned with national and state-level strategy and institutions.** It supported the integration of nutrition interventions into the government PHC system and built government capacity for implementation and coordination. It also supported the integration of nutrition work into health policy and wider national initiatives
2. **The WINNN-supported nutrition-specific interventions were appropriate but insufficient to address the immediate determinants of malnutrition (diet and disease) in the WINNN focal LGAs.** The TOC's assumption that the delivery of these interventions through government systems with sufficient levels of coverage could improve the anthropometric status of children under three in the focal LGAs without the concurrent implementation of nutrition-sensitive interventions was unfounded

5.1 To what extent did WINNN's work align with national and state-level strategy and institutions?

Summary of findings: WINNN's work has been appropriately aligned with national and state-level strategies and institutions. WINNN has supported the integration of nutrition interventions into the government PHC system and built government capacity for implementation and coordination. It also supported integration of nutrition work into health policy and wider national initiatives. At state level, WINNN has supported the development of multi-sectoral nutrition plans and the adoption of the NPFN.

WINNN was expected to work through existing institutions and in line with relevant strategies at federal and state level in order to embed nutrition work and increase political leadership and ownership. To a large extent, this was achieved. **WINNN supported the integration of nutrition-specific interventions into the government PHC system.** It ensured local ownership and institutionalisation of the interventions by building government capacity and systems for cascade training, coordination, planning, implementation and monitoring.

At federal level, WINNN supported the coherence of nutrition work within broader health policy. WINNN played an important role in promoting the integration of NSPAN objectives into the National Health Policy and the Basic Primary Health Care Financing Guidelines. It also successfully advocated for the integration of CMAM-related services into the national 'One PHC per Ward' initiative. This ensured alignment with the government's 'Primary Health Care Under One Roof' strategy and the institutionalisation of costing of CMAM-related services into PHC budgets. WINNN also supported the integration of nutrition into wider national initiatives, such as 'Zero Hunger' and the Saving One Million Lives (SOML) initiative. At state level, WINNN promoted adoption of the NPFN and supported the development of multi-sectoral nutrition plans of action in its focal states, which align with the thrust of the national nutrition policy.

WINNN supported the establishment or revitalisation of inter-sectoral coordination committees for food and nutrition at both national and state levels (NCFN and SCFNs). The NCFN and several SCFNs had been set up prior to WINNN, following a national directive, but were largely inactive at baseline. WINNN also helped to strengthen the FMoH-led Nutrition Partners Forum, which was established to harmonise and strengthen nutrition-specific interventions.

Through its membership of these forums, WINNN built commitment to nutrition within the government bureaucracy and supported the development of nutrition guidelines, policy and plans.

5.2 Did WINNN's interventions address the key determinants of malnutrition in northern Nigeria? Was the WINNN programme TOC relevant and appropriate?

Summary of findings: *WINNN supported the implementation of a set of evidence-based nutrition-specific interventions designed to directly address the immediate determinants of child malnutrition in northern Nigeria. Some of the principle design assumptions underlying the TOC proved valid in terms of improved health system capacity and the integration of nutrition interventions within the PHC system. The lack of complementary nutrition-sensitive interventions implemented alongside WINNN in its focal LGAs, which it was assumed would be in place in the programme design, meant that WINNN's achievements did not translate into improvements in anthropometric measures among children aged 0–3 years at LGA level.*

At the time the DFID Business Case for WINNN was formulated in 2011, over half of all children under five in the northern states were stunted, over one-third were underweight, and nearly one-quarter were wasted (DFID, 2011). Malnutrition was estimated to account for at least 35% of under five deaths, of which there were a million per year in the country, and to reduce GDP by 2–3% (DFID, 2011). The immediate determinants of malnutrition in northern Nigeria identified in the Business Case included household food insecurity, inappropriate infant and child feeding, and the high burden of infectious disease. The underlying determinants identified included poverty and lack of income-generating opportunities, poor healthcare provision, demand-side barriers to use of health services, poor water and sanitation, agricultural policy that was not sensitive to nutrition, and gender inequality. **The Business Case also identified a number of contextual factors that could undermine efforts to improve nutrition, including weak political leadership on nutrition, fragmented government structures, and a weak and under-resourced PHC system.**

As the programme TOC set out in the DFID Business Case (Annex H) shows, **the WINNN programme was designed to address some of the immediate determinants of child malnutrition by demonstrating how to implement a set of evidence-based nutrition-specific interventions** in northern Nigeria. There was an explicit assumption in the Business Case that with sufficient levels of coverage these interventions would have an immediate effect on undernutrition (DFID, 2011, p. 16, pp. 24–25). **The Business Case and TOC also laid out an approach designed to tackle some of the contextual challenges to addressing malnutrition in northern Nigeria.** WINNN was to strengthen the government systems needed to deliver the interventions by building capacity within the PHC system and integrating the interventions into routine government health services. It would use targeted advocacy and leveraging to increase political leadership and commitment of government resources to fund and scale up interventions to address malnutrition.

Some of the principle design assumptions laid out in the TOC were shown to be valid.

Support for the delivery of services through existing health systems helped to improve health systems performance and capacity (see section 3.3). Advocacy and leveraging helped to increase political commitment and public funding for nutrition (see section 3.1). These, together with improved inter-sectoral coordination, have underpinned the integration of the nutrition interventions into the PHC system, although they are not yet fully at scale or adequately funded. Operations research and the impact evaluation helped in understanding the causes of malnutrition in northern Nigeria and adapting the interventions to the northern Nigeria context.

The TOC was sound in terms of planned inputs, outputs and outcomes, i.e. up to the point of improving health systems performance and delivering interventions within the PHC system, albeit

with concerns around long-term sustainability in terms of the adequacy of human resources and public funding (see section 3). **But these outcomes proved insufficient to trigger their intended final impact: better nourished children in northern Nigeria, assessed against anthropometric indicators.** This may have been partly due to insufficient levels of coverage, one of the key assumptions in the Business Case (treatment of children with SAM was constrained by the low availability of RUTF, MNCHW events attendance remained low, and the IYCF interventions was focused on a limited number of health facilities and communities) (see section 1). It may also have been due to the staggered roll-out of the interventions, with some of them implemented for less than three years at the time of the final evaluation.

The lack of impact on child anthropometrics was also likely due to the absence of complementary nutrition-sensitive interventions that could modify the complex underlying determinants of malnutrition. There is a clear evidence base that nutrition-specific interventions can be expected to have limited influence on child anthropometrics without complementary nutrition-sensitive interventions (Stevens *et al.*, 2012). The importance of nutrition-sensitive interventions was recognised in the Business Case, and there was an explicit assumption in the WINNN logframe that WINNN could only contribute to improved anthropometrics if nutrition-sensitive interventions to improve food security, water, sanitation and hygiene, poverty and healthcare were in place, alongside political stability and the absence of conflict. DFID was supporting a number of nutrition-sensitive interventions in some states in the north when the Business Case was written, and set up others during the course of the WINNN programme. These included Phase 2 of the Sanitation, Hygiene and Water in Nigeria (SHAWN II) programme and the Maternal, Newborn and Child Health programme (MNCH2). There were important efforts to coordinate the SHAWN and WINNN programmes from 2015. But the WINNN programme was not accompanied by a suitable range of nutrition-sensitive interventions *across its focal LGAs*. Better coordination and scale-up of these programmes across the WINNN states and LGAs could have increased the impact on child anthropometric indicators.

