Examining the feasibility of community health worker delivery of severe acute malnutrition treatment using an innovative simplified low-literacy protocol: Results from Nigeria

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Introduction
The problem

• Globally,
  malaria, diarrhoea and pneumonia are the leading causes of death among children under five, with malnutrition being an underlying cause in half of all cases.

• Undernutrition increases the frequency and severity of common infections in children and delays recovery, putting them at greater risk of death.

• The World Health Organization estimates that 30–50% of severe acute malnutrition cases in under-fives are fatal.

• In Nigeria,
  acute malnutrition levels have remained alarmingly high at 5–10% since 2014.
  about 2 million children suffer from severe acute malnutrition.
  the 2018 National Nutrition and Health Survey estimates that 7% and 1.5% of under-fives suffer from global and severe acute malnutrition respectively.
Access to treatment

• Only 20% of Nigeria’s local government areas (LGAs) are covered by the nutrition programme led by the Ministry of Health.
• While these LGAs are concentrated in the north, GAM prevalence is as high as 6.8% in the southwest zone.

(Source: Unicef, 2019)
Review of evidence:
Increasing access through community intervention
Currently...

• Uncomplicated SAM cases are treated at outpatient therapeutic feeding sites (OTPs) that are usually based in hospitals and are only accessible to a subset of the population.

• Although integrated community case management (iCCM) is recognised as a strategy to increase access to life-saving treatment, malnutrition is not properly addressed in iCCM guidelines.

• A community delivery model for SAM treatment beyond OTPs is urgently needed to achieve universal health coverage.

• However, there are concerns about the patients’ safety, extra workload for the community health workers (CHWs) and effects on the quality of care provided.
Evidence on the safe treatment of SAM by CHWs

“With minimal training, CHWs are able to appropriately treat SAM in the community ... without compromising treatment outcomes and can lead to improved access to treatment.”
Evidence on the safe treatment of SAM by CHWs

“The review of the evidence ultimately demonstrates that the successful delivery of SAM treatment via CHWs will require adaptations in nutrition and health policy and practice.”
In this setting, well-trained and supervised CHWs were able to effectively manage cases of SAM. These findings suggest the feasibility of further decentralization of treatment from current delivery models for community-based management of acute malnutrition.
"This was one of the first trials adding the treatment of SAM to a CHW workload and suggests that adding SAM to a well-trained and supervised CHW's workload, including preventive and curative tasks, does not necessarily yield lower quality of care."

Evidence on the safe treatment of SAM by CHWs
Justification and objective

- Although promising community delivery models exist, adapting them for low-literacy settings had not been studied widely.
- Malaria Consortium implemented a pilot study to determine whether CHWs could use simplified tools to treat SAM without medical complications.
Study area and context

- Niger state
- Total population: 5,586,003
- Literacy: 50% of the adult population
- Global acute malnutrition: 6.1%
- Severe acute malnutrition: 0.5%
- Moderate acute malnutrition: 5.6%
Study design and sampling

- Feasibility and acceptability study, with qualitative and quantitative components
- Sample size: 176 eligible children sampled to test non-inferiority against the Sphere humanitarian standard of 75% recovery rate for SAM
- Training: 67 CHWs and 20 community health extension workers (CHEWs) already delivering iCCM were trained to use the simplified protocol and tools for SAM, and provided with job aids for treating co-morbidities.
- Implementation: seven months
- Supervision: CHEWs supervised the CHWs weekly for the first two months, then bi-weekly.
Enrolment into CHWs’ SAM treatment

- Screening for danger signs followed the regular iCCM algorithm and appetite test.
- Admission to CHWs’ nutrition treatment was based on the child’s mid upper arm circumference (MUAC), measured with modified colour coded MUAC strip.
Simplified algorithm and tools for low-literate CHWs
Simplified SAM Treatment Algorithm:

Red on MUAC

or other danger signs

Appetite Test

Pass ➔

Fail ➔

Referral to Health facility

Appetite Test

Pass ➔

Fail ➔

Nutrition Counselling

Normal

Tell the caregiver their child is not malnourished and encourage them to continue feeding their child the same way.
1. Simplified MUAC tape

