CMAM integration

Lessons learned from a community-based child survival program in Bangladesh

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Research Officer – Action Against Hunger
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IAEA : International Symposium on Understanding Moderate Malnutrition in Children for Effective Interventions
Bangladesh: background

• Bangladesh has 4th highest number of children with severe acute malnutrition (SAM) in the world

• National nutrition programs focused on:
  – Behavior Change Communication
  – Growth Monitoring and Promotion
  – Undernutrition defined as weight-for-age, no mechanism to identify SAM in community

• As of 2008, SAM treatment at facilities, no national community-based strategy

• Many cases of SAM unidentified, untreated

UNICEF, 2009; NIPORT et al., 2009
Integrated SAM management by CHWs: the “CCM of SAM”

• Save the Children (SC-US) 5-year community-based nutrition program
• Barisal Division
• Community Health Workers (CHWs)
  – Paid staff of SC-US
  – Community case management (CCM) of pneumonia, diarrhea
  – 4th year: SAM added to CHW workload
• CHWs identify and treat SAM in communities in 1 upazila
  – 1-year study by Tufts University, funded by Tufts, GAIN
Case identification & treatment

• 1 upazila: CHWs identify & treat SAM in community
  – Monitor nutrition status: MUAC<110mm, edema (GMP sessions, HH visits)
  – Counseling & sensitization
  – Weekly follow-up at home
  – Provision of RUTF (200 kcal/kg/day)
  – Refer to hospital any cases with complications
  – Discharged cured at 15% weight gain
# General program effectiveness

<table>
<thead>
<tr>
<th>Outcome</th>
<th>CCM of SAM (n=724)</th>
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</thead>
<tbody>
<tr>
<td>Recovery</td>
<td>91.9%</td>
</tr>
<tr>
<td>Mortality</td>
<td>0.1%</td>
</tr>
<tr>
<td>Coverage</td>
<td>89.0%</td>
</tr>
<tr>
<td>Weight gain (avg)</td>
<td>6.7 g/kg/day</td>
</tr>
<tr>
<td>Length of stay (avg)</td>
<td>37.4 days</td>
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From Sadler et al., 2011
Quality of care results

• **Quality** of SAM case management:
  - 55 CHWs assessed (direct observation)
  - 89% of CHWs achieved >90% error-free case management (supervisory checklist)

• **Workload:**
  - SAM treatment ↑ workload 3 hr/wk
  - No ↓ performance on routine preventive tasks (2\textsuperscript{nd} QoC assessment)

• **Community satisfaction** → participation
  - CHWs were familiar, trusted sources of info, treatment
  - Proximity enabled early presentation
  - Regular follow-up, sensitization → program awareness, access, compliance

Puett et al. 2012, 2013a
CHW motivation

“We feel good. There was no such treatment earlier...No doctor can do so much good within a week.” --CHW

“I am very happy to have this program. We can treat the SAM children. Before this we had no idea. We used to go to the health assistant but he also had no proper idea. We all thought it was a strange disease. No knowledge. No prevention. No treatment. Now we prevent SAM and now we treat SAM.” --CHW

“Sometimes she came two times per day to our houses to help us. Our children are well now.” --Caretaker
CMAM cost-effectiveness comparison

<table>
<thead>
<tr>
<th></th>
<th>Bangladesh</th>
<th>Ethiopia</th>
<th>Malawi</th>
<th>Zambia</th>
</tr>
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<tbody>
<tr>
<td>Per recovery</td>
<td>$180</td>
<td>$145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per child treated</td>
<td>$165</td>
<td>$135</td>
<td>$169</td>
<td>$203</td>
</tr>
<tr>
<td>Per DALY</td>
<td>$26</td>
<td></td>
<td>$42</td>
<td>$53</td>
</tr>
</tbody>
</table>

- C-E comparable with other child survival interventions (DALYs)
- Low cost burden to households

