# GASTROINTESTINAL PROBLEMS IN CHILDREN

Jodi Tidwell, MSN, RNC-NIC

Instructional Module 5

# Distribution of body fluids

- Distribution of water changes with growth
- In infants, water & electrolyte imbalances occur more frequently & more rapidly

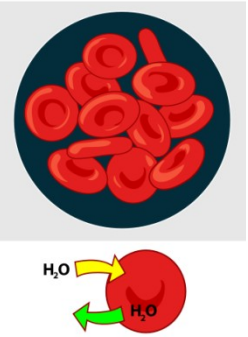
# Factors in Fluid Loss

- Insensible fluid loss
- Body surface area
- Basal metabolic rate
- Kidney function
- Fluid requirements

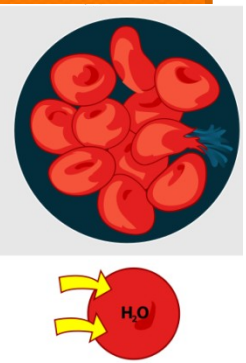
- Water Intoxication
- Dehydration

# Disturbances of fluid & electrolyte balance

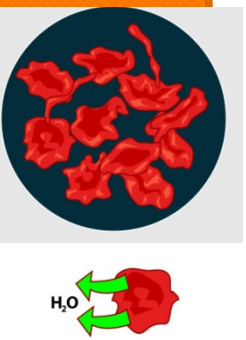
# Types of Dehydration




- Isotonic
  - water and electrolytes are decreased in balanced proportions




- Hypotonic
  - electrolyte deficit exceeds the water deficit




- Hypertonic
  - water loss in excess of electrolyte loss

# Dehydration & Body Weight

- Weight is the most important determinant of total body fluid loss in infants & young children

# Clinical Manifestations

- Depends on the degree of dehydration
- Earliest detectable sign is usually tachycardia
- C[illegible]chanisms

Table 22-4
p. 694

# Treatment of Dehydration

- Severe isotonic & hypotonic dehydration:
  - initial phase of IV therapy is rapid fluid replacement
  - may need a bolus or two

- Hypertonic dehydration:
  - rapid infusion of IV fluid may lead to cerebral edema (central pontine myelinolysis)

## Enteral (PO) Rehydration

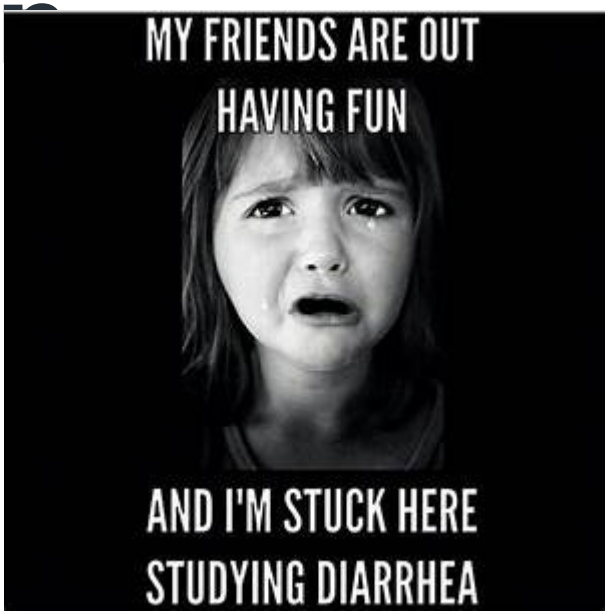
- mild/ moderate
- ORT over 4 to 6 hours = success:
  - replacement of continuing losses
  - Provide at least minimum

## Parenteral (IV) Rehydration

- severe - child is unable to keep enough fluids and electrolytes down to:
  - meet daily physiological needs
  - to replace previous deficits
  - to replace ongoing abnormal losses

- Diarrhea
- Constipation
- Hirshsprung Disease
- Gastroesophageal Reflux (GER)

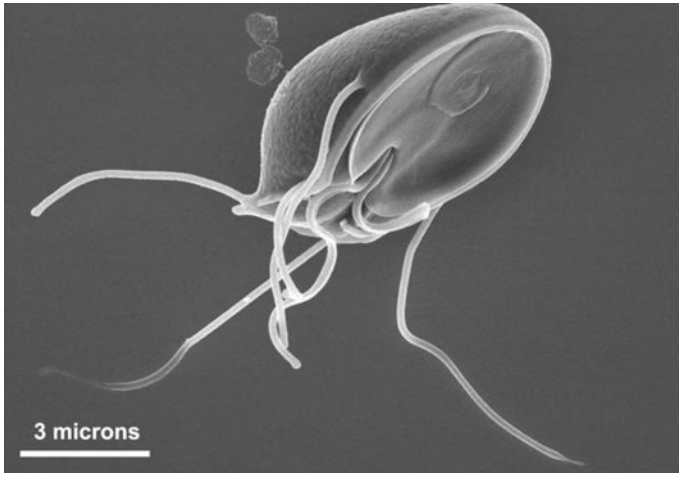
# Gastrointestinal dysfunctio



# Diarrhea

- Acute
  - Self-limiting
  - <14 days
- Chronic
  - >14 days

# Giardiasis




- Protozoa
  - cysts are ingested & eventually excreted in stool
- Mode of Transmission
  - person-to-person
  - improperly prepared infected food
  - contaminated water
  - animals



- Immunization
  - oral
- Transmission fecal-oral route or fomites
- Watery diarrhea, can be severely dehydrating
- Possibly fever & vomiting

