Evaluation of
Community-based Management of Acute Malnutrition Programme supported by UNICEF in DPR Korea
2015–2017

Evaluation Report

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Paul Binns (Evaluator) and Saul Guerrero (Technical Director)

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Abbreviations and acronyms

CBS	Central Bureau of Statistics
CDMU	Child Data Management Unit
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CERF	United Nations Central Emergency Response Fund
CHD	Child Health Day
CMAM	Community-led Management of Acute Malnutrition
CMSAM	Community Management of Severe Acute Malnutrition
CPD	UNICEF Country Programme Document, DPRK
CRC	Convention on the Rights of the Child
DAC	Development Assistance Committee
DPRK	Democratic People's Republic of Korea
HHD	Household doctor
ICN	Institute of Child Nutrition
IEC	Information, education and communication
IGME	Inter-agency Group for Child Mortality Estimation
IMNCI	Integrated Management of Neonatal and Childhood Illness
IMR	Infant Mortality Rate
IYCF	Infant and young child feeding
KFPD	Korean Federation for the Protection of the Disabled
KLMIS	Korean Logistical Management and Information System
LQAS	Lot Quality Assurance Sampling
MAM	Moderate acute malnutrition
MoPH	Ministry of Public Health
MTSP	Medium Term Strategic Plan
MUAC	Mid-upper arm circumference
NCC	National Coordination Committee
NNS	DPRK National Nutrition Strategy 2014–2018
OECD	Organization for Economic Co-operation and Development
PC	Population Centre
RUSF	Ready-to-use supplementary food
RUTF	Ready-to-use therapeutic food
SAM	Severe acute malnutrition
SFP	Supplementary Feeding Programme
SST	Supplementary suckling technique
TET	Technical Evaluation Team
ToC	Theory of Change
ToR	Terms of reference
U5	Under 5 years of age
U5MR	Under 5 Mortality Rate
UNEG	United Nations Evaluation Group
UNICEF	United Nations Children's Fund
WASH	Water, sanitation and hygiene
WFH	Weight for height
WFP	World Food Programme

1 Executive summary

The CMAM approach to the treatment of acute malnutrition was introduced in DPRK in 2008 with the main objectives of (i) contribute to the overall efforts to reduce excess morbidity and mortality due to undernutrition (ii) to contribute to the reduction of the prevalence of undernutrition among children less than 5 years of age (iii) to treat severe acute malnutrition (SAM through the provision of therapeutic services, promotion of appropriate feeding practices and vulnerability reduction and (iv) to strengthen the technical capacity of the Ministry of Public Health at national, provincial and county levels to design, implement and monitor public health programmes at scale. With UNICEF support, the Government of DPRK established outpatient treatment services for children with severe acute malnutrition (SAM) without complications in 29 counties in four provinces, in approximately 1,000 *ri* (village) clinics and 14 orphanages (baby homes). Inpatient treatment for children with SAM with complications was established in 12 provincial hospitals. Overall, this provided geographical coverage to 16% of children aged under 5 years (U5).

In 2014 a major programme revision was agreed with MoPH. Children with moderate acute malnutrition (MAM) with associated illnesses would be treated in the CMAM programme to mitigate the risk of children becoming SAM. In addition, expanding geographic coverage would provide equitable access to treatment. Following successive droughts and floods in 2015 and 2016, the programme gradually expanded to provide CMAM programming in 189 of the 210 counties nationwide, representing geographic coverage of 90% of U5 children. Hospitals deliver both outpatient and inpatient treatment for U5 children with SAM with or without complications and MAM with illnesses. Screening is conducted monthly at community level in nurseries, routinely at *ri* clinics, twice-yearly on Child Health Days (CHDs). The extensive network of by doctors and household doctors (HHDs) also screens during home visits.

After several years of implementation and scale-up of CMAM in DPRK, an evaluation was commissioned to review the countrywide scale up of CMAM, the progress to date in achieving programme objectives including the access to and utilization of CMAM services by caregivers, and to provide a comprehensive analysis as a basis for planning the new UNICEF country programme 2017–2021. The evaluation was undertaken between the 9th October and 3rd November 2017; conducted by Action Against Hunger under a long-term agreement contract with UNICEF Headquarters.
The theory of change for the revised programme strategy indicates promoting the '1,000 days approach', improving cross-sectoral links in 10 convergence counties, ensuring life-saving services, and removing bottlenecks and barriers to access[1]. These themes were integrated into the evaluation, which focused on three overarching questions:

1. To what extent has the strategy to achieve high geographic programme coverage provided equitable access and utilization by beneficiaries?
2. To what extent has the programme provided effective care that is contextually appropriate and consistent with international standards?
3. What lessons can be learned from achievements and challenges in order to plan for future programming?

The specific objectives of the evaluation were as follows:

a) To examine CMAM programme performance in a representative sample from the currently operational 189 counties and thirteen provincial paediatric hospitals using the standard OECD /

[1] Currently, 9 of envisaged 10 convergence counties have been identified jointly with the Government. A convergence county has not yet been selected for Jagang Province.

DAC criteria of programme relevance/ appropriateness, efficiency and quality of services, effectiveness, impact (potential) and sustainability in addition to Equity.

b) To examine the effectiveness of related crosscutting issues such as coordination and management; gender and other forms of equity; capacity development; advocacy and policy development; and information/data management.
c) To document good practices and generate evidence-based lessons and recommendations to strengthen on-going efforts towards the expansion of CMAM coverage in DPRK and considering potential regional level guidance and support.
d) Identify gaps, key lessons learned, and main challenges and provided recommendations on how to address these challenges, pursuing the opportunities and recommend key practices that should be incorporated into the future programme.

A mixed methodology was used to provide three streams of data: (i) a desk review of documentation, (ii) a technical evaluation of CMAM services provided by hospital facilities and *ri* clinics and (iii) a community-based evaluation of treatment coverage using the Lot Quality Assurance Sampling (LQAS) method to classify case coverage against internationally recognized standards. Findings were triangulated to answer specific questions in the terms of reference (ToR) in accordance with Development Assistance Committee (DAC) criteria of relevance / appropriateness, effectiveness, coverage, efficiency (and quality), impact and sustainability. It is intended that the Government of DPRK, MoPH and UNICEF use this report to identify strengths, weaknesses and lessons learned during CMAM programme scale up in order to implement contextually appropriate programme reform and guide further programme development.

Main findings and key recommendations

Relevance / appropriateness

The evaluation found the CMAM programme to be relevant and appropriate. The underlying causes of acute malnutrition in DPRK are multifactorial and the occurrence of natural disasters imposes additional localized nutritional stressors. The programme has responded appropriately to the needs of the population in disaster-affected areas over both short- and long-term fluctuations in need. The strategy to change the service delivery model to focus both on high geographic coverage and responding to disasters from 2015 onwards has been appropriate to the needs of the national and local context. Nutritional support of children with MAM with illnesses is a unique adaptation for the DPRK context. However, terminology used in the national guidelines describing these illnesses as 'complications' has resulted in confusion regarding treatment protocols and resulted in an efficiency impact on the programme in terms of cost and logistical demand.

Key recommendation
Update CMAM National Guidelines: The national CMAM guidelines should be updated and adapted to the CMAM programme strategy adopted since 2014, and should clarify protocols for children with MAM with illnesses.

Effectiveness

The evaluation found the CMAM programme to be highly effective. The CMAM programme in DPRK treats U5 children with SAM to prevent mortality, and children with MAM with illnesses to prevent further morbidity and subsequent risk of death. The strategy to prevent SAM through the treatment of children with MAM with illnesses has decreased the proportion of SAM cases relative to MAM cases programme-wide. Inferential evidence suggests that the CMAM programme in DPRK has achieved high cure rates and been highly effective in reducing both morbidity and mortality. For 2016, the latest

year for which complete data was available, this led to a reduction in morbidity for approximately 12,500 children, with approximately 4,600 deaths averted.

Key recommendation
Data management: Quarterly data shared with UNICEF for routine programme monitoring should provide treatment outcome data for both children cured and those with negative outcomes, including defaulters, deaths and non-cured. Additional information on gender and disabilities should be included in reporting.

Coverage

The evaluation found the CMAM programme to be available to the majority of those who need it. Currently the programme is present in 189 of 210 counties and provides ***availability coverage*** of 90% nationally. The evaluation also found barriers to access that affect the level of uptake. Distance from treatment sites is a major barrier to accessing treatment, with ***accessibility coverage*** extending to a maximum radius of 15–20km from treatment sites. The LQAS evaluation found that within this radius of hospitals, **case coverage** was classified as high (>70%) based on international Sphere standards for urban nutritional programming. This result should be interpreted with caution as this may be an overestimate because of a potentially weak case finding methodology.

Baby homes were excluded from the evaluation and no children were identified as having disabilities. The proportions of female and male programme admissions correlates with expectations based on mid-upper arm circumference (MUAC) case findings and indicates equitable coverage based on gender. The accessibility radius is likely to be seasonal and highly compromised in winter. Opportunities to increase the impact of the programme, and thus child survival, lie in decentralization of the programme at county level to provide greater **accessibility coverage**.

Key recommendation
Formulate a programme strategy to increase accessibility and case coverage: In counties where MoPH data obtained through CHDs, for example, indicates a high burden of malnutrition and/or geographical long distances to CMAM treatment, services should be decentralized at county level in order to provide improved accessibility to outpatient treatment through additional county and *ri* hospitals.

Efficiency and quality

The evaluation found the CMAM programme to be efficient but with significant room for improvement. The screening and referral of eligible children to the CMAM programme from the community through MUAC screening in nurseries and the twice-yearly CHDs has resulted in timely admission of children for treatment. However, the potential gains in efficiency of treatment that timely referral allows has been lost to some extent through the absence of protocols to guide the treatment of children with MAM with illnesses. This has led to the use of more therapeutic products and antibiotics than is required for treatment, the unnecessary and prolonged occupation of hospital beds, and unnecessary consumption of human resources.

A significant departure from expected quality standards is evident in the treatment protocols for the management of infants aged less than 6 months; most significantly in the lack of use of protocols for treatment that promote breastfeeding. In general, the rapid expansion of the CMAM programme has been accompanied by a remarkable consistency of practice that has been facilitated by the efficient transfer of knowledge through CMAM Master Trainers, provincial CMAM focal persons, the widespread use of the national telemedicine system and supportive supervision from UNICEF and MoPH staff, particularly at provincial and county level. Major improvements in efficiency that would impact all aspects of the programme can be achieved through strengthening guidelines.

Key recommendation
Strengthen Infant and Young Child Feeding (IYCF) counselling and promotion: IYCF counselling and integration of IYCF practices such as optimal complementary feeding into CMAM needs to be strengthened. In particular, this should include promotion of early initiation of breastfeeding and exclusive breastfeeding within treatment protocols for children aged less than 6 months, and providing practical training on the supplementary suckling technique (SST) or the manual expression and use of breast milk.

Impact

The evaluation found the CMAM programme to have a strong impact. Official data from CBS indicate that during the period January 2015 to December 2016, a total of 151,981 children with MAM with illnesses and 33,853 children with SAM were treated. This translates into a reduction in morbidity through 17,630 cases of SAM being avoided and reduction in mortality of 7,581 U5 children. These figures do not include children treated in 2017. This is in line with the stated purpose of the CMAM programme in DPRK to address Goal 4 of the Millennium Development Goals to reduce undernutrition and mortality in children.

Key recommendation
Extend CMAM treatment services to include all children with MAM: The impact of the CMAM intervention to reduce morbidity and prevent mortality from acute malnutrition should be enhanced through the inclusion of **all children with MAM** irrespective of whether illnesses are present or not.

Sustainability

The evaluation found the CMAM programme, in its current form and against anticipated needs, to be unsustainable. Improved efficiency through improved clinical practices and the consequent reduced demand for therapeutic supplies may enable logistical demands for current CMAM interventions to be better met against donor funding. The use of more cost-effective products such as Ready-to-Use Supplementary Food (RUSF) to manage MAM is to be encouraged. However, unless the economic and political situation changes, and the underlying causes of malnutrition such as food insecurity and

limited public health systems are addressed, it is unlikely that CMAM interventions would be sustainable in the absence of donor funding.

Key recommendation
Support the management of commodities through the Government medical warehouse system: Effective distribution systems – initially county medical warehouses – should be supported in the short term to facilitate decentralization of services at county level. Trials of system support should be conducted in convergence counties for learning and refinement prior to nationwide expansion. A longer-term solution will require the current supply-driven system to be replaced by a demand-driven system and integration into Government logistical systems. The Korean Logistical Management and Information System (KLMIS) holds promise in this regard.

Conclusions:

The CMAM programme in DPRK has achieved high geographic coverage, providing equitable services where these are accessible by the population. The integration of the programme into the Government of DPRK's primary health services and extensive screening at community level has enabled high case overage and inferentially high cure rates compared with international standards resulting in a high impact programme in terms of the stated objectives of reducing morbidity and mortality in children aged less than 5 years and building resilience to seasonal and sudden onset fluctuations in the burden of malnutrition.

The provision of infrastructure and human resources in combination with a coherent policy platform and extensive training by UNICEF and the MoPH under the '1000 days' approach has provided an enabling environment to implement CMAM at scale. Within the context of the national guidelines CMAM services have been delivered effectively with good quality, however gaps in guidance specifically with respect to the treatment of children with moderate acute malnutrition (MAM) need to be addressed. Specific issues with quality are detailed in this report however the implementation of protocols for the treatment of infants aged less than 6 months and their integration with principles of infant and young child feeding should be a primary focus.

Going forward the revision of protocols for the treatment of children with MAM under the CMAM programme should result in a considerable easing of the logistical burden of the programme and facilitate the further expansion of the programme. The plan for expansion should consider the feasibility of providing more equitable coverage at the county level, particularly in counties with the greatest burden of malnutrition. The planned 'convergence county' approach provides the potential for multisectoral interventions at county level to reduce the burden of malnutrition and high rates of relapse from CMAM treatment. Until the convergence county approach is able to provide the evidence base for such reductions in morbidity and conditions necessary to its scale-up in other counties exist, in the short term the expansion of the CMAM programme at county level to increase accessibility coverage is indicated.

In the longer term the feasibility of further CMAM programme expansion and its effectiveness will be determined by the political commitment of the government of DPRK and international donor funding to support the programme, the capacity to maintain the logistic chain supplying medicines and therapeutic products to the health facilities and the provision of frequent and suitably disaggregated routine programme data to identify programmatic issues and timely responses.

2 Country context and background

DPRK has a population of over 24 million, of which 1.74 million are U5 children. Continued economic sanctions and recurrent natural disasters continue to challenge the nutritional status of the population, which experiences high levels of undernutrition (UNICEF, 2016a). Fundraising for programming in DPRK is extremely difficult as a result of geopolitical tensions, political isolation and strict governmental control over relevant and reliable data, which is a barrier to the monitoring and analysis of programme performance required by donors (UNICEF, 2016b, p. 6) (UNICEF, 2016h, p. 73).

Despite this, DPRK has made some progress in recent years in reducing undernutrition, although levels remain a public health issue, with the rate of decline in maternal and child mortality being insufficient to achieve Millennium Development Goals 4 and 5 by 2015. A 2014 United Nations estimate showed that U5 mortality (U5MR) stood at 22.7 per 1,000 live births, while the infant mortality rate (IMR) stood at 16.7 per 1,000 in 2012. The 2012 National Nutrition Survey indicated that stunting (low height for age) stood at 27.9%, wasting (low weight for height (WFH)) at 4% and severe wasting at 0.6% for U5 children. The same survey indicated that wasting and stunting was higher in the northern and eastern provinces than in the main population centres; however, the burden of malnutrition is higher in the main cities due to their higher population density.

According to the Global Hunger Index, which tracks hunger worldwide, DPRK ranked 98 out of 118 countries. UNICEF has provided support to the DPRK Government since 1986, although a basic cooperation agreement only took effect in 1996. The most recent programme cycle covered the period 2011–2016, including a one-year extension due to the effect of sanctions involving currency transfers (UNICEF, 2015, p. 6 and UNICEF, 2016i, p. 6). According to Global Hunger Index 2017, the situation in DPRK is improving, with a current ranking of 93 and a declining index score (from 40.3 to 28.2) since the year 2000, which is also lower than that of the South Asia region (30.9).

As part of UNICEF support to DPRK, the CMAM approach was introduced in 2008. The programme established outpatient treatment services for children with SAM without complications in 29 counties in four north-eastern provinces, in approximately 1,000 *ri* clinics and 14 orphanages (baby homes); and inpatient treatment for children with SAM with complications in 12 provincial hospitals. These 29 counties represented approximately 16% of the total population of U5 children in DPRK. This community-based model of implementation at the level of the *ri* or *dong*[2] enabled easy access to services at local clinics (*see ToR, and additional programme information, annex 1*).

The UNICEF project cycle to 2016 also included a midterm review of programmatic focus. Following this review and extensive monitoring visits to treatment sites, a nutrition programme report identified challenges to programming and opportunities for programme expansion. The main challenges in the previous CMAM strategy were in the limited geographic coverage, monitoring of service quality and the facilitation of logistics to over 1,000 service delivery units. With no services supporting the treatment of MAM, these cases would present at hospitals with illnesses and would quickly deteriorate to SAM. It was determined that treating children with MAM with illnesses and at greater risk of becoming SAM would likely be a cost-effective approach to preventing SAM.

[2] Provinces are divided into cities (districts) and counties. A county is further subdivided into smaller geographic areas called *ri* (village*)* and *dong (*the smallest administrative unit of a locality). (Source: *CBS, DPR Korea 2008 Population Census, National Report).*

In 2014 a major programme revision was agreed with MoPH. Children with MAM with associated illnesses (termed *medical complications*[3]) would be treated in the CMAM programme and children with MAM without complications in residential care would continue to receive support in baby homes. Screening for acute malnutrition was also to be integrated into twice-yearly CHDs in the existing 29 counties. Outpatient services to treat SAM without complications were also established in Pyongyang, and further services for inpatient treatment through the opening of another treatment site at Okryu Children's Hospital.

To address the issue of low geographical coverage, it was agreed to close the 1,000 treatment sites at community level and establish hospital-based services in an expanded programme in a total of 89 counties (including the original 29 counties) (annex 2). The hospitals would provide outpatient services for SAM without complications with an amount of ready-to-use therapeutic food (RUTF) according to weight until cured (according to standard international and national treatment protocols) and treat MAM with illnesses with one sachet of RUTF for a maximum of two weeks. Screening for malnutrition would be conducted through *ri* clinics. UNICEF facilitated the development of Master Trainers to deliver integrated training on CMAM and IYCF using the '1,000 days' approach (emphasizing health and nutrition for children in the first 1,000 days of life) and also supported all in-country logistics for the transport of programme supplies from the Central Medical Warehouse to treatment facilities.

In June 2015 the Government declared a severe drought affecting four provinces – North Hwanghae, South Hwanghae, South Pyongan and South Hamgyong – and asked UNICEF to expand CMAM programme coverage to treat all U5 children in an additional 60 counties (annex 3). This increased coverage to 149 of the total of 210 counties in DPRK by September 2015 and represented geographic coverage of 60% of the total population of U5 children. (ENN; FANTA, 2008). Following floods in August 2015, the programme was further expanded to an additional 40 counties (annex 4), including all counties in Jagang and Ryanggang provinces, thus establishing geographic coverage of 90% of U5 children in 189 of 210 counties. The great extent of this geographic coverage through existing MoPH infrastructure facilitated the admission, according to official data from CBS, of over 63,000 children for treatment of acute malnutrition, making the scale-up of the CMAM programme in DPRK the most rapid and extensive in the East Asia region, with at least four times as many admissions[4] as CMAM programmes in other countries in the region.

At the time of the evaluation the CMAM programme was operational in six hospitals in Pyongyang, five in Nampo City and one in Kaesong City; and nine provincial hospitals, 14 other district general hospitals, 14 other city hospitals, 135 county general hospitals and 13 baby homes. The hospitals deliver both outpatient and inpatient treatment modalities for U5 children with SAM with or without complications and MAM with illnesses. Screening for acute malnutrition through the measurement of MUAC and checking for the presence of bilateral pitting oedema is conducted at community level through twice-yearly CHDs, routinely by doctors through the extensive network of *ri* facilities, and in the community at household level by HHDs.

The DPRK National Nutrition Strategy 2014–2018 (NNS) calls for an increase in the cure rate for SAM from 80% to 85%; expansion of the CMAM programme nationwide; the procurement and distribution of RUTF and therapeutic milk;[5] improved supervision of the management of acute malnutrition at all levels; and development and dissemination of CMAM guidelines. The UNICEF *Country Programme*

[3] In other contexts the term *complications* refers to critical illnesses such as shock, severe dehydration, loss of consciousness, anorexia and other 'IMNCI danger signs'. In DPRK the term '*complications'* inappropriately refers to associated relatively minor illnesses such as diarrhoea or respiratory infection.

[4] Myanmar reported 13,853 admissions while all other countries in the UNICEF East Asia and Pacific Regional Office region reported less than 5,000 admissions *(*Source: *Terms of Reference for DPRK CMAM evaluation.)*

[5] The procurement of therapeutic supplies was intended for the original 29 counties.

Document (CPD) (UNICEF, 2016c) results and resources framework aims to provide equitable utilization of nutrition services to prevent and treat undernutrition (outcome 2) but does not include any specific progress indicators for CMAM prevention and treatment modalities. The inter-agency group for Child Mortality Estimation (IGME[6]) report of 2017 indicated a decline for 2016 in the IMR to 15 per 1000 live births and U5MR to 20 per 1000 (22/1000 for males & 18/1000 for females); an annual decline of 3%.

The theory of change (ToC) (*see* Annex 5) for the revised programme strategy note for the country programme 2017–2021 (UNICEF, 2016b) indicates the promotion of the '1,000 days approach', improved cross-sectoral linkages in 10 convergence counties, ensuring life-saving services and the removal of bottlenecks and barriers to access among other strategies towards the equitable use of nutrition services and context appropriate behaviours for the prevention and treatment of undernutrition. The results matrix for nutrition includes indicators for CMAM specifically in the 'percentage of children with SAM treated' (to be increased from 40% to 50%) and the 'proportion of hospitals implementing the CMAM–IYCF package of services' (to be increased from 43% to 100%); the 'proportion of hospitals receiving supportive supervision visits' (to be increased from 20% to 60%); and the 'proportion of counties submitting timely and complete monitoring data' (to be increased from 0 to 60%) (UNICEF, 2016b). Indicators for CMAM from the results matrix of the previous country programme (2011–2015) (UNICEF, 2010, p. 3) provided indicators for CMAM programme expansion according to the community level model and are not relevant as indicators for the evaluation of the current CMAM programme in 189 counties.

The convergence county strategy looks to converge multisectoral programming in selected counties, linking health, nutrition and water, sanitation and hygiene (WASH) interventions. The focus in the convergence counties is promoting early childhood development, reducing morbidity and mortality and strengthening the availability and quality of child-related data. The approach also aims to contribute to advocacy and policy, and support reporting on the Convention on the Rights of the Child (CRC), the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) and the Convention on the Rights of Persons with Disabilities. Currently, the Government provides annual CMAM and related nutrition programme data per province.

UNICEF is has supported the establishment of a Child Data Management Unit (CDMU) within CBS which, when fully operational, will share nutrition data disaggregated by county on a quarterly basis. UNICEF will also facilitate supportive supervision, on-the-job training, data collection and verification of programmes with provincial and county People's Committee departments during weekly field visits. This convergence of multisectoral programming will focus in 10 'convergence counties' (one per province) to demonstrate the effectiveness of a convergence approach and allow efficient monitoring. Most of these counties are also included in the World Food Programme (WFP) blanket supplementary feeding programme that targets prevention of MAM among 518,353 children in the nurseries of 89 counties.

Annex 6 provides a schematic representation of the geographical focus of UNICEF programming 2017–2021. Programming for health and nutrition, comprising the distribution of emergency medical kits and the integration of Integrated Management of Neonatal and Childhood Illness (IMNCI) and CMAM programming will converge in 50 counties, selected from 89 counties already implementing CMAM, with agreement from the Government. At the time of the CMAM evaluation, discussions between the Government and UNICEF were ongoing regarding the official status of the remaining 100 counties implementing CMAM.

[6] The standard IGME model for IMR and U5MR calculation is adapted for DPRK

In 2015, UNICEF indicated that only 38% of requested funding was received (for nutrition specifically only 20% of requested funding was received), resulting in low coverage of programming for nutrition and WASH. This was linked to the challenge in raising funds due to the political situation (UNICEF, 2015, p. 6). Contributions against appeals and the United Nations Central Emergency Response Fund (CERF) funding proved essential in covering funding gaps, allowing a timely response to the drought (UNICEF, 2015, p. 18).

The UNICEF CPD (UNICEF, 2016c) includes a proposed aggregate indicative budget of $12,735,000 from regular resources, subject to the availability of funds, and $58,637,000 in other resources, subject to the availability of specific-purpose contributions, for the period 2017–2021. This includes a budget for nutrition of $3,576, 000 from regular resources plus $13,902,000 from other resources,[7] an overall budget reduction of 58% but an increase of 41% over the nutrition budget of 2011–2015. The major reason for the overall budget reduction is the absence of contributions from the Global Fund past 2018 (UNICEF, 2016b). Contingency planning prioritizes the provision of essential medicines and the treatment of children with SAM.

[7] Unless otherwise stated, all figures in this document are in United States dollars.

3 Evaluation purpose, objectives, scope and questions

3.1 Purpose

The proposed evaluation aimed to undertake a comprehensive assessment of all of the components of the current CMAM programme and identify key achievements, challenges and lessons learned, and identify practical and realistic recommendations. The primary users of this report are the Government of DPRK, UNICEF and other United Nations agencies for future programme planning and coordination, and resource advocacy and allocation. Secondary users will be European Union Project Support agencies,[8] donors and other health and nutrition programme stakeholders.

3.2 Objectives

The specific objectives of the evaluation from the ToR (*see Annex 1*) are:

e) To examine CMAM programme performance in a representative sample from the currently operational 189 counties using the standard Organization for Economic Co-operation and Development (OECD) / DAC criteria of programme relevance / appropriateness, efficiency and quality of services, effectiveness, impact (potential) and sustainability in addition to equity.
f) To examine the effectiveness of related cross-cutting issues such as coordination and management, gender and other forms of equity, capacity development, advocacy, policy development and information / data management.
g) To document good practices and generate evidence-based lessons learned and recommendations to strengthen ongoing efforts towards the expansion of CMAM coverage in DPRK and considering potential regional-level guidance and support.
h) Identify gaps, key lessons learned and main challenges, and provide recommendations on how to address these challenges and pursue opportunities, and recommend key practices that should be incorporated into the future programme.

3.3 Scope of the evaluation

The evaluation aimed to systematically generate evidence on the countrywide CMAM results during the county-level scale-up of the programme from January 2015 to October 2017, assessing the effectiveness of the programme in achieving its stated objectives and documenting the feasibility of caregivers' accessing and use of CMAM services. The evaluation examined processes and results related to all key components of the CMAM programme. These are:

a) Community mobilization and screening by community health workers
b) Outpatient treatment for SAM without complications at county health facilities
c) Inpatient care for SAM with complications or no appetite
d) Management of MAM with complications in inpatient care in hospitals.

The evaluation generated evidence on what works well and what does not work in the DPRK context for each of the key steps of the CMAM programme cycle, covering community mobilization and awareness creation, case detection, screening, referral, enrolment, treatment and feeding modality, and follow-up processes. The evaluation examined policy and programmatic aspects as well as management modalities and makes recommendations to strengthen both aspects.

This CMAM evaluation is the second UNICEF programme evaluation in DPRK in the costed Evaluation Plan of the CPD 2017–2021. It is hoped that it will contribute to developing an 'evaluation culture' in DPRK and provide a learning experience for future evaluations in other programming sectors.

[8] European Union Project Support agencies in DPRK are known as non-governmental organizations in other contexts.

3.4 Questions from the ToR

There are three overarching questions that can be derived from the ToR:

1. To what extent has the strategy achieved high geographic programme coverage, and provided equitable access and use by beneficiaries?
2. To what extent has the programme provided effective care that is contextually appropriate and consistent with international standards?
3. What lessons can be learned from achievements and challenges in order to plan for future programming?

3.5 Changes to the ToR

Prior to and during the inception visit, discussions between the evaluator and UNICEF Country Office adapted the ToR. The adaptations are detailed below.

- **CMAM programme delivery sites:** The CMAM programme is delivered through the network of provincial, city and county hospitals and baby homes in DPRK. Instructions from the DPRK Government, received at a meeting of the Stakeholder Reference Group during the inception visit, directed that baby homes were to be excluded from the evaluation. The evaluator requested that baby homes be included in screening activities during the LQAS evaluation of coverage so as to ensure exhaustive case finding.
- **Programme coverage:** The ToR questions require the evaluation to assess geographical coverage against estimated national needs. The scope of the evaluation requires the evaluation to document the feasibility of caregivers accessing CMAM services. Estimates of geographic coverage are indirect; the focus of the evaluation of coverage for this ToR clarified the extent to which geographic coverage has provided actual access and treatment for children with acute malnutrition. Jagang Province is closed to travel by foreign and most national staff so did not fall within the criteria for the selection of evaluation sites or LQAS coverage evaluation sites.
- **Disaster Management Unit of People's Committees:** During discussions with the Country Office, the role of the Disaster Management Unit of People's Committees was considered not to be strictly relevant and coherent with the other activities and outputs of the ToR. The recommendations generated from the evaluation will consider aspects of resilience against future emergencies for the CMAM programme; however, the question on the role of the Disaster Management Unit was excluded from the evaluation.

4 Evaluation methodology

The evaluation methodology was designed using internationally recognised data collection methods and tools for CMAM evaluations, adapted for the DPRK context, and based on the evaluation criteria defined by the Organisation for Economic Cooperation and Development (OEDC) Development Assistance Committee (DAC) ; Relevance, Effectiveness, Coverage, Efficiency (& Quality), Impact and Sustainability as defined by the Terms of Reference (annex 1).

The evaluation was conducted using a mixed methods and participatory approach, generating quantitative and qualitative data by using a variety of sources and methods to enable triangulation of information and ensure data validity (*see Annex 7, Evaluation Matrix*). The participation of governmental and non-governmental stakeholders was ensured through the stakeholder representative group formed during the inception visit. During the evaluation, local officials, staff and beneficiaries were interviewed at provincial, city and county hospitals; and community-based staff at *ri* clinics. All evaluation tools were reviewed during the inception visit and approved for use by the National Coordination Committee (NCC) of DPRK.

The evaluation generated three main streams of data:

1. **A desk review** of documentation and secondary data to inform the evaluation regarding contextual considerations including policies; guidelines; managerial, financial and operational issues; and analysis of routine programme data supplied by CBS. The list of documents reviewed can be found in the bibliography and routine programme data provided by CBS is presented in 8. Documents reviewed included UNICEF and governmental strategy documents, national guidelines, programme monitoring reports and nutrition sector coordination meeting minutes, providing insights into the contextual framework of the CMAM programme and its evolution. These documents are referenced in this report where specific references have been made.

2. **Quantitative and qualitative data** collection through observations of programme implementation and key informant interviews during field visits to hospitals and *ri* clinics implementing each of the components of the CMAM programme (see data collection formats, annex 9). Data collection was undertaken by a technical evaluation team (TET) comprising two UNICEF national staff seconded from the Ministry of Foreign Affairs and ICN, and led by the independent consultant (*see Annex 10 for TET composition*).

   The sampling framework for health facilities provided spatial stratification of the sample through the creation of three geographic regions comprising three contiguous provinces. In each region, one province was purposively selected. Within each province, two counties were purposively selected; one county selected in each province was a 'convergence county' as identified by the UNICEF strategy and one county was any other non-convergence county. Although the convergence county strategy has not been rolled out fully, it was intended that the evaluation data might provide a baseline for future county-level evaluations. To ensure representativeness, the purposive selection of counties was done to ensure that provincial, city and county hospitals were sampled. The evaluator provided the framework for purposive selection and the DPRK Government selected the locations and hospitals (*see* Annex 11).

   At each location quantitative clinical data was collected from an examination of registers and patient treatment records. The evaluator also examined treatment cards for the appropriate application of admission, treatment and discharge protocols, and to check the correct prescription of medications and therapeutic nutrition products. Where clarification of any issues was necessary, the information on the treatment cards was cross-checked with the

physician. Qualitative data was collected through key informant interviews with local officials from the Health Department of People's Committees, hospital directors and hospital staff including doctors and nursing staff (*see* Annex *12 for a list of persons interviewed and a summary of interviews*). In each hospital the evaluation team interviewed 4–5 beneficiaries (as were available at the time of interview). Interview questions were arranged thematically in order to compare and triangulate information between locations. The names of beneficiaries were not taken in order to protect confidentiality.

3. A **community-based LQAS evaluation of coverage** was undertaken at selected locations in the community to identify issues regarding access to services and case coverage.[9] The LQAS was undertaken by multiple teams of enumerators consisting of national staff from ICN, CBS and the Population Centre (PC) (*see* Annex *13 for LQAS team composition*). The sampling framework of the LQAS provided spatial stratification by geographical region and the purposive sampling of two provinces in each region (six in total). In each province two counties were purposively selected. Within each county, four *ris* were purposively selected. The total of 48 *ris* were selected according to two classes, depending on their distance from the health facility; two were 'less than 5 km' and two were 'more than 5 km'. These classes of distance were based on findings during the inception visit that identified that all beneficiaries had come from within 5km of the health facility. The LQAS sampling framework is illustrated in Annex 14.

   In each *ri*, all U5 children were screened according to case definitions for eligibility for enrolment in the CMAM programme. The proportion of children that were eligible and were enrolled in the CMAM programme (the case coverage) was classified as being 'high coverage' (>70%), 'moderate coverage' (30%–70%), or 'low coverage' (<30%). The three-tier classification was based on the Sphere international standards for coverage and classifications typically used in other contexts. At the time of the LQAS evaluation in each county, a member of the TET contacted the relevant county hospital and collected any information on children from the selected *ris* currently being treated as inpatients in hospital. The carer of any child identified with MAM or SAM was interviewed to collect specific details regarding the child's status. Each carer was also administered a questionnaire according to whether the child was enrolled or not enrolled in the CMAM programme, in order to identify underlying issues contributing to case coverage and provide an opportunity to give feedback on their programme experience. The LQAS procedure is presented in Annex 15. Data-collection formats for the LQAS are presented in Annex 16.

The three streams of data generated during the evaluation were triangulated by methods and sources wherever possible to verify the validity of the data. Examples of triangulation are given in an overview of the evaluation matrix in Annex 7. Specific triangulations of information are detailed in the section on findings and analysis. Quantitative data analysis and the relevant figures presented in this report were produced using Microsoft Excel. Data analysis and the relevant figures are provided in section 5 of this report, 'Main Findings and Analysis'. Quantitative data from the LQAS was analysed and summarized by CBS in collaboration with the TET using SPSS statistical software. Qualitative information from key informant interviews was organized into themes and summarized in the annexes. Technical standards for programme performance were compared with international benchmarks for performance including Sphere standards (Sphere, 2011), international norms for CMAM programming documented in guidelines and reports, international recommendations for best practice and the CMAM National Guidelines for DPRK. Findings were interpreted taking into account the unique context of DPRK.

[9] Case coverage refers to the proportion of eligible children with acute malnutrition that are able to access and be enrolled in treatment services in a defined programme area, as opposed to geographic coverage.

4.1 Limitations

The evaluation methodology was designed following technical meetings with the stakeholder reference group and the field-testing of data-collection tools during the inception visit. Several of the tools were redesigned specifically to meet the needs of the unique context of DPRK. The deployment of the tools was also highly modified; in other contexts, a CMAM evaluation should design its sampling framework for the evaluation of coverage iteratively based on an analysis of routine programme data. No systematic routine programme data were available from CBS or UNICEF prior to the evaluation, and data from CBS were shared with the evaluator several weeks after the completion of fieldwork.

Obligations of the evaluator

The independent consultant was bound by the UNEG code of conduct for evaluation in the United Nations system (UNEG, 2008) to ensure independence, impartiality, confidentiality, integrity and transparency during the evaluation; and by the UNICEF procedure for ethical standards in research, evaluation, data collection and analysis (UNICEF, 2015); UNEG norms and standards for evaluations (UNEG, 2016); and UNEG guidance on integrating human rights and gender equality in evaluations (UNEG, 2014). As an independent consultant, the evaluator had no conflict of interest with any stakeholder in the CMAM programme in DPRK or elsewhere. The national staff potentially had conflicts of interest in terms of being linked to major stakeholders in the CMAM programme. Potential risks arose from the roles of the national staff in providing liaison and logistical support, and as translators and intermediaries between the evaluator and stakeholders including beneficiaries.

To mitigate risks, the evaluator cross-checked information that seemed unclear and triangulated responses with other streams of data. During the evaluation there were several occasions on which TET members encouraged and translated information during interviews that were potentially negative comments on their own roles within the CMAM programme, or alerted the evaluator that other stakeholders potentially unduly influenced responses. This demonstrated the impartiality of the national staff during the evaluation. There were also occasions on which long answers to interview questions were summarized in translation. These responses were checked for consistency with the interviewees' non-verbal communication, with further questioning on detail where required.

Evaluation schedule

A major impact on the evaluation occurred through a restriction in scheduling. The evaluator requested a minimum of one day and up to two days at each facility during the planning phase of the evaluation. Logistical constraints on travelling, the days on which local officials and health facility staff would be available for discussion and restrictions imposed on the amount of time to be spent at each facility resulted in a constrained timetable for data collection.

In DPRK, Fridays and Saturdays are typically used for DPRK nationals to attend to other duties. It was not possible to work during these days; however, a compromise allowed travel between locations to be undertaken so as to minimize disruption to the evaluation schedule. The time constraints as a result of a combination of these factors inhibited the effective deployment of the extensive observation checklists for inpatient and outpatient treatment evaluation. An attempt to condense data collection using the approved formats proved impossible. Discussion and liaison with national, provincial and county-level authorities enabled some flexibility in the scheduled times for health facility visits so that the time available for data collection was maximized.

In mitigation of this constraint, the Department of Health of the People's Committee was requested to provide a sample of approximately 30 inpatient and 30 outpatient treatment records for patients recently discharged. A rapid review of treatment records by the evaluator with assistance from the

TET allowed the extraction of data required to evaluate the implementation of CMAM protocols and compare this with expected performance standards. The rapid review entailed checking:

a) Age of the infant / child
b) Application of admission criteria
c) Calculation of WFH
d) Prescription of medications and crosschecking with medical records
e) Appropriate calculation and prescription of therapeutic foods
f) Appropriate charting of therapeutic food and feeding routines
g) Length of treatment with therapeutic product according to the phase of treatment
h) Expected changes in weight and MUAC according to daily treatment
i) Application of discharge criteria.

