Malnutrition

Anaemia

Generic Guidelines • Treatment
Severe Anaemia • Moderate Anaemia

Malnutrition

Nutritional Status • Severe Malnutrition
Very Low Weight • Weight For Age as Indicator
Other Indicators

Nutritional Counselling

Using WFA • IMCI Guidelines

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For curative purposes • Supplementation
Anaemia

Generic guidelines

• Severe anaemia: classified using severe palmar pallor

• Anaemia: classified using some palmar pallor
  – OK to be less specific because over-treatment usually not harmful
  – OK to have lower sensitivity
    • nutrition counseling to improve iron intake
    • malarial anaemia will recover even if no iron, although slower
    • using conjunctival pallor to classify anaemia can obscure conjunctival hyperemia and can result in crying child
Treatment

- **Severe anaemia requiring referral and transfusion**
  - Severe pallor
  - Cardio pulmonary decompensation

- **Anaemia requiring iron treatment**
  - Some pallor

- **Anaemia requiring other treatments**
  - Mebendazole if hookworm is a problem
  - Antimalarial and iron supplementation if malaria is a problem (caution: iron supplementation containing folate will counteract the effect of pyrimethamine)
Severe Anaemia

Clinical Signs for Identification

- Studies in Gambia, Bangladesh, Kenya, Uganda concluded:
  - Sensitivity of severe palmar pallor similar to or better than conjunctival pallor
  - Specificity about the same for both
  - Using both signs decreased sensitivity
  - Allowing either sign decreased specificity and increased overreferral
  - Addition of any other IMCI referral classification detects most children with severe anaemia who need referral
Moderate Anaemia

Clinical Signs for Identification

- Kenya study: nailbed and tongue pallor are less sensitive for the detection of severe to moderate anaemia.
- Uganda, Bangladesh studies: sensitivities and specificities equivalent for conjunctival and palmar pallor.
- Using “some palmar pallor” is a reasonable sign:
  - Simple
  - Less traumatic to the child
  - Less person-to-person transmissions of eye pathogens
**Malnutrition**

**Nutritional Status**

- All children should be assessed for nutritional status
- Very low weight requiring home management or nutritional counseling
- Severe malnutrition needing referral
  - Marasmus or kwashiorkor indicated by severe visible wasting
  - Oedematous malnutrition indicated by oedema of both feet
Malnutrition

Severe Malnutrition

Kenya Study

- Weight for height (WFH) best indicator of mortality
  - Children with very low WFH were 3.9 times as likely to die
- Visible wasting and oedema showed four-fold and three-fold increase of death
- Visible severe wasting and oedema chosen as clinical signs
  - Length boards are generally not available in most developing countries
  - Weight-for-height charts are not used correctly or commonly
  - Weight-for-age scores not useful and excluded from
Very Low Weight

- IMCI guidelines: feeding assessment and nutrition counselling as preventive measures for all children less than 2 years
  - Low weight for age in these children often indicates current undernutrition
  - Case management can reverse stunting

- Children older than 2 years, low WFA generally reflects stunting due to past undernutrition
  - Feeding assessment and nutrition counselling only if very low WFA
  - Stunting is not reversible

- Weight for age chosen as a screening indicator for malnutrition
Weight for Age as Indicator

- Weight for height assessments most accurate but not routinely performed
- Weight for age Z-score can be viewed as a proxy estimate for weight for height
- Kenya study demonstrated the performance of weight for age Z-score in detecting children with a weight for height < -2
  - < -3 Z-score of WFA was chosen because the prevalence of children meeting this criteria is between 8-9% of the population
  - While a <-2 Z-score of WFA would function better as a cutoff and have a higher sensitivity, 24-27% of children seen in clinic would be called back for one-month follow-up
Nutritional Counselling
Using Very Low WFA (< 3 Z score)

1,785 Children in Siaya, Kenya Study

< 24 Months
1,274 (71%)
- WFA > - 3z
  116 (9%)
- WFA < - 3z
  108 (9%)

