

- **Diarrhoea** is defined as recent change in consistency and frequency of stools i.e, liquid or watery stools that occur more than 3 times a day.
- In a vast majority of cases these acute episodes subside within 7 days.
- **Persistent diarrhoea:** Acute diarrhoea persisting for more than 2 weeks ( 5 to 15% cases )mostly due to infections.
- **Chronic diarrhoea:** Insidious onset diarrhoea of more than two weeks duration in children mostly due to non-infectious conditions causing malabsorption (IBD)

- If there is associated blood in stools it is termed as **dysentery**.
- Diarrhoea accounts for over 20% of all deaths in underfive children.
- Globally it affects 3 to 5 billion cases and causes about 2 million deaths a year.
- Consequences of diarrhoea in children: malnutrition ,dehydration, electrolyte imbalance, acid base imbalance

# ETIOLOGY

- Most common: Intestinal infections( bacterial, viral or parasitic)
- Other causes:
  - ✓ Certain drugs(antibiotics,NSAIDs,PPIs,cytotoxic drugs)
  - ✓ food allergy
  - ✓ systemic infections( urinary tract infection and otitis media)
  - ✓ surgical conditions( appendicitis or Hirschsprung disease).
- Rotavirus remains the leading cause of severe gastroenteritis worldwide.
- In India- rotavirus and enterotoxigenic E.coli

- **Bacterial:** E.coli, Shigella, Vibrio cholerae, Salmonella, Campylobacter, Bacillus cereus, Clostridium difficile, S.aureus.
- **Viral:** Rotavirus, Norovirus, enteric adenovirus, coronavirus
- **Parasitic:** Giardia lamblia, Cryptosporidium parvum, Entamoeba, Isospora

# RISK FACTORS

- Poor sanitation and personal hygiene
- Non availability of safe drinking water
- Unsafe food preparation practices
- Low rates of breastfeeding
- Low immunization
- Young children (less than 2 years)
- Malnutrition
- Hypo or achlorhydria
- selective IgA deficiency
- HIV infection, immunodeficiency
- Chronic use of antibiotics (clostridium difficile)
- Travel

