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**FACULTY OF NURSING**

# PROTEIN ENERGY MALNUTRITION



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# PROTEIN ENERGY MALNUTRITION

## Definition :

PEM has been defined by WHO as a range of **pathological conditions** arising from coincidental **lack in varying proportion of protein and calories** occurring most frequently in **infants and young children** and commonly associated with **infection**.

“Often starts in the womb and ends in the Tomb”

## Interpretation of indicators

$$\text{Weight/Height(\%)} = \frac{\text{Weight of the child} \times 100}{\text{Weight of a normal child at same height}}$$

$$\text{Height/Age(\%)} = \frac{\text{Height of the child} \times 100}{\text{Height of a normal child at same age}}$$

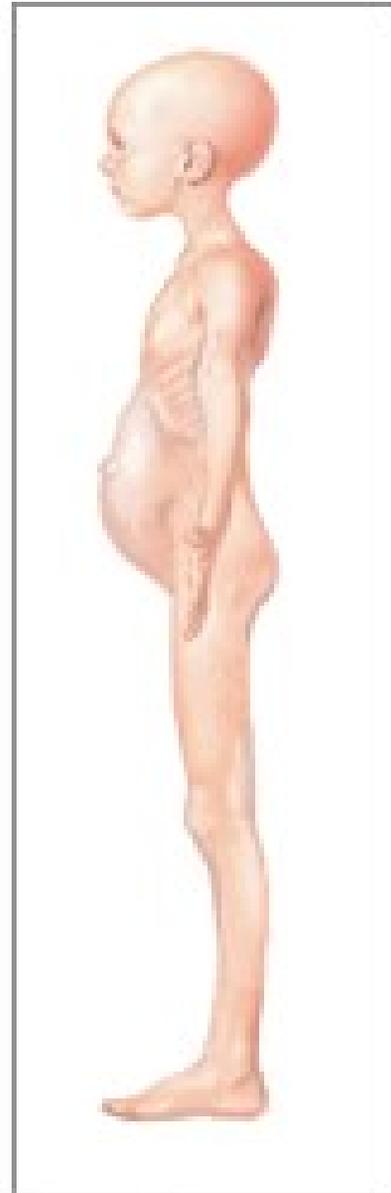
# Types of PEM

- Protein-Energy Malnutrition (PEM)
  - also called protein-kcalorie malnutrition (PCM)
- Classifying PEM – text version
  - Marasmus – severe protein and calorie deficit
  - Kwashiorkor – moderate calorie deficit, severe protein deficit, and infection

Normal



Kwashiorkor



# **Kwashiorkor**

A severe malnutrition of infants and young children, primarily in tropical and subtropical regions, caused by deficiency in the quality and quantity of protein in the diet and characterized by anemia, edema, potbelly, depigmentation of the skin, loss or change in hair color, hypoalbuminemia, and bulky stools containing undigested food.

# Marasmus

- It is a severe form of protein energy malnutrition which occur in children due to inadequate intake of primarily carbohydrates however there may also be inadequate proteins and fats intake and it is characterized by severe weight loss, and stunted growth.
- Marasmus usually develops between the ages of six months and one year in children who have been weaned from breast milk or who suffer from weakening conditions like chronic HIV/AIDS



**KWASHIORKOR**  
**vs**  
**MARASMUS**

## **KWASHIORKOR**

- **Clinical features**
- Occurs in children between 6 months 3 years of age
- Growth failure
- Wasting muscles but preserved adipose tissue
- Edema , localized or generalized, present
- Enlarged fatty liver
- Serum proteins low
- Anemia present
- Alternate bands of light and dark hair

## **MARASMUS**

### **Clinical features**

- Growth failure
- Wasting of all tissues including muscles and adipose tissue
- Edema present
- No hepatic enlargement
- Serum proteins low
- Anemia present
- Monkey-like face, protuberant abdomen, thin limbs

# MANAGEMENT

- **Stop all sources of calorie and protein until the electrolyte imbalances are corrected.**
- Start with **50% of the caloric intake** at which the patient developed symptoms.
- Supplement with **multivitamins** (including thiamine)
- **Watch for recurrence of refeeding syndrome** by monitoring clinical and biochemical parameters daily.
- **Limit sodium and fluid intake.**
- Gradually increase the caloric requirement every 3 days.  
**“Start low and go slow”.**
- **Protein restriction is not recommended**, 1.5 g/Kg/day rich in essential aminoacids is required for anabolism to occur.

## Treatment

- Ampicillin iv for atleast 2 days f/b oral amoxycillin
- i.v. gentamicin or amikacin for 7 days.

If no improvement within 48hrs,

- i.v. cefotaxime
- Ceftriaxone

## Prevention

- Follow standard precautions like hand hygiene
- Give measles vaccine if >6 months and not immunised or if the child is more than > 9 months.

**THANK YOU**