2. Major deficiency diseases in emergencies

- **Protein-energy malnutrition** (PEM) is the most impor[illegible] health problem during a nutritional emergency.
  Severe PEM can present several forms:
  - *Nutritional marasmus* is characterized by a severe wasting away of fat and muscle ("skin and bone"). It is the commonest form in most nutritional emergencies.
  - *Kwashiorkor* is characterized by oedema, usually starting at the lower extremities.
  - *Marasmic kwashiorkor* is a combination of wasting and oedema. The treatment of severe forms of PEM is presented in Chapter 5.

- **Mineral and vitamin deficiencies** may also be important.
  - *Severe anemia* is common and requires a daily intake of iron for an extended period of time.
  - *Vitamin A deficiency*, the most important vitamin deficiency, is characterized by night blindness and/or eye lesions which may lead to permanent total blindness. The severe forms are usually associated with PEM.
  - Other deficiency conditions are less common: beriberi, pellagra, scurvy, rickets.
  - Mineral and vitamin deficiencies must be identified and the individuals affected or at risk treated by administration of the missing nutrient.

Protein-energy malnutrition (PEM)

Protein-energy malnutrition is a problem in many developing countries, even in normal times. Most commonly it affects children between the ages of 6 months and 5 years (especially around 18–24 months), i.e., at the time when they are most vulnerable to the common infectious diseases such as gastroenteritis and measles. PEM may simply be due to shortage of food, or it may be precipitated by lack of appetite and an increase in nutrient requirements and losses caused by infection.

Chronic PEM has many short- and long-term physical and mental effects, including growth retardation, a malnourished child being lighter and shorter than a better-fed child of the same age.

In times of nutritional emergency it is primarily the more acute forms of PEM that have to be dealt with. These are characterized by a rapid loss of weight and may be evident in a much wider range of age groups than usual. For example, significant numbers of older children, adolescents, and adults may also be affected.

Past experience has shown that many emergencies affect the supply of food to only a proportion of the population concerned. The situation will obviously vary from place to place, but it is often the case that only a small proportion of the total population presents clinical signs of severe PEM. For each case of severe clinical PEM there may well be 10 moderate cases and 100 children of "near normal" nutritional status. Progression from moderate to clinically severe forms is rapid

Severe forms of PEM [1]

The severe forms of PEM are:

nutritional marasmus
kwashiorkor
marasmic kwashiorkor

Nutritional marasmus results from prolonged starvation (see Fig. 1).

The main sign is a severe wasting away of fat and muscle. The child is very thin ("skin and bone"), most of the fat and muscle mass having been expended to provide energy. It is the most frequent form of PEM in cases of severe food shortage.

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[1] For treatment, see Chapter 5

Associated signs can be

- A thin "old man" face
- "Baggy pants" (the loose skin of a child s buttocks hanging down).
- The children concerned are usually active and may appear to be very alert in spite of their condition.
- There is no oedema (swelling that pits on pressure) of the lower extremities.

FIG 1 CHILD SUFFERING FROM NUTRITIONAL MARASMUS

Kwashiorkor (see Fig. 2 and Fig. 3). The main sign is oedema, usually starting at the lower extremities and extending in more advanced cases, to the arms and face. Oedema may be detected by the production of a definite pit in the pretibial region as a result of moderate pressure for three seconds with the thumb over the lower end of the tibia.

The child may look "fat" so that the parents regard him as well-fed.

Associated signs can be

- Hair changes: loss of pigmentation, curly hair becomes straight (an African child may appear to have much longer hair), easy pluckability (the hair comes out easily with a very gentle pull).

FIG. 2. A SEVERE CASE OF KWASHIORKOR SHOWING OEDEMA AND SKIN AND HAIR CHANGES