SEVERE MALNUTRITION WITH HIV/AIDS THERAPY IN CHILDREN

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INTRODUCTION (1):

Good nutrition is the foundation upon which children are able to learn and develop into healthy and reproductive adults.

A sound nutritional status helps to reduce morbidity and mortality rate, and is important for poverty alleviation and economic development.
Cambodia has a high prevalence of malnutrition and micronutrient deficiencies among women and preschool aged children.

Malnutrition increases the likelihood of mortality from a number of diseases and can lead to high rates of childhood mortality.

In addition, malnutrition is inextricably linked with HIV/AIDS, malaria, diarrhea, acute respiratory infection, and TB, which are serious public health problems in Cambodia.
INTRODUCTION (3)

In NPH, the program to care malnourish children ± HIV/AIDS was started on November 2003 by international training course, conducted by WHO.

This program has been continuing supported by UNICEF and located in Unit C (Severe Malnutrition Unit) of NPH, Phnom Penh.

Before 2007

This unit divides in two rooms, one for hospitalized (20 beds) and another for food prepared and for mother education.

There is one team:

4 nurses, 2 doctors

Now:

This unit become to Department D+H responsible for SPEM, SPEM+ HIV/AIDS, and Diarrhee
OBJECTIF:

- To understanding the evidence linking Malnutrition and HIV disease severity children,
- To discuss how to treat better malnutrition in HIV infected children.
Possible relationship between malabsorption, malnutrition, immune deficiency, and enteric infections.
RESULTS (1): HIV Prevalence

HIV/AIDS POSITIVE CHILDREN

- 2004: 157 (215P=27%)
- 2005: 224 (384P=41.6%)
- 2006: 160 (209P=58.4%)

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- SPEM
- SPEM+HIV

HIV/AIDS POSITIVE CHILDREN
## RESULTS (2): Length of hospital stay:

<table>
<thead>
<tr>
<th>Year</th>
<th>Minima</th>
<th>Medium</th>
<th>Maxima</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>9 days</td>
<td>22 days</td>
<td>73 days</td>
</tr>
<tr>
<td>2005</td>
<td>2 days</td>
<td>20 days</td>
<td>120 days</td>
</tr>
<tr>
<td>2006</td>
<td>2 days</td>
<td>18 days</td>
<td>135 days</td>
</tr>
</tbody>
</table>

Medium 20 days
RESULTS (3): Desired weight on discharge vs. weight on discharge:

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>86%</td>
</tr>
<tr>
<td>2005</td>
<td>80%</td>
</tr>
<tr>
<td>2006</td>
<td>76%</td>
</tr>
<tr>
<td>Medium:</td>
<td>80.6%</td>
</tr>
</tbody>
</table>
**RESULTS (4): Case Fatality Rate (CFR):**

<table>
<thead>
<tr>
<th>Year</th>
<th>Case fatality rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>10.8%</td>
</tr>
<tr>
<td>2005</td>
<td>9%</td>
</tr>
<tr>
<td>2006</td>
<td>18.3%</td>
</tr>
<tr>
<td>Medium</td>
<td>12.7%</td>
</tr>
</tbody>
</table>
Response to the treatment for recovered patients (case)
# How to Treat Severe Malnutrition with HIV/AIDS Guideline

**WHO’s Standard:** Weight for Height (WH)

**Classification:**

<table>
<thead>
<tr>
<th></th>
<th>Moderate Malnutrition</th>
<th>Severe Malnutrition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symmetrical Edema</td>
<td>No</td>
<td>Yes (edematous malnutrition)</td>
</tr>
<tr>
<td>Weight-For-Height</td>
<td>$-3 \leq SD\text{-score} &lt; -2$ (70-79%)</td>
<td>SD-score $&lt; -3$ (&lt;70%) (severe wasting)</td>
</tr>
<tr>
<td>Height-For-Age</td>
<td>$-3 \leq SD\text{-score} &lt; -2$ (85-89%)</td>
<td>SD-score $&lt; -3$ (&lt;85%) (severe stunting)</td>
</tr>
</tbody>
</table>
# FRAME FOR THE MANAGEMENT OF A CHILD WITH SEVERE MALNUTRITION

