Child's health (2)
Care in illness

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Child Health problems

1. Nutritional deficiency diseases

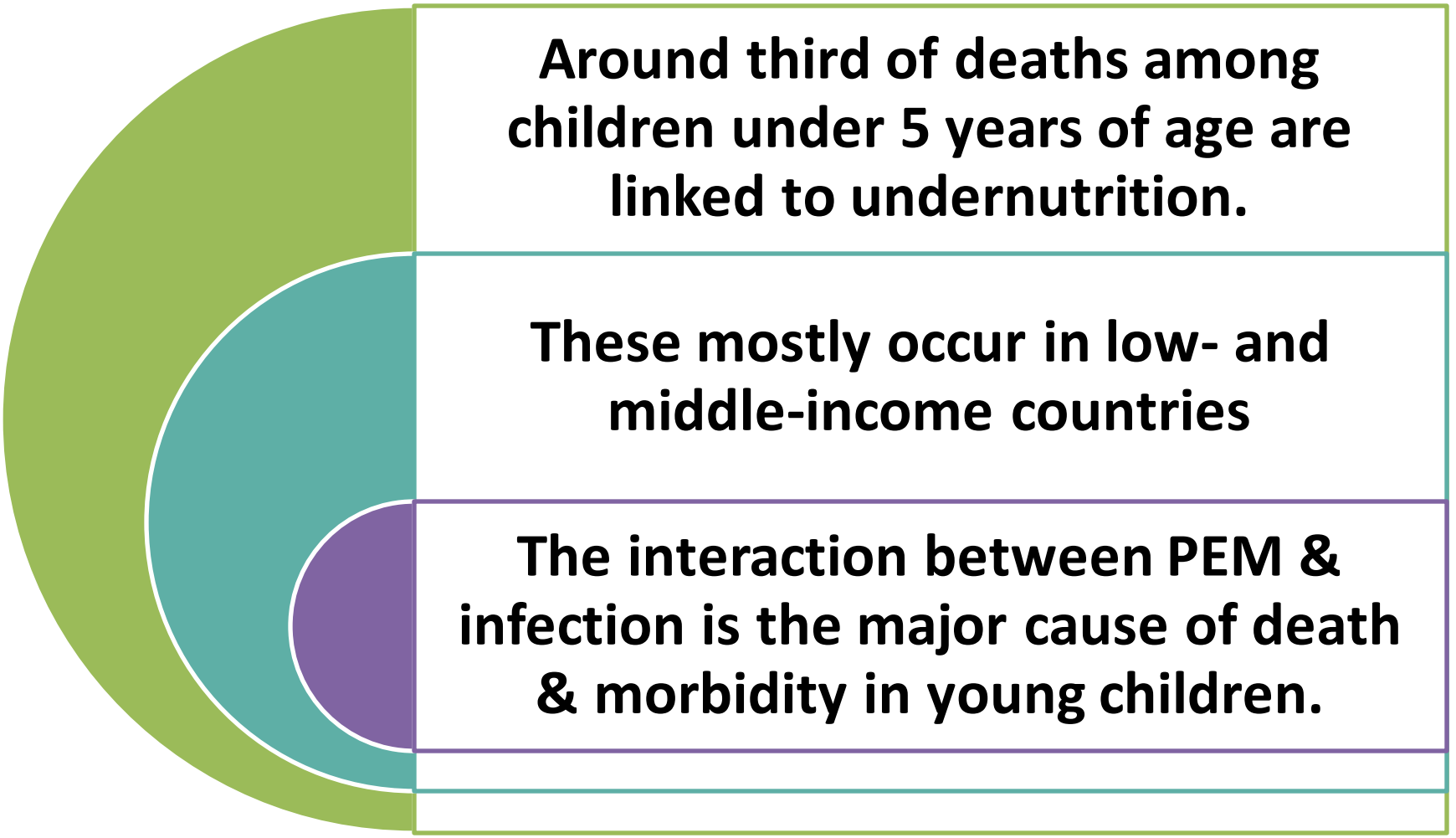
2. Infections

Nutritional deficiency diseases

Protein Energy Malnutrition (PEM)

Iron Deficiency Anaemia (IDA)

Nutritional deficiency diseases



1. Protein energy malnutrition

- **It is a group of body depletion disorders.**
- **PEM is due to "food gap" between the intake and requirement.**

The most serious forms are ***kwashiorkor and marasmus.***

- **MARASMUS** Represents simple starvation . The body adapts to a chronic state of insufficient *caloric intake*
- **KWASHIORKOR** It is the body's response to insufficient *protein intake* but usually sufficient calories for energy.