The review was done in the presence of hospital clinicians to enable the clarification of information and verify methods of calculation against standing protocols when necessary. Extraction of data was at the discretion of the evaluator using the approved evaluation formats when possible, within the limits of the data collection approved by the NCC, and was limited to the key information required to evaluate the performance of the CMAM programme.

Availability of data

Routine data for 2015–2016: CBS collects routine programme macro data that is not gender disaggregated and does not identify children with disabilities.[10] Gender equity in access to programmes was examined through data collected during the LQAS evaluation of coverage. Where data in DPRK is collected for disabilities, the available data does not include U5 children (UNICEF, 2016b, p. 45). The UNICEF CPD 2017–2021 results matrix includes disability indicators for WASH and social inclusion only. The LQAS evaluation of coverage included data collection on beneficiaries with disabilities.

Routine programme data for 2017: Some of the requested data were not collected during the evaluation; these are indicated below. Anecdotally, CBS collates routine data during December and January and publishes it annually at the end of Q1. CBS could provide limited data to October 2017 for the six counties visited during the TET evaluation; however, other provincial and county-level data for 2017 were not yet collated. Data for a limited number of provinces for 2017 supplied by UNICEF were used to project admission numbers for the sake of comparison with previous years in the same provinces. Its reliability and interpretation should be viewed with caution; however, a comparative calculation with data from 2016 proved accurate to within 5%.

Bottleneck analysis: Data for bottleneck analysis for reporting, human resources and geographic access was not collected by CBS. Where possible, other sources of secondary data were used to inform these data gaps.

Sampling frameworks

The selection of provinces, counties and type of health facility for the TET evaluation was done within the framework requested by the evaluator. CBS purposively selected the health facilities; although the evaluator did not insist on any specific criteria for selection it is not known what criteria were applied. This potentially introduces selection bias (for example by selecting only the best-performing facilities); however, based on the subsequent review and analysis of the three streams of data this would not have significantly affected the outcome of the evaluation.

Typically, an evaluator would be closely involved in the purposive selection of LQAS sampling sites. For this evaluation, the evaluator set the framework and criteria for selection of communities, in turn based on assumptions regarding the prevalence of acute malnutrition and the anecdotal average population size of a *ri*. The actual population of the communities sampled was not shared with the evaluator. However, based on the total number of children screened, the populations were much larger than anticipated. It was intended that the purposive selection of communities in the category of 'distance greater than 5km from the hospital' would take into account the size of the county by using the approximate half distance between the hospital and the furthest point in the county. Due to a possible breakdown in communication, this information was not clearly transmitted as the requested sampling framework. The distances of *ris* from health facilities were not shared until after completion of the LQAS, which did not allow the redesign of the sampling framework prior to the LQAS. This has unfortunately limited the LQAS in identifying factors that may be boosters or barriers to access to treatment. In mitigation, data taken from hospital registers on the distances travelled by admissions was used to triangulate with the LQAS data and determine the limits to accessibility.

A basic and important requirement of the LQAS is the exhaustive sampling of communities for all U5 children; however, baby homes were excluded from the screening process. A review of LQAS data subsequent to the completion of the LQAS evaluation suggests that this exclusion would likely not have affected the overall results. Foreign nationals and national staff are not permitted to travel to

[10] This is not unique to DPRK. Data on children with disabilities is rarely collected by CMAM programmes in other contexts.

Jajang Province and although CMAM sites are operational there, this province was excluded from the sampling framework.

LQAS team composition and training

The LQAS team enumerators were recruited from a recently completed Multiple Indicator Cluster Survey and were competent in survey techniques. The enumerators were drawn from CBS, ICN and PC Government staff, and were given a one-day training in LQAS procedures. Training was based on assumptions of experience in anthropometric measurement. The evaluator was not permitted access to the field with the LQAS teams in order to undertake practical training. As a compromise, the enumerators were trained in a Pyongyang hotel and children were organized to attend the practical session to practice measurement of MUAC and oedema. However, the children were ultimately not able to participate in the session and standardization of MUAC measurement was not possible. Observations of accuracy and precision for measurements made on adults quickly indicated that MUAC measurement was inconsistent.

In mitigation, enumerators from ICN were considered to be the most competent in measurement techniques and were chosen to lead the enumerator teams. Verification visits to enumerator teams in the field were conducted by the TET in two locations and by a UNICEF observer independent of the TET and expert in anthropometric measurement in two other locations. The visits were limited but informative. The UNICEF observer checked measurements and offered advice on technique but was not permitted to influence the transcription of data into the data-collection formats. The independent verification visit report indicated that MUAC measurement was inconsistent and identified a tendency to measure children with the MUAC tape too loose. This would have the effect of underestimating the number of cases of acute malnutrition and potentially provide an overestimation of coverage.

A review by the evaluator of the completion of data entry forms in the field and a rapid review by the TET and CBS following the LQAS indicated that these were completed competently with few errors. Data taken from treatment cards by the TET indicated that in some locations a significant proportion of the admissions were infants aged less than 6 months. Infants were absent in the LQAS sample and were not represented in the list of inpatients from LQAS locations. This suggests a potential weakness in the case finding techniques for infants for whom MUAC cannot be used. The results presented for coverage cannot reliably be extrapolated for infants aged less than 6 months.

Access to paediatric ward areas

Following several years of experience in DPRK, United Nations international nutrition staff are permitted to visit ward areas during supportive supervision of hospitals. Access to the ward areas for the evaluator was more restricted, generally confined to one or two rooms. This limited observations such as assessing the quality of the care environment and general care practices, although it was possible to interview carers in the ward area and visit milk preparation areas. Notwithstanding observations on other constraints, this did not have a significant impact on the findings of the evaluation.

Selection of treatment records

Typically, a CMAM evaluation would allow the random selection of approximately 30 treatment records by the evaluator across each positive and negative treatment outcome and checked against programme reports to ensure appropriate classification and reporting. The required number of cards was provided in four of the six hospitals, with two hospitals providing a total of 20 records for examination. Selecting the cards without the involvement of the TET introduced the potential for selection biases, including the number of MAM versus SAM cards selected, age, gender and treatment outcome. All of the reviewed cards were for cured children; there were no defaults, deaths or non-response outcomes. There was no seasonal bias for the data extracted from the treatment cards;

however, the low numbers of defaulters identified in the register may have shown a seasonal bias due to the data being extracted for admissions from July to October 2017. In mitigation, issues around default were discussed in key informant interviews.

A more transparent approach to selection would have likely been more effective in identifying issues with negative programme outcomes and forming appropriate recommendations. Triangulation with other data suggests that major determinants of negative outcomes could be partly addressed by the evaluation without reference to treatment cards for negative outcomes. However, this combined with the absence of routine outcome data limits the extent of the findings.

Each treatment card was visually reviewed, comparing expected and actual weight changes according to the specific therapy, and charted morbidities cross-checked with medical records and prescriptions. This review, conducted exclusively by the principle evaluator, concluded that the patient records identified as SAM or MAM were correctly classified according to the programme case definitions. The treatment cards were deemed by the evaluator to be accurate records of treatment and progress.

4.2 Ethical considerations for participants

All data gathering formats were submitted to UNICEF and the Government of DPRK for review seven weeks prior to the start of evaluation. The intended use of data and overview of the subsequent analysis was shared through a stakeholder meeting during the inception visit and the subsequent inception visit report. The NCC cleared all formats for quantitative and qualitative data collection.

During training for enumerators for the LQAS it was emphasized that carers of beneficiaries of the CMAM programme were not obliged to participate in the survey or provide any information and that refusal to participate would not affect the care or treatment of their child in the CMAM programme. Verbal consent to provide information was implicit by the provision of information from the carer. The names of carers were not required during data collection. The names of children identified as cases were requested so that information could be cross-checked between the LQAS data and inpatient data and ensure no child was missed or double counted. Children's data was anonymized during data analysis and any electronic format in the possession of the evaluator that contained personally identifiable data was password protected. All paper documents containing raw data were left in the possession of a CBS officer for safekeeping. Only CBS and members of the TET viewed documents containing the names of children. No personally identifiable information on beneficiaries was given to UNICEF international staff.

In the course of a normal Semi-Quantitative Evaluation of Access and Coverage, Simplified Lot Quality Assurance Sampling Evaluation of Access and Coverage or LQAS coverage evaluation, interviews with carers of beneficiaries are conducted separately from other programme stakeholders so as to provide the opportunity for both positive and negative feedback. In DPRK the key informant interviews with carers were necessarily done in the presence of clinicians and representatives of the People's Committee (as observers) when the evaluator conducted the interviews. It is not possible to ascertain to what extent feedback from beneficiaries was influenced by the presence of observers. Carers were not pressed to give any negative feedback if none was freely offered during first responses. No children were interviewed for this evaluation and all LQAS enumerators were experienced national staff and seconded from Government departments.

5 Main findings and analysis

5.1 Relevance / appropriateness

Relevance is concerned with assessing whether the project is in line with local needs and priorities (as well as donor policy). Appropriateness is the tailoring of humanitarian activities to local needs, increasing ownership, accountability and cost-effectiveness accordingly.

Summary findings and analysis

The evaluation found the CMAM programme to be relevant and appropriate. The underlying causes of acute malnutrition are multifactorial in DPRK and the occurrence of natural disasters imposes localized additional nutritional stressors. The programme has responded appropriately to the needs of the population in disaster-affected areas over both short- and long-term fluctuations in need. The strategy to change the service delivery model to focus on high geographic coverage and focus the expansion to respond to disasters from 2015 onwards has been appropriate to the needs of the national and local context.

The CMAM National Guidelines developed in 2014 describe the management of children with SAM and are consistent with the 2013 WHO updates for the management of SAM. Nutritional support of children with MAM with illnesses is a unique adaptation for the DPRK context but the lack of guidance on their correct treatment is a significant gap in the guidelines. The use of terminology describing these illnesses as 'complications' has resulted in confusion regarding treatment protocols and resulted in an efficiency impact on the programme in terms of cost and logistical demand.

Guidelines for CMAM, IMNCI and IYCF are coherent, although none provide sufficient guidance for the treatment of MAM or links to existing programming. Synergy between CMAM and supplementary feeding programme (SFP) approaches appears to be weak, although more detailed mapping of the approaches at *ri* level and comparative studies would be needed to identify if SFPs effectively prevented SAM or provided adequate support to children with MAM with illnesses.

The Government's provision of an enabling environment at central level through appropriate policies and guidelines has facilitated the integration of CMAM services into the Government's primary health services at provincial, county and *ri* levels, making strategy for CMAM programme expansion relevant to context. Guidelines and programme implementation are consistent with the Government's commitments to the CRC and CEDAW and UNICEF's strategies for the ToC.

Q. How well has the overall CMAM programme strategy evolved and to what extent have specific strategies / interventions responded to the local / national context, needs and priorities?

The evolution of the CMAM strategy in DPRK had two significant features: a change in the model of service delivery and a change in eligibility criteria. Before 2015, the CMAM programme in DPRK was implemented through a highly decentralized community-level model providing screening services and outpatient treatment through 1,000 *ri* clinics in 29 counties, and inpatient treatment through 14 provincial hospitals for U5 children with SAM. During the period of the evaluation (2015–2017), the CMAM programme underwent a significant change in strategy to locate both outpatient and inpatient CMAM treatment services at hospital level. Treatment services were discontinued at *ri* clinics; however, HHDs at *ri* level continued to screen and refer cases. Along with this change in the mode of service delivery, the eligibility criteria for the programme were expanded. Instead of treating only children with SAM, the programme also began treating children with MAM with illnesses.

Following the strategy change the CMAM programme underwent significant stepwise expansion from the original 29 'focus counties' to establish services in 189 out of the total 210 counties across all 10 provinces in DPRK. By early 2015 a total of 89 counties had been established by agreement with the Government (including the original 29 focus counties). Further expansion to 149 counties occurred following requests from the Government for programme expansion in response to drought (April to June 2015) and floods (1–5 August 2015). Services were expanded to a further 40 sites in 2016 in areas affected by floods. Details of the stepwise expansion can be found in Annexes 2 - 4. Significantly this expansion specifically addresses aspects of the ToC strategies 1, 2 and 3 and creates the potential for expansion of the geographic focus of CMAM (annex 6) and intersectoral coordination beyond the envisaged 89 counties.

The appropriateness of the evolution of the strategy can be determined by analysing admission trends for children with MAM and SAM. Since the causes of MAM and SAM are multifactorial, the trend in admissions should vary according to the prevalence of contributing factors (e.g. seasonal variation in food security, prevalence of diseases or climatic factors). A child with MAM hypothetically becomes at greater risk of SAM if they contract an illness that increases metabolic demand on the body. The prevalence of contributing factors are altered by natural disasters in the locations where they occur. If the strategy to treat MAM with illnesses was an appropriate change, then although the total number of admissions may increase or decrease over time, the ratio of MAM to SAM should increase.[11]

Figure 1 shows a seasonal calendar for the major contributory risk factors for acute malnutrition in DPRK. It was compiled from interviews with officials and medical staff in hospitals, paediatric doctors and HHDs at *ri* clinics, and secondary sources of information from reports from WFP and Global Hunger Index. Qualitative discussion suggested a seasonal variation in urinary tract infections. Studies in the United Kingdom and Denmark (Stansfield, 1966; Elo, Sarna and Tallgren, 1979) have previously indicated winter peaks for children. Although any infection may contribute to the development of wasting, this qualitative analysis does not describe any causal link between urinary tract infections and acute malnutrition in DPRK.

Figure 1: Seasonal calendar of risk factors for acute malnutrition in DPRK

Data sources: *Summary of qualitative interviews; and United Nations Humanitarian Country Team DPRK, DPRK Needs and Priorities 2017.*

[11] Treating MAM with illnesses will not fully prevent SAM since some children may not be able to access treatment in a timely way or may be MAM without an illness and become SAM before they become eligible for treatment in the CMAM programme.

Figure 2 presents the trend (as a three-point moving average) in admissions during the evolution of the CMAM programme from January 2015 to December 2016. In early 2015 a total of 89 counties had been established by agreement with the Government, with further expansion to 149 counties in response to requests from the Government for expansion in response to the drought (April to June 2015) and floods (1–5 August 2015). Data was sourced from CBS and presented without disaggregation into patient category (inpatient / outpatient), gender or age. No data was available on relapse or admissions of children with disabilities.

Figure 2: Graphical representation of the evolution of the CMAM programme in DPRK

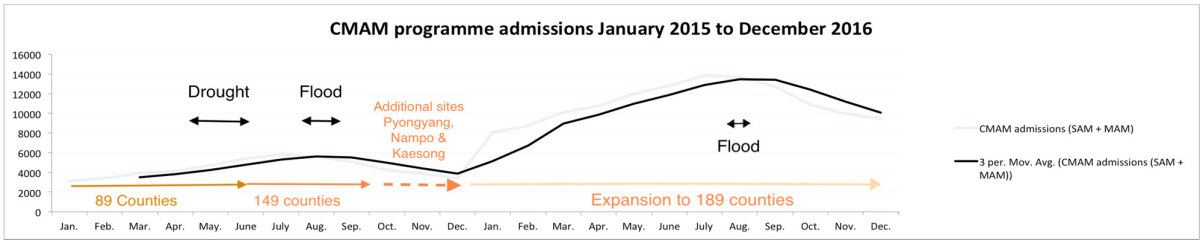


Figure 3 provides a disaggregation of the totals of MAM and SAM admissions from January 2015 to December 2016. An unusual feature of the trend lines is that during expansion of the programme to 189 counties, the trend in SAM admissions remained fairly flat relative to MAM admissions. At the inception of a CMAM programme in a new location, it might be expected to find a relatively high number of SAM cases that decreases sharply within a few months. No such trend is seen in these data. Comparison of month-to-month data indicates a remarkably consistent average increase in total SAM admissions of 26% (range 25%–30%) and a 300% increase in total MAM admissions (range 297%–325%) from 2015 to 2016.

This indicates increasing admissions as expansion occurs, with a significant increase in 2016 as 40 new treatment sites were added in flood-affected areas. Interpretation of the trend requires an assessment of stressors predisposing to acute malnutrition and further disaggregation of data.

Figure 3: Trend in MAM and SAM admissions in DPRK, January 2015 to December 2016

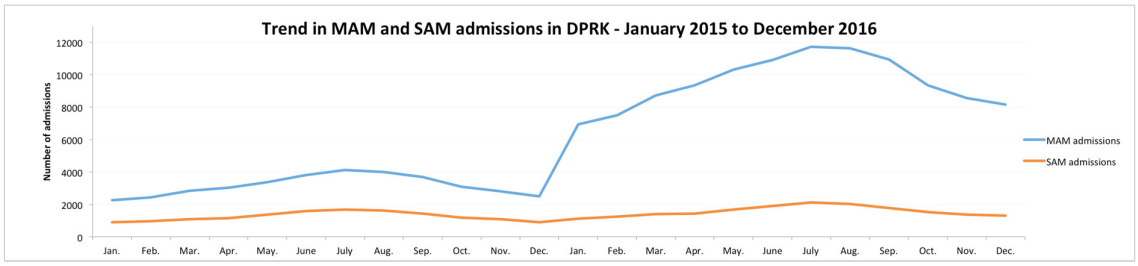


Figure 4 provides exemplar admission trends in South Pyongan in 2015. The seasonal calendar predicts a decrease in March and April and an increase in cases during the summer months. However, the trend for MAM and SAM cases shows a continued increase in March and April during the drought, while in the summer the trend line for SAM cases is significantly blunted but the trend for MAM continues to increase. This indicates that **the programme was responsive to the effect of the drought and the expected seasonal increase in acute malnutrition due to illnesses (increased prevalence of diarrhoea) and that the strategy to treat MAM with illnesses reduced the occurrence of SAM significantly**.

Figure 4: MAM and SAM admissions, South Pyongan Province, 2015

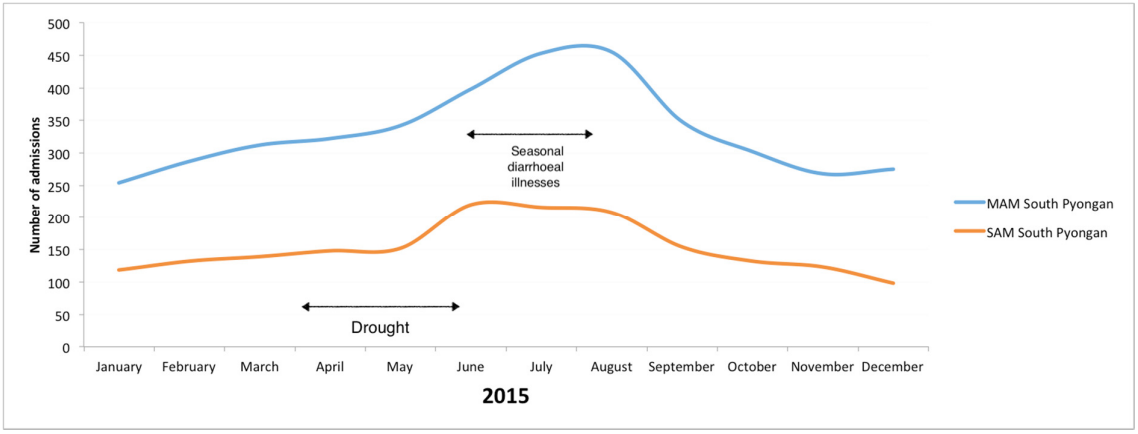


Figure 5 presents trends for MAM and SAM admissions in South Hwanghae and South Hamgyong during 2015. Reports from MoPH indicated a 72% increase in the prevalence of diarrhoea during the first six months of 2015 in the four most affected provinces (UNICEF, 2015). During 2015 the number of treatment sites more than doubled in South Hwanghae (from 12 to 25) and in South Hamgyong (from 8 to 18). Figure 5 illustrates that the drought and flood in these provinces is associated with increased admissions superimposed on normal seasonal fluctuations. A predicted decrease in admissions around late summer is interrupted by flood and the admissions in South Hamgyong increase. **This demonstrates that the CMAM programme is responding appropriately at a local level, not only to seasonal fluctuations in disease but also to both drought and flood**. It should be noted that the true responsiveness of the programme might be dampened in these figures since the drought and flood affected specific county areas but data was not disaggregated to this level. It is therefore remarkable that the responsiveness of the programme comes through in the provincial data presented.

Figure 5: Admission trends in South Hwanghae and South Hamgyong Provinces in 2015

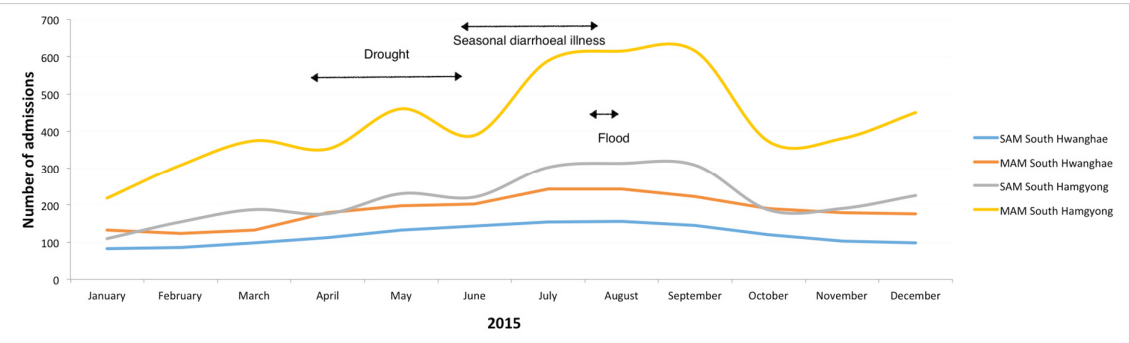
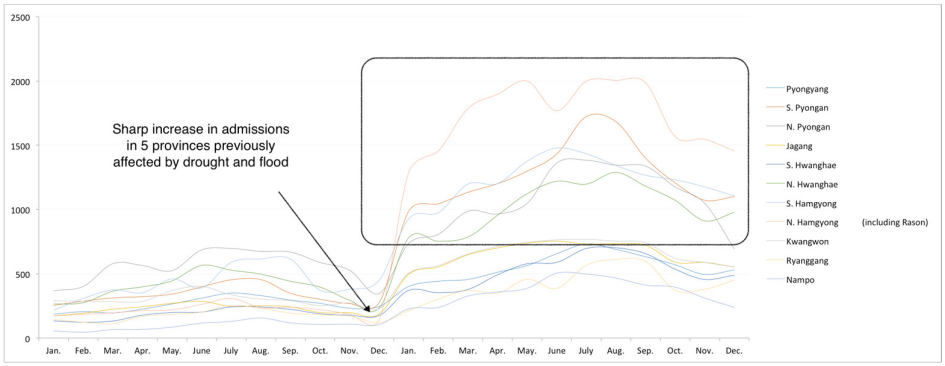


Figure 6 indicates the trend in combined admissions of MAM and SAM for all provinces from January 2015 to December 2016. The trend lines show several significant features. There is the expected seasonal variation in admissions in 2015 except for the admissions trend in Q4. The seasonal calendar predicts an increased prevalence of acute malnutrition from December to February; however, for both 2015 and 2016 a decrease in admissions is reported. Given that the new treatment sites were operational by the end of September 2015, and supplies for Q3 and Q4 were distributed around July–August and October respectively, it is surprising not to see an upsurge in admissions in Q4 of 2015. Anecdotal discussions with UNICEF and CBS staff indicated that data is collated quarterly at county and provincial levels but six-monthly at national level, with annual summary data compiled during December and January. It is possible that the collation of admissions for December each year is

truncated due to internal reporting procedures. Other explanations are possible: if this was caused by stock-outs or inefficient distribution, the decrease in November / December would mean that all provinces ran out of supplies simultaneously so it seems unlikely that this is a supply-driven variation in admissions. The large increase in January and February also suggests that seasonal variation in access and coverage is not the explanation.

The box in Figure 6 isolates the trend lines for those provinces most affected by floods and droughts during 2015–2016. For these provinces, a threefold to sevenfold increase in admissions occurred in January 2016. The general increase in numbers of children treated in 2016 is largely explained by the addition of an extra 100 counties since September 2015; however, the sharp increase in admission numbers in January 2016 and then onwards throughout the year potentially reflects improved reporting procedures between MoPH and CBS. This is speculative, though, since the data was received after the conclusion of fieldwork and confirmation would require further discussion with both departments.

Figure 6: Trends in MAM admissions, January 2015 – December 2016



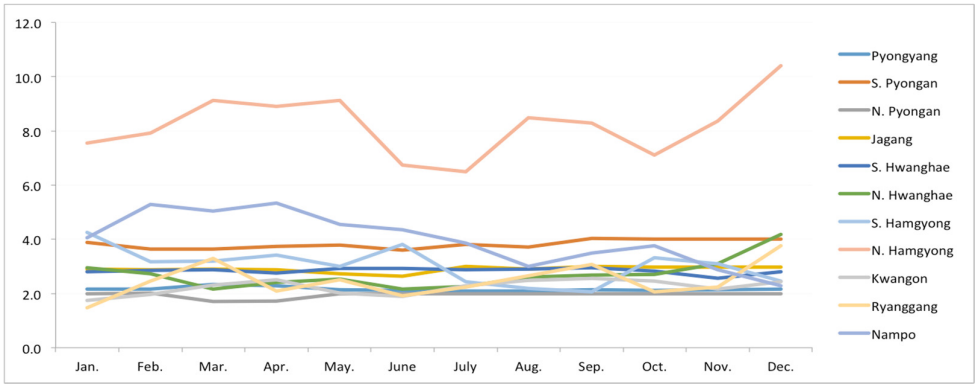
A CMAM programme report of 2016 states:

> *"The overall project objective of the UNICEF CMAM programme to be implemented with the new CERF funding support is to reduce excess mortality among U5 children with drought-triggered increased vulnerability in 60 new delivery sites, treating SAM-affected children particularly in the four drought-affected provinces."*
>
> (UNICEF, 2016d, p. 2).

The CERF-funded expansion of the programme in flood-affected provinces in 2016 indicates an appropriate allocation of resources to areas of greatest need. Localized flooding in August 2016 is also reflected in the trend of admissions superimposed on seasonal trends**. This indicates that the programme is locally responsive over both slow-onset seasonal fluctuations and quick-onset disasters**.

Figure 7 indicates the trend in the ratio of month-on-month increases in MAM admissions during the course of 2016 compared with 2015.

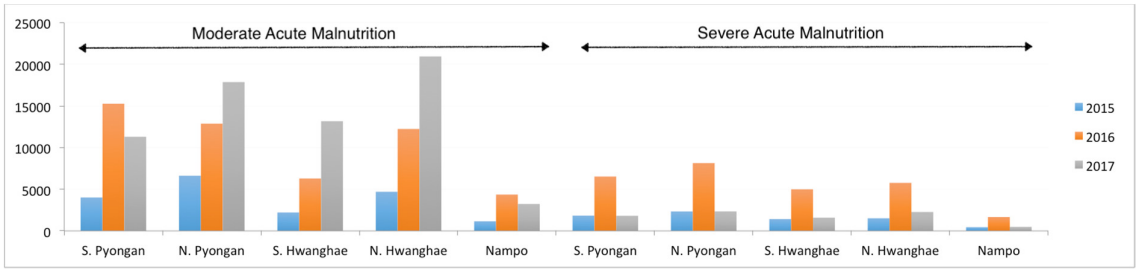
Figure 7: Ratio of MAM by month-to-month comparison of admissions in 2015 and 2016



The trend in month-to-month ratios indicates an increase of 2–4 times in most provinces compared with the same month of the previous year. In Nampo and North Hamgyong, the month-to-month ratios indicate fourfold to sevenfold increases. North Hamgyong experienced repeated flooding during 2015–2016, and in August 2016 severe flooding affected 600,000 people and caused loss of life. The increase of 7–10 times as many admissions as the previous year is maintained throughout 2016. **This suggests that the demand for CMAM services was ongoing long after the occurrence of the initial disasters and that the underlying factors contributing to the increase of malnutrition have not yet been adequately addressed**. A drought in 2017 from April to late June reduced food security and suggested a move towards the use of negative coping strategies (FAO, 2017). Comparable provincial data for CMAM admissions for 2017 was not available at the time of the evaluation.

Figure 8 summarizes the annual MAM and SAM admissions for 2015 to 2017 in five affected provinces. The data for 2017 is a projection based on data obtained from CBS for the first six months and should be interpreted with caution;[12] however, Figure 8 shows a continuing increase in MAM admissions, and all five provinces demonstrate an initial increase in SAM admissions between 2015 and 2016 followed by a decrease in 2017. This indicates that the change of strategy to treat MAM with illnesses has had a very significant effect on reducing the numbers of SAM cases and the relative numbers of MAM and SAM.

Figure 8: MAM and SAM cases in selected provinces 2015 and 2016, and 2017 (projected)



In summary, **the change of strategy to expand geographical coverage generally – and more specifically into disaster-affected regions – has been entirely appropriate. The inclusion of children with MAM with illnesses has been an appropriate approach to reducing the incidence of SAM and, by inference, reducing mortality**. This is consistent with ToC strategies 1, 2 & 3, contributing to output 1 and outcome 2.

[12] Projected admission numbers for 2017 were obtained by doubling the numbers of admissions over the first six months. Similar calculations for admission numbers in 2015 and 2016 produce estimates of annual admission figures accurate to within 5%.

To what extent is the DPRK CMAM programme in line with global recommendations and practices for management of acute malnutrition?

Management of acute malnutrition including both SAM and MAM and methods of service delivery are typically adapted to local contexts. Intermittent reviews of evidence occasionally update general recommendations for practice (e.g. WHO updates for the management of SAM in 2013). It is important therefore that the CMAM programme in DPRK is not only appropriately aligned to global recommendations but also appropriate for the local context (ToC outcome 2).

Eligibility for admission to the CMAM programme is defined by the national guideline for the management of acute malnutrition (MoPH, 2014), which was developed and finalized in 2014 prior to the change of programme strategy. The change of strategy in 2015 extended eligibility for admission to children with MAM with illnesses who were to be treated with one packet of RUTF per day for a maximum of two weeks (UNICEF, 2015 and UNICEF East Asia and Pacific Regional Office, 2017). This is a unique adaptation for the DPRK context but one that has not been supported by the dissemination of appropriate management protocols through updated national guidelines or job aids. MoPH indicated that the management of cases of MAM with illnesses had been included in training; however, field observations confirmed that only management protocols and job aids for the management of SAM were available at the hospitals visited.

Typically a child with MAM would be treated with supplementary food products (e.g. RUSF or Super Cereal) and, from a United Nations perspective, would normally fall under the mandate of WFP. Reports (WFP, 2017) indicate that WFP has more limited programme coverage geographically and that SFPs were underfunded during the period 2015–2017. It is unrealistic to expect that WFP support of children with MAM could have expanded at the same rate as the CMAM programme or that UNICEF could have supported all MAM cases with or without illnesses. **The strategy to treat the most vulnerable MAM cases with concurrent illnesses using limited amounts of RUTF would appear to have been an appropriately pragmatic approach to mitigate the risk of children becoming SAM despite it not being a typically recommended practice**. RUTF and RUSF are very similar in terms of macronutrient and micronutrient profile and both are safe to use in the management of MAM; however, RUSF is the product recommended for MAM and is approximately 30% cheaper.

The goal of treating cases of MAM with illnesses in DPRK is to support the child through his/her illness to prevent SAM, and is defined by a fixed period of treatment. The original intention of the strategy was not to treat the child through to cure (e.g. as defined by MUAC >12.5cm or WFH > -2 z-scores). In practice, a review of treatment records in all the hospitals visited indicated that children with MAM with illnesses are admitted for hospitalization and are treated systematically with therapeutic milks and antibiotics (indicated only for children with SAM with complications); and after transition, management is continued with RUTF through to cure. The management of cases of MAM with illnesses is not appropriate for their physiological condition and is not in line with globally recommended practices.

The protocols for the management of MAM with illnesses observed in the field have also filtered through to the level of donor proposals. The CERF proposal of 2016 states:

> *"MAM with medical complications will be treated using therapeutic milk and antibiotics only while they are in inpatient care as a life-saving measure to hasten recovery"* (UNICEF, 2016, p. 5).

Discussion with UNICEF nutrition staff suggested that the original form of the proposal was edited by the Office of Coordination of Humanitarian Affairs and did not reflect the promoted practice. A

separate document on key nutrition messages from July 2016 (UNICEF, DPRK, 2016e), reportedly produced for ambassadors and other laypersons, indicates that cases of "MAM and SAM with complications" should be treated with specialized therapeutic supplies including medicated milks. The document later goes on to correctly describe that this is for the specific treatment of SAM with complications. Although not aimed at clinical practice, these documents suggest a potential for confusion regarding the treatment of MAM with illnesses that correlates with the practices observed at all the hospitals visited during the evaluation. The number of hospitals sampled by the evaluation is 3% of the total number of hospitals: however, the consistency across geographic regions and counties within provinces suggests that this is a systematic issue.

While the origin of the management protocols for cases of MAM with illnesses is unclear, a significant effect has been to put an excessive logistical demand for resources on the programme nationwide. This suggests the need to clarify terminology relating to complications in line with globally recognized use. In summary, the intended management of cases of MAM with illnesses was an appropriate and pragmatic adaptation to meet the objectives of the programme. In practice, the translation of protocol into practice resulted in the use of incorrect terminology around complications, which has led to the inappropriate management of these cases.

A review of the 2014 National Guidelines shows that the mode of service delivery was appropriate to a decentralized, community-based model for the treatment of SAM and that management protocols for SAM are consistent with WHO guidance. **The evolution of the programme strategy placing treatment services in designated hospitals in each county has conversely increased the distance that beneficiaries would have to travel to obtain treatment potentially to several tens of kilometres**. Weekly travel over such distances with a sick child to obtain treatment over these distances would be an unreasonable expectation, especially in winter. More appropriate options for service delivery will need to be considered going forward to provide the equitable service utilization envisaged in ToC outcome 2.

How synergistic is the link between CMAM and other health and nutrition interventions such as IYCF, micronutrient supplementation, supplementary feeding interventions and IMNCI?

As a concept, CMAM is a public health approach to treating acute malnutrition that encompasses the treatment of both MAM and SAM. However, the design of primary health service delivery or of vertical programming varies according to context. The various components of the approach may be implemented as a seamless service or as quite distinct programme components. Where programmes are distinctly separate there need to be adequate programme links to ensure they act synergistically.

The NNS to 2018 emphasizes synergy in multisectoral programming and the UNICEF Country Office Strategic Plan to 2021 supports this strategy and the development of Government capacity to manage multisectoral programming. Coordination of sector working groups occurs at the level of the Humanitarian Country Team under the Resident Coordinator. UNICEF chairs the Nutrition Sector Working Group. Technical coordination is conducted through this Working Group, with meetings scheduled monthly. At the time of the evaluation a review of monitoring tools was under discussion with the view to later harmonization. This will be an important step for effective multisectoral programming, which is currently yet to be fully rolled out.

In DPRK, a blanket feeding programme is in operation for children in various locations across 63 counties and implemented through institutions (e.g. hospitals, nurseries and baby homes). In approximately 10% of the locations listed, treatment for children with MAM is also reported to be available; however, for the more widespread blanket SFP, screening for malnutrition is not a requirement for eligibility. Treatment for children with SAM or with MAM with illnesses is available

across the 189 counties of the CMAM programme. **By virtue of differences in geographic coverage of programming, there is no synergy between prevention and treatment programmes in approximately 120 of the counties served by the CMAM programme**. This limitation is unlikely to improve in the short term with the WFP programme being chronically underfunded and facing a critical shortage of funding going into 2018 (WFP, 2017). Contrary to the coordination envisaged in the ToC in 89 counties, any synergy between CMAM and WFP programming that exists in counties where they are both present is by inference only.

The LQAS evaluation of coverage was conducted in 6 provinces, 12 counties and 48 *ris*. WFP provides support in 9 of the 12 counties[13] surveyed, although interviews with *ri* clinic HHDs indicated that WFP support was not available in every *ri*. As discussed later (*see 'Effectiveness and coverage'*) almost all (94%) of the cases of MAM identified in the LQAS were verified as admitted to the CMAM programme, with only 6% being MAM without illnesses. By comparison, the 2012 National Nutrition Survey found a prevalence of morbidity of 14% among all children and no association between morbidity and acute malnutrition (2012 National Survey, p. 37). Studies in other contexts have identified that approximately 12% of children with MAM are at risk for SAM (Save the Children, 2016). The proportion of MAM cases being identified with illness compared with those without illness in the LQAS is therefore extraordinarily high and points towards a poor or biased case finding technique[14] rather than a failure of preventive programming.

Interviews with HHDs at *ri* level suggest that links between CMAM and WFP programmes to prevent MAM are weak. HHDs screen for acute malnutrition in nurseries monthly; however, interviews did not indicate any referral of children from the WFP programme to the CMAM programme or vice versa. A joint monitoring report (UNICEF and WFP, 2016) indicated that anthropometric measurements are undertaken at nursery level but that the calculation of WFH and eligibility for the CMAM programme is determined at the level of the Health Department, while interviews during this evaluation suggested that children with low MUAC were referred to the *ri* clinic to determine eligibility. Routine programme data disaggregated to county level would be useful to assess the effectiveness of SFPs in the prevention of SAM compared to counties where SFPs are absent and CMAM provides RUTF to MAM cases with illness.

A more detailed examination of WFP and UNICEF programming at the *ri* level is needed to understand if the CMAM and blanket SFP programmes are operating in synergy, as available evidence suggests they are not doing so particularly well. Examination of the '3W' (who, where, what) spreadsheet produced by sector working groups and designed to document coordination of approaches does not provide enough disaggregation to *ri* level to enable further analysis. Previous underfunding of WFP programmes and foreseeable continued funding shortfalls[15] together with lead times for international food procurement and local food production present significant barriers to the universal treatment of MAM. **Achieving countrywide synergy between prevention and treatment programmes will require significantly more funding than is presently available**.

A review of national guidelines on IYCF (2014) and guidelines for control of micronutrient deficiencies in DPRK (2014) indicated that they are appropriate and coherent with the current national guidelines, and aligned to priorities outlined in the NNS. IMNCI guidelines were in the process of finalization

[13] All LQAS counties are covered by WFP programming except (i) Jungsan County, South Pyongan (ii) Junghwa County, North Hwanghae and (iii) Chongdan County, South Hwanghae.

