

Acute Gastroenteritis

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Professor of

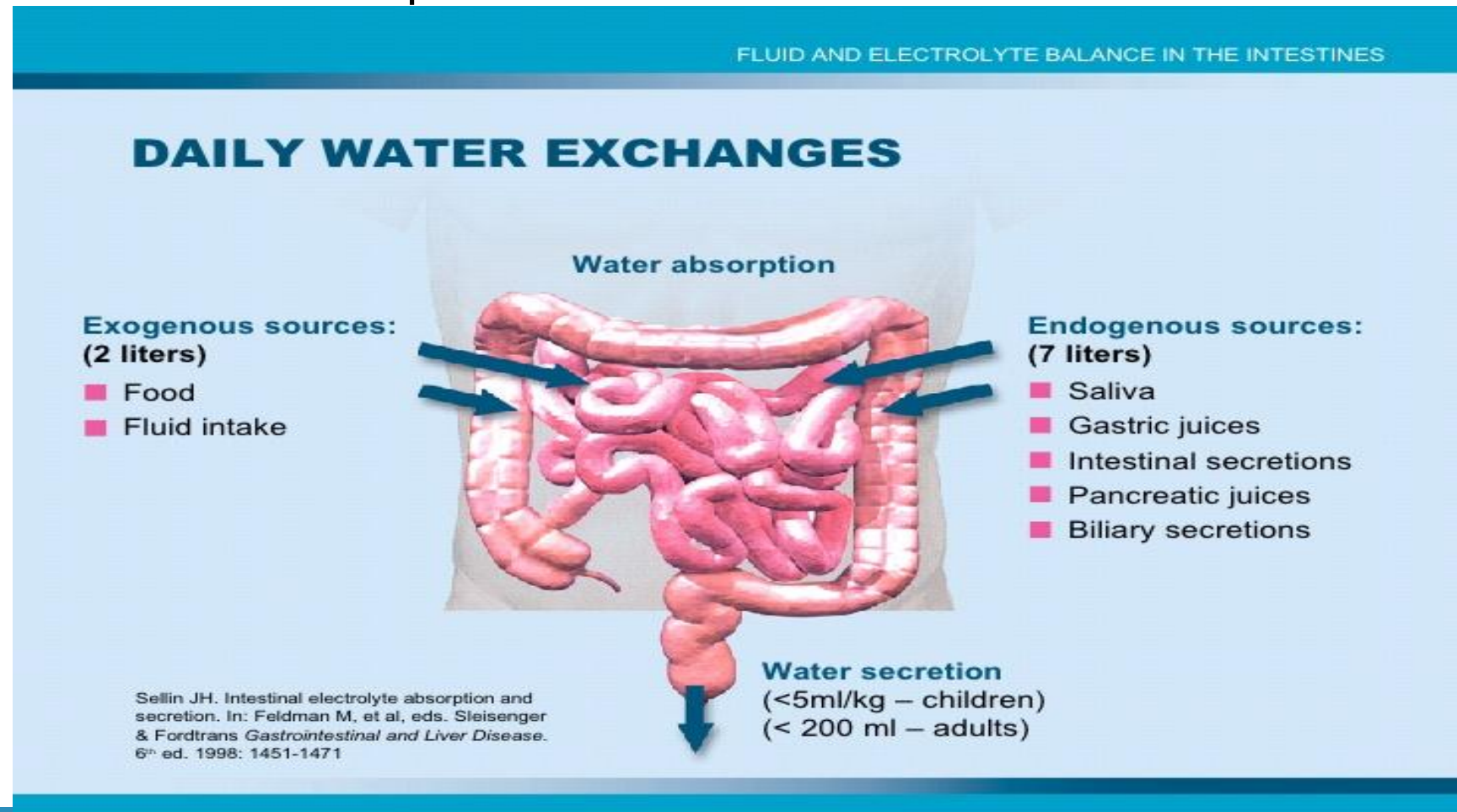
Pediatrics & Gastroenterology

Outline

- Basic physiology
 - Definition and classification
 - Epidemiology
 - Etiology
 - Complications
 - Management
 - Prevention
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GI tract job description?

- To perform the mechanical and chemical processes of
 - Digestion of food
 - Absorption of nutrients
 - Elimination of waste



AGE Definition

Acute gastroenteritis is generally defined as a decrease in the consistency of stools and/or an increase in the frequency of evacuations (typically ≥ 3 in 24 hours), with or without fever or vomiting.

However, a change in stool consistency versus previous stool consistency is more indicative of diarrhea than stool number, particularly in the first months of life.

Acute diarrhea typically lasts less than 7 days and not longer than 14 days when it becomes chronic diarrhea.

