

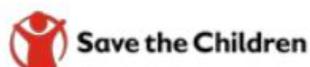
Full Costing of the WINNN Programme

Summary Report

Operations Research and Impact Evaluation

Paola Vargas and Sarah Keen

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Introduction

Operations Research and Impact Evaluation (ORIE) is led by Oxford Policy Management (OPM) in conjunction with three other UK-based institutions, the London School of Hygiene and Tropical Medicine (LSHTM), the Institute of Development Studies (IDS) and Save the Children UK (SCUK), and four Nigerian partners, the University of Ibadan, Kaduna Polytechnic, Ahmadu Bello University at Zaria (ABU), and the Food Basket Foundation International (FBFI).

ORIE is funded by the Department for International Development of the UK Government and implemented in collaboration with the Government of Nigeria.

This report summarises the findings of the ORIE economic evaluation on the costs of the WINNN programme. The aim of the work is to assess the costs of delivering the WINNN outputs over the programme duration (2011–2017). The level at which the output is focused determines the scope and the perspective of the costing. All outputs are costed from a programme perspective, which considers the expenditure of the WINNN programme. The infant and young child feeding (IYCF) interventions (Output 2) and community-based management of acute malnutrition (CMAM) programme (Output 3) are additionally costed from a societal perspective, which includes costs incurred by health service providers in providing the intervention and costs incurred by health service users, in addition to the expenditure of the WINNN programme.

Separate reports provide the results of the cost-effectiveness analysis (CEA) of the IYCF interventions and CMAM programme interventions ([Cost-effectiveness of the WINNN programme, 2017](#)), and a value for money (VfM) analysis of the overall WINNN programme. These reports will complement the costing and cost-efficiency analysis findings in this summary report and will help provide a better answer to the VfM question of whether the best possible outcome was obtained within the given budget and considering improvements in equity.

This research was carried out by the ORIE consortium. The ORIE project is managed by Patrick Ward at OPM. For further information on this report, please email psu.ORIE@opml.co.uk or see the website: <http://www.heart-resources.org/tag/orie/>

The contact point for the client is Melkamnesh Alemu: m-alemu@dfid.gov.uk

ORIE

Level 3, Clarendon House
52 Cornmarket Street
Oxford, OX1 3HJ
United Kingdom

Tel +44 (0) 1865 207 300
Email admin@opml.co.uk
Website www.opml.co.uk

The WINNN programme

The WINNN programme is an ambitious £52 million, six-year DFID-funded programme (2011–2017) to improve maternal, newborn and child nutrition in five states in northern Nigeria: Jigawa, Katsina, Kebbi, Yobe and Zamfara. WINNN is implemented by three implementing partners (IPs): SCI, Action Against Hunger (ACF), and the UN Children’s Fund (UNICEF).

WINNN is designed to deliver three nutrition-specific interventions (micronutrient supplementation, IYCF interventions and the CMAM programme) that evidence has shown are effective and cost-effective, while also supporting effective government coordination and planning for nutrition. The delivery of these interventions through government is expected to build government systems and capacity for implementation, and ultimately to institutionalise them within routine health care systems. This is expected to raise the political profile of undernutrition in Nigeria and to encourage the government to support nutrition programmes.

Based on the WINNN logical framework, the outputs of the WINNN programme are as follows:

Output 1: Integration of micronutrient intervention into routine primary health services. This output is concerned with the delivery of micronutrient interventions to pregnant women and children under five through their integration in routine primary health services.

Output 2: Delivery of effective IYCF interventions in selected states and LGAs in northern Nigeria. This output is concerned with facility and community-based interventions focused on mothers of children under two and pregnant women, to improve IYCF practices through exclusive breastfeeding (EBF), weaning and complementary feeding.

Output 3: Delivery of effective treatment for severe acute malnutrition (SAM) through local health systems in selected states and LGAs in northern Nigeria. This output is concerned with the provision of treatment for SAM via the CMAM programme through integrated primary health services.

Output 4: Strengthening of nutrition coordination and planning mechanisms at national and state levels. This output is related to more effective government planning and coordination in nutrition and related sectors at the federal and state levels, as well as building government commitment.

Output 5: The fifth output, ORIE, is a consortium that is independent of the three IPs, managed by Oxford Policy Management (OPM). ORIE is responsible for undertaking operations research and assessing the impact and effectiveness of the WINNN programme.

