

New approach to simplifying and optimising acute malnutrition treatment in children aged 6 to 59 months: The OptiMA single-arm proof-of-concept trial in Burkina Faso Research snapshot¹

OptiMA (Optimizing treatment for acute MAlnutrition) is a simplified protocol that aims to treat both moderate and severe acute malnutrition (MAM and SAM), determined through early household detection by the presence of oedema and/or mid-upper arm circumference (MUAC) <125 mm, with progressively reduced doses of a single-product, ready-to-use therapeutic food (RUTF). OptiMA was implemented from January 2017 to March 2018 in a 'real-life' setting by the

personnel of the Ministry of Health of Burkina Faso in all 54 health centres of Yako district, with operational support from a national and international non-governmental consortium and an established UNICEF-supported RUTF supply chain. Almost 5,000 children were included for analysis. Overall recovery rate was 86.3%, exceeding the SPHERE standard for both SAM and MAM programmes. Recovery was lowest among children who were most malnourished at admission, with 70.4% of the children admitted with MUAC<115

mm or oedema recovering. Mortality rate was low (0.4%), while defaults, non-response and transfers represented 4.7%, 3.4% and 0.2%, respectively. Programme outcomes stratified by MUAC and weight-for-height z-score (WHZ) at admission revealed that children with both MUAC<115mm and WHZ<-3 had the lowest recovery (64.3%) and highest non-response (12.5%) and mortality (1.7%) rates. Current SAM programmes typically plan for RUTF consumption of between 120-150 sachets per child treated, while MAM programmes plan for between 60 and 90 sachets of ready-to-use supplementary food (RUSF) per child. Although comparisons of average rations must consider variations in discharge criteria (under OptiMA, discharge was stringent at two consecutive measures of MUAC >125 mm), the overall RUTF consumption of an average of 60.8 sachets per child per course of treatment was highly encouraging. Further study will be needed to determine if increasing RUTF dosage for children admitted with MUAC<115mm will improve recovery and non-response, even if multivariate analysis reveals other factors that appear to influence recovery rate.



A mother and child in a targeted supplementary feeding programme in Damdégou, Burkina Faso

WFP/Rein Skallerud

¹ Dures, M., Phelan, K., Issoufou, M., Kouanda, S., Sawadogo, O., Issaley, K., Cazes C., Séri B., Ouaro B., Akpakpo B., Mendiboure V., Shepherd S., Becquet, R. (n.d.). New approach to simplifying and optimizing acute malnutrition treatment in children aged 6 to 59 months: The OptiMA single-arm proof-of-concept trial in Burkina Faso. *British Journal of Nutrition*, 1-31. doi:10.1017/S0007114519003258

The effect of acute malnutrition on enteric pathogens, moderate-to-severe diarrhoea, and associated mortality Research snapshot¹

Children with acute malnutrition are three times more likely to die from diarrhoea than children with better nutritional status, and over 200,000 diarrhoeal deaths are attributed to acute malnutrition annually. Using data from the Global Enteric Multicenter Study, authors assessed whether acute malnutrition modifies the association: a) between common enteric pathogens and moderate-to-severe diarrhoea, and b) in children with diarrhoea, between enteric pathogens and death. Children older than six months of age with moderate-to-severe diarrhoea and age-matched and community-matched controls were included in this analysis. Acute malnutrition was defined as mid-upper arm circumference (MUAC) below 12.5 cm. Odds ratios were adjusted for age, site and co-infection. Adjusted odds ratio (aOR) for moderate-to-severe diarrhoea associated with typical enteropathogenic *E. coli*

among children aged 6-11 months was 2.08 (95% CI 1.14–3.79) in children with acute malnutrition and 0.97 (0.77–1.23) in children with better nutritional status, compared with healthy controls. Enterotoxigenic *E. coli* among children aged 12-23 months also had a stronger association with moderate-to-severe diarrhoea in children with acute malnutrition (aOR 7.60 [2.63–21.95]) than among similarly aged children with better nutritional status (aOR 2.39 [1.76–3.25]). Results for *Shigella* spp, norovirus and sapovirus suggested they had a stronger association with moderate-to-severe diarrhoea than other pathogens among children with better nutritional status, although *Shigella* spp remained associated with moderate-to-severe diarrhoea in both nutritional groups. Among the 144 children with moderate-to-severe diarrhoea who died, 92 (64%) had acute malnutrition. Pathogen-specific, 60-day fatality rates for all pathogens were higher among children

with acute malnutrition, but no individual pathogen had a significantly larger increase in its relative association with mortality.

The authors conclude that acute malnutrition might strengthen associations between specific pathogens and moderate-to-severe diarrhoea. However, the strong link between acute malnutrition and mortality during moderate-to-severe diarrhoea in children is not limited to specific infections and affects a broad spectrum of enteric pathogens. Interventions addressing acute malnutrition could be an effective way to lower the mortality of both childhood malnutrition and diarrhoea.

¹ Kirkby D Tickell, Rumana Sharmin, Emily L Deichsel, Laura M Lamberti, Judd L Watson, A S G Faruque, Patricia B Pavlinac, Karen L Kotloff, Mohammad J Chisti. (2020) The effect of acute malnutrition on enteric pathogens, moderate-to-severe diarrhoea, and associated mortality in the Global Enteric Multicenter Study cohort: a post-hoc analysis. *Lancet Glob Health* 2020; 8: e215–24.