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# Acute Gastrointestinal Infections

Watery Diarrhea- Dehydration

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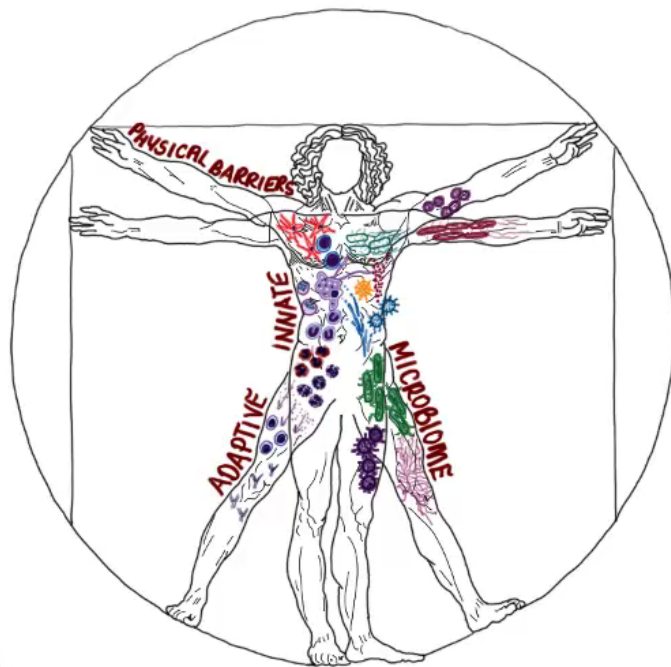
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REMEMBER

IMMUNOLOGY



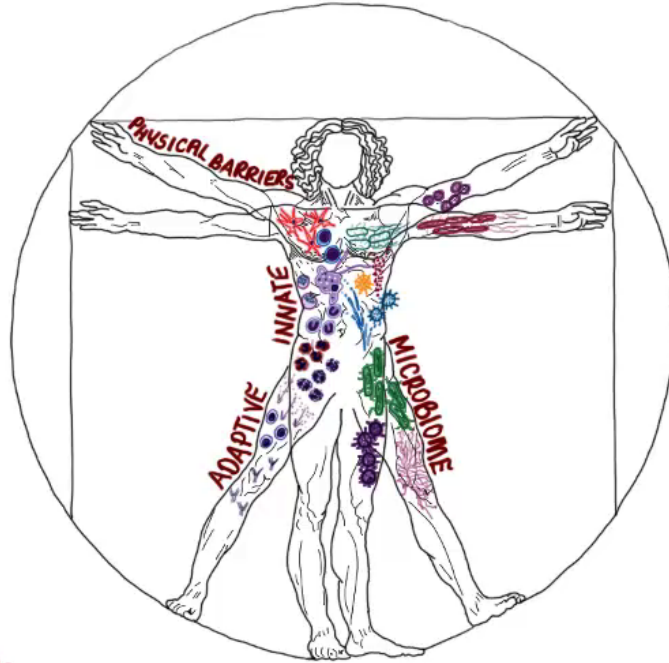
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MICROBIOLOGY

DIAGNOSIS  
THERAPY  
CLINICAL PRESENTATION  
PREVENTION  
EPIDEMIOLOGY

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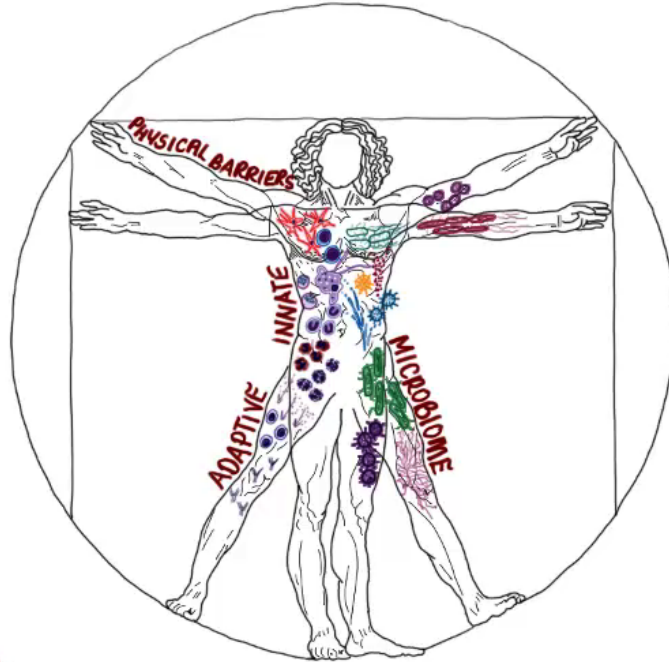
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THERAPY