Burden of Diarrhea

Diarrhea: Key facts

- Is the second leading cause of death in children under five (525,000) each year.
 - Globally, there are nearly 1.7 billion episodes diarrheal every year.
 - Is a leading cause of malnutrition in children under five years old.
 - It is both preventable and treatable.
 - Peak incidence is between 6-11 months
 - Age of complementary feeding
 - Related to developmental age (mouthing)
 - Declining maternal antibodies
-

Department of Statistics: Diarrhea

Jordan



Population and
Family Health Survey **2017-18**

Key Indicators

- - 10% of children under age 5 had diarrhea in the 2 weeks preceding the survey
- Medical advice was sought in only 54% of children
- 28% of children with diarrhea were given antibiotics.
- Only 31% were given more fluids than usual (recommended)
- - 44% of children were given fluids prepared from an ORS

Causes of acute gastroenteritis in children

■ Viruses (about 70%)

- Rotaviruses
- Noroviruses
- Enteric adenoviruses
- Caliciviruses
- Astroviruses
- Enteroviruses

■ Protozoa (<10%)

- *Cryptosporidium*
- *Giardia lamblia*
- *Entamoeba histolytica*

■ Bacteria (10-20%)

- *Campylobacter jejuni*
- Non-typhoid *Salmonella* spp
- Enteropathogenic *Escherichia coli*
- *Shigella* spp
- *Yersinia enterocolitica*
- Shiga toxin producing *E coli*
- *Salmonella typhi* and *S paratyphi*
- *Vibrio cholerae*

■ Helminths

- *Strongyloides stercoralis*

39.6% had Rotavirus by ELIZA

Viral Gastroenteritis Among Young Children in Northern Jordan

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Summary

During the summer months of 1992 and 1993, a total of 439 diarrhoeatic fecal specimens from infants and young children less than 3 years of age admitted to the pediatric ward of Princess Basma Teaching Hospital, northern Jordan were tested for the presence of viruses using direct electron microscopy (EM) and enzyme-linked immunosorbent assay (ELISA) for rotavirus. EM revealed rotaviruses in 83 (18.9 per cent) of cases, adenoviruses in five (1.1 per cent) cases, and small round viruses in three (0.68 per cent) cases. In contrast, the ELISA method detected rotavirus in 154 (39.6

Diarrhea: Complications

- Dehydration leading to shock
 - Electrolytes imbalance
 - Metabolic acidosis
 - Convulsions (brain edema)
 - Malnutrition if chronic or recurrent
 - Sepsis and DIC
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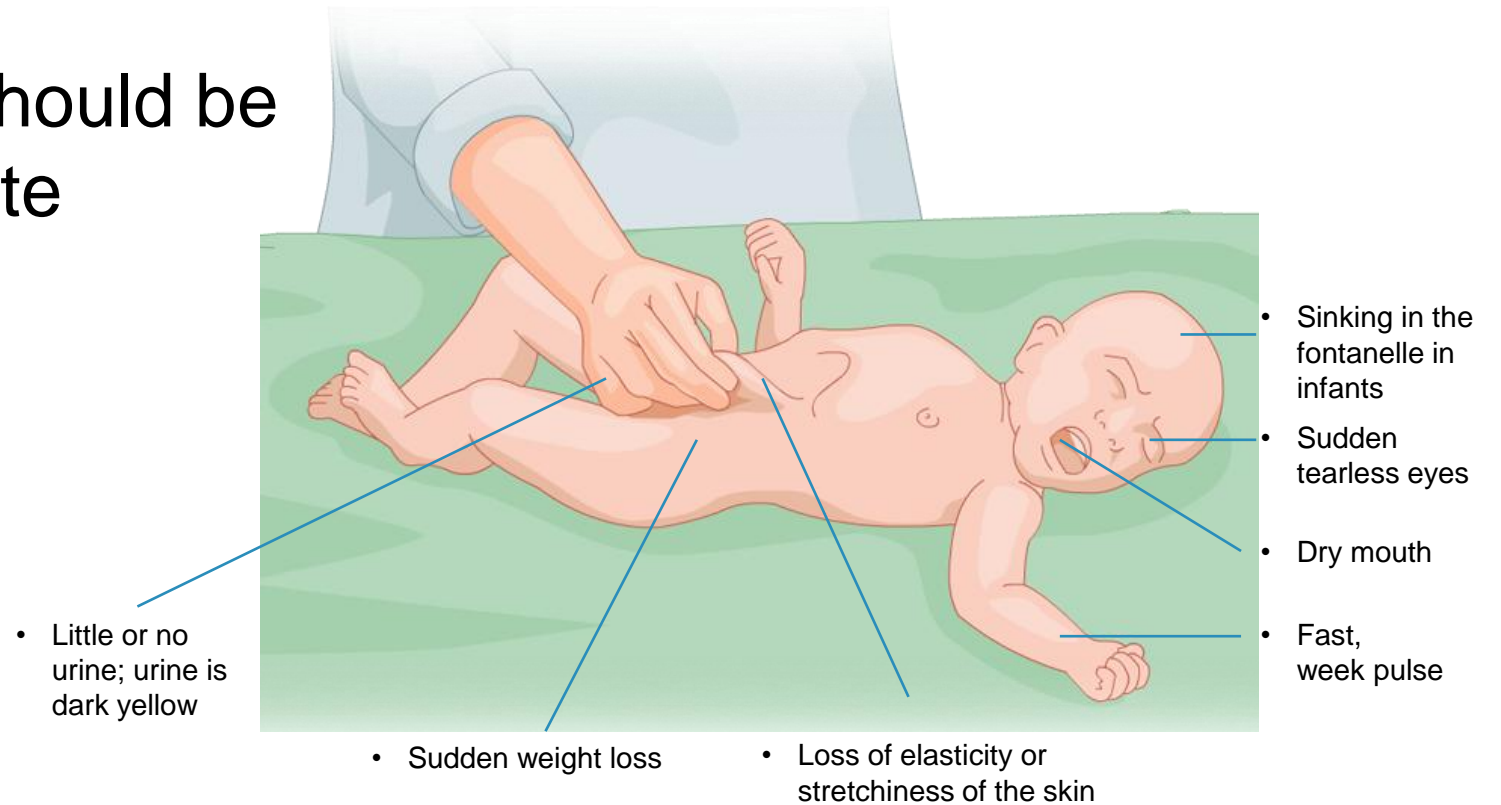
Assessment of dehydration

