Appendicitis Management Pathway

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Introduction

This pathway is for use with children aged 2-18 years old with no underlying disease or co-morbidity who have a confirmed diagnosis of appendicitis (either non-perforated or perforated) by the General Surgery Team who require a surgical appendectomy or medical management. Patients are to be removed from this pathway if there are significant postoperative complications (eg. bowel obstruction or prolonged TPN) or a change in diagnosis.

Target Users

- General Surgery Surgeons, Residents, Fellow, Nurse Practitioners, and nurses on the inpatient units

Definitions

- **Non-perforated appendicitis** - Appendix is normal, injected, inflamed or suppurative. Presence of cloudy fluid +/- local fibrinous exudate, or gangrenous appendicitis but with no visible hole in appendix, abscess or free fecalith
- **Perforated appendicitis** - Visible hole in appendix, free fecalith, diffuse peritonitis with fibrinous exudate or abscess
- **Appendectomy** - surgical removal of the appendix
- **Fever** - a fever is defined as any temperature reading greater than 38°C
Recommendations - Printable Version

Appendicitis Algorithm

- Initial ED with confirmed diagnosis of Appendicitis on ultrasound
- ED to consult General Surgery team and initiate ED Appendicitis order set
- Are there signs of perforation on ultrasound? (symptoms for >3 days?) Is there a sign of abscess on ultrasound?
- NO
  - If yes, proceed to surgical management
  - If no, proceed to medical management
- Surgery
  - Child placed on OR Priority 2 list
  - Initiate Colloids/Infusion sets
  - Start Parenteral antibiotic using Epic order set: RHB-hospital
  - Refer to HGB

- Medical management
  - Patient to General Surgery for further management
  - Are there drainable collections on ultrasound?
  - YES
    - IOT to insert percutaneous drain for collection; and determine length of time until drain removal
    - Child will remain on IV Colloids/Infusion sets until drain is removed
  - NO
    - Initiate IV colloids/infusion sets using Epic order set: RHB-hospital (Refer to HGB)

- Post-op
  - Convert to oral antibiotics when stool is formed (at least 24 hours)
  - Refer to HGB
  - Switch to oral Cefixime/piperacillin (if appropriate) to complete 7 days of oral antibiotics
  - Discharge

- If patient clinically worsens, consider upgrade to IV antibiotics/IV colloids: If no ultrasound within the past 2-3 days, repeat in order to rule out drainable collection. If collection is found, refer to algorithm for patient with drainable collections (IOT).
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- **Antibiotic therapy should be reassessed based on any available microbiological data (e.g. if cultures are obtained from an abdominal abscess aspiration).**
- **A fever is defined as any temperature reading greater than 38°C (refer to Severe Clinical Pathway).**

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Appendicitis Management Pathway
## Inpatient Non-Perforated Appendicitis Care Pathway

### Pre-Operative

1. Hydration maintained
   - Adequate pain control
   - Anticholinergic
   - Able to tolerate diet (clear fluids to regular diet)
   - Incision intact, no drainage, dry and intact

### Physical Exam

- Obtain history
- Complete physical exam
- Assess vital signs
- Complete pain assessment (refer to Pain Assessment Guidelines)
- Obtain accurate in and out
- Ensure that patient is NPO
- Administer 1000 mL and 0.9% NaCl with 20mm Hg31 at maintenance
- Bolus as indicated
- Refer to Fluid and Electrolyte Guidelines
- Colloids/Intravenous Fluids: Avoid all unless Clinically necessary or Ciprofloxacin or Metronidazole. Refer to the e-formulary
- Pain medication as needed, morphine or acetaminophen: Refer to the e-formulary

### Activity

- Activity as tolerated
- Consent for surgery
- Pre-operative procedures for child and caregiver
- Review parental involvement in care (pre and post-operatively)

### Diet

- Advance diet as tolerated
- Acetaminophen and/or ibuprofen (if not contraindicated) for 48 hours then as needed
- Review need for pain management

### Pain

- Acetaminophen and/or ibuprofen (if not contraindicated) for 48 hours then as needed
- Review need for pain management