Puett et al., 2013b; Tekeste et al., 2012; Wilford et al., 2011; Bachman 2009
Enabling factors

- End of 5-year program, good relationship established: CHW & community
- CHWs knew their communities, were aware of new arrivals
- Active case-finding (monthly)
- Good CHW support and supervision
- RUTF supply chain managed by SC, no stock-outs
- Doorstep service delivery, limited mobility for women
Future directions

- CHWs can provide high quality, cost-effective care for cases of SAM
- Potential for adding SAM treatment to the iCCM package, with malaria, pneumonia and diarrhea
  - Treatment of multiple illnesses reduces severity of SAM
- Promote community management of SAM by CHWs
  - As WHO has done for (e.g.) pneumonia
- Need to assess global generalizability of results
  - Women’s education
  - Population density
  - Comorbidities (malaria)
- Integration into MoH system
  - Implications for coverage, participation, quality
MAM ideas, projections

• Early treatment (MAM) by CHWs would prevent many cases of SAM
  – Treatment intensity would be low
  – Episode length would be short
• Slow start on admitting MAM cases
  – Avoid large numbers at start-up delaying treatment of SAM cases
• Adequate CHW support essential (training, supervision)
• Small scale field trial needed to test this approach
THANK YOU!
References

Appendices
Classification of SAM

Age ≥ 6 months
MUAC < 110mm and/or bilateral edema

SAM with NO complications

- Good Appetite
- AND
- Clinically well.
  If infection is present it is mild. For example:
  - Pneumonia that is not classified as severe
  - Diarrhea with no dehydration

Outpatient Care by the CHW

SAM WITH complications

- Poor Appetite
- AND/OR
- Clinically unwell.
  For example:
  - Any of the IMCI general danger signs or
  - Severe pneumonia or
  - Diarrhea with dehydration

Inpatient Care at the UHC followed by Outpatient Care

Sadler et al., 2011
Monthly admissions

Figure 3: Admissions for the period June 2009–February 2010

No. SAM Admissions

Months since June 2009

Analysis by Mark Myatt, from Sadler et al., 2011
Distribution of MUAC at admission

Figure 4: Distribution of MUAC at admission for the period June 2009–June 2010 (n = 718)

Note: The program used the “numbers in boxes” style of MUAC strap with a two mm graticule. With this design of strap a measured value of (e.g.) 108 mm corresponds to a MUAC between about 108 and 110 mm.

Analysis by Mark Myatt, from Sadler et al., 2011
Quality of care assessment tools

- **Direct observation with supervisory checklists:**
  - CMAM quality of care checklist, based on a treatment algorithm, to assess quality of SAM case management at household visit
  - Routine household visit checklist, based on normative literature, to assess quality of routine preventive care at household visit (compared 2 groups of CHWs, w/ & w/o SAM responsibilities)

- **Case scenarios:** for pneumonia, diarrhea, severe disease, to assess CHW knowledge and competency in CCM of other illnesses

- **CHW survey:** background, demographics, time allocation, CCM case scenarios

- **Focus group discussions:**
  - Caretakers: perceptions of CHW quality of care
  - CHWs: work-related challenges
CMAM in Bangladesh

• Policy-makers in Bangladesh wanted to assess:
  o effectiveness of CMAM in BD
  o how to integrate into current health services

• Co-Investigator team involved in study design, oversight, support:
  o Institute of Public Health Nutrition in Bangladesh; the Research and Planning Unit of the Directorate General Health Services; the Regional Medical College (Barisal) and the District Health Authority.
Identifying children with SAM

261 CHWs: monitor nutrition status (using MUAC & edema) during routine activities:
• GMP: 0-24 months
• Household visits: 0-36 months

Identification of SAM:
• MUAC <110mm and/or
• Nutritional edema

WHO et al., 2007
Treating children with SAM

SAM with complications:
- Inpatient treatment 2-5 days
- Gradual introduction of RUTF and discharge to CHW for treatment