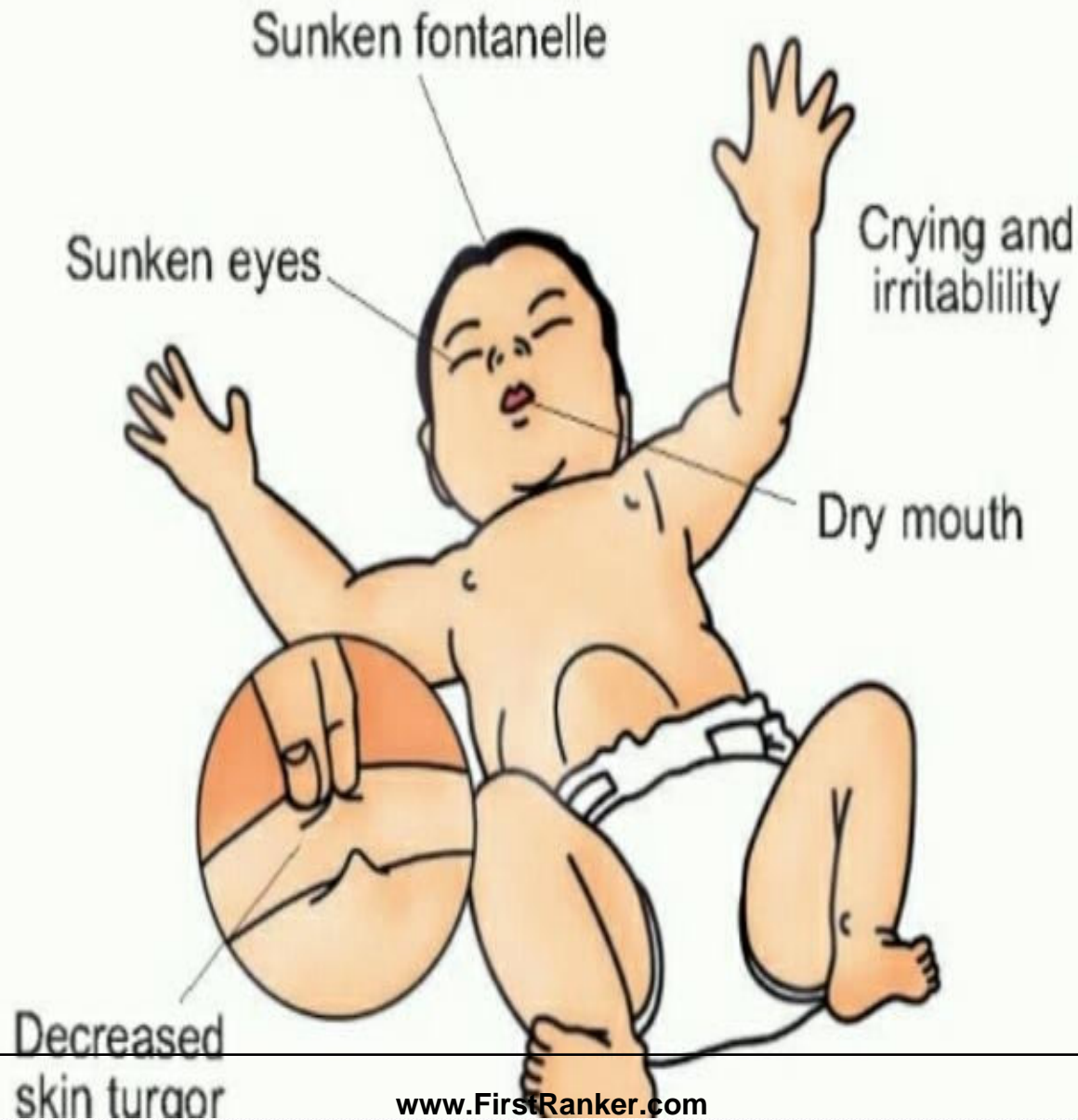
# PATHOGENESIS

- 60% of a child's body weight is water -ECF and ICF compartments
- Diarrheal losses comes from ECF which has relatively high sodium and low potassium
- In 50% cases concentration of sodium in plasma remains normal
- In 40 to 45% cases excessive sodium is lost in stools - hyponatremia and fall in ECF osmolality- movement of water from ECF to ICF compartment - Further shrinkage of ECF volume.
- In both hyponatremic and isonatremic dehydration, skin turgor or elasticity is lost.

- In 5% cases, especially when child is given fluids with extra salt, serum sodium increases - ECF osmolality increases - water moves from ICF to ECF - skin appears soggy duffy or leathery.
- Therefore a severe case of hypernatremic dehydration is likely to be underestimated.
- As ECF compartment is depleted, blood volume decreases - weak thready pulse, low BP and cold extremities.
- Low hydrostatic pressure in Renal glomeruli - filtration of urine decreases
- Since intestinal secretions are alkaline, considerable bicarbonate is lost in diarrhoeal stools - acidosis - kussmaul's breathing .

- Thirsty
- Irritable
- Decreased skin turgor
- Fontanelle ( if open ) – is depressed
- Eyes appear sunken
- Tongue and inner side of cheeks appear dry
- Decreased urine output
- Urine passed at longer intervals
- Weak and Thready pulses
- Low blood pressure
- Cold extremities
- Due to hypokalemia-Abdominal distension,paralytic ileus,muscle hypotonia,ST depression,Flat T wave
- Kussmauls breathing





# Decreased skin turgor



# Depressed fontanelle



# Assessment of child with acute diarrhea

# Goals of assessment

1. Determine the type of diarrhea ie., acute watery diarrhea , dysentery or persistent diarrhea
2. Look for dehydration and other complications
3. Assess for malnutrition
4. Rule out nondiarrheal illness
5. Assess feeding ( both preillness and during illness )

# History


Should include information on

1. Onset of diarrhea, duration and number of stools per day
2. Blood in stool
3. Number of episodes of vomiting
4. Presence of fever, cough , and other significant symptoms
5. Type and amount of fluids and food taken during the illness and the pre illness feeding practices
6. Drugs and local remedies
7. Immunization history

# Examination

- Assessment of degree of dehydration
- Features of malnutrition
- Systemic infection
- Fungal infection



 <b>FirstRanker.com</b> Firstranker's choice	No dehydration	Some dehydration	Severe dehydration
	www.FirstRanker.com	www.FirstRanker.com	
Sensorium	Alert	Irritable	Lethargic/ unconscious
Thirst	Not thirsty; drinks normally	Thirsty; drinks eagerly	Drinks poorly or not able to drink
Skin turgor	Goes back quickly	Goes back slowly	Goes back very slowly
Eyes	Normal ; tears	Sunken ; tears absent	Very sunken ; tears absent
Oral mucosa	Moist	Dried	Very dry
Definition	No signs of dehydration	If 2 or more of the above signs including at least one key sign are present	If 2 or more of the above Signs including at least one key sign
Heart rate	Normal	Normal; maybe increased	Tachycardia; bradycardia in most severe cases
Pulse and extremities	Normal, warm www.FirstRanker.com	Normal- decreased volume, cold	Weak thready or impalpable, cold



# Severity of dehydration

- No dehydration -  $< 50$  ml/kg
- Some dehydration –  $50 - 100$  ml / kg
- Severe dehydration  $> 100$  ml/ kg

1. Look for features of malnutrition-
  - Anthropometry
  - Examination for wasting
  - Edema
  - Signs of vitamin deficiency
2. Systemic infection (cough, high grade fever, fast breathing etc.)
3. Fungal infection- Oral thrush, perianal satellite lesions

# Laboratory investigations

- Stool microscopy(cholera, giardiasis)
- Stool culture
- Hemogram
- Blood gas estimation
- Serum electrolytes
- Renal function tests