

# The effect of dairy protein quality on treatment of moderately malnourished children

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**Project manager:** Mark Manary  
**Institution:** Washington University School of Medicine

## Aim

To test the effectiveness of a protein quality optimized supplementary food compared to a standard food in the treatment of moderate acute malnutrition (MAM).

## Description

**Type of study:** Prospective, randomised, double-blinded, controlled clinical effectiveness trial.

**Problem to be studied:** Recovery from uncomplicated moderate malnutrition in children.

**Methodology:** The setting will be 18 rural sites in southern Malawi. The participants will be 1800 children 6-59 months old with MAM, defined as mid-upper arm circumference (MUAC) of 11.5-12.4 cm and/or weight-for-height Z-score (WHZ) between -2 and -3, without bipedal edema. Children will receive approximately 75 kcal/kg/d (314 kJ/kg/d) of one of two supplementary food products in two-week rations for outpatient therapy of MAM.

**Food products:** Supplements will be a novel, locally produced dairy powder containing ready-to-use supplemental food, or a locally produced peanut/soy supplementary food. The dairy containing supplemental food will be created by first considering a novel protein quality score, a version of the digestible indispensable amino acid score (DIAAS) modified for food aid recipients. Any shelf stable powdered dairy product containing substantial protein will be a candidate ingredient. Linear programming will be used to minimize cost and optimize protein quality. Potential recipes will be tested for acceptability.

**Outcomes:** The primary outcome measures will be recovery from MAM (achieving MUAC  $\geq$  12.5 cm and WHZ  $\geq$  -2 by 12 weeks) or failure (death, development of severe acute malnutrition, transfer to hospital for inpatient care, failure to recover from MAM by 12 weeks, default). Secondary outcome measures include rates of weight, height, and mid-upper-arm circumference gain, time to graduation, and adverse effects from the supplementary foods. Fisher's Exact test and Student's t-test will be used to compare outcomes between different food groups.