Recommendations for future nutrition programmes in northern Nigeria

The WINNN implementing partners have made important achievements in building political awareness and support for nutrition, increasing capacity to implement nutrition services in the PHC system, and changing behaviours related to uptake of nutrition services and child feeding in communities. Their work has underpinned significant improvements in micro-nutrient supplementation for pregnant women and children under five, the treatment of children under five with SAM, and the adoption of key IYCF practices. Their work, together with the work conducted by ORIE, has advanced the evidence base for the implementation of nutrition interventions in northern Nigeria.

This progress has been achieved within a particularly challenging environment. Low political awareness of malnutrition at baseline, a severely under-resourced health system, high levels of poverty, malnutrition and morbidity, and conservative attitudes toward maternal and child healthcare and women's use of health services all presented barriers. These difficulties were further compounded by a severe fiscal crisis due to the large drop in the price of oil and escalating conflict in the northeast, which has led to serious food shortages and greater food insecurity. **The lack of progress on child anthropometric indicators should be recognised as a shortcoming in the intervention TOC – the lack of concurrent implementation of nutrition-sensitive interventions** to address the underlying determinants of malnutrition in the WINNN focal LGAs – rather than a failure of implementation.

The main challenges to the full institutionalisation and scale-up of the nutrition interventions at the time of the final evaluation in 2016 were **insufficient public funding, a weak primary healthcare system, and inadequate human resources in the health system.**

Recommendations

The following recommendations are based on the research and evaluation findings summarised in the preceding sections of this report. **They draw on the strategies that WINNN has shown to be effective, as well as areas in which there are still challenges.** The recommendations are intended primarily for DFID, the Nigerian government and DPs working to improve nutrition in northern Nigeria, as well as for implementers of future nutrition programmes in the north (including government, DPs, INGOs and CSOs). They may also be helpful to DPs, policy-makers and implementers in other settings.

For DFID, DPs and donors working to improve nutrition in northern Nigeria and similar contexts

- 1. Implement nutrition-sensitive interventions alongside nutrition-specific interventions** in order to address the underlying causes of child malnutrition. The most immediate need is to tackle the high levels of poverty and food insecurity, poor water and sanitation, and low maternal autonomy around childcare and the use of household resources. Findings from the midline evaluation of the Child Development Grant Programme (CDGP)²⁵ will indicate whether a social protection programme combined with nutrition education can influence maternal and child nutrition.
- 2. Create a common and flexible evaluation framework to allow for evaluation of the combined effects of nutrition-specific and nutrition-sensitive interventions.** Develop

²⁵ The midline evaluation report will be available around October 2017.

an evaluation approach that allows for different start-up times if interventions are rolled out incrementally.

3. **Use population-based coverage data from surveys as a core component of programme monitoring**, rather than focusing on targets based on absolute numbers, in order to understand coverage of the interventions in the intended populations. This will require efforts to improve the quality of routine monitoring data by government.

For the Nigerian government:

4. **Public financing for nutrition interventions must increase for the government to tackle the huge burden of maternal and child malnutrition in northern Nigeria.** The government needs to find ways to reduce the high prevalence of SAM and MAM among children, while also financing preventative interventions like micro-nutrient supplementation and IYCF counselling at scale, which, alongside nutrition-sensitive interventions, can gradually reduce the need for treatment. State governments should be supported to identify and access available funding from donors and federal sources. These may include a US\$ 500 million World Bank loan for the SOML initiative, which includes nutrition and nutrition-related health investments, upcoming World Bank/International Development Association nutrition financing of US\$350 million, and the matched funding mechanism for purchase of RUTF recently introduced by CIFF. While donor funding may be necessary in the short term, this should not supplant government responsibility to fund nutrition interventions in the long term.
5. **Invest more resources in the design and implementation of multi-sectoral nutrition-sensitive interventions** in order to tackle the underlying causes of child malnutrition, as proposed in the NPFN and NSPAN. Ensure that nutrition objectives are integrated into the policies and plans of relevant ministries and that relevant ministries have appropriate staffing to enable them to implement sectoral nutrition-sensitive interventions.
6. **Seek intermediary solutions to the overriding challenge of inadequate human resources for health in order to sustain and scale up nutrition services with appropriate coverage and quality.** This includes increasing the numbers of health workers and their training, particularly in PHC services in rural and remote areas. It will also likely involve strengthening the role of CVs in health facilities and communities and seeking appropriate ways to motivate and compensate CVs, given the critical role they play in service delivery. In the long term this may include developing a paid community health workforce. The proposal to pay stipends to mother leaders in the Care Group Model piloted by WINNN may generate further learning. There may also be valuable lessons on how to engage community members in health and nutrition programmes from other countries, for example Pakistan's Lady Health Worker Programme (see OPM, 2002 and OPM, 2009), and Brazil's Family Health Programme (see Macinko and Harris, 2015).
7. **Inaugurate the National Council on Nutrition, chaired by Nigeria's Vice President, as set out in the approved NPFN.** The Council has the potential to enhance inter-sectoral coordination for nutrition, advocate for appropriate nutrition-sensitive interventions that can enhance efforts to reduce malnutrition, and further strengthen federal coordination of nutrition work in the states.

For implementers and funders of future nutrition programmes in northern Nigeria (Nigerian government, DFID, DPs, INGOs and CSOs):

Micro-nutrient supplementation

8. **Explore ways to increase attendance at MNCHW events.** Build on and further develop WINNN's social mobilisation strategies in order to ensure that messages about MNCHW events reach more households and convince both mothers and fathers of the benefits of attending. Enable non-WINNN LGAs to draw on WINNN's strategies for social mobilisation, including targeting of different family members. Continue to develop and test strategies to reduce resistance by some men to their wives' use of facility-based health services. Community leaders may play an important role in encouraging community acceptance of health services. Seek cost-effective ways to take MNCHW event services to more remote communities such as through mobile teams, which WINNN effectively piloted.
9. **Investigate reasons for the decline in Vitamin A supplementation among children under five,** apparently due to the decline in the door-to-door IPD service. Investigate reasons for the fall in the proportion of children receiving Vitamin A at MNCHW events, which may be due to under-staffing at these events. Develop new strategies to increase Vitamin A supplementation, such as those proposed in the next recommendation.
10. **Continue to explore other strategies to control micro-nutrient deficiencies.** These may include fortification of basic commercially produced foods that are commonly used in poorer households and micro-nutrient powders for home use, as recommended in the NPFN and NSPAN. They may also include incorporating micro-nutrient supplementation into routine maternal, new-born and child services in addition to, or rather than, the campaign-style MNCHW events. There may be a case for reinstating some door-to-door services, given that MNCHW events have not been able to compensate for the decline in distribution of Vitamin A through IPDs. Such services have been delivered effectively in other countries through paid community health workers (see for example Pakistan and Brazil, cited under Recommendation 6).