CLINICAL PRESENTATION

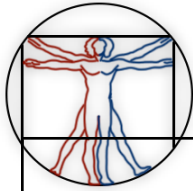
PREVENTION

EPIDEMIOLOGY



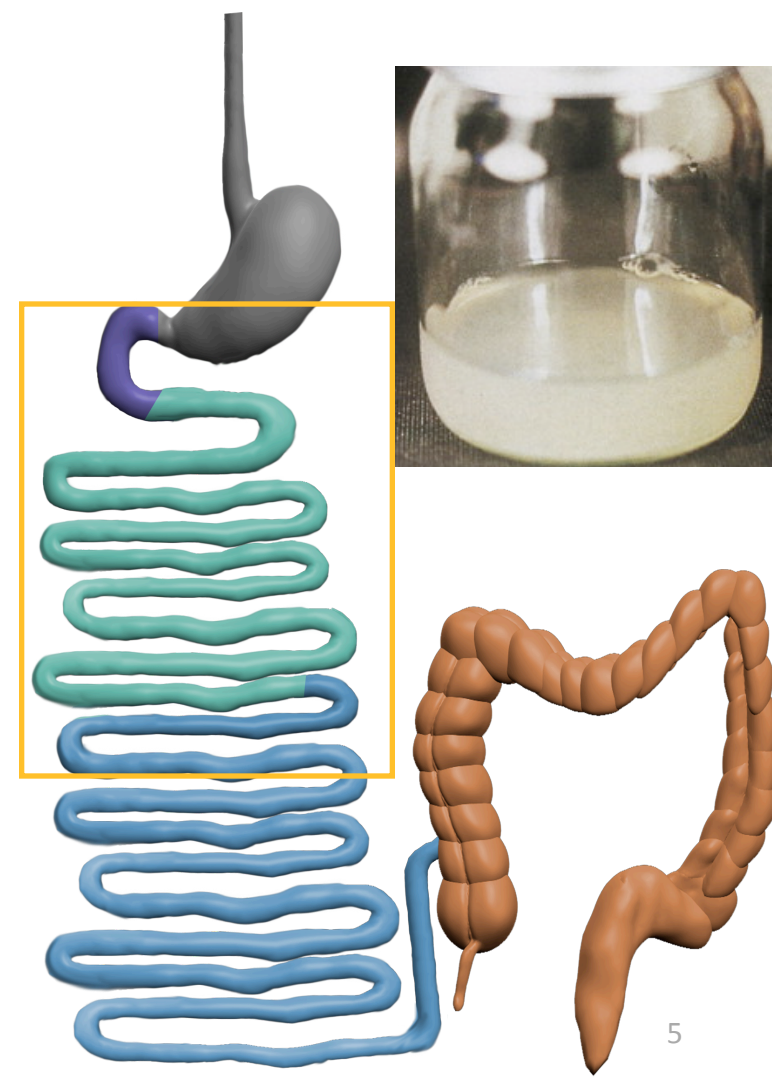
# Learning Objectives

- Explain the epidemiological differences in the etiology of infectious diarrhea seen in the developing vs developed world
- Recognize the clinical features, complications and treatment of dehydration from acute infectious watery diarrhea



# Watery Diarrhea

Clinical Features	Large volume watery stools without inflammatory cells or blood. Can lead to dehydration. Possibly accompanied by nausea, vomiting, bloating, colicky abdominal pain
Complications	Dehydration, electrolyte abnormalities, malnutrition
Management	Assess degree of dehydration, consider DDx, rehydrate, maintenance hydration
Anatomical Location	Proximal Small Intestine
Pathogenesis	Non-invasive, several are toxin mediated, secretory vs malabsorptive
Viruses	Rotavirus, Norovirus, Adenovirus (all non-enveloped capsids)
Bacteria	<i>Vibrio cholerae</i> , Enterotoxigenic <i>E. coli</i> (ETEC), EPEC, EAEC
Protozoa	<i>Giardia</i> , <i>Cryptosporidium</i>