1. Protein energy malnutrition Causes:

- **Inadequate Diet:**
  - Lack of access to a balanced diet that provides sufficient calories, protein, vitamins, and minerals is a primary cause of PEM. This can occur due to poverty, food scarcity, or insufficient nutritional knowledge (**WRONG CONCEPTS ABOUT NUTRITION**).
- **Food Insecurity:**
  - Lack of consistent access to an adequate and nutritious food supply, often due to factors like drought, famine, or political instability, can contribute to PEM.
- **Infections and Illnesses:**
  - Infections (e.g. Diarrhea) and chronic illnesses can increase the body's nutritional requirements and, at the same time, reduce appetite and nutrient absorption. This combination can contribute to malnutrition.

1. Protein energy malnutrition Causes:

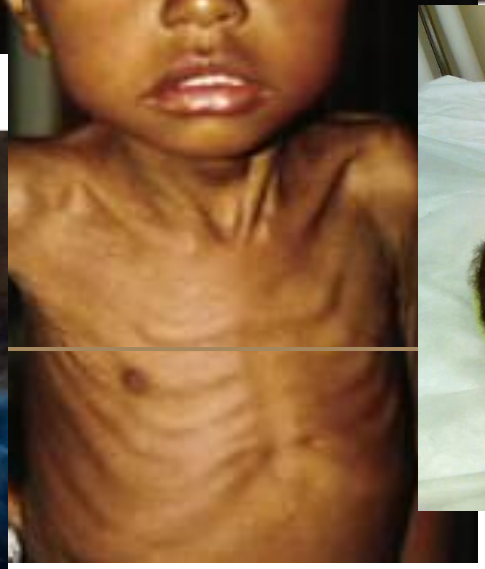
- **Poor Sanitation and Hygiene:**
  - Inadequate sanitation and hygiene practices can lead to recurrent infections and diseases that affect nutritional status. Diarrheal diseases, for example, can result in nutrient loss and contribute to malnutrition.
- **Lack of Breastfeeding:**
  - In infants, the absence of breastfeeding or early ending of breastfeeding can contribute to malnutrition.
- **Cultural and Dietary Practices:**
  - Certain cultural beliefs and dietary practices may limit the variety of foods consumed, leading to nutritional imbalances. For example, (Meal Structure and Timing, food Preparation Methods, Traditional Diets…etc..)