[14] Enumerators were observed to be measuring MUAC with the tape too loose. This would bias towards identifying fewer MAM. Children registered in the CMAM programme can also be identified through questionnaires and RUTF consumption, leading to an overrepresentation of these children in the data.

[15] WFP forecasts predict a funding shortfall for operations to December 2018 of up to 85% of total operational costs, resulting in possible breaks in assistance.

during the CMAM evaluation, which together provide the basis for the enabling environment for strategies 1 &2 of the ToC and geographical focus (annex 8)

Discussion with *ri*-level staff indicated that all staff were trained in IYCF, and information, education and communication (IEC) materials (primarily UNICEF IYCF flipcharts) were present in all CMAM facilities. This is consistent with CRC Article 24(e), which states that carers must have access to basic child health and nutrition education, including on the advantages of breastfeeding. Limited time and restrictions on visiting communities prevented questioning carers on their recall of IYCF messages and age-specific dietary practices for children. In South Hwanghae, clinicians at hospital and *ri* level indicated issues at the community level with the early cessation of breastfeeding (at 2–4 months). This was supported by the age profile of hospital admissions in South Hwanghae, with a higher proportion of admissions aged less than 6 months. It also indicates that the training given has enabled the appropriate identification of infants with acute malnutrition.

IMNCI daft guidelines reviewed during this evaluation were appropriately aligned with international standards for other IMNCI guidelines. As with other Integrated Management of Childhood Illness / IMNCI guidelines, identifying malnutrition has low priority. This is not a problem if clinical assessment is methodical and includes assessment of acute malnutrition prior to prescribing treatment. To mitigate the low prioritization, the training manual accompanying the IMNCI guidelines in DPRK clarifies – better than is usual in other contexts – that children with SAM are treated differently than normally nourished children. **The IMNCI protocols are coherent with the current CMAM national guidelines but there is a lack of coherence with programming, with neither guideline indicating appropriate referral for nutritional support of children with MAM**. The section on 'supplementary feeding' in the IMNCI guidelines refers to the introduction of complementary feeding and does not include referral to blanket SFPs or treatment under the CMAM programme where illnesses are present. Those specific links will need to be provided through training courses / materials.

IYCF guidelines mention referral of children with oedema for treatment for SAM but do so inconsistently, with the focus being on the assessment of wasting. Various joint MoPH–UNICEF supervision reports state that oedema cases account for 3%–5% of admissions to the CMAM programme; as such, screening for oedema should be systematic along with MUAC measurement. Micronutrient guidelines appropriately identify that children on therapeutic feeding do not require additional micronutrients, and HHDs confirmed this during interviews. It was indicated that sachets of micronutrient powder are primarily given out twice a year during Child Health Days (CHD)

The 1,000 day approach (UNCT, 2014) used in training is well understood by staff at hospital and *ri* levels, and appears to be useful for understanding how the programmes are supposed to work synergistically. **A gap in this evaluation is that it was not possible (due to certain restrictions on the evaluator), to survey CMAM beneficiaries in the community to specifically link outcomes for CMAM, IYCF and WASH programmes. This would be a useful adjunct in demonstrating programme synergy in future monitoring and evaluation exercises in convergence counties (ToC strategy 4)**. In order to demonstrate the effectiveness of the multisectoral approach, better access to communities for monitoring will be needed, along with greater frequency and disaggregation in programme reporting that includes treatment outcomes; the establishment of the CDMU holds promise in this regard (ToC mitigation a & c).

What level of progress has been achieved to build CMAM programme ownership by the provincial Government and support its integration in the provincial health service delivery system as part of a strategic response to acute malnutrition?

At central level the Government of DPRK has provided an enabling environment through nationally endorsed CMAM guidelines, the inclusion of CMAM in its NNS to 2018 and Medium Term Strategic Plan (MTSP) to 2020 (MoPH, 2013 and MoPH & WHO, 2016). One target in the NNS is to spread the programme nationwide, and currently the CMAM programme has achieved 90% geographic coverage. CMAM has been integrated operationally into the national health infrastructure with the establishment of a provincial focal person for CMAM; treatment being given through provincial, city and county hospitals; and screening through the network of paediatric doctors and HHDs at *ri* level.

Training in CMAM and other health and nutrition interventions is given through face-to-face trainings and through the telemedicine system by clinical staff at provincial and county hospitals. Training is supported by contributions from the Health Department of the People's Committee. Updates and continuing on-the-job support are given through hospital-based monthly to quarterly meetings for *ri* staff and by occasional supervision visits to *ri* clinics by paediatric doctors from the hospital. During all interviews with provincial, city, county and *ri* staff in all locations, an appreciation of the CMAM programme was expressed and note made of its contribution to reducing mortality and morbidity.

Reporting on CMAM admissions and treatment outcomes is collated at county and provincial level quarterly, although it was not possible for the evaluator to review the reporting in detail as it was integrated into reporting for other hospital services. Paediatric Ward registers record CMAM-specific admissions and outcomes and the local Department of Health of the People's Committee stores hospital treatment records, including those of CMAM beneficiaries, after discharge.

To this extent the CMAM programme is largely integrated into the provincial and county infrastructure, demonstrating a significant level of governmental commitment to the programme. At the time of the evaluation, the written agreement between the Government and UNICEF (CPD 2017–2021 DPRK) supports the implementation of CMAM in 89 counties, although there have been considerable commitments above this agreement to implement in 189 locations in line with need and consistent with ToC output 1. Although assumptions a-d in the ToC do not specifically address CMAM, these assumptions have been met for this programme.

Consistent with the envisaged risks (a) and (c) to the ToC, **a significant gap in the integration of the CMAM programme at provincial and county levels is in logistics supply management**. Currently the Central Medical Warehouse distributes CMAM supplies directly to treatment facilities with support from UNICEF. When CMAM guidelines are next updated, the 2013 training package should be updated and job aids adapted for greater simplicity. They should also be more widely disseminated. This will be particularly important if quality is to be maintained if/ when CMAM treatment is decentralized to strategically placed *ri* clinics. The update should also take the opportunity to identify practical links between programmes to strengthen continuity of care and resilience. Convergence in the use of treatment records should aim to avoid duplication (e.g. between IMNCI and CMAM clinical assessments).

5.2 Effectiveness

Effectiveness measures the extent to which an activity achieves its purpose, or whether this can be expected to happen on the basis of the outputs. Implicit within the criterion of effectiveness is timeliness.

Summary findings and analysis

The evaluation found the CMAM programme in DPRK to be highly effective. It treats U5 children with SAM to prevent mortality and children with MAM with illnesses to prevent further morbidity and subsequent risk of death. The strategy to prevent SAM through the treatment of children with MAM with illnesses has decreased the proportion of SAM cases relative to MAM cases programme-

wide and inferential evidence suggests that the CMAM programme in DPRK has achieved high cure rates and been highly effective in reducing both morbidity and mortality. For 2016, the latest year for which complete data was available, this led to a reduction in morbidity for approximately 12,500 children, with approximately 4,600 deaths averted.

To what extent have the expected outcomes in relation to reduction of wasting, excess morbidity and mortality been realized through the CMAM programme?

The NNS and *Action Plan for the Control of Undernutrition of Children and Women in DPR Korea (2014–2018)* indicate that to decrease acute malnutrition and mortality, the CMAM approach should be sustained and extended countrywide (consistent with CRC Article 24(a)), and the target for the cure rate from SAM should increase from 80% to 85%. The rolling workplan 2015–2016 identifies a target cure rate of 90%; however, this is carried over from the rolling workplan prior to 2015 when the programme operated through a different (community-based) service delivery model.[16] **Although narratives describe the main aim of the CMAM programme as reducing mortality from SAM, neither the results framework of the UNICEF strategy (2017–2021) nor the CERF CMAM proposal (2016) identify targets for treatment effectiveness (e.g. cure rate, mortality rate).** In addition, the ToC intended outcome 2 is the utilisation of services, whereas to achieve the intended impact there must be continued utilisation of CMAM services through to cure.

Various programme reports and other documents report CMAM cure rates of greater than 80%, and individual reports from joint MoPH / UNICEF supervision visits all indicate the same. However, **there were no systematic treatment outcome data for cure, default, death or non-cure available at the time of the evaluation**. Evidence detailed elsewhere in this report, including the timely identification and referral of cases of acute malnutrition and low numbers of defaulters, supports the reported cure rates as being realistic and credible (thus going beyond ToC outcome 2 in achieving impact); however, this evaluation could not validate them.

In the absence of outcome data the effectiveness of the CMAM programme in reducing mortality and morbidity must be made inferentially through calculations of the numbers of cases of SAM averted and cases of death from SAM averted based on the number of admissions and assumptions regarding the cure rate.

Research from 1986 to 1994 in various contexts (Briend & Zimicki, 1986; Briend, 1987; Vella et al, 1994) indicates the mortality rate for untreated SAM at a MUAC of 110mm varies between 10.5% and 21.1% (mean = 17.325%) of cases per year. Based on these estimates we can approximate the number of deaths averted for any given year in the CMAM programme. Total admissions in the CMAM programme in DPRK for SAM in 2016 were 18,884 and if cure rate is assumed to be 85%[17]:

Deaths averted = Number of admissions in one year x 17.325% x Cure Rate
Deaths averted = 18,884 x 0.17325 x 0.85
SAM deaths averted in 2016 = 2,781 (Range: 1,685 – 3,387)

[16] Close proximity of treatment facilities is more likely to be associated with high coverage and low mortality, and less likely to be associated with default, resulting in high cure rates. Where distances are greater, higher levels of default may occur, driving down cure rates. Sphere minimum standards require a cure rate >75%.

[17] Early admission into treatment is consistent with expectations for low mortality. Anecdotal data and data from registers indicate a very low default rate. It is reasonable to assume the cure rate may be even higher than 85%.

In DPRK the proportion of children with MAM who would have spontaneously recovered or developed SAM if left untreated is unknown. In addition, the CMAM programme in DPRK only enrols children with MAM with concurrent illnesses (complications). It is assumed from the programme design in DPRK that these cases of MAM are more likely to develop SAM than a child without illnesses. A study in Burkina Faso indicated that approximately 11.6% of children with MAM left untreated became SAM.[18] The study cannot be extrapolated to the DPRK context but may serve as an estimate as an order of magnitude.

[18] Other studies in other contexts show similar results.

MAM admissions in 2016 = 114, 076
SAM averted by treatment = 114,076 x 11.6% = 12,548
Subsequent deaths averted from SAM = 12,548 x 0.17325 x 0.85 = 1,848
Total deaths averted = 2,781 + 1,848 = 4,629[19]

With estimates of 12,548 SAM cases averted and 4,629 deaths averted, the CMAM programme has (inferentially) been effective in its stated aim to reduce morbidity and mortality.

What factors have contributed to the programme outcomes achieved?

The evaluation identified five factors that contributed to outcomes being achieved:

- **Timely provision of funding and logistics** (ToC strategy 3, mitigation b)**:** Expansion of the CMAM programme from 2015 to 2017 was enabled through continued funding from the Korean and Norwegian Committees for UNICEF and full funding allocation to CMAM, while **the timely provision of funds through CERF for therapeutic supplies for disaster-affected areas facilitated the early treatment of children with acute malnutrition and directly contributed to reduced mortality and morbidity by providing access to treatment**. The CMAM programme was prioritized as a life-saving intervention and was insulated from underfunding at the expense of support to the programme tackling micronutrient deficiencies, with the unintended consequence of the micronutrient programme being affected for three years.

- **Timely screening and referral at community level** (ToC strategy 2) **:** The human resource and infrastructure capacity at community level in DPRK is high, enabling a ratio of one HHD per 130 households. HHDs were able to describe the correct referral criteria, and in case of potential absence of MUAC tapes, the appropriate referral of children with illnesses or visible wasting to the *ri* clinic for further anthropometric assessment. **The frequency of screening (at least monthly in nurseries and through home visits) has enabled timely referral for treatment, which predisposes to reduced morbidity and mortality**.

  These effects are demonstrated in the early referral (MUAC on admission) and sensitive response of the programme to need (admission trends against nutritional stressors) described in the preceding section. Anecdotal reports from HHDs indicate they bring RUTF supplies to the *ri* on some occasions to facilitate carers' continued access to and use of CMAM treatment, reducing absences from treatment and default, and contributing to improved odds[20] of cure. Although supervision reports 2015–2016 indicate a low proportion (approximately 25%) of hospitalized beneficiaries were referred by HHDs, the LQAS coverage and TET evaluation indicated the vast majority of beneficiaries, at both hospital and community level, were referred by an HHD or other health worker at a *ri* clinic.

- **Training capacity of MoPH** (ToC strategy 2)**:** As the CMAM programme has evolved since 2015, three out of 20 MoPH Master Trainers who were trained by UNICEF facilitated further face-to-face training in CMAM and IYCF for nutrition focal points and hospital staff under the 1,000 days approach. This has created a high level of knowledge of treatment protocols among clinicians at hospitals. The training content and provision of IYCF flipcharts supports the guidance from the Committee on the Elimination of Discrimination against Women third and fourth periodic reports (Article 199) on the promotion and dissemination of information on breastfeeding and the 1,000 days approach, and UNICEF core commitments for children (CRC

[19] The figures in these calculations should be interpreted with caution since the contexts on which the calculations are based are not directly comparable, assumptions are made, case definitions are different and treatment outcomes in DPRK have not been verified. They are provided only as 'order of magnitude' estimates.

[20] 'Odds' is a specific statistical term that is different from probability. The research from which this is taken indicated an 'odds ratios' for recovery. For more information see https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4908708/.

Article 24(e)) to ensure women have access to education on breastfeeding and child health and nutrition.

Further cascade training by provincial nutrition focal persons and hospital clinicians was conducted for staff at county hospitals and *ri* clinics through face-to-face and telemedicine training sessions. Telemedicine provides a live training platform through television media and enables training to be given in locations that are hard to reach. Key informant interviews at all of the hospital sites (n=6/6) and all *ri* clinics (n=7/7) had received training through one or both of these methods and received regular training updates at provincial or county level.

These training mechanisms have enabled a high standard of knowledge to be maintained in the face of a rapidly expanding programme, as evidenced through the correct recall of referral criteria at *ri* clinics; and admission, treatment and discharge protocols at hospitals in all locations. **The review of treatment cards indicated a high standard of record-keeping with few data gaps per record**. The clinical data documenting progress in the child's condition conformed to what would be expected from the prescribed treatment given, indicating accurate observational skills. Implementation of treatment protocols for children aged 6–59 months was consistent across the programme in terms of the use of medicines and therapeutic food products.

- **Supportive supervision** (ToC strategies 1-3, Risks a & d)**:** A review of reports of joint supportive supervision visits from MoPH and UNICEF between 2015 and 2016 and a report for a CMAM programme review in 27 of the 189 CMAM sites (14%) visited by ICN and UNICEF staff (UNICEF, 2016f) indicates a good standard of technical supervision. Details are further documented in supervision trip reports for each location and document the identification of technical issues related to the quality of care that would directly enhance the effectiveness of the programme, as well as appropriate technical support provided through UNICEF staff and Master Trainers. The results matrix for the country strategy note (UNICEF, 2016b) indicates a target for supervision visits to be increased from 20% to 60% of CMAM treatment sites. Interviews with UNICEF staff indicated several supervision visits, particularly since 2016, with 48 trip reports specifically for the CMAM programme (25.4% of programme sites) between 2015 and 2017 (23.8% since 2016), indicating progress towards the target of 60%.

- **Technical capacity and local leadership of the People's Committees** ToC strategies 1 -3, Risk a)**:** Discussions with CMAM focal points and hospital doctors, particularly in some areas, indicated great enthusiasm for and very good technical knowledge of CMAM and understanding of the wider issues around CMAM. In one instance it had been recognized that protocols for treatment with therapeutic milk were 'too long' for the child's clinical condition with descriptions of consequent (and appropriate) reductions in treatment time evident in many of the treatment cards examined. **Proactive management of supplies had resulted in the least time spent with stock-outs of supplies of any of the visited facilities. Beyond demonstrating the effectiveness of CMAM technical training under the 1,000 days approach, these were good indications of the technical capacity of provincial staff to manage the CMAM programme**.

5.3 Coverage

Coverage refers to the need to reach major population groups facing life-threatening suffering wherever they are.

Summary findings and analysis

The evaluation found the CMAM programme to be available to the majority of those who need it. Treatment coverage is the main driver of child survival for CMAM programmes. The Government and UNICEF both target nationwide coverage for treatment at provincial, city and county hospitals.

Currently the programme is present in 189 of 210 counties and provides ***availability coverage*** of 90% of the population nationally. The target narratives assume accessibility for the whole county population and neither the NNS nor UNICEF results framework provide indicators for case coverage.

The TET evaluation identified that distance from treatment sites is a major barrier to access to treatment, with ***accessibility coverage*** extending to a maximum radius of 15–20km from CMAM treatment sites. The LQAS evaluation found that within this radius of hospitals, **case coverage** was classified as high based on international Sphere standards for urban programmes. The case coverage should be interpreted with caution since the case finding methodology was weak and baby homes were excluded from the evaluation, suggesting the coverage may be an overestimate. None of the children treated were identified as having disabilities; however, the proportions of female and male admissions correlates with expectations based on MUAC case finding and indicates equitable coverage based on gender.

The high geographical coverage has been achieved through maintenance of the regular funding stream for CMAM and CERF funding for emergency supplies. The radius of accessibility is good compared with other programmes internationally and is likely achieved through a combination of the availability of hospitalization as a treatment choice and good follow-up in the community by HHDs. This accessibility radius is likely to be seasonal and highly compromised in winter. Regular screening and early referral of cases by HHDs at community level have facilitated the high case coverage. Currently there is negligible treatment coverage beyond 20km from a CMAM treatment site. Opportunities to increase the accessibility coverage, effectiveness and impact of the programme, and hence child survival, lie in decentralization of the programme at county level.

What is the estimated geographical coverage of CMAM services against the estimated national needs?

The UNICEF strategy 2017–2021 results matrix establishes a target of 50% of children with SAM to be treated – an increase on the baseline result from 40% – and a 100% target for geographical coverage of CMAM services. This target needs to be clarified because the target for case coverage for urban programming is greater than 70% according to Sphere standards. If based on estimated met needs then the target needs to clarify the expected level of accessibility and be correlated with programme cure rates. If intended as a measure of point coverage[21] then direct estimates of coverage will be required.

A summary of the classification coverage identified through the LQAS evaluation is illustrated in Annex 17 and indicates that **47/48 sampled communities achieved high coverage[22] that exceeds internationally accepted standards**. This coverage estimate includes both MAM and SAM cases and reflects 'period coverage', including cases identified as SAM or MAM and recovering cases still under treatment. One community returned a 'moderate' period coverage result. **In the context of a programme that expanded rapidly nationwide, achieving a case coverage proportion of greater than 0.7 (70%) is exceptional, especially in the northern provinces with mountainous terrain**. A key question is to what extent this high coverage is indicative of access to children from all parts of the county.

As indicated in the 'Methods' section above, the LQAS evaluation had limitations and **it is likely that a weak case finding methodology has resulted in an overestimate of case coverage**. Almost all areas

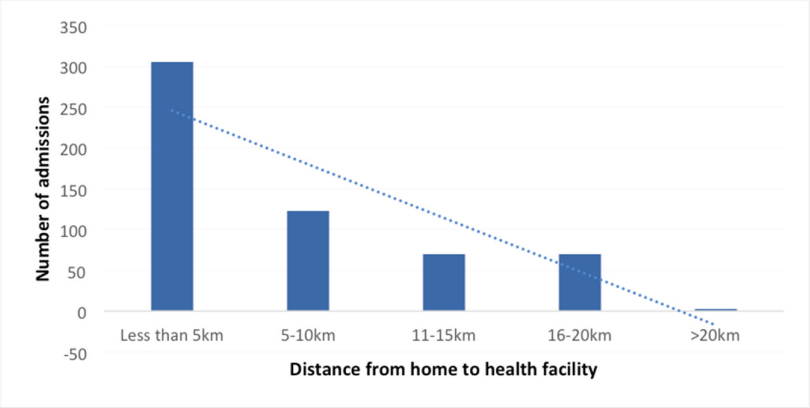
[21] Point coverage refers to the proportion of children with SAM treated. It is a measure of the efficiency of case finding and may not fully reflect case coverage. Point (or period) coverage must be estimated directly and the programme area under the survey clearly identified.

[22] The Sphere minimum standard for coverage is 50% for rural CMAM programmes and 70% for urban programmes. This evaluation identifies period coverage for both MAM and SAM cases.

reported high coverage. The median proportion for all locations ranging in distance up to 16km from the hospital was 0.9 (or 90%). This is unlikely to be an accurate description of case coverage, particularly in mountainous provinces where outpatient beneficiaries are expected to travel weekly for treatment in difficult terrain on foot or by bicycle accompanied by a sick child.

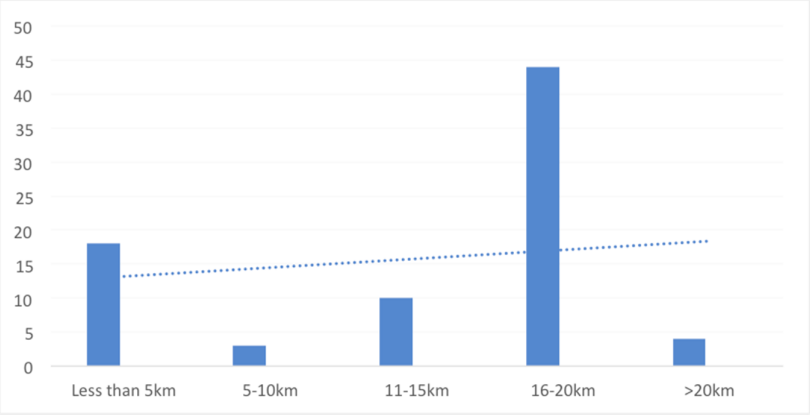
A 2016 country programme review of progress and a report of the United Nations Humanitarian Country Team indicated that 90% of children had access to CMAM services (UNHCT, 2017). Potential overestimates notwithstanding, high coverage in all locations, when triangulated with admission data from registers at the health facilities, represents the best possible case scenario. Figure 9 illustrates distance travelled for all admissions between July and October 2017 in all TET-evaluated health facilities (except for the Provincial Hospital in South Hwanghae, which presents a special case). The maximum distance travelled by beneficiaries is 16–20km, beyond which there are a negligible number of admissions.

Figure 9: Number of admissions to CMAM against distance travelled, July to October 2017



Source: Hospital facility CMAM registers.

Figure 10: Distance of admissions for South Hwanghae Provincial Hospital



Source: Hospital facility CMAM registers.

The effective radius for case coverage in DPRK is comparable to (and better than many) CMAM programmes in other contexts. The sharp decrease in the number of admissions beyond 5km from the hospital can be partially explained as a function of decreasing population as one moves away from the main population centre. South Hwanghae may present a special case and indicate that provincial referral hospitals receive proportionally higher numbers of admissions from beyond 15km. More

detailed mapping of the origins of admissions would be required to understand the factors underlying this data. **The implication for the majority of the programme is clear; beyond 20km from all health facilities, a negligible number of children have access to treatment**. This does not undermine the remarkable achievements made in programme expansion but does point towards potential strategies for improving case coverage and child survival (ToC strategy 1), and providing more equitable treatment for hard to reach locations at the county level (ToC outcome 2).

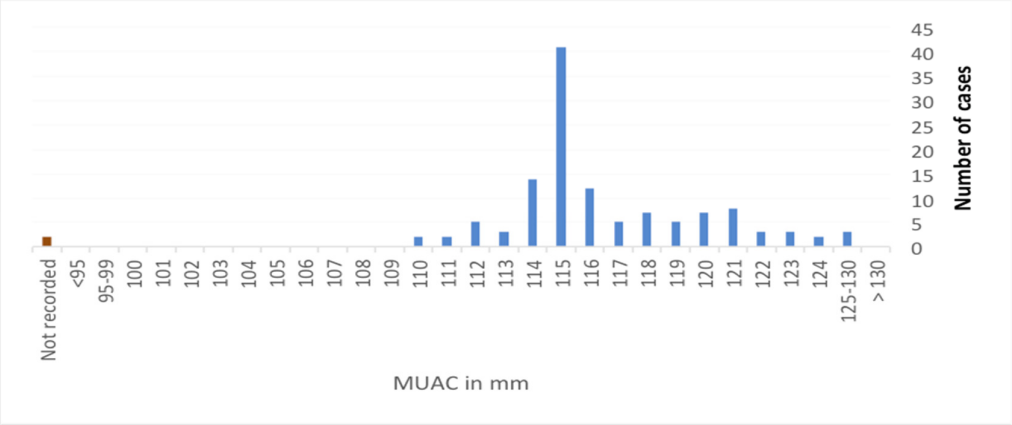
How have strategies such as community outreach through HHD visits and community / People's Committees' mobilization, screening and enrolment, outpatient treatment, inpatient treatment, information management and follow-up contributed to realizing overall programme objectives?

Reducing morbidity and mortality and achieving high case coverage in CMAM programmes requires an effective community mobilization strategy for acute malnutrition to be identified at an early stage in its progression (ToC strategies 2 & 3, outcome 2 & Impact). A child with MAM (MUAC <12.5cm) should be referred before they become SAM (MUAC <11.5cm) and a child with SAM should be referred as soon as possible after the MUAC falls below 11.5cm (ideally with MUAC > 10.5cm).

In DPRK, cases of acute malnutrition are identified and referred through doctors and HHDs at community level. Data extracted from health facility registers and treatment cards during the evaluation indicate a median MUAC on admission for all evaluated sites of 11.5cm. Figure 11 indicates the range of MUAC on admission except for South Hwanghae Hospital. There is considerable 'stacking' at a MUAC of 11.5 cm. It is possible that the true values of MUAC lay either side of this cut-off and SAM cases may be underrepresented in admissions data. Where SAM cases are represented the lowest MUAC on admission is 11.0 cm, indicating early referral. The frequency of reported screening activities varied between locations, with 3/7 locations indicating screening activities 2–3 times a week at nurseries. In other locations, screening is done monthly at nurseries and at community level. The regularity of screening and referral for admission is also evidenced in the responsiveness of the programme to need.

It can be postulated that children with MAM that do not develop a concurrent illness would not be identified as eligible for CMAM programme admission until they become SAM. If this is the case, then catching all cases while the MUAC is 11.0 cm or greater is evidence of generally good case finding and is indirectly indicative of good case coverage (ToC strategy 2). The corollary to this is that some children could have been treated more cost-effectively at an earlier stage of malnutrition.

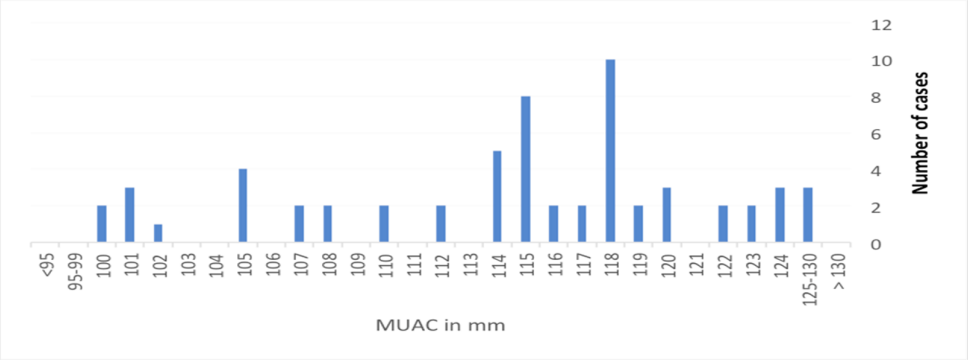
Figure 11*: *Consolidated MUAC on admission at evaluated sites, July to October 2017



The MUAC on admission for South Hwanghae Provincial Hospital is presented in Figure 12. There are a number of admissions with MUAC lower than 11.0cm (as low as 10cm), indicating late identification or late referral. Such cases of SAM are more likely to develop complications and those without complications take twice as long to be cured as cases admitted with a MUAC of 11.0cm or greater. **In terms of coverage, a low MUAC on admission is a strong indicator of low case coverage in the community**. The low MUAC on admission correlates with the greater distances from which admissions come for treatment in South Hwanghae. Why this occurs only in this location and not at the other city and county hospitals visited deserves further investigation. An unfortunate consequence of the limitations of the LQAS is that responses by carers to the questionnaires relating to 'barriers to access' were very few and were not completed correctly. It was not possible to gather more nuanced information regarding potential barriers other than distance.

Interviews with caregivers in 3/6 hospitals[23] visited indicated that they knew of other children with signs of malnutrition that did not attend the CMAM programme, and 5/6 hospitals reported that there were defaulters due to distance or conflicting farming or family duties. These reports correlated with interviews with HHDs that indicated the same reasons for lack of attendance but also indicated success at eventually convincing carers to attend the hospital for CMAM treatment.

Figure 12*: *MUAC on admission for South Hwanghae Hospital



LQAS data indicate that for all MAM and SAM cases identified, the carer's first choice of treatment was through the *ri* clinic (50%) using Koryo medicine (31.4%) or using another home remedy (19.6%). All of the carers interviewed (except one) in all locations heard about the CMAM programme from the HHD either through sensitization messages or screening. In one location, none of the carers had heard about the programme prior to admission, indicating that screening activities are a critical gateway to the programme.

LQAS data indicate that overall 83.5% of CMAM cases were being treated as outpatients in the community and 16.5% treated as inpatients. It was not possible to ascertain what proportion of all cases started treatment as an inpatient.

Overall, 93.4% of all reported cases in the LQAS were MAM with illnesses and 6.6% were SAM with or without complications. In comparison, national data from the same period in 2016 indicate that 13.9% of cases were SAM and 86.1% of cases were MAM with illnesses. Data for 2017 were not available at the time of writing. The decrease in the proportion of SAM cases since 2016 correlates with other findings above indicating early referral and with the decreasing proportions of SAM children indicated by data from CBS and projected estimates for 2017. Of those cases hospitalized at the time of the LQAS, 30.2% were SAM cases and 69.8% MAM with illnesses. Interviews with HHDs indicated frequent

[23] The proportion of caregivers making these reports in each location was not consistently noted.

follow-up of children during treatment and for several weeks after discharge, which contributed to the continued use of the CMAM service and directly enhanced period coverage.

It is clear that case finding and early referral has enabled the majority of children to be treated while MAM and has in many cases prevented their deterioration to SAM, while continued follow-up in the community has contributed to the effectiveness and coverage of the CMAM programme as crucial elements in reducing morbidity and mortality (ToC outcome 2). There is room to strengthen advocacy to seek treatment early, and earlier referral to provincial hospitals (ToC mitigation a, to risk d).

CMAM, IYCF and IMNCI procedures do not currently consider disability-specific assessments or give specific guidance for any special measures required to enable access to treatment or specialized treatment and follow-up. Key informant interviews with European Union Project Support 7 (Handicap International) indicated that they currently have no links with nutrition programmes or any capacity to inform programming on technical nutrition needs. Discussions may be useful in identifying the means to ensure the inclusion of children with disability in disaster risk reduction measures and ensure access to screening during sudden-onset shocks. The Korean Federation for the Protection of the Disabled (KFPD) carries the mandate for the protection of the disabled. A 2011 report reads:

> *"The mission of KFPD is to advocate and represent the rights and interests of people with disabilities in DPRK. Among its major tasks, contributions to the mental and physical rehabilitation of people with disabilities, the establishment of a barrier-free environment, prevention of disabilities and ensuring a social status of respect for people with disabilities will be the top priority of the federation. The federation shall undertake various kinds of support services and advocate and disseminate public information to enable people with disabilities to play their role as the true masters of the society and community".*

The inclusion of KFPD in discussions would provide specialist knowledge to apply a disability lens during any update to national guidelines and be useful to explore ways in which to provide equitable access to the CMAM programme for children with disabilities, strengthening ToC outcome 2.

Findings suggest that there are opportunities to redefine the architecture of the CMAM programme according to local context. **Many of those children currently hospitalized do not require hospitalization and the hospital census could be decreased, allowing hospital staff to focus on those cases requiring more intensive treatment**. Alternatively, where distance makes weekly visits impossible, the provision of temporary residence in the vicinity of the hospital should be considered as a mode of case management. It should be low input and avoid excessive demands on staff for routine monitoring; bed space need not be occupied and children not requiring intensive clinical care could be reviewed at the outpatient clinic.

All of the HHDs interviewed described having received training either face-to-face at the county hospital or through the telemedicine system, with supportive supervision given through quarterly meetings at the hospital. In one location (5km from the hospital) the *ri* clinic doctors reported receiving weekly visits from the hospital paediatric doctor.

In summary, **the high coverage and early admission to the CMAM programme are consistent with the high cure rate and low mortality. The primary influence in achieving high coverage and early admission is undoubtedly HHDs, through regular screening and referral from the community in most cases** (ToC strategy 1, output 2, outcome 2).

What are the possible opportunities for the expansion of effective CMAM interventions?

The CMAM programme has achieved 90% geographic coverage of services. **Within 15 km of hospitals providing treatment the case coverage appears to be high; however, a negligible number of children living beyond 20km are able to access treatment.** The current UNICEF strategy to achieve 100% geographical coverage would provide equal availability nationwide and would likely achieve the same result in terms of the extent of case coverage. Inference suggests that the programme expansion to date has been accompanied by effective treatment delivering good cure rates. Reporting of treatment outcomes would be needed to identify means by which to improve effectiveness at facility, county and provincial levels.

The estimated programme need and targets for achievement for the CMAM strategy need to be nuanced at the county level in order to improve on ToC outcome 2. The proportion of children actually able to access the CMAM programme can be estimated by calculating of the proportion of the county population living within 15km of the health facility. The implication of this is that in counties of similar area, those with the highest numbers of cases of MAM and SAM may have the lowest proportion of those needs met. Larger counties will also be disadvantaged. Strategies for expansion of the programme should consider expanding the number of outpatient treatment sites at county level in high burden counties against expanding the nationwide geographic coverage in the light of the potential impact in terms of child survival.

5.4 Efficiency and quality of services

Efficiency measures the outputs – qualitative and quantitative – achieved as a result of inputs. This generally requires comparing alternative approaches to achieving an output, to see whether the most efficient approach has been used.

Summary of findings and analysis

The evaluation found the CMAM programme to be efficient but with significant room for improvement. The screening and referral of eligible children to the CMAM programme from the community has resulted in the timely admission of children for treatment and has contributed to the overall objectives of the programme to reduce morbidity and mortality. Early referral typically results in short stays and lower treatment costs.

Following admission for treatment, the efficiency and quality of CMAM service provision for children with MAM with illnesses has been affected by the absence of protocols in national guidelines and job aids at hospital level, and confounded by conflicting information regarding clinical management. This has led to the use of more therapeutic products and antibiotics than is required for treatment, the unnecessary and prolonged occupation of hospital beds, and overconsumption of human resources. This sits at odds with the capacity of hospital staff, who demonstrated a good technical knowledge in most aspects of the guidelines as they are presented.

A significant departure from expected quality standards is evident for the treatment protocols for the management of infants aged less than 6 months; most significantly in the lack of use of protocols for treatment that promote breastfeeding, a problem that had been highlighted previously during joint supervision visits in 2015 and 2016 but remains unresolved. In general, the rapid expansion of the CMAM programme has been accompanied by a remarkable consistency of practice that has been facilitated by the efficient transfer of knowledge through CMAM Master Trainers and provincial CMAM focal persons; the widespread use of the national telemedicine system; and supportive supervision from UNICEF and MoPH staff, particularly at provincial and county level.

Major improvements in efficiency that would impact all aspects of the programme can be achieved by providing appropriate guidance for the management of cases of MAM with illnesses. Immediate remedial action is needed to improve protocols for the management of infants and encouraging mothers to breastfeed, both from a clinical perspective and to be consistent with Government commitments on CEDAW and the CRC.

To what extent has the rapid expansion of geographic coverage of services in DPRK been accompanied by quality service provision and to what extent does the quality of service delivery for the beneficiaries meet the expected standards according to internationally recognized benchmarks?

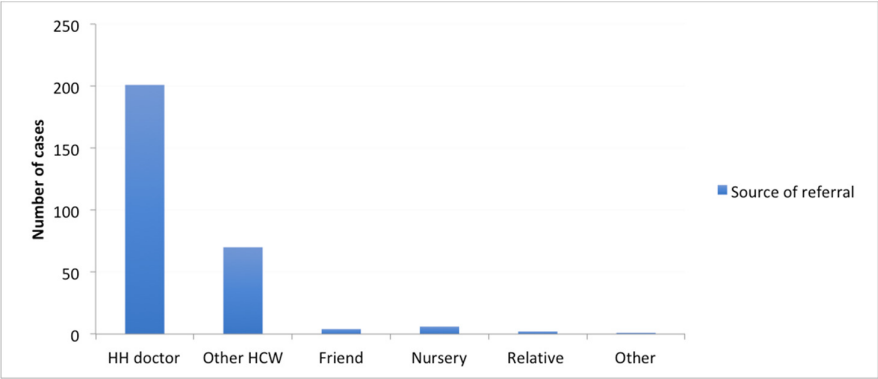
In order to determine the impact of the rapid expansion on service quality, key service components were reviewed.

- **Efficiency and quality of case finding and referral:** The timely identification and referral of children with acute malnutrition is a central principle of CMAM that prevents further deterioration of the physical condition of the child. This results in less morbidity and mortality and enables the child to be treated more efficiently, requiring shorter duration of treatment and more cost-effective use of resources. Section 4.3 above indicates the definitions of early and late referral and Figures 11 and 12 indicate that the majority of referrals to the programme are 'early'.

  Interviews with hospital staff indicate some issues with referrals from *ri* level. In three locations, hospital staff indicated wrong referrals either due to incorrect MUAC measurements or referral of children with MAM without concurrent illnesses. In one hospital interview it was suggested that there was no proper system for referral. During interviews with doctors at the associated *ri* clinics, referral criteria were correctly stated at all locations. At one *ri* in South Hwanghae it was indicated that screening was done at the *ri* clinic and that approximately 65% (n = 6/9) of HHDs have MUAC tapes. Without a MUAC tape the HHDs do a visual assessment for malnutrition or refer the child to the clinic if she or he is ill.