The CMAM programme

11. **The cost of implementing the full CMAM programme at scale far outstrips the volume of resources currently available in state budgets for nutrition.** Continued advocacy is needed to increase awareness among senior political leaders of the considerable health and economic benefits of effective treatment of SAM. ORIE evidence on the cost-effectiveness of the WINNN-supported CMAM-related services can be used to support advocacy.
12. **It may be necessary to test alternative ways of treating children with SAM, at least in the short term.** This might include treating children assessed to be severely malnourished who present at routine health services without active case-finding in communities, even though this would mean reduced coverage, particularly among harder-to-reach groups. Integration of treatment into routine services in this way could help to reduce the burden on health facilities of delivering services on weekly CMAM days. A planned CIFF-funded trial in Sokoto, with monthly rather than weekly visits to an OTP site, and training for mothers to notice danger signs in their children, may offer an alternative. Such an approach would also help to reduce the financial burden of repeat visits to CMAM facilities on caregivers. Another option being considered by WINNN is to train promoters in the IYCF Care Group programme to screen children for both SAM and MAM, and refer children on for treatment. This would increase active case-finding and help with early detection and treatment of MAM, thereby helping to reduce the number of children that progress to SAM and

eventually lowering the additional cost burden to the government and caregivers of treatment in SC centres. Whatever the model, a regular and reliable supply of RUTF and antibiotics is essential.

13. **Alternatively, if resources are available for a fuller community-based model, as the CMAM programme intended to be, it will be important to strengthen active case-finding and defaulter tracking in communities.** This is likely to require a greater number of CVs and resources for CVs to travel to more remote communities, as well as sufficient funding to treat the presently large number of cases.
14. **Explore options for producing RUTF locally and safely** (addressing concerns about aflatoxin, for example). The cost of local production may be lower than the current costs of imported RUTF. As the cost of RUTF is the major cost driver of the CMAM programme, a lower cost would significantly lower the overall costs of implementing the service.
15. If the CMAM programme is to be fully integrated into routine PHC provision with the appropriate level of quality and observance of national protocols, **training on basic nutrition and CMAM-related services should be integrated into the standard health curriculum for all health workers.** This would also help to ensure that health workers 'borrowed' on CMAM days have adequate training.

IYCF interventions

16. **While political support and public funding for the IYCF interventions have increased since baseline, more needs to be done to sustain and scale up the services at health facilities and in communities.** Ongoing advocacy for the importance of preventative measures alongside the treatment of children with SAM and MAM will be important. ORIE evidence on the cost-effectiveness of the WINNN-supported IYCF interventions can be used to support advocacy.
17. **Continue to strengthen the behaviour change focus in IYCF counselling** by working with small groups of mothers with similar characteristics (e.g. age, stage of child feeding) in facility and community settings propitious to education, peer support and motivation.
18. **Continue to research and test ways to support mothers to adopt EBF.** This may include messages around the adequacy of the water content of breastmilk even on hot days. Religious and community leaders may be engaged to play an important role in supporting religious and cultural beliefs related to breastfeeding.
19. **Continue to develop strategies to improve complementary feeding for young children.** Assess the effectiveness of the recently introduced food demonstrations using recipes with locally available foods. Information should be targeted at mothers, fathers and older women, as fathers are often responsible for food purchases and older women often make decisions around child feeding. This work needs to be accompanied by interventions that improve household food security, so that parents can access the foods recommended for young child feeding.
20. **Find ways to further improve the reach and quality of the c-IYCF component of the IYCF interventions.** Assess the effectiveness of the targeted support groups at reaching and changing behaviour among adolescent mothers. Assess the effectiveness of the Care Group Model currently being piloted as a way to promote dialogue and understanding about IYCF among household members. **Develop separate spaces to work with grandmothers** in order to increase their acceptance of recommended IYCF practices and their support for their daughters and daughters-in-law. **Continue to strengthen and roll-out fathers' IYCF support groups** so that fathers support their wives to adopt

recommended IYCF practices and persuade older women in the household of the benefits of those practices.

All nutrition interventions

21. **Improve the access of adolescent girls to nutrition interventions**, given that the large majority of girls living in northern Nigeria marry and have a child by the time they reach age 19. This may include targeted interventions with support from key community actors, including male community leaders. It will be important to work with the husbands of adolescent mothers to help them understand the benefits to their children of supporting their wives' use of health and nutrition services.
22. **Continue to test ways to increase the coverage of nutrition interventions among harder-to-reach women and their children**, including the least educated and those living in the poorest households and furthest away from health facilities. This may include greater outreach into communities by CVs, as well as further decentralisation of MNCHW events and CMAM-related services to additional facilities.

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Annex A Evaluation framework

Evaluation questions	Primary or additional	Sources of evidence
1. Effectiveness: has WINNN achieved the intended service coverage, quality and equity?		
1.1. What has been the coverage of WINNN-supported interventions among the target population (micro-nutrient supplementation, the CMAM programme and IYCF interventions)? How does it compare with the intended coverage?	Primary	ORIE quantitative final impact evaluation WINNN programme logframe
1.2. Have the WINNN-supported interventions been of an appropriate quality?	Additional	ORIE quantitative final impact evaluation ORIE qualitative final impact evaluation ORIE Health Facility Survey ORIE operations research (CMAM programme) WINNN programme logframe
1.3. Has WINNN promoted equitable and gender-sensitive programming?	Additional	ORIE quantitative final impact evaluation ORIE qualitative final impact evaluation ORIE Health Facility Survey ORIE operations research (MNCHW events) ORIE operations research (CMAM programme) ORIE Nigeria Gender Synthesis Report (Year Three)
1.4. Which factors facilitated and hindered effective implementation of the WINNN-supported interventions?	Additional	ORIE quantitative final impact evaluation ORIE qualitative final impact evaluation ORIE Health Facility Survey ORIE operations research (MNCHW event) ORIE operations research (CMAM programme)
2. Impact: To what extent have the WINNN-supported interventions achieved the intended impact?		
2.1. To what extent have the WINNN-supported interventions improved knowledge and practices among mothers/caregivers?	Primary	ORIE quantitative final impact evaluation ORIE qualitative final impact evaluation
2.2. To what extent have WINNN-supported interventions improved the anthropometric status of children under	Primary	ORIE quantitative final impact evaluation

