

NUTRITIONAL DISORDERS

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NUTRITIONAL DISORDERS

MALNUTRITION

MALNUTRITION

A pathological state due to a relative or absolute deficiency or excess of one or more essential nutrients; clinically manifested or detected only by biochemical, anthropometric or physiological tests.

Classification:

- 1.Undernutrition: Marasmus**
- 2. Over-nutrition: Obesity ,Hypervitaminoses**
- 3. Specific Deficiency: Kwashiorkor ,Hypovitaminoses.**
- 4.Mineral Deficiencies**
- 5.Imbalance: Electrolyte Imbalance**

Etiology:

A.child related:

- Low birth wt.
- Absence or early cessation of breast feeding
- Delay weaning
- Incorrect dietary habit
- Recurrent infection :diarrhea, measles

B.Maternal factor:

Maternal malnutrition

Ignorance about feeding
separation

C. socio-economical factor:

Poverty and unemployment

Large family size

Unhygienic living condition

Disadvantaged children

D. cultural factor: wrong beliefs

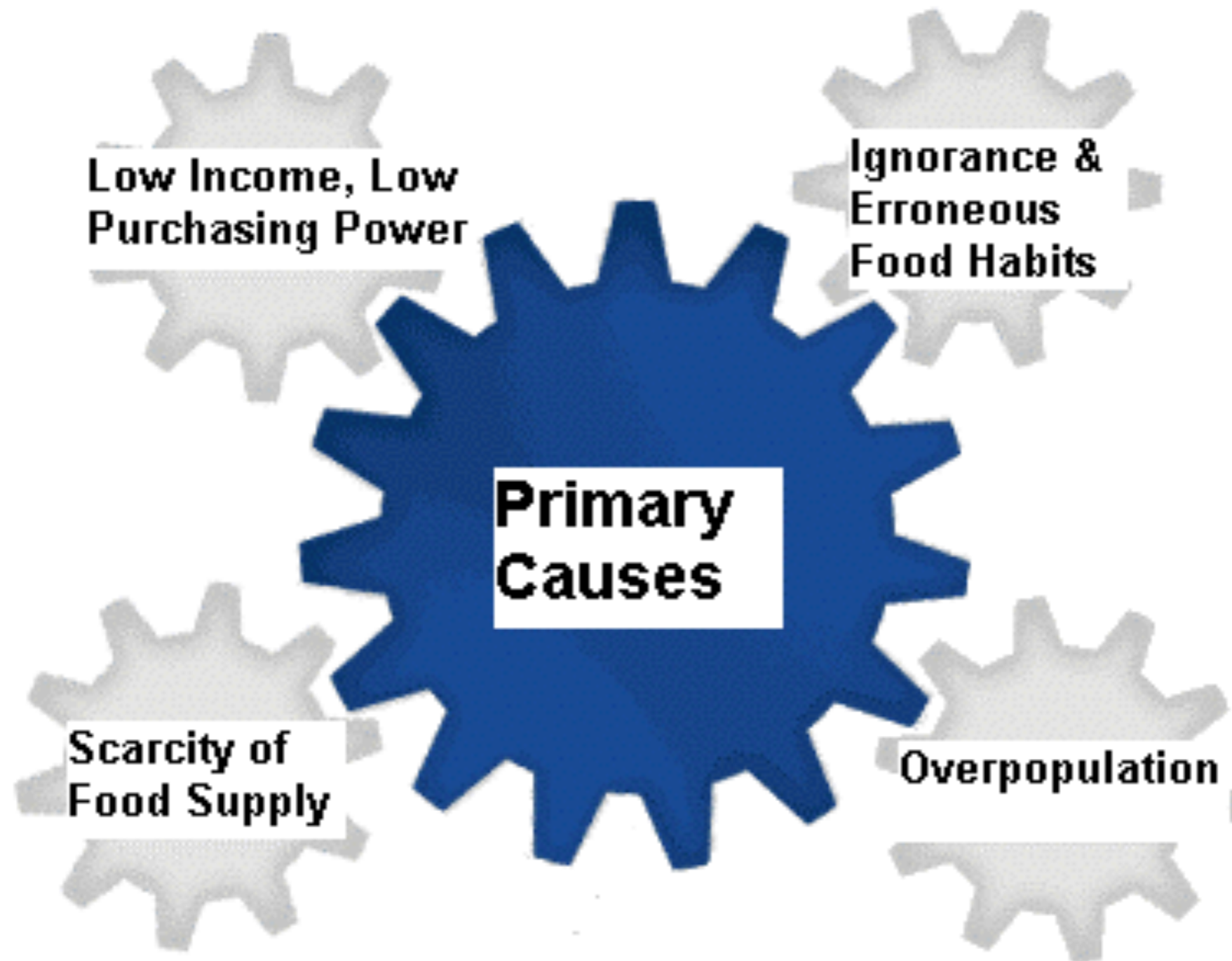
E. community factor:

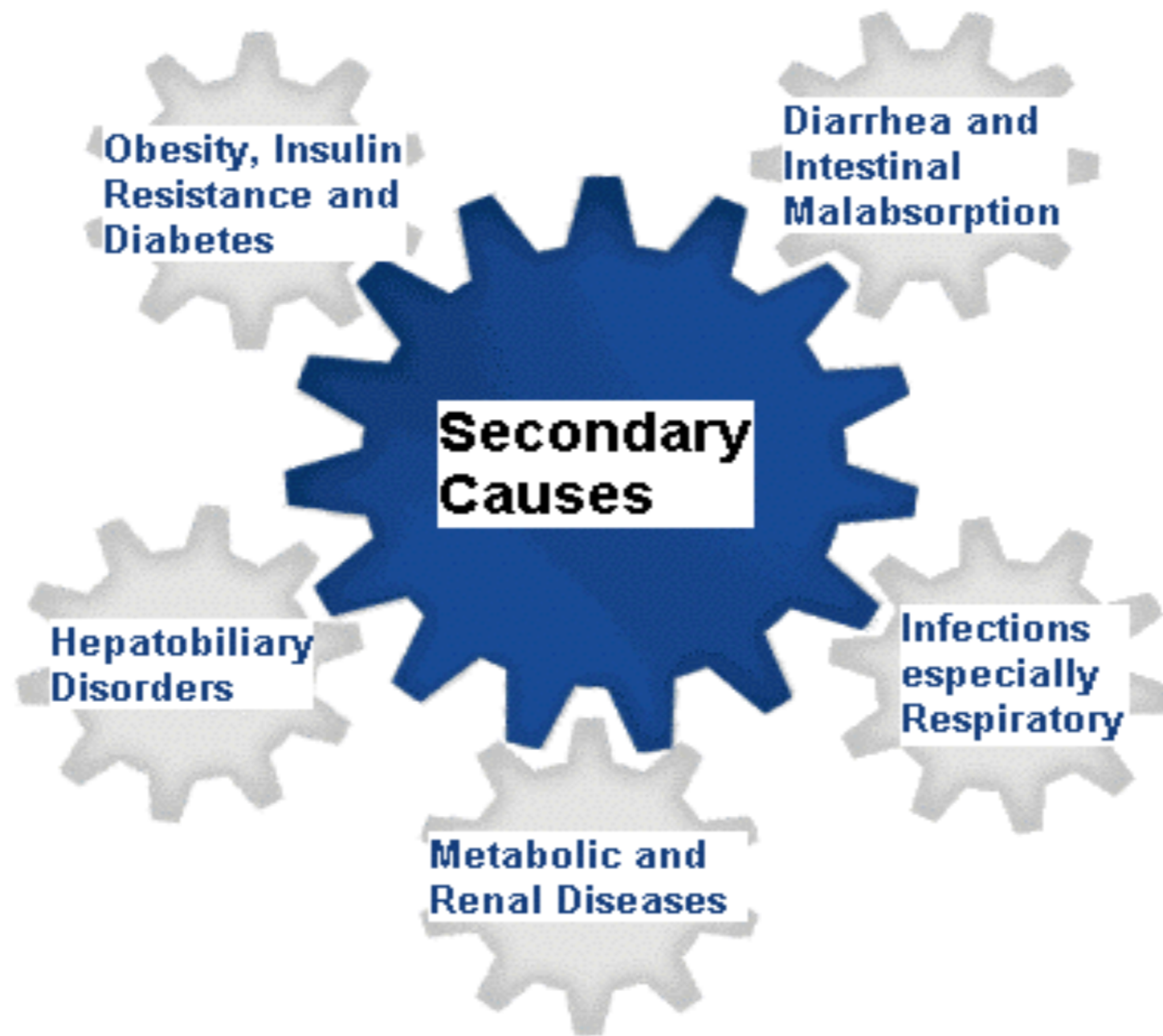
Natural/man made disaster

Generalized economic depression

Inadequate primary health care

ETIOLOGY





Marasmus



- ❖ **Common in the 1st year of life**

Etiology:

- ✓ **“Balanced starvation”**
- ✓ **Insufficient breast milk**
- ✓ **Dilute milk mixture or lack of hygiene**
- ✓ **deficiency of ALL nutrient**

Marasmus

Clinical Manifestations:

1. **Wasting**
2. **Muscle wasting**
3. **Growth retardation**
4. **Mental changes**
5. **No edema**
6. **Variable-subnormal temp, slow PR, good appetite, often w/diarrhea, etc.**

Laboratory Data:

1. **Serum albumin N**
2. **Urinary urea/ creatinine**

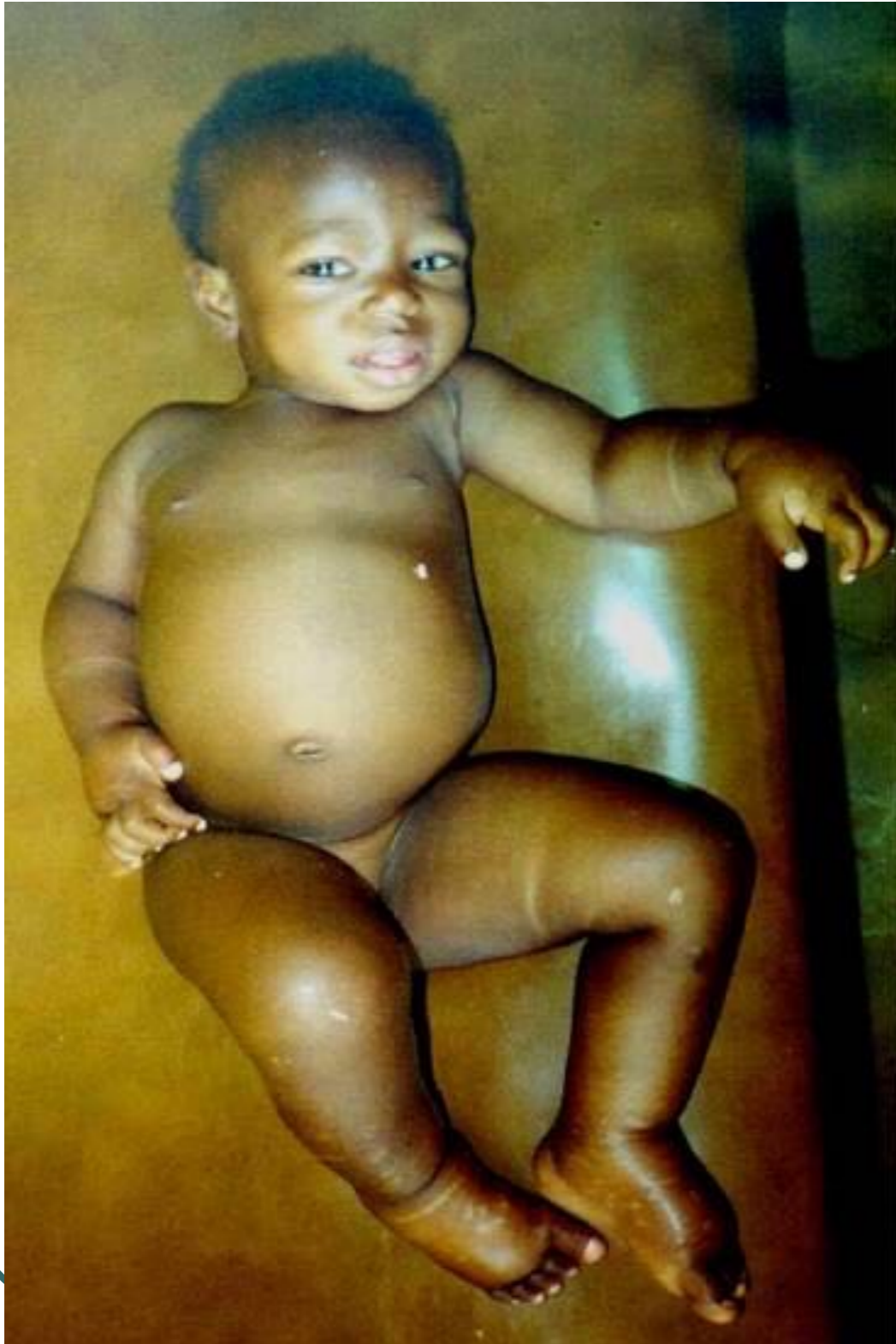
3. **Urinary hydroxyproline/ creatinine low**
4. **Serum essential a.a. index N**
5. **Anemia uncommon**
6. **hypoglycemia**
7. **K⁺ deficiency present**
8. **Serum cholesterol low**
9. **Diminished enzyme activity**
10. **Bone growth delayed**
11. **Liver biopsy N or atrophic**

