Abdominal Pain in the Pediatric Patient

PUCC 2018

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Disclosures

- I have no financial disclosures or other conflicts of interest

Objectives

- Recognize the common etiologies of acute abdominal pain across different pediatric age groups
- Examine the differences between pediatric and adult abdominal pain in etiology, diagnosis, and management
- Recognize the worrisome causes of abdominal pain
- Discuss the scope of treatment in the UC setting
- Distinguish those patients who can be discharged

Introduction

- Abdominal pain is common
- Challenge: distinguish benign from serious
- Etiologies vary across different age groups
- Presentation varies with age
- Presentation varies with etiology
- Often H&P alone is sufficient

ED experience

- Retrospective study, N=371
- Results
  - 64% medical
  - 6% surgical
  - 30% nonspecific
  - These statistics held up in adult EM studies as well

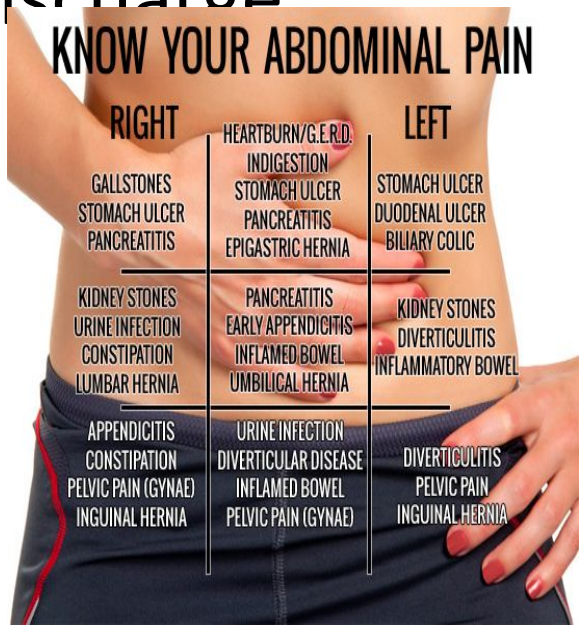
Pediatr Emerg Care. 1990 Children with abdominal pain: evaluation in the pediatric emergency department. Reynolds SL, Jaffe DM.

Our urgent care experience

- Discharge ICD-9 codes: 3% were abdominal pain related
- Our common discharge diagnoses:
  - Gastroenteritis/gastritis: 38%
  - Abdominal pain, NOS : 28%
  - Constipation: 20%
  - Location not RLQ 11%
  - RLQ pain 3%

Adult EM common abdominal pain discharge diagnoses

- Adult ED 7-10% of chief complaints were abdominal pain related
- Common and Worrisome Discharge Diagnoses:
  - Appendicitis
  - Gastroenteritis
  - Torsion (Ovarian or Testicular)/Epididymitis
  - Constipation



What History Elements Are Important?

- Age
- Onset, duration, location
- Frequency: constant or intermittent
- Associated symptoms
- History of trauma/surgery
- Dietary history

Clues From Associated Symptoms

- Fever
- Vomiting
  - Bilious
  - No diarrhea
- Diarrhea
- Sore throat
- Cough
- Dysuria

Pearls For A Successful Pediatric Physical Exam

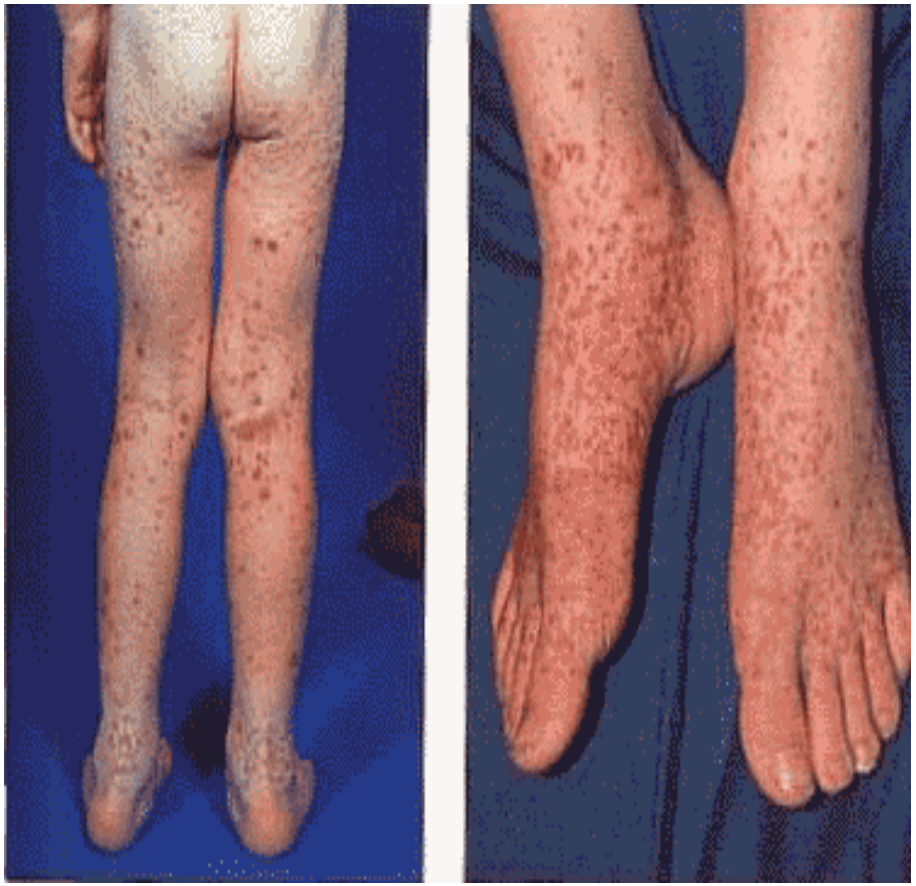
- Observe walking/jumping
- Caretaker lap or table, knees flexed
- Assess bowel sounds
- Distraction is key
- Can use stethoscope for palpation
- Can have parent palpate abdomen in a nervous infant/toddler
- Assess before HEENT (keeps patient calm)
- Rectal not routine

Adolescents

- Male
  - Consider testicular torsion, always check groin
- Female
  - Obtain gyn and sexual history
  - Pregnancy test if menarche
  - Worrisome conditions include ectopic pregnancy, PID with tubo-ovarian abscess, and ovarian torsion

Extraabdominal Findings

- Pharyngeal erythema
- Crackles or decreased breath sounds
- Flank tenderness
- Abdominal or extra-abdominal bruising
- Rash



The majority of pediatric patients with abdominal pain will require diagnostic imaging or bloodwork

A. True

B. False

Abdominal pain: UC management

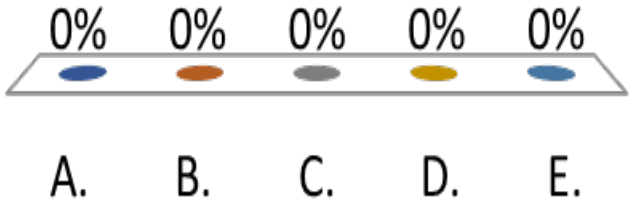
- Majority will not require xray or bloodwork
- Consider work up only if it will make a difference in management
  - Exam and/or repeat exams are focal
  - Unable to tolerate po
  - Patient is not well appearing
  - Testing may delay care, consider transfer

Ancillary Tests in UC setting

- Rapid strep
- Urinalysis (catheter specimen infants)
  - Pyuria: UTI/pyelonephritis
  - Hematuria: UTI, stones
  - Glucosuria: DKA
- Urine pregnancy
- Stool guaiac
- Abdominal xray
- Serum glucose, electrolytes
- CBC

Stool guaiac may be positive in all except:

A. Intussusception
B. Gastroenteritis
C. Colic
D. Henoch schonlein purpura
E. Milk protein allergy



What about the WBC?

- CBC*
- Other Tests to Consider
  - Consider glucose check in patient with abdominal pain and vomiting
  - Serum chemistries

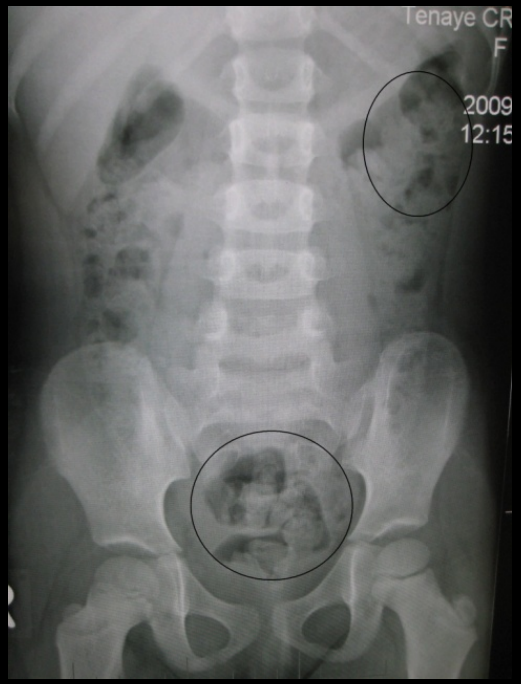
*Wang LT. Use of WBC count and left shift in the diagnosis of appendicitis in children. Pediatric Emerg Care Feb 2007

Battery Ingestion

- Most serious battery ingestions are not witnessed
- GI symptoms seen with Battery ingestion include:
  - Drooling, vomiting, abdominal pain, difficulty swallowing, decreased appetite, refusal to eat and coughing, choking or gagging with eating and drinking
- **This is a case where you should take an x-ray!**
- Keep the patient NPO until Xray
- A battery lodged in the esophagus may cause a serious burn in as little as 2 hours!
- Several good guidelines to follow
- National Battery Ingestion Hotline at 1-800-498-8666 for assistance in battery identification and patient management.

How About An Xray?

Fecalith



Constipation

Air fluid levels

When Should I Worry?

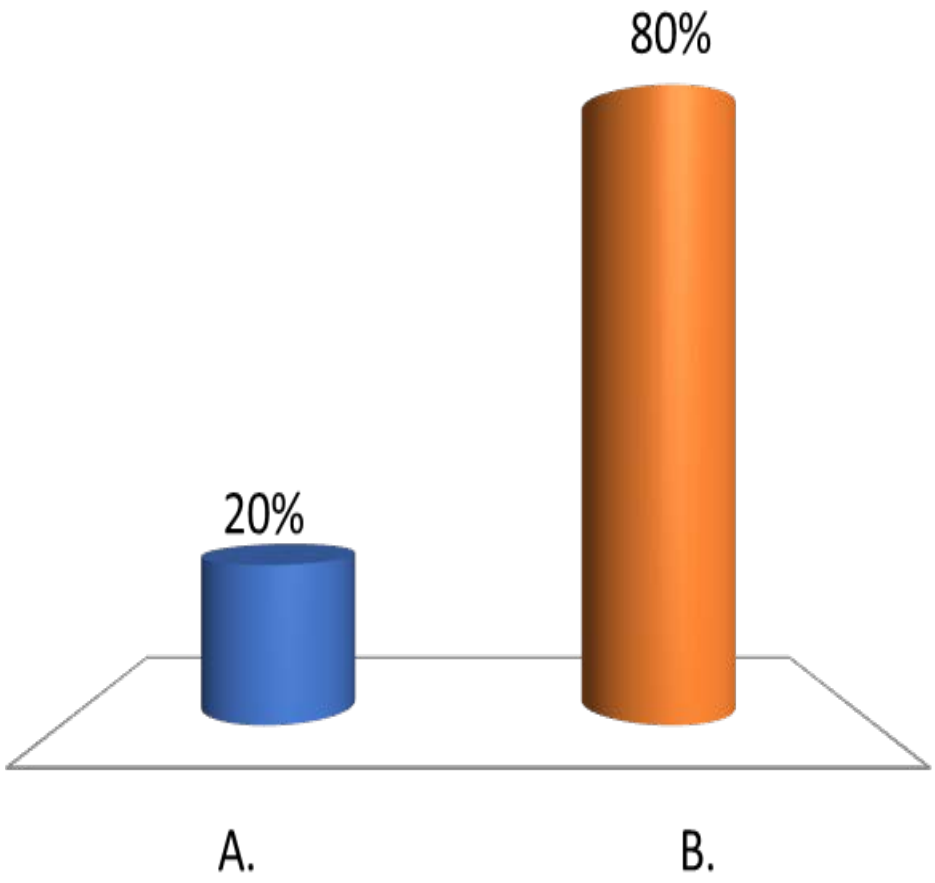
- Is there a history of trauma?
- Is there bilious emesis?
- Are there signs of peritonitis?
- Are there extra-abdominal findings?
- Is there a mass?
- Is there focal tenderness?
- Is there blood in stool?
- Is there a history of severe intermittent pain?

OVERVIEW OF CASES

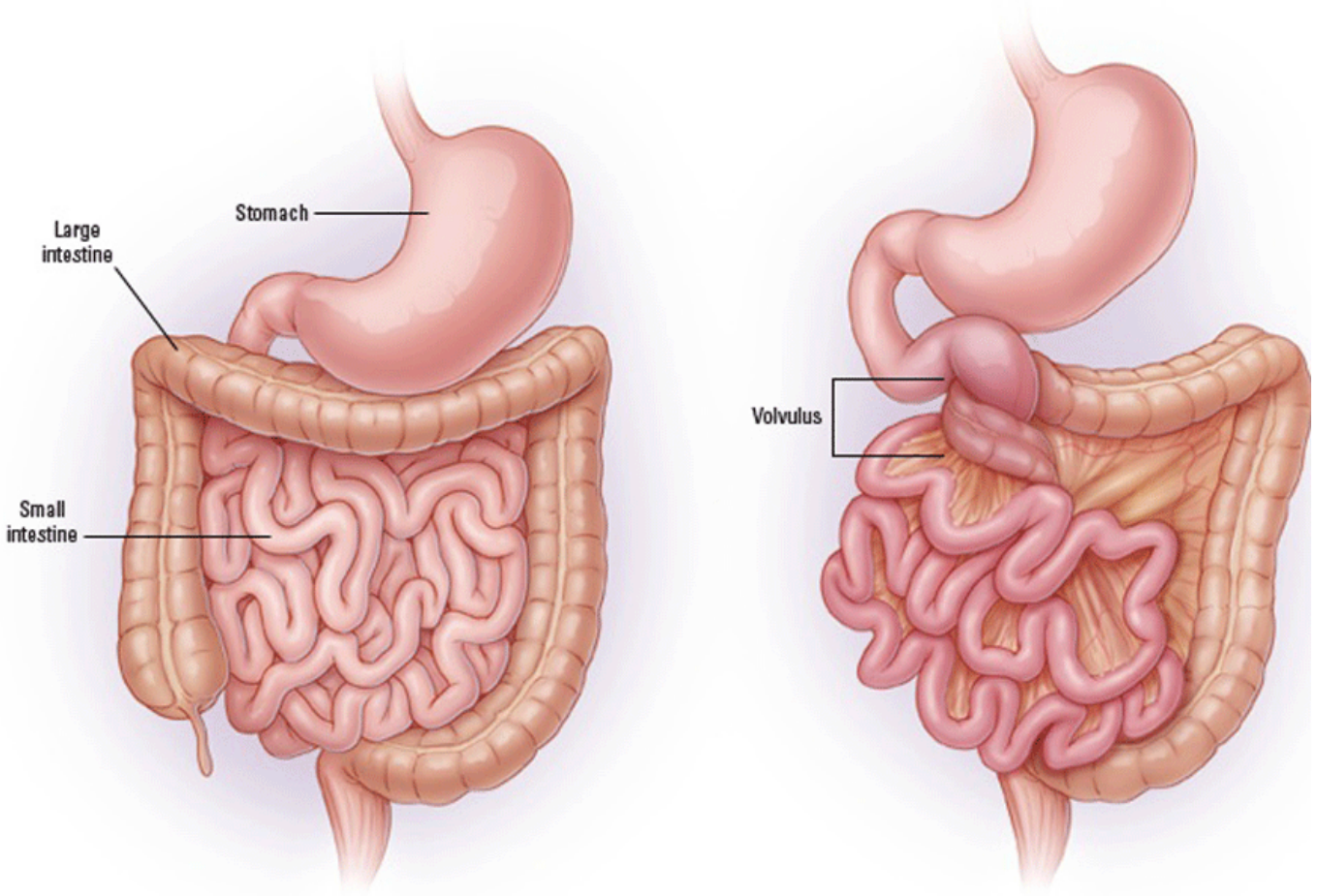
- Malrotation with midgut volvulus
- Pyloric stenosis
- Intussusception
- Gastroenteritis
- Constipation
- Appendicitis

Bilious emesis is always a red flag in the neonate

A. True
B. False



Malrotation with volvulus



Worrisome causes of vomiting in the infant

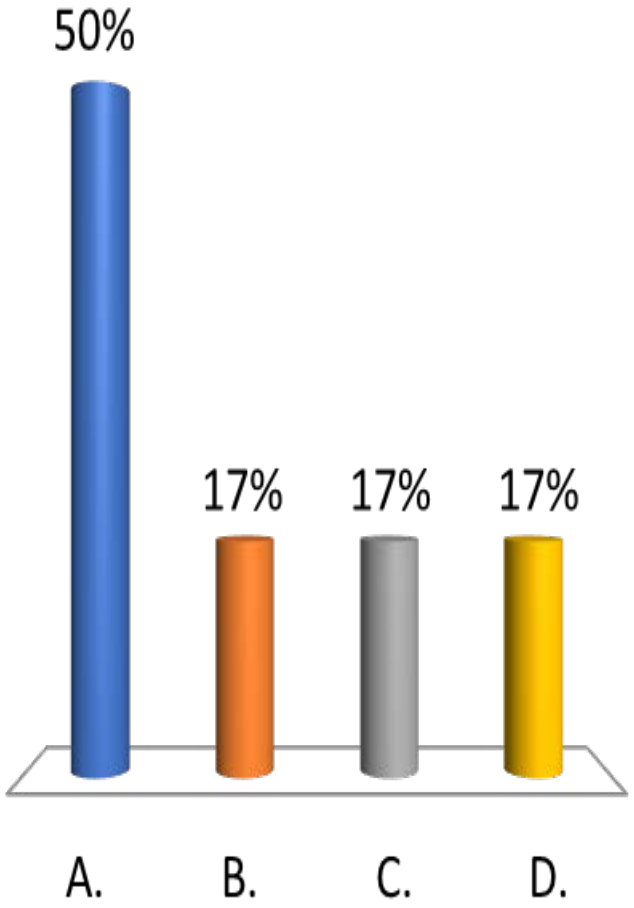
- Malrotation with midgut volvulus
  - > 50% of children with malrotation present < 1 mo with volvulus (distension and tenderness)
  - Emesis can be bilious or nonbilious
- Hirschsprungs with toxic enterocolitis
  - Vomiting can become bilious; intestinal necrosis
- Necrotizing enterocolitis
  - Most often h/o prematurity
  - Vomiting can become bilious; Intestinal necrosis

Non-surgical causes of vomiting in the infant

- < 1 year old
  - Colic
  - Reflux
  - Milk protein allergy
  - Gastroenteritis
  - Urinary tract infection (afebrile)
  - Pyelonephritis (febrile)

Bilious emesis can be associated with all of the below except:

A. Intussusception
B. Pyloric Stenosis
C. Malrotation with volvulus
D. Gastroenteritis

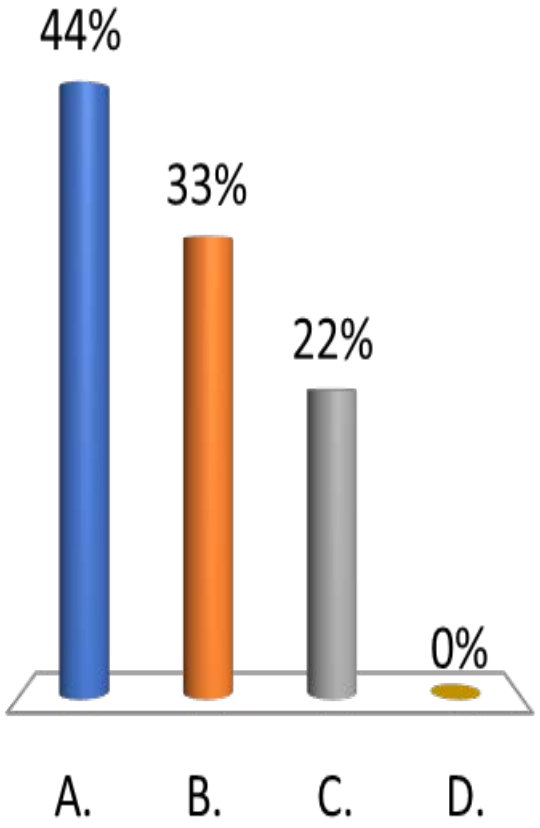


Pyloric Stenosis: Age and Presentation

- Obstruction is proximal to gallbladder
- Onset age 2-5 weeks
- Progressively forceful; projectile
- Vomiting shortly after feeds
- No abdominal pain
- Typically hungry

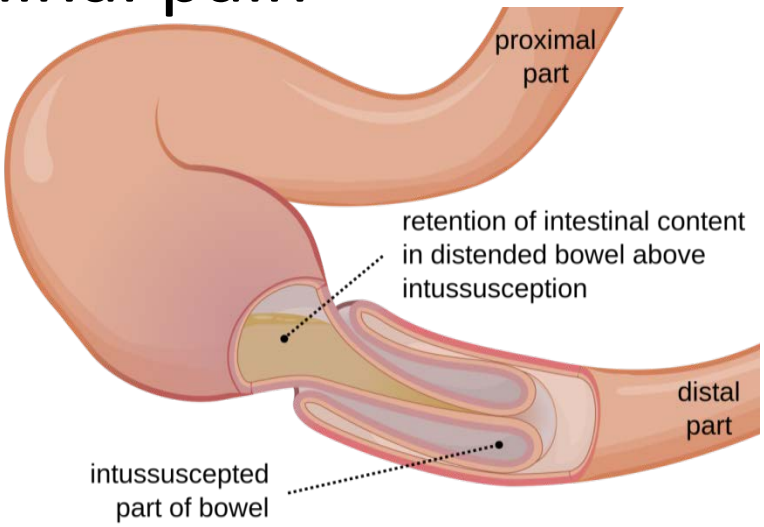
An afebrile 5 year old presents with severe intermittent abdominal pain and the below rash. Which of the below diagnoses are you concerned about?

A. Appendicitis
B. Mesenteric Adenitis
C. Intussuscept
D. Pancreatitis



Intussusception: Age and Presentation

- 6 months-3 yo (most < 2 years old)
- Paroxysmal colicky abdominal pain
- Irritable
- History of pulling up legs
- Vomiting
- Altered mental status



Intussusception: Clinical Exam

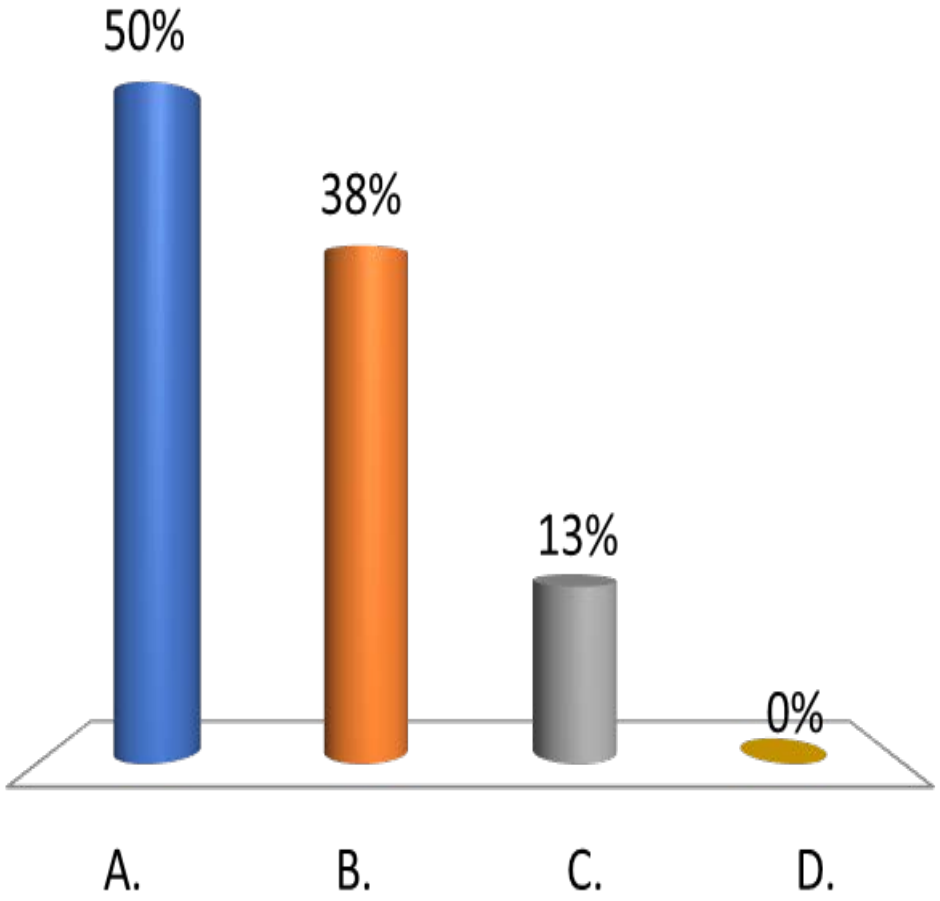
- Intervals of alternating lethargy or irritability with normal behavior
  - May just present with lethargy
- Abdominal exam normal between episodes
- May palpate a right sided mass (uncommon)
- Currant jelly stool – late finding (uncommon)
- “Crawling up” parent

Urgent Care Management

- Consider rectal for guaiac
- No need for xray
- Consider transfer if histor
  - Even with normal exam!

2 year old with abdominal pain and fever, emesis 4x and diarrhea 3x since yesterday. Pt well appearing with normal abdominal exam. Which of the next steps is LEAST helpful?

A. Zofran
B. PO trial
C. Stool culture
D. Reassurance



Worrisome causes of abdominal pain: preschool

- Intussusception
- Appendicitis
- Foreign body ingestion
- Adhesions
- Ovarian torsion
- Trauma
- Incarcerated hernia

Gastroenteritis

- Most often viral; no role for antibiotics
- Stool culture only if concerned for bacterial etiology
  - Prolonged symptoms
  - Blood in stool
- Ondansetron and PO trial (oral rehydration therapy)
- Main criteria for discharge
  - Benign abdominal exam
  - No concern for dehydration
  - Able to tolerate po

Ondansetron (Zofran)

- Tablet, Liquid, ODT or IV
- Only use if benign abdominal exam
- >6 months old
- Weight based dosing (0.15mg/kg), or age based:
  - 6 months-1 year: 1 mg
  - 1-4 years: 2 mg
  - 4-12 years: 4 mg
  - over 12 years: 8 mg

The PO Trial: Oral Rehydration Therapy

- If giving Zofran, start PO after 20 min
- 5-10cc every 5-10 min (advance as tolerated)
  - 1ml/kg is shortcut
- Empower the parent
- Older children: offer popsicles or ice chips

Why Use Oral Rehydration Therapy (ORT)?

- Mildly-mod dehydrated patients can be successfully rehydrated
- Avoids painful/difficult IV
- Parents can continue ORT at home
- ORS (Pedialyte) contains the appropriate amount of glucose and electrolytes

CONSTIPATION

- Estimated World Wide Prevalence As High As 30%
- 17-40% of Children Experience Constipation in 1st Year of Life
- Peak Incidence Occurs During the Toilet Training Years
- 5% of all Outpatient Visits
- 25% of all GI Referrals

Diagnosis of Constipation

- History: frequency, withholding behaviors, consistency of stool
- Physical Exam: Abdominal Exam, Perianal Region, Lumbosacral Region, Neurological Exam
- Laboratory Testing/Imaging Studies: evidence does not support using Digital Rectal Exam (DRE), Abdominal X-ray, or Transabdominal Rectal Ultrasound

Treatment Of Constipation

Enemas-can be diagnostic AND therapeu

- Usually See Effects Within Minutes
- Document repeat exam
- Side Effects- Abdominal Pain, Anorectal Discomfort

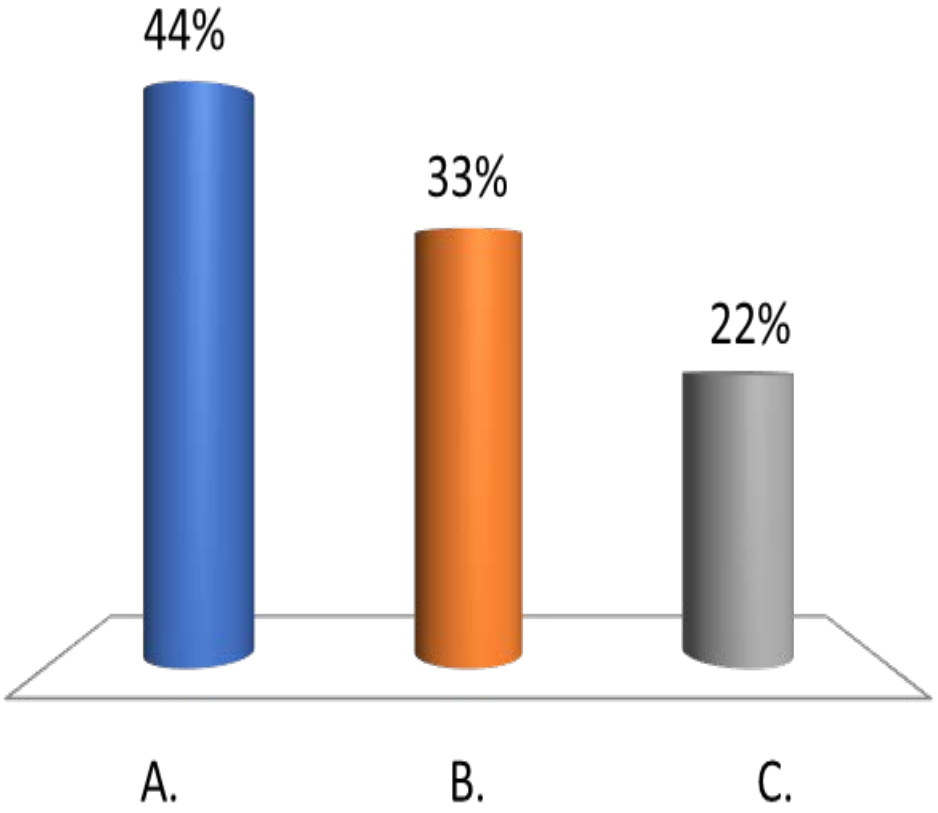
Treatment Of Constipation - Dispo

- Osmotic Laxatives: Polyethylene Glycol (Miralax)
- First Line
- Safe and Effective Children < 2 Years Old
- Effect Usually Occurs 1-2 Days
- Side Effects- Fecal Incontinence, Flatulence, Abdominal Pain

- Stimulant Laxatives : (Senna/Senokot/Ex-lax)
- Additional or Second Line Treatment
- Act Directly On Intestinal Mucosa
- Side Effects-Severe Diaper Rash
- >1 Year Old

All statements about ovarian torsion are true except:

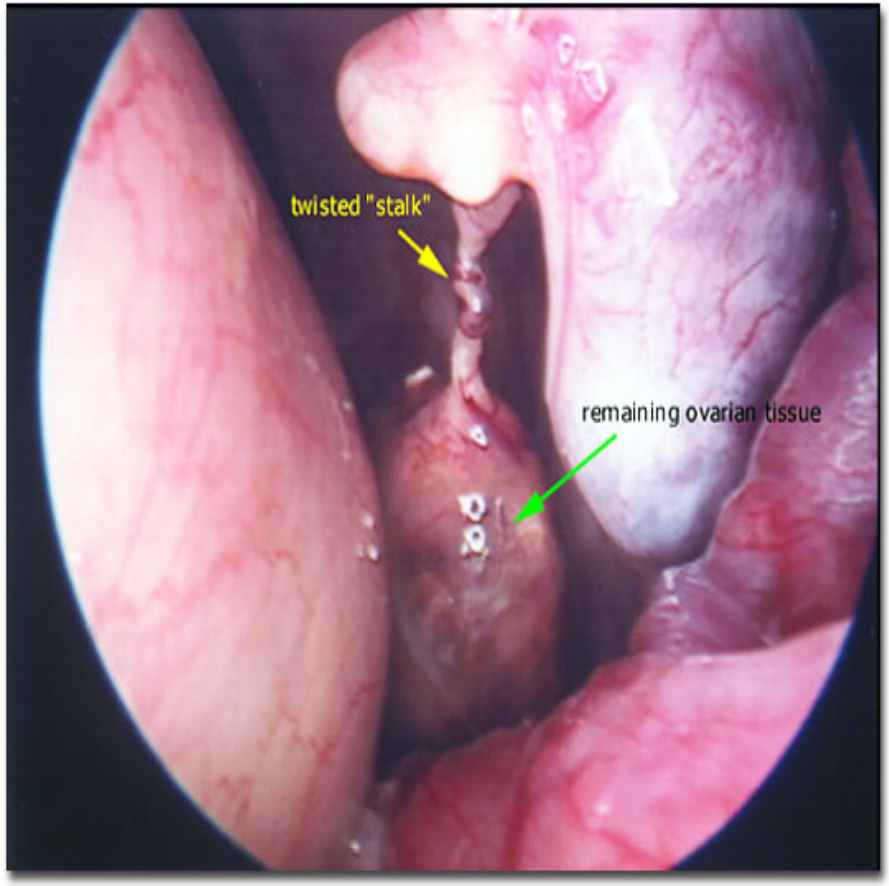
A. Symptoms can be vague
B. Can occur in females of all ages
C. Left ovary is more likely to become torsed



Non-Pediatric Providers

Ovarian Torsion

- Signs and Symptoms
  - Severe, intermittent pain
  - RLQ or LLQ pain (90%)
  - Nausea and vomiting (47-70%)
  - Fever (2-20%)
  - Right ovary is more likely to torse
- Vague symptoms in infants
  - feeding intolerance
  - vomiting
  - abdominal distension



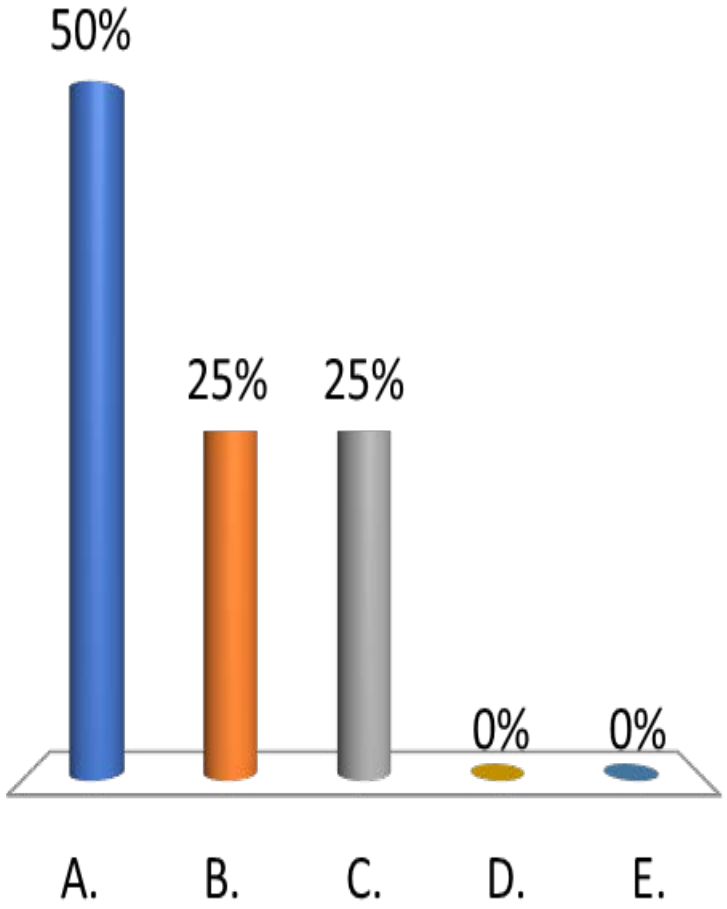
Ann Emerg Med 2001.Ovarian torsion: a fifteen-year review

Worrisome causes older child

- Appendicitis
- Trauma
- Ovarian torsion
- Testicular torsion
- Ruptured ovarian cyst
- Ectopic pregnancy
- PID
- Renal stones
- Cholecystitis
- DKA
- Sickle cell crisis
- HSP
- IBD
- Pancreatitis
- Hepatitis
- Adhesions
- Myocarditis/pericarditis
- Bacterial peritonitis

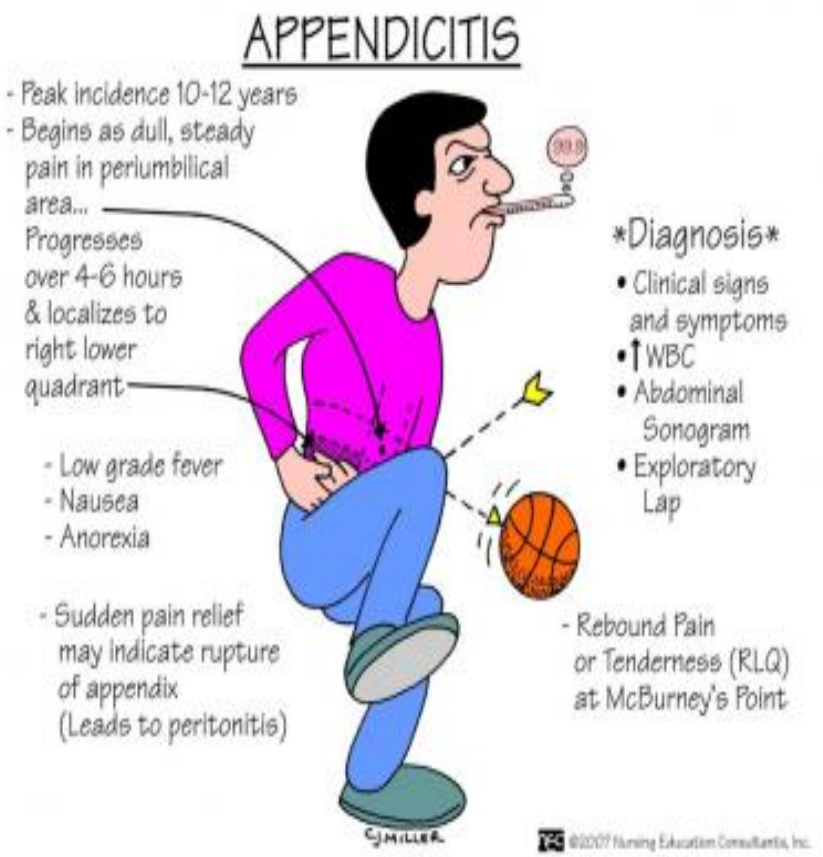
11 yo male with abdominal pain, fever and vomiting. Pain started periumbilical now RLQ. Also with anorexia. Pt uncomfortable when walking into exam room and has difficulty getting onto exam table. On exam he has RLQ tenderness with guarding.
The most appropriate next step is:

A. Obtain CBC
B. Obtain abdominal xray
C. Obtain urinalysis
D. All of the above
E. None of the above. Send to ER



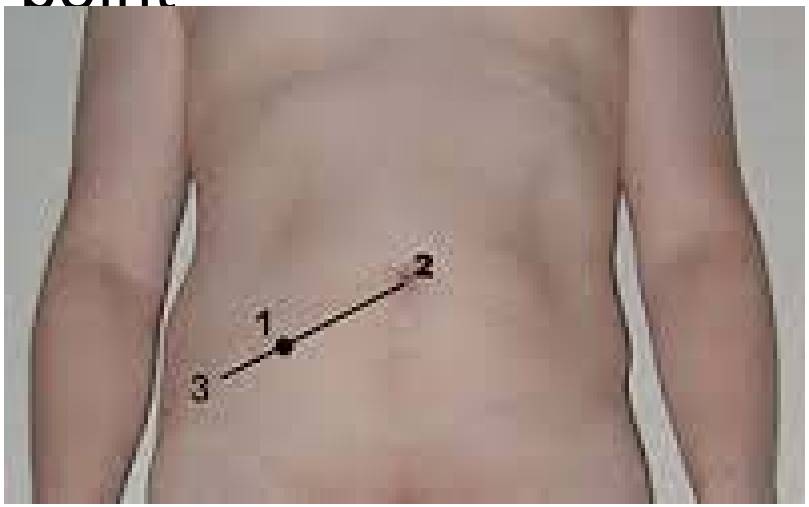
Appendicitis: Age and Presentation

- Children < 5y/o
  - Abdominal distension, vomiting, and decreased PO
  - Irritable, grunting
  - Often present perforated
  - Very challenging to diagnose
  - Difficulty in localizing pain
- School age and older
  - More classic but diagnosis can still be challenging



Appendicitis: Not So Straightforward

- 2nd most common missed diagnosis
- Why can it be so challenging?
  - Not always at McBurney's point
  - Location of appendix
    - Retrocecal
    - Pelvic
  - Perforated
  - Phlegmon



The Urgent Care Patient: Who Can I Discharge?

- Reassuring history
- Abdominal exam or repeat abdominal exams nonfocal
- Pt well appearing
- Tolerating po

Discharge Tips

- Instruct parent to return, call PMD or go to ER if condition worsens
- Encourage next day follow up, especially for younger patients
- Call patient that evening if concerned or have patient call you
- Document!

Transferring The Urgent Care Patient

- Who to transfer?
  - Focal tenderness despite therapy
  - Ill appearing or unable to tolerate po
  - Infant with distention or bilious emesis
  - H/o severe intermittent pain
- Transfer considerations
  - Method of transfer
  - Where to transfer
  - Notify PMD and receiving facility
  - Document

Our Abdominal Pain Transfer Data

- Annual transfer rate = 0.8%
- Of total transfers: abdominal pain =24%
  - R/o appendicitis = 58%
  - Other DC diagnoses:
    - Ovarian cyst or torsion
    - Intussusception
    - Renal (stones or pyelonephritis)
    - Trauma
    - Pyloric stenosis

Who Required Surgery?

- Of the patients transferred for r/o appendicitis
  - Positive : 31%
  - Other diagnoses
    - Mesenteric adenitis
    - Ovarian pathology
    - Abdominal pain NOS
    - Strep pharyngitis

Take home points

- Most pediatric abdominal pain can be treated in UC setting
- Distension and bilious emesis are always red flags in the neonate
- The infant with an abdominal emergency may only have lethargy, grunting, or poor feeding
- GU pain can refer to abdomen: think about torsion
- Severe intermittent pain, with benign exam, may still need transfer
- Appendicitis is a common missed diagnosis
- Document repeat exams after any intervention
- Document instructions and all communication

Questions?

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