

Optimising the dosage of ready-to-use therapeutic food in children with severe acute malnutrition and severe underweight: secondary analysis of the OptiMA-DRC trial.



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Introduction

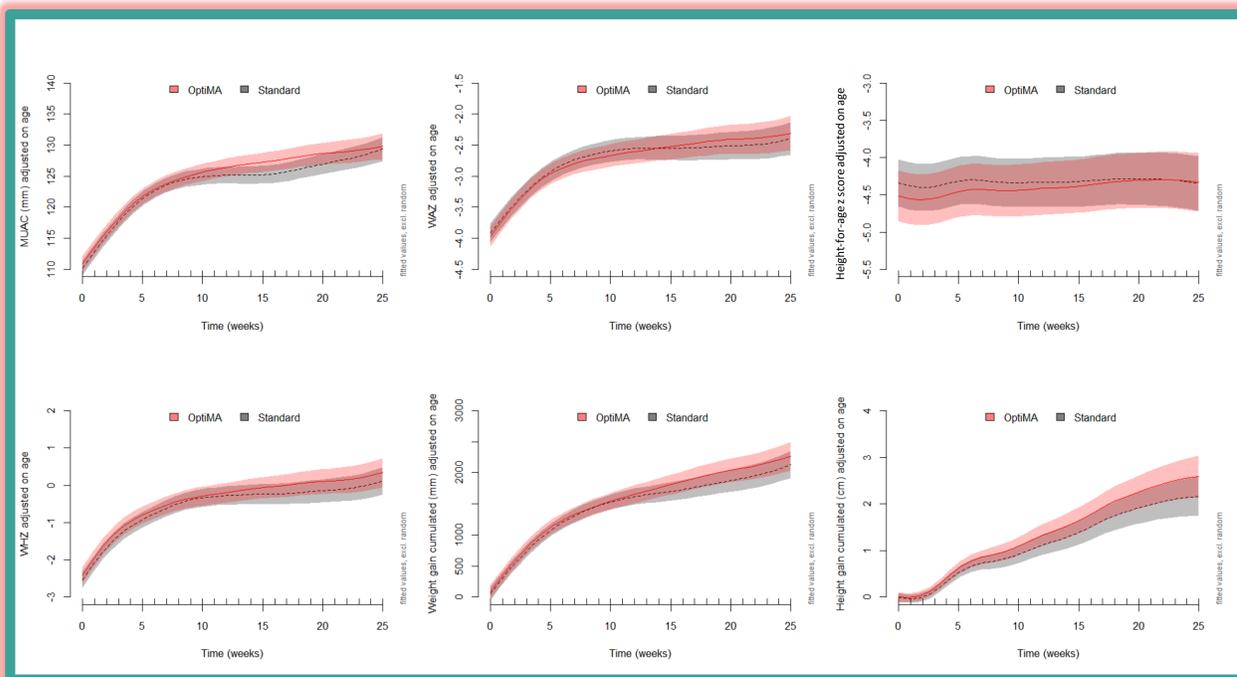
Children under five with multiple severe anthropometric deficits have the highest risk of death (1). Prior studies indicate that children cumulating wasting and stunting are also underweight (2) and that wasted children with severe underweight are an especially vulnerable group (3). We sought to assess whether tapering the dosage of ready-to-use therapeutic food (RUTF) according to the OptiMA strategy would compromise the anthropometric recovery of the most vulnerable children aged 6-59 months compared with standard RUTF dosage. We also identified factors associated with recovery of acute malnutrition within 16 weeks.

Methods

- **Secondary data analysis** of an individually non-inferiority randomised controlled trial in the Democratic Republic of Congo (4).
- **Standard arm:** RUTF standard dosage (175-200 kcal/kg/j)
- **OptiMA arm:** RUTF dosage from 175-200 to 75 kcal/kg/day in average as weight and MUAC increased.
- **Generalised additive mixed-effects models** adjusted for age and using hierarchical random effects on individuals, by study arm to represent the 25-week anthropometric curves of children accumulating a weight-for-age (WAZ) z score <-3 and mid-upper arm circumference (MUAC) <115 mm (n=208).
- **Multivariate logistic regression on recovery** (i.e. MUAC>125mm and WHZ>-2 without oedema for 16 days within 16 weeks), in children with MUAC<115mm at inclusion (n=284).

Results

Figure 1: Panel of modelled adjusted weekly means of MUAC, WHZ, WAZ and MUAC, weight and height cumulated gain through 6-month by randomisation groups (n=208, 3065 follow-up visits)



Growth curves in OptiMA and standard groups similar for all parameters over the 6-month follow-up with a median overall ration of RUTF distributed of 112 sachets and 189 sachets, in the OptiMA and standard arms, respectively (p<0.0001).



Figure 2: Factors associated with nutritional recovery within 16 weeks among in children included in OptiMA-DRC trial with MUAC<115 at baseline (n=284)*



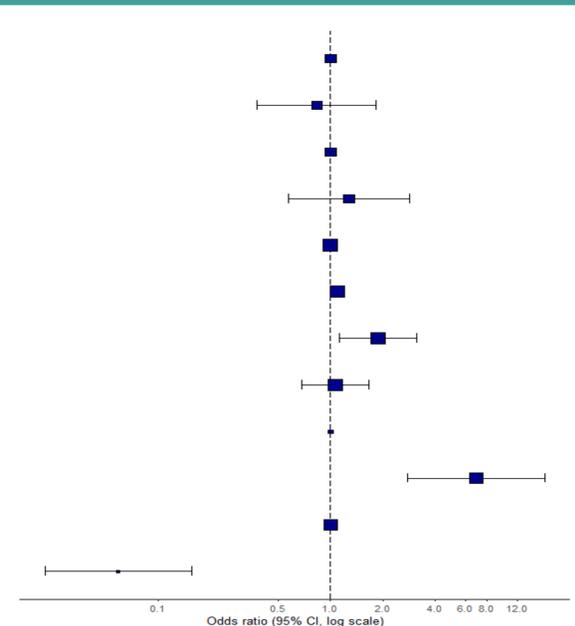
Higher WAZ at inclusion and absence of hospitalisation positively associated while living more than 14km from health centre negatively associated with recovery within 16 weeks, whatever arm, sex, age, MUAC, WHZ at inclusion.



Recovery by 16 weeks: ORa (95% CI, p-value)

Arm	Standard	-
	OptiMA	0.83 (0.38-1.84, p=0.649)
Sex	Male	-
	Female	1.28 (0.57-2.88, p=0.554)
Age at inclusion, months	-	1.00 (0.96-1.03, p=0.911)
MUAC,mm at inclusion	-	1.09 (0.99-1.20, p=0.066)
WAZ score at inclusion	-	1.88 (1.13-3.15, p=0.016)
WHZ at inclusion	-	1.06 (0.68-1.65, p=0.794)
Hospitalisation	At least one	-
	Never hospitalized	6.95 (2.77-17.42, p<0.001)
Distance from home	<15 km	-
	>14 km	0.06 (0.02-0.16, p<0.001)

*Adjusted odd ratios (ORa) and 95% confidence intervals (95% CI) with a random effect on health centres



Conclusion

This secondary analysis of the OptiMA-DRC trial suggests that reducing the dosage of RUTF as weight and MUAC increase is safe for children accumulating severe anthropometric deficits.

Ethics Approved by the National Health Ethics Committee, DRC, and by the Ethics Evaluation Committee of Inserm, the French National Institute for Health and Medical Research (Paris, France).

References

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