In the interests of simplicity, throughout the report we refer to the first four WINNN outputs as micronutrient supplementation (Output 1), IYCF interventions (Output 2), the CMAM programme (Output 3) and government coordination and planning (Output 4).

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.

Costing methodology

The costing study was designed to respond to the primary aim of assessing the costs of delivering the WINNN outputs over the programme duration, from a programme perspective for all four outputs and also from a societal perspective for the IYCF interventions and the CMAM programme. The methodology was developed in ORIE's inception phase and informed by a mapping of the intervention cost items and a focused literature review.

The context of the study is five states in northern Nigeria—Jigawa, Katsina, Kebbi, Yobe and Zamfara. WINNN supports the delivery of three nutrition-specific interventions—micronutrient supplementation, IYCF interventions and the CMAM programme—through the government primary healthcare system and Community Volunteers (CVs). In addition, it supports government planning and coordination for nutrition.

The primary objectives of the costing are:

- to report WINNN programme expenditure overall and analyse this broken down by WINNN output, cost category, state and year; and
- to estimate the cost-efficiency of the IYCF and CMAM interventions, which is the cost per beneficiary from a societal perspective defined as:
 - IYCF: This is the **cost per woman reached** through WINNN-supported the IYCF interventions from September 2012 to August 2016 from a societal perspective;¹
 - CMAM: This is the **cost per child treated** at WINNN-supported CMAM facilities (including treatment received at the outpatient therapeutic programme (OTP) facilities and at the stabilisation care (SC) facilities) from September 2012 to August 2016 from a societal perspective.

The time horizon for the costing is most of the programme duration (September 2011 to August 2016). The sixth and final year of the programme is not included due to the timing of this report.

There are some important limitations related to the internal and external validity of our data sources for the cost estimates. The four main limitations are as follows:

1. Sampling for the Health Facility Survey (HFS), Patient Registration Card data and interviews with the State Nutrition Officers (SNOs) and Local Nutrition Officers (LNOs) is not representative over the time period August 2011–September 2016.
2. Asking people to estimate the time spent on an activity, even if the recall period is short, is notoriously difficult. This issue affects our estimates of WINNN programme expenditure through the time spent by WINNN personnel and health workers on WINNN activities, as well as the CVs and caregiver opportunity costs of their time spent on WINNN activities. It also affects the estimates of state/LGA personnel time spent on the CMAM programme and the IYCF interventions supervision and monitoring.
3. There is a key limitation when interpreting the disaggregation by WINNN outputs. The apportioning of staff and other common costs to different WINNN outputs was not done in a standardised way in the case of UNICEF, due to the change in the agency's global financial system data capturing coding during the course of the project.

¹ Although the IYCF interventions also target husbands and mothers-in-law through counselling and community mobilisation, we necessarily use women for the unit cost calculation because the other beneficiaries are not recorded consistently in IYCF beneficiary monitoring statistics for all years and states.

4. WINNN is not the only nutrition programme in Nigeria. Thus, costing findings for micronutrient supplementation and government planning and coordination should be interpreted as the DFID contribution to these activities. It is for this reason that cost-efficiency or cost-effectiveness analyses for these outputs would be problematic.

Key findings

The costs of WINNN from a programme perspective

Overall WINNN expenditure for Years 1–5 of the programme (September 2011 to August 2016) totalled £33.6 (\$52.3) million. The CMAM programme constituted the largest share of total expenditure (41%), followed by micronutrient supplementation (32%), the IYCF interventions (15%) and support to government coordination and planning (12%).

The absolute expenditure on each intervention has varied across the years due to the gradual expansion of the programme, the varying timing of procurement of some medical commodities, and different contributions from states and LGAs to WINNN output across the years. Over the years, WINNN has spent increasing amounts on the IYCF interventions and government coordination and planning. The 47% increase in expenditure on the IYCF interventions from Year 4 to Year 5 can be explained by the expansion of the community IYCF (c-IYCF) component of the IYCF interventions to additional wards in the beginning of Year 5. Annual spend over the years on the CMAM intervention and micronutrient supplementation has varied a bit more. Expenditure on the CMAM intervention in Year 3 was the largest, with the roll-out to the remaining states taking place that year. However, this decreased in subsequent years as a result of lower set-up costs and bulk procurement of ready-to-use therapeutic food (RUTF) in the first three years of the programme (inflating costs in those particular years). Expenditure on micronutrient supplementation also varied across the years. This could also reflect the gradual expansion of the programme to all states², the possibly lumpy procurement of some medical commodities and the varying contributions from states and LGAs to this output across years.