three in target areas (prevalence of stunting, wasting and underweight)?		
2.3. Has WINNN resulted in any unintended positive or negative outcomes?	Primary	ORIE quantitative final impact evaluation ORIE qualitative final impact evaluation ORIE Health Facility Survey ORIE operations research (CMAM programme)
3. Sustainability: Has WINNN contributed to the institutionalisation of nutrition work in its focal states?		
3.1. What contribution has WINNN made toward improving political commitment to nutrition? What strategies were used to influence political commitment?	Primary	ORIE qualitative final impact evaluation
3.2. What contribution has WINNN made to civil society and community support for nutrition work? How has this increased uptake of services and strengthened government commitment?	Primary	ORIE qualitative final impact evaluation
3.3. To what extent has WINNN strengthened government capacity to implement and sustain the interventions over time?	Additional	ORIE qualitative final impact evaluation
4. Efficiency: Were WINNN-supported interventions cost-efficient and cost-effective?		
4.1. What were the costs and cost drivers of the WINNN-supported interventions?	Primary	Costing study
4.2. What was the cost per SAM child treated in the WINNN-supported CMAM programme?	Primary	Costing study
4.3. What was the cost per mother counselled in the WINNN-supported IYCF interventions?	Primary	Costing study
4.4. Were the WINNN-supported CMAM and IYCF interventions cost-effective?	Primary	Economic evaluation of WINNN-supported CMAM and IYCF interventions
5. Relevance and alignment: Was the WINNN programme relevant to national requirements, priorities and strategies?		
5.1. To what extent did WINNN's work align with national and state-level strategy and institutions?	Primary	ORIE qualitative final evaluation

5.2. Did WINNN's interventions address the key determinants of malnutrition in northern Nigeria? Was the WINNN programme TOC relevant and appropriate?	Additional	ORIE quantitative final impact evaluation ORIE qualitative final impact evaluation DFID Business Case
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Annex B WINNN and ORIE

B.1 The WINNN programme

WINNN was implemented by three partners: Save the Children, Action Against Hunger and UNICEF. WINNN provided support on the following nutrition-specific interventions:

- **Micro-nutrient supplementation for pregnant women and children under five:** WINNN supported improved coordination and planning of MNCHW events (nationwide bi-annual events), the procurement and delivery of some drugs to state medical stores, and social mobilisation, across all LGAs in WINNN's five focal states. It also supported the provision of supplements to pregnant women, as well as zinc and oral rehydration solution (ORS) to children under five with diarrhoea, at routine PHC services.
- **The CMAM programme:** WINNN supported training for state and LGA officers (who stepped training down to health workers and CVs), supervision and monitoring with the LGA health teams, the procurement and transportation of RUTF and some routine medicines to state medical stores, and community sensitisation around malnutrition through CVs. This support was provided to outpatient facilities (OTP facilities) in around five PHC facilities in each of three focal LGAs in each state, and at least one referral centre per focal LGA.
- **IYCF interventions: WINNN supported the establishment of IYCF counselling services** in health facilities by trained health workers (at CMAM facilities, ANC and PNC services and MNCHW events) and in communities by trained CVs (through support groups, food demonstration sessions and education in community settings), and provided supervision and monitoring with LGA health teams. Facility-based counselling was initially provided in five health facilities offering CMAM-related services, and some non-CMAM facilities, in each of its three focal LGAs. From late 2015, facility counselling was expanded to all facilities with ANC, and community counselling was provided in 10 communities in every ward, in the focal LGAs.

B.2 ORIE

ORIE was managed by OPM and consisted of two other UK-based institutions (the London School of Hygiene and Tropical Medicine and the Institute of Development Studies) and two Nigerian partners (the University of Ibadan, and Food Basket Foundation International). ORIE had six workstreams:

1. Operations research
2. Impact evaluation (using mixed methods at community and institutional level)
3. Economic evaluation (assessment of programme costs and cost-effectiveness)
4. Gender analysis
5. Capacity-strengthening for Nigerian academic research on nutrition
6. Evidence dissemination and uptake.

Annex C WINNN programme roll-out

	2011	2012	2013	2014-2016
MNCHW events				
Zamfara				
Jigawa				
Katsina				
Kebbi			Immunisation Plus Days	MNCHW
Yobe				
IYCF interventions				
Zamfara				
Jigawa				
Katsina				
Kebbi				
Yobe				
CMAM programme				
Zamfara				
Jigawa				
Katsina				
Kebbi				
Yobe				
Governance				
Zamfara				
Jigawa				
Katsina				
Kebbi				
Yobe				

Source: [Qualitative Evaluation of the WINNN Programme – summary report: Operations Research and Impact Evaluation](#)

Annex D WINNN logframe (assessment at end of Year 5)

We show WINNN's achievements against its cumulative targets at the end of Year 5 of the programme for outcome and output indicators in order to coincide with the date of the endline evaluation data collection. Baseline values and Year 5 targets are from the WINNN logframe. End of Year 5 values for output indicators are from the logframe used by WINNN to report to DFID during the 2017 Annual Review. ORIE has not quality assured these data. ORIE findings on WINNN's impact indicators (child anthropometry) are reported in section 2.2 of the report.

Table 8: WINNN achievements against end of Year 5 targets on outcome and output indicators

Indicator	Baseline value (2011)	Year 5 target (2015/16)	End of Year 5 value	Year 5 target met/exceeded?	Data source (end Year 5 value) ²⁶	Notes
Outcome indicators						
1. Proportion of children aged 6–59 months who received Vitamin A supplementation in the last six months during MNCHW event	51%	90%	28%	No	ORIE	End of Year 5 value is proportion of children 6–35 months who received Vitamin A in last six months
2. Proportion of infants aged 0–6 months who are exclusively breastfed in target LGAs	3.5%	16%	19.5%	Yes	ORIE	ORIE data for end of Year 5 are for children aged 0–5 months
3. Proportion of children aged 6–23 months who receive foods from four or more food groups in target LGAs	12.8%	25.3%	20.8%	No	ORIE	Although the target was not met there was an improvement from baseline to the end of Year 5
4. Recovery rate (CMAM programme)	0%	>75%	86%	Yes	WINNN M&E	
5. Number of states with budget line for nutrition which is funded and 30% budget released	0	4	5	Yes	ORIE	
Output indicators						
1.1 Cumulative number of unique children under 5 reached with Vitamin A supplements by the programme	2,516,402	7,313,976	9,232,400	Yes	WINNN M&E	

²⁶ We use ORIE data rather than WINNN monitoring data to report against outcome indicators, as WINNN monitoring data are incomplete.

1.2 Cumulative number of women (unique pregnancies) reached with iron supplementation	789,610	3,814,460	4,924,001	Yes	WINNN M&E	
1.3 Number of children under 5 with diarrhoea treated with Zinc and ORS	n/a	359,350	537,083	Yes	WINNN M&E	
2.1 Cumulative number of pregnant women and mothers of children <24 months reached through counselling on appropriate IYCF practices in the target LGA	0	546,119	498,563	No	WINNN M&E	
3.1 Cumulative number of children admitted in target LGA [CMAM programme]	0	174,000	187,275	Yes	WINNN M&E	
4.1 Domestication of reviewed NPFN at the state level and implementation of state-level annual action plans	0	4	4	Yes	WINNN M&E	
4.2 Number of states with a functioning body for the coordination and delivery of nutrition interventions	0	4	5	Yes	WINNN M&E	

Annex E ORIE studies

Below we list all ORIE studies undertaken between 2014 and 2017. The studies used for this report are marked with an asterisk. Full reports can be accessed on the [HEART](#) and [OPM](#) websites.