  Interviews at *ri* clinics describe regular case finding activities, at least monthly as routine and sometimes more frequent when needed or when illness is reported. Joint supervision reports from 2015 and 2016 hospital visits indicate that approximately 25% of hospital CMAM admissions came by HHD referral, with the rest being self-referrals. Figure 13 indicates the source of referrals from data obtained during the LQAS evaluation. The vast majority (around 70%) occur through HHD referral, with 'other health care workers' referring approximately 28%.

Figure 13*: *Source of referral to CMAM taken from LQAS questionnaires



- **Efficiency and quality of treatment and follow-up:** Proper implementation should support children with MAM through a period of illness with a maximum of two weeks of support with a daily packet of RUTF. In this respect RUTF acts as a supplementary food. The protocols as implemented result in the unnecessary use of therapeutic milks and ongoing treatment with RUTF as therapeutic rations (approximately 2.5 times more than the intended supplementary ration) given through until cure (when MUAC is greater than 12.5cm or WFH is greater than -2 z-scores) rather than just two weeks of nutritional support.

  In addition, the child unnecessarily occupies a hospital bed and staff time is used in making the milks and implementing care routines required only for children with SAM with complications. Table 1 describes the cost of F75 and F100 therapeutic milks and RUTF distributed in 2017. The cost of RUTF is given as per UNICEF records and reflects the international standard cost of RUTF plus the international distribution costs up to arrival in DPRK. Local transport costs are not included.

Table 1: Amount and cost of RUTF distributed in DPRK in 2017

	RUTF	F75	F100	Total
Units distributed	38,220	2,418	5,145	N/A
Cost per unit (USD)[24]	48.00	50.9	49.5	N/A
Total cost (USD)	1,834,560	123,076	254,678	**2,212,314**

In 2016, 85.8% of admissions were MAM with illnesses and 14.2% of cases were SAM. Typically less than 10% of children with SAM would have complications requiring the use of F75 or F100 therapeutic milk. If it is assumed that all SAM children were treated with appropriate protocols then the minimum efficiency savings in the use of F75 and F100 are 85.8% of total usage. The median number of RUTF consumed per day is 2.5–3 packets (outpatient and inpatient respectively) according to LQAS data. For cases of MAM with illness, only one packet per day is required, indicating a minimum efficiency saving of 60%.

Table 2**: **Cost savings from reductions in use of therapeutic products

Cost of 85.8% usage for MAM (USD)	1,574,053	105,599	218,514	**Total**
Reduction in usage	60%	100%	100%	N/A
Cost of proper usage for MAM	628,621	0	0	628,621
Reduction in cost (USD)	**944,432**	**105,599**	**218,514**	**1,268,545**

Based on present consumption, this amounts to a saving of US$1.27 million (57%) of the US$2.21 million spent on therapeutic supplies. The cost of RUSF is approximately 30% cheaper than RUTF; with international transport costs included there would be an approximate further saving of 25% if RUSF replaced RUTF as the product used for children with MAM with illnesses as is recommended by this evaluation. Children with MAM with illnesses are currently being treated until cure, with the median length of outpatient treatment being 14–28 days. If all MAM cases were treated only for two weeks with RUTF (or RUSF) then in some locations a further 50% reduction in treatment cost could be obtained through the proper use of discharge protocols. Similar calculations could be applied for the cost of inappropriate antibiotic usage for MAM cases and the reduction in local transport costs as a result of fewer

[24] Cost is given as unit cost at the point of delivery to DPRK and does not include the cost of local transport.

therapeutic and medical supplies being needed, as well as considerably easing the current logistical demands of the CMAM programme (ToC risk d).

- **Quality of treatment:** Benchmarks of the quality of care are indicated in the CMAM national guidelines, presented in Table 3.

Table 3: Performance indicators, CMAM national guidelines, DPRK

Performance indicator	PW
	Acceptable
Cured (long term stay in PW with Rehabilitation phase)	>75%
Defaulted	<15%
Died	<10 %
Non-cured	Not stated
Length of stay (short term stay in PW with only Stabilization phase and Transition)	5-7 days
Length of stay (long term stay in PW with Rehabilitation phase)	<4 weeks
Weight gain (long term stay in PW with Rehabilitation phase)	> 8 g/kg/day

These indicators are in line with Sphere international standards but are more particularly appropriate for inpatient care rather than a CMAM programme with outpatient treatment modalities. Other than the Government target to achieve cure rates of 85%, none of the usual performance indicators for CMAM form part of the UNICEF results matrix. Although coverage is the main factor determining child survival in CMAM programmes and the NNS and UNICEF strategy both focus on this (ToC strategies 1,2 & 3), the addition of performance indicators combined with improved reporting would assist both in monitoring the programme at central level and with targeting counties most in need of supportive supervision visits.

- **Treatment outcomes:** Reports from 2015 indicate a cure rate of 90%, a case-fatality rate for SAM of less than 2% and an 8% relapse rate in the 149 treatment sites operating at that time (UNICEF, 2015, p. 5). Individual UNICEF supervision reports between 2015 and 2016 indicating numbers of admissions, deaths and non-cured cases support the reported figures and indicate that outcome data are available; however, treatment outcome data were not made available for this evaluation.

  The reported cure rate of 90% is an improvement over the 80% cure rate reported in 2014 (UNICEF, 2015, p. 13). The source of data is unknown; however, these results are credible in the context of the current programme. **This suggests that the targets for cure rate in the National Nutrition Plan (MoPH, 2014–2018) have been exceeded but this could not be validated during this evaluation**. An examination of registers for admissions from July to October 2017 during the TET evaluation revealed very few defaulters across the six sites and certainly less than the 15% Sphere standard. Adding outcome indicators to the Government nutrition strategy indicators and UNICEF results matrix, and subsequent inclusion in the proposed quarterly reporting at county level by CDMU would likely strengthen programme monitoring at all levels (ToC output 1, outcome 2).

- **Length of stay:** A length of stay of 5–7 days for 'stabilization and transition' in the inpatient unit is indicated in the DPRK national guidelines, in line with internationally accepted norms. A 'normal' period of stabilization using F75 lasts between one and three days (being on F75 for four days or more may indicate treatment failure) and the transition from F75 to RUTF takes approximately 2–5 days. The actual period of treatment with F75 and transition requires contextual interpretation depending on the methods used to transition from one type of food to the other, described in the WHO 2013 updates for the management of SAM.

  For children with SAM without complications treated with RUTF, the expected median length of stay is approximately 6–7 weeks when MUAC >12.5cm or WFH > -2 z-scores are used as discharge criteria. Across the six hospitals evaluated, the median lengths of stay in inpatient ranged between 10.8 and 35 days, and the median length of treatment with F75 ranged from three to six days. During transition, children were typically changed to F100 therapeutic milk and then to RUTF prior to discharge, and long periods of care in the transition phase have contributed to prolonged length of stay.

Across all hospitals there is room to improve the efficiency of both stabilization and transition phases and prepare for earlier discharge within seven days for cases of SAM. MAM cases do not require inpatient protocols. In many CMAM programmes outpatient care is the mode of treatment preferred by patients. In DPRK, hospitalization allows a period of rest for the carer and so may be an appropriate adaptation; however, continued treatment in hospital after seven days for most cases should be done according to outpatient protocols and not require the occupation of a paediatric ward bed or frequent monitoring by clinical staff. If residential care is required, due to distance for example, this can be done in the vicinity of the hospital or in a less intensive care environment without daily monitoring.

The median length of stay for outpatient treatment ranged from 14 to 28 days.[25] Time limitations did not allow the matching of individual inpatient and outpatient records to identify what proportion of outpatients started treatment in hospital and what proportion of care was carried out as inpatient versus outpatient. Cases of MAM with illness should be able to be discharged after 14 days according to the intended protocol, indicating opportunities to shorten treatment and associated costs; however, protocol updates should also consider discharge criteria to include the absence of illness and weight loss.

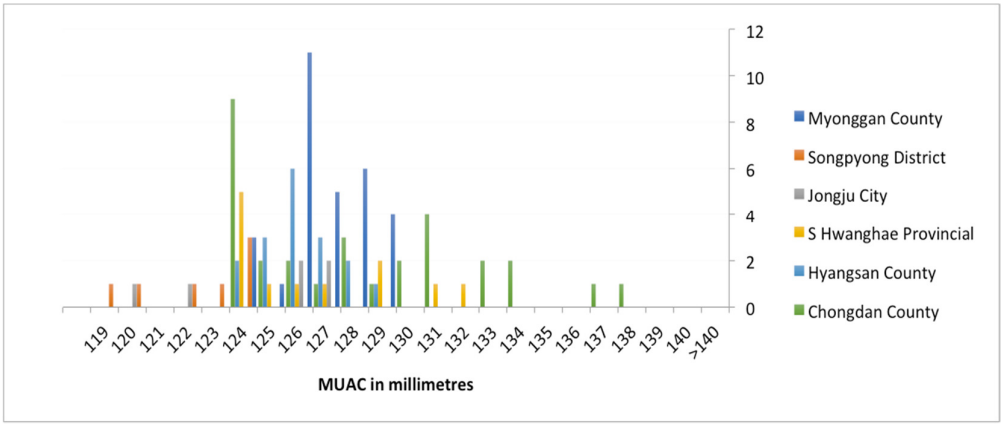
- **Default:** CMAM national guidelines and interviews with clinical staff at hospitals and *ri* clinics indicate that children undergoing outpatient treatment must attend the hospital every week for follow-up care and to obtain more RUTF. Interviews with carers of children indicate that 22% (n=5/22) of carers travelled 10km or more, mostly on foot or by bicycle. Despite this, interviews with staff and data taken from registers indicate that the default rate is very low, while the LQAS indicated high coverage up to distances of 16km. The reported low default rate is remarkable and may be facilitated in DPRK by hospitalization at the start of treatment, which reduces the burden of frequent travel.

  Interviews with HHDs also indicated that when children treated as outpatients are not able to travel, the HHD collects the RUTF. These coping mechanisms likely mitigate potentially high levels of default. Weekly visits to hospital for clinical review are unnecessary for MAM cases and may be avoidable for a good proportion of uncomplicated SAM cases. Monitoring progress at *ri* level rather than at hospital would enable a more efficient approach that would reduce the carer's burden of travel and being away from other duties. Hospital visits could be used primarily for admission and discharge, and regular follow-up or hospitalization of children not recovering well at home carried out according to well-defined protocols.

- **Discharge:** Consolidated data from treatment cards indicate an efficient discharge of children when cured (i.e. the child reaches a MUAC of >12.5 cm or WFH > -2 z-scores). Figure 14 illustrates the MUAC on discharge disaggregated by hospital. It should be noted that while some cases are discharged with MUAC less than 12.5 cm, this is because treatment is continued in outpatient care after discharge; there was no evidence from the cards examined of premature discharge from treatment. In Songpyong District Hospital with the lowest MUAC on discharge, the lengths of stay in inpatient and outpatient care were 14 days each and were among the most efficient at treatment and discharge, with the longest length of stay for any patient being five weeks.

[25] Jongju City Hospital outpatient records indicated a median length of stay of 35 days; however, there were too few outpatient records (n=6) for this to be reliable.

Figure 14: MUAC on discharge disaggregated by hospital



While the majority of hospitals discharge efficiently, a review of treatment cards at Chongdan Hospital indicates that 70%–80% of children stay in treatment after cure for an extra 2–3 weeks. This represents an excess of approximately 5kg of RUTF at an excess cost of treatment of approximately $17 per case.[26] Future training and supportive supervision should include practical support in identifying appropriate timing for discharge to improve efficiency (mitigating ToC risk b).

- **Relapse after discharge:** UNICEF supervision reports for 2015 to 2016 indicate relapse rates of 8%. The LQAS evaluation indicated that of those under treatment at the time of the evaluation, 23.2% had been admitted to the programme on a previous occasion (the time between admissions is unknown). Of those with a previous admission, 74.2% had been admitted one time and 25.8% twice; no child had been admitted more than twice. All of the relapses were from the provinces of North Hamgyong, South Hamgyong, North Pyongan, South Pyongan, North Hwanghae and South Hwanghae – provinces primarily affected by floods and drought from 2015 to 2017. The highest rates of second relapse came from Chongdan County in South Hwanghae (40%) and Jungsan County in South Pyongan (60%). Studies in other contexts using similar discharge criteria have indicated short-term relapse (within three months) rates after cure of less than 2%. **The high rate of relapse in DPRK, although not directly comparable with other studies, since it is over a longer time period, indicates that the underlying causes of acute malnutrition are yet to be sufficiently addressed**. In terms of the UNICEF Theory of Change, while CMAM contributes to the overall impact of UNICEF's nutrition programme, the capacity to 'thrive in safe and healthy environments' (ToC impact) is beyond its scope, relying on a strengthening of other programming and nutrition ToC strategies 4 & 5.

- **Supportive supervision** (ToC strategies 1 & 3): An examination of UNICEF trip reports from 2015 shows detailed supervision checklists completed by UNICEF staff. Trip reports since 2016 are largely summary reports without completed checklists attached but describe using the CMAM national guidelines checklist to compile the reports. Interviews with UNICEF nutrition staff suggest that access to ward areas and the ability to use checklists for systematic data collection is not the same for all staff, with senior staff having greater access. UNICEF has developed a variety of supervision checklists since 2013. Their design allows efficient collection of information and is largely subjective, with scoring on a scale of 1–3 on whether items are done correctly or not. The checklists could be improved by adjusting some of the subjective indicators to be more objective. For example, specific indicators for median MUAC

[26] Estimated cost is based on an average of 2.5 packets RUTF per day and the price of RUTF excluding local transport costs.

on admission, length of stay, duration of treatment on F75, F100 and RUTF and outcome indicators (among others) would provide objective measures of the efficiency of case finding, quality of care and results specific to the results framework thus strengthening ToC strategies 1 and 3, and mitigation a.

- **Reporting** (ToC strategy 1 risk e): Reports on screening and follow-up done at *ri* level are shared with the CMAM treatment facility during supervision visits from hospital staff or routinely by phone. Programme information is collated at county level and reported to the provincial hospital, typically by phone, where it is collated and passed to the Health Department of the People's Committee. Data are then passed to central level. Data include the number of admissions (inpatient and outpatient) and number of discharges. CBS collects aggregated data on admissions from county level upward but does not collect information on the number of discharges or disaggregated discharge outcomes.

  The TET saw reporting formats (in Korean) during hospital visits but it was not possible to gather data from the reports. The reporting formats for CMAM contained in the national guidelines are not used. It was reported in interviews that following discharge, treatment cards are held in local storage by the Health Department of the People's Committee. These findings are consistent with joint MoPH and UNICEF supervision reports of 2015 and 2016 indicating the same. The MoPH national strategy indicates a target for quarterly reports to be available at provincial level and six-monthly reports to be available at national level. During interviews with CBS it was indicated that this is done; and at national level, admissions data are collated but did not include CMAM treatment outcome data.

  Publication of data is strictly controlled by CBS. At the time of the evaluation no systematic data were available either from CBS or UNICEF, and admissions data disaggregated by province for 2015 and 2016 and for six counties in 2017 were made available by CBS following the evaluation. Systematic gathering of admissions and treatment outcome data by service delivery site and by administrative area are a routine part of data collection in every other CMAM context and are a vital resource to identify programmatic issues and appropriately target interventions to improve the quality of service delivery (ToC strategy 1). CMAM treatment outcome data are available at hospital level in DPRK but need to be integrated into the reporting systems for the Health Department of the People's Committee and CBS. The ToR provides graphs sourced from MoPH for admissions data for 2014 to 2015 disaggregated by class of admission (MAM with complications, SAM and SAM with complications) and by location of treatment. The graphs show significant differences from the admissions data shared by CBS for 2015. However, the original MoPH source data were not shared and could not be crosschecked against the official CBS data (ToC risk e).

What factors have contributed to meeting quality standards?

Several of the factors contributing to the quality of the programme intrinsically contribute to the effectiveness of the programme, including timely case finding at community level, the training capacity of MoPH, supportive supervision and technical capacity at provincial level.

- **Staff capacity and commitment at all levels** (ToC strategy 2): Clinicians at all of the hospitals were able to cite appropriate admission, discharge and treatment protocols (notwithstanding the confounding issue of MAM protocols). The review of treatment cards indicated a high standard of record-keeping with few data gaps per record. The clinical data documenting progress in the child's condition conformed to what would be expected from the prescribed treatment given, indicating accurate observational skills. The implementation of treatment

protocols for children aged 6–59 months was relatively consistent in terms of the use of medicines and therapeutic food products.

Good standards of theoretical knowledge and consistency in practice are the result of good coordination and regular supportive training and supervision from CMAM focal persons and paediatricians between provincial and county facilities and associated *ri* clinics, as evidenced in key informant interviews at all levels. In two of the six hospitals visited it had been recognized that, despite the guidance on treatment, children with MAM with illnesses did not require long periods of stabilization and transition and this resulted in a shorter length of stay in inpatient care, indicating the application of good standards of clinical assessment. Although the length of stay was still prolonged, there is the capacity to respond to appropriate guidance and improve the quality of care.

- **Logistics support** (ToC strategy 3 & risk c): Logistics support for the CMAM programme is provided through the Central Medical Warehouse system supported by UNICEF, through calling treatment facilities quarterly and updating requests for supply, and through providing fuel or arranging transport, bypassing the provincial and county medical warehouse systems. The current arrangement was put in place as part of the new CMAM strategy to increase geographic coverage and avoid the anecdotal logistical issues experienced in supplying 1,000 *ri* clinics. The expansion of the programme to 189 counties has consequently resulted in difficulties maintaining the current system and has resulted in stock-outs on multiple occasions during 2017 at five of the six hospitals visited in 2017, ranging from two weeks to three months and primarily affecting therapeutic milks rather than RUTF.

  No stock-outs were reported in one of the six hospitals, although no F75 was available at the time of the visit. It is a remarkable effort to have maintained the supply of products to 189 separate facilities, and despite the stock-outs that are creating a bottleneck (discussed below), the programme shows evidence of being highly effective. UNICEF nutrition staff indicated that a global shortage of therapeutic milk and Government-directed limitations on distribution contributed to shortages during 2017, although this was not verified during the evaluation. Commodity distribution records for 2017 indicate that one out of six hospitals did not receive a supply of therapeutic milks in Q1 and four out of six hospitals did not receive supplies during Q2 (although 71 other hospitals did). Q3 distributions supplied only RUTF. All hospitals received therapeutic milks and RUTF during Q4. Distribution issues notwithstanding, the previously noted issues with the implementation of therapeutic milk protocols and overuse of therapeutic products (*see Table 3*) are significant contributors to stock-outs.

What were the bottlenecks for successful implementation of the CMAM objectives and what factors should be strengthened in order to further enhance the quality of service provision and address bottlenecks or constraints?

The UNICEF CPD 2017–2021 indicates the objective of extending the equitable use of quality nutrition services providing treatment for acute malnutrition to 89 counties. The results and resources framework does not provide any indicators or targets for CMAM except the indicative output.

> *"MoPH has enhanced capacity to develop, implement and monitor a comprehensive package of women-, adolescent- and child-related nutrition-specific interventions, particularly in those regions affected by the protracted humanitarian crisis".*

The UNICEF programme strategy note indicates a **key to the success of the CMAM programme will be institutionalizing screening and early referral of wasted children to CMAM services; increasing geographical coverage and access and uptake of CMAM services; and improving the quality of these life-saving service**s. The strategy note for the CPD 2017–2021 results matrix outputs for the CMAM

programme indicate a target of 100% of hospitals to implement the CMAM–IYCF package of services and that 50% of SAM children should have received treatment. **The programme expansion has achieved 90% geographic coverage and is well on target to achieve 100% coverage by 2021.** However, the objectives around access, early referral and uptake need clearer definition (ToC strategies 2 &3) and objective outcome measures (ToC output 2), and explanation of how they relate to the objective of treating 50% of children with SAM (ToC impact).

Specific bottlenecks or barriers identified during the evaluation include the following (ToC strategy 3).

- **Operational guidance** (ToC risk d): The intent of the treatment strategy is to prevent mortality through the treatment of SAM, and to attempt to prevent SAM by treating children with MAM who are likely to be at high risk by treating the child with one packet of RUTF per day for a maximum of two weeks. The lack of clarity over treatment protocols has resulted in the overuse of therapeutic products as discussed elsewhere in this report. This has not been a bottleneck to the programme objectives stated in the CPD per se but has created a bottleneck to implementing a cost-effective programme and created excessive demands on the logistical system that have contributed to frequent stock-outs of therapeutic products, ultimately resulting in a barrier to accessing treatment.

  CMAM training was conducted using national guidelines and supported by a limited number of laminated protocols distributed to hospitals to support practice, resulting in issues with transition phase protocols and the rationing of RUTF. In the short term, practice could be enhanced by providing additional protocols around the use of transition phase milk (only for SAM with complications) and the use of RUTF in transition from stabilization to outpatient rations.

  Specific guidance for MAM with illnesses is critical to improving the quality of care and mitigating logistical challenges. CMAM programme guidelines provide guidance and joint supervision reports indicate practical training was given for specific issues identified during field visits, such as the use of the SST. Lack of use of SST or other means of supporting breastfeeding infants in inpatient care remains an outstanding issue. The provision of job aids to help clarify and implement infant treatment protocols generally should improve the quality of care; however, specialist techniques such as SST will likely require more practical training. More generally, updated CMAM guidelines supported by a training package containing operational field guides for CMAM and providing stronger practical links between CMAM, supplementary feeding, IYCF and other programming would likely enhance care delivery.

- **Logistics** (ToC risk c): The CMAM programme has evolved from 89 counties in 2015 to 189 counties by the end of 2016, increasing the effort required to directly supply CMAM treatment facilities. In 5/6 facilities visited, pharmacy and hospital staff indicated that notification of the requirement for new supplies is given only when supply of a product is exhausted. Routine supply from UNICEF is distributed quarterly and in all of the five facilities stock-outs were reported. Stock-outs varied from three weeks to three months and at least one stock-out was reported in each facility during 2017. In one of the five facilities there was a simultaneous stock-out of more than one product. In one facility a buffer stock system was in place to ensure supplies were in place until the next delivery, ordering was done in advance and the pharmacist reported no stock-outs in 2017 (although there was no F75 available at the time of the evaluation).

  Subsequent to the evaluation, UNICEF nutrition staff indicated that the stock-out for three months was a direct result of the Government decision to reduce the distribution of supplies to only 89 counties during Q2 and Q3. Of the six hospitals visited, one hospital had been stocked out for two months and one for three months, and they were awaiting the Q4 distribution at the time of the evaluation. Four of the six hospitals indicated short-term

episodic stock-outs during 2017. By contrast, UNICEF staff also suggest that a separate consultation on logistical supply conducted during September 2017 had observed nutrition products to be available at all 47 hospital sites visited, suggesting an absence of any logistical supply issues despite the lack of Q2 and Q3 distribution of therapeutic milk. Neither these findings nor the methodology used to ascertain the information could be verified at the time of writing.

This evaluation strongly suggests that UNICEF staff should not ignore clear indications of the problematic logistical supply of nutrition products. Whether stemming from distribution issues or overuse of products, stock-outs represent an absolute barrier to treatment that originates directly from a service delivery failure. The intermittent lack of availability of therapeutic supplies directly affects the quality of care delivery and is a bottleneck that is likely to grow in effect in pursuing increased coverage, whether this is geographic coverage or accessibility coverage. If CMAM services are decentralized at county level, both volume and complexity will increase.

Discussions with pharmacy staff indicated that for other routine (non-CMAM) requirements the county or provincial medical warehouse is able to supply products within one week to one month of notification. This offers the potential for UNICEF to transition from direct supply to facilities to a system supporting the county medical warehouse system. This would require an in-depth technical assessment of the logistical capacity of the medical warehouse system and training in stock management at hospital level, particularly around the use of buffer stocks and predictions for future caseloads.

In the short term, the correction of treatment protocols should ease logistical demands. Interviews with WHO and a review of the MTSP indicate a potential longer-term solution to logistic issues through KLMIS. the MTSP reports that the KLMIS system is now rolled out to all medical warehouses nationwide following a successful pilot, and is used for forecasting, distribution, management and monitoring of supplies. This would be a more sustainable demand-driven system that could replace the current supply-driven CMAM distribution.

- **Access to monitor quality and training** (ToC risk e): The tight control of information and limitations to programme access for monitoring and supervision has been documented previously (UNICEF, 2016b). The limitations for this evaluation are documented elsewhere in this report (*see Annex 3*). LQAS evaluation and other coverage assessment methodologies can be complicated and are usually taught on the job with field training and supervision during data collection. This evaluation was restricted to classroom-based training, which led to inappropriate case finding and possible overestimation of case coverage. If DPRK national staff are to receive appropriate training in the correct and proper use of techniques to evaluate coverage and other methodologies (for example, routine monitoring and evaluation of IYCF practices) then greater transparency in planning and execution, and community-based training, will be needed. The strategy for convergence programming offers an opportunity in this regard, where the designated convergence county in each province could offer greater access to international staff for training, monitoring and evaluation so that techniques could be implemented more widely.

- **Reporting** (ToC risk e, mitigation c): The quality of programming can be measured through treatment outcomes. Transparent reporting of both positive and negative outcomes (default, death and non-cure) is needed to identify any corrective measures required to maximize the effectiveness of treatment. Indications are that the programme is likely to have high cure rates and be performing well; however, there are also issues with the quality of the programme as indicated by very low MUAC on admission (e.g. in South Hwanghae). Joint supervision reports from 2015–2016 indicate treatment outcomes for individual facilities. Treatment outcomes

are reported at county and provincial levels and the reporting of disaggregated outcomes at national level would assist in programme monitoring at central level. The development of the CDMU is a positive step in the provision of data for monitoring and supervision, and provides potential for practical feedback for clinicians and HHDs.

- **Redefining the CMAM strategy for coverage** (ToC strategy 1, outcome 2): Pursuing nationwide geographic coverage has been critical to the success of the CMAM programme in DPRK and has not been a bottleneck. Potential future bottlenecks for the programme are the continuing pursuit of 100% geographic coverage, and clear and objective measures for effective outcomes. The national and UNICEF strategies aim for high geographic coverage, through which equitable access and uptake can be achieved; the programme has largely met these objectives through achieving 90% geographic coverage. In terms of CMAM, the terms 'access' and 'uptake' need to be clearly defined and associated with objective outcomes. Geographic coverage describes the availability of the service; however, accessibility to services provided on a local level (accessibility coverage) needs to be defined, and barriers and boosters to access quantified.

  In terms of equitable service delivery, understanding 'accessibility coverage' will likely be a better guide than 'geographic coverage', since achieving high geographic coverage may not effectively target or direct resources to areas most in need. This information is relatively easy to obtain at the facility level using formats deployed during this evaluation. The term 'uptake' is defined by 'case coverage', which is a central principle of CMAM and the main driver for child survival in CMAM programmes. Sphere minimum standards for case coverage for humanitarian nutrition programmes are greater than 50% case coverage for rural programmes and greater than 70% case coverage for urban programmes. The addition of appropriate targets for case coverage to results / outcome matrices would provide an overarching standard that requires other issues around quality of service delivery – such as sensitization, case finding, referral and follow-up during treatment – to be addressed, and would be consistent with a transition to indicators for the Sustainable Development Goals.

5.5 Impact

Impact looks at the wider effects of the project – social, economic, technical, environmental – on individuals, gender and age groups, communities and institutions. Impacts can be intended and unintended, positive and negative, macro (sector) and micro (household).

Summary findings and analysis

The evaluation found that the CMAM programme has an impact. Official data from CBS indicate that during the period January 2015 to December 2016, a total of 151,981 children with MAM with illnesses and 33,853 children with SAM were treated. This translates into a reduction in morbidity through 17,630 cases of SAM being avoided and reduction in mortality of 7,581 U5 children. These figures do not include children treated in 2017. This is in line with the stated purpose of the CMAM programme in DPRK to address Goal 4 of the Millennium Development Goals (UNICEF, 2016i) to reduce undernutrition and mortality in children.

Estimates for admissions given in UNICEF programme reports are higher than official admission figures and would be indicative of even higher impact. This impact has been achieved through a strategy of achieving high geographic coverage of treatment services through integration into the governmental health infrastructure but has been limited by accessibility covering only children living within 15–20km of health facilities. The UNICEF thematic nutrition report (2016) states, "10% of the 1.7 million U5 children in DPRK are beyond the reach of life-saving CMAM services". This proportion is underestimated. Depending on the size of any given county and the population further than 15–

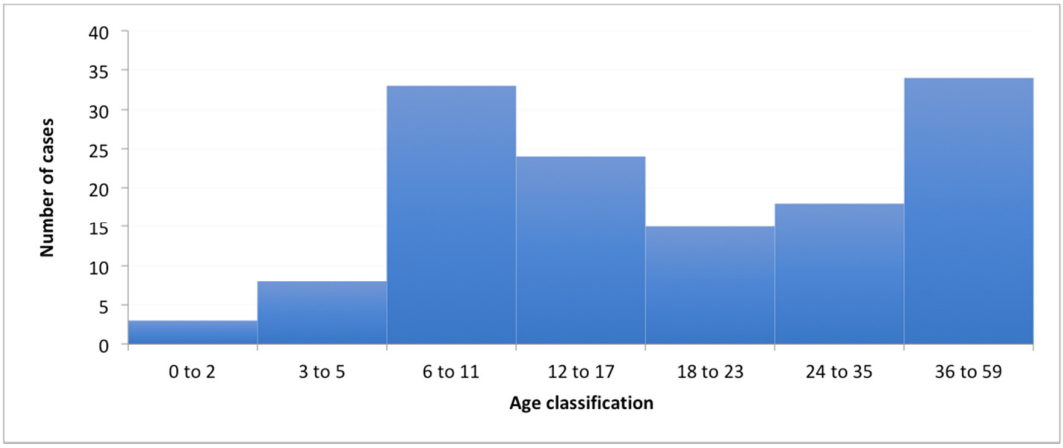
20km from a treatment facility, the CMAM programme is accessible to approximately one third to one fifth of the intended 90% geographic coverage.

The impact of the CMAM programme to date is a remarkable achievement and the next phase of its development can increase the impact by focusing attention on ensuring high case coverage within areas close to treatment facilities and decentralizing treatment to extend accessibility coverage.

How has the CMAM programme impacted / influenced primary health care services including other nutrition interventions such as the promotion of IYCF and micronutrient supplementations?

The MoPH NNS targets an age group of 6–9 months for the minimum acceptable diet. The UNICEF strategy result matrix indicates targets of an 80% exclusive breastfeeding rate and for 50% of children 6–23 months to receive an age-appropriate minimum acceptable diet. Figure 15 indicates the age profile of admissions to CMAM obtained from data from treatment cards.

Figure 15: Age profile (in months) of admissions to CMAM in DPRK



The range of ages in admissions indicates issues in all age groups and indicates that exclusive breastfeeding, age-appropriate complementary feeding and minimal acceptable diet to 23 months likely need to be strengthened. Screening with MUAC usually has a tendency to identify younger children; however, children aged over 23 months also form a significant proportion of admissions.

The theme of the 1,000 days approach linking CMAM and IYCF programming (ToC strategy 4) arose during discussions with hospital and *ri* clinic staff. Joint training linking programming since 2015 had supported this approach; however, detailed training schedules were not available. In 50% (n = 3/6) of hospitals, training had been given by UNICEF and was well appreciated (being described as sensational in one instance) and described as improving the capacity of staff dramatically. In two other hospitals training had been received via the telemedicine system. In one hospital doctors had not received direct training from UNICEF but were given on-the-job training at provincial level.

It was not possible to discern the direct impact of CMAM programming on IYCF practices in the community at large and IYCF programming was not evaluated.[27] Indirectly, the evidence suggests that

[27] Micronutrient supplementation is given primarily during CHDs twice per year and is not directly linked to the CMAM programme. **Specifically, children receiving therapeutic foods should not receive other micronutrient supplementation**.

the impact is likely to be weak. For example, one objective of the NNS is to improve the exclusive breastfeeding rate; however, according to the treatment records available for examination, protocols for infants aged less than 6 months specifically designed to improve breastfeeding or re-establish breastfeeding during treatment are not implemented (ToC risk d). A primary aim of IYCF counselling within the CMAM programme is to prevent relapse following discharge from treatment but the LQAS data suggests high rates of relapse. In the face of documented public distribution system rations below the target level and low rates of minimum acceptable diet, it is unknown whether counselling at facility level would have a significant impact in mitigating relapse (ToC mitigation a) without strengthening of IYCF programming more widely at community level.

How can the links between CMAM and other health and nutrition interventions be enhanced?

Links between CMAM and other interventions can be most obviously enhanced through the introduction of systematic screening during other health and nutrition interventions (ToC strategy 4). For example, this means screening being done not only by HHDs but that all facilities should screen all U5 children at every point of contact. Introducing IMNCI assessment protocols should enhance systematic screening but will require the provision of MUAC tapes to all clinicians. Screening and referral should occur specifically in immunization clinics where tuberculosis is screened for and treated, and at all IYCF counselling sessions. Tuberculosis in particular carries a high risk of acute malnutrition but it was not mentioned as a causative factor by any clinicians at hospital or *ri* level, nor by the small number of beneficiaries interviewed. An interview with WHO indicated that screening for malnutrition is not currently conducted during treatment for tuberculosis.

The NNS calls for enhanced institutional capacity to prevent and control malnutrition, and enhanced synergy for multisectoral programming. In support of this strategy the United Nations sector working groups are currently looking at multisectoral monitoring of programmes in the convergence counties, although joint monitoring tools had not been developed at the time of the evaluation. An example of a joint monitoring tool for CMAM, IYCF and WASH which can be deployed at county level and serve as a pilot tool to evaluate the performance of 'convergence counties' versus 'non-convergence counties' was shared with the nutrition team during the evaluation. The tool measures the impact of programming through outcomes at community level but will require adaptation for use in DPRK.

The UNICEF theory of change (*see* Annex 5) indicates a move towards the convergence of multisectoral programming in 10 convergence counties (11 in the figure) and the convergence of CMAM with other programming, with varying geographic focus, in coordination with WHO, the United Nations Population Fund and WFP. The convergence county strategy (ToC strategies 4 & 5) was in its infancy at the time of the evaluation, with evidence of its benefits yet to be documented.

The CMAM approach includes treating children with both SAM and MAM. Updated national guidelines could incorporate the treatment modalities for all MAM children and make strong and clear practical links to other health and nutrition programming (ToC strategy 4); for example, making links with WFP blanket feeding programming and clearly indicating the available care pathways for children with MAM without illness Interviews with staff at hospital and *ri* levels indicate the use of referral slips both to and from the inpatient facility and *ri* clinic that effectively link the inpatient and outpatient components of the CMAM programme. Joint training for CMAM and other nutrition interventions under the 1,000 days approach has made a significant impact on the reported capacity of these staff (contributing to mitigation of ToC risk a), although links between the CMAM programme and SFPs were not ascertained by this evaluation.

How significantly has the programme contributed to either revitalize or place nutrition high on the national and provincial policy and developmental agenda?

Interviews with all evaluation participants indicated that the CMAM programme has been well received from national-level MoPH to *ri*-level staff. It has in every anecdotal account been noted to contribute to reducing both the prevalence of SAM and mortality. All stakeholders at provincial and county level expressed gratitude for the efforts of UNICEF and the Government in expanding the programme. As previously noted, the Government has committed many resources at all levels in support of the CMAM programme. The NNS (MoPH, 2014–2018) and MTSP 2016–2020 (MoPH & WHO, 2016) demonstrate policy commitments supported by the development of national guidelines in CMAM, IYCF, micronutrients and IMNCI to create the necessary enabling environment. The implementation of the programme has been consistent with, and has contributed significantly to, national commitments on human rights instruments including the CRC and CEDAW through providing equitable access to treatment for malnutrition irrespective of gender, and the promotion of appropriate IYCF (ToC assumptions a & d).

The national nutrition policy targets nationwide CMAM treatment coverage and is currently available in 189/210 counties. It has thus far achieved 90% geographic coverage. MoPH has achieved high impact through integrating screening, referral and treatment services into its health infrastructure at provincial, city, county and *ri* levels (ToC assumption a & d, outcome 2). Training has been supported by MoPH through Master Trainers and cascaded through provincial focal persons and provincial and county clinical staff, and is supported by the Health Department of the People's Committee. UNICEF supplies the MoPH Central Medical Warehouse, which then distributes CMAM supplies quarterly directly to treatment facilities, with transport facilitated by UNICEF.

The direct evidence of integration into the Government health system and framework of enabling policies and guidelines and the evidence of the achievement of high-impact programming, consistent with CEDAW and CRC rights instruments, suggests a firm commitment to a national agenda to address malnutrition in DPRK (nutrition ToC impact).

5.6 Sustainability

Sustainability refers to the idea that interventions should support longer-term goals and eventually be managed without donor input, and refers to the need to ensure that activities of a short-term emergency nature are carried out in a context that takes longer-term and interconnected problems into account.

Summary findings and analysis

The evaluation found the CMAM programme to be, in its current form and against anticipated needs, unsustainable. Improved efficiency through improved clinical practices and the consequent reduced demand for therapeutic supplies may enable the logistical demands for current CMAM interventions to be better met against donor funding. Using more cost-effective products such as RUSF to manage MAM is to be encouraged. However, unless the economic and political situation changes, and the underlying causes of malnutrition such as food insecurity and limited public health systems are addressed, it is unlikely that CMAM interventions will be sustainable in the absence of donor funding.

What gaps in the capacity of MoPH can be identified which may hinder handover of the CMAM programme and what capacity needs to be developed for MoPH to successfully support programme implementation including commodity management and logistics?

Previous sections of this report have indicated specific technical, administrative and logistical issues that need to be addressed to improve the effectiveness, coverage and efficiency of the CMAM programme, and the current Government and UNICEF strategies for sectoral convergence of programming. The situational analysis of 2017 (UNICEF, 2016h) highlights institutional shortfalls in

equipment, piped water and electricity: gaps supported by interviews during this evaluation. Upgrading health facilities, including those at county hospital and *ri* levels, is addressed under the MTSP (ToC risk c).

A key requirement for CMAM programming to improve accessibility coverage and meet targets of treating 50% of children with SAM will be the decentralization of the CMAM programme to other hospitals (at city, county or *ri* level). For example, a profile of the UNICEF-supported convergent counties indicates that there are between two and six hospitals in each of the convergent counties at city / county level, and between 2 and 11 *ri* hospitals. **Selected county and *ri* facilities could serve as pilot sites prior to scaling up any decentralization to other counties.** With appropriate training, these facilities would easily have the capacity to implement outpatient treatment and piloting would be more relevant to testing logistics systems rather than technical capacity (ToC strategy 3, risk c).