# Epidemiology and burden of Disease

- Fecal-oral transmission- Contaminated Water
- Diarrhea and dehydration are the second leading cause of death in children under five
- Nearly 1.7 billion cases of diarrheal illness worldwide each year
- Leading cause of malnutrition in children <5







# Epidemiology and burden of Disease in U.S.

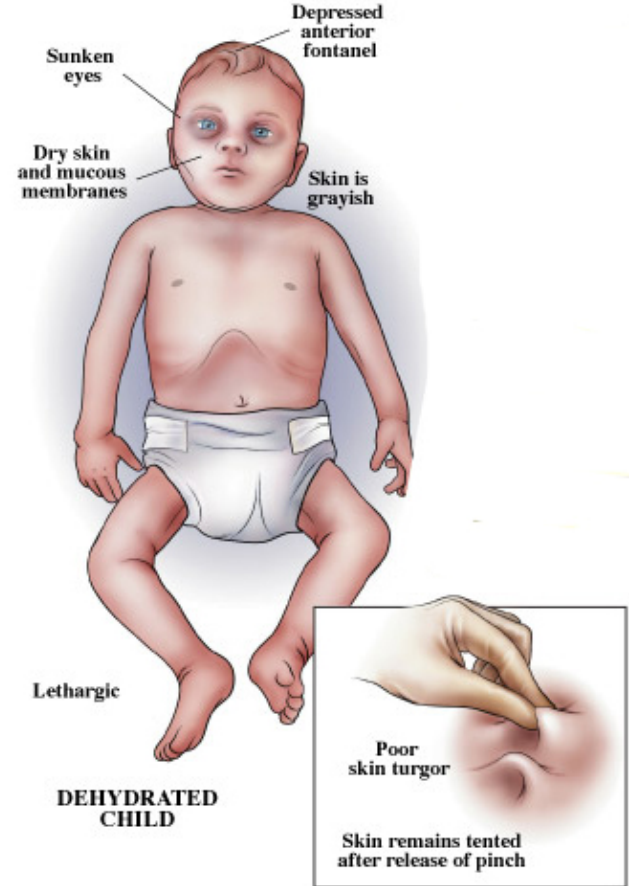
- Fecal-oral transmission- Contaminated Food
- Most bacterial infections are zoonoses from animal feces contaminating food supply
- U.S. animal feeding operations produce 335 million tons of dry feces per year- more than one ton per person per year
- In the U.S. CDC estimates each year: 1 in 6 Americans (48 million) become ill, 128,000 hospitalizations 3,000 deaths





# Degree of Dehydration

- Developed world:
  - An 8-month-old girl in day-care in the United States develops fever to 101°F for the last two days accompanied by vomiting. She is drinking formula but has fewer wet diapers than usual. She now has large volume watery, yellowish diarrhea without blood that is not contained by the diapers. She cries but does not make tears and her saliva and gums seems sticky or tacky.
- Developing world:
  - A 14-month-old Haitian boy develops vomiting and diarrhea too numerous to count for 10 hours before admission to a clinic. He has stopped urinating. He is lethargic, and not very interactive. He has sunken eyes, dry mouth, skin tenting, and has a rapid pulse and rapid breathing rate.

