



**Cost Effectiveness Analysis of the Community-  
based Management of Acute Malnutrition  
(CMAM) Surge Approach**

**Niger**

**Short Summary**

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**This report was prepared by Jean Christophe Fotso  
and Mark Myatt**



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The effectiveness of the community management of acute malnutrition (CMAM) approach to treating acute malnutrition has been established since 2007 following an endorsement by United Nations agencies which provided a framework for the expansion of the intervention. The cost-effectiveness of the intervention has been proven and documented by a number of studies. Drawing from his experience implementing CMAM in more than 16 countries over the last 15 years, Concern developed the *CMAM Surge* approach which seeks to support health systems to become more resilient by helping them to better manage seasonal ‘surges’ in the demand for treatment of acute malnutrition that occur in many vulnerable contexts. While previous assessments have shed light on its ability to respond to increases in caseload, an equally critical question of whether the model offers the same level of cost-effectiveness as other models for delivering CMAM services remains to be answered. This report presents the results of the cost-effectiveness analysis (CEA) of the CMAM Surge program in Niger.

The study focuses on the 13 outpatient therapeutic program (OTP) sites which began CMAM Surge implementation in 2017, which includes eleven health centers and two health posts. Also included in this study was the stabilization center (SC) facility located within the district’s general hospital (CHR) which services all OTP sites in the district. The study period was defined as January-December 2018. We adopted an approach to costing which encompasses both the intutional and societal costs. Primary data collection with districts, health facilities, community volunteers and caregivers took place between August 2018 and January 2019. Data was collected in two waves covering the periods July-September and October-December. Data extraction (e.g. from OTP/SC registers) was also undertaken during the same period.

The outcomes of interest to the study are number of children cured, number of deaths averted (number of lives saved), and number of disability adjusted life years (DALYs) averted. The principal outcome of interest is the number of DALYs averted. Some costs were in US dollars and others were in the local currency (CFA Francs). Costs in the CFA Francs were converted into US dollars using the mid-year (June 15th, 2018) mid-market exchange rate.

The 'No-frills' approach was used (i.e. age-weighting and discounting were not used) for DALY calculations. In this study, uncertainty was accounted for by the use of fuzzy triangular numbers (informed by literature review and analysis of the collected data) and propagated through calculations using fuzzy (interval) arithmetic. Estimates of results with 95% confidence intervals were made using a geometric method to find the central 95% of the triangular distribution represented by a fuzzy triangular number.

Our measures of cost-effectiveness (CE) are defined as:

$$CE = \frac{cost}{outcomes}$$

They are calculated by dividing the total cost by the number children cured, the number of deaths averted (number of lives saved), and the number of DALYs averted.

The total cost is estimated at \$266,817.70, and the cost per DALY is estimated at \$28. Cost-effectiveness estimates are usually interpreted by comparison with other programs and/or against commonly used standard or threshold values.

It is common to use standard (threshold) values. Two standards are commonly used:

- **A single fixed standard for cost per DALY averted:** Interventions achieving a cost per DALY averted of less than US\$100 at the time of analysis are classified as being very cost-effective. The cost per DALY averted achieved by the current program was US\$28.11. This program would, therefore, be classified as being very cost-effective.
- **Variable standard per DALY averted:** The most commonly-used standard in the public health nutrition field is one proposed by the WHO. This compares the cost per DALY averted by an intervention with the per capita GDP of the country in which the intervention is implemented:
  - Highly cost-effective interventions avert a DALY for less than a country's GDP per capita.
  - Cost-effective interventions avert a DALY for between one and three times a country's GDP per capita.
  - Intervention that are not cost-effective avert a DALY for more than three times a country's GDP per capita.

The proportion of GDP required to avert one DALY by the current program is 0.0741 (i.e. 7.41% of GDP). The current program can, therefore, be considered to be highly cost-effective.

In conclusion, the Niger CMAM Surge program appears to be a very cost-effective strategy.