Assessment of Dehydration

- Studies that have evaluated the correlation of clinical signs of dehydration with post-treatment weight gain indicate that
 - the first signs of dehydration might not be evident until 5%,
 - with more numerous clinical signs evident at 5 -9%
 - and signs indicating severe dehydration and shock not evident until fluid loss reaches 10%.
 - Duggan C, Refat M, Hashem M, Wolff M, Fayad I, Santosham M. How valid are clinical signs of dehydration in infants? *J Pediatr Gastroenterol Nutr* 1996;22:56--61.
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Diarrhea: Signs of Dehydration

Dehydration assessment should be carried out through complete physical evaluation.



Degree of Dehydration

- No clinical signs = Mild dehydration
- 2 signs with stable circulation = Moderate
- 2 signs and signs of shock = Severe

Diagnostic workup

Diarrhea: Who needs work up?

- Most children with acute gastroenteritis do not require diagnostic workup except:
- In very young children.
- In patients with underlying chronic conditions (e.g. cancer, inflammatory bowel diseases, immune deficiency disorders, diabetes mellitus).
- In very sick patients.
- In patients with febrile invasive diarrhea or bloody diarrhea with or without fever.
- In patients with known travel to high-risk areas or during disease outbreak.

Hospital admission

Indications for hospital admission

- Shock
 - Moderate-to-severe dehydration in young children.
 - Neurological abnormalities (lethargy, seizures, etc.).
 - Intractable vomiting.
 - Failure of oral rehydration.
 - Suspected surgical conditions.
 - Electrolyte and/or acid/base imbalance.
 - Unmet conditions for safe follow-up and home management.
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Treatment

Rehydration

Diarrhea: Management

- Oral rehydration solution (ORS)
- Feeding
- Additional therapies
 - Probiotics
 - Antibiotics
 - Anti-diarrheal drugs
 - Antispasmodics

Fluids Management of AGE

- ORS should be used as first-line therapy for the management of children with acute gastroenteritis with mild or moderate dehydration.
- All other therapies should be administered as add-on to ORS if needed.

WHO ORS Osmolarity

| | | | |
|-----------------------|--------------------|--------------|-------------|
| <i>Na⁺</i> | | <i>90mM</i> | |
| <i>Cl⁺</i> | | <i>80mM</i> | |
| <i>Glucose</i> | | <i>110mM</i> | |
| <i>K⁺</i> | | <i>20mM</i> | |
| <i>Citrate</i> | Bicarbonate | <i>10mM</i> | 30 M |
| <i>TOTAL</i> | | <i>310mM</i> | |

How Much ORS?

- 75ml/kg in 3-4 hours
- Regular food
- 100 ml after each loose stool

Treatment

Nutritional management

AGE: Nutritional Management

- Breastfeeding should continue all through
- Early resumption of feeding after rehydration therapy is recommended
- Extra food and extra drink
- The use of lactose-free feeds is not
- The use of diluted milk is not recommended

Prevention

- Wash hands thoroughly before and after eating or when preparing the meals.
- Make sure that the tools used for eating and preparing the meals are clean.
- Cover our food or put them in the fridge to prevent any contamination.
- Rotavirus vaccines

Thank You