Report title	Date
Operations research	
Operations Research. What are the barriers to attendance at the MNCHW events and how can these be reduced?*	April 2014
Operations Research. How to strengthen the CMAM programme in northern Nigeria and reduce rates of programme defaulting*	August 2014
Operations Research. How to strengthen the Infant and Young Child Feeding (IYCF) interventions in northern Nigeria	April 2015
Operations Research. How to motivate practice of the Infant and Young Child Feeding (IYCF) recommendations in northern Nigeria	December 2015
Operations Research. Exclusive breastfeeding and early initiation: Target groups and messages	December 2015
Operations Research. Promoting women's attendance at ANC: Influencers and motivating messages	November 2015
Operations Research: Relapse rate in the Community Management of Acute Severe Malnutrition programme in Jigawa State, northern Nigeria	July 2017
Quantitative impact evaluation	
ORIE Nigeria: Quantitative Impact Evaluation Baseline Report	July 2014
Quantitative Impact Evaluation of the WINNN Programme – Volume 1: Operations Research and Impact Evaluation*	July 2017
Quantitative Impact Evaluation of the WINNN Programme – Volume 2: Operations Research and Impact Evaluation	July 2017

Qualitative impact evaluation	
ORIE Qualitative Impact Evaluation. Governance contexts for nutrition interventions. Baseline Report	July 2014
Qualitative Midline Evaluation. Governance and community engagement contexts for nutrition interventions	April 2015
Qualitative Evaluation of the WINNN Programme – summary report: Operations Research and Impact Evaluation*	July 2017
Economic evaluation	
Health Facility Survey*	May 2016
Full costing of the WINNN Programme: Operations Research and Impact Evaluation*	July 2017
Cost Effectiveness of the WINNN Programme: Operations Research and Impact Evaluation*	July 2017
Gender syntheses	
ORIE Nigeria Gender Briefing: Gender inequality and maternal and child nutrition in northern Nigeria*	April 2014
ORIE Nigeria Gender Synthesis Report: Gender-related findings across ORIE studies	April 2014
ORIE Nigeria Gender Synthesis Report: Gender-related findings across ORIE studies (Year 3)*	September 2015
Final summary reports	
Improving micro-nutrient supplementation among women and children: Lessons from the WINNN programme*	July 2017
Community Management of Acute Malnutrition (CMAM) Programme: Lessons from the WINNN programme*	July 2017
Improved infant and young child feeding (IYCF): Lessons from the WINNN programme*	July 2017
Gender barriers to nutrition services: Lessons from the WINNN programme*	July 2017

Strengthening nutrition sector governance: Lessons from the WINNN programme*	July 2017
Integrated Evaluation Report of the WINNN Programme - summary report: Operations Research and Impact Evaluation	July 2017

Annex F Notes on ORIE evidence

Below we present brief details on the studies produced by each ORIE workstream and a summary of the limitations affecting the ORIE studies as is relevant to the interpretation of the findings presented in this report. Full details on study design and limitations can be found in each report.

F.1 Description of ORIE studies

F.1.1 Operations research

Seven operations research studies were undertaken over the course of ORIE. They looked at how to reduce the barriers to MNCHW event attendance, how to strengthen the CMAM and IYCF programmes, CMAM relapse rates, how to promote attendance at ANC, how to motivate practice of recommended IYCF practices, and target groups and messages for EBF and early initiation. These were small-scale studies using qualitative methods (usually in-depth interviews and focus group discussions) to explore the perceptions, insights and experiences of respondents relative to the research topic. Each study was undertaken in a number of communities in two purposively selected LGAs in each of one or two of the WINNN states. Respondents (a mix of programme beneficiaries, staff, CVs and community leaders) were purposively selected. The number of respondents varied from 228 in the smallest study to 513 in the largest.

F.1.2 Impact evaluation

The impact evaluation used a mixed-methods approach to assess the impact of the WINNN programme as a whole. Qualitative methods were used to assess all four of the WINNN-supported interventions (micro-nutrient supplementation, the CMAM programme, IYCF interventions and governance). Quasi-experimental methods were used to assess the impact of the two interventions implemented at LGA level (CMAM programme and IYCF interventions).

F.1.3 Quantitative impact evaluation

The evaluation used a quasi-experimental design to identify and quantify changes on key indicators that can be attributed to the WINNN programme (CMAM programme and IYCF interventions). Data were collected in three treatment LGAs and three control LGAs in each of four WINNN focal states (not Yobe for security reasons). A panel of households was visited at baseline (June and July 2013) and again at endline (July and August 2016). On each visit, a household questionnaire was administered, and child anthropometric measurements were taken. A household was eligible for inclusion if it had at least one child aged 0–35 months. Children in this age group were targeted so that they were exposed to the WINNN-supported interventions for their entire lives. The table below shows the number of communities, households, mothers and children included in the study at baseline and endline. The sampling ensured that findings are representative in both treatment and control areas.

Table 9: Sample sizes in the ORIE quantitative surveys

Level of analysis	Baseline	Endline	Baseline		Endline	
			Treatment	Control	Treatment	Control
Households (with eligible children aged 0–35 months)	3,457	3,229	1,710	1,747	1,595	1,634
Children aged 0–35 months	6,833	5,567	3,463	3,370	2,777	2,790
Mothers to children aged 0–35 months (mothers of reproductive age, i.e. 15–49 years)	5,708	4,765	2,855	2,853	2,395	2,370
Communities	840	829	420	420	411	418

F.1.4 Qualitative impact evaluation

The qualitative evaluation used a theory-based approach, guided by the programme TOC, to assess WINNN's contribution to changes in the governance contexts for nutrition and the institutionalisation and sustainability of the WINNN-supported nutrition interventions. Data sources used for the evaluation included interviews and focus group discussions with a variety of stakeholders, WINNN programme documents, government documentation, media reports and reports from other DPs working on nutrition.

Baseline data were collected between July and October 2013, midline data in October to December 2014, and endline data in July to August 2016. Data were collected in two purposively selected LGAs in each of four WINNN focal states (as well as limited data collection in Yobe at endline) and at federal level. Interviewees and focus group participants included government officials, DPs (WINNN, CSOs and others), health workers, community-level implementing partners (CVs, community leaders, WDCs, town announcers, etc.), and members of mothers' support groups. All respondents at facility and community level were attached to one of two purposively selected health facilities in each LGA. A total of 724 stakeholders were interviewed at endline, and a similar number at baseline.