The difficulties of the current logistics system highlighted in previous sections would increase in complexity and undoubtedly lead to stock-outs at decentralized facilities unless the capacity to manage supplies at the county medical warehouse level and treatment facility level is supported through practical training, and potentially integration into the KLMIS.

Informal discussions within the evaluation team and with MoPH raised the subject of the feasibility of local production of RUTF/RUSF in DPRK, consistent with the NNS (outcome 3.2.2). A 2015 UNICEF report surveyed an RUTF supplier base of 15 manufacturers. Nine were local producers in programme countries, of which seven had local prices, two provided products both locally and for export, and two exclusively exported. The average price from offshore producers was $47.48 per 13.8kg carton (range: USD 42.06 to USD 61.41/carton) versus the average local-for-local price of USD 53.21 (range: USD $46.77 to $59.25); all prices exclusive of international transport. The report concluded that the price gap has been narrowing since 2003 (Segre, Liu & Komrska, 2016). **While technically it is likely feasible to undertake local production of RUTF and that would increase the independence of the Government in implementing the CMAM programme, it is debatable whether the cost of the RUTF could be met by either UNICEF or Government funding**. A feasibility study and cost analysis would be needed to identify whether the volume of production in DPRK would reduce prices enough to make them competitive with external suppliers.

How feasible is it to sustain the current interventions without direct institutional, administrative, technical and financial support from UNICEF and other agencies?

A report from Action Against Hunger indicated that approximately 3% of national budgets should be directed towards tackling undernutrition (Action Against Hunger, 2015) in order to promote sustainability. The MoPH MTSP for the health sector (2016–2020) targets an increase of health expenditure from 6.4% of gross domestic product in 2014 to 7%, in line with a strengthening of the national economy (MoPH, 2014–2018). However, according to the UNICEF programme strategy note (2017–2021), the economy of DPRK remains vulnerable, while political isolation and increasing economic sanctions contribute to instability and make donor funds difficult to mobilize even though continuing support is required. The situation analysis of DPRK (2017) suggests that despite Government expenditure of $900 million on health systems, this is insufficient to cover many basic costs, including the provision of essential medicines (ToC risks b & c).

The budget for UNICEF support 2017–2021 totals $70.5 million, with $15.7 million required for nutrition, while the MTSP budget for support of health services to 2020 totals $173.8 million, with a funding gap of $119.2 million. There has been substantial commitment of Government resources towards the management of nutrition. In line with optional indicators for the Sustainable Development Goals, contributions should be costed in order to better define national budget allocations to nutrition. Estimation of the number of health professionals per 100,000 who are trained

in nutrition would provide a measure of existing capacity and provide a baseline to estimate capacity to implement nutrition interventions against national needs and provide defined targets to meet the Sustainable Development Goals.

Improved efficiency through improved clinical practices and the consequent reduced demand for therapeutic supplies may enable the logistical demands for current CMAM interventions to be better met against donor funding (not accounting for further decentralization of services). The use of more cost-effective products such as RUSF to manage MAM is to be encouraged. However, unless the economic and political situation changes, and the underlying causes of malnutrition such as food insecurity and limited public health systems are addressed, it is unlikely that CMAM interventions will be sustainable in the absence of donor funding.

6 Lessons learned

What lessons can be learned from the best practices, achievements, challenges and constraints of the programme?

Planning for evaluation in the DPRK context

The CMAM evaluation was planned well in advance. An inception visit identified the tools to be used and methods to deploy them. The tools were submitted the required time ahead of the evaluation and the NCC granted clearance. The evaluation proceeded roughly per the agreed plan; however, operational decisions were made that directly limited or completely hindered the use of the evaluation tools as planned. An example of this is the selection of sites for the LQAS sampling. While yielding useful information, closer involvement of UNICEF and the evaluator in decision-making would have made the evaluation more useful or allowed redesign of the sampling framework if necessary. It was not possible to pre-empt practical field issues due to the restrictions on the evaluator conducting community-based training for LQAS. In mitigation, the TET was in daily contact with LQAS teams; however, practical issues arising in the fieldwork were not communicated to the evaluator until close to completion of the fieldwork. Either of these activities could have potentially improved the quality of the data.

Future evaluations should:

- Adopt a user-focused approach to bolster ownership by key stakeholders.
- Proceed stepwise and ensure that every step of the evaluation procedure is understood and transparent communication is promoted by all stakeholders as the evaluation progresses.
- Ensure that all key decisions that will affect data quality are undertaken transparently in collaboration with the evaluation team prior to and during the evaluation.
- Ensure that any skills needed for surveying or measuring anthropometry are standardized.
- Ensure that any data – for example routine programme data that may influence key decisions – are made available prior to starting the evaluation. Given the time required for clearance of evaluation methods and tools by the NCC and the collation of data by CBS, this should be done at least three months in advance if possible.
- Consider off-site experiential training for key decision makers and key technical staff in other contexts. The restrictions placed on international staff do not allow proper capacity-building in appropriate evaluation techniques through field training in DPRK. Training for national staff in another context may improve understanding of what is required for the evaluation and why, and facilitate greater transparency and cooperation for fieldwork in the DPRK context.

Rapid scale-up can produce good quality programming at scale

The rapid expansion of CMAM programmes can very quickly multiply operational problems. The rapid nationwide programme in DPRK was facilitated through integration into the health delivery system but also in part through the use of the Government telemedicine system. Technical issues with guidelines aside, hospital clinicians, *ri* doctors and HHDs demonstrated good knowledge of the theoretical protocols. The data suggest that the CMAM programme is high-impact, sensitive and responsive to long- and short-term nutritional stressors.

Treating MAM cases with illnesses appears to be an effective strategy in the DPRK context

The treatment of cases of MAM with concurrent illnesses is a strategy unique to DPRK in the absence of a universal SFP for children with MAM. Despite increasing numbers of cases of acute malnutrition during the evaluation period 2015–2017, the ratio of MAM: SAM cases has increased, indicating that the strategy has had an impact on preventing SAM.

7 Conclusions

Relevance / appropriateness

The CMAM programme in DPRK has undergone a remarkable transformation over the evaluation period 2015–2017. A change of strategy with the expansion of the programme from 49 counties (pre 2015) to the 189 treatment sites has provided more equitable access to services to treat acute malnutrition. The integration of treatment services into the national infrastructure has built resilience to future shocks, with the CMAM programme being responsive to seasonal and sudden-onset fluctuations in nutritional stressors.

Government commitment to the CMAM programme has been substantial, as demonstrated in the allocation of infrastructure and human resources and the creation of an enabling policy and guideline environment. The NNS embraces the 1,000 days approach and is consistent with strengthening the work of the DPRK Committee on the Elimination of all forms of Discrimination against Women and integration of the CRC.

The umbrella of the 1,000 days approach has provided strategic guidance to developing the nutrition programme to incorporate preventive and therapeutic approaches to undernutrition that are also consistent with the core commitments of UNICEF. The strategy for both MoPH and UNICEF could be strengthened through the integration of disability-sensitive nutrition protocols that recognize the vulnerability of this group and its special needs in terms of access, treatment and follow-up support. This should be enhanced through the inclusion of disability-sensitive indicators in the nutrition results matrix and supported by additional reporting on admissions to CMAM involving disability.

The CMAM guidelines conform to international standards for treatment; however, the addition of specific protocols for children with MAM with illnesses need to be relevant to the current operational context of the programme. This gap in guidance has been the source both of confusion about protocols and of children with MAM with minor illnesses being inappropriately given treatment intended only for children with SAM with life-threatening complications. This has had a major impact on the logistical demands of the programme. Specific targets for the treatment of MAM with illnesses are not currently part of the NNS or UNICEF results frameworks, which refer only to CMAM targets for treatment and the cure rate for SAM. National guidelines for IYCF, IMNCI and CMAM would also benefit from strengthened operational links with SFPs.

Effectiveness

The CMAM programme in DPRK treats U5 children with SAM to prevent mortality and children with MAM with illnesses to prevent further morbidity and subsequent risk of death. While the NNS

identifies a target CMAM cure rate of 85%, the UNICEF CPD results matrix does not identify targets for treatment outcome indicators; however, the rolling workplan 2015–2016 targets a 90% cure rate for all CMAM institutions. The target of 85% is above Sphere international standards for cure rates for MAM and SAM and inferential evidence suggests that the CMAM programme in DPRK has achieved high cure rates and been highly effective in reducing both morbidity and mortality. For 2015 and 2016, this led to a reduction in morbidity for approximately 5,130 and 12,500 children respectively, with approximately 2,981 and 4,600 deaths averted respectively. This suggests increasingly effective programming. The major factors contributing to these results have been the timely screening, referral and admission of children to the CMAM programme made possible by the Government's extensive health system infrastructure and human resources at community level through the network of HHDs, and the technical capacity of the hospital staff to treat referred cases.

Prioritizing funding for the CMAM programme to allow expansion and CERF funding for therapeutic supplies to disaster-affected areas with particularly high admissions in 2016 was key to increasing effectiveness.

Coverage

The rapid expansion of the programme enabled by MoPH's commitment of resources through infrastructure and human resources at all levels and extensive use of existing capacity in the telemedicine system has enabled remarkable consistency in practice on a national scale, resulting in a technically well-integrated programme with a geographic coverage of 90%.

The TET evaluation identified that distance from treatment sites is a major barrier to access to treatment, with **accessibility coverage** extending to a maximum of 15–20km from treatment sites, although this is likely to be seasonal and highly compromised in winter. The LQAS evaluation found that within this radius of hospitals, **case coverage** was classified as high based on international Sphere standards. The radius of accessibility is good compared with other programmes internationally and is likely achieved through a combination of the availability of hospitalization as a treatment choice and good follow-up in the community by HHDs, who on occasion also obtain RUTF for beneficiaries who are unable to travel.

Regular screening and early referral of cases by HHDs at community level have facilitated the high case coverage. Opportunities to increase the effectiveness and impact of the programme, and hence child survival, lie in decentralization of the programme at county level. The location of the sites would need to balance improved access to the largest proportion of the population with the feasibility of maintaining the logistics supply line for RUTF and routine antibiotics. County-level data from provinces with high relapse rates should be examined for specific problem locations, and a joint field study for CMAM, IYCF and WASH conducted to determine the underlying causes.

It is predictable that in areas where children have previously not had access to the CMAM programme there will be a higher proportion of children with SAM than is reflected in current programme data. At the start of a programme or expansion into a new area, typically a greater proportion of children with SAM will also require hospitalization for complications. The seasonal calendar, supported by data from previous years, predicts that the highest prevalence of cases of acute malnutrition will occur in summer, correlating with a peak in diarrhoeal illnesses. A timely expansion of the programme before the summer months would thus likely result in fewer SAM cases and fewer children requiring hospitalization. Training through the telemedicine system makes it possible to expand coverage of screening and treatment services quickly in remote areas, ensure that services are in place before the summer peak and that they deliver the greatest impact in terms of averted mortality and morbidity.

Baby homes were excluded from the evaluation and none of the children screened in the LQAS were identified as having disabilities, so access to treatment by specific groups of children still remains to be quantified. The proportions of female and male programme admissions correlates with expectations based on MUAC case finding and indicates equitable coverage based on gender.

Efficiency and quality

The potential gains in treatment efficiency that timely referral allows have been lost to some extent through the absence of protocols to guide the treatment of children with MAM with illnesses. Following admission for treatment, the efficiency and quality of CMAM service provision has been profoundly affected by the absence of protocols in national guidelines and job aids at hospital level, leading more therapeutic products and antibiotics being used than is required for treatment, unnecessary and prolonged occupation of hospital beds, and overconsumption of human resources. This sits at odds with the capacity of hospital staff, who demonstrated good technical knowledge of most aspects of the guidelines as they are presented.

A significant departure from expected quality standards is evident for the treatment protocols for the management of infants aged less than 6 months; most significantly in the lack of use of protocols for treatment that promote breastfeeding. The quality of service provision can be strengthened through better definition of target groups for the intervention and establishing clear criteria for cost-effective treatment. Where these need to be achieved in the short term, the capacity of the MoPH Master Trainers, provincial and county officers and clinicians, and the telemedicine medium can be employed for training by targeting hospital-based clinicians on specific issues such as the transition phase and infant treatment protocols.

In general, the rapid expansion of the CMAM programme has been accompanied by a remarkable consistency of practice that has been facilitated by the efficient transfer of knowledge through CMAM Master Trainers, provincial CMAM focal persons, the widespread use of the national telemedicine system and supportive supervision from UNICEF and MoPH staff, particularly at provincial and county levels. Major improvements in efficiency that would impact all aspects of the programme can be achieved through strengthening guidelines. Operational guidance should be revised to suit the current strategy and provide contextually appropriate options for service delivery that also strengthen the links between nutrition and other sectoral programmes.

Logistical support for the programme remains challenging with the current system of direct support to facilities and will be unsustainable in the long term. Administrative support to strengthen the management of stocks at facility level, the use of buffer stocks and creation of a demand-driven system for the commodity supply chain will be needed to enable the programme to extend coverage into rural areas. Integration of CMAM supplies into the KLMIS holds potential in this regard.

Improvements in the delivery of quality of care are most likely to deliver the greatest gains by targeting specific locations (facility, county or province) where programme performance is weak. Identifying sites to efficiently target supportive supervision visits can only be achieved if reporting mechanisms are established that convey both positive and negative programme outcomes to central level and can be shared with UNICEF or other stakeholders. These outcomes should be included in the quarterly data collated at county level that will be provided through the CDMU.

Impact

The direct impact of the CMAM programme on meeting the needs of the population is a product of its effectiveness, expressed through cure rate and case coverage. From January 2015 to December 2016, a total of 151,981 children with MAM with illnesses and 33,853 children with SAM were treated. This translates into a reduction in morbidity through 17,630 cases of SAM being avoided and reduction

in mortality of 7,581 U5 children. These figures do not include children treated in 2017. This is in line with the stated purpose of the CMAM programme in DPRK to address Goal 4 of the Millennium Development Goals (UNICEF, 2016i) to reduce undernutrition and mortality in children.

The proportion of children able to access treatment is overestimated by the programme's focus on geographic coverage. Depending on the size of any given county and the population living more than 15–20km from a treatment site, the CMAM programme is accessible to approximately one third to one fifth of the intended 90% geographic coverage. The impact of the CMAM programme to date is a remarkable achievement and the next phase of its development can increase that impact by focusing attention on ensuring high case coverage within accessible areas around current facilities and decentralizing treatment to extend accessibility coverage.

Sustainability

The geographical convergence county strategy for United Nations agencies under the strategic coordination of the United Nations country team (UNCT, 2014, p. 6) (*see Annex 6*) and supported by the UNICEF Country Office strategy promotes the convergence of multisectoral programming in a limited number of counties to demonstrate synergistic benefits and develop Government capacity to manage multisectoral programming. Although there is sectoral coordination within the United Nations structure, this has not yet been translated into tools for joint evaluation that will provide direct evidence of the synergistic effects of joint health, CMAM, IYCF and WASH programming. A monitoring and evaluation tool for CMAM, IYCF and WASH programming was provided during the evaluation for consideration as a pilot tool. It will require surveys to be conducted at community level and should demonstrate the benefits of multisectoral programming by comparison between convergent and non-convergent counties. The move towards multisectoral programming is consistent with the Sustainable Development Goals. Adding disability-sensitive protocols and reporting to nutrition interventions will be necessary to ensure equitable coverage.

If technical capacity of Government partners to effectively monitor and evaluate multisectoral programmes is to be achieved, there will need to be enough access to allow appropriate skills transfer from international technical staff and to address gaps in programming. One convergent county in each province allows for limited but practical, community-based training by international staff in appropriate and rigorous data collection techniques in order to build the capacity of national staff without compromising control over information. Monitoring and evaluation skills can then be rolled out to other non-convergent counties. This would be consistent with the desire to make the convergent counties learning centres and with the need to provide evidence-based interventions in support of donor advocacy efforts.

A prerequisite to effective monitoring and evaluation for CMAM programming is reporting of treatment outcomes, so the promise of quarterly data supplied by CDMU and disaggregated by county is a useful and timely development. The results framework for the NNS and the UNICEF strategic results matrix could be improved by establishing verifiable targets for effectiveness against positive and negative treatment outcome data. An important gap in integrating CMAM into the national health infrastructure is managing therapeutic supplies. KLMIS has the flexibility to add other commodities and integration of CMAM commodities would be important in making any decentralized CMAM programme sustainable.

The MTSP targets an increase in health expenditure to 7% of gross domestic product (from 6.4% in 2014) in line with a strengthening of the national economy (MoPH, 2014–2018). There has been substantial commitment of Government resources towards the management of nutrition. The contributions should be costed in order to better define national budget allocations to nutrition as part of the transition to the Sustainable Development Goals. Improved efficiency through improved

clinical practices and the consequent reduced demand for therapeutic supplies may enable the logistical demands of current CMAM interventions to be better met against donor funding (not accounting for further decentralization of services). However, unless the economic and political situations change, and the underlying causes of malnutrition such as food insecurity and limited public health systems are addressed, it is unlikely that CMAM interventions will be sustainable in the absence of donor funding.

8 Recommendations

The following recommendations were developed after reviewing the evaluation data and holding post-evaluation discussions with UNICEF and MoPH. The recommendations and their prioritization reflect the opinion of the evaluator.

For immediate consideration and implementation

1. Clarify treatment strategy for children with MAM (Responsible: UNICEF / MoPH).

Discussions between MoPH and UNICEF should clarify the intention of treatment of children 6–59 months with MAM.

a) Clarify the intention to provide nutritional support through illness for MAM cases (i.e. maximum length of treatment) or intention to cure (i.e. MUAC > 12.5m / WFH > -2Z).
b) If the intention to provide nutritional support is adopted, clarify the criteria for ending treatment (e.g. the child is clinically well and does not require any medicines).

2. Clarify treatment protocols (Responsible: UNICEF / MoPH).

Some of the treatment protocols for both MAM and SAM in children aged 0–59 months require clarification. UNICEF should take the technical lead in providing clarification where necessary and support the distribution of relevant materials to all hospitals. Targeted practical training by Master Trainers from MoPH (with technical support from UNICEF) should be provided to priority hospitals on protocols for infants aged less than 6 months.

a) **Clarify the term 'complications' that require hospitalization**. This is synonymous with the IMNCI danger signs and is not intended for less serious illnesses. For less serious conditions, if medicines are unavailable at community level, hospital referral should be for prescription of medicines only and not for inpatient nutritional support.
b) **Supply hospitals with updated MAM treatment protocols**. Clarify that cases of MAM require only one packet per day of RUTF. MAM cases should not be treated with therapeutic milks on hospitalization without exceptional and very specific medical indications.
c) **Clarify F75 treatment protocols**. Clear confusion over prescription of F75 for children without oedema and children with oedema. Make the difference between protocols more clearly visible on the laminated protocol supplied to hospitals.
d) **Clarify the protocol for transition phase**. Provide a laminated milk prescription table for the use of F100 in transition phase that is clearly distinguishable from phase 2 F100 rations. Provide a laminated protocol for the prescription of RUTF in transition phase that is clearly distinguishable from the outpatient ration.
e) **Clarify treatment protocols for infants aged less than 6 months**. Protocol implementation for infants with a possibility of breastfeeding needs to be strengthened. Practical training and on-the-job support is required to teach the SST or manual expression of breast milk. Provide a laminated copy of treatment protocols for breastfed infants that are clearly distinguishable from the protocol for non-breastfed infants. Primary targets for training should be convergence counties and provincial paediatric referral hospitals, with cascade training via face-to-face training with paediatricians from other city and county hospitals.

3. **Targeted training for provincial CMAM focal points** (Responsible: UNICEF / MoPH / People's Committees).

Targeted training should be used to rectify the immediate issues with specific protocols outlined in recommendations 1 and 2. General refresher training is not required and should be delayed until the CMAM national guidelines are updated. Additionally, the targeted training should also include strengthening IYCF counselling and promotion of early initiation of breastfeeding, exclusive breastfeeding and optimal age-appropriate complementary feeding, with a focus on the integration of IYCF practices into CMAM practices at all levels.

4. **Enhance case finding** (Responsible: UNICEF / MoPH / People's Committees).

UNICEF should supply all *ri* clinics with an adequate supply of MUAC tapes for all staff. Priority should be given to *ri* clinics within 20km of hospital facilities. Master Trainers from MoPH should prioritize promoting case finding for infants during any future training opportunities related to CMAM or IYCF. MoPH should promote integrating case finding for infants into CHDs.

a) **Supply all *ri* clinics with MUAC tapes**. Effective, frequent screening for children aged 6–59 months and avoiding two-stage screening requires that all doctors and HHDs at *ri* level be supplied with MUAC tapes.
b) **Strengthen case finding for infants aged less than 6 months**. Reiterate the importance of systematic case finding for infants using criteria indicated in the current CMAM national guidelines. The assessment of 'visible severe wasting' is unreliable.
c) **Incorporate case finding for infants into CHDs**. Screening children aged 6–59 months for acute malnutrition is already done on CHDs; screening for infants using the criteria indicated in CMAM national guidelines should also be integrated.

For discussion and implementation in the short term

5. **Formulate a programme strategy to increase case coverage** (Responsible: NCC / UNICEF/ MoPH / CBS / CDMU).

Discussions between NCC, MoPH and UNICEF should agree a strategy to increase case coverage, considering the need to prioritize equity in access to treatment in rural areas of high burden counties and provinces, and continuing with the focus on expansion of geographic coverage. The results of the recent Multiple Indicator Cluster Survey should inform decision-making.

A considerable investment and donor commitment will be required for programme reform and future development and should be supported by official recognition of a long-term strategy for CMAM implementation to strengthen advocacy for donor funding.

a) **Prioritize high-burden counties and provinces and expand case coverage at the county level**. Consider strategic placement of treatment sites so that no community is further than 15–20km from treatment in high-burden counties.
b) **Official recognition of CMAM implementing sites**. Currently only 89 of the operational CMAM sites are officially recognized by NCC. Strategic expansion of the programme should be officially recognized.

6. **Implement buffer stock and timely ordering of therapeutic supplies** (Responsible: UNICEF / MoPH).

Discussions between UNICEF and MoPH should identify and implement procedures to replace the current supply-driven logistical system with a demand-driven system.

a) **Support the supply chain through Government systems in convergence counties.** Provide technical administrative support to county medical warehouse staff in convergence counties to provide timely supplies of therapeutic products based on demand. Support successive integration at provincial and national levels based on learning prior to expansion, to supply the CMAM programme nationwide.

b) **Establish a buffer stock of therapeutic products at all CMAM sites**. Provide technical / administrative training and support to pharmacists, head doctors and officials of the Health Department of the People's Committee to identify appropriate buffer stock levels based on usage rates, predicted caseload and time to resupply to create a demand-driven system.

c) **Establish timely ordering of supplies based on planned usage**. Provide training and support as above to identify seasonal admission trends based on historic data and quarterly data from CDMU to predict seasonal changes in buffer stocks and demand for supplies.

7. **Update the CMAM National Guidelines** (Responsible: UNICEF / MoPH).

The CMAM national guidelines should be updated and adapted to the new programme strategy, provide strengthened operational guidance and integrate the treatment of all children with MAM (with and without concurrent illnesses).

a) **Provide operational guidance for vulnerable groups**. Specific operational guidance for vulnerable groups such as infants with very low birth weight and children with disabilities should be included in guidelines relating to screening, clinical assessment, medical and nutritional management, and follow-up support following discharge.

b) **Clarify the management of MAM cases under IMNCI protocols**. An addendum to the IMNCI training manual should replace current guidance and ensure the proper management of children diagnosed with MAM. Targeted practical training should support guidance implementation, prioritizing health facilities in counties with convergence programming.

c) **Provide operational guidance on how to manage supplies** at each level of the distribution system.

d) **Strengthen operational sectoral and intersectoral links**. Practical guidance should be included in guidelines, specifically linking CMAM to nutrition and other sectoral interventions to strengthen resilience, reduce relapse and provide a platform for multisectoral evaluations in convergence counties.

e) **Update the CMAM training package**. The CMAM training package should be updated with relevant changes in protocols. Job aids should be updated for clarity and simplicity and widely disseminated to assist practice.

f) **Provide guidance for the management of MAM**. The management of MAM falls under the umbrella of the CMAM approach to managing acute malnutrition. Different aspects may be supported by different United Nations agencies at different locations (i.e. clinic, nursery, baby home) but clarity in the management and treatment options available and the links between them should be included in CMAM guidelines.

g) **Consider integrated protocols for MAM/SAM management**. Children admitted with SAM are treated with one packet of RUTF per day after reaching MAM anthropometric criteria (MUAC > 12.5cm, WFH >-2z and no oedema) and continue treatment until cure. Cases of MAM with a concurrent illness are treated with one packet per day until MAM discharge criteria are reached (maximum stay or cure).

h) **Contextualize and provide options for treatment modalities**. Cases (of MAM or SAM) admitted to CMAM that do not require hospitalization for intensive nutritional support should be treated as outpatients. Admission, follow-up and discharge can be conducted at *ri* clinics. Frequency of follow-up should account for the clinical status of the child and seasonal barriers that may affect attendance. The choice of hospitalizing the carer or prescribing rest for the carer at home are suitable adaptations for the DPRK context.

i) **Provide strategic and operational guidance for 'winterization'**. Strategic pre-positioning of supplies at *ri* clinics should be used to combat seasonal variations in access to treatment. This may require temporary treatment sites to be opened during winter in areas with high burdens of malnutrition and extremes of terrain or climate.

For discussion and implementation in the medium term

8. **Refresher training for updated guidelines** (Responsible: UNICEF / MoPH / People's Committees).

   General refresher training should be provided for updated guidelines, with a strong emphasis on operational guidance and practical support.

9. **Improve monitoring and monitoring checklists** (Responsible: UNICEF / MoPH / Nutrition Sector Working Group / United Nations Humanitarian Country Team).

   Develop more objective checklists incorporating key indicators for CMAM and other nutrition / multisectoral activities.

10. **Develop evaluation capacity of national staff** (Responsible: UNICEF / MoPH / Nutrition Sector Working Group / United Nations Humanitarian Country Team).

    Develop the evaluation capacity of national officers with correctly implemented evaluation procedures. Consider out-of-country training.

11. **Share routine programme data quarterly** (Responsible: NCC / UNICEF / MoPH / CBS / CDMU).

    The effectiveness of CMAM treatment should be enhanced through the regular sharing of routine programme data at national, provincial and county levels; with joint review and technical feedback to clinicians and People's Committees.

a) **Routine data should be shared and reviewed quarterly**. In coordination with CBS, CDMU, People's Committee Statistics Department, head doctors, clinicians and Master Trainers, UNICEF technical staff should review CMAM admission and discharge data quarterly according to programme indicators and provide technical feedback.

b) **Disaggregate quarterly county data by gender and establish a mechanism to monitor programme access for children with disabilities**.

12. **Coordinate multisectoral monitoring and evaluation in convergence counties** (Responsible: NCC / UNICEF / MoPH / CBS / CDMU).

    Integrate IYCF and WASH key activities / indicators into CMAM documentation for patient assessment, counselling and follow-up to support quality of care, strengthen programme synergy and contribute to indicators for multisectoral evaluations.

13. **Expand support of Central Medical Warehouse distribution systems** (Responsible: NCC / UNICEF / MoPH).

    Following pilot activities to support county and provincial medical warehouses in establishing a demand-driven logistical system, expand coverage nationally based on lessons learned. Explore long-term integration into the KLMIS.

For discussion and implementation in the long term

14. **Local production of RUSF / RUTF** (Responsible: NCC / UNICEF / MoPH).

    Conduct a feasibility study on local production of RUSF / RUTF, including technological requirements, import of essential ingredients, local adaptations to recipes and capacity of laboratory facilities to conduct physical, chemical and microbiological testing.

Annex 1: Terms of Reference – Evaluation of CMAM programme UNICEF DPRK

1. Background

In DPRK, undernutrition affects about one third of U5 children. Over the last three decades, the country has experienced natural disasters, widespread food insecurity, a shrinking economy, sanctions, deteriorating basic social services, and poor quality of health and WASH services on top of prevailing suboptimal IYCF practices. All these elements have a role in perpetuating the endemicity of undernutrition among U5 children all over the country.

The national nutrition survey for 2012 revealed that chronic undernutrition (stunting) affects 27.9 per cent of U5 children, general malnutrition (underweight) is 15.2 per cent, and acute malnutrition (wasting) is 4 per cent, with severe wasting at 0.6 per cent, while moderate-severe anaemia affects about one third of U5 children and women of reproductive age. The survey also revealed within-country disparities, in which relatively high rates of undernutrition and anaemia among children and women were recorded in the northern and eastern provinces compared with the rest of the country and the capital city.

SAM threatens the survival of U5 children in both emergency and non-emergency settings. Recent estimates suggest that over 17 million children are affected by SAM worldwide. Children with SAM are nine times more likely to die than well-nourished children. The management of SAM is critical for child survival and is a key cost-effective component of the scaling up nutrition framework. Scaling up access to and use of critical nutrition interventions such as the treatment of SAM is paramount to achieving global development targets. This underscores the urgent need to increase actions to strengthen country-level capacities to treat SAM in addition to scaling up preventive interventions to protect the nutritional status of children and women.

The management of SAM has evolved as a major programme intervention over several decades but had limited outreach/coverage because it was tied to lengthy inpatient treatment in health facilities. Scaling up programmes that address SAM was made possible over a decade ago when RUTF was developed and an innovative community-based approach made it possible to treat most SAM children in their homes. Large-scale implementation of CMAM – including both SAM with and without and MAM with complications – started after United Nations endorsement of the community-based approach in 2007. The CMAM strategy is comprehensive and covers both demand and supply aspects. An enabling environment is provided through the development of policies, commitment of funds, coordination and the availability of technical support to ministries of health and programme implementers.

Access to services for both the inpatient and outpatient components of SAM treatment is enhanced through links with formal and informal health care and community-based organizations or networks. Access to CMAM supplies including medicines, supplements, rehydration fluids, therapeutic milk and RUTF is essential to the success of the programme. This often requires long-term donor commitment if maintaining supplies is beyond the capacity of local governments. Service quality includes the establishment of national guidelines in line with global standards, capacity development of service providers, supportive supervision, and monitoring and evaluation components.

In 2008 UNICEF supported the Government of DPRK to establish a CMAM programme in 29 counties, availing screening and treatment of SAM to about 16% of U5 children, and subsequently supported expansion of the CMAM services to reach about 90% of the U5 population.

The CMAM programme is implemented by MoPH through the health service delivery platform, with direct financial and technical support from UNICEF. Over the last four years, UNICEF has: provided

technical support to develop the NNS and action plan for 2014–2018; facilitated development and updating of the CMAM technical guidelines; facilitated the capacity development of health workers on CMAM; provided supportive supervision and on-the-job training; provided end-user monitoring and field visits; and facilitated the dissemination of communication messages to service providers and caregivers on promotion of optimal IYCF practices and related nutrition education. Since the inception of the programme in 2008, UNICEF has provided various anthropometric equipment, CMAM-related essential medicines and therapeutic nutritional supplies; and facilitated related in-country logistics to all service delivery sites in 10 provinces. The CMAM programme in DPRK is seen as an important strategy and an entry point that will contribute to reduction of undernutrition among U5 children, leveraging additional resources and offering capacity development opportunities for health workers.

During the period 2013–2015, the programme received annual CMAM data officially from MoPH and CBS. The trends of CMAM service uptake during this period clearly showed increased uptake of the services. This is mainly because of increased geographical access, new openings and optimum utilization of the screening and treatment services at different levels, including active screening in communities and nurseries. It is noted that DPRK has by far the largest numbers of children admitted for treatment in the East Asia Pacific region and the most rapid scale-up (by comparison, in 2015 Myanmar had 13,853 admissions to DPRK's 63,176, and all other countries in the region admitted fewer than 5,000 children each).

For planning purposes, the programme estimated the burden / annual caseload of wasting at 200,000 (60,000 SAM and 140,000 MAM) cases in need of treatment in 2016. This was based on the estimate that the network at that time was accessible to only about 60% of the U5 population in CMAM catchment areas / counties, based on extrapolation of the 2015 CMAM service uptake data[28] and provincial population figures.[29]

2. Justification

After several years of implementation and scale-up of CMAM in DPRK, there is a need to review progress to date and provide a sound analysis to form a basis on which to plan for the new country programme 2017–2021. The need to assess the quality of the services is crucial, as is the need to ensure that CMAM remains coherent with the national health and nutrition policy and systems environment. The proposed evaluation aims to undertake a comprehensive assessment of all the components of the current CMAM programme and will ascertain the effectiveness, quality, appropriateness, and sustainability of the programme. Key achievements and challenges will be identified, while synthesizing the lessons learned into practical and realistic recommendations, for use by the Government of DPRK, UNICEF, United Nations agencies, NGOs, donors and other stakeholders for future programme planning.

3. Evaluation scope and objectives

The proposed evaluation aims at systematically evaluating the countrywide CMAM scale-up during the period 2014–2016. The evaluation will also aim to assess the effectiveness of the programme in achieving its stated objectives (*see 'Programme objectives'*), and assess the access to and use of CMAM services by caregivers. The lessons and recommendations from the evaluation will be used by national and provincial governments, United Nations agencies, donors, International Federation of Red Cross and Red Crescent Societies, and international NGOs to strengthen existing programmes and to advocate for resources for effective CMAM strategies and interventions in areas in need.

[28] Service uptake is actual use of the CMAM/Integrated Management of Acute Malnutrition treatment services, i.e. number of wasted children treated in the programme.

[29] The annual caseload/burden of wasting in DPRK is about 300,000 (100,000 SAM with and without complications and 200,000 MAM with complications) based on annual CMAM service uptake data and provincial population figures.

The specific objectives of the evaluation are as follows:

a) To examine CMAM programme performance in a representative sample from the currently operational 189 counties, 13 provincial paediatric hospitals and 14 baby homes using the standard OECD / DAC criteria of programme relevance / appropriateness, efficiency and quality of services, effectiveness, impact (potential) and sustainability in addition to equity.[30]
b) To examine cross-cutting issues such as coordination and management; gender and other forms of equity; capacity development; advocacy and policy development; and information / data management.
c) To document good practices and generate evidence-based lessons and recommendations to strengthen ongoing efforts towards the expansion of CMAM coverage in DPRK, and considering potential regional-level guidance and support.
d) Identify gaps, key lessons learned and main challenges, and provide recommendations on how to address these challenges and pursue opportunities, and recommend key practices that should be incorporated into the future programme.

The evaluation will examine processes and results related to all key components of the CMAM programme (the national CMAM technical guidelines will be attached for easy reference on different components of the programme), which are:

a) Community mobilization and screening by community health workers;
b) Outpatient treatment for SAM without complications at decentralized health facilities and baby homes;
c) Inpatient treatment for SAM with complications or no appetite; and
d) Management of MAM ***with complications*** in inpatient care in hospitals and ***without complications*** in baby homes.

The evaluation will generate evidence on best practices, achievements and challenges and cover all of the key steps of the CMAM programme cycle including community mobilization / awareness, case detection, screening, enrolment, treatment and follow-up. The evaluation of the management and treatment aspects of the programme will be interpreted in the context of the prevailing policy environment. The evaluation will provide evidence-based analysis to answer the following questions.

Programme relevance / appropriateness

- How well has the overall CMAM has programme strategy evolved and to what extent have specific strategies / interventions responded to the local / national context, needs and priorities?
- To what extent is the DPRK CMAM programme in line with global recommendations and practices for management of acute malnutrition?
- How synergistic is the link between CMAM and other health and nutrition interventions such as IYCF, micronutrient supplementation, supplementary feeding interventions and IMNCI?

Programme effectiveness and coverage

- To what extent have the expected outcomes in relation to reduction of wasting, excess morbidity and mortality been realized through the CMAM programme?
- What factors have contributed to the programme outcomes achieved?

[30] Relevance and estimated influence / likely impact of the programme; efficiency – correlation between time, effort, knowledge, money invested (cost benefit analysis) and results achieved; effectiveness – results and outcomes, main enabling and hindering factors in achieving the targets and goals and impact of the programme interventions; sustainability of the programme – ownership by local communities, education / health institutions; main enablers and bottlenecks that can enhance / inhibit sustainability of achieved changes for UNICEF; impact – whether or not the programme meets or exceeds the stated outcomes / expectations.

- What is the estimated geographic coverage of CMAM services against estimated national needs? Its relevance and appropriateness?
- To what extent has the rapid expansion of geographic coverage of services in DPRK been accompanied by quality service provision?
- How have strategies such as community outreach through HHD visits and community / People's Committees' mobilization, screening and enrolment, outpatient treatment, inpatient treatment, information management, and follow-up contributed to realizing overall programme objectives?
- What were the bottlenecks[31] for successful implementation of the CMAM objectives?

Programme efficiency and quality of services

- To what extent does the quality of service delivery for the beneficiaries meet the expected standards according to internationally recognized benchmarks?
- What factors have contributed to meeting quality standards?
- What factors should be strengthened in order to further enhance the quality of service provision and address bottlenecks or constraints?
- How has the CMAM programme impacted / influenced primary health care services, including other nutrition interventions such as the promotion of IYCF and micronutrient supplementation?

Programme sustainability and opportunities for scaling up

The evaluation will examine administrative, institutional, technical and financial sustainability and explore possible opportunities for the expansion of effective CMAM interventions.

- What level of progress has been achieved to build ownership of the CMAM programme by the provincial government and support its integration in the provincial service health delivery system as part of a strategic response to acute malnutrition?
- How feasible is it to sustain the current interventions without direct institutional, administrative, technical and financial support from UNICEF and other agencies?
- What capacity needs to be developed for MoPH to successfully support programme implementation including commodity management and logistics?

Programme impact (outcomes / potential impact)

- How significantly has the programme contributed to either revitalize or place nutrition high on the national and provincial policy and developmental agenda?
- What lessons can be learned from the best practices achievements, challenges and constraints of the programme?

Cross-cutting issues

- What gaps in the capacity of MoPH can be identified which may hinder handover of the CMAM programme?
- How can the links between CMAM and other health and nutrition interventions be enhanced?
- What is the role of Disaster Management Units in the People's Committees?

