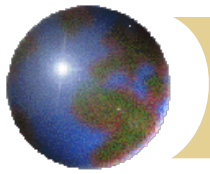


# *Public Nutrition in Complex*

## *Emergencies: Learning Objectives*

- ✦ To identify the principal forms of malnutrition in emergencies
  - ✦ Protein-energy malnutrition (PEM)
  - ✦ Micronutrient malnutrition
- ✦ To identify the key indicators of nutritional status for assessment and principles of data interpretation for response planning
- ✦ To understand core principles and protocols for assessing the need for, establishing, maintaining and phasing out of:
  - ✦ General food distribution programs
  - ✦ Supplementary feeding programs
  - ✦ Therapeutic feeding programs
- ✦ To be able to calculate ration composition to meet minimum guidelines
- ✦ To understand, for key micronutrients, the epidemiology of deficiency, assessment techniques, and treatment of deficiency



# *Nutritional Assessment and Interventions in Emergency Settings*

*Ellen C. Mathys, MPH*

*John B. Mason, PhD*

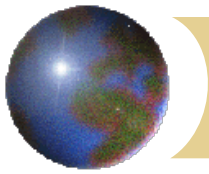
*Tulane University*

*School of Public Health  
and Tropical Medicine*



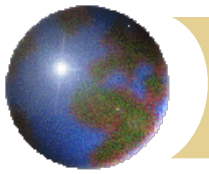
Developed in part with support from a grant from CARE International.

*Photo from Oxfam food distribution in Ethiopia, c.  
2000.*



# *Objectives of nutritional programming in emergencies*

- ✦ To ensure adequate food supply for entire affected population and thereby prevent malnutrition and other adverse health consequences
- ✦ To provide nutritional rehabilitation for moderately and severely malnourished
- ✦ To prevent nutritional deterioration for 'vulnerable groups'

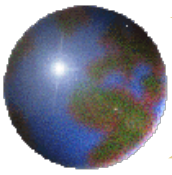


# *Why focus on the whole population first?*

*Photo of Eritrean refugee camp, July 2000, by Ellen Mathys.*

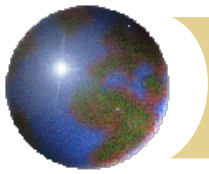




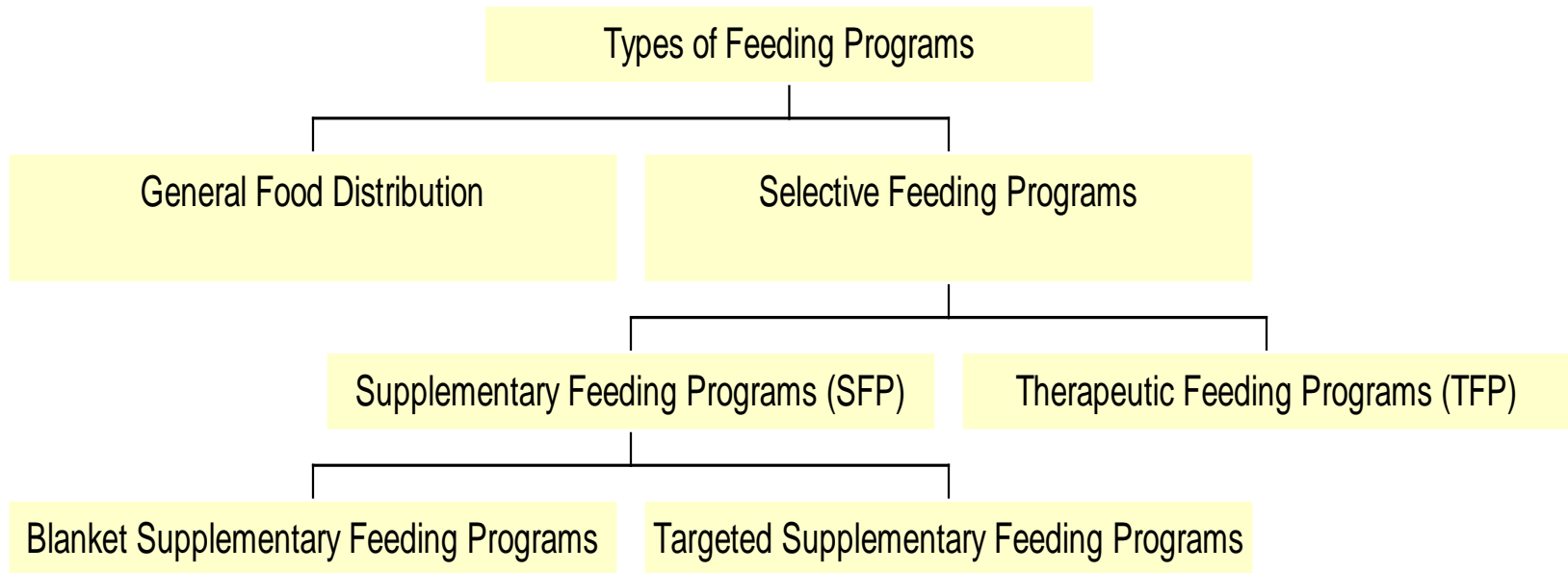


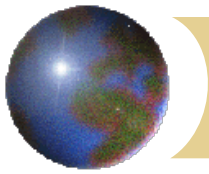
*Photo of Eritrean refugee camp, July 2000, by Ellen Mathys.*