F.1.5 Qualitative impact evaluation: Community level

A small-scale qualitative study was undertaken in one LGA each in Zamfara and Kebbi states at endline (January 2017). This study was designed to collect in-depth information from programme beneficiaries to better understand two issues identified in the quantitative data: (1) the difficulties faced by mothers translating IYCF knowledge into practice; and (2) the relatively low awareness of and attendance at MNCHW events among mothers. The first included interviews and discussions with 823 mothers, 413 fathers, 46 grandmothers, 89 CVs, 45 traditional birth attendants and 29 community leaders in 28 purposively sampled communities, including two Fulani communities and at least two communities with no health facility. The second included research with 213 fathers, 22 community leaders and 22 town announcers in 22 communities without CMAM-related services and IYCF-related services, including two Fulani settlements.

F.1.6 Economic evaluation

F.1.6.1 Health facility survey (HFS)

The HFS was undertaken in August 2015. The main objective was to understand how the CMAM programme was being implemented in WINNN-supported sites and the challenges and costs faced by staff, CVs and caregivers using the services. Four domains were explored: costs, time allocation, facility readiness, and quality of services. Data were collected in a representative sample of WINNN-supported OTP facilities randomly selected within each LGA (n=24; 37% of all

OTP facilities) and all WINNN-supported SC facilities (n=12), across four WINNN states (not Yobe for security reasons). As well as survey questionnaires for staff, CVs and caregivers, data were collected via time-cards and direct observation. Clients at OTP sites were selected via time sampling. At OTP facilities, the sample included 132 staff, 176 CVs and 445 clients. At SC sites, the sample included 55 staff and 43 clients.

F.1.6.2 Full costing of the WINNN programme

The costing study assessed the costs of delivering the WINNN outputs from programme and health services perspectives for all four outputs, as well as from a societal perspective for the CMAM and IYCF interventions. The latter included costs incurred by unpaid CVs and health service users. A top-down approach to costing was used for WINNN programme expenditure, with total expenditure divided by total units (e.g. patients treated) for a given output. Costing of the CMAM and IYCF interventions used a mix of top-down and bottom-up approaches, depending on data availability. A bottom-up approach identifies and assigns a value to all resources used to provide an output, and sums the values to derive a total unit cost. Information on data sources used and further details on methodology are presented in Annex G.

F.1.6.3 Cost-effectiveness of the WINNN programme

The economic evaluation of the CMAM and the IYCF interventions used CEA to provide comparable VfM estimates. The CEA evaluates the differences in costs and the differences in outcomes between the intervention and a comparator using a decision tree modelling approach. The approach models the costs and outcomes of different pathways under each scenario (intervention or no intervention) based on the likelihood, or probability, that a child will follow different pathways under each scenario. The outcome measures were calculated using costs from both societal and health services perspectives. The costs used were the same as the costs used in the costing study. A mix of primary and secondary data sources and/or assumptions derived from the literature were used for each model parameter (outcome probabilities and costs) for the CMAM programme and the IYCF interventions decision trees. These are shown in Annex G along with further details on methodology.

F.1.7 Gender syntheses

Gender analysis was undertaken at key moments in the WINNN programme in order to triangulate and summarise gender-related findings from across ORIE studies. No additional data collection was undertaken. Gender synthesis reports were produced at the end of WINNN years 2 and 3. The purpose of the syntheses was to increase awareness among programme implementers, the Government of Nigeria, CSOs and researchers of the influence of gender-related issues on maternal and child nutrition and the uptake of health and nutrition services, and to suggest the implications of the findings for WINNN programmes and government services.

F.2 Limitations of ORIE evidence

- **The quantitative impact evaluation was designed to assess the impact of the WINNN programme as a whole**, not of individual nutrition interventions (for which an evidence base exists). This means that the evaluation measures the combined effects of the interventions on the target population, rather than the effects of individual interventions.
- The quantitative impact evaluation measured impact on the entire populations of WINNN's focal LGAs for the CMAM programme and the IYCF interventions. WINNN's activities were focused on a subsection of communities and facilities in each LGA (see description of the geographical coverage of each intervention in Annex B). **This could dilute the impact estimates.**

- The quantitative impact evaluation sample was drawn to provide representative estimates for WINNN treatment and control areas. The small and purposive samples used for qualitative evaluation and research similarly mean that findings cannot be generalised. Some community research was undertaken in only one or two LGAs in only some of the WINNN states. **These sampling strategies mean that evaluation findings cannot be generalised to the four states included in the studies or to all of northern Nigeria.**
- **The risks of contamination (effects of another intervention that could affect the outcomes of interest, potentially causing an overestimate of impact) and spillover** (individuals in control LGAs accessing WINNN interventions, potentially causing an underestimation of impact) in the quantitative impact evaluation data were considered low.
- Operations research studies and the HFS were undertaken between 2014 and 2016. Evidence from the operations research studies has been used only to contextualise findings. **WINNN may have subsequently acted on the evidence and overcome issues identified in these studies.**
- The qualitative impact evaluation describes the contributions of multiple actors to progress on the research questions. **It is often difficult to disentangle which actors are responsible for which outcomes, particularly as the same actors often financed their activities with funding from multiple donors.**
- **The costing methodology extrapolates from data collected at specific time periods (e.g. the HFS, patient registration cards and interviews with state and LGA staff) to the programme duration.** Variations in programme context and implementation mean, however, that the mix of inputs from different stakeholders, particularly WINNN and the government, changed over time.

Annex G Further information on the methodology used in the costing and cost-effectiveness studies

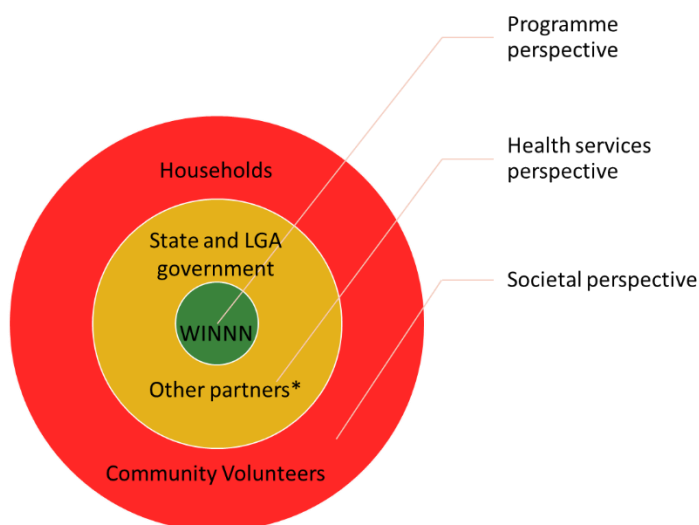
In both studies, costs are reported in US\$ in order to be comparable with studies in the international literature. Values were converted using IMF exchange rates. Adjustments for inflation were not made. Vehicle and equipment costs (capital costs) were annualised across years 1 to 5, using a discount rate of 3% and an average lifespan for the different capital expenditure categories reported by WINNN (15 years for vehicles, 10 years for medical equipment and five years for other equipment).

G.1.1 Costing study

The costing methodology was informed by a mapping of the intervention costs and contributing stakeholders during the inception phase, using programme documentation and discussions with WINNN. The methods and data sources were informed by other published studies identified through a focused literature search.