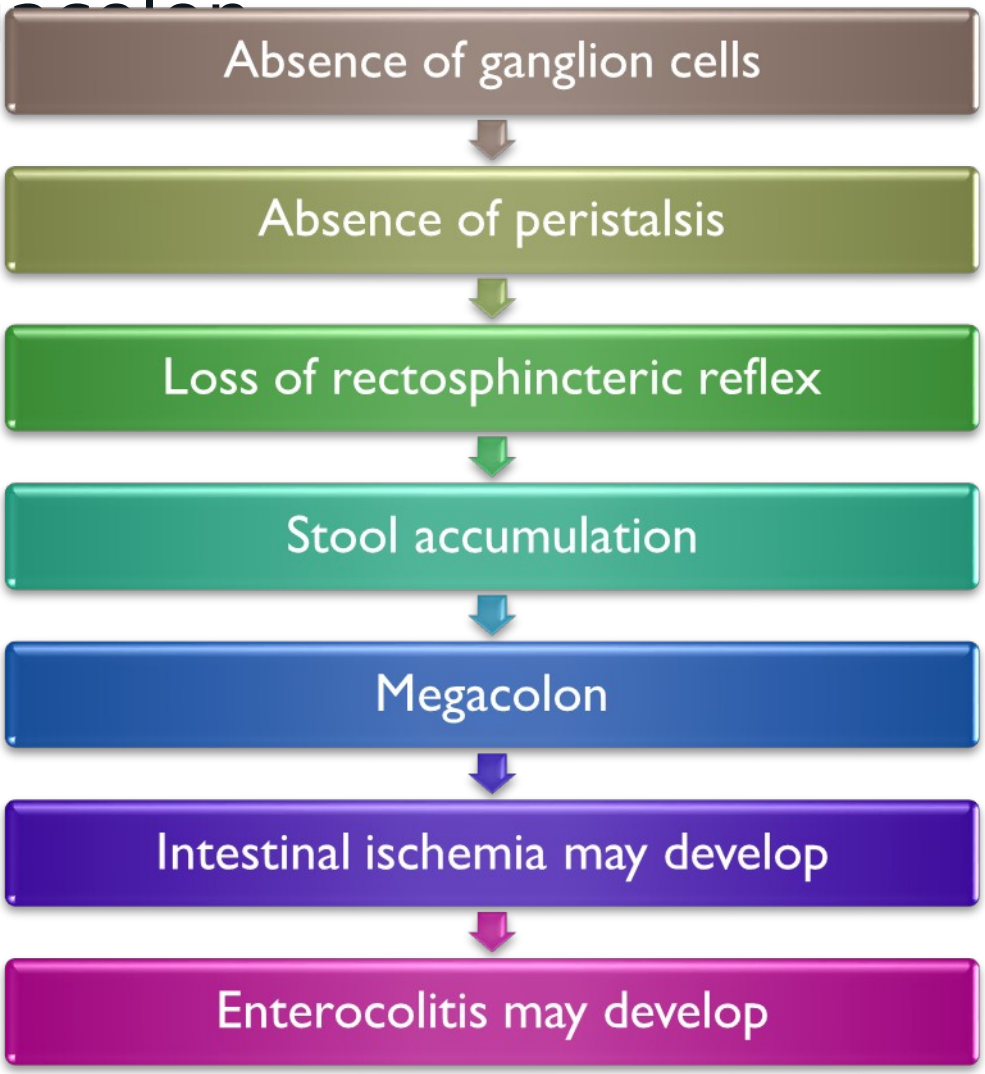
# Constipation

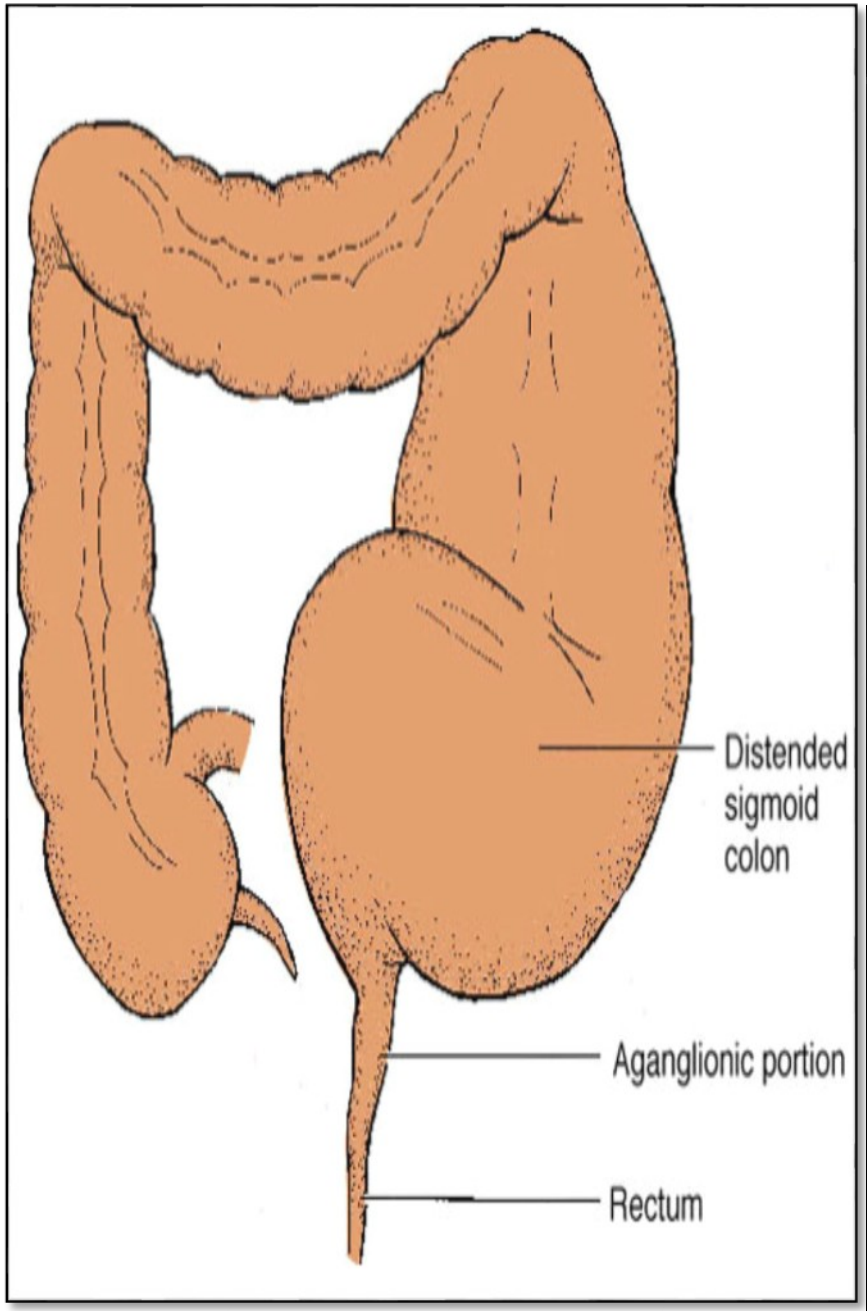
- Definition:

  A decrease in bowel movement frequency or trouble defecating for more than 2 weeks

# Hirschsprung Disease

- AKA Congenital Aganglionic Megacolon




Distended
sigmoid
colon
Aganglionic portion
Rectum

# Hirschsprung cont'd

- Clinical manifestations
  - Failure to pass meconium within first 24-48 hours
  - Abdominal distention
  - Vomiting
  - Constipation, diarrhea, and/or ribbon-like, foul smelling stools
  - Easily palpable stool mass
- Treatment
  - surgery
- Pre/post op considerations

# Gastroesophageal Reflux

- The transfer of gastric contents into the esophagus

- Diagnosis
  - history & physical assessment
  - upper GI series
  - 24 hr intraesophageal monitoring
  - endoscopy with biopsy

# Clinical Manifestations

## Preverbal child

- Choking with feeding
- Spitting up/vomiting
- Irritability
- Arching of back
- Hematemesis
- Weight loss (FTT)
- Respiratory

❑ Complications and Treatment?

## Child/Adolescent

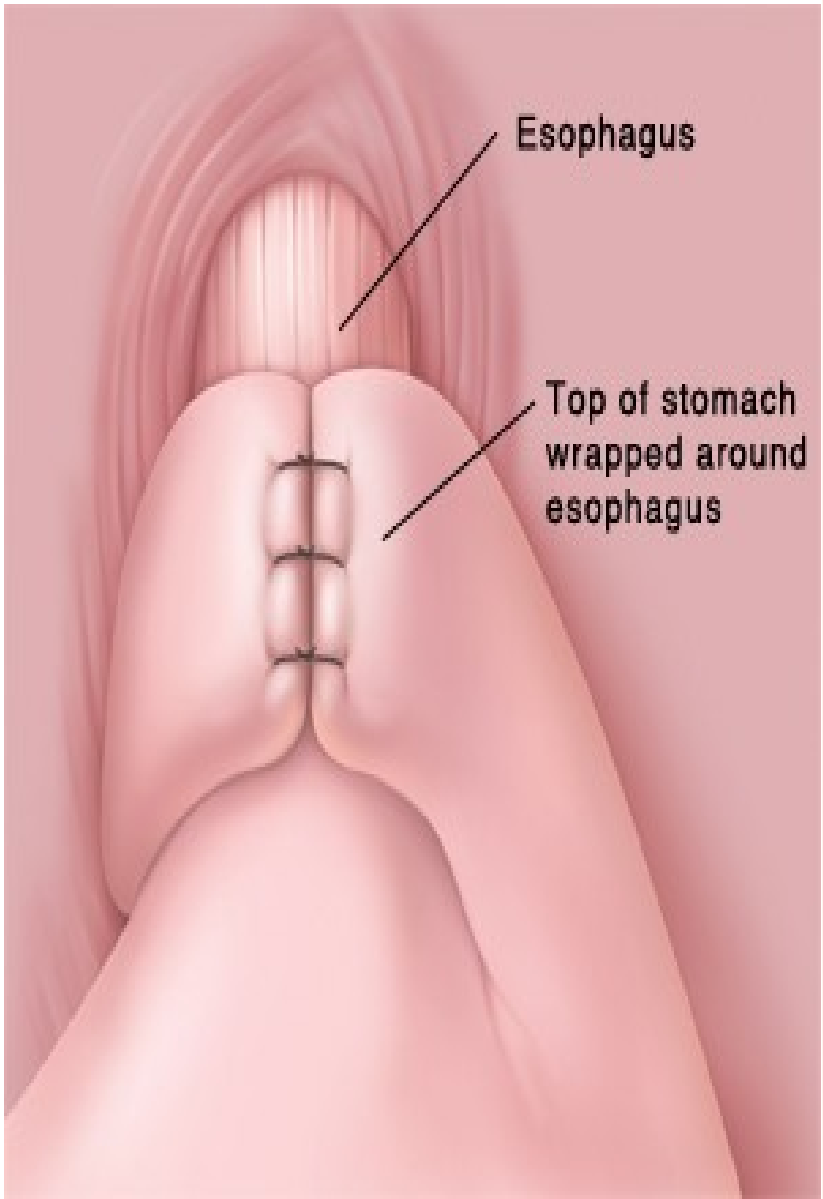
- Heartburn
- Abdominal pain or non-cardiac chest pain
- Chronic cough
- Dysphagia
- Recurrent pneumonia