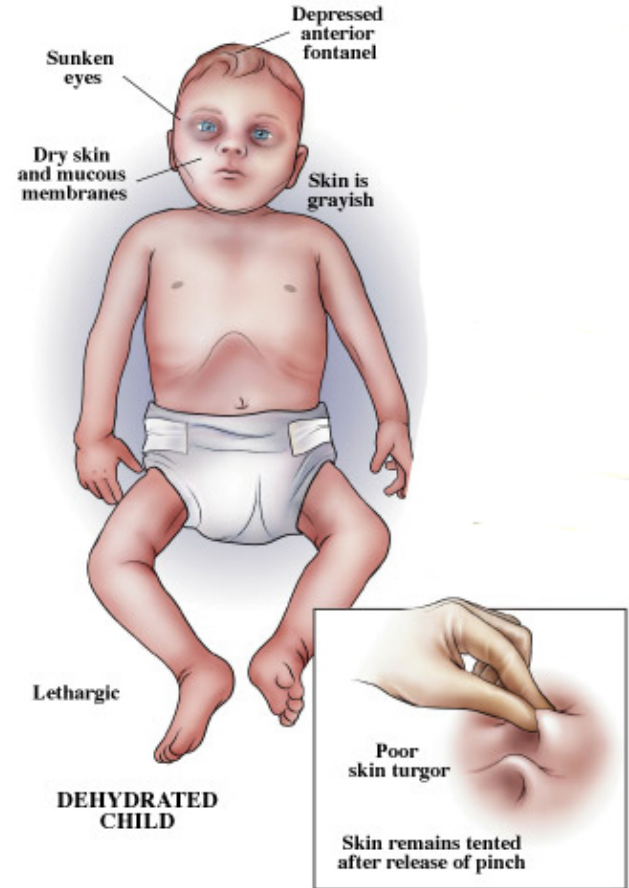




# Degree of Dehydration



- Early dehydration
  - no signs or symptoms.
- Moderate dehydration:
  - Thirst
  - Restless or irritable behavior
  - Decreased urine output
  - Sunken eyes, decrease moisture in mouth, tears absent
- Severe dehydration:
  - Worsening signs and symptoms
  - lethargy, floppy, weak, lack of urine output, dry mouth, cool extremities, rapid and feeble pulse, slow capillary refill time, poor skin turgor, impending shock with low blood pressure.





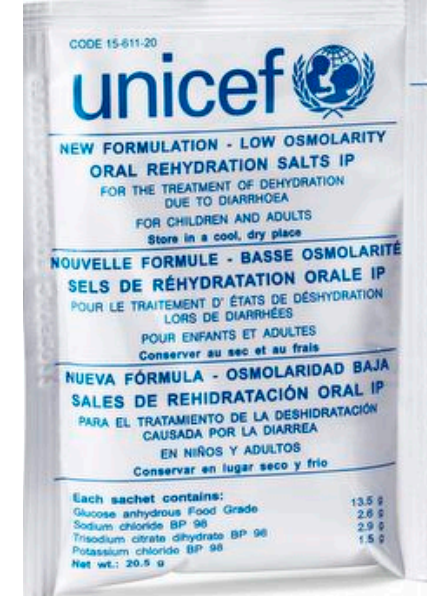
# Treatment

- Regardless of the infectious etiology rehydration and correction of electrolyte imbalance is the most important treatment
  - For mild to moderate dehydration use Oral Rehydration Solution, ORT
  - Severe dehydration is a medical emergency and may require intravenous access



# Treatment

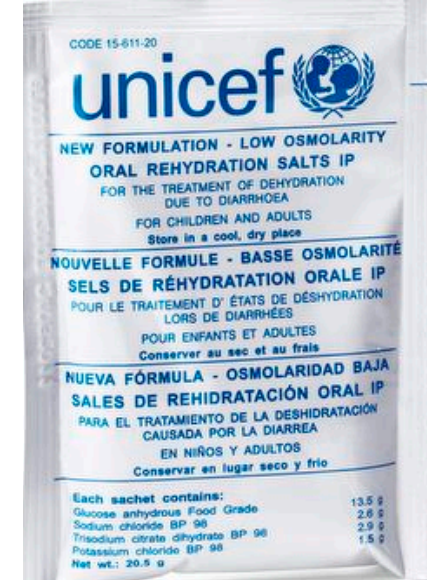
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## Credits: Watery Diarrhea- Dehydration

**Slide 5:** Rice Water Stools. From: Gastrointestinal tract infections. Mims' Medical Microbiology. Goering, Richard V., BA MSc PhD. January 1, 2013. Pages 269-302. © 2013. Figure 22.13.

<https://www.clinicalkey.com>

**Slide 6:** Children playing near an open sewer in Kibera, Kenya. Wikimedia Commons

[http://commons.wikimedia.org/wiki/File:Children\\_and\\_open\\_sewer\\_in\\_Kibera.jpg](http://commons.wikimedia.org/wiki/File:Children_and_open_sewer_in_Kibera.jpg)

**Slide 7:** CAFO Concentrated animal feeding operation. Wikimedia Commons

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**Slide 8-9:** Pediatric Dehydration. Patient education. Spandorfer, Philip R.. Published February 14, 2014. Pages 291-295. © 2007 Elsevier

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**Slide 10:** Unicef oral rehydration salts

<https://www.unicef.org.nz/product/Oral-Rehydration-Salts>