Human resources constituted the largest expenditure category (33% of total expenditure), followed by RUTF and F75/F100 (23%), other medical commodities (13%), and expenditure on monitoring and evaluation (M&E) (10%). The majority of the human resources category, 79%, corresponded to expenses on WINNN staff working at the federal, state and local levels, and staff shared with other programmes. The remaining 21% corresponded to expenses on non-staff items, such as technical assistance or stipends for health workers. RUTF accounted for 99% of the therapeutic commodities expenditure for the CMAM programme. Other micronutrient supplements included iron folate, deworming, and oral rehydration solution and zinc for routine primary health care (PHC) services and MNCHW events and some other costs (less than 1%) on other medicines for the treatment received at the CMAM programme, such as antibiotics. M&E expenses included venue hire, M&E materials, per diems, travel, and other costs for supervision and programme assessments.

As anticipated, the main cost drivers for each WINNN output resemble the main components of that specific intervention. For instance, RUTF provision is the main cost driver of the CMAM programme (55%). WINNN expenditure on micronutrient supplementation is driven by the cost of medical commodities (42%) delivered through routine primary health

² WINNN rolled out maternal, newborn and child health weeks (MNCHW events) in Zamfara and Jigawa in Year 1, followed by Katsina and Yobe in Year 2. In Kebbi, WINNN supported the platform of the Immunisation Plus Days in Year 2 and Year 3, up until MNCHW events were first implemented in Year 4.

services and MNCHW events. The IYCF interventions and government coordination and planning are relatively more people-intensive than other WINNN outputs, with human resources constituting the largest cost category at 52% and 57%, respectively.

WINNN is not a capital-intensive programme in the standard sense but it has made significant investments in strengthening the government capacity to implement nutrition interventions. Only 5% of WINNN programme expenditure has been on traditional capital items, such as vehicles, medical equipment and other equipment (e.g. computers). Expenditure on human resources, however, has constituted 33% of overall expenditure. This represents the cost of WINNN staff (and consultants) at the national, state and local levels supporting the delivery of the three key comprehensive nutrition-specific interventions through the public health system and the effective planning and coordination of nutrition interventions more generally.

The government and other development partners work in coordination with WINNN on the achievement of micronutrient supplementation and government coordination and planning outputs. Thus, **the WINNN expenditure on those outputs—£10.8 million on micronutrient supplementation and £3.9 million on government coordination and planning—represents the DFID-funded contribution to those activities in the focal states and nationally.**

The costs of the IYCF interventions

The average cost per mother reached for the facility IYCF (f-IYCF) component from a health services perspective was £10.0 (\$15.6). Of this total, 87% (£8.7) was for WINNN higher-level programme costs, and the remaining 13% (£1.3) was for health facility-level costs (health worker inputs and facility overheads). CV and caregiver costs were not included in the costing of the f-IYCF component since the extent of CV involvement in delivering facility-based IYCF services could not be estimated (thus we assume health workers only provide this service), and caregivers' costs are expected to be negligible as they incur costs on the f-IYCF component while they attend other facility-based services.

The average cost per mother reached for the c-IYCF component from a societal perspective was £12.3 (\$19.2). Of this total, 70% (£8.7) was for WINNN higher-level programme costs, 10% (£1.2) was for state and LGA costs, and 20% (£2.5) was for CV costs to establish and facilitate mothers' support groups. 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 is £9.9 (\$15.4). This is very similar to the cost of the facility-based service from a health services perspective.**

WINNN higher-level programme costs are the main cost driver of the IYCF interventions. From a societal perspective, 87% of the cost per mother reached through the f-IYCF component and 70% of the cost per mother reached through the c-IYCF component is expenditure by the WINNN programme. WINNN expenditure on the IYCF interventions is primarily spent on human resources (52%) to support the delivery of the intervention. Other substantial areas of WINNN programme costs on the IYCF interventions include expenditure on materials, allowances and meeting expenses (33%), such as for mobilisation of CVs, M&E, and training of health workers, state and LGA officers.