# Medications to treat GER:

- H2 Antagonists
  - Suppresses the secretion of gastric acid by selectively blocking H2 receptors
- Proton Pump Inhibitors (PPI)
  - Reduce gastric acid secretion
- Prokinetic Agents
  - Increases rate of gastric emptying

# Treatment-Surgical

- Reserved for pts with severe complications
- Nissen Fundoplication
  - fundus of the stomach is placed behind the esophagus; encircles the distal esophagus
  - Post operative care
    - Ng tube (Do Not replace)
    - Monitor for gastric distention



- Appendicitis

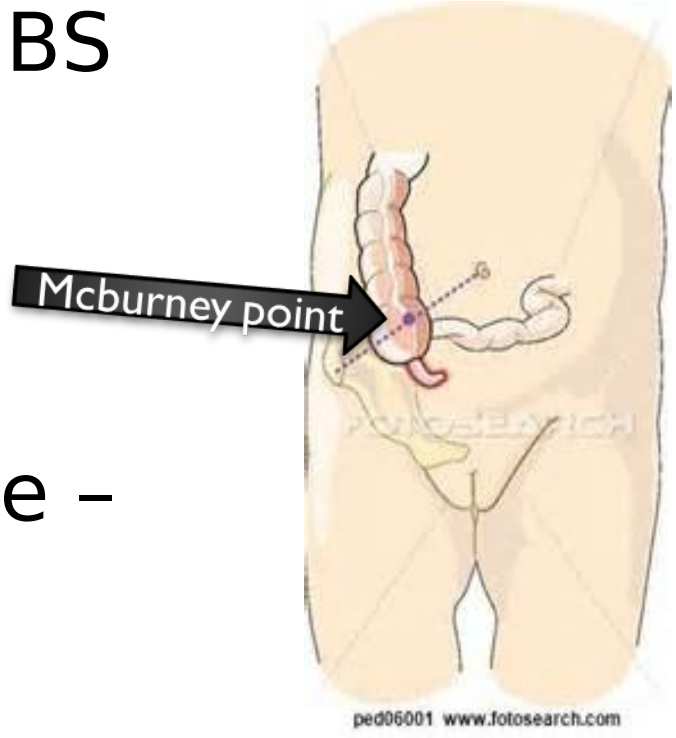
# INFLAMMATORY DISORDERS

# Appendicitis

- Inflammation of the vermiform appendix caused from an obstruction of the lumen of the appendix
- Avg age is 10 yrs

# Clinical manifestations

- Abdominal pain in RIGHT lower quadrant
- Rigid abdomen
- Decreased/absent BS
- Fever
- Possible vomiting




Diagnostic procedure –

CT scan

Nursing Care?

- Biliary Atresia

# HEPATIC DISORDERS

# Biliary Atresia

- A progressive inflammatory process that results in intrahepatic & extrahepatic bile duct fibrosis, resulting in ductal obstruction

# Clinical Manifestations

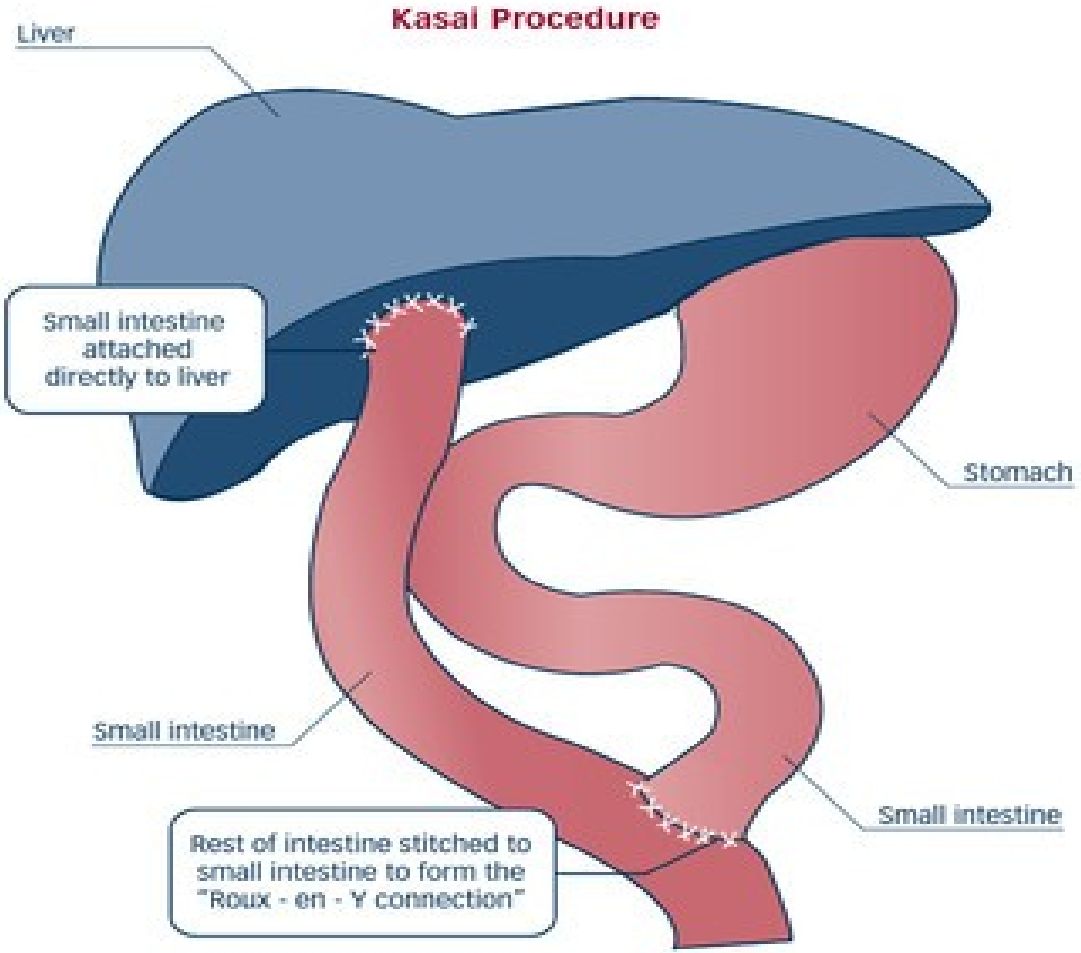
- Jaundice persisting beyond 2 weeks of age
  - most common early sx
- Putty-like white or clay stools
- Tea colored urine
- Intense itching & irritability
- Malnutrition leading to severe growth failure

# Diagnosis

- Ultrasound & percutaneous liver biopsy
- Endoscopic retrograde cholangiopancreatography (ERCP)
- Early diagnosis is critical
  - surgery
    - in first 60 days – 80% chance of established bile flow
    - 60 to 90 days – 50% chance
    - >90 days – 10% chance

# Treatment

- Hepatoportoenterostomy (Kasai procedure)
  - anastomosis of a segment of intestine to the liver in an attempt to drain bile
  - several variations in procedure
- Most children will need a liver transplant
- Nutritional support
  - formula v. TPN




