OBJECTIVE

To simplify and unify the treatment of severe and moderate acute malnutrition into one protocol in order to improve:

- Coverage
- Cost-effectiveness
- Quality
- Continuity of care

The combined protocol will use mid-upper arm circumference (MUAC) as the sole indicator of energy needs and provide treatment using one product (Ready-to-Use Therapeutic Food (RUTF)) at doses tested to optimize growth and minimize cost at each stage of treatment.

STUDY OVERVIEW

Stage 1
Analyze growth of children recovering from acute malnutrition to 1) determine energy requirements and 2) propose an optimized dose of RUTF correlated with MUAC category.

Stage 2
Test effectiveness of a Combined Protocol in two countries and evaluate cost-effectiveness.

Expected Duration: October 1, 2014 – December 31, 2017

STAGE 1: Methods

Objective
Analyze rate of growth (MUAC and weight gain) and energy requirements of 8,000 acutely malnourished children 6-59 months.

How
Retrospective analysis of patient cards and databases from IRC, ACF & MSF.

Where
Chad, Kenya, Pakistan, South Sudan, Yemen (CKPSY).

FINDINGS

1. Growth trends in MUAC mirror those of proportional weight gain and rates of MUAC and weight gain slow with increasing MUAC.
2. As the rates of MUAC and weight gain slow, proportional energy needs decrease.
3. Total energy needs of 95% of all children with a MUAC <125mm can be met with 1,000 kilocalories a day.

PROPOSED SIMPLIFIED DOSAGE PROTOCOL

Objective
Meet the energy requirements of >95% of recovering children.

- <115mm: 100% of energy needs met
- 115-<125mm: 50% of energy needs met

<table>
<thead>
<tr>
<th>MUAC Category</th>
<th>Dose</th>
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<tr>
<td>&lt;115mm</td>
<td>2 RUTF/day (1000 kcal/day)</td>
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<tr>
<td>115-&lt;125mm</td>
<td>1 RUTF/day (500 kcal/day)</td>
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NEXT STEPS: Stage 2

Research Questions
Primary Outcomes
- Recovery (MUAC ≥125mm and no oedema)

Secondary Outcomes
- Coverage
- Default rate
- Death rate
- Length of Stay
- Average daily weight gain
- Average daily MUAC gain

Study Design
- Cluster randomized controlled non-inferiority trial in two countries
- Cost-effectiveness analysis
- Qualitative study:
  - Intra-household sharing of RUTF
  - Breastfeeding
  - Preferences of caretakers and health care workers

Figure 1. Comparing trends in MUAC and proportional weight change over MUAC at last visit in all patient visits with desired outcome.

Figure 2. Step function of 95th percentile of proportional energy needs (kilocalories per kilogram weight per day) among subsample of visits among children with the desired outcome.

Figure 3. 95th percentile of total energy needs among children in Africa and Asia.