Comparison of MUAC and percent weight gain as discharge criterion in a large TFP program in Burkina Faso - 2007-2011

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Background
- Community-based management of acute malnutrition (CMAM) is recommended as the standard of treatment for severe acute malnutrition (SAM) since 2007.
- Simple diagnostic tools for SAM are needed for recruitment within the community, particularly where human resources are difficult to supervise.
- Compared to WHZ, Mid Upper Arm Circumference (MUAC) is:
  - simple, rapid, less prone to errors,
  - facilitates coverage of therapeutic feeding programs (TFP).
- Identifies younger children at higher risk of mortality.
- MUAC can be used:
  - in community-based nutritional programs
  - in emergencies, when close supervision is often not possible.
- The World Health Organization (WHO) endorsed MUAC as an independent admission criterion to TFP for children 6-59 months old with acute malnutrition since 2008.
- As of 2009, WHO recommends 15% weight gain to define nutritional recovery and discharge from program due to lack of evidence.

Methods
- Routinely collected data of children admitted in a TFP in Burkina Faso between Sept 2007 – Dec 2011 were analysed
- Period A (September 2007 – March 2009)
  - defined recovery at discharge by 15% weight gain, based on admission weight, and absence of any pathology.
  - Period B (April 2009 – December 2011)
  - recovery at discharge was achieved at MUAC ≥ 124 mm, with a 4 week minimum stay and absence of any pathology.
- Total period (September 2007 – December 2011) children were classified as:
  - defaulters if they missed weekly appointments for 3 consecutive weeks in ambulatory therapeutic center (A-TFC) or were absent 3 consecutive days in intensive therapeutic center (I-TFC).
  - non-responders if they failed to achieve discharge criteria after 6 weeks in A-TFC.

Objectives
- To compare program outcomes and nutritional recovery as assessed by both discharge criteria, 15% weight gain and MUAC ≥ 124 mm
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Results
- During the total period, 50,841 children were admitted in the TFP: children during period A: 26,049 children during period B
- Median age was 13 months [IQR: 10-20] and sex ratio M:F was 0.9 at admission.

Program outcomes and treatment response
- 90.4% of all admissions recovered: 22,094 (89.1%) during period A and 23,865 (91.6%) during period B (Table 2).
- Average length of stay [ALS] in the program for children recovered during period A was 53.9 days compared to 37.0 days for those recovered over period B.
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- During the total period, 50,841 children were admitted in the TFP:
  - 24,792 during period A
  - 26,049 children during period B

Conclusions
- The MSF TFP in Burkina Faso is an innovative community-based nutritional program using MUAC as admission and discharge criterion since April 2009.
- 15% weight gain as a discharge criterion led to the paradox of more malnourished children receiving shorter treatment and being discharged while still fulfilling admission criteria.
- The change in discharge criterion resulted in redirection of resources to the most malnourished while improving overall program coherency and efficiency.
- MUAC >124 mm as TFP discharge criteria is superior to 15% weight gain when admission is based on MUAC. Percent weight gain as a discharge criterion should be abandoned.

Table 2: Outcomes of children admitted to TFP, MSF program Titao-Yako, Sept 2007 – Dec 2011

<table>
<thead>
<tr>
<th>Period</th>
<th>MUAC Categories at Admission</th>
<th>Cut-off</th>
<th>Death</th>
<th>Non-responders</th>
<th>Defaulter</th>
<th>Referred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period A</td>
<td>ornado</td>
<td>&lt;100 mm</td>
<td>514 (2.1)</td>
<td>348 (1.5)</td>
<td>116 (0.5)</td>
<td>187 (0.7)</td>
</tr>
<tr>
<td>Period B</td>
<td>&lt;110 mm</td>
<td>100-110 mm</td>
<td>899 (3.8)</td>
<td>515 (2.2)</td>
<td>128 (0.5)</td>
<td>236 (0.9)</td>
</tr>
<tr>
<td>Total period</td>
<td>110-114 mm</td>
<td>110-114 mm</td>
<td>1168 (5.7)</td>
<td>539 (2.3)</td>
<td>95 (0.4)</td>
<td>328 (1.4)</td>
</tr>
</tbody>
</table>

Anthropometry status of upon discharge by MUAC categories at admission
- During period A, mean MUAC and WHZ at discharge were respectively < 120 mm and < -2 z scores among recovered children whose MUAC upon admission was < 100 mm.
- During period B, MUAC and WHZ at discharge were respectively < 125 mm and < -2 z scores whatever MUAC categories at admission (Figure 2-3).