# Nursing Considerations?

- Cleft Lip
- Cleft Palate

# STRUCTURAL DEFECTS

# Cleft Lip & Cleft Palate

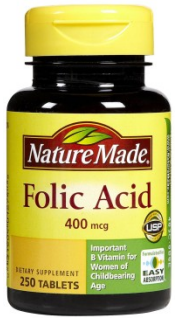
- Defect in cell migration resulting in failure of the maxillary & premaxillary processes to merge between the 4th & 10th weeks of embryonic development

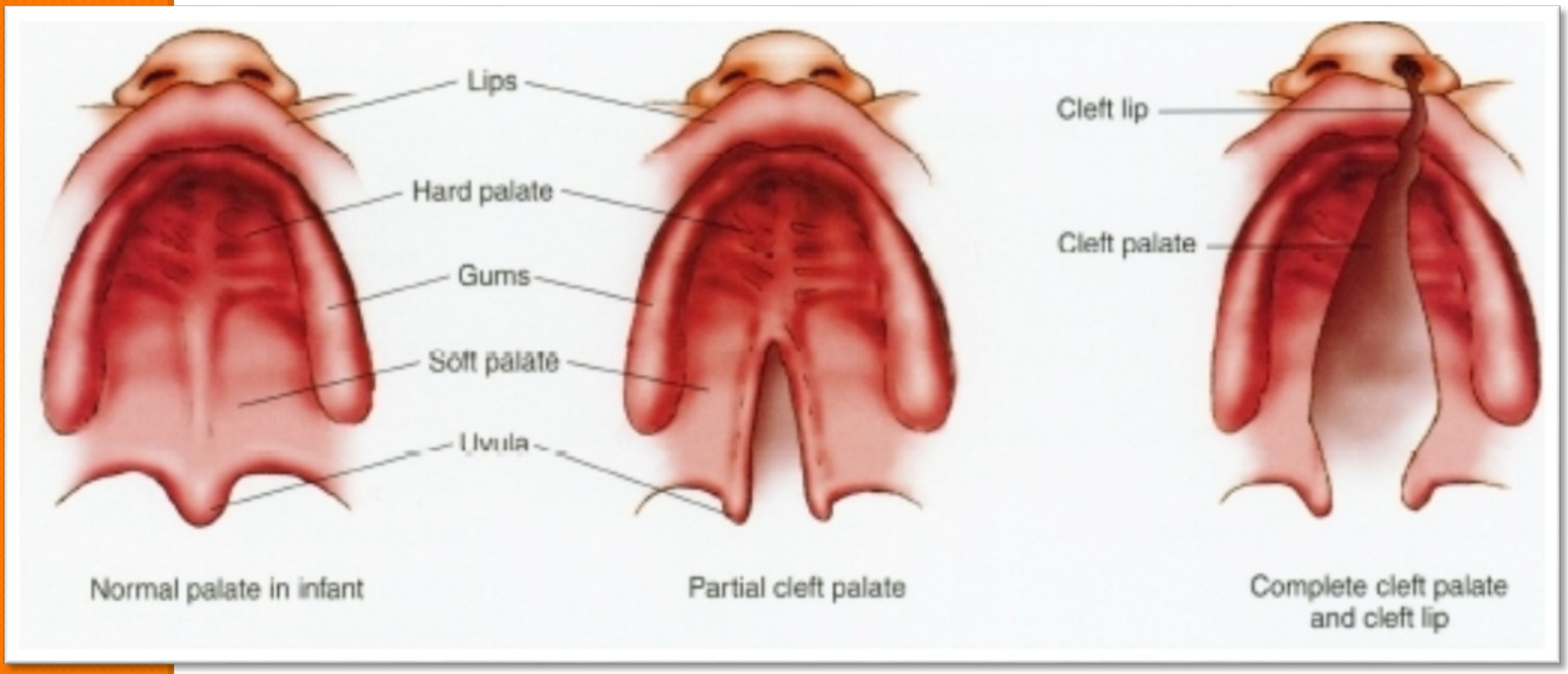
  → incomplete closure of the lip and/or palate

# Etiology

- Associated with:
  - multifactoral inheritance
  - alcohol
  - anticonvulsants (Dilantin)
  - isotretinoin (Accutane)
  - smoking
  - folate deficiency





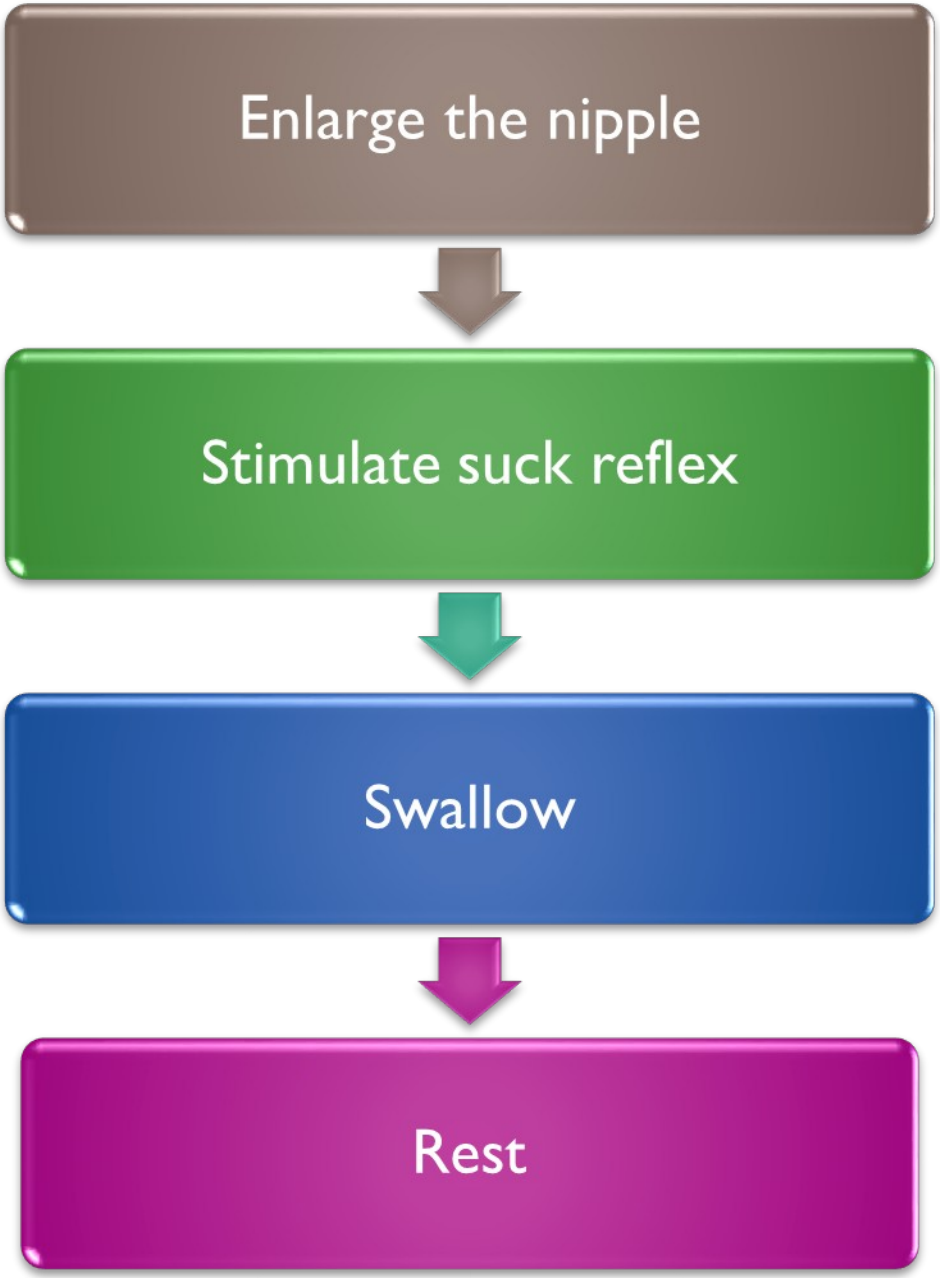



www.humanillnesses.com/.../Cleft-Palate.html

# Immediate Problems

- Reaction of the parents
- Feeding
  - alteration in the infant’s ability to suck
  - begin breastfeeding ASAP
  - if breastfeeding is not possible:
    - Use large soft nipples with soft holes