kwashiorkor vs Marasmus

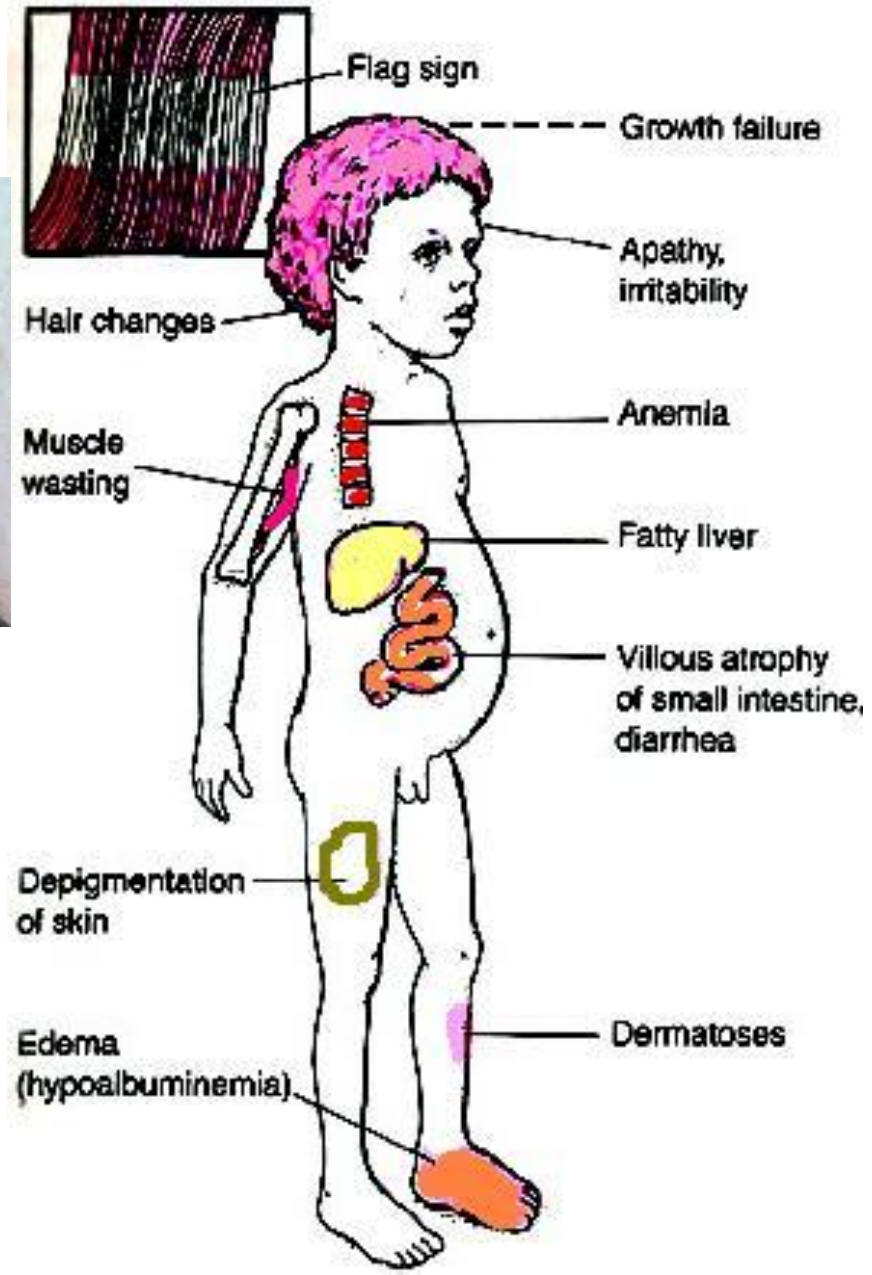
	Kwashiorkor	Marasmus
Age of onset	1-5 yrs old	Weaned infant (<1)
Underlying Cause:	deficiency of protein intake	caloric intake is very low
Edema:	a hallmark sign, especially in the extremities and face.	typically absent or minimal.
Body weight	60-80% of normal	<60% of normal
Abdomen	protruding	Sunken
Face	Moon face	Old man's face
Muscle wasting	Hidden by edema	wasted
Weight for height	Maybe masked by edema	Very low
Fat wasting	Fat often retained but not firm	Severe loss of cutaneous fat
Liver Involvement	Hepatomegaly (enlarged liver) is common due to fatty infiltration.	No hepatomegaly
Mental appearance	apathetic or irritable	more alert and irritable
Hair and Skin Changes	changes in hair color (hypopigmented) and texture(Sparse, silky, easily pulled),skin peeling.	Less to no hair changes, Skin may be dry and wrinkled.
Appetite	Poor	good