WINNN expenditure on the IYCF interventions is large in proportion to the current programme expenditure incurred by state and LGA governments. WINNN programme costs per mother reached are 3.5 times larger (£8.68) than the total cost currently incurred by the government in health worker inputs, facility overheads, and state-/LGA-level supervision and planning of activities (£0.81, £0.49, and £1.19 respectively).

Health worker costs are not a large component of the costs of the f-IYCF component. We estimate that health worker costs are £0.81 per mother reached, or 8% of the total cost per mother reached through f-IYCF component. This is indicative of the IYCF interventions not being very demanding on the health system as it is a service that is easily integrated into other PHC services, such as antenatal care (ANC), postnatal care (PNC), or MNCHW events, which does not need a bespoke day or independent infrastructure. However, even this may be a stretch for the current cadre of health workers, with CVs stepping in to assist in the delivery of the f-IYCF component. This cost could even be over-estimated since CVs usually step in to delivery of the f-IYCF component as well, but we could not cost their involvement as relevant information is not available.

Health worker costs in the f-IYCF component model, at £0.8 per mother reached, are less costly than CVs costs in the c-IYCF component model, at £2.5 per mother reached. Social costs per CV hour are much lower than those for health workers³. Thus, the larger costs of CVs can be explained by the fact that c-IYCF component is more of a standalone intervention compared to f-IYCF component, which is more integrated into existing PHC services, the costs of which are not accounted for as part of our modelling. CVs will spend more time organising and facilitating IYCF activities in the community, while health workers will only spend a relatively small portion of their time delivering counselling sessions at the facility.

The costs of the CMAM programme

The overall cost per child treated with the CMAM programme was £74.8 (\$116.7) from a health services perspective and £83.7 (\$130.7) from a societal perspective. 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.⁴

The cost per child treated is found to be higher in SC facilities than in the OTP facilities, at £86 versus £62, respectively, from a health services perspective, and at £102 versus £69, respectively, from a societal perspective. This is not surprising given the more intensive treatment received at SC facilities which is needed to cure SAM children with complications. Both levels of care also have very different human resource structures, with SC facilities usually operating seven days a week, with relatively more qualified staff, given the level of care required, which has implications in terms of costs.

The main cost drivers of the CMAM programme are RUTF and WINNN higher-level programme costs. Our estimates show that they constitute 34% (£28.8) and 33% (£27.2), respectively, of the overall cost of the CMAM programme per child treated. In the case of the OTP component of the CMAM programme, RUTF and WINNN higher-level programme also constitute the largest elements (42% or £28.6 and 35% or £23.7, respectively) of the costs per child of the treatment received at the OTP facility. For the cost per child of treatment received at SC facilities, the figure is quite different, given that the level of care provided is more intense in terms of human resources and infrastructure. In this case, the costs incurred by the government in health worker inputs and facility overheads constitute the largest elements, at 56% (£56.9) of the costs per child of the treatment received at the SC facility, followed by WINNN higher-level programme costs, at 23% (£23.7).

³ We estimate an hourly salary of \$1.85 of an average health worker implementing f-IYCF component, versus an hourly opportunity cost of \$0.38 of a CV. See Section **Error! Reference source not found.** and Section **Error! Reference source not found.** for further details on the assumptions in relation to health workers and CVs costs, respectively.

⁴ The assumption is based on evidence from fhi360, 2012.

The CMAM programme is not very capital intensive. Our estimates show that 2.6% (£2.2) of the overall cost per child treated relates to capital expenditure. However, further investments in health facility and supply chain infrastructure would need to be considered more holistically for future implementation and sustainability, as evidenced by the current limitations of some facilities lacking enough supplies to provide the full set of CMAM services (OPM, 2016).

Introducing the societal costs of CVs and caregivers increases the cost burden of CMAM care per child treated, and not by a negligible amount. CVs incur costs per child treated in terms of their time and expenses of £1.90, and caregivers £4.73 at an OTP facility and £15.58 at a SC facility (£7.1 on average for the CMAM programme overall). These costs combined constitute 11% (£9.0) of the overall cost of the CMAM programme per child treated from a societal perspective. These may be smaller relative to other costs from an overall perspective, but they represent a large burden for the CVs and caregivers themselves, and thus a scale-up model should evaluate whether some compensation should be offered.