The costing was undertaken from three perspectives: (1) the WINNN programme; (2) a health services perspective; and (3) a societal perspective (in the case of the CMAM and IYCF interventions) (see Figure 4). The last of these includes the costs borne by community members (CVs and health service users).

Figure 4: Perspectives in economic evaluation



A combination of top-down and bottom-up costing approaches was used. In a top-down approach, total expenditure is divided by total units (e.g. patents treated) for a given output. This approach was used for WINNN programme expenditure. A bottom-up approach identifies and assigns a value to all resources used to provide an output, and sums the values to derive a total unit cost. A mix of top-down and bottom-up approaches was used to cost the CMAM and IYCF interventions, depending on data availability.

Data sources used for the costing study were:

- **WINNN expenditure data** (annual programme data submitted by WINNN using a pre-agreed expenditure-tracing template). Personnel and overhead costs shared across WINNN outputs were allocated to specific outputs by ORIE using an activity-based

apportioning methodology. Cost data provided by WINNN were not inspected from an accounting perspective;

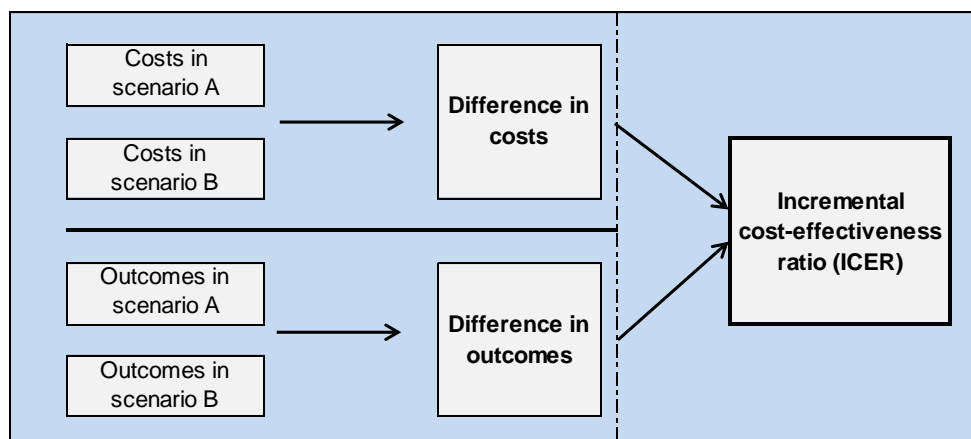
- **data on time use from patient registration cards** with start dates of June 2014 and May 2015 as part of the HFS;
- **data on resource use** (RUTF, F75/100 and other routine CMAM-related medicines) from the HFS; and
- **interviews with WINNN, state and LGA staff** in one LGA each in four WINNN states (all except Yobe) to understand state and LGA contributions to CMAM-related activities and IYCF-related activities.

G.1.2 Cost-effectiveness analysis (CEA)

The CEAs use two outcome measures. The first is an estimate of DALYs. The DALY combines mortality (years of life lost due to premature death) and morbidity (years of life lost due to disability). The disability weight used for SAM was 0.053 (Murray and Lopez, 1996). The second is an estimate of lives saved by the intervention. Both are calculated based on incremental differences in costs and outcomes between the intervention and a comparator of no treatment. The outcome measures are calculated from both a societal perspective and a health services perspective.

The final outcome of each analysis is the ICER. This is the ratio of the difference in costs and the difference in DALYs or lives saved between the intervention group and the comparator group (see Figure 5). The ICER represents the additional cost incurred to gain or avert one unit of the outcome, such as one DALY averted or one life saved.

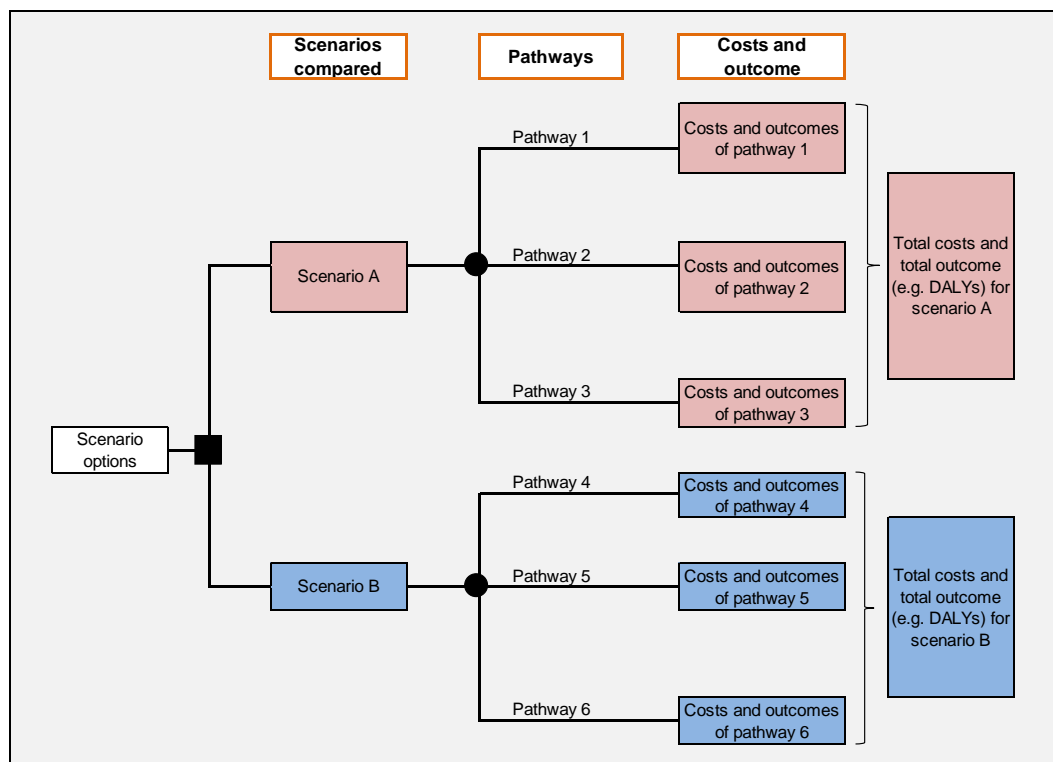
Figure 5: Overall approach of the CEA



Source: [Cost Effectiveness of the WINNN Programme: Operations Research and Impact Evaluation](#)

The CEAs use a decision tree modelling approach. The approach models the costs and outcomes of different pathways under each scenario (intervention or no intervention) based on the likelihood, or probability, that a child will follow different pathways under each scenario (see Figure 6). The probabilities used in the model are based on available data from other studies and/or sensible assumptions. The costs used in both analyses are the same as those used in the calculation of the cost per SAM child treated and the cost per mother counselled (see sections 4.2 and 4.3).