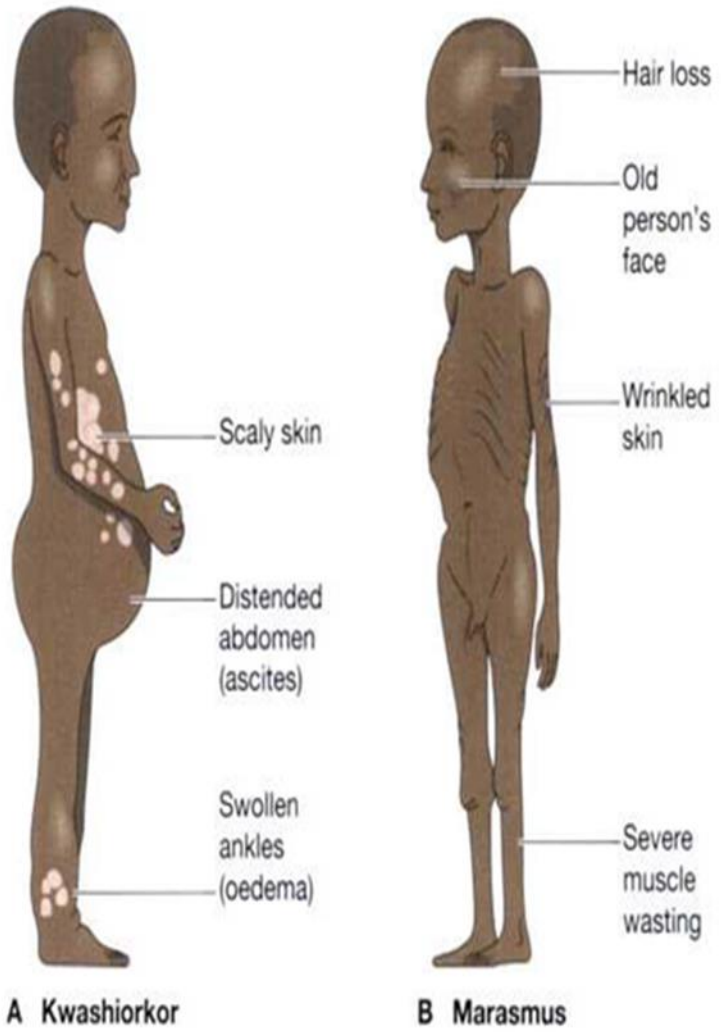
An 8-year-old Madaya boy suffering from kwashiorkor, a form of malnutrition caused by protein deficiency. Photo: Syrian American Medical Society

T ed with Kwashiorkor disease in the besieged town, medical expert says



Hair changes, rust colour

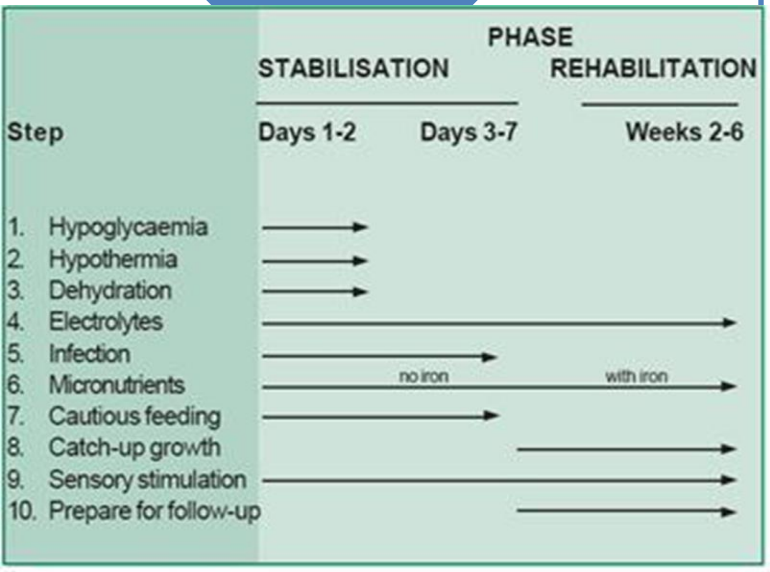




A Kwashiorkor **B Marasmus**

TREATMENT

Treatment strategy can be divided into **three** stages:



- **Resolving life threatening conditions:** Hospital Treatment: Hypothermia, hypoglycemia, infection, dehydration, electrolyte imbalance, anaemia and other vitamin and mineral deficiencies are corrected.
- **Restoring nutritional status:** Start cautious feeding: Dietary Management from locally available foods - inexpensive, easily digestible, evenly distributed throughout the day and increased number of feedings gradually to increase the quantity of food. Avoid (refeeding syndrome).
- **Rehabilitation:** Achieve catch-up growth. practical nutritional training for mothers to learn feeding their children back to health under supervision and using local foods.