# *Types of emergency feeding programs*





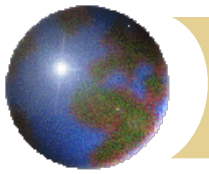
# *Malnutrition in emergencies*

## ❖ Protein-energy malnutrition (PEM)

- ❖ Marasmus
- ❖ Kwashiorkor
- ❖ Marasmic kwashiorkor

## ❖ Micronutrient malnutrition

- ❖ Vitamin A deficiency (xerophthalmia)
- ❖ Thiamin (B1) deficiency (beriberi)
- ❖ Niacin (B3) deficiency (pellagra)
- ❖ Vitamin C deficiency (scurvy)
- ❖ Iron deficiency (anemia)
- ❖ Iodine deficiency (goiter, cretinism)
- ❖ Riboflavin (B2) deficiency (ariboflavinosis)



## *PEM: Marasmus*

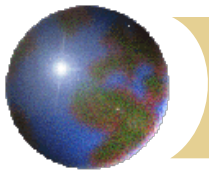
### ✦ May result from:

- ✦ Severe food shortage
- ✦ Chronic or recurrent infections with marginally low food intake

### ✦ Main and associated signs:

- ✦ Severe loss of fat and muscle
- ✦ Thin “old man” face
- ✦ “Baggy pants”
- ✦ Generally alert
- ✦ No nutritional edema
- ✦ Prominent ribs
- ✦ Importance of appetite

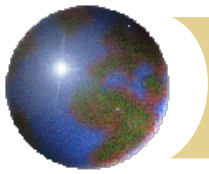




# *Marasmus*

*Photo of Somali child by A. Raffaele Ciriello (<http://www.ciriello.com>).*

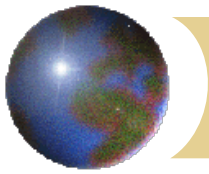




# *Marasmus*

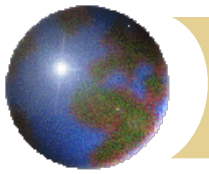
*(Photo from [www.nutrition.uu.se](http://www.nutrition.uu.se))*





## *PEM: Kwashiorkor*

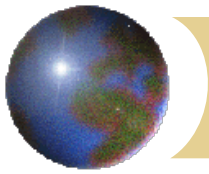
- ❖ Relatively uncommon, but high risk of mortality
- ❖ May result from:
  - ❖ Combination of inadequate diet and infection
  - ❖ More common with non-cereal diet (e.g. roots/tubers)
- ❖ Main and associated signs:
  - ❖ Nutritional edema
  - ❖ May appear fat because of edema
  - ❖ Hair changes: loss of pigmentation, straightening, easy pluckability
  - ❖ Skin lesions and depigmentation: dark skin may become lighter in skin folds, outer layers of skin may peel off (esp. legs), ulceration, lesions resembling burns
  - ❖ Apathetic, miserable, irritable demeanor, lack of appetite
  - ❖ Marasmic kwashiorkor



# *Kwashiorkor*

*(Photo from [www.nutrition.uu.se](http://www.nutrition.uu.se))*

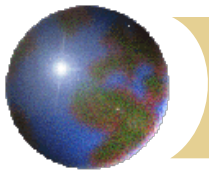




## *Nutritional assessment in emergencies*

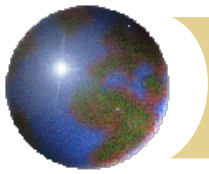
- ✚ Before data is available: 100:10:1
- ✚ When should you do a nutritional survey?
  - ✚ As an initial assessment of the severity of the problem
  - ✚ As a follow-up assessment to monitor trends and impact of interventions
  - ✚ When resources are available to act on results
  - ✚ When time and conditions allow for survey implementation





## *Nutritional assessment: relevant secondary information*

- ✚ History of emergency
- ✚ Household resources (food, non-food)
- ✚ Proximity to markets
- ✚ Development of local market activities
- ✚ Support from local population
- ✚ Numbers of malnourished
- ✚ Food access



# *Nutritional assessment: sampling and indicators*

## ✚ Sampling:

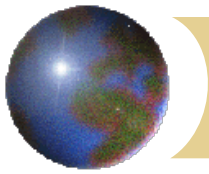
- ✚ Children 6-59 mos
- ✚ Adolescents, adults

## ✚ Indicators:

- ✚ Acute emergency:
  - wasting, edema
- ✚ Stable emergency:
  - wasting, edema
  - underweight
  - stunting

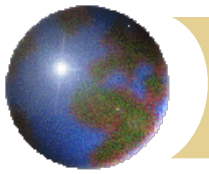
## ✚ Reporting WFH, edema:

- ✚ Moderate wasting:
  - $< -2$  to  $-3$  Z scores WFH
- ✚ Severe wasting:
  - $< -3$  Z scores WFH
- ✚ Moderate+severe wasting (global) plus edema:
  - $< -2$  Z scores WFH
- ✚ Edema:
  - Nutritional edema, regardless of WFH



# *Interpreting anthropometric results for response planning*

- ✦ If food availability at hhld level  $< 2100$  kilocalories per person per day (kcal pppd):
  - ✦ Improve general rations!
- ✦ If global acute malnutrition rate  $\geq 15\%$ , OR 10-14% with aggravating factors:
  - ✦ Ensure adequate general rations
  - ✦ Consider starting a time-limited SFP for vulnerable groups (esp. children, preg/lact women)
  - ✦ Therapeutic feeding programs for severely malnourished individuals



# *Interpreting anthropometric results for response planning*

- ❖ If global acute malnutrition rate is 10-14%, OR 5-9% with aggravating factors:
  - ❖ Ensure adequate general rations
  - ❖ Targeted SFP for moderately malnourished
  - ❖ TFP for severely malnourished
- ❖ If global acute malnutrition rate <10%, OR <5% with aggravating factors:
  - ❖ No immediate need for large-scale interventions
  - ❖ Surveillance and support to nutritional services in existing health system