# ESSR Feeding Technique



# Surgical Repair

- Cleft Lip
  - Timing of surgery
    - early closure
    - rule of 10s
    - may require rhinoplasty
- Cleft Palate
  - Typically between 6 & 12 months
  - If postponed after speech develops, may result in faulty speech habits
  - Approximately ¼ will require a second surgery
  - If not a candidate for surgical repair, prosthetic

# Postoperative Care

- Do not place objects in mouth
- Resume feeding
- Pain control
- Maintain restraints
- Reduction of tension on suture line
  - Logan bow

# Long-term considerations

Speech therapy

Recurrent otitis media

Dental

Social adjustment

Surgical revisions

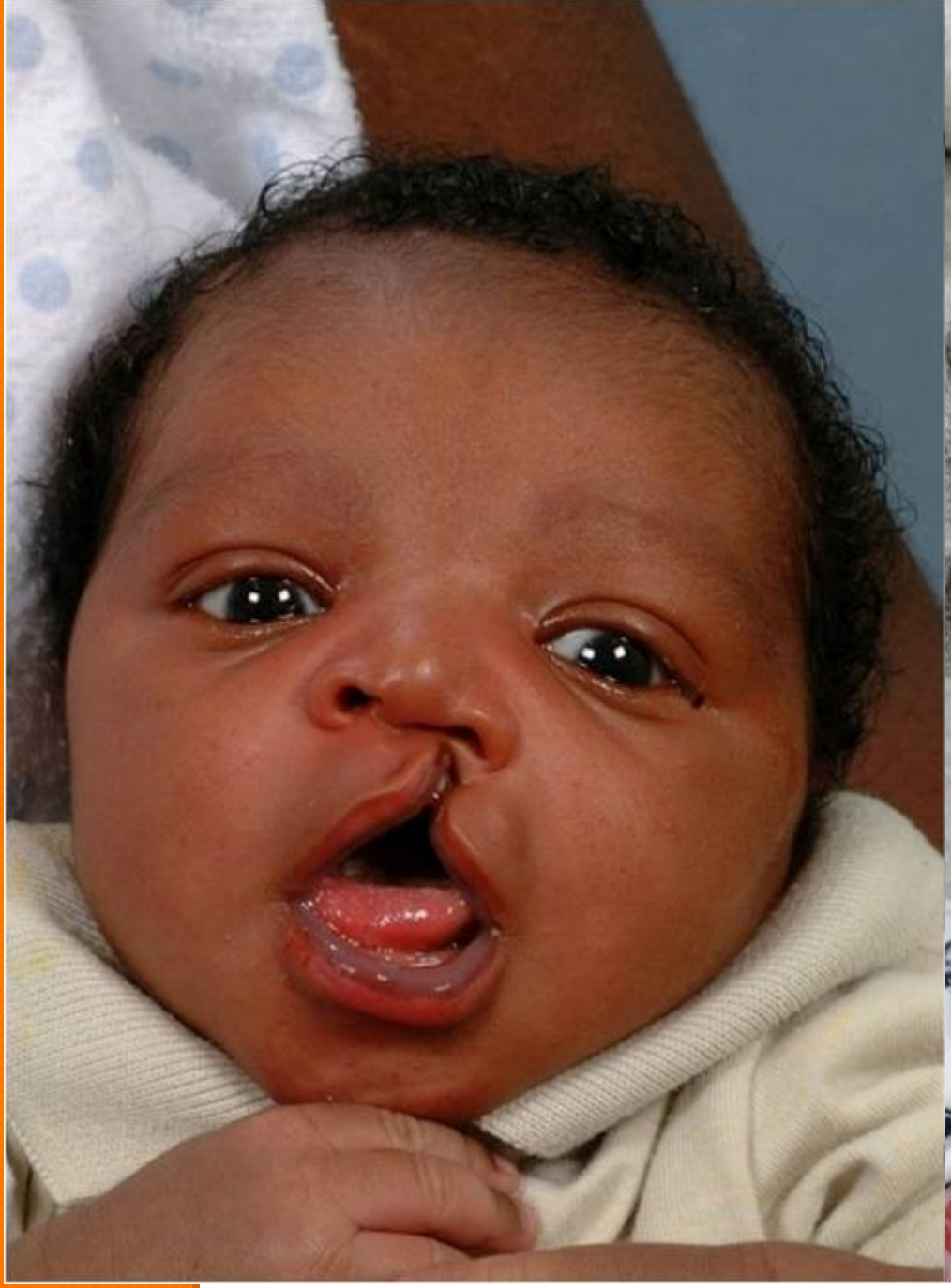
1

2

3



4




Before

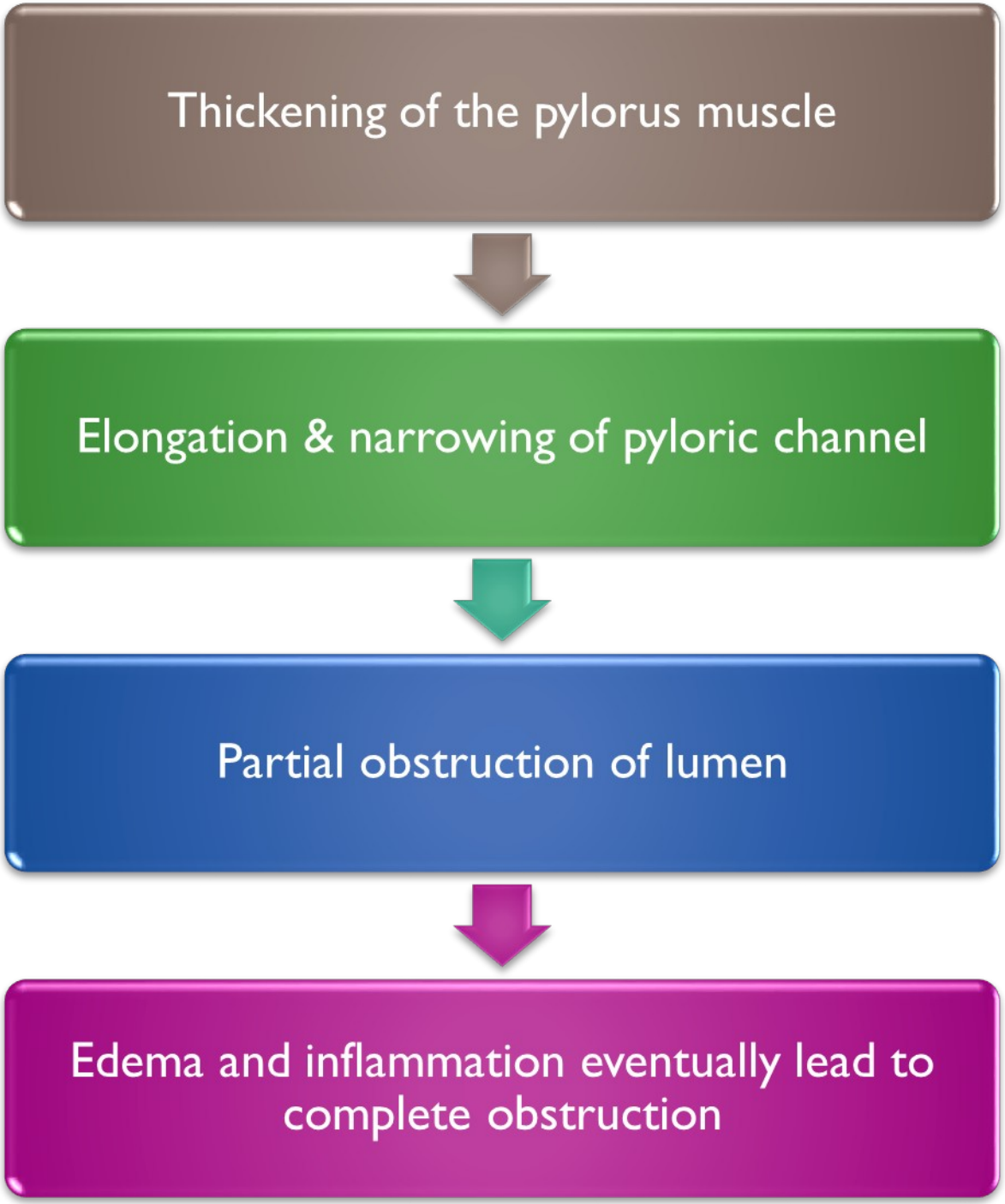
After