Figure 6: A schematic presentation of the decision tree modelling approach for CEA



Source: [Cost Effectiveness of the WINNN Programme: Operations Research and Impact Evaluation](#)

The data sources and/or assumptions used for the model parameters in each decision tree (outcome probabilities and costs) are shown below in Table 10 (CMAM programme) and Table 11 (IYCF interventions).

Table 10: Data sources and assumptions used in the CMAM programme decision tree

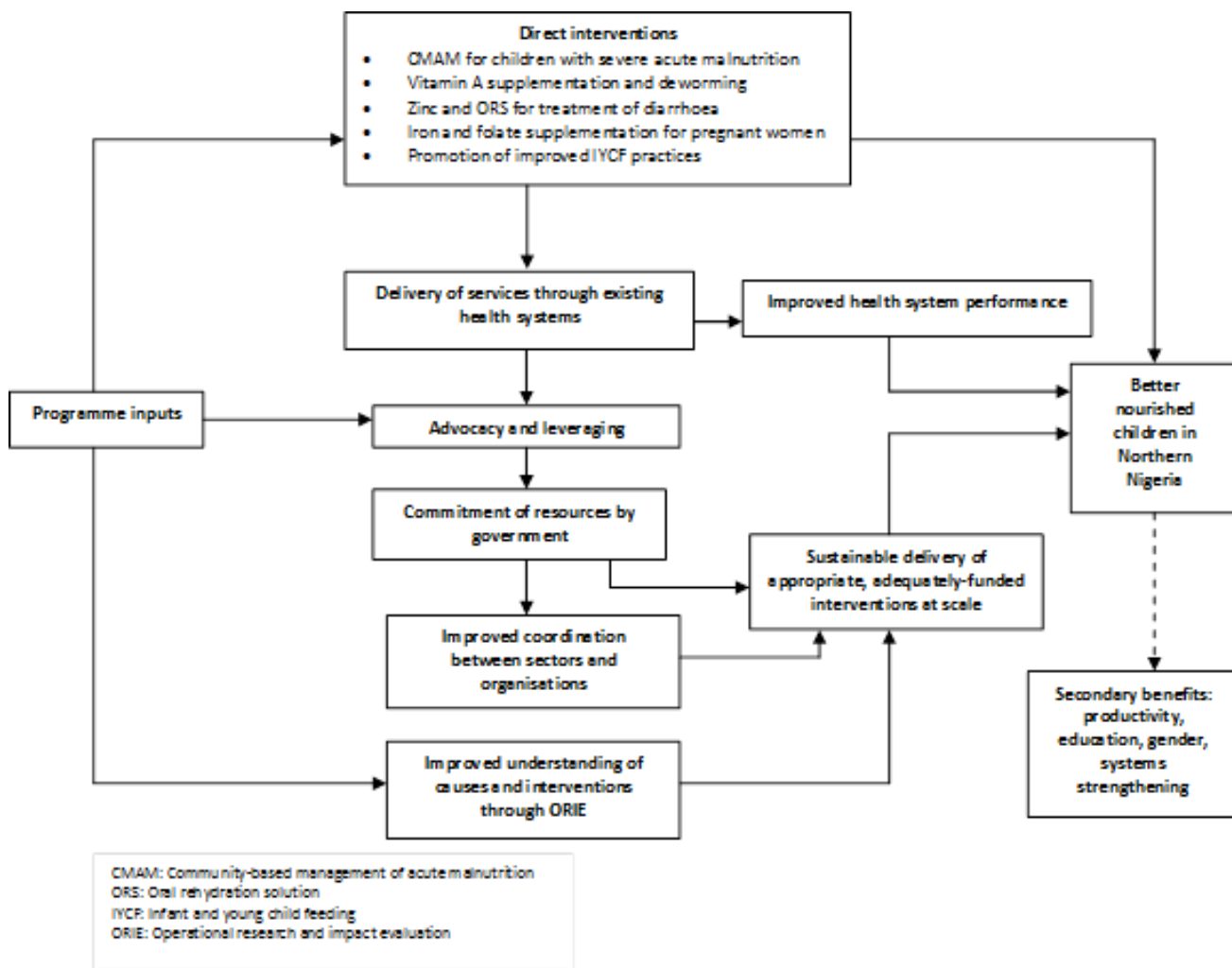
Model parameters	Data sources
Probabilities used in the decision model	
Probability of use of treatment at CMAM facilities and of use of non-CMAM-related treatment and no treatment/self-treatment	ORIE endline survey [primary analysis] SLEAC (Simplified Lot Quality Assurance Sampling Evaluation of Access and Coverage) survey [sensitivity analysis]
Probability of treatment outcomes among users of the CMAM-programme (including dying during treatment at CMAM facilities)	WINNN programme service data for the CMAM intervention
Probability of mortality in users of the CMAM programme after exiting from the CMAM programme (presented as mortality outcome)	Follow-up survey of CMAM service users, conducted by Jos University (recovered in OTP or SC facility) Model assumptions for other treatment outcomes, i.e. not recovered and defaulted
Probability of mortality in children receiving no treatment	Mortality estimated based on the MUAC score of SAM children before they received treatment
Probability of mortality in children receiving non-CMAM-related treatment	Assumed to be an average of mortality in the CMAM programme and mortality in children receiving no treatment
Costs used in the decision model	

WINNN programme costs	WINNN programme expenditure data for years 1 to 5, broken down by states, outputs and cost categories
State- and LGA-level programme costs	ORIE-conducted interviews with state nutrition officers (SNOs), local nutrition officers (LNOs) and WINNN local technical assistants (LTAs) in Jigawa, Katsina, Kebbi and Zamfara
Health facility-level costs	Various data sources were used for the calculations of these costs: Patient registration cards, UNICEF procurement data from WINNN and the One Health Tool, ORIE-conducted interviews with SNOs, LNOs and LTAs, and the HFS
Community volunteer costs	The HFS and patient registration cards
Caregiver costs	The HFS and patient registration cards
Costs of non-CMAM-related treatment	Model assumptions based on Wilford <i>et al.</i> (2011) and WHO-CHOICE estimates

Table 11: Data sources and assumptions used in the IYCF interventions decision tree

Model parameters	Data sources
Probabilities used in the decision model	
Probability of exposure to the IYCF interventions	ORIE baseline and endline surveys
Child breastfeeding practices	ORIE baseline and endline surveys
Probability of under-five mortality	LiST (based on breastfeeding rates)
Costs used in the decision model	
WINNN programme costs	WINNN programme expenditure data for years 1 to 5, broken down by states, outputs and cost categories
State- and LGA-level programme costs	ORIE-conducted interviews with SNOs, LNOs and WINNN LTAs in Jigawa, Katsina, Kebbi and Zamfara
Health facility-level costs	Various data sources were used for the calculations of these costs: ORIE-conducted interviews with SNOs, LNOs and LTAs, WHO estimates, and the HFS
Community volunteer costs	Various data sources were used for the calculations of these costs: WINNN CV motivation study, the HFS, and WINNN monitoring service data

Annex H The WINNN TOC



Source: DFID (2011).