<table>
<thead>
<tr>
<th>Initial treatment</th>
<th>Activity Rehabilitation</th>
<th>Follow up week 7-26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days 1-2</td>
<td>Day 3-7</td>
<td>week 2-6</td>
</tr>
<tr>
<td>Treat or prevent:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hypoglycemia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hypothermia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>dehydration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct electrolyte imbalance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treat infection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct micronutrient deficiencies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Begin feeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase feeding to recover lost weight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(&quot;catch-up growth&quot;)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stimulate emotional and sensorial development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepare for discharge</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>without iron</td>
<td>with iron</td>
</tr>
</tbody>
</table>
Treatment for Severe malnutrition with HIV/AIDS is the same with treatment of Severe malnutrition without HIV/AIDS

THERE ARE 10 STEP TO TREAT SEVERE MALNUTRITION
A-GENERAL PRINCIPLES FOR ROUTINE CARE:

There are 10 Essential Steps:

STEP 1. TREAT/PREVENT HYPOGLYCEMIA

Conscious:

- Axillary $<35.0\, ^\circ\text{C} \rightarrow$ Glycaemia capillary (dextrostix) $<54\, \text{mg/dl} \ or \ <3\, \text{mmol/l} \rightarrow$ 50 ml bolus of 10% glucose or 10% sucrose solution (1 rounded tea spoon of sugar in 3.5 table spoons water)

- orally or by nasogastric (NG) tube.

- Then Feed starter F-75 every 30 mn for 2 hours (giving one quarter of the two hourly feed each time.)
Unconscious

- → IV sterile 10% glucose (5ml/kg) or 50ml of 10% glucose or sucrose by NG
  → F-75
- → Antibiotics

Monitor:

- Blood glucose
- Axillary temperature: $<35.5^\circ C$ → dextrostix
- Level of consciousness: deteriorates → dextrostix
STEP 2. TREAT/PREVENT HYPOTHERMIA

Axillary temperature < 35.0 °C → Rectal temperature < 35.5 °C

→ F-75

→ Warm

→ Blood glucose level

→ Antibiotics

Monitor:

- Temperature
- Blood glucose level
STEP 3. TREAT/PREVENT DEHYDRATION

→ ReSoMal 5ml/kg every 30 min. for two hours, orally / nasogastric tube,

→ 5-10ml/kg/h for next 4-10 hours

→ F-75

DO NOT GIVE STANDARD ORS TO SEVERELY MALNOURISHED CHILDREN.

Monitor:

• pulse rate
• respiratory rate
• urine frequency
• stool/vomit frequency
STEP 4. CORRECT ELECTROLYTE IMBALANCE

**DO NOT TREAT EDEMA WITH A DIURETIC.**

→ extra potassium 3-4 mmol/kg/day

→ extra magnesium 0.4-0.6 mmol/kg/day

→ ReSoMal

→ prepare food without salt
STEP 5. TREAT/ PREVENT INFECTION

→ broad-spectrum antibiotic(s)

→ measles vaccine if child is ≥ 6 months and not immunized (delay if the child is in shock)

→ metronidazole (7.5mg/kg 8 hourly for 7 days) Choice of broad-spectrum antibiotics:

- No complications:

  → Co-trimoxazoles

- Complications:

  → Ampicillin IM/IV

  → Amoxicillin PO

  → Gentamicin IM/IV

• Specific antibiotics (if appropriate)

• Anti malarial treatment (malaria parasites+)
STEP 6. CORRECT MICRONUTRIENT DEFICIENCIES

→ Do not GIVES iron initially but wait until the child has a good appetite and starts gaining weight.

→ Provide potassium and restrict sodium.

→ Vitamin A

→ Multivitamin

→ Folic acid

→ Zinc

→ Copper

→ Iron
STEP 7. START CAUTIOUS FEEDING

→ small, frequent feeds of low osmolarity and low lactose

→ oral or nasogastric (NG) feeds (never parenteral preparations)

→ 100 kcal/kg/d

→ 1-1.5 g protein/kg/d

→ 130 ml/kg/d of fluid (100 ml/kg/d if the child has severe edema)

→ if the child is breastfed → continue breastfeeding
STEP 8. ACHIEVE CATCH-UP GROWTH

→ F-75 → F-100

→ Increase each

Monitor:

* respiratory rate
* pulse rate
STEP 9. PROVIDE SENSORY STIMULATION AND EMOTIONAL SUPPORT

Provide:

→ tender loving care

→ a cheerful, stimulating environment

→ structured play therapy

→ physical activity

→ maternal involvement when possible
STEP 10. PREPARE FOR FOLLOW-UP AFTER RECOVERY

Show parent or career how to:

• feed frequently with energy-and nutrient-dense foods
• give structured play therapy

Advise parent or career to:

• bring child back for regular follow-up checks
• ensure booster immunizations are given
• ensure vitamin A is given every six months
Poor nutrition severely hinders personal, social and national development.

The problem is more obvious among the poor and disadvantaged.

The ultimate consequence is millions of severely malnourished children throughout the world.
In the International Centre for Diarrhea Disease Research, Bangladesh, after the introduction of a standardized protocol, based on the WHO guideline, fatality rate decreased to 9% and subsequently to 3.9% from a previous 17%.

In South Africa, the mortality rate decreased from 30-40% to less than 15%.
The Population Analysis Unit, of the Ministry of Planning issued a report on August 15th 2003, stating that in Cambodia, the rate of children under-five years of age affected by:

- stunting = 44.6%,
- wasting = 15%,
- low body weight = 45%
- the rate of prevalence of iron deficiency anaemia = 63%
At NPH, the causes of a child’s failure to respond to treatment may be related to procedures, staff, equipment, and/or the ward environment, or they may be specific to the individual child.

High case fatality rates and poor rate of weight gain result from a failure to appropriate treatment that needs to be carried out in stages, and that the order in which problems are addressed is fundamental to effective care.
DISCUSSION AND CONCLUSION (10):

- An aggressive attempt to promote rapid weight gain from the start of treatment is also dangerous:
- Many prescribe a high protein diet for children with **kwashiorkor**, but this can be fatal.
- Many prescribe diuretics to get rid of edema. This procedure can be fatal.
- Prescribing iron to treat anemia increases deaths in the initial phase of treatment.
This study finds that the frequent causes of children failing to respond to treatment at the NPH, Phnom Penh, Cambodia are:

- Poor environment for malnourished children;
- Insufficient or inadequately trained staff;
- Inaccurate weighing machines;
- Food prepared or given incorrectly.
DISCUSSION AND CONCLUSION (12):

5. Insufficient food given;
6. Vitamin and/or mineral deficiency;
7. Malabsorption of nutrients;
8. Rumination;
9. Infections, especially diarrhea, dysentery, otitis media, pneumonia, tuberculosis, urinary tract infection, malaria, intestinal helminthiasis and HIV/AIDS;
10. Serious underlying disease.
RECOMMENDATION (1)

Generally, it is recommended that in countries like Cambodia with inadequate numbers of doctors and PEM specialists, or where there is poor distribution of staff between urban and rural areas, the national organization of primary health care services should be as follows:

Primary Health Care Services should be integrated with other appropriate services such as community based rehabilitation;
RECOMMENDATION (2)

When PEM is actively being sought in the community, adequate facilities for treatment and management should first be available;

All primary health care facilities should be supported by a referral system:

- To a community service;
- To a facility staffed by a medical officer;
- To rehabilitation facilities.
RECOMMENDATION (3)

Medical officers with appropriate PEM care training should be located at district hospitals.

Where personnel and equipment are available, a severe malnutrition service should be established at referral hospitals;

Guidelines should be established for referrals between National Hospitals and the available PEM services at provincial hospitals;
Visits by PEM specialists (local and expatriate teams), for the purpose of providing on-site education and/or diagnoses/treatment, should be encouraged and where possible conducted at the referral hospital level.

These visits should also be used for practical training of medical officers, clinical assistants and community primary health care nurses;

They need to be convinced of the feasibility, sustainability, and cost-effectiveness of such program.
RECOMMENDATION (6)

Cambodia is awakening to the need to address the problems of malnutrition associated with HIV/AIDS, and hopefully those working links developed between governmental and non-governmental organizations will expand.

As well as the sharing of ideas for the strengthening of primary PEM care and practice in promoting the treatment of PEM, it is hoped that the necessary funding to support such initiatives will begin to emerge.
Thank you