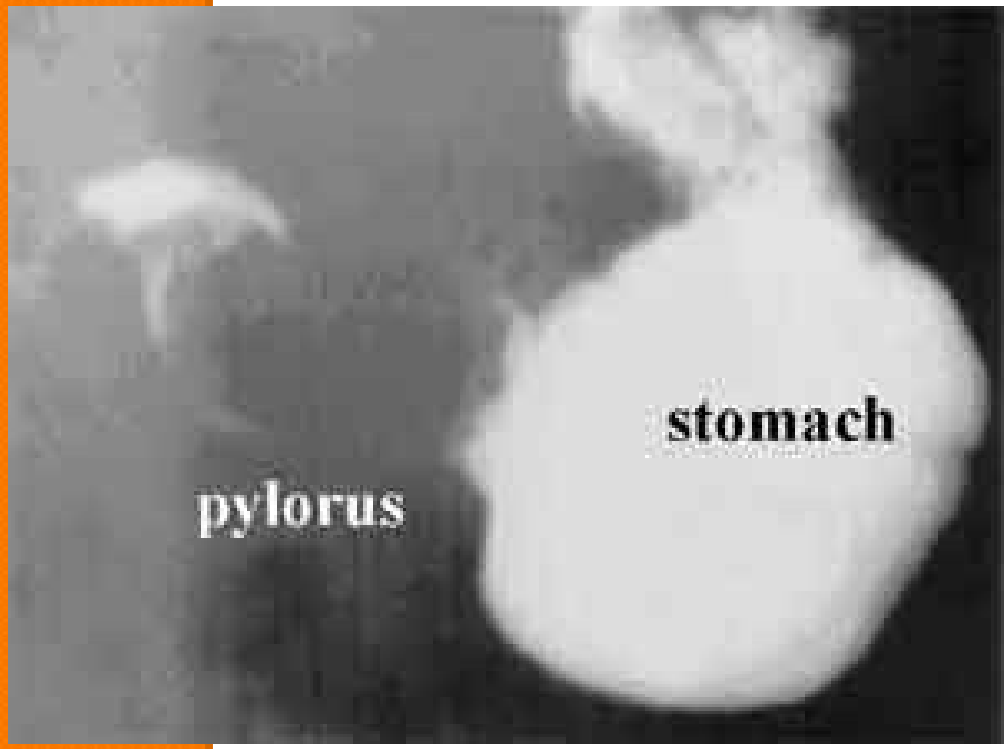
- Hypertrophic Pyloric Stenosis
- Intussusception

# OBSTRUCTIVE DISORDERS

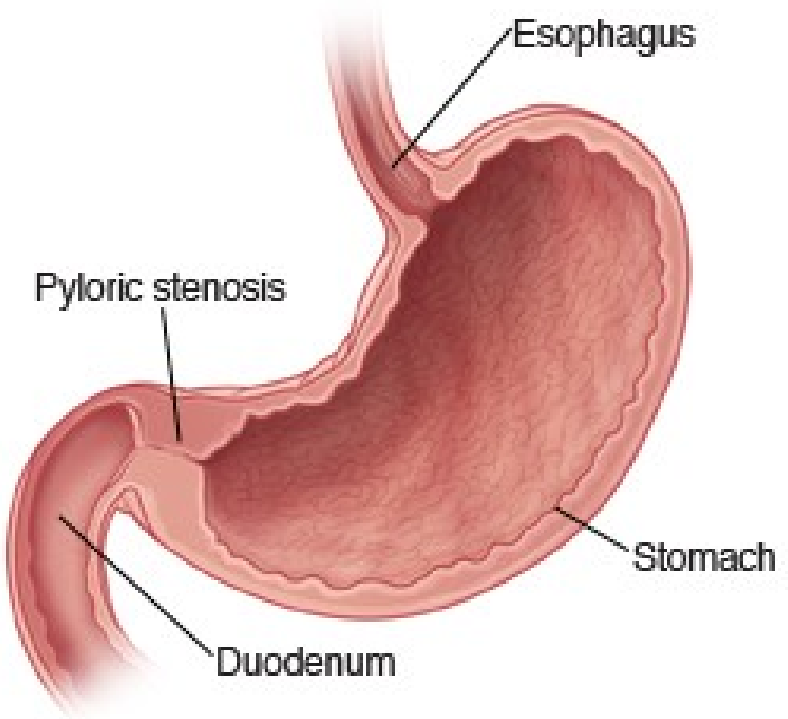
# Hypertrophic Pyloric Stenosis

- Narrowing of the pyloric canal producing outlet obstruction


Thickening of the pylorus muscle
Elongation & narrowing of pyloric channel
Partial obstruction of lumen
Edema and inflammation eventually lead to complete obstruction




http://www.pediatricsurgerymd.org/Pyloric_Stenosis/4218.htm



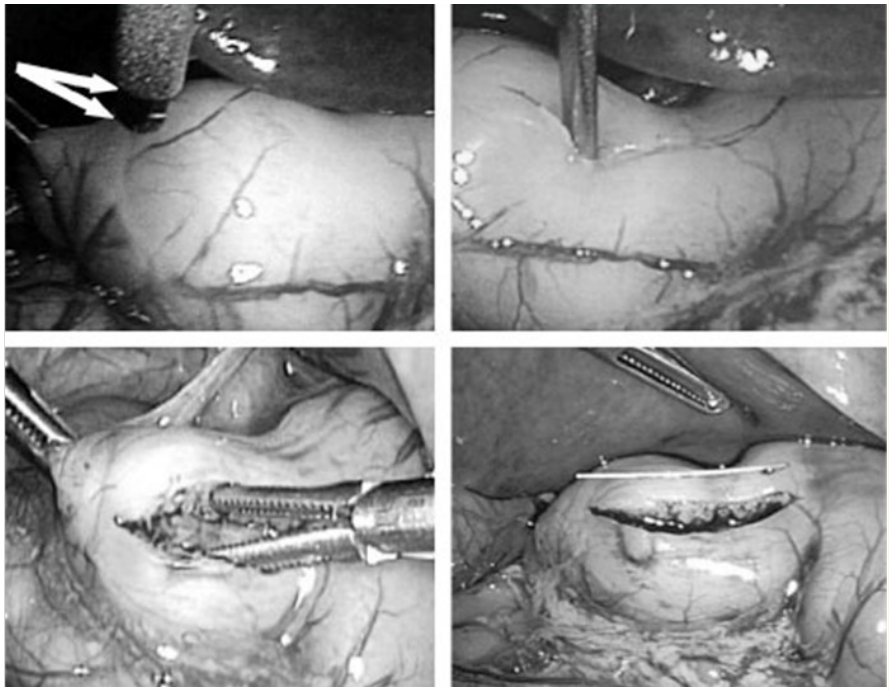

http://www.fairview.org/fv/groups/public/documents/images/164262.jpg

# Clinical Manifestations

- Olive-like mass in upper abdomen
- Vomiting after feedings
  - eventually projectile vomiting
- Dehydration
- Metabolic alkalosis
- Growth failure
- Ultrasound