24-59 Months
511 (29%)
- WFA < - 3z
  43 (8%)
- WFA > - 3z
  468 (92%)

Nutritional Counseling: 1,317 (74%)
Follow Up: 151 (9%)
No Counseling: 468 (26%)
Nutritional Counselling Using Very Low WFA (< 2 Z score)

1,785 Children in Siaya, Kenya Study

- < 24 Months
  - WFA > -2z: 945 (74%)
  - WFA < -2z: 302 (24%)

- 24-59 Months
  - WFA > -2z: 374 (73%)
  - WFA < -2z: 137 (27%)

Nutritional Counseling: 1,384 (78%)

Follow Up: 439 (25%)

No Counseling: 374 (21%)
Other Indicators

- **Low WFA (<-2 Z-score)**
  - Population-based nutritional surveys only
  - For comparison of different areas and time
  - Not for patient-based decisions

- **Mid upper arm circumference (MUAC)**
  - Not as effective as WFH gold standard
  - Prone to errors: even half a centimeter could result in wrong classification
  - Useful for screening an emergency situation
Growth Monitoring

Limitations

- Could provide valuable information about a child’s current growth -- potential powerful tool
- No consensus on quantitative definition of growth faltering
  - Weight loss between 2 monthly measurements
  - Weight gain over 3 monthly measurements
  - Falling off the curve
- Efficacy difficult to demonstrate
  - No effect on nutritional status
  - Health workers have difficulty recognizing “faltering”
Nutritional Counselling

- 0 point represents the initial weight-for-age value, 8 days after the consultation
- Children not receiving nutritional counselling did not gain weight adequately
- Children counselled by IMCI-trained health workers gained weight significantly
Current anthropometric data to assess country’s nutritional status

- Malnutrition was described based on the quartile distribution observed in 79 countries surveyed (WHO study)
- Prevalences for weight for age (WFA) or height for age (HFA) or weight for height (WFH) were calculated

Prevalence of underweight children

- Latin America - low or moderate
- Asia - high or very high
- Africa - both moderate and high

Stunting and wasting

- Latin America - low
- Asia - high
- Africa - combination of both
Setting WFA Z-score

- High wasting, low stunting indicates acute malnutrition
- High stunting, low wasting indicates chronic undernutrition
- High stunting means:
  - high “false positive” rates especially for children > 2 years
  - large number of children to treat (depending on threshold)
- Must understand classification of nutritional status before setting Z-score

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>low stunting/low wasting</td>
<td>Brazil</td>
</tr>
<tr>
<td>moderate stunting/low wasting</td>
<td>Peru, Bolivia</td>
</tr>
<tr>
<td>high stunting/low wasting</td>
<td>Guatemala, Uganda</td>
</tr>
<tr>
<td>moderate stunting/Togo, moderate wasting</td>
<td>Kenya, Philippines</td>
</tr>
<tr>
<td>high stunting/high wasting</td>
<td>Ethiopia, Bangladesh</td>
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</tbody>
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Vitamin A

For Curative Purposes

• Vitamin A for curative as well as preventive purposes

• Absolute indications:
  – Current xerophthalmia
  – Current measles
  – Severe malnutrition

• Optimal dosages:
  – 0-5 Months  50,000 IU
  – 6-12 Months  100,000 IU
  – >12 Months   200,000 IU
Supplementation

• Universal distribution
  – Infants > 6 months or children weighing < 8 kg: 100,000 IU at contact if none was received in the previous month
  – Children over 12 months: 200,000 IU every 4-6 months
  – Lactating mothers: 200,000 IU once within the first 2 months after delivery

• Disease targeted distribution (if not received in preceding months)
  – Non breastfed infants < 6 months: 50,000 IU
  – Infants > 6 months or children weighing < 8 kg: 100,000 IU at contact if none was received in the previous month
  – Children over 12 months: 200,000 IU at contact

• Immunization-linked supplementation
  – Currently being studied