2. Iron deficiency anaemia

AETIOLOGY:

- **Dietary Insufficiency:** A lack of iron-rich foods in the diet, especially in children with poor nutritional habits.
- **Rapid Growth:** During periods of rapid growth, such as infancy and adolescence, the body's demand for iron increases.
- **Limited Iron Absorption:** Some children may have conditions that limit the absorption of iron from the gastrointestinal tract.
- **Premature Birth:** Preterm infants may have lower iron stores, leading to an increased risk of iron deficiency.
- **Infection, particularly parasitic diseases and diarrhoea causing agents**

2. Iron deficiency anaemia

Prevention and treatment:

- **Iron Supplementation:** Oral iron supplements are commonly prescribed to correct the deficiency.
- **Dietary Changes:** Encouraging a diet rich in iron-containing foods, such as lean meats, poultry, fish, iron-fortified cereals, and vegetables. **starting by age of 5-6 months.**
- **Vitamin C Intake:** Enhancing iron absorption by combining iron-rich foods with sources of vitamin C.
- **Breastfeeding:** Ensuring that infants receive adequate iron for breastfed infants **infants at 4 months of age** or iron-fortified formula.
- **Avoid cows milk before 1 year of age**
- **Monitoring and Follow-Up:** Regular follow-up visits with healthcare providers to monitor the child's response to treatment and adjust the management plan as needed.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2791650/

2. Infections

- **(Acute Respiratory Infections) ARI**
- **Diarrhoeal diseases**
- **Malaria**

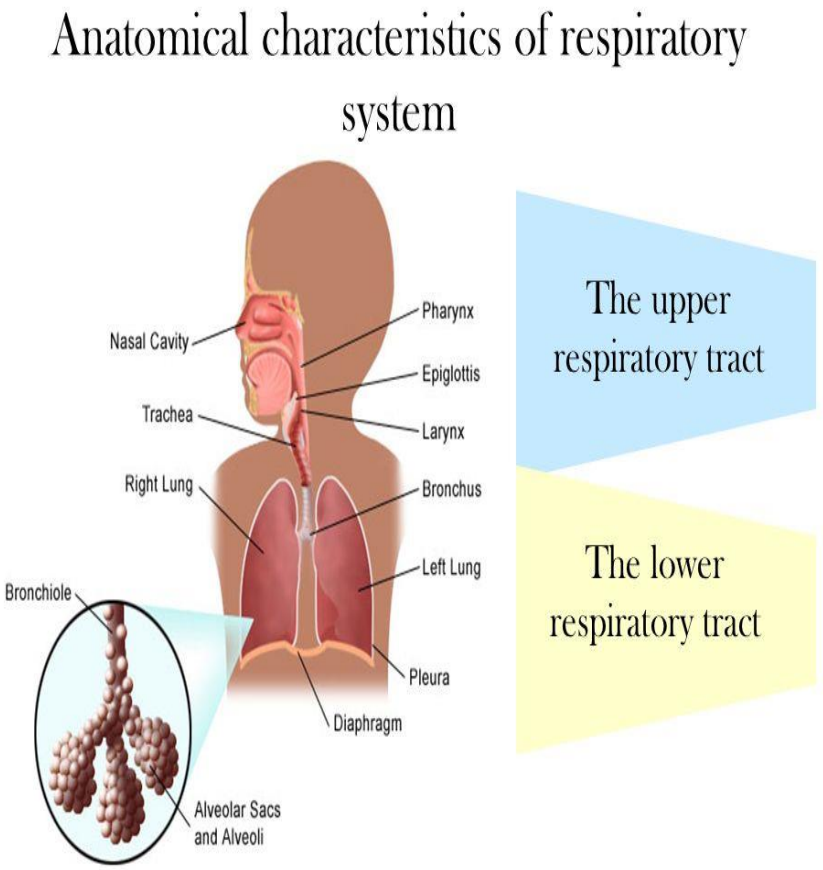
About two-thirds of child deaths are preventable through practical, low-cost intervention

1. Acute respiratory infections

An episode of acute symptoms and signs resulting from infection of any part of the respiratory tract or related structures (extending for less than 30 days).

ARIs are classified according to the site of infection into:

- ❖Acute upper respiratory tract infections (AURIs): these are common cold, laryngitis, pharyngitis, and otitis media
- ❖Acute lower respiratory infections (ALRIs): these are,; trachiltis, bronchitis, bronchiolitis alveolitis and pneumonia.



Most children have about **four to eight acute respiratory infections each year.**

Children with respiratory infections account for a large proportion of patients seen by health workers in health centres.