# Diagnosis & Treatment

- Diagnosis:
  - often made by H&P; may perform ultrasound to confirm
- Treatment:
  - Pyloromyotomy
    - longitudinal incision through the circular pylorus muscle



# Pre-op Nursing Considerations

- Baseline labs
- Rehydrate
- Correct electrolyte imbalances
- NPO
- NGT

# Post-op Nursing Considerations

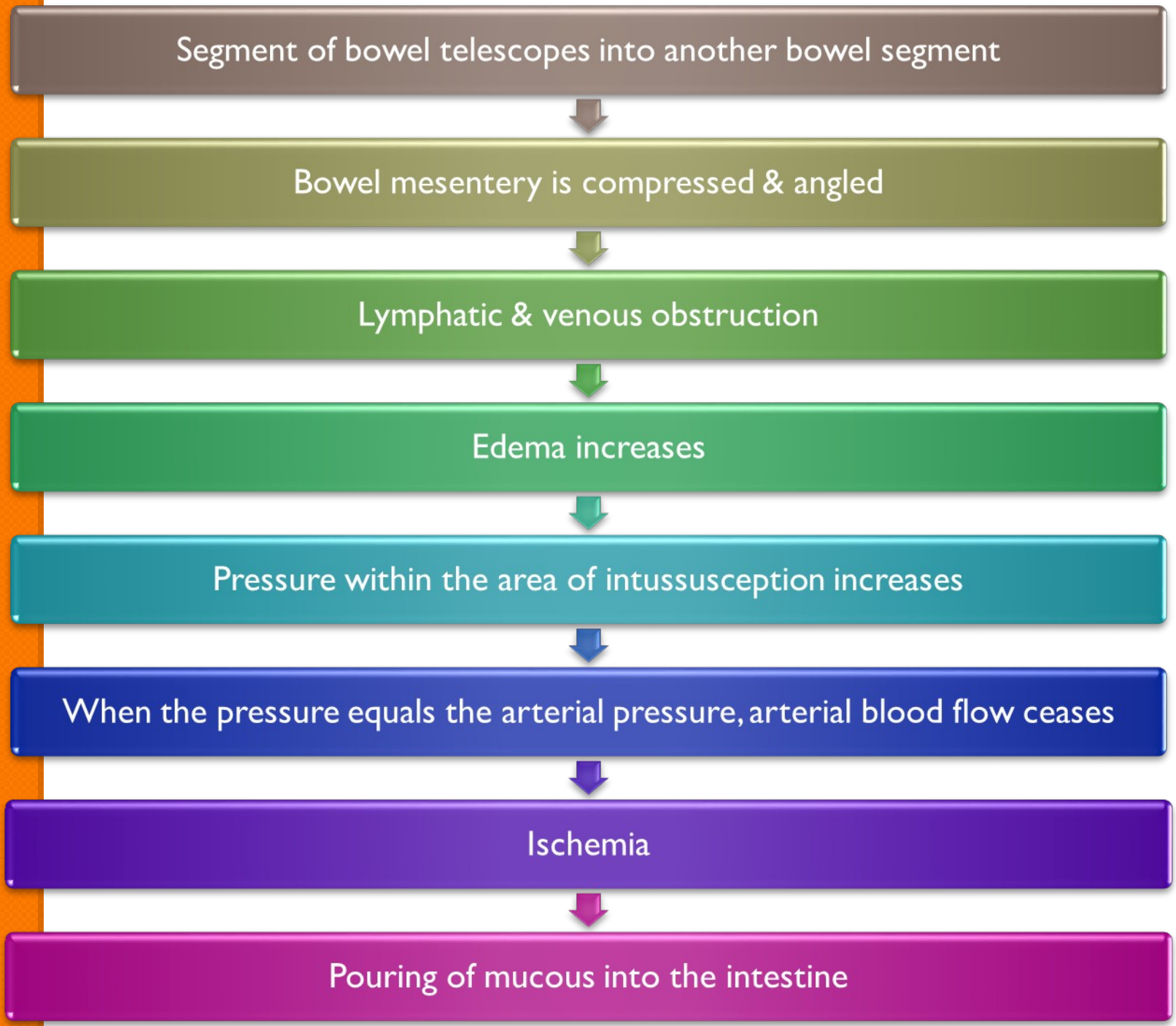
- Monitor for vomiting
- Close I&Os
- Continue IVF
- Pain management
- Feedings
  - clear liquids with glucose & electrolytes
  - small volumes at frequent, ordered intervals
  - progress to formula in increments