4. Evaluation approach and methodology

Given the multidimensional focus of the evaluation, a variety of methods will be used to generate information. The evaluator is invited to propose a more detailed methodology at the inception phase including evaluability assessment, suggested documents review, key stakeholders and beneficiary interviews, and field observation visits as follows:

[31] UNICEF framework of bottleneck analysis is applied here to SAM management as described in the global SAM programme guidance (2015).

a) Reviewing CMAM programme reports, records and related CMAM data at national level and samples from CMAM service delivery sites to assess the quality of service delivery, routine activities and effectiveness of the programme.
b) Reviewing the training materials and tools, training plan, methodology and outputs.
c) Review of secondary data and documents: A list of relevant documents together with electronic copies of key documents will be shared with the evaluation team during the inception phase. In addition, programme managers will provide data that are readily available from various sources including studies available on CMAM-related topics. The data will be reviewed and analysed during the inception phase to determine the need for additional information and finalization of the detailed evaluation methodology.
d) Interviews with key informants at several levels and in phases (MoPH – Headquarters, ICN, WFP, WHO, international NGOs and People's Committees).
e) Field observation including clinical practices, key informant interviews with nutrition and health staff including CMAM service providers, programme managers, policymakers, international agencies, NGOs, and focus group discussions in the community with People's Committees and caregivers of SAM children. When organizing field visits and interviews, attention will be given to ensure gender balance, geographic distribution, representation of all population groups and representation of the stakeholders / duty bearers at all levels (policy / service providers / parents / community).

5. Evaluation management and stakeholders' participation

The evaluation will be funded and managed jointly by UNICEF, MoPH, ICN and CBS in technical consultation with the UNICEF regional office. One technical focal person each from UNICEF and MoPH will supervise the study. A CMAM technical advisory team consisting of UNICEF, ICN, MoPH and central and provincial People's Committees' representatives will work with the consultants and facilitate data collection and logistical arrangements.

A steering committee will be established including Government partners, UNICEF Country Office and Regional Office staff as well as NCC, MoPH, ICN and CBS to ensure that all deliverables are of the required quality.

Key stakeholders and their role

UNICEF Country Office	Provision of technical guidance including knowledge-sharing / exchange with Government counterparts on programme implementation and capacity-building support.
UNICEF Regional Office	Technical guidance including quality assurance and knowledge-sharing / exchange with the Country Office.
NCC	Coordination and facilitation roles.
CBS	Coordination and facilitation of data collection, processing and validation. CBS might be requested to support data collection by mobilizing their staff.
MoPH	Technical and coordination support including visits from the central level to lower administrative level.
ICN	Technical and coordination support including visits from the central level to lower administrative level.
Provincial and county People's Committees	Technical and coordination support including field visits from the provincial level to counties and villages.

6. Expected outputs

The evaluator is expected to deliver the following:

- Development and presentation of the evaluation methodology, formative research tools and protocols; instruments and workplan (including the questionnaire).
- Inception report with evaluation methodology, structure, key questions, timeline and outlines of final report.
- Debriefing with UNICEF, NCC, MoPH and ICN to discuss the main findings and recommendations of the evaluation.
- Presentation and submission of draft evaluation report including all the findings, conclusions and recommendations according to the agreed report structure.
- Submission of final report incorporating the comments and suggestions on the draft report.
- Submission of dissemination materials (two pager containing main findings in English language, PowerPoint presentation).

Presentation of final report (in-country or remote)

Final report (approximately 30-40 pages) consists of (but is not limited to) the following chapters and in line with the UNICEF Evaluation Report Standards[32] and the Global Evaluation Reports Oversight System:[33]

- Executive summary.
- Country context and background.
- Description of the evaluated projects.
- Description and evaluation of the methodology (including a discussion of its limitations).
- Evaluation objectives and questions.
- Description of main findings, analysis, conclusions, lessons learned and recommendations: short, medium and long-term accountabilities.
- Body of the text that covers all the components of the programme, including the institutionalization of the programme, sustainability and key constraints.
- List of activities that are implemented.
- Annexes: case studies, evaluation instruments (questionnaires, focus group reports), list of project locations, institutions / organizations and individuals that participated in the process, bibliography and any quantitative database developed as part of the evaluation.
- Complete database / data sets (filled out questionnaires).

The final evaluation report based on UNICEF feedback needs to be submitted within two weeks of receiving the feedback.

7. Proposed time frame / duration of the consultancy (16–18 weeks)

W-1: Familiarize with key documents, meet key partners and draft the workplan.
W-2 and 3: Draft the questionnaires (quantitative and qualitative data) related to coverage, access and use of CMAM services; checklists; and fieldwork testing.
W-4: Debriefing meetings and drafting the final template of the evaluation report.

The preliminary evaluation schedule is as below; this might be changed during the process of agreement with the evaluator. The total period of evaluation (distance and in-country) on the level of effort from the evaluator is expected to be approximately 16–18 weeks starting from 1 April and ending in July, including four weeks within DPRK.

32 www.unicef.org/evaluation/files/UNICEF_Evaluation_Report_Standards.pdf.
33 www.unicef.org/evaluation/files/UNICEF_Global_Evaluation___Report_Oversight_System_aFinal.pdf.

Description	Responsible	Timeline (prelim.)
Evaluation – inception phase		
Desk review of the existing documents with focus on CMAM programme	Evaluator	W1: Five days (starting from the date of signing the contract) (Distance)
Development of the evaluation methodology, the research tools, and protocols; instruments and workplan (including the questionnaire)	Evaluator	W2: (Distance)
Field testing and adapting the tools	Evaluator	W3: Three days (In-country)
Inception report[34] (including evaluation workplan and timeline, evaluability assessment, presentation of methodological approach, instruments to be used, annotated outline of final report), to be presented and approved by UNICEF and MoPH	Evaluator	W4: Five days (In-country)
Evaluation – implementation		
• Data collection (field visits, meetings, interviews, focus group discussions) • Coding and data entry • Data processing and analysis • Debriefing with UNICEF, MoPH, ICN, NCC	Evaluator	Three weeks (In-country)
Evaluation – report preparation		
Interim evaluation report and presentation (draft findings with comprehensive quantitative and qualitative analysis, conclusions and recommendations from all data sources used in the evaluation)	Evaluator	Three weeks (Distance)
Feedback and comments from UNICEF, ICN and MoPH	UNICEF, ICN and MoPH	Two weeks
Incorporation of recommendations from UNICEF, ICN and MoPH after review	Evaluator	Three days (Distance)
Final evaluation report with presentation (including summary), subject to approval by UNICEF	Evaluator	Three days (Distance)
Use of evaluation findings		
Dissemination of the final report to all partners and stakeholders and discussions on further improvement of the CMAM programme and next stages	UNICEF, ICN and MoPH	Onwards

8. Support needed from UNICEF

- Facilitate recruitment of two national consultants, required human resources support and interpreter (ToR as per agreed-upon standards of seconded consultants).
- Facilitate visa / travel permits to and within DPRK.
- Facilitate / provide all in-country transport.
- Organize the venue, required materials, meals and refreshments for meetings.

34 The inception phase will clarify the methodology and approach to be taken for this evaluation; depending on this there might be some changes to the contract initiated with the company.

Sources of information

- Previous project review reports, assessments and evaluations
- Assessment Report on Focus County Approach 2015
- DPRK Country Programme Documents for 2011–2016 and 2017–2021
- Nutrition Strategy Note 2015
- National Nutrition Survey 2012
- DPRK Multiple Indicator Cluster Survey, 2009
- DPRK Socioeconomic, Demographic and Health Survey, 2014
- UNICEF DPRK Country Office Annual Reports
- Detailed explanation of the programme objectives, outline and activities by the implementing partner
- Manuals, reports from capacity-building interventions
- Data collected through survey questionnaires, interviews with key stakeholders, focus group discussions
- Feasibility reports
- Donor reports
- United Nations Evaluation Group (UNEG) Norms and Standards for Evaluation
- UNICEF-Adapted UNEG Evaluation Reports Standards
- Others as requested by the evaluator.

Accountabilities, reporting

The Evaluation Team Leader will lead the evaluation process at all stages and coordinate with UNICEF, MoPH, ICN, CBS and other stakeholders. The Evaluation Team Leader is responsible for providing the deliverables listed above in time and with good quality. The Evaluation Team Leader will report to the Evaluation Manager.

A reference group will be established to quality assure all deliverables:

a) Coordinator – Wisam Hazem, Chief of Nutrition Section, UNICEF DPRK
b) Murat Sahin, Deputy Representative, UNICEF DPRK
c) Christiane Rudert, UNICEF Regional Adviser (Nutrition)
d) Riccardo Polastro, UNICEF Regional Adviser (Evaluation)
e) Shailesh Kumar, Monitoring and Evaluation Specialist, UNICEF DPRK
f) Government of DPRK, NCC Coordinator and MoPH External Affairs Officer.

All comments provided by the reference group should be addressed by the evaluation team.

The evaluation is conducted in the context of identifying best practices and how best to overcome challenges in the implementation of CMAM programming. Being able to build on existing achievements and overcome challenges is the mark of a successful programme. All discussions are confidential and will be shared only with the evaluation team and no personally identifiable information will be used in any report or other material.

The evaluation team will act with integrity and respect to all stakeholders according to UNEG Ethical Guidelines for Research, June 2016. The debriefing, draft report, final report and dissemination materials will not make reference to any personally identifiable data that emerges during the evaluation. The evaluator is expressly forbidden from sharing any information with the media or any other person or organization in Pyongyang or abroad regarding evaluation data and findings.

UNICEF staff will review and approve the deliverables listed and provide relevant documents.

Qualification requirements for two international consultants (selection criteria):

- High-quality project appraisal as per the requirements of the ToR, including methodological aspects (compliance with the ToR).
- Advanced university degree in nutrition and/or public health.
- Proven expertise and experience of the evaluator in carrying out evaluations and/or assessment of Nutrition programmes / projects, with experience in evaluating or reviewing CMAM programmes an asset (10 years);
- General experience in the Nutrition sector (15 years), including in the area of programme and strategy design and assessment, including demonstrable specific knowledge of UNICEF Nutrition programming, with specific experience in CMAM an asset;
- Excellent knowledge of monitoring and evaluation methodologies (demonstrated by previous evaluations carried out by the evaluator; a sample report to be enclosed);
- Excellent analytical report writing skills (demonstrated through a sample report provided);
- Excellent written and spoken English required (demonstrated through sample reports provided);
- Good communication and presentation skills;
- Familiarity with UNICEF corporate systems and programming processes is an asset;
- Knowledge of the country context and Nutrition programmes in DPRK / East Asian region is an asset.

Duty station and official travel involved, field visits

The evaluator is to include in the budget costs for travel to/from DPRK in relation to this evaluation, including per diems which will cover accommodation and food.

9. Duration

Approximately 16–18 weeks in-country and from distance.

10. Performance indicators

Criteria for performance are the quality of work, timeliness (ability to keep to strict deadlines), accuracy, initiative, responsibility, competence and communication.

Additional programme information

Phase I: Establishment of Community Management of SAM (CMSAM) services: UNICEF DPRK facilitated establishment of a CMSAM programme in 29 selected 'focus' counties in four north-eastern provinces in 2008. Given the country context, the 'community' component of the CMSAM programme was implemented in collaboration with People's Committees at different levels in *ri*s, counties and provinces. The HHDs at *ri* / *dong* or *ups* (bigger villages) clinics or in nurseries (who act as community health workers / promoters, representing the lowest cadre in the health service delivery system) were required to screen all U5 children in their catchment areas regularly, and identify and treat SAM children at community level (outpatient treatment only of uncomplicated cases and referral services of SAM with complications to county and provincial hospitals).

From inception until the end of 2014, the CMSAM programme was delivered as outpatient treatment services in 1,000 CMSAM service delivery sites located in *ri / dong clinics* in 29 'focus' counties in four north-eastern provinces only. From 2008 to 2014, UNICEF facilitated establishment of inpatient treatment of referred SAM with complications in the same 29 focus counties' general hospitals with no outpatient treatment of SAM at county hospital level. In addition to the above, UNICEF also

supported establishment of inpatient treatment of SAM only in 12 provincial children's referral hospitals in all the 10 provinces (these are 10 provincial ICN hospitals and the Medical University Children's Hospital). The 12 children's hospitals provided inpatient treatment of SAM with medical complications only (again with no outpatient treatment before January 2015).

During the same period, UNICEF also supported establishment of CMSAM services in 14 baby homes in the country. Under this arrangement, the health workers / HHDs in the 14 baby homes were responsible for monthly screening for SAM along with treatment of uncomplicated SAM and referral of SAM with complications to nearby provincial children's hospitals. To summarize, CMSAM services in DPRK from 2008 to the end of 2014 can be described as:

a) Outpatient treatment of SAM at community / household level in 29 out of 210 counties in DPRK.
b) Inpatient treatment of referred SAM with complications in 29 county general hospitals.
c) Inpatient treatment of SAM in 12 provincial hospitals (referred SAM children with complications from baby homes and SAM children with complications diagnosed accidently while receiving treatment for other illnesses).
d) Residential (outpatient) treatment of SAM and referral of SAM with complications in 14 baby homes (orphanages).

In mid-2014, after extensive monitoring field visits and during the midyear review of the nutrition programme with the Government, the nutrition programme report presented the following findings.

a) The context of limited population movement in DPRK and limited access to quality health and basic social services.
b) About 16% of the 1.6 million U5 children were accessing and using screening and SAM treatment services, leaving about 84% of the U5 population with no access to screening or SAM treatment.
c) Facilitating in-country logistics, supervision and monitoring of 1,000 CMSAM clinics with such limited outreach / coverage in 29 counties only was impossible to sustain.
d) There was a need to establish inpatient and outpatient treatment of SAM in the recently opened main children's hospital in Pyongyang (Okryu Children's Hospital), bringing the total number of provincial children's hospitals offering treatment services to 13.
e) The operational children's hospitals in Pyongyang admitted on average 20–30 SAM children with complications per hospital per week for treatment in the inpatient CMAM programme. The need to establish screening and early treatment services in the big cities was crucial in order to expand the coverage of the CMAM programme.
f) The report also highlighted that MAM children, presenting at hospitals with other illnesses and related 'medical complications' such as diarrhoea, were quickly sliding into SAM with complications while they were still in hospital. In order to address this finding, the need to enrol MAM children with other illnesses into the CMAM programme was likely to be a cost-effective and potentially life-saving approach.
g) There was no WFP-supported MAM treatment service in DPRK.

To address the above findings, MoPH agreed to treat MAM with 'medical complications' in the 29 county and 13 provincial hospitals and to continue **treating MAM children without medical complications in baby homes** (residential treatment). This agreement came after long advocacy efforts with the Government to **grant additional access to other counties outside the original 29 focus counties** and to include **outpatient treatment of SAM in the service delivery package of county and provincial children hospitals.** MoPH also agreed to **integrate MUAC screening and referral into the twice-yearly CHD activities** in the 29 counties in 2014.

These efforts culminated in a formal agreement with MoPH to implement **Phase II** of the scale-up and expand the service coverage of the CMAM programme, and enhance the integration of the programme, as community screening was practised widely by HHDs at village level and at nurseries, reaching about 60% of the U5 population in DPRK at regular intervals (monthly in households and nurseries, and twice yearly during CHDs).

In early 2015, the Government agreed to close the 1,000 CMSAM clinics in villages and to expand service coverage to health facilities in an additional 60 counties (totalling 89 counties), in addition to expanding CMAM services in Pyongyang and two autonomous cities (Nampo and Kaesong). The new arrangement of the CMAM programme in Phase II (totalling 89 counties) can be summarized as:

a) HHDs serving in *ris, ups* and *dongs* undertook: monthly MUAC screening; early referral of SAM with and without complications to county hospitals for verification and enrolment into the programme; and responsibility for following up on treatment of all enrolled SAM children, including those discharged from hospital treatment. Mothers brought their children back to the county hospital fortnightly for follow-up. There was no more RUTF dispensed at community level. RUTF was managed at county and provincial hospitals in order to facilitate record-keeping and monitoring.
b) Health workers / HHDs in all nurseries in the 89 counties and the three cities were responsible for MUAC screening and referral of SAM with and without complications to nearby county or provincial children's hospitals for verification and treatment.
c) Paediatricians and general doctors working in county and provincial hospitals undertook physical examinations and anthropometric measurements to verify the status of the referred children. Accordingly, SAM without complications was treated in the outpatient treatment programme while SAM with complications was treated in the inpatient treatment programme, followed by transfer to the outpatient programme after discharge from hospital.
d) County and provincial hospitals established outpatient treatment of SAM without complications and treated MAM with complications with one sachet of RUTF a day for two weeks only**.**
e) UNICEF facilitated training of Master Trainers in an integrated training package of CMAM with promotion of selected IYCF practices and rolled out the training package to all the 89 counties and the three main cities (Pyongyang, Nampo and Kaesong).
f) UNICEF facilitated all in-country logistics using a UNICEF contractor to transport nutrition supplies from the central medical warehouses in Pyongyang to all operational CMAM / Integrated Management of Acute Malnutrition (SAM and MAM) treatment service delivery sites in county and provincial hospitals and baby homes.
g) Following these arrangements, CMAM services (screening, referral and treatment of SAM with and without complications and MAM with complications) became accessible[35] to about 60% of U5 children in DPRK.
h) The UNICEF nutrition programme had full access to all the 89 counties in order to provide supportive supervision and end-user monitoring of nutrition supplies.

In mid-2015, the Government declared severe drought affecting the four central provinces (North and South Hwanghae, South Pyongan and South Hamgyong) and asked UNICEF to expand CMAM services to an additional 60 counties in order to provide full coverage to all U5 children in all counties in the four drought-affected central provinces. The new expansion in the drought-affected provinces brought the total number of CMAM counties to 149 counties (89+60) at the end of September 2015. The Government also asked UNICEF to facilitate mass training of health workers and agreed to grant

[35] In the DPRK context, accessibility to services means within the geographical catchment area of the county hospital – in which mothers and children are allowed to move within the county boundaries but cannot travel to another county without prior authorization and/or travel permission.

a visa for an additional international nutrition specialist to undertake joint supportive supervision and monitoring with MoPH and ICN.

During the second half of 2015, UNICEF advocated with the Government to establish additional service delivery sites in three Pyongyang city hospitals to reduce the caseload on the three operational provincial children's hospitals in ICN, Okryu and in the Medical University Hospital, and to establish additional service delivery sites in the district hospitals in the autonomous cities in Nampo and Kaesong. The Government agreed to expand the service coverage in Pyongyang and the two cities accordingly **(Phase III)**.

In 2016, the UNICEF nutrition programme advocated again to expand programme coverage in the northern provinces in response to floods in the northern part of the country and to the increasing uptake of CMAM services in the already selected 'scattered' northern counties. The Government agreed again to expand screening, referral and treatment services to an additional 40 counties to ensure full coverage of all counties in the northern provinces of Jagang and Ryanggang, bringing the total number of counties to 189 (149 + 40) out of 210 counties in DPRK, rendering screening, referral and treatment services accessible[36] to about 90% of U5 children in the country **(Phase IV)**. **At the end of 2016, CMAM services were accessible to all U5 children in the three main cities and in 189 counties out of 210.**

The main objectives of the CMAM programme in DPRK, since 2008, were:

a) To contribute to overall efforts to reduce excess morbidity and mortality because of undernutrition.
b) To contribute to reducing the prevalence of undernutrition among U5 children.
c) To treat SAM-affected children and reduce associated morbidity and mortality through providing therapeutic services, promoting appropriate feeding practices, and vulnerability reduction.
d) To strengthen the technical capacity of MoPH at national, provincial and county level to design, implement and monitor public health programmes at scale.

[36] Same as above.

Annex 2: Profile of CMAM programme sites, DRPK 2015

Province		Target county / sites
Kangwon	1	Kosong
	2	Ichon
	3	Munchon
	4	Sepho
	5	Wonsan
	6	Chonnae
	7	Anbyon
North Hamgyong	8	Myonggan
	9	Musan
	10	Kyongwon
	11	Myongchon
	12	Kilju
	13	Onsong
	14	Buryong
	15	Yonsa
	16	Kyonghung
	17	Kim Chaek City
	18	Hoeryong City
	19	Chongan District
	20	Sunan District
	21	Songphyong District
South Hamgyong	22	Rakwon
	23	Kumyha
	24	Kowon
	25	Hamju
	26	Hongwon
	27	Sinpho city
	28	Bukchong
	29	Hungnam District
Ryanggang	30	Samijyon
	31	Paekam
	32	Kim Hyong Gwon
	33	Taehongdan
North Hwanghae	34	Junghwa
	35	Hwangju City
	36	Songrim City
	37	Unpa
	38	Rinsan
	39	Sohung
	40	Yonsan
	41	Sinpyong
	42	Koksan
	43	Tosan
	44	Jangpung
	45	Pongsan

South Hwanghae	46	Chongdan
	47	Unchon
	48	Jaeryong
	49	Sinwon
	50	Bongchon
	51	Pyoksong
	52	Jangyon
	53	Samchon
	54	Songhua
	55	Kangryong
	56	Sinchon
	57	Unryul
North Pyongan	58	Jongju City
	59	Phihyon
	60	Unjon
	61	Hyangsan
	62	Unsan
	63	Sonchon
	64	Kusong
	65	Tongrim
South Pyongan	66	Jungsan
	67	Kaechon
	68	Pyongwon
	69	Sukchon
	70	Sinyang
	71	Songchon
Provincial Paediatric Hospitals	72	Kangwon
	73	South Hamgyong
	74	North Hamgyong
	75	Ryanggang
	76	South Pyongan
	77	North Pyongan
	78	South Hwamghae
	79	North Hwamghae
	80	Kaesong
	81	Nampo
	82	Jagang
Pyongyang City	83	Kangnam County
	84	Pyongyang Medical University
	85	ICN
	86	Pyongyang Hospital No. 1
	87	Pyongyang Hospital No. 2
	88	Pyongyang Hospital No. 3
	89	Okryu Children’s Hospital

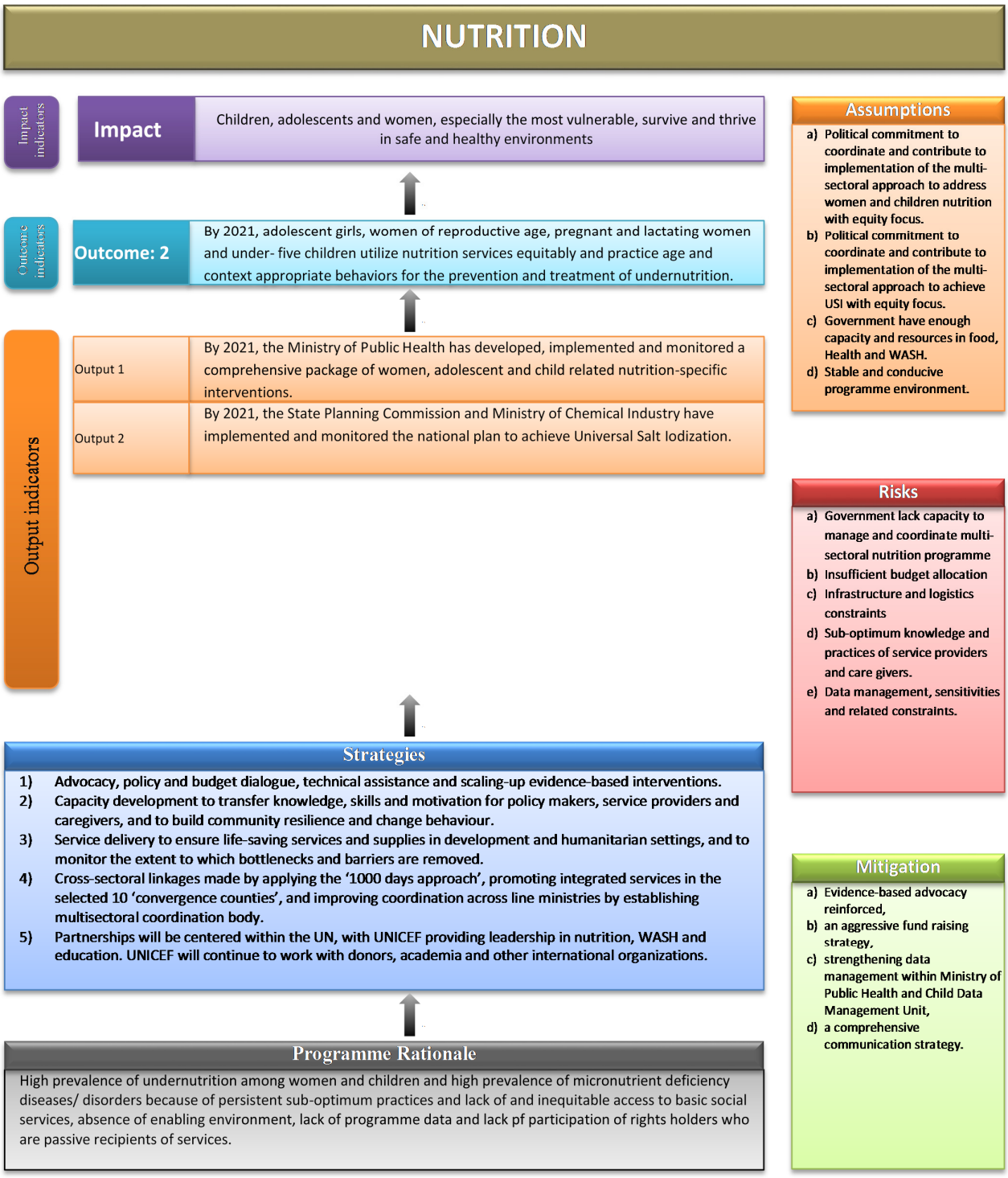
Annex 3: Expansion of the CMAM programme into 60 more counties (total 149) in 2015

South Pyongan	Pyongsong City	**South Hwanghae**	Haeju City	**North Hwanghae**	Sariwon City	**South Hamgyong**	Tanchon City
	Anju City		Thaetan		Songrim City		Songchongang D
	Sunchon City		Songhwa		Kaesong City		Tonghungsan D
	Tokchon City		Anak		Hwangju		Hoesang D
	Taedong		Sinchon		Yonthan		Sapho D
	Pyongwon		Jaeryong		Suan		Hungdok D
	Sukchon		Sinwon		Sinkye		Haean D
	Mundok		Paechon		Phyongsan		Yonggwang
	Sinyang		Yonan		Kumchon		Sinhung
	Yangdok		Kwail		Sungho D		Pujon
	Unsan		Kangryong		Sangwon		Jangjin
	Pukchang		Ongjin				Jongpyong
	Maengsan		Ryongyon				Yodok
	Hoechang						Toksong
	Nyongwon						Riwon
	Taehung						Hochon
	Chongnam						Sudong
	Tukjang						Kumho

Annex 4: Expansion of the CMAM programme into 40 more counties (total 189) in 2016

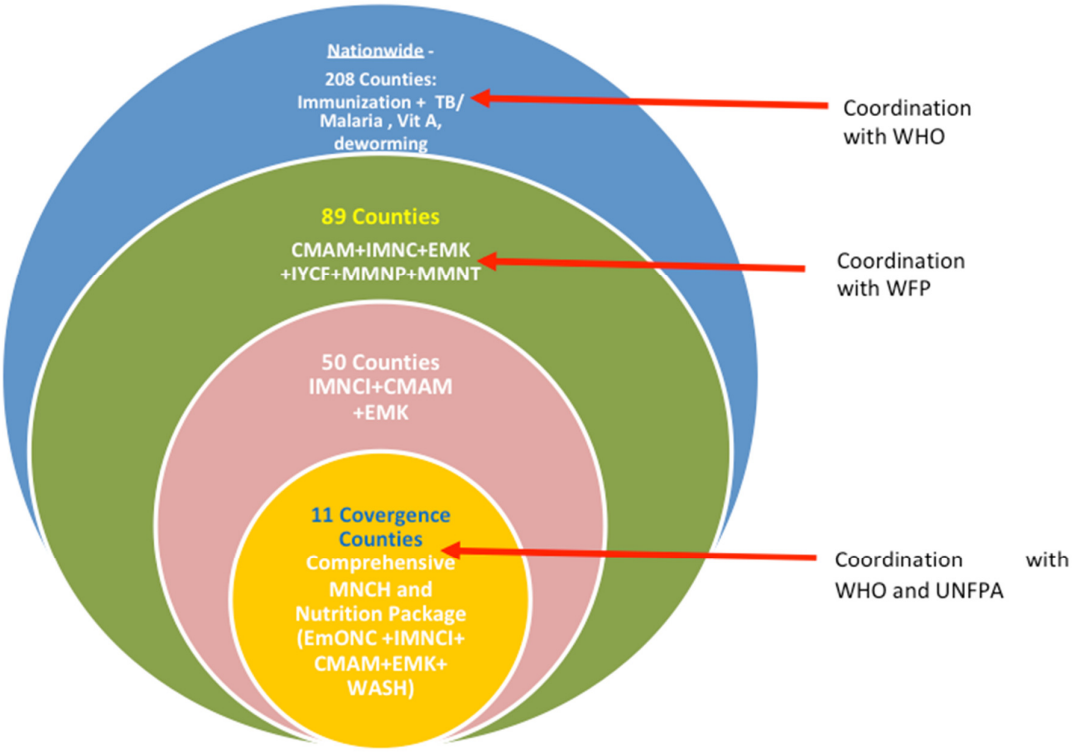
Ryanggang	Hyesan city	**Jagang**	Kanggye City	**North Hamgyong**	Sinam D
	Samsu		Manpho City		Chongam D
	Kim Hyong Gwon		Huichon City		Phohang D
	Pochon		Rangrim		Sunam D
	Unhung		Jonchon		Ranam D
	Kapsan		Songgan		Orang
	Phungso		Janggang		Yonsa
	Kim Jong Suk		Hwaphyong		Musan
	Kim Hyong Jik		Junggang		Kyongsong
	Taehongdan		Jasong		Kyonghung
	Paekam		Sijung		Kyongwon
			Wiwon		
			Chosan		
			Usi		
			Kophung		
			Songwon		
			Tongsin		
			Ryongrim		

Annex 5: UNICEF's Theory of Change for nutrition activities in DPRK



Source: UNICEF DPRK Country Programme Strategy Note 2017–2021.

Annex 6: Schematic Representation of UNICEF's geographical focus



CMAM: Community Management of Acute Malnutrition
EMK: Essential Medicine Kits
IMNCI: Integrated Management of Neonatal and Childhood illnesses
EmONC: Emergency Obstetric and Neonatal Care
IYCF: Infant and Young Child Feeding counselling
MMNP: Multi-micronutriment Powder (Sprinkles)
MMNT: Multi-micronutriment tablets

Source: UNICEF DPRK Programme Strategy Note 2017–2021.

Annex 7: Evaluation matrix

OECD / DAC criteria	Questions from ToR	What to look for	Data sources	Data collection methods
Relevance / appropriateness	• How well has the overall CMAM programme strategy evolved and to what extent have specific strategies / interventions responded to the local / national context, needs and priorities? • To what extent is the DPRK CMAM programme in line with global recommendations and practices for management of acute malnutrition? • How synergistic is the link between CMAM and other health and nutrition interventions such as IYCF, micronutrient supplementation, supplementary feeding interventions and IMNCI?	• Admissions over time • Admission trends responsive to nutritional stressors • Discharge outcomes • Discharge trends over time • Appropriate treatment protocols • Internationally recommended admission and discharge protocols • Internationally recommended treatment protocols • Coherence of guidance between guidelines • Cross-referral between programmes • Evidence of improved practices and behaviours of CMAM beneficiaries	• Routine programme data • Interviews with officials and clinicians • Seasonal calendars of nutritional stressors • Situational analyses • Nutrition strategy documents • Guidelines • Field observations • Interviews with beneficiaries • Beneficiary questionnaires	• CBS reports • Key informant interviews • Document review • Observation checklists • Beneficiary interviews • Beneficiary questionnaires
Programme effectiveness and coverage	• To what extent have the expected outcomes in relation to reduction of wasting, excess morbidity and mortality been realized through the CMAM programme? • What factors have contributed to the programme outcomes achieved? • What is the estimated geographical coverage of CMAM services against estimated national needs? Its relevance and appropriateness? • To what extent has the rapid expansion of geographic coverage of services in DPRK been accompanied by quality service provision? • How have strategies such as community outreach through HHD visits and community/ People's Committees' mobilization, screening and	• Admission trends of MAM / SAM • Increasing ratio of MAM: SAM • Discharge outcomes (cure > 75%, deaths < 10%, default < 15%) • Timeline for expansion of programme in relation to need • Admission trends in areas of expansion relevant to context • Geographical coverage (90%). case coverage (>70%) • Case finding methodology • Nutrition status on admission • Appropriate referral and triage	• Routine programme data disaggregated by province / county • Disaggregated data for MAM / SAM • UNICEF / MoPH programme documentation • Community-based coverage survey	• CBS reports • LQAS coverage evaluation • Beneficiary questionnaires • Document review • Treatment records information retrieval • Key informant interviews • Beneficiary interviews • Beneficiary questionnaires

	enrolment, outpatient treatment, inpatient treatment, information management and follow-up contributed to realizing overall programme objectives? • What were the bottlenecks for successful implementation of CMAM objectives?			
Programme efficiency and quality of services	• To what extent does the quality of service delivery for the beneficiaries meet the expected standards according to internationally recognized benchmarks? • What factors have contributed to meeting quality standards? • What factors should be strengthened in order to further enhance the quality of service provision and address bottlenecks or constraints? • How has the CMAM programme impacted / influenced primary health care services including other nutrition interventions such as the promotion of IYCF and micronutrient supplementation?	• Appropriate ward environment • Appropriate admission • Discharge outcomes compared to Sphere minimum standards and national guidelines • Treatment protocols conform to United Nations standards (WHO / UNICEF / national guidelines) • Contextually appropriate length of stay in treatment • Appropriate use of antibiotics / medicines • Appropriate rations of therapeutic milk / RUTF • Assessment of pharmacy stock-outs • Links / referral to IYCF • Recall of IYCF messages	• Ward observations • Guidelines • Job aids • Staffing • Treatment records • Key informants • Beneficiaries • Monthly reports	• Observation checklist • Treatment records information retrieval • Key informant interviews • Beneficiary interviews • Beneficiary questionnaires • Document review
Programme sustainability and opportunities for scaling up	• What level of progress has been achieved to build CMAM programme ownership by the provincial government and support its integration in the provincial health delivery service system as part of a strategic response to acute malnutrition? • How feasible is it to sustain the current interventions without direct institutional, administrative, technical and financial support from UNICEF and other agencies? • What capacity needs to be developed for MoPH to successfully support programme	• Impressions of CMAM from officials and hospital directors • Human resource commitments • Financial commitments • Coordination meetings • Training • Supportive supervision • Effective commodity management • Assessment of capacity to implement based on theoretical / practical knowledge	• Observation of protocol implementation • Key informants • CBS (bottleneck analysis formats) • Pharmacy records	• Observation checklist • Bottleneck analysis • Treatment records information retrieval • Key informant interviews • Document review

	implementation including commodity management and logistics?			
Programme impact (outcomes / potential impact)	• How significantly has the programme contributed to either revitalize or place nutrition high on the national and provincial policy and developmental agenda? • What lessons can be learned from the best practices achievements, challenges and constraints of the programme?	• Impressions of CMAM from officials and hospital directors • Human resource commitments • Financial commitments • Coordination meetings • Training • Supportive supervision • Effective commodity management • Assessment of capacity to implement based on theoretical / practical knowledge	• Observation of protocol implementation • Key informants • CBS (bottleneck analysis formats) • Pharmacy records	• CBS reports • LQAS coverage evaluation • Observation checklist • Bottleneck analysis • Treatment records information retrieval • Key informant interviews • Document review • Beneficiary interviews • Beneficiary questionnaires • Pharmacy records
Cross-cutting issues	• What gaps in the capacity of MoPH can be identified which may hinder handover of the CMAM programme? • How can the links between CMAM and other health and nutrition interventions be enhanced?	• Suitable infrastructure • Staffing / human resources • Technical capacity of staff • Capacity for case finding and referral • Logistic management • Referral between programmes • Operational guidance • Coherence of guidelines	• Observation of protocols • Document review • Bottleneck analysis • Key informants • Treatment records • Pharmacy records • Beneficiaries	• Observation checklists • Treatment record data review • Pharmacy record review • Beneficiary interviews • Beneficiary questionnaires • Guideline review

Annex 8: CMAM admissions data 2015–2017

MAM patients (inpatients and outpatients) by province 2015 according to month

	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Pyongyang	185	205	195	225	265	310	350	330	295	270	232	245	3107
S. Pyongan	254	287	312	322	342	398	453	455	348	302	268	275	4016
N. Pyongan	369	402	579	564	524	686	697	674	669	588	528	347	6627
Jagang	172	193	224	243	270	286	245	252	242	198	197	186	2708
S. Hwanghae	132	123	132	178	198	202	242	242	223	189	178	175	2214
N. Hwanghae	264	275	364	398	445	565	528	497	442	396	294	234	4702
S. Hamgyong	218	308	374	352	460	389	589	615	615	372	380	450	5122
N. Hamgyong	155	166	178	187	203	224	268	196	212	197	157	124	2267
Kwangwon	289	286	282	285	369	402	336	303	291	252	273	228	3596
Ryanggang	145	123	113	168	182	202	254	231	194	181	170	120	2083
Nampo	56	45	65	67	85	116	129	156	118	105	108	105	1155
Rason	16	18	18	26	16	38	40	40	28	24	28	16	308
total	2255	2431	2836	3015	3359	3818	4131	3991	3677	3074	2813	2505	37905

SAM patients (inpatients and outpatients) by province 2015 according to month

	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	total
Pyongyang	37	41	39	45	53	62	66	53	49	47	46	49	587
S. Pyongan	118	132	139	148	152	220	216	208	154	132	123	98	1840
N. Pyongan	123	134	193	188	211	262	264	258	223	196	176	109	2337
Jagang	86	86	98	86	116	128	98	102	107	85	83	65	1140
S. Hwanghae	82	85	98	112	132	143	153	156	145	119	102	97	1424
N. Hwanghae	83	87	115	132	141	178	181	166	138	124	98	78	1521
S. Hamgyong	109	154	187	176	230	221	302	313	308	186	190	225	2601
N. Hamgyong	57	64	55	78	98	108	134	98	78	78	70	40	958
Kwangwon	98	96	94	95	123	134	112	101	97	84	91	76	1201
Ryanggang	63	54	45	56	64	79	102	98	73	77	70	40	821
Nampo	32	31	24	24	32	45	59	52	46	35	36	35	451
Rason	5	6	6	8	9	10	10	10	7	6	7	4	88
total	893	970	1093	1148	1361	1590	1697	1615	1425	1169	1092	916	14969