Discussion

An investment of £33.6 (\$52.3) million over five years in five states in northern Nigeria represents a significant contribution to funding three nutrition-specific interventions in those states, and moreover in more generally supporting effective government planning and coordination for nutrition. However, this level of investment still represents a financial gap when compared to the National Strategic Plan of Action for Nutrition (NSPAN) (2014–2019) or, more ambitiously, the Scaling Up Nutrition full coverage targets (World Bank, 2014).⁵

WINNN is a people-intensive programme, with 33% of overall WINNN expenditure being on human resources. Also, WINNN higher-level programme costs constitute a significant component of the cost per beneficiary of both the IYCF and CMAM interventions, even though WINNN has a delivery model which is integrated into existing health systems. Although the purpose of this report is not to suggest the cost model for the government taking over these interventions, these findings do raise questions as to how government would take over the WINNN programme costs. Some of these costs will likely be initial investment, complementary to the government expenditure, or just reduced, given the less expensive salary structure of government human resources.

The RUTF cost estimate of £29 (\$45) per child treated is not surprising given it is a high cost input with a price that is set in the international marketplace, and given that UNICEF is playing a significant role in its procurement, both for Nigeria and internationally. There are no real economies of scale for this cost item, other than perhaps slight improvements in purchasing power for a larger order or in transportation costs. However, future reductions in the unit price of RUTF are expected to be crucial to determine sustainability for scaling up and the possibility of the government taking over this cost.

The IYCF interventions come at a much lower cost per beneficiary than the CMAM programme. We estimate a cost per child treated through the CMAM programme of £84 (\$131) from a societal perspective and a cost per mother reached through the f-IYCF component of £10 (\$16), and through the c-IYCF component of £12 (\$19). This is to be expected, as curative services like the CMAM programme are usually more costly than preventative services such as the IYCF interventions.

⁵ Federal Republic of Nigeria (2014) *National Strategic Plan of Action for Nutrition*.

There is a lack of existing estimates in the global literature, and in particular for Nigeria, of the cost per mother reached by other IYCF interventions similar to the IYCF component of the WINNN programme, making comparisons difficult. NSPAN (2014–2019) uses a cost for community nutrition programmes for behaviour change communication of \$5 per child. The source of this estimate is not clear, but it appears to be based on a study in 1999 related to a community nutrition programme in Asia (Mason *et al.*, 1999). There are many methodological differences in the approach used in Mason *et al.* (1999), compared to ours. One of the most important is that our cost estimate of the IYCF interventions is per mother reached, not per child. A conservative assumption of two children under two years of age per mother reached would give an estimate of \$10 per mother reached, which is not too different from our estimates.

Our estimate of the cost of the CMAM programme per child is broadly similar to another recent societal estimate from northern Nigeria, and to other estimates of cost per child in similar contexts and settings. Variations in programme costs arise from different costing perspective used (health service vs. societal), assumptions regarding the coverage and scale of the programme, and the human resource model of service delivery. Frankel, S., Roland, M. and M. Makinen (2015) estimated a similar overall societal cost per child treated of \$123 in the CMAM programme supported by UNICEF with Children’s Investment Fund Foundation (CIFF) funding. Bachmann (2009), which is the study used in the DFID Business Case (2011), estimates an overall cost per child cured of \$203 in Zambia from a health services perspective. The five-year (2014–2019) strategic plan for nutrition in Nigeria, NSPAN, estimates a much lower cost per child, at \$80. The lower cost might be explained by the different methodology used,⁶ which might not accurately reflect actual programmatic experience under WINNN, exclusion of societal costs, and different coverage estimates. **Interestingly, although there are differences in methodologies, the comparison with the cost estimates of other CMAM programmes also shows that RUTF and higher-level programme costs remain the largest shares of the overall cost, regardless of settings and delivery models.**

⁶ NSPAN 2014–2019 costing employed the ‘program experience’ methodology. This approach generates unit cost data that capture all aspects of service delivery, such as costs of commodities, transportation and storage, personnel, training, supervision, monitoring and evaluation, relevant overheads, wastage etc., for each intervention from actual programmes that are in operation in Nigeria, and considers the context in which they are delivered. Whenever possible, the unit costs of the nutrition-specific interventions in NSPAN were estimated using programmatic data that were provided by local IPs, the Federal Ministry of Health, and state governments, based on programme experience. In cases where the intervention was not yet being implemented or local data were not available, global unit cost estimates from the World Bank were used (NSPAN, 2014).

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