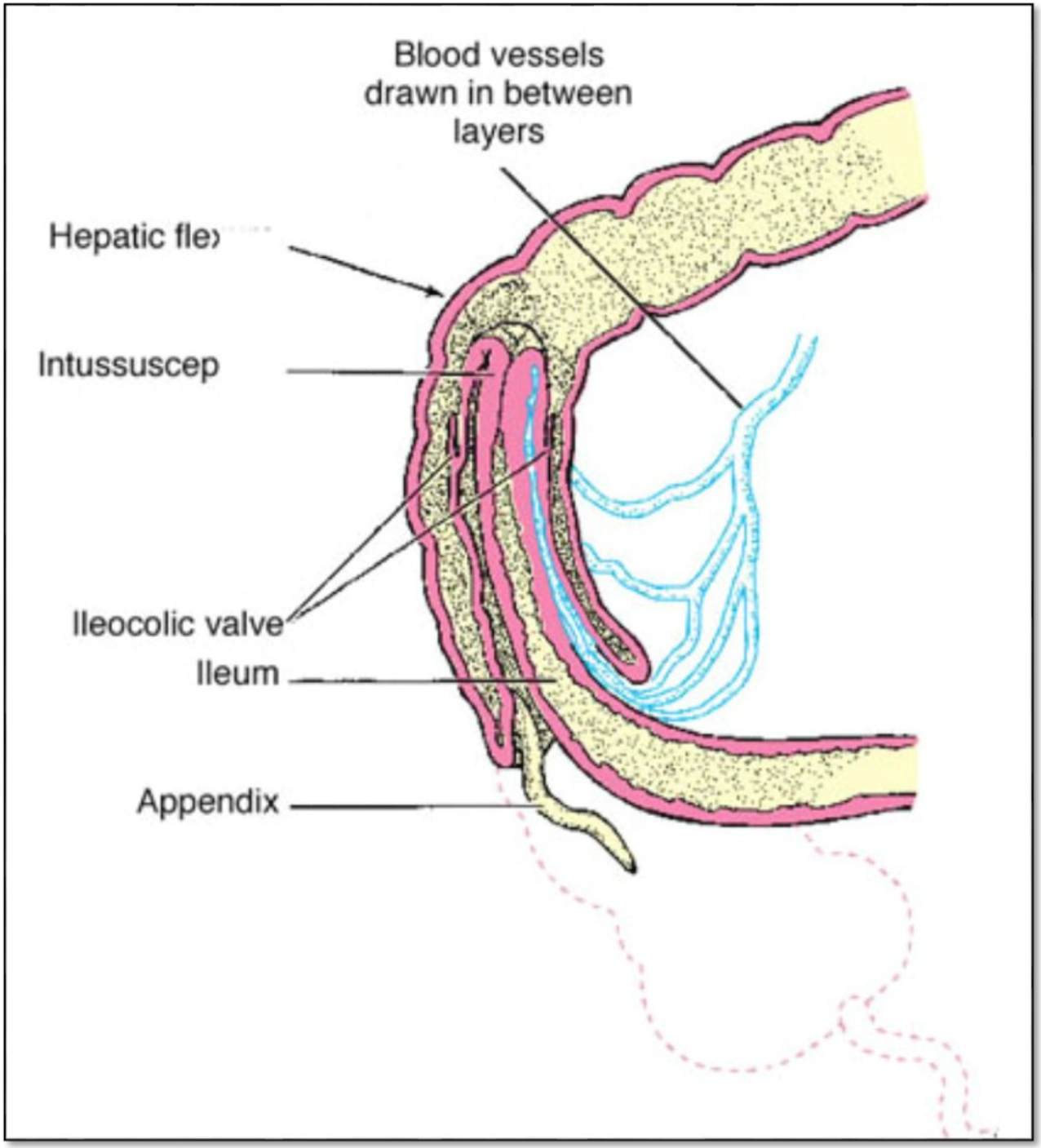
# Intussusception

- Occurs when one segment of bowel telescopes into another segment

# Etiology

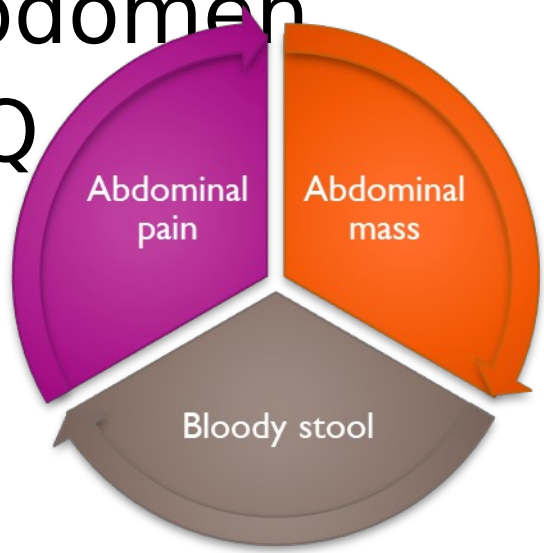
- Most common cause of obstruction in kids 3 months to 3 years of age
- More common in boys
- More common in children with Cystic Fibrosis
- Many cases r/t hypertrophy of intestinal lymphoid tissue secondary to viral infection


Segment of bowel telescopes into another bowel segment
Bowel mesentery is compressed & angled
Lymphatic & venous obstruction
Edema increases
Pressure within the area of intussusception increases
When the pressure equals the arterial pressure, arterial blood flow ceases
Ischemia
Pouring of mucous into the intestine


Blood vessels
drawn in between
layers
Hepatic fle
Intussuscep
Ileocolic valve
Ileum
Appendix

# Clinical Manifestations

- Acute, severe, intermittent abdominal pain
- Tender, distended abdomen
- Palpable mass in RUQ
- Empty RLQ
- Vomiting
- Lethargy
- Red, currant jelly-like stool



# Therapeutic Management

- Water-soluble contrast enema & air pressure

OR

- Water-soluble contrast enema and carbon dioxide

OR

- Barium enema

# Surgical Intervention

- Manual reduction
- Removal of dead tissue if needed

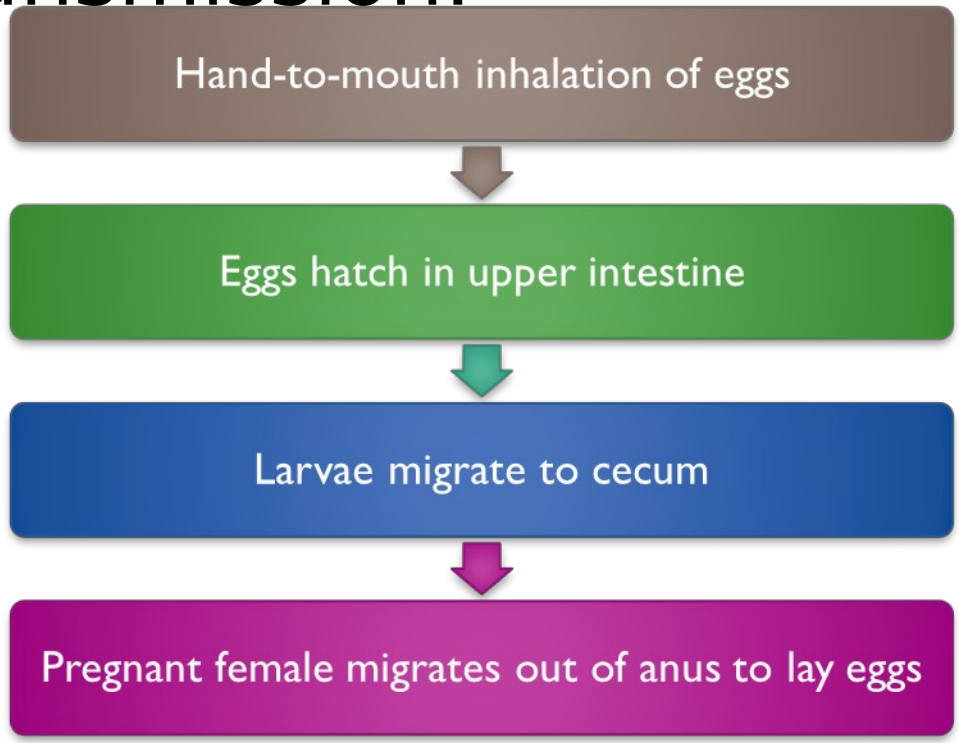
## Pre and Post-op Nursing Interventions?

- Enterobiasis
- Ascariasis

# HELMINTHIC INFECTIONS

# Enterobiasis (Pinworms)

- Most common helminthic infection in U.S.
- Transmission:

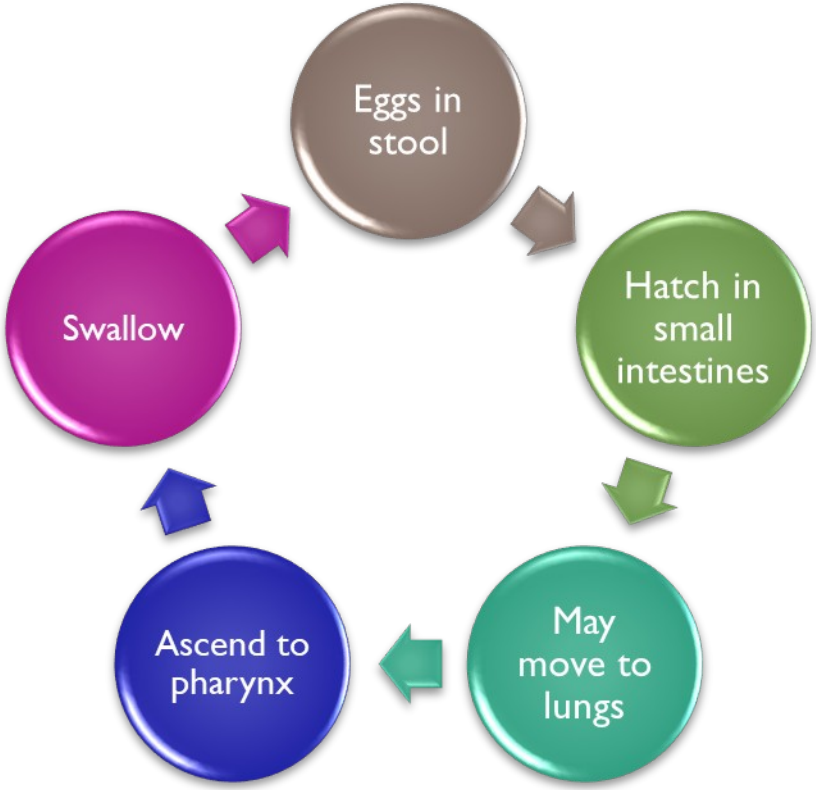


# Enterobiasis

- Intense itching
- Diagnosis: tape test
- Education

# Ascariasis (Round Worms)

- Primarily affects 1–4 year olds
- Prevalent in warm climates
- Transmission is hand-to-mouth



# Ascariasis

- Mild infection may be asymptomatic
- Severe infection may lead to intestinal obstruction, peritonitis, pneumonitis
- Examine stools 2 weeks after treatment & monthly for 3 months
- Treat family members as needed
- Education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CALM
THIS IS THE END
OF MY
presentation

# References


Assessment Technologies Institute®, LLC. (2016). *Content mastery series: RN nursing care of children* (10th ed.).

Hockenberry, M., Wilson, D. & Rodgers, C. (2017). *Wong's nursing care of infants and children* (10th ed.). St. Louis, MO: Mosby Elsevier.