Ecology of ARI

Viral agents are responsible for over 90% of cases of AURIs and a considerable proportion of ALRIs.

The most frequent viral agents of ARI in infants and young children are:

a. **Respiratory syncytial virus**,

b. human rhinovirus (HRV)

b. Para influenza and influenza A, B viruses,

c. Adenoviruses, human metapneumovirus (hMPV)

d. Measles, mumps, and German measles.

Bacterial agents include:

Pertussis, Streptococcal pyogenes .

Streptococcus pneumonia and Haemophilus influenza (Type B (Hib)) are the commonest causes of pneumonia in children.

Clinical presentation

Upper Respiratory Tract Infections (URTI):

- **Nasal Congestion:**
- **Runny Nose (Rhinorrhea):**
- **Sneezing:**
- **Cough:**
  - Dry or productive cough is common.
- **Sore Throat:**
- **Fever:**
- **Headache:**
  - Older children may complain of a headache.
- **Fatigue:**
  - Generalized tiredness or lack of energy.

Lower Respiratory Tract Infections (LRTI):

- **Cough:**
  - Persistent cough, which may become more severe over time.
- **Shortness of Breath:**
  - Rapid or labored breathing, especially during physical activity.
- **Wheezing:**
  - High-pitched whistling sound during breathing, often heard on exhaling.
- **Chest Pain:**
  - Children may experience chest discomfort.
- **Fever:**
- **Difficulty Feeding (Infants):**
  - Infants with lower respiratory infections may have difficulty feeding or show signs of increased effort during breathing.

General Symptoms:

Poor Appetite:

Vomiting: Some children may vomit, especially if coughing is severe.

Ear Pain: Ear pain or discomfort, especially in cases of middle ear infections (otitis media).

Dehydration: Signs of dehydration may be present, especially if there is associated fever, vomiting, or poor fluid intake

Mortality:

The main causes of ARI deaths for children under five are: Pneumonia, bronchopneumonia and bronchiolitis.

ARIs are common in urban areas than in rural ones.

The death rates are 20-50 times higher in the developing ones.

Prevention

1. **Immunization:**

influenza, pneumococcal infections, Haemophilus influenzae type B (Hib), and pertussis (whooping cough).

2. **Chemoprophylaxis:**

- Used in prevention of recurrent streptococcal infections by penicillin.
- It is possible to prevent some viral infections by anti-viral agents e.g. Tamil for influenza.

3. **Non specific measures**: Hand Hygiene, Improvement of socio-economic and health status in general e.g. control of malnutrition, encouraging breast feeding, control of air pollution …etc

Home Care

- Keep the baby warm
- Continue breast feeding and feeding the child
- To increase feeding after recovery
- To clear the nose if it interferes with feeding
- Cough can be relieved by home made decoctions
- To watch for danger signs (Difficulty Breathing, Persistent Cough, Cyanosis, Lethargy, Altered Mental Status, persistent high fever..)

2. Diarrheal disease

Diarrhoea is defined as the passage of three or more loose or liquid stools in a 24-h period (or more frequent passage than is normal for the individual). *However, it is the consistency of the stools rather than the number that is.*

Diarrhoea is usually a symptom of an infection in the intestinal tract.

Viruses are the most common cause of a child's diarrhoea in the first 5 years of life.

Most common virus is rotaviruses.

Others: noroviruses and adenoviruses.

Bacterial pathogen: Campylobacter jejuni, yersinia, salmonella, shigella, pathogenic E. coli, or clostridium difficile).

Parasites are the cause in fewer than 5% (lamblia, cryptosporidia, Entamoeba histolytica, and others).

Diarrhoeal disease is the second leading cause of death in children under five years old.

In low-income countries, children under three years old experience **on average three episodes of diarrhoea every year.**

Each episode deprives the child of the nutrition necessary for growth. As a result, diarrhoea is a major cause of malnutrition, and malnourished children are more likely to fall ill from diarrhoea.

Types of diarrhea:

Three main clinical types of diarrhea

- **Acute watery diarrhea:** This refers to acute diarrhea, lasts less than 14 days (average 7 days) and involves the passage of frequent loose or watery stools without visible blood.
- **Dysentery:** It is diarrhea with **visible blood** in faeces accompanied by anorexia, rapid weight loss and damage to the intestinal mucosa by the invasive bacteria (Shigella ,Entamoeba histolytica).