MAM patients (inpatients and outpatients) by province 2016 according to month

	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	total
Pyongyang	401	442	456	512	564	656	732	690	633	570	495	530	6681
S. Pyongan	987	1045	1134	1201	1298	1432	1723	1684	1401	1208	1072	1100	15285
N. Pyongan	735	807	987	965	1048	1362	1384	1345	1338	1176	1049	694	12890
Jagang	497	553	648	701	738	754	732	733	723	591	588	553	7811
S. Hwanghae	371	352	378	492	578	589	697	702	657	536	456	489	6297
N. Hwanghae	781	753	786	956	1123	1220	1198	1289	1182	1072	912	978	12250
S. Hamgyong	928	976	1198	1202	1376	1478	1434	1343	1267	1232	1176	1106	14716
N. Hamgyong (including Rason)	1289	1456	1786	1897	2000	1768	1998	2005	1987	1568	1546	1456	20756
Kwangwon	504	564	654	712	745	764	768	754	742	621	588	553	7969
Ryanggang	213	303	371	349	457	386	566	612	597	372	380	450	5056
Nampo	227	238	327	358	387	505	498	467	412	396	311	239	4365
total	6933	7489	8725	9345	10314	10914	11730	11624	10939	9342	8573	8148	114076

SAM patients(inpatients and outpatients) by province 2016 according to month

	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	total
Pyongyang	45	52	50	54	64	75	79	53	54	48	52	53	679
S. Pyongan	125	143	157	148	165	220	225	215	154	142	134	104	1932
N. Pyongan	121	123	178	188	211	262	263	258	223	196	176	109	2308
Jagang	112	109	105	115	116	123	134	123	118	114	83	65	1317
S. Hwanghae	86	88	102	112	132	145	153	161	145	119	102	97	1442
N. Hwanghae	132	143	142	143	154	187	223	218	174	156	146	153	1971
S. Hamgyong	89	124	167	167	221	202	278	278	234	167	167	223	2317
N. Hamgyong (including Rason)	209	256	289	278	349	378	407	403	403	337	328	328	3965
Kwangwon	108	116	120	124	167	167	179	145	132	98	70	52	1478
Ryanggang	64	55	53	62	68	85	115	107	87	89	78	71	934
Nampo	33	31	38	38	36	45	66	68	54	48	42	42	541
total	1124	1240	1401	1429	1683	1889	2122	2029	1778	1514	1378	1297	18884

No of SAM treated in 2017(up to September)										
Facility	**Jan.**	**Feb.**	**Mar.**	**Apr.**	**May**	**Jun.**	**July**	**Aug.**	**Sep.**	**Total**
Myonggan	3	3	3	4	6	5	6	6	7	43
Songpyong	2	2	4	5	7	7	9	8	8	52
Jongju	4	3	6	7	7	8	10	11	9	65
Hyangsan	2	1	3	2	2	3	5	6	5	29
S. Hwanghae Provincial hospital	5	6	6	8	9	9	14	15	14	86
Chongdan	3	2	3	3	5	7	9	10	11	53

No of MAM treated in 2017(up to September)										
Facility	**Jan.**	**Feb.**	**Mar.**	**Apr.**	**May**	**Jun.**	**July**	**Aug.**	**Sep.**	**Total**
Myonggan	20	23	25	24	26	26	29	30	32	235
Songpyong	32	33	34	34	35	36	35	37	38	314
Jongju	24	29	30	33	41	43	45	47	47	339
Hyangsan	8	9	8	13	14	14	16	15	16	113
S. Hwanghae Provincial hospital	7	8	8	10	15	15	17	17	18	115
Chongdan	21	20	23	24	26	27	30	29	32	232

Annex 9: Data-collection formats

MAM ADMISSIONS BY COUNTY 2017

Province: Date:

Month	January		February		March		April		May		June		July		August		September		October		Total
Sex / County	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	

MAM ADMISSIONS BY PROVINCE 2015

PROVINCE	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
North Hamgyong																									
Ryanggang																									
South Hamgyong																									
Jagang																									
North Pyongan																									
South Pyongan																									
Kangwon																									
North Hwanghae																									
South Hwanghae																									
Nampo City																									
Pyongyang																									
Total																									

MAM ADMISSIONS BY PROVINCE 2016

PROVINCE	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
North Hamgyong																									
Ryanggang																									
South Hamgyong																									
Jagang																									
North Pyongan																									
South Pyongan																									
Kangwon																									
North Hwanghae																									
South Hwanghae																									
Nampo City																									
Pyongyang																									
Total																									

MAM ADMISSIONS BY PROVINCE 2017

PROVINCE	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
North Hamgyong																									
Ryanggang																									
South Hamgyong																									
Jagang																									
North Pyongan																									
South Pyongan																									
Kangwon																									
North Hwanghae																									
South Hwanghae																									
Nampo City																									
Pyongyang																									
Total																									

MAM DISCHARGES BY PROVINCE 2017

PROVINCE	CURED		DIED		ABANDONED		NON-RESPONDENT	
	Number Cured	% Cured	Number Died	% Died	Number Abandoned	% Abandoned	Number Non-responder	% Non-responder
North Hamgyong								
Ryanggang								
South Hamgyong								
Jagang								
North Pyongan								
South Pyongan								
Kangwon								
North Hwanghae								
South Hwanghae								
Nampo City								
Pyongyang								
Total								

SAM ADMISSIONS BY COUNTY 2017

Province: Date:

Month	January		February		March		April		May		June		July		August		September		October		Total
Sex / County	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	

SAM ADMISSIONS BY PROVINCE 2015

PROVINCE	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
North Hamgyong																									
Ryanggang																									
South Hamgyong																									
Jagang																									
North Pyongan																									
South Pyongan																									
Kangwon																									
North Hwanghae																									
South Hwanghae																									
Nampo City																									
Pyongyang																									
Total																									

SAM ADMISSIONS BY PROVINCE 2016

PROVINCE	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
North Hamgyong																									
Ryanggang																									
South Hamgyong																									
Jagang																									
North Pyongan																									
South Pyongan																									
Kangwon																									
North Hwanghae																									
South Hwanghae																									
Nampo City																									
Pyongyang																									
Total																									

SAM ADMISSIONS BY PROVINCE 2017

PROVINCE	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
North Hamgyong																									
Ryanggang																									
South Hamgyong																									
Jagang																									
North Pyongan																									
South Pyongan																									
Kangwon																									
North Hwanghae																									
South Hwanghae																									
Nampo City																									
Pyongyang																									
Total																									

SAM DISCHARGES BY PROVINCE 2017

Province: Date:

PROVINCE	CURED		DIED		ABANDONED		NON-RESPONDENT	
	Number Cured	% Cured	Number Died	% Died	Number Abandoned	% Abandoned	Number Non-respondent	% Non-respondent
North Hamgyong								
Ryanggang								
South Hamgyong								
Jagang								
North Pyongan								
South Pyongan								
Kangwon								
North Hwanghae								
South Hwanghae								
Nampo City								
Pyongyang								
Total								

ADMISSION DEFAULT LOCATIONS and DISTANCE

Province County Inpatient / Outpatient DATE:

RI	DISTANCE (KM)	TALLY OF ADMISSIONS	TOTAL	DEFAULTERS	TOTAL

Length of Stay before Cure

Location

Province County Inpatient / Outpatient

Date:

WEEK	TALLY	TOTAL
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
> 16		
Not cured		

MUAC AT ADMISSION

Location

Province County Inpatient / Outpatient

Date:

MUAC	TALLY	TOTAL
>130 mm		
125 – 130 mm		
124 mm		
123 mm		
122 mm		
121 mm		
120 mm		
119 mm		
118 mm		
117 mm		
116 mm		
115 mm		
114 mm		
113 mm		
112 mm		
111 mm		
110 mm		
109 mm		
108 mm		
107 mm		
106 mm		
105 mm		
104 mm		
103 mm		
102 mm		
101 mm		
100 mm		
95 – 100 mm		
< 95 mm		
Not recorded		

MUAC AT DISCHARGE

Location

Province County Inpatient / Outpatient

Date:

MUAC	TALLY	TOTAL
> 140 mm		
140 mm		
139 mm		
138 mm		
137 mm		
136 mm		
135 mm		
134 mm		
133 mm		
132 mm		
131 mm		
130 mm		
129 mm		
128 mm		
127 mm		
126 mm		
125 mm		
124 mm		
123 mm		
122 mm		
121 mm		
120 mm		
119 mm		
118 mm		
117 mm		
116 mm		
115 mm		
< 115 mm		
Not recorded		

Seasonal calendar

Province: Date: Source:

Childhood illnesses

ILLNESS	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Diarrhoea												
Respiratory illnesses												

Crops and produce

Crop / produce	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rice												
Maize												

Labour demand

Labour duties	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Land preparation												
Sowing												
Harvesting												
Other non-agriculture												

Climate

Climate	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature												
Rainfall												
Snow / ice												

Observation checklist for inpatient unit

Name of health facility: _____ Type of health facility: _____
Province: _____ County: _____
City/*ri*_____
Date of evaluation_____
Patient census _____SAM_____MAM w/ comp

Section 1: Staffing

Staffing					Resources		Comment
Which staff work on the malnutrition ward? (indicate number of each) Number	AM	PM	Night	Date Trained in CMAM	Are the following documents easily available to staff on the ward?		
Doctor					CMAM National Guidelines		
Nurse					IYCF Guidelines		
Other (list)					IYCF IEC materials		
					Other (list)		
# Supervision visits in 2017					Supervision visit reports / documents		
# Refresher trainings							

Section 2: Care environment

Interview with staff		Verification process		Comment
Ask staff regarding the ward policy on the use of bottle feeding and commercial milk		Observe the ward environment.		
		Handwashing facilities available		
		Toilet facilities available		
		No sign of pest infestation		
		Ward area kept clean		
		Ward temperature 27 – 30 C		
		Electrical equipment safe for use		
		Patients have separate beds		
		Carer is able to sleep with the child		
Bottle feeding is banned		No feeding bottles found		
Commercial milk formulas are banned		No commercial milk formulas found		
Baby-friendly hospital initiative		Ward area is light and colourful		
Access for disabled carers / children		Access for disabled carers / children		

Section 3: Equipment and measuring

Interviews with staff		Verification process		Comment
Q2. Anthropometry		Observe anthropometric measurements		
MUAC tape for children (6–59 m)		MUAC measured correctly		
MUAC tape for P and LW				
Salter scale / SECA (accurate to 100g)		Oedema checked correctly		
Infant scale (accurate to 10g)		Weight checked correctly		
Height board (appropriate for measuring length and height)		Height checked correctly (must be observed)		
WFH tables MUST BE WHO 2006 STANDARDS		WFH calculated correctly (must be observed)		

Section 4: Assessment / eligibility criteria

Children 6–59 months		
Q3. Ask staff eligibility criteria		
Oedema + 3 (always inpatient) Marasmic Kwashiorkor (always inpatient)		
MUAC < 11.5cm or		Check treatment records (aprox.10)
WFH < -3 Z-scores or		
Oedema +1 / +2		# correct
with		
Complications or lack of appetite		# incorrect
Referrals from outpatient SAM		
Children > 6 m weighing < 4kg		
MUAC 11.5 to 12.5cm w/complications		

Infants < 6 months		
Q3. Ask staff eligibility criteria		
Weight for length < - 3 Z-scores		Check 10 treatment records
Oedema of any grade		# correct
Not gaining weight despite counselling		
Visible severe wasting		# incorrect

Section 5: Milk preparation / observation

Verification process		Comment
Observe how milk is prepared. Check the prescription on the treatment chart.		
Milk prepared by qualified staff		
Use cooled boiled water (and filtered)		
Quantities of milk calculated correctly		
Milk prepared to the proper dilution		
Milk is given according to schedule		
Proper milk quantity given to each child		
Milk given correct number of times / day		
Amount taken by child charted correctly		
Vomiting / NG tube recorded correctly		
Children > 6m fed upright with cup		

Section 6: Phase 1 care, children 6–59 months

Interview with staff		Verification process		Comment
Q5. What protocols are used in phase 1 care?		Observe treatment charts during the ward round. Are phase 1 protocols applied correctly?		% Receiving antibiotics
Staff indicate correct protocol for F75 (100Kcal/kg/day or correct milk table used)		F75 prescribed correctly according to weight (100Kcal/kg/day or correct milk table used)		
Nasogastric tube feeding for children with no appetite (gravity feeding method)		NGT feeding method is by gravity (not injection)		
Antibiotics given (orally or IM/IV)		NGT feeds are clearly charted		
Staff recite correct protocol for moving from phase 1 to transition phase correctly		Milk intake charted correctly		
		Nutritional assessment done daily on all cases		
		Average length of stay in phase 1 =		
		Antibiotics prescribed according to protocol		
		Progress note charted for each day		
		Assessed for moving from phase 1 to transition phase according to protocol*		

Section 7: Transition phase

For children 6–59 months transitioning to outpatients

Interview with staff		Verification process		Comment
Q6. What are the protocols in transition phase to transfer a child to outpatient care in transition phase?		Observe treatment cards during the ward round. Examine treatment cards of discharged cases. Are transition phase protocols applied correctly?		
		NG tube removed if previously used		
F 75 milk continued as in phase 1 (100Kcal/kg/day or correct milk table used)		F75 prescribed correctly according to protocol (100Kcal/kg/day or correct milk table used)		
		Number of feeds prescribed correctly		
		Milk intake charted correctly		
RUTF given before each ration of milk ¼ pkt if weight <5kg or 1/3 pkt if weight >5kg)		RUTF F100 given according to transition phase protocol 100ml F100 = 20g RUTF		
Staff can recite key messages for RUTF		Carer is given key messages for RUTF		
F75 / F100 stopped when eating RUTF transition phase ration		F75 / F100 stopped when eating RUTF transition phase ration		
When eating RUTF without milk change to outpatient ration and observe for 24 hrs		Outpatient RUTF ration given for 24 hrs under observation		
Staff correctly recite discharge protocols / procedures to outpatient care		Discharge protocols / procedure to outpatient care correctly implemented *		
		Registration number noted on all documentation		

Transition phase for children remaining as inpatients

Interview with staff		Verification process		Comment
Q7. What are transition phase protocols for a child remaining as an inpatient?		Examine 10 treatment cards of discharged cases. Are transition phase protocols applied correctly?		
NGT removed before transition phase		NGT removed if previously used		
F100 prescribed according weight (130kcal/kg/day or correct milk table used)		F100 prescribed correctly according weight (130kcal/kg/day or correct milk table used)		
Number of feeds prescribed correctly		Number of feeds prescribed correctly		
		Milk intake charted correctly		
Staff recite correct protocols for moving from transition phase to phase 2		Child is moved from transition phase to phase 2 according to protocol *		

Section 8: phase 2 care

Interview with staff		Verification process		Comment
Q8. What are the protocols for Phase 2 care?		Observe treatment cards and current cases on ward round and discharged children		
		All IV access has been removed		
F100 protocol used to prescribe F100 (200 kcal/kg/day or correct milk table used)		F100 prescribed correctly according to weight (200 kcal/kg/day or correct milk table used)		
Number of feeds prescribed correctly (volume of feeds changes if frequency decreased)		Number of feeds prescribed correctly (volume of feeds changes if frequency decreased)		
		Milk intake charted correctly		
Staff calculate discharge weight correctly		Discharge weight is calculated / noted correctly		
Staff give discharge summary		Discharge summary documented (forms available)		
Staff give specific discharge advice on IYCF, nutrition and WASH for all children		Advice given relevant to patient history		
Registration number noted on all documentation		Registration number is noted on all documentation		

Section 9: Infants < 6 months or weighing less than 3.5kg

Staff distinguish between protocols for infants < 6m or <3.5kg (if breastfed or not)		Infant is correctly assigned to protocols for breastfed or non-breastfed infants or < 3.5kg		
Diluted F100 milk prescribed according to weight for marasmus (correct milk table used)		Diluted F100 prescribed correctly according to weight for marasmus (correct milk table used)		
F75 prescribed according to weight for oedema cases (correct milk table used)		F75 prescribed correctly according to weight for oedema cases (correct milk table used)		
Infants with oedema are changed from F75 to diluted F100 when oedema has resolved		Infants with oedema are changed from F75 to diluted F100 when oedema has resolved		
Infants > 6m < 3.5kg are changed from diluted F100 to full strength F100 when the weight is 3.5kg		Infants > 6m < 3.5kg are changed from diluted F100 to full strength F100 when the weight reached 3.5kg		

Infants < 6 months who will be breastfed

Interview with staff		Verification process		Comment
Q9. What protocols are used to treat infants < 6 months who will be breastfed?		Check treatment records for proper protocol implementation		
Staff recite how to use SST correctly		SST is used to deliver diluted F100 (or F75 for oedema cases)		
Infant is weighed daily (10–20g accuracy)		Infant is weighed daily (10–20g accuracy)		

When gaining weight > 10 g / day prescribed diluted F100 volume is halved		When gaining weight > 10 g / day prescribed diluted F100 volume is halved		
If continued weight gain > 10g / day SST is stopped and breastmilk only is given (minimum 20 mins feed each breast)		If continued weight gain > 10g / day SST is stopped and breastmilk only is given (minimum 20 mins feed each breast)		
Infant is discharged when gaining > 10g / day for three days on breastmilk alone		Infant is discharged when gaining > 10g / day for three consecutive days on breastmilk alone		

Infants < 6 months who will NOT be breastfed

Interview with staff		Verification process	Comment
Q10. What protocols are used for infants <6 m will NOT be breastfed?		Check treatment cards for proper protocol implementation and documentation	
Staff recite protocols for phase 1 / transition and phase 2 for non-breastfed infants correctly		Phase 1 diluted F100 milk prescribed correctly according to weight	
		Transition phase diluted F100 prescribed correctly according to weight (50% increase of phase 1 volume)	
		Phase 2 diluted F100 prescribed correctly according to weight (100% increase of phase 1 volume)	
Staff have given counselling on the benefits of breastfeeding and dangers of formula milk		Mother has been counselled on the benefits of re-establishing breastfeeding and continues to refuse (documentation)	
Staff demonstrate safe milk preparation (using diluted F100) while in inpatient care		Mother has been taught safe preparation of formula milk before discharge	

Staff have shown the carer how to make the right amount of milk for the infant's age		Mother has been counselled on proper (age-appropriate) complementary feeding	
Staff have referred the carer to the local health facility		Mother has been referred to the local health facility for ongoing IYCF counselling	
		Child is discharged according to protocol correctly	

Section 10: Registration and tracking

Interview with staff		Verification process		Comment
Q11. How do you register and track the beneficiaries?		Check 10 treatment records for registration and tracking		
Registration number given on admission		Registration number given on admission		
Registration number written on all documents		Registration number written on all documents		
Registration number noted in all registers		Registration number noted in all registers		
Discharges filed by type / month		Discharges filed by type / month		

Section 11: Reporting

Verification process		Comment
Check three previous monthly reports: see if completed correctly. Cross-check treatment records with tally sheets / monthly reports		
Tally sheets / registers completed correctly		Reports are sex disaggregated? Y / N Reports indicate disabilities? Y / N
Monthly reports completed correctly		
Cured cases / transfer cases correctly identified and reported		
Cure > 75% (average of three months' reports)* for inpatients only		
Cure + transfer rate > 75% (average of three months' reports) where inpatient AND outpatient treatment are available		
Default rate < 15% (average of 3 months reports)		
Death rate < 10% (average of 3 months reports)		
Defaulter follow-up reports (documented and available) **		

Section 12: Stock check (ward or pharmacy)

Stock records	Comment
Stock record for F75 / F100 / RUTF	
Minimum one-month supply (all commodities)	# Boxes
Expiry date of RUTF (write)	
Expiry date of F75	
Expiry date of F100	
Is stock stored correctly (on pallets, not against walls, no signs of leakage or infestation, gross damage)	
Treatment records (at least one-month supply)	
Referral slips (outpatient care) (at least one-month supply)	

EVALUATOR COMMENTS

% Receiving full protocol

Observation checklist for outpatient unit

Name of health facility: _____ Province: _____
County:_____ City/Ri_____
Date of evaluation_____ Patient census _____ SAM _____ MAM

Section 1: Organization of services

Interviews with staff			Verification process				Comment
Q1. Which staff work at this health centre? (Indicate number of each)		Trained in treatment of SAM / MAM	On-the-job training given?				
Doctor			Yes		No		
Nurse			Yes		No		
Midwife			Yes		No		
Vaccinator			Yes		No		
Health Educator			Yes		No		
Pharmacist			Yes		No		
Lab technician			Yes		No		
Others? (list)			Yes		No		
Q2. Who is responsible for these activities? (e.g. nurse, doctor, health educator)			Which of the following are present in the clinic?				
Screening (MUAC and oedema)			Integrated Nat. Guidelines				
Measuring weight			CMAM training package				
Measuring height			IYCF guidelines				
Calculating WFH			IYCF training package				
Appetite test			Protocol posters				
Decision to treat			Other (list):				
Decision to discharge							
# Supervision visits in 2017			Supervision visit reports				

Section 2: Assessment and triage of patients

Interview with staff		Verification process	Comment
Q3. What are the eligibility criteria for: Outpatient SAM 6–59 months		(Check 5–10 of each type of treatment records) Outpatient SAM 6–59 months	
MUAC < 11.5cm		MUAC	
Oedema +1 / +2		Oedema	
WFH < -3 Z-scores		WFH (check all WFH calculations)	
Appetite for RUTF		Appetite	
Clinically well (no IMNCI danger signs)		Clinically well	
Outpatient MAM 6–59 months		Outpatient MAM 6–59 months	
MUAC < 12.5 to 11.5 cm		MUAC	
WFH < -2 to – 3 Z-scores		WFH	
Oedema absent		Oedema	
Children < 6 months		Children < 6 months	
WFH < -3 Z-scores (if > 45 cm)		No child < 6 months in outpatient SAM / MAM	
Too weak/feeble to breastfeed			
Visible severe wasting			

Section 3: Follow-up care

Interview with staff		Verification process	Comment
Q4. Which medications are given: Outpatient SAM 6–59 months		Check 10 treatment records. Check medicines which were given on admission Outpatient SAM 6–59 months	% Receiving antibiotics % Receiving full protocol
Vitamin A		Vitamin A	
Amoxycillin		Amoxycillin	
Mebendazole (>12 months)		Mebendazole (> 12 months)	
Antimalarial (with RDT)		Antimalarial	
Vaccinations (or referred to EPI)		Vaccinations	
Outpatient MAM 6–59 months		Outpatient MAM 6–59 months	
Vitamin A		Vitamin A	
Mebendazole		Mebendazole	
Antimalarial (with RDT)		Antimalarial (with RDT)	
Vaccinations (or referred to EPI)		Vaccinations (or referred to EPI)	
Q5. Other follow-up care?		Data recorded weekly	
MUAC / oedema / weight (weekly)		MUAC / oedema / weight (weekly)	
Appetite test (weekly)		Appetite test (weekly)	
Clinical check (weekly)		Clinical check (weekly)	

Section 4: Referral

Staff interview		Verification process	Comment
Q6. What are criteria for HHD visit referral?		Check 10 treatment records and referral records. Observe for referral for conditions in Q6.	
Static weight 3 consecutive visits		Static weight 3 consecutive visits	
Losing weight 2 consecutive visits		Losing weight 2 consecutive visits	
Oedema not decreasing in three visits		Oedema not decreasing in three visits	
General condition not improving		General condition not improving	
Absenteeism		Absenteeism	
Default		Default	
Q7. What are criteria for hospital referral?		Check 10 treatment records. Observe for referral for conditions in Q6.	
No appetite for RUTF (SAM cases)		No appetite for RUTF (SAM cases)	
IMCI danger sign (examples)		IMNCI danger sign (examples)	
Losing weight 3 consecutive visits		Losing weight 3 consecutive visits	
Static weight 5 consecutive visits		Static weight 5 consecutive visits	
Oedema worsening		Oedema worsening	
Not cured after 3 months		Not cured after 3 months	

Section 5: Counselling

Staff interview		Verification process	Comment	
Q8. What key messages do you give for RUTF / RUSF?		See patient counselling cards / patient information handouts		
Only give RUTF/RUSF to the sick child				
Give the child x packets per day				
Eat from the packet / do not cook				
Do not mix with other foods / fluids				
Take with breastmilk or water				
Clean hands before eating				
Keep food covered				
Q9. What IYCF counselling do you give to the carer / mother? (1 point each)				
Continued breastfeeding to 2 years				
Complementary feeding 6–9 months				
Complementary feeding 9–12 months				
Complementary feeding > 12 months				
Discourage bottle feeding				
Discourage milk formula				

Section 6: Discharge criteria

Interview with staff		Verification process		Comment
Q10. What are the discharge criteria for: (ask staff to state admission criteria.) Outpatient SAM 6–59 months		(Check 5 of each type treatment records. Note for each record where admission criteria correctly applied) Outpatient SAM 6–59 months		
MUAC > 12.5 cm x 2 weeks		MUAC > 12.5 cm x 2 weeks		
Oedema absent x 2 weeks		Oedema absent x 2 weeks		
WFH > -2 Z-scores x 2 weeks		WFH > -2 Z-scores x 2 weeks		
AND		AND		
Clinically well		Clinically well		
Outpatient MAM 6–59 months		Outpatient MAM 6–59 months		
MUAC > 12.5cm x 2 weeks		MUAC > 12.5cm x 2 weeks		
WFH > - 2Z scores x 2 weeks		WFH > - 2Z scores x 2 weeks		
Clinically well		Clinically well		

Section 7: Follow-up care after discharge

Interview with staff		Verification process	Comment
Q11. On discharge, what referrals are made to other services?		Check 10 treatment records.	
Children 6–59 months		Children 6–59 months	
Growth monitoring		Growth monitoring	
IYCF counselling		IYCF counselling	
Vaccination services		Vaccination services	
Well Baby Clinic / MCH clinic		Well Baby Clinic / MCH clinic	
Other (list)		Other (list)	

Section 8: Registration and tracking

Interview with staff		Verification process	Comment
Q12. How do you register and track the beneficiaries?		Check 10 treatment records for registration and tracking.	
Registration number given on admission		Registration number given on admission	
Registration number written on all documents		Registration number written on all documents	
Registration number noted in registers		Registration number noted in registers	
Discharges filed by type / month		Discharges filed by type / month	

Section 9: Reporting

Verification process		Comment
Check three previous monthly reports: see if completed correctly. Cross-check treatment records with tally sheets / monthly reports		
Tally sheets / registers completed correctly		Reports are sex disaggregated? Y / N Reports indicate disabilities? Y / N
Monthly reports completed correctly		
Cured cases / transfer cases correctly identified		
Cure > 75% (average of three months' reports)		
Cure + transfer rate > 75% (average of three months' reports) where inpatient AND outpatient treatment are available		
Default rate < 15% (average of three months' reports)		
Death rate < 10% (average of three months' reports)		
Defaulter follow-up reports (documented and available) **		

Section 10: Stock check (Clinic or Pharmacy)

Stock records (2 points for each correct record)	Comment
Stock record for RUTF	
Minimum one-month supply	
Expiry date of RUTF	
Stock record for RUSF	
Minimum one-month supply	
Expiry date of RUSF	
Other	
Treatment records (at least one-month supply)	
Referral slips (Hospital / CHW) (at least one-month supply)	

Evaluator comments
% Receiving full protocol

Key informant interview: Caregivers of children enrolled in CMAM

UNDERSTANDING OF MALNUTRITION

1. When did you first notice that your child was unwell?
2. What was wrong with them?
3. What symptoms did they have?
4. What did you do?
5. Did you try other treatments first? If so, what and how long?

OUTREACH

1. How did you first hear about the CMAM service?
2. Who told you?
3. Have you heard about it from any other source since?
4. Who is telling people about it in your village / town?
5. What did you hear about it?
6. What made you come to the clinic?
7. How long has your child been attending the clinic?

EXPLANATION FROM STAFF

1. What did the clinic staff tell you about your child's condition?
2. What were you told about the treatment?
3. What do doctors call the treatment? What do you call the treatment?

OTHER CASES / CASE REFERRAL

1. Do you know of other children who have the same problem but who are not attending the clinic?
2. If yes, why not?
3. Have you told anyone else to bring their child to the clinic?
4. Why / why not?

DISTANCE

1. How far is it from your home to the clinic?
2. How do you get here? Walk / transport?
3. How long does it take?
4. Determine the farthest distance travelled.
5. Do you have any other reason to come to this clinic / this place?

STANDARD OF SERVICE

1. What do you think of the CMAM service?
2. What are the strengths / good things?
3. What are the difficulties?
4. What could be done to make the service better?
5. How long do you usually wait to see the doctor?
6. How much time do you spend with the staff?
7. What happens during the consultation?
8. What treatment does your child receive?
9. Have there been any shortages on any week?
10. Have you ever not received the full amount or received something else instead?

ABSENCE / DEFAULTING

1. How easy is it for you to come every week?
2. What makes it difficult for you to come / what stops you from coming sometimes?
3. Do you know of any children who have stopped coming?
4. Why is that?
5. How can we encourage these children to return and continue the treatment?

PERCEPTION OF CMAM / FEEDBACK

1. What are people saying about the service in your village / town?
2. What works well for you in this programme?
3. What difficulties do you have in this programme?
4. How could we make the service better for you?
5. Do you have any questions or comments about the service?

Key informant interview: Outpatient staff

<u>Outpatient / inpatient staff / *ri* clinic</u>

CMAM INVOLVEMENT AND CHALLENGES

1. How long have you been working on CMAM?
2. Are all staff in the clinic involved / trained on CMAM?
3. How many male versus female staff are trained?
4. Who trained you on CMAM?
5. Have you had refresher training?
6. Is there any additional training you feel you need?
7. What contact / support have you had with focal people / ministry to help you in your job?
8. What difficulties, if any, do you have? E.g.
    a. High number of patients
    b. Time
    c. Completing paperwork accurately and keeping up to date

CALENDAR

1. What are the main childhood diseases you see in the clinic / hospital?
2. Which is the most common? Rank.
3. What time of year do they occur?
4. What do you think are the causes of malnutrition in this area?

REFERRAL

1. How do children usually come to the clinic / hospital for CMAM?
    a. Referred by community mobilization staff
    b. Heard about it from other beneficiary
    c. Heard about it from other person in the village
    d. Heard about it at the clinic / hospital
    e. Heard via the radio or other media, etc.
    f. Other source.

Rank in order of importance.

REFERRAL AND FOLLOW-UP

1. Do children who are referred from the community / clinic / hospital come with a referral slip / paper?
    g. What do you do with the referral slips?
2. Do the community mobilization staff check that children they have referred actually present at the clinic / hospital?
    a. Do you report back to community mobilization staff on the number of children you have seen that are referred by them?
3. Have you had any wrong referrals from the community screening?
    a. How many? What was the problem?
    b. What did you do?
    c. Did you report back to the community mobilization staff?
4. How do you refer patients to the stabilization centre or back to clinic?
    a. Do you give them a slip?
    b. How do you know if they have arrived at the stabilization centre / clinic?
    c. How do you know what happens to them?
    d. When patients are referred back do they come with any paperwork?
5. Is there any trend in the numbers of children referred / admitted for treatment?

ADMISSION / NON-ADMISSION

1. How many non-malnourished children have presented at the clinic / hospital?
    a. Approximately how many each month?
    b. What do you say when the child cannot be enrolled?
2. How do you decide to admit a mother and child as inpatient versus outpatient?
    a. Check CMAM protocol and other informal criteria.

DEFAULTING

1. How many children are absent for more than one week during the course of treatment?
2. How many children default?
    a. Why do you think this is?
    b. Is there a trend in the pattern of defaulting?
3. What do you do when children default?
4. How could we encourage children who default to return for treatment?
5. What barriers prevent mothers from bringing their children to the outpatient therapeutic programme?

COMMUNICATIONS

1. What communications do you have with provincial staff?
2. Who does community mobilization in this area?
3. What activities are included?
4. How often do you see the community mobilization staff?
5. How do you communicate with them?
6. How do they report activities to you?

IMPROVEMENTS AND PRACTICES

1. What works well in this CMAM programme?
2. What improvements could be made to the CMAM programme?

ANY OTHER COMMENTS

1. Do you have any questions or other comments on the CMAM programme?

Key informant interview: Programme officials

LEVEL OF ENGAGEMENT

1. What is your involvement with the CMAM programme?
2. What is your general impression of the CMAM programme?

PROGRAMME ACTIVITIES and CONSTRAINTS

1. What have been the main successes and challenges in your role in the following areas?
    a. Coordination with United Nations / other Government ministries
    b. Human resources
    c. CMAM programme commodities / logistics
    d. Training
    e. Monitoring
    f. Data collection and analysis
    g. Other
2. How did you overcome these constraints?

POLICY ENVIRONMENT

1. Are the current programme guidelines / policies relevant for future programme planning?
2. What changes in guidelines or policies, if any, would be required?

PROGRAMME PLANNING and SUSTAINABILITY

1. What will be required for the CMAM programme to meet planned needs over the next three years?
2. What will be required in terms of resources for the programme to be sustained at current or planned future levels?
    a. Human resources
    b. Managerial / technical training
    c. Programme commodities / logistics
    d. Infrastructure

CMAM PROGRAMME EVALUATION

1. In your role, what key issues should the evaluation consider making it most useful to you?
2. What are the positive aspects of the programme?
3. What aspects of the programme could be strengthened?

Bottleneck analysis – human resources / geographic access

	# Counties	# Counties with CMAM services	# Hospital doctors trained in CMAM*	% *Ri* clinics offering screening for CMAM**	% Doctors / HHDs in *ri* clinics trained in screening for CMAM
North Hamgyong			M F		M F
Ryanggang			M F		M F
South Hamgyong			M F		M F
Jagang			M F		M F
North Pyongan			M F		M F
South Pyongan			M F		M F
Kangwon			M F		M F
North Hwanghae			M F		M F
South Hwanghae			M F		M F
Nampo City			M F		M F
Pyongyang			M F		M F
Total			M F		M F

* Doctors working in hospital paediatric wards and outpatient clinics providing inpatient / outpatient care for CMAM programme.
** % of *ri* clinics offering screening in counties with a CMAM service available.

Bottleneck analysis – reporting (January – August 2017)

Month	January		February		March		April		May		June		July		August	
Quality / Province	On time	Error Free	On time	Error free	On time	Error free	On time	Error free	On time	Error free	On time	Error free	On time	Error free	On time	Error free
North Hamgyong																
Ryanggang																
South Hamgyong																
Jagang																
North Pyongan																
South Pyongan																
Kangwon																
North Hwanghae																
South Hwanghae																
Nampo City																
Pyongyang																
Total																

Annex 10: Technical Evaluation Team (TET) composition

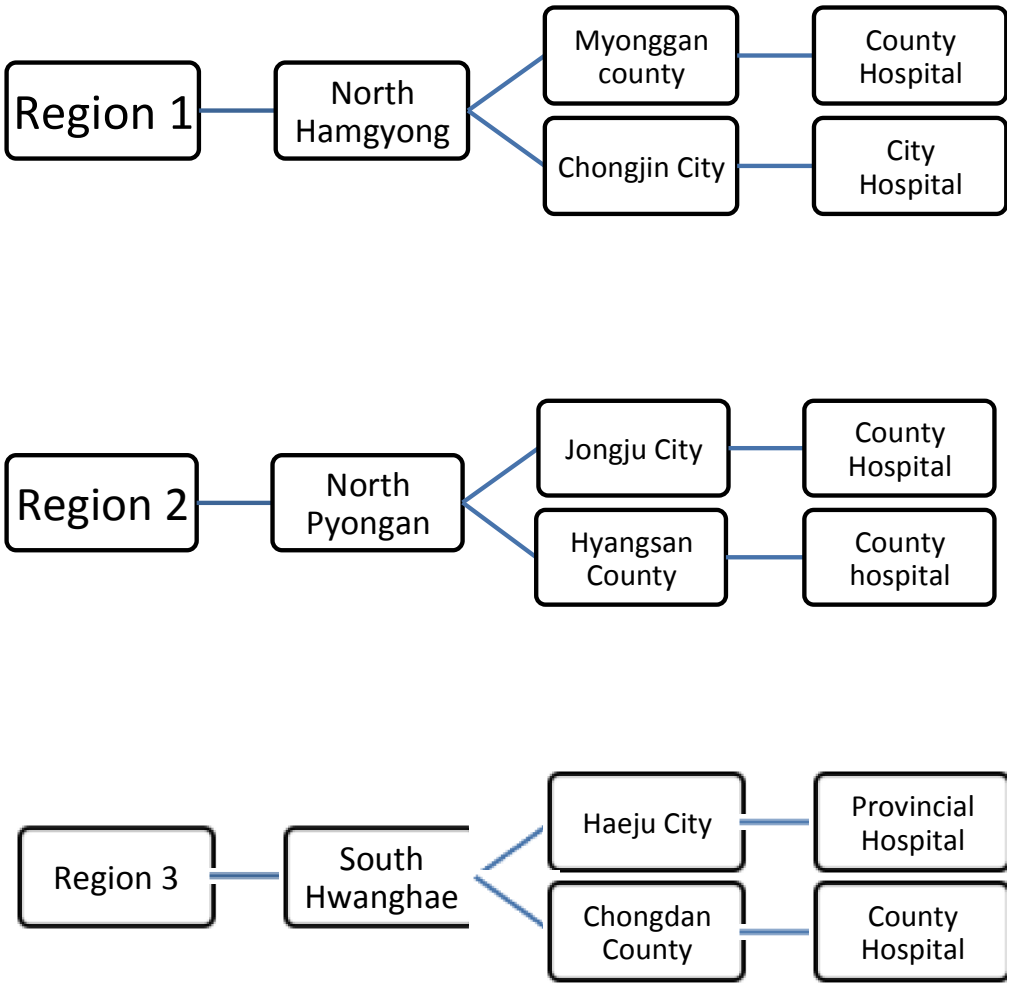
Evaluator: Paul Binns, independent consultant
Paul Binns worked as a critical care specialist nurse for 16 years, primarily in university teaching hospitals in specialties including cardiothoracic surgery, cardiology, major burns and trauma as well as general medical and surgical intensive care units. Paul joined the research team at Valid International in 2004 during the development of Community-based Therapeutic Care and subsequently worked as a consultant in over 20 developing countries in emergency and development contexts, co-authoring the first field manual on Community-based Therapeutic Care in 2006. He has worked as a consultant to United Nations agencies, international and national NGOs in every aspect of CMAM programme design, set-up, training, implementation and evaluation and has conducted evaluations of all components of CMAM programming from inpatient care to community-level coverage evaluations.