### Inclusion criteria

- Leaves ster-strips until fall off or remove after 10 days
- Once ster-strips removed, may wash incision gently with soap and water

### Signs and symptoms of wound infection:

- Fever
- Redness around incision
- Drainage from incision
- Increasing pain around incision

### Follow-up

- May shower or bathe, 48 hours after surgery
- Activity:
  - Ambulate in hallways
  - May return to normal daily activities as patient feels able

### When to call surgeon's office:

- Wound infection
- Vomiting
- Fever
- Pain

### Post-Operatively

1. Algora
   - Adequate pain control
   - Antibiotics
   - Able to tolerate diet
   - Incision dry and intact
   - Child caregiver teaching

### Discharge

- Within 24 hours Post-Op

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**PRINTABLE VERSION**
# Inpatient Perforated Appendicitis Care Pathway

<table>
<thead>
<tr>
<th>DAY OF ADMISSION</th>
<th>DAY #1</th>
<th>DAY #2 - #3</th>
<th>DAY #4</th>
<th>DAY #5</th>
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<tbody>
<tr>
<td><strong>GOALS</strong></td>
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<td><strong>PHYSICIAN</strong></td>
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<td><strong>FAMILY/COMMUNITY EDUCATION</strong></td>
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## DAY #1
- Vital signs as per IPERFAS (Refer to Sepsis Clinical Pathway)
- Pain assessment (focus on abdomen) every 4 hours
- Adequate pain control
- Accurate I & O
- Maintain adequate oral fluid intake and then TKVO
- Pre-operatively:
  - Pain medication as needed (morphine / acetaminophen)
  - Start IV/flush of IV sodium and metaraminol (Refer to a formulary for dosing)
- Post-operatively:
  - Administration of IV sodium and metaraminol
  - Monitor IV fluid intake and output
  - Pain management:
    - If on morphine infusions, use as tolerated
    - Acetaminophen every 4 to 6 hours for 48 hours then as needed for pain reliever
    - Ketorolac or ibuprofen every 6 hours for 48 hours
  - Antibiotics:
    - Q8h dosing of IV sodium and metaraminol
    - Consider switching to oral antibiotics - Ceftriaxone (if susceptible) or metronidazole to complete an additional 72 hours post-op when child is able to tolerate oral intake

## DAY #2 - #3
- Diet as tolerated
- If NPO, ensure that child is receiving IV fluids with D5W
- Assess need for PN therapy
- Ambulating to chair daily
- Progress to ambulating in hallway X 5

## DAY #4
- When diet will be started
- Need for pain management
- Potential return to school

## DAY #5
- When to call surgeon’s office:
  - Wound infection
  - Vomiting
  - Fever
  - Pain
- Follow-up:
  - Phone call for follow-up with Primary Surgeon
  - Family doctor/primary care
- 1 - 2 weeks

## Related Documents
- E-formulary
- Sepsis Pathway
- Pain Management Guidelines
- Pain Assessment Guidelines
- Fluid & Electrolyte Guidelines
References


6. Children’s Hospital of Philadelphia: Appendicitis without Known GI Disease Clinical Pathway- Emergency

7. Cincinnati Children’s Hospital: Emergency Appendectomy Clinical Pathway

8. Cincinnati Children’s Hospital: Appendectomy for Ruptured Appendix with Abscess or Generalized Peritonitis Care Guideline

9. Cincinnati Children’s Hospital: Appendectomy for Ruptured Appendix with Abscess or Generalized Peritonitis Care Guideline


15. Inpatient and Surgical Care: Appendectomy for Ruptured Appendix with Abscess or Generalized Peritonitis Care Guideline


29. University Hospitals of Cleveland: Pediatric Appendicitis/Simple Laparoscopic/Open Technique Care Path

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Attachments:
appendicitis algorithm.docx
appendicitis algorithm.pdf
Non perforated appy pathway.pdf
Non perforated appy pathway.rtf
Perforated appy pathway.pdf
Perforated appy pathway.rtf