Types of diarrhea:

- **Persistent diarrhea:** Diarrhea that begins acutely but is usually of long duration (more than 14 days). It may begin either as watery diarrhea or dysentery with risk of dehydration.

Persistent diarrhea should not be confused with ***chronic diarrhea*** which is recurrent or long lasting diarrhea due to non infectious causes such as food sensitivity or metabolic disorders.

Prevention

- **access to safe drinking-water;**
- **use of improved sanitation;**
- **hand washing with soap;**
- **exclusive breastfeeding for the first six months of life;**
- **good personal and food hygiene;**
- **health education about how infections spread; and**
- **Rotavirus vaccination**
- **Measles immunization is a very cost effective measure for reducing diarrhea morbidity and mortality.** Measles vaccine given at the recommended age can prevent up to 25% of diarrhea-associated deaths in children under 5 years of age.

https://pubmed.ncbi.nlm.nih.gov/6414730/#:~:text=Theoretical%20calculations%20indicate%20that%20measles,among%20children%20under%20age%205.

Types of dehydration

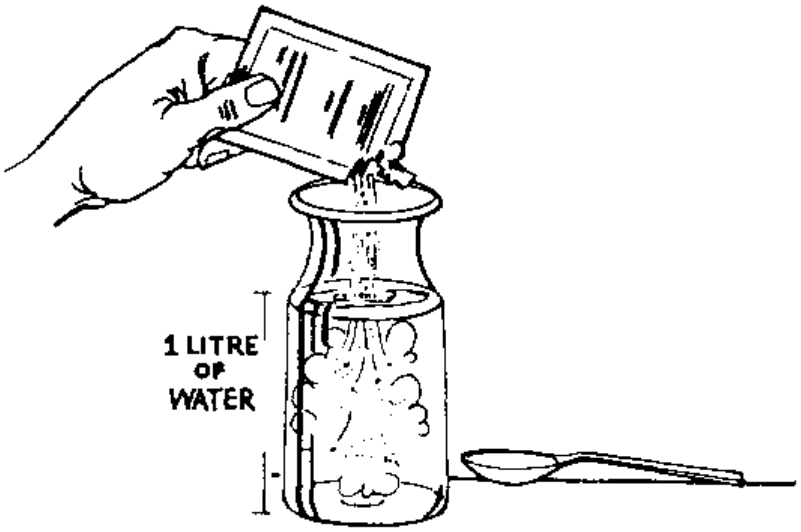
Based on severity:

- Mild : when the total fluid loss reaches 5% or less
- **Moderate :** when the total fluid loss reaches 5_10% .
- **Severe :** when the total fluid loss reaches more than 10%, considered an emergency case

Possible Complications:

• Permanent brain damage • Seizures • hypernatremia • Hyponatremia • hypovolemic shock • Kidney failure • Coma and death

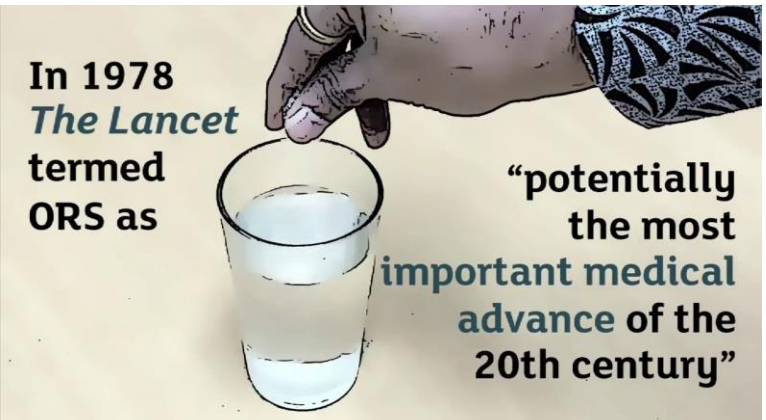
Treatment



1. Treat the cause.
2. Continue breastfeeding
3. For mild and moderate dehydration:

Oral rehydration solution (ORS): This solution (glucose & electrolytes) can be taken by cup and spoon to prevent or correct dehydration. Glucose is added in optimal amount (2%) to promote sodium absorption.