Kwashiorkor

❖ **Between 1-3 yrs old**

Etiology:

- ✓ **Very low protein but calories from CHO**
- ✓ **In places where starchy foods are main staple**
- ✓ **Never exclusively dietary**



Kwashiorkor

Clinical Manifestations:

A. Diagnostic Signs

1. Edema
2. Muscle wasting
3. Psychomotor changes

B. Common Signs

1. Hair changes
2. Diffuse depigmentation of skin
3. Moonface
4. Anemia

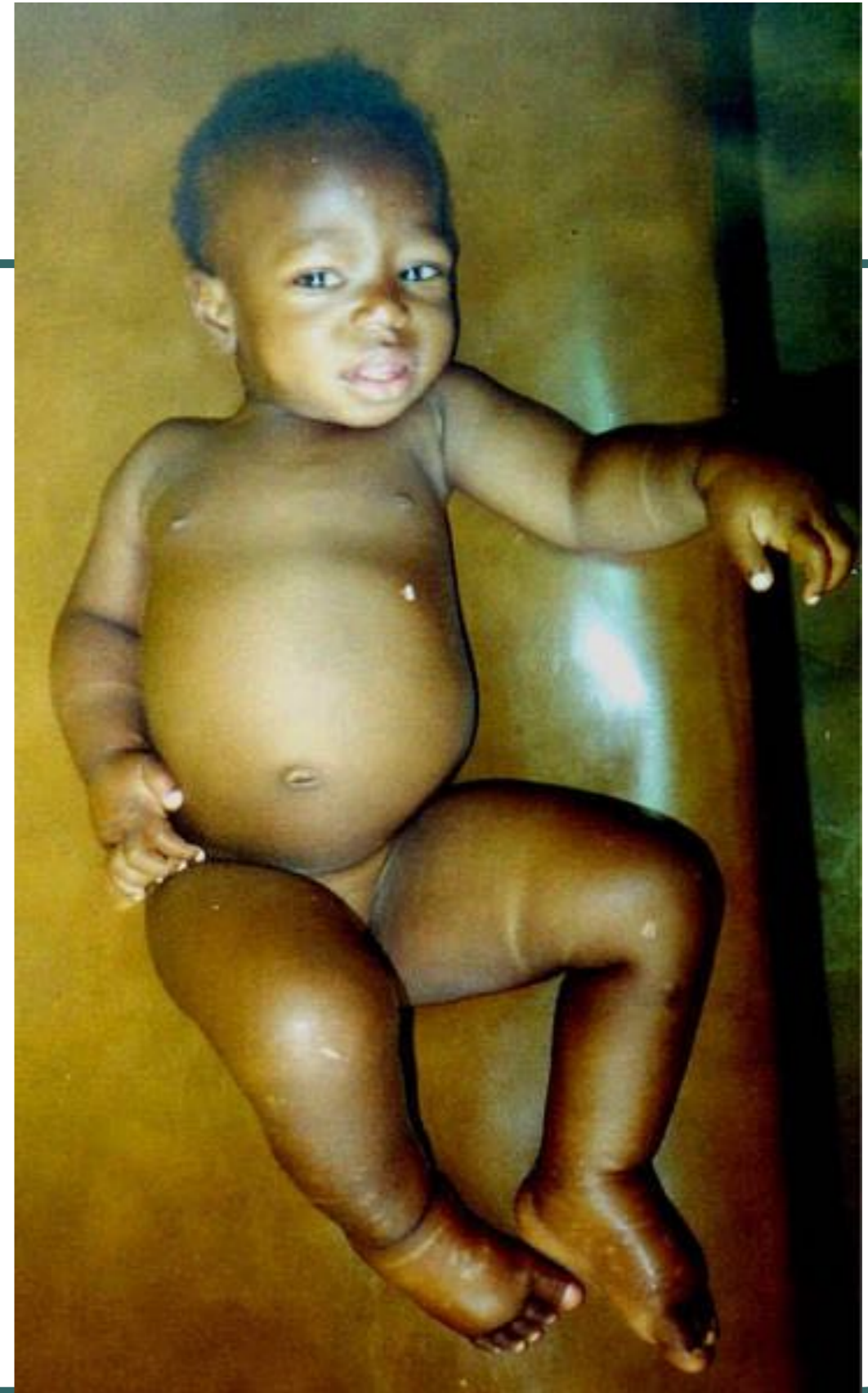
C. Occasional Signs:

1. Flaky-paint rash
2. Noma
3. Hepatomegaly
4. Associated

Laboratory:

1. Decreased serum albumin
2. EEG abnormalities
3. Iron & folic acid deficiencies
4. Liver biopsy fatty or fibrosis may occur

Differences between Marasmus and Kwashiorkor



SEVERE CHILDHOOD UNDERNUTRITION

(Protein-Energy Malnutrition)

<i>Site</i>	<i>Signs</i>
<i>Face</i>	Moon face (kwashiorkor), simian facies (marasmus)
<i>Eye</i>	Dry eyes, pale conjunctiva, Bitot spots (vit A), periorbital edema
<i>Mouth</i>	Angular stomatitis, cheilitis, glossitis, spongy bleeding gums (vit C), parotid enlargement
<i>Teeth</i>	Enamel mottling, delayed eruption
<i>Hair</i>	Dull, sparse, brittle hair, hypopigmentation, flag sign (alternating bands of light and normal color), alopecia

<i>Skin</i>	Loose and wrinkled (marasmus), shiny and edematous (kwashiorkor), dry, follicular hyperkeratosis, patchy hyper- and hypopigmentation (crazy paving or flaky paint dermatoses), erosions, poor wound healing
<i>Nails</i>	Koilonychia, thin and soft nail plates, fissures or ridges
<i>Musculature</i>	Muscle wasting, particularly buttocks and thighs; Chvostek or Trousseau signs (hypocalcemia)
<i>Skeletal</i>	Deformities, usually as a result of calcium, vitD or vitC deficiencies

<i>Abdomen</i>	Distended: hepatomegaly with fatty liver; ascites may be present
<i>Cardiovascular</i>	Bradycardia, hypotension, reduced cardiac output, small vessel vasculopathy
<i>Neurologic</i>	Global developmental delay, loss of knee and ankle reflexes,

<i>Site</i>	<i>Signs</i>
	impaired memory
<i>Hematologic</i>	Pallor, petechiae, bleeding diathesis
<i>Behavior</i>	Lethargic, apathetic, irritable on handling

Kwashiorkor



Investigations

- CBC,CRP,GUE,GSE,RBS,RFT,TSP,S.
albumin(low in both)

Treatment

Rx. of PEM involve 3 phases:

1-Stabilization phase (1st wk)

2-Rehabilitation phase (2nd wk-6th wk)

3-follow-up. (7th wk till recovery)

Stabilization phase (1st wk):-

It involves Rx & Pv of infection, hypoglycemia, anemia, dehydration & correction of electrolyte disturbances, and vitamins & micronutrient deficiency (except iron).

feeding with F75 formula (75 kcal/100 ml)

2. Rehabilitation phase (2nd wk-6th wk):-

It involves feeding with **F100 formula** (100 kcal/100 ml) to give 100 kcal/kg/day. If oral feeding is not tolerated, give it by NG tube.

follow-up phase (7th wk till recovery):-

By feeding to cover catch-up growth and also the provision of emotional stimulation with the aid of family & the community.

Refeeding Syndrome

It usually **complicates** the acute nutritional rehabilitation after aggressive enteral or parenteral alimentation due to the development of severe **hypophosphatemia** after the cellular uptake of phosphate during the 1st wk of starting therapy.

Other features of Refeeding syndrome include: **hypokalemia, hypomagnesemia, sodium retention, hyperglycemia, & vitamins deficiency (especially thiamin).**



Phosphorus

Here, there, everywhere

C.M. of hypophosphatemia especially when serum Pi is ≤ 0.5 mmol/L include: -

weakness,

-rhabdomyolysis,

-neutrophil dysfunction, hemolysis, thrombocytopenia,

-seizures, altered consciousness,

-arrhythmias, cardiorespiratory failure, & sudden death

Inv. Monitor serum Pi, K, Mg & Ca frequently in the 1st 2 wk after Rx.

Rx. Slowly ↑ feeding with supplementation of minerals (especially phosphate) & vitamins (especially thiamin) as well as the correction of other electrolytes disturbances, especially hypokalemia & hypomagnesemia



THANK YOU