SAM without complications managed by CHW:
- RUTF to take home
- Counseling & follow-up
- Discharged: MUAC >110, gained ≥ 15% weight and no edema for 2 weeks
## CHW support: supervision & workload

<table>
<thead>
<tr>
<th>Program characteristic</th>
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<tbody>
<tr>
<td># of CHWs per supervisor</td>
<td>25-40</td>
</tr>
<tr>
<td>Monthly supervision visits</td>
<td>1-2</td>
</tr>
<tr>
<td>Frequency of refresher trainings</td>
<td>1/month</td>
</tr>
<tr>
<td>% of monthly refresher training dealing with management of SAM</td>
<td>25% (2-4 hours)</td>
</tr>
<tr>
<td># of households per CHW</td>
<td>150-225</td>
</tr>
<tr>
<td>Average household &amp; population size per CHW area</td>
<td>175 HH, 875 pop’n</td>
</tr>
<tr>
<td>Average monthly SAM caseload</td>
<td>1-2</td>
</tr>
<tr>
<td># of SAM cases per CHW over one-year project</td>
<td>1-4</td>
</tr>
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From Puett et al., 2013a
CHW support: training

• Initial 3-day training session covering:
  – Causes and consequences of SAM
  – Focus on practical application: SAM identification
    • Standardized measurement of MUAC
    • Checking for nutritional edema
  – Classification of SAM (with/without complications)
  – Use of nutritional and medical protocols for SAM treatment
    • RUTF weekly ration size calculated using weight chart
    • Administration of folic acid, cotrimoxazole, etc. according to National Guidelines
• Special focus on supervision in first few weeks of implementation
• Monthly refresher trainings
  – Discuss any problems or questions
  – Submit monthly reports
  – Submission of all monitoring forms for children exiting program during the last month
  – Receive a new stock of RUTF and medicines
# Bangladesh: effectiveness

<table>
<thead>
<tr>
<th>Outcome</th>
<th>CCM of SAM N=724 (n)</th>
<th>Sphere Standards*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recovered</td>
<td>91.9% (665)</td>
<td>75%</td>
</tr>
<tr>
<td>Defaulted</td>
<td>7.5% (54)</td>
<td>15%</td>
</tr>
<tr>
<td>Non-responder</td>
<td>0.6% (4)</td>
<td>--</td>
</tr>
<tr>
<td>Died</td>
<td>0.1% (1)</td>
<td>10%</td>
</tr>
<tr>
<td>Weight gain (g/kg/day)</td>
<td>6.7</td>
<td>8</td>
</tr>
<tr>
<td>Coverage</td>
<td>89%</td>
<td>&gt;50%†</td>
</tr>
</tbody>
</table>

*Sphere international standards for therapeutic feeding programs
† For rural areas

Sadler et al., 2011
Management of SAM

• 55 CHWs assessed
• 89% of CHWs achieved >90% error-free case management
• Community satisfaction with services
  – CHWs were a familiar, trusted source of information and treatment
• CHWs reinforced program
  – awareness
  – access
  – compliance

Puett et al., 2013a
### Comparative analysis: time allocation

<table>
<thead>
<tr>
<th>Activity</th>
<th>CCM n=141</th>
<th>CCM SAM+ n=197</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total hours for HH visits last week</td>
<td>9.7 (3.2)</td>
<td>12.8 (5.0)***</td>
</tr>
<tr>
<td>Total hours worked as CHW last week</td>
<td>13.3 (4.6)</td>
<td>16.7 (6.9)***</td>
</tr>
<tr>
<td>Hours in SAM follow-up visits last week</td>
<td>--</td>
<td>2.4 (2.3) (n=58)</td>
</tr>
</tbody>
</table>

- Increased workload by 3 hours/week
- Time spent in household visits for children with SAM

*** $p < .001$; for significance of difference between CHW groups

Puett et al., 2012