<table>
<thead>
<tr>
<th>Traditional tape</th>
<th>Revised tape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Categories</td>
<td>Action</td>
</tr>
<tr>
<td>Red: &lt;11.5cm</td>
<td>Treatment at OTP</td>
</tr>
<tr>
<td>Yellow: 11.5 to &lt;12.5cm</td>
<td>Nutrition counselling</td>
</tr>
<tr>
<td>Green: ≥12.5cm</td>
<td>No treatment</td>
</tr>
</tbody>
</table>
2. Dosage scale
3. Dosage calculator
4. Flip chart

5. Patient register
## Follow-up and discharge

### Weeks 3–12: follow-up and discharge criteria

<table>
<thead>
<tr>
<th>MUAC colour</th>
<th>CHW’s action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Refer to health facility</td>
</tr>
<tr>
<td>Two greens in a row</td>
<td>Recovered, DISCHARGE</td>
</tr>
<tr>
<td>Two missed visits in a row</td>
<td>Defaulted, DISCHARGE</td>
</tr>
<tr>
<td>MUAC is below admission MUAC</td>
<td>Deteriorated, refer, DISCHARGE</td>
</tr>
<tr>
<td>If never had two greens in a row in 12th week</td>
<td>Non-response, refer, DISCHARGE</td>
</tr>
<tr>
<td>Otherwise</td>
<td>Continue treatment</td>
</tr>
</tbody>
</table>
Study data collection and analysis

• Patients’ information was collected — including sex, age and MUAC colour at enrollment — and focus group discussions and key informant interviews were held with CHWs and caregivers.

• Treatment outcomes (% recovered, % defaulted, % non-response, % death) and treatment time were calculated. Data were stratified by key characteristics such as the child’s age and severity of malnutrition at enrollment.

• Test for one-sample non-inferiority against 75% Sphere standard, assuming 10% difference was done.
Results
Treatment outcomes by MUAC colour at enrollment

- At enrollment:
  - 303 children seen (data analysis N=288)
  - 20.1% in severe range (deep red)
  - 79.9% in less severe range (pink)

<table>
<thead>
<tr>
<th></th>
<th>Recovered</th>
<th>Non-response</th>
<th>Default</th>
<th>Referred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep red N=58</td>
<td>28 (48.3%)</td>
<td>5 (8.6%)</td>
<td>12 (20.7%)</td>
<td>13 (22.4%)</td>
</tr>
<tr>
<td>Pink N=230</td>
<td>152 (66.1%)</td>
<td>6 (2.6%)</td>
<td>42 (18.3%)</td>
<td>30 (13.0%)</td>
</tr>
</tbody>
</table>

- Median weeks until recovered: 6.5 (range 4–12 weeks)
  - 8 weeks (deep red) and 6 weeks (pink)
## Overall treatment outcomes

<table>
<thead>
<tr>
<th></th>
<th>Without referrals in denominator</th>
<th>With referrals in denominator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recovered</td>
<td>180 (73.4%)</td>
<td>180 (62.5%)</td>
</tr>
<tr>
<td>Non-response</td>
<td>11 (4.5%)</td>
<td>11 (3.8%)</td>
</tr>
<tr>
<td>Default</td>
<td>54 (22.0%)</td>
<td>54 (18.8%)</td>
</tr>
<tr>
<td>Referred</td>
<td></td>
<td>43 (14.8%)</td>
</tr>
</tbody>
</table>

*There was no record of deaths in the study*
Summary of key findings

• The recovery rate was high (73 percent), which is close to the Sphere minimum standard for treatment of SAM (75 percent).

• The non-response rate was 4.5 percent, excluding referred cases.

• The median number of weeks needed for patients to recover was 6.5, which is average for nutrition programmes.

• The default rate was higher than expected. Caregivers deciding not to continue care, seeking care elsewhere or relocating were reported as some of the reasons.

• The programme was well-received by CHWs, who felt motivated by children's recovery and the community recognition they gained for having acquired the skills to treat children with SAM. They also listed free care and shorter distance to reach care as advantages for caregivers.

• Caregivers were positive about the pilot, having seen improvements in their children's health.

• The programme revealed that the prevalence of SAM in Niger state is likely much worse than estimated.
This study was implemented by Malaria Consortium in collaboration with the Federal and Niger State Ministries of Health as part of a multi-country study led by the International Rescue Committee with funding from the Eleanor Crook Foundation.

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Thank you

www.malariaconsortium.org