As Country Director in Zambia, Paul liaised with Government health and nutrition departments and oversaw technical programming and therapeutic food production. He has worked as an independent consultant since 2011 and worked as a lead consultant or assisted in the development of several CMAM national guidelines in Africa and Central and South-East Asia, and has authored CMAM-related peer reviewed research publications.

TET Member: Hyon Chol Jong ('JJ')
JJ is a member of UNICEF national nutrition staff and is seconded from the Ministry of Foreign Affairs of the Government of DPRK.

TET Member: Dr. Hye Gyong Kim
Dr. Hye Gyong Kim is a member of UNICEF national nutrition staff and is seconded from ICN, DPRK. Dr. Hye Gyong is a Master Trainer for the CMAM programme in DPRK and has provided nutrition training and clinical support to hospitals in several provinces. She has most recently been involved in the development of guidelines for IMNCI.

Annex 11: Technical evaluation sampling framework for health facilities implementing CMAM



Annex 12: List of people met by the technical evaluation team during the CMAM evaluation & Summary of interviews

Jongju City, North Pyongan Province

Kang Myong Il	Director of Jongju City People's Hospital
Ri Song Hwan	Chief of Paediatric Department, Jongju City Hospital
Jo Mi Hyon	Senior Officer in Health Department, Jongju City People's Committee
Hyon Il Chol	Supply Manager in Jongju County Medical Warehouse

Songpyong District, North Hamgyong Province

Ri Hye Yong	Senior Officer, Health Department, N. Hamgyong Province People's Committee
Ham Song Hae	Vice Chair, Songpyong District Committee, N. Hamgyong
Kim Yong Hui	Director of Songpyong District Hospital
Rim Myong Hwa	Chief of Paediatric Department, Songpyong District Hospital
Ri Myong In	Director, Kundong *Ri* Clinic
Kim Jin Ok	Paediatrician HHD, Kundong *Ri* Clinic
Sim Hae Yong	Director, Susong *Dong* Clinic
U Myong Hui	Paediatrician, Susong *Dong* Clinic

Myonggan County, North Hamgyong Province

Ri Hye Yong	Senior Officer in Health Department, N. Hamgyong Province People's Committee
Pae Gyong Su	Chief of Health Department, Myonggan County People's Committee
Kim Jin Chol	Director, Myonggan People's Hospital
Ham Myong Jin	Chief of Paediatric Department, Myonggan County People's Hospital
Kim Kwang Hui	Vice-Chair, Myonggan County People's Committee
Kim Myong Chol	Paediatrician, Yangchon *Ri* Clinic
Sim Chol Jun	Director, Yangchon Clinic
Pak Myong Su	Director, Yongkwang *Ri* Clinic
Kim Sun Hui	Paediatrician, Yongkwang *Ri* Clinic

S. Hwanghae Provincial Paediatric Hospital, South Hwanghae

Kang Chang Son,	Director of External Department, S. Hwanghae Province People's Committee
Jang Kum Son	Director, S. Hwanghae Province People's Hospital
An Chun Sil	Vice-Chair, Chongdan County People's Committee

Chongdan County, South Hwanghae

Jang Kum Son	Director, S. Hwanghae Province People's Hospital
An Chun Sil	Vice-Chair, Chongdan County People's Committee
Ju Hong Royl	Director of Health Department, Chongdan County People's Committee
O Du Sok	Director of Chongdan County People's Hospital
Ri Hak Chol	Chief of Paediatric Department, Chongdan County People's Hospital
Choe Myong Chol	Director of Hungsan *Ri* Clinic
Ri Sun Chol	Director of Tongdae *Ri* Clinic
Choe Jong Chol	Paediatrician, Tongdae *Ri* Clinic

Hyangsan County, North Pyongan

Kim Si Ung	Director of Health Department, Hyangsan County People's Committee
Ji Gyong Do	Vice Director of Hyangsan County People's Hospital
Ri Mun	Director of Haso *Ri* Clinic
Ri Chol Min	Paediatric HHD, Haso *Ri* Clinic

Summary of interviews – officials and hospital staff

Theme	Myonggan	Songpyong	Hyangsan	Jongju	Chongdan	South Hwanghae
General impressions	Thanks to UNICEF for CMAM supplies		Thanks to UNICEF for CMAM support. Good programme with standard fixed criteria. Able to treat more children. Mothers also happy. Number of deaths decreased dramatically since CMAM	Very helpful programme. Increased number of children accessed treatment and prevented SAM.	Thanks to UNICEF for supplies. Great improvement in child health. Doctors and mothers like the CMAM programme.	Thanks to UNICEF for cooperation and treatment supplies. RUTF has saved a lot of children.
CMAM involvement and challenges	Nobody UNICEF-trained. No refresher training. Eight inpatient doctors trained on the job at provincial level. Two work in outpatient. No transport to distant *ris.*	Four doctors trained through telemedicine. Also refresher by telemedicine. Rotation of staff can be problematic. Gaps filled by provincial staff.	UNICEF training in 2015 covered all areas with 1,000 days approach (sensational training!). Need more. Trainings from provincial level 2-3 times per year	Training in CMAM and IYCF for doctors and nurses. Training on community mobilisation (CM) given to People's Committee. Information passed verbally (no handouts). Training through telemedicine system. Also 100/250 doctors trained in IMNCI.	Training by UNICEF. Want more for doctors, HHDs and mothers. Training emphasized 1,000 days approach. Also training given in IMNCI.	Capacity improved dramatically. Telemedicine training by MoPH regularly once a month central level to province, then province to county via face-to-face and telemedicine. Face-to-face training better.
Calendar	Diarrhoea throughout the year, mainly July to September. Acute respiratory infection mostly in winter. Causes are lack of water quality and supply, mothers' lack of knowledge.	Summer – digestive diseases (diarrhoea) Winter – acute respiratory infection and pneumonia. Causes are poor water infrastructure, lack of knowledge of malnutrition.			Worm infections common.	

Theme	Myonggan	Songpyong	Hyangsan	Jongju	Chongdan	South Hwanghae
Referral	Mostly come to clinic by walking. Referred by HHDs. MUAC-only referrals. Always have referral slips. A few wrong referrals of MAM without complications. Always have referral slip back to *ri* clinic.	Come to hospital by walking even if long distance. Heard about programme from HHDs and neighbours. Always referral slips on admission and discharge. HHDs only do referrals by MUAC. About 20% incorrect referrals due to poor MUAC measurement. Health Department of People's Committee organize community mobilization.	High rate of treatment. Not a single child was missed. Even in winter [CMAM] treatment is accessible.		Need training for HHDs, as referral done incorrectly. No proper system for referral.	
Admissions and treatment	Average four SAM, 20 MAM.	Average 2–3 per month, mostly MAM with complications. CMAM has reduced length of treatment for malnutrition.	Length of treatment reduced since CMAM. Micronutrients (sprinkles) supported by UNICEF.	Definition of complications: bronchitis, tonsillitis, high fever, diarrhoea, meningitis, and pneumonia. Ramps are present to allow access for disabled.		Massive decrease in SAM since CMAM started. Duration of treatment reduced.
Default	Two cases only. Both due to distance. HHD takes RUTF to family.	One or two defaulters due to long distance or work. Hospital contacts HHD and s/he will give treatment at home but with poor quality. Barriers to access heavy snow in winter, harvesting in autumn.				

Theme	Myonggan	Songpyong	Hyangsan	Jongju	Chongdan	South Hwanghae
Supervision		Supervision from MoPH once a month. Have closer contact with provincial and county officials. Quarterly meeting with provincial staff. County staff train HHDs.		Supervision from MoPH once a month. Supervision from UNICEF 2–3 times per month, irregularly but at least once a month. MoPH gives feedback on [stock] reports.	Supervision schedule not fixed. MoPH comes twice per quarter. Six visits so far in 2017. Doctors and HHDs at county level do not visit the provincial hospital.	
Issues		High patient numbers sometimes. Too many *ris*. Rare issues with supplies. Use Koryo medicine and nutritious substitutes.	Distance problematic for mothers. Extend programme.	General shortage of antibiotics but mainly in winter.	Water supply is problematic (this is convergent county). No shortage of antibiotics for CMAM but also needed in paediatric ward. Doctors do not manage supplies well. High admissions aged <6m due to early weaning.	There are a lot of Koryo practitioners. IMNCI guidelines need to be contextualized to DPRK. They are cut and paste from Africa. Not necessary to take 2–10 days for stabilization; experience shows only 2–3 days needed on F75.
Suggestions	Also need to treat MAM.	Motorbike to deliver supplies. Pre-position supplies in winter. HHDs then take RUTF to *ri*. Update guidelines for county-level workers with simple materials.	Provide antibiotic syrups for young children. Bicycles for People's Committee to visit children.	Need IEC materials for community mobilisation. More training at *ri* level.	IEC materials for mothers.	Need more details in guidelines, e.g. for children < 2kg.

Summary of interviews at *ri* clinics

County	Myonggan County		Songpyong County	Hyangsan County	Chongdan County		South Hwanghae
Ri	Yangchon ri	Yongkwang ri	Kundong ri	Susong Dong ri	Haso ri	Hungsan ri	Dongdae ri
Distance	< 5 km	> 5 km	7 km	5.5 km	12 km	5 km	24 km
Treatment	Doing CMAM for five years.	Give advice about breastfeeding up to 2 years of age and dietary diversity. Follow up every two weeks and refer if no weight gain. In CMAM, mother goes to hospital once a week	Doing CMAM for four years. If mother refuses then call hospital and doctor will come and treat child with RUTF at *ri* clinic.	Doing CMAM for three years. E.g. Malnourished child goes to hospital and normally comes back after 2–3 weeks.	Started in 2015. SAM and MAM with complications. MAM with no complications given counselling on IYCF and referred if no improvement. WFP programme in some but not this *ri.* Sprinkles given to all children.	Started nearly two years ago for SAM and MAM with complications	Eleven patients. Two inpatient, nine outpatient in CMAM, micronutrients.
Impressions	Screening for MAM / SAM has saved more children.	There is a rapid improvement in SAM / MAM with CMAM treatment.	Thanks for UNICEF support to reduce child mortality and morbidity.	Thanks to UNICEF for supplies for MAM and SAM. All mothers surprised at recovery and are happy.		Big improvement in children.	Thanks to UNICEF. With CMAM can prevent SAM.

Training	UNICEF did training for IMNCI at county level. CMAM training from county hospital five times.	At county hospital monthly training of HHDs together. Training on IYCF, 1,000 days, IMNCI. CMAM training in September 2017 [IYCF training not separate].	No face-to-face training with UNICEF in five years. There is limited and irregular training by telemedicine and sometimes also when a child has been treated.	Official training twice. Once at the county hospital with real practice. Provincial trainer gave training on SAM / MAM and which to refer. [Criteria stated correctly]. Complications: diarrhoea, respiratory tract infections, urinary tract infections, anorexia and infection.	2015 – five trainings: IMNCI, CMAM, 1,000 days, IYCF and others. Central-level Government training given at county level. Supervision visits are given by county hospital 2–3 times a month. Reporting is done routinely by telephone by the head of the *ri* clinic to the county hospital, about 2–3 times per month.	September 2017 training from county hospital by telemedicine on IMNCI, obstetrics and gynaecology. Training materials given [guidelines verified as present]. One visit per week from county hospital paediatric doctor, face-to-face so can exchange views and opinions.	At county hospital. Last month on CMAM / IYCF for HHDs.
Screening and referral	All HHDs have MUAC tapes. Go to community and screen and refer. Also check WFH. Refer with complications. Screen once a month. If living close to clinic then they come to clinic, otherwise we go to their home.	Role is to detect malnourished children. If they cannot treat at *ri* then refer to hospital. [All criteria stated correctly – MUAC priority]. Measure WFH at nursery monthly. MUAC screening at nursery 2–3 times per week. All children go with a referral slip. Winter – acute respiratory infection. Summer – diarrhoea.	Screening done by MUAC twice a week at nurseries, and HHDs can screen at home. Routinely all children screened once a month and if HHD visits. Refer children with MUAC <12.5cm. Not eligible if no complications. HHDs need more MUAC tapes.	Screening at nursery 2–3 times per week or if child comes to clinic or HHD screens at home. If infant <6m, check for oedema or visible wasting. All HHDs have MUAC tapes.	HHDs screen at home and at *ri* clinic for all children with illnesses. [Criteria explained correctly]. Complications include: diarrhoea in summer and acute respiratory infection, urinary tract infections and rickets in winter. All go with referral slip.	HHDs screen with MUAC at nurseries and attend home of absentees. Recited criteria correctly with prompting. Complications include: diarrhoea, pneumonia, and stomatitis.	Only use MUAC. Screening done at clinic. Not all doctors have MUAC tape (6/9). Refer to clinic if child is malnourished. Referral criteria for <6m and >6m recited correctly. June / July – diarrhoea. Winter – bronchitis and pneumonia.

Follow-up			Follow up twice a week when discharged from hospital. Working area 8km wide so transport difficult for HHDs.	After discharge, mother informs HHD and is followed up for 2–3 weeks.			Outpatients followed up every day by HHD.
Strengths and weaknesses	Communities sensitized about CMAM. Difficult for doctors to get around.		There has been a big improvement in knowledge but need more.	Mothers and community know CMAM but call it 'nutritious treatment'.	Timely screening by HHDs visiting *ris* Mothers want to be treated at *ri* level No advocacy material at *ri* level.	No RUTF guidelines at *ri* level. Need more supplies of medicines to *ri* level. Difficulty travelling (some *ris* 8km from clinic) [note: only 5km from hospital]. No breaks in supplies in 2017.	
Barriers	Distances between houses / *ris* – spread out. Long distance to hospital. About 10% refuse to go (e.g. other work to do).	About 1/10 refuse to go to hospital due to urgent business at home but after 2-3 days went to hospital. Some *ris* are distant.	Long distance to hospital.		Distance and mothers' workload, especially in winter.	Despite weather, household visits still conducted in winter.	Distance: four hours to walk to hospital. Mothers dislike going during harvest season.
Suggestions	Have supplies at *ri* clinic. Would prefer Seca scales instead of Salter scales at *ri* clinic.	Have an outpatient therapeutic programme at *ri* level. Doctors can collect RUTF once a month. Provide clean water.	Need WFH measures and RUTF to do CMAM at *ri* clinic. Doctors need MUAC tapes and doctor's bags, and mothers need IEC materials. Need a bike for emergencies.	HHDs need UNICEF doctor's bag – WHO bag has no medicines; UNICEF bag has medicines.		IEC materials for mothers.	Have CMAM in *ri* clinic. Need technical material for HHDs / IEC for mothers.

Summary of beneficiary interviews

Theme	Myonggan	Songpyong	Hyangsan	Jongju	Chongdan	South Hwanghae
Understanding of malnutrition	Children came in with diarrhoea, skin infection, gripe and high fever. Some cases not gaining weight.	Children came in with: diarrhoea, skin infection, gripe, high fever, weight loss, weakness. .	Children came in with: diarrhoea, bronchitis, high fever and malnutrition.	Four carers in room, three interviewed. Admitted for: 1. Diarrhoea, was not playing properly. 2. Weight loss, weakness. 3. Not digesting properly.	Came in with diarrhoea, bronchitis, oedema.	Diarrhoea, bronchitis, malnutrition, child not gaining weight
Knowledge of CMAM	Most (4/5) carers heard about CMAM from HHD. One of the five heard from a relative. HHD spreads messages in the village.	Heard about CMAM from HHD. Not heard about it from anyone else. Heard nutritious jam given to help the child. Heard it improves nutrition status of children.	All heard from HHD.	Went to *ri* clinic, 2/3 said MUAC measured and told child is malnourished. For one, MUAC was okay but admitted for 14 days. None knew of CMAM before admission.	All (3/3) heard from HHD	All (4/4) heard from HHD. *Ri* doctor says the children are weak and wasted.
Treatment	Treated at *ri* clinic for 2-3 days. No other treatment tried.	Have been in hospital 2–3 days. Treated for a few days by HHD. *Ri* doctor said child was wasted. No other treatments tried.	Most (3/4) treated at *ri* clinic for 2–3 days. One of the four came directly to hospital. No other treatments tried.	All (3/3) children receiving RUTF (linked to stock-out of F75/F100).	Treated as advised by HHD for 2–3 days.	For 3–4 days treated as advised by HHD then referred for malnutrition treatment, nutrition treatment for children.
Communication	Heard that nutritious jam (RUTF) is great to help the malnourished child. Do not know of other children but have told others.	I have told others about it. The hospital has good therapies. The hospital has a programme for malnourished children.	Heard that nutritious jam (RUTF) is great to help the malnourished child. Doctor says child is weak and wasted, needs nutrition treatment.	All (3/3) know of other children with same symptoms not in treatment.	*Ri* doctor says the children are weak and wasted, and oedema is very dangerous condition that needs to be treated urgently. Nutritious jam (RUTF) is great help to malnourished child.	Mother had got some information on caring for her child from doctors.

					Mother had got some information on caring for child from doctors.	
Distance and defaulting	• 2/5 from >7km • 1/5 from 5km • 2/5 from near the hospital 'It's a long distance', 'busy with work'. One knows a defaulter due to farming duties.	• 1 carer < 5km • 2 carers >7 km Reported some refuse to go to hospital due to distance, family chores, work, seasonal constraints.	• 1/4 very far > 10km • 2/4 < 5km • 1/4 near hospital Defaulters refused to continue to go to hospital because the mother is occupied with farm and family chores.	• < 30 min walk • < 30 min walk • 2–3 hours by bicycle • 15 km – came because *ri* doctor said there are United Nations medicines for children	• 1 from very far >10km • 1 < 5km • 1 from near the hospital Know of defaulters who refused to continue to go to hospital because the hospital condition is not good, especially in winter (cold, no water, no electricity).	• 1/5 from >15km • 1/5 from <5km • 3/5 from inside town Know of defaulters. They refused to continue to go to hospital because the mother is occupied with farm and family chores.
Issues / suggestions	Room is not warm. Playground needed for kids. IEC materials needed for information.	Room is not warm, environment not desirable. Need IEC materials for when discharged. Playground needed for kids.	Room is not warm. We waste time staying at hospital. We can learn more information on caring for the child after discharge from the hospital on IEC and television. Need playground for the kids, toys.	Need to be warmer in winter [prompted by doctor]. Television to pass time. Lockers. Patient gowns.	Room is not warm. Need IEC materials and television to learn about care of the child after discharge.	Room is very cold. The environment is not really friendly to baby and mother. If possible, while staying at the hospital, I wish I could have some IEC materials to learn or even after my child is discharged. Wish the room was warm in winter. Playground for the kids, toys.

Requests for additional resources

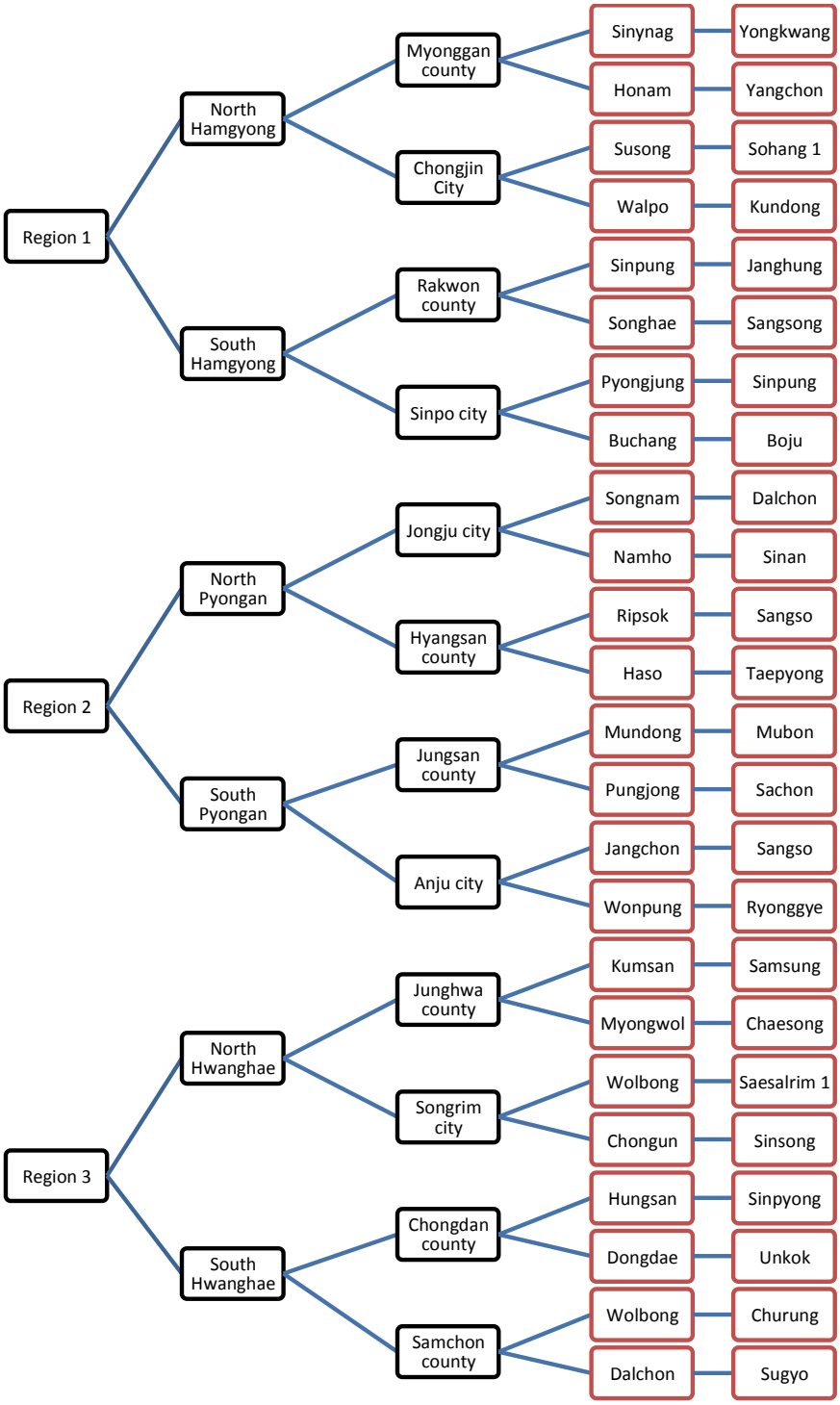
Location	Electricity	Heat	Water	Other equipment	Other facilities
Myonggan County Hospital	Solar panels requested	Limited heating available	No proper water supply	• Children's toys • Weighing scales and height boards for *ri* clinics • Advocacy materials • Water pump • Water filters • Thermos flasks	• Bathroom not functional • Ambulance • Motorcycles / motorized bicycles
Songpyong District Hospital	Solar panels requested	Ward heater available. Central heating or solar panels requested	• Limited hot water • Water filters requested	• Height boards and weighing scales for *ri* clinic • Advocacy materials • Additional blankets	• Children's playroom • Pre-positioning of supplies for winter
Hyangsan County Hospital	Solar panels requested	Ward heater uses coal, not safe	Limited hot water	Advocacy materials	• Motorized bicycle • Milk making room needs refurbishment
Jongju City Hospital	Solar panels requested	--	Limited hot water	--	• Emergency lighting system
Chongdan County Hospital	Solar panels requested	--	Limited hot water	--	• Counselling rooms • Television / video / tapes for counselling • Bathroom not functional • Motorcycles / motorized bicycles
South Hwanghae Provincial Hospital	Electricity limited	--	Limited hot water	• Water filters • Advocacy materials	• Television / videos for counselling • Multimedia projector for training • Toys for children

Annex 13: LQAS team designation, location and distance from hospital

Team no.	Designation	Place			
		Province / county	Date (October)	*Ri*	Distance
Team 1	ICN	Hamgyong N. / Myonggan	17th –18th	Honam *ri*	> 5km
	CBS		19th –20th	Yonggwang *ri*	< 5km
Team2	ICN	Hamgyong N. / Myonggan	17th –18th	Sinyang *ri*	< 5km
	PC		19th –20th	Yangchon *ri*	>5km
Team 3	ICN	Hamgyong N. / Chongjin City, Songpyong District	17th –18th	Wolpo *ri*	>5km
	ICN		19th –20th	Kundong *ri*	>5km
Team 4	CBS	Hamgyong N. / Chongjin City, Songpyong District	17th –18th	Susondong	< 5km
	PC		19th –20th	Sohang 1 *dong*	< 5km
Team 5	ICN	Hamgyong S. / Rakwon	17th –18th	Songhae *ri*	> 5km
	PC		19th –20th	Sansong *ri*	> 5km
Team 6	CBS	Hamgyong S. / Rakwon	17th –18th	Sinpung *ri*	< 5km
	PC		19th –20th	Janghung *ri*	< 5km
Team 7	CBS	Hamgyong S. / Sinpo City	17th –18th	Buchang ri	> 5km
	PC		19th –20th	Sinpung *ri*	< 5km
Team 8	CBS	Hamgyong S. / Sinpo City	17th –18th	Ryongjung *ri*	< 5km
	PC		19th –20th	Boju *ri*	> 5km
Team 9	ICN	Pyongan N. / Jongju City	17th –18th	Namho *ri*	> 5km
	PC		19th –20th	Sinan *ri*	> 5km
Team 10	ICN	Pyongan N. / Jongju City	17th –18th	Songnam *dong*	< 5km
	ICN		19th –20th	Dalchon *dong*	< 5km
Team 11	ICN	Pyongan N. / Hyangsan	17th –18th	Sangso *ri*	< 5km
	PC		19th –20th	Taepyong	> 5km
Team 12	CBS	Pyongan N. / Hyangsan	17th –18th	Ripsok	< 5km
	PC		19th –20th	Haso *ri*	> 5km
Team 13	CBS	Pyongan S. / Jungsan	17th –18th	Sachon *ri*	> 5km
	ICN		19th –20th	Mundong *ri*	< 5km
Team 14	PC	Pyongan S. / Jungsan	17th –18th	Pungjong *ri*	> 5km
	CBS		19th –20th	Mubon *ri*	< 5km
Team 15	ICN	Pyongan S. / Anju	17th –18th	Wonpung *ri*	> 5km
	ICN		19th –20th	Jangchon *ri*	< 5km
Team 16	CBS	Pyongan S. / Anju	17th –18th	Ryonggye *ri*	> 5km
	ICN		19th –20th	Sangso *ri*	< 5km
Team 17	CBS	Hwanghae N. / Junghwa	17th –18th	Myongwol *ri*	> 5km
	ICN		19th –20th	Chaesong *ri*	> 5km
Team 18	CBS	Hwanghae N. / Junghwa	17th –18th	Kumsan *ri*	< 5km
	ICN		19th –20th	Samsung *ri*	< 5km
Team 19	CBS	Hwanghae N. / Songrim city	17th –18th	Chonggun *ri*	> 5km
	ICN		19th –20th	Sinsong *ri*	> 5km

Team 20	CBS	Hwanghae N. / Songrim city	17th –18th	Wolbong *ri*	< 5km
	PC		19th –20th	Saesalrim 1 *dong*	< 5km
Team 21	CBS	Hwanghae S. / Chongdan	17th –18th	Dongdae *ri*	> 5km
	PC		19th –20th	Ungok *ri*	> 5km
Team 22	CBS	Hwanghae S. / Chongdan	17th –18th	Sonpyong *ri*	< 5km
	PC		19th –20th	Hungsan *ri*	< 5km
Team 23	ICN	Hwanghae S. / Samchon	17th –18th	Dalchon *ri*	> 5km
	PC		19th –20th	Wolbong *ri*	< 5km
Team 24	ICN	Hwanghae S. / Samchon	17th –18th	Sugyo *ri*	> 5km
	PC		19th –20th	Churung *ri*	< 5km

Annex 14: LQAS coverage evaluation sampling framework



Annex 15: LQAS procedure

Main activities

- Aim to screen ALL U5 children in the selected *ri.*
- Identify children with acute malnutrition (MUAC less than 12.5cm or with oedema).
- Identify any children with MUAC greater than 12.5cm but registered in CMAM.
- Complete supplementary information form for any children with acute malnutrition or registered in the CMAM programme.
- Complete a 'coverage information' form for relevant cases.

Equipment needed

- Tally sheet / supplementary information form.
- Forms for children 'covered' and 'not covered'.
- MUAC tape / sachet of RUTF.

Case definitions

- **For children aged 6–59 months**
  SAM: MUAC less than 11.5cm OR bilateral pitting oedema.
  MAM: MUAC less than 12.5cm to 11.5cm. Oedema must be absent.

- **For children aged less than 6 months**
  **** Do not use MUAC for children aged less than 6 months ****
  SAM: Oedema
  MAM / SAM*: Carer reports child is too weak to breastfeed properly or is not gaining weight
  * We do not classify SAM / MAM for these criteria. These are referral criteria to send the child to the *ri* clinic for further assessment.
  Illness / disability: Any illness or disability in the previous two weeks as reported by the mother.

At *ri* level

- Obtain list of U5 children in selected *ri.*
- Screen all children present in the nursery using MUAC and checking for oedema.
- Screen all children in other locations (e.g. baby home) if available in selected *ri*.
- Follow up any absent children at home.
- Follow up any children aged less than 6 months at home or other location.

Complete tally sheet for children aged 6–59 months

- Put a tally mark in the relevant box according to where the child was screened and whether the child has MUAC <11.5cm or oedema (SAM) or MUAC <12.5cm (MAM)
- Indicate the total number of children screened (ALL children, not just the SAM and MAM).

Complete supplementary information sheet

- List all children with SAM or MAM.
- List children with MUAC >12.5cm thought to be registered in CMAM.
- In column 1 write the name, and column 2 the MUAC reading and / or oedema (if present).
- Then interview the mother / carer and ask if child is registered in the CMAM programme. Show the RUTF ration to the mother to ensure we are talking of the same programme.
- Indicate how many packets per day of RUTF are prescribed to the child by the doctor.
- Indicate how long the child has been in treatment (as reported by mother).

- Indicate any illnesses in the previous two weeks or disability. Write the number of days of illness (e.g. cough x three days, vomiting x two days etc.).

Complete the coverage questionnaire sheet

- **Questionnaire for covered cases**
  Please use the questionnaire for covered cases if:
  - ✓ MUAC is less than 12.5cm
    OR
  - ✓ Bilateral pitting oedema is present
    AND
  - ✓ Carer confirms that child is registered in the programme

  OR
  - ✓ Child has MUAC 12.5cm or greater
    AND
    Carer confirms that child is registered in the programme.

- **Questionnaire for non-covered cases**
  Please use the questionnaire for cases NOT covered if:
  - ✓ MUAC is less than 12.5cm or bilateral pitting oedema is present
    AND
  - ✓ Carer reports any illness in the previous two weeks
    AND
  - ✓ Carer confirms the child is NOT registered in the CMAM programme

  OR
  - ✓ Infant is aged less than 6 months
    AND
  - ✓ Bilateral pitting oedema is present
    OR
  - ✓ Carer reports one of the following
    - Infant is too weak to breastfeed
    - Infant is not gaining weight properly

    OR
  - ✓ If the enumerator thinks the infant looks sick or very thin.

********IMPORTANT*******
Any child that is identified as a case of MAM with any illness or SAM and is not registered in the programme MUST be referred to the *ri* clinic for further assessment and referral for treatment.

Children who have MAM without any illnesses should NOT be referred to the CMAM programme; however, the carer should be advised that the child would likely benefit from nutrition counselling.

Please tell the carer why we are requesting information. Reassure the carer that any information will be treated confidentially and no identifiable information will be used.

The carer has the right to refuse to participate in the LQAS. Refusal will make no difference to referral or the care that the child receives.

Annex 16: LQAS data collection forms

Province: County:
Ri: Date:

Name of *ri*	**Tally of SAM cases** MUAC < 11.5cm or oedema	**Tally of MAM cases** MUAC 11.5 – 12.4	**Total number children screened**
Nursery			
At home with carer			
Baby home or other location			
Totals			

Enumerator comments:

LQAS supplementary information

Province: County:

Ri: Date:

Name of child	MUAC (cm)	Age in months	Registered in CMAM (Y / N)	Number packets RUTF per day	Distance to hospital (km)	How long in treatment (weeks)	Any current illness / disability reported? Indicate the type of illness and number days of illness in the previous 2weeks

Patient information

Province: County:

Child Name	Inpatient or outpatient	Age (months)	Sex M / F	MUAC or oedema on admission (cm)	WFH on admission	Current MUAC (cm)	Length of stay (weeks)	Distance to *ri* (km)	Enumerator comments

Questionnaire for covered cases

Province: County:
Ri: Name of child: Age (m): M / F
Distance to home / health facility (km): Inpatient / outpatient
Child has physical or developmental disability: Y / N If yes, specify: _____

Q1. Is this the first time your child has been admitted to the programme?

YES ☐ (Go to Q4) NO ☐ DON'T KNOW ☐

Q2. How many times has your child been admitted to the CMAM programme?

1 ☐ 2 ☐ 3 ☐ More than 3 times ☐

Q3. Why has your child returned to the CMAM programme this time?

Was cured and became malnourished again ☐ (Go to Q4)

Stopped treatment and then returned to continue ☐

(If yes, why was treatment stopped? _____)

Q4. How did you first hear about the CMAM programme?

☐ Doctor / HHD
☐ Other health care worker
☐ A friend
☐ Other (please specify: _____)

Q5. Did you try any other treatments before the CMAM programme?

☐ NO

☐ YES (Specify for how long)

☐ Treatment at the clinic_____ weeks
☐ Koryo medicine_____ weeks
☐ Home remedy_____ weeks
☐ Other (specify): _____ weeks

Q6. HOW CAN WE MAKE THE PROGRAMME BETTER?
COMMENTS: *(write on back of page if necessary)*

Questionnaire for non-covered cases

Province: County:
Ri: Name of child: Age (m)
Distance to home / health facility (km): SAM / MAM M / F

Child has physical or developmental disability: Y / N If yes specify: _____

Q1. Does the child have any of the following?

☐ High fever
☐ Fast breathing
☐ Any infection requiring antibiotics

Q2. Do you think your child is malnourished?

YES ☐ NO ☐ DON'T KNOW ☐

Q3. Have you tried any treatment for the child? (Tick all that apply)

☐ Hospital How long _____ weeks
☐ *Ri* Clinic How long _____ weeks
☐ Koryo medicine How long _____ weeks
☐ Other remedy How long _____ weeks

Q4. Do you know of a programme to treat malnutrition?
YES ☐ NO ☐ DON'T KNOW ☐

Q5. Has your child ever attended the programme?

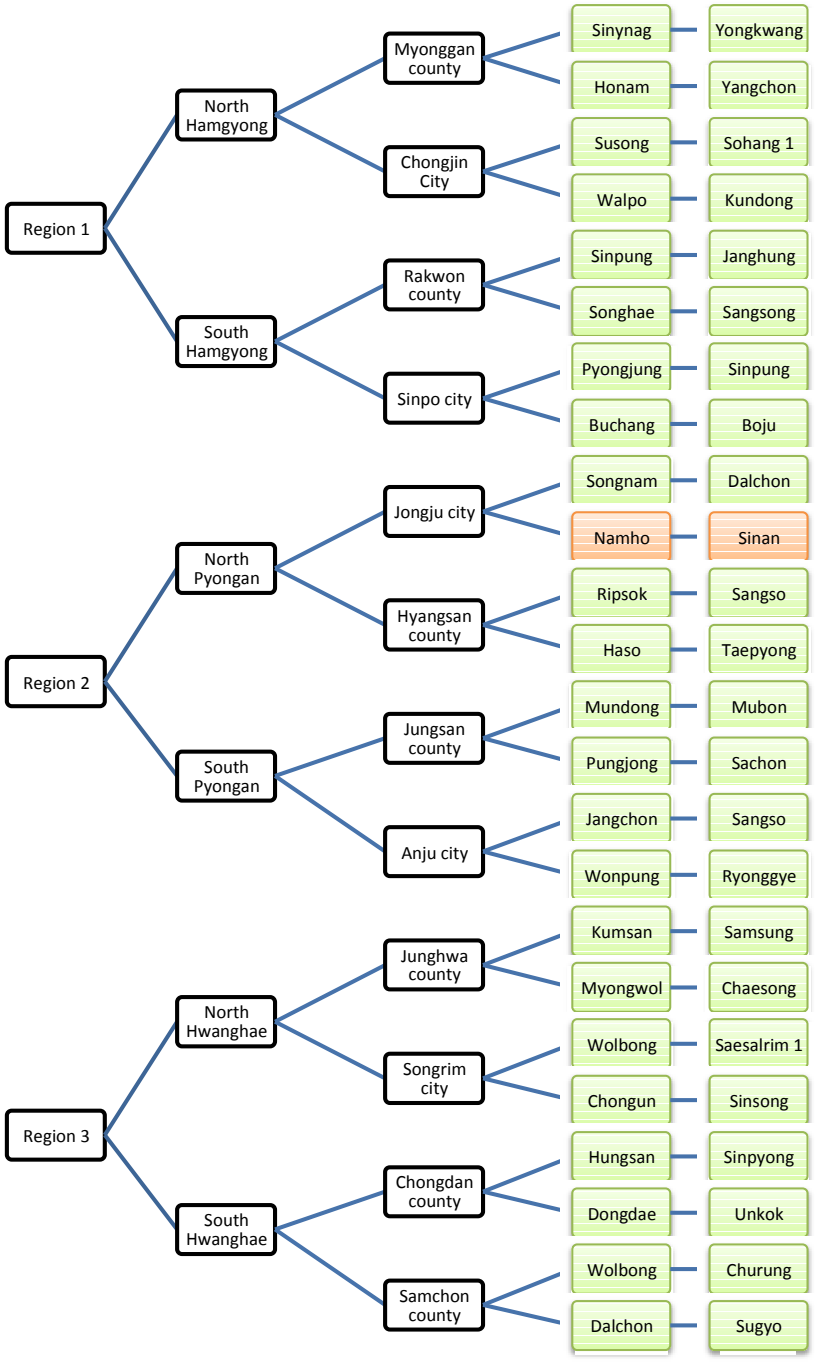
YES ☐ NO ☐ DON'T KNOW ☐

Q6. What has stopped you from taking your child to the programme?

☐ Too far
☐ Too busy
☐ Unable to travel
☐ Carer was sick
☐ Other reason Please describe _____

***** Provide carer with a referral slip and refer for treatment if appropriate *****

Annex 17: LQAS classifications of coverage



P > 0.7 | P = 0.5- 0.7 | P < 0.5

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