4. Zinc supplement

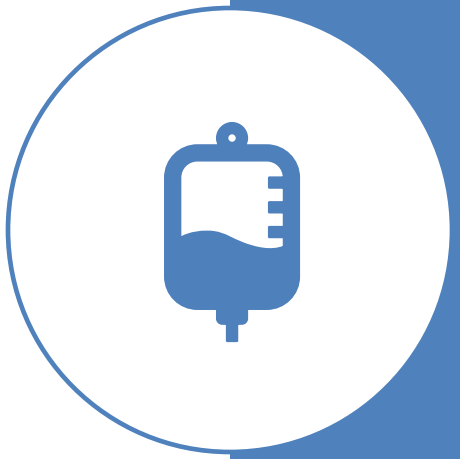


Contraindications for ORS:

1. **Severe dehydration.**
2. **Unconsciousness.**
3. **Frequent vomiting**

Treatment

- **A child classified with SEVERE Diarrhoea (DEHYDRATION) needs fluids quickly. Treat with IV (intravenous) fluids.**



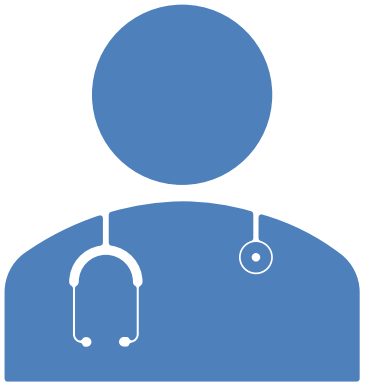
Home treatment :

- Notify physician immediately in case of continues vomiting and diarrhoea.
- Teach the mother how to prepare ORS at home in case of mild and moderate dehydration if Oral rehydration solution (ORS) was not available : (6 tea spoon) of sugar+ (1/2 tea spoon) of salt+ (4.25 Cups) of water.
- Return immediately if the child develops danger signs, drinks poorly, or has blood in stool.

Integrated Management of Childhood Illness (IMCI).

- WHO and UNICEF developed a strategy known as Integrated Management of Childhood Illness (IMCI).
- The strategy includes preventive and curative interventions, which aim to improve practices both in the health facilities and at home.

Why is IMCI better than single-condition approaches?



1. Children brought for medical treatment in the developing world are often suffering from more than one condition.
2. A single diagnosis may not be possible or appropriate
3. Treatment may need to combine therapy for several conditions.

"Looking to The Child as a Whole".

Diseases Covered By IMCI

1-Acute respiratory infections

2-Diarrhoeal diseases

3-Malaria

4-Measles

5-Malnutrition.

- **Age Groups Covered By IMCI**

IMCI guidelines recommend case management procedures based on two age categories:-

- Young infants age up to 2 months
- Children age 2 months up to 5 years.

BASIS FOR CLASSIFYING THE CHILD'S ILLNESS

- The child's illness is classified based on a **color-coded triage system:**
- **PINK-** indicates urgent hospital referral or admission
- **YELLOW-** indicates initiation of specific Outpatient Treatment
- **GREEN –** indicates supportive home care

The Integrated Case Management Process

Check for danger signs

1. Convulsions
2. Lethargy/ unconsciousness
3. Inability to drink/breastfeed
4. Vomiting

Assess main symptoms

1. Cough/difficulty in breathing
2. Diarrhoea
3. Fever
4. Ear problems

Assess

- Nutrition
- Immunization status and
- Potential feeding problems

Check for other problems

Classify the condition of the child and assign to one of the three color codes and Identify the treatment actions as per the actions listed in that color band

Urgent referral

1. Pre – referral treatments
2. Advise parents
3. REFER the child

At the referral facility

1. ETAT
2. Diagnosis, treatment and
3. Monitoring and follow up

Treat at the OPD

1. Treat local infection
2. Give oral drugs
3. Advise and teach mother
4. Follow – up

Home Management

Counsel care taker on how to:

1. Give oral drugs
2. Treat local infections at home
3. Continue feeding
4. Danger signs
5. Follow – up

- THANK YOU

- Following on past lecture: