Inclusion Criteria: Children 2-21 yrs old with RUQ abdominal pain or epigastric pain

Exclusion Criteria: History of trauma, pregnant, previous abdominal surgery, concern for tumor/abdominal mass, concerns for cholangitis, sepsis, concern for necrotizing pancreatitis

Assessment
History: Inquire specifically about onset and intensity of symptoms, location of pain, nausea/vomiting, jaundice, fever, association with meals, radiation of pain, family history of gallbladder disease
Clinical Examination: localized tenderness, Murphy’s sign, jaundice, +/- obesity

Interventions
- CBC w/diff, CRP, CMP, DBili, lipase, urine HCG if ≥9 yrs old
- NPO with maintenance IVFs (DS ≥ NS with 20 meq KCL)
  - Acetaminophen IV while NPO
    - ≤50 kg: 15 mg/kg/dose every 6 hours or 12.5 mg/kg/dose every 4 hours; maximum single dose: 15 mg/kg up to 750 mg; maximum daily dose: 75 mg/kg/day not to exceed 3,750 mg/day
    - >50 kg: 1,000 mg every 6 hours or 150 mg/kg/dose every 4 hours; maximum single dose: 1,000 mg; maximum daily dose: 4,000 mg/day
  - Give Acetaminophen orally, if not NPO
    - Weight-directed dosing: Infants, Children, and Adolescents: 10 to 15 mg/kg/dose every 4 to 6 hours as needed; do not exceed 5 doses in 24 hours; maximum daily dose: 75 mg/kg/day not to exceed 4,000 mg/day
    - Morphine 0.1 mg/kg IV q3h PRN pain
    - Ondansetron
      - ≤40 kg: 0.1 mg/kg/dose as a single dose; maximum dose: 4 mg/dose
      - >40 kg: 4 mg/dose as a single dose
    - Abdominal limited RUQ US
    - CT if RUQ US positive

Criteria for Admission
- US positive for gallbladder wall thickening, with or without stones in the gallbladder or cystic duct dilation (see page 2)
- History of multiple visits to the ED for discomfort/pain related to cholelithiasis
- May d/c from ED if stable (pain controlled, afebrile, normal WBC)
- Have follow-up appointment with surgery scheduled as an outpatient, with plan for future cholecystectomy

If cholelithiasis without cholecystitis, cholelithiasis or pancreatitis

Further Recommendations/Considerations
Patients who need antibiotic therapy:
- Has fever
- Toxic appearance
- Needs surgical consult
- Radiology exam shows gallbladder wall thickening

Recommndations/Considerations
The gallbladder is an organ under the liver on the right side of the abdomen, which stores bile. Bile is then ejected from the gallbladder into the intestine to help digest the fat in foods.
Cholecystitis: acute inflammation of the gallbladder
Cholelithiasis: presence of gallstone in the gallbladder
Cholelithiasis: gallstones present in the common bile duct (CBD), causing an obstruction, which can cause jaundice and liver damage
Gallstone Pancreatitis: gallstones blocking the pancreatic duct, which stops pancreatic enzymes from getting into the small intestine, causing pancreatitis
Biliary dyskinesia: poor gallbladder contractility and emptying, causing pain

Laboratory Findings: leukocytosis, elevated CRP (cholecystitis), elevated liver enzymes and T&D bilirubin (cholelithiasis), elevated lipase (gallstone pancreatitis)
Patients who have sickle cell or are TPN dependent are more prone to gallstones.

Consider refraining from the use of NSAIDs prior to surgery. (Grade X, Level V)

Discharge Criteria
- Tolerating food
- Able to ambulate
- Pain managed by oral medications

Patient Education
- Cerner instructions as appropriate for diagnosis - Cholecystectomy, Post-Op Care, Pain Management, Post-Op Constipation, Low Fat Diet

Reassess the appropriateness of Care Guidelines as condition changes and 24 hrs after admission. This guideline is a tool to aid clinical decision making. It is not a standard of care. The physician should deviate from the guideline when clinical judgment so indicates.
Ultrasound Positive for gallbladder wall thickening, with or without stones in the gallbladder or cystic duct dilation

- **Nonsurgical diagnosis/possible outpatient follow-up**
  - **Yes**
    - **Cholelithiasis (can present with or without cholecystitis)**
      - **Choledocholithiasis**: Ultrasound shows – CBD 5mm or greater, with elevated LFTs (AST/ALT) and Hyperbilirubinemia (Total and Direct Bilirubin)
      - **OR**
        - **Gallstone pancreatitis**: Elevated Amylase/Lipase if gallstone obstructing pancreatic duct
      - **Admit to pediatrics with Surgery Consult (in AM if admitted overnight and is clinically stable)**
        - **IV antibiotics**: Cefoxitin (80-160 mg/kg/day q 4-6hrs) or Ceftriaxone (50-75 mg/kg/dose q day) and Flagyl (22.5 to 40 mg/kg/day q 6-8 hrs), if symptoms of cholecystitis present
      - **MRCP**
        - **No stone found in CBD or pancreatic duct**
          - **Pain management**
            - IV Acetaminophen or Morphine PRN
        - **NPO with maintenance IV fluids (D5 ½ NS + 20meq KCL)**
          - **Consent for Cholecystectomy vs d/c home for “cooling off” with antibiotics; schedule for outpatient surgery**

- **If stone is seen on imaging in CBD or pancreatic duct – go straight to ERCP**
  - **ERCP +/- sphincterotomy and/or stent placement**
    - ***note – done at UCI, requires d/c and readmission**
      - **Pain management**
        - IV Acetaminophen or Morphine PRN
      - **NPO with maintenance IV fluids (D5 ½ NS + 20meq KCL)**
        - **Consent for cholecystectomy when labs normalize**

- **Cholecystitis**
  - **Admit to pediatrics with Surgery Consult**
    - **IV antibiotics**: Cefoxitin (80-160 mg/kg/day q 4-6hrs) or Ceftriaxone (50-75 mg/kg/dose q day) and Flagyl (22.5 to 40 mg/kg/day q 6-8 hrs)
  - **NPO with maintenance IV fluids (D5 ½ NS + 20meq KCL)**
    - **Pain management**
      - IV Acetaminophen or Morphine PRN
  - **Consent for Cholecystectomy vs d/c home for “cooling off” with antibiotics; schedule for outpatient surgery**

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References
Preoperative Cholecystectomy Care Guideline


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