Appendicitis Management Pathway

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
Appendicitis Management Pathway

Recommendations - Printable Version

If chief complaint is consistent with acute appendicitis on ultrasound:

1. ED to consult General Surgery team and initiate ED Appendicitis order set.
2. Advise patient of next steps:
   - Patient may be discharged, admitted to hospital, or admitted to surgery based on severity and risk factors.
3. If surgery is recommended:
   - Patient to be admitted to hospital and scheduled for surgery.
4. If discharge is recommended:
   - Patient to be discharged with instructions to return to ED if symptoms persist or worsen.

Diagnostic Considerations:

- Obtain complete blood count (CBC) and liver function tests (LFTs) to assess for systemic inflammation.
- Perform CT scan of abdomen to confirm diagnosis and assess for complications such as perforation or abscess.

Management:

- Acute Appendicitis:
  - Medical management: Antibiotics to cover gram-negative bacteria, typically with a combination of a cephalosporin and metronidazole.
  - Pain management: Oral narcotics or non-steroidal anti-inflammatory drugs (NSAIDs) as needed.
  - Fluid resuscitation: IV fluids to maintain hydration.

- Perforated Appendicitis:
  - Surgical management: Immediate appendectomy to prevent peritonitis.
  - Antibiotics: IV antibiotics to cover gram-negative bacteria.
  - Pain management: Oral narcotics or non-steroidal anti-inflammatory drugs (NSAIDs) as needed.

- Complicated Appendicitis:
  - Surgical management: Appendectomy with or without bowel resection.
  - Antibiotics: IV antibiotics to cover gram-negative bacteria.
  - Pain management: Oral narcotics or non-steroidal anti-inflammatory drugs (NSAIDs) as needed.

Post-operative Care:

- Pain management: Oral narcotics or non-steroidal anti-inflammatory drugs (NSAIDs) as needed.
- Fluid resuscitation: IV fluids to maintain hydration.
- Monitor vital signs and observe for signs of intra-abdominal complications.

Supportive Measures:

- Nutritional support: Early enteral feeding to maintain optimal nutrition.
- Pain management: Oral narcotics or non-steroidal anti-inflammatory drugs (NSAIDs) as needed.
- Monitor vital signs and observe for signs of intra-abdominal complications.

Complications:

- Peritonitis: Immediate surgical intervention to prevent severe complications.
- Abscess formation: Antibiotics and surgical drainage as needed.
- Perforation: Appendectomy to prevent peritonitis.

Alternative Treatment Options:

- Medical treatment for uncomplicated appendicitis.
- Appendectomy for complicated appendicitis.
- Supportive care for perforated appendicitis.

References:


**Note:** This information is for educational purposes only and should not be used as a substitute for professional medical advice. Always consult with your healthcare provider for specific medical advice.
# Appendixitis Management Pathway

## Inpatient Non-Perforated Appendicitis Care Pathway

<table>
<thead>
<tr>
<th>Phase</th>
<th>Pre-Operative</th>
<th>Post-Operatively</th>
<th>Discharge: Within 24 hours Post-op</th>
</tr>
</thead>
</table>
| **Goals** | 1. Hydration maintained  
2. Adequate pain control  
3. Patient prepared for OR  
4. CHILD family is advised of pre-op bath. Wipes to be used upon arrival. Refer to procedure document | 1. Allograft  
2. Adequate pain control  
3. Ambulating  
4. Able to tolerate diet (clear fluids to regular diet)  
5. Incision intact, no drainage, dry and intact | 1. Allograft  
2. Adequate pain control  
3. Ambulating  
4. Able to tolerate diet  
5. Incision 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 | Complete pain assessment every 4 hours  
Ensure child has adequate pain control (refer to Pain Management Guidelines)  
Monitor vital signs as per Bedside Peers (CPR)  
Monitor pain levels as per Pain Management Guidelines  
Obtain accurate in and out  
Complete abdominal assessment | 1. Allograft  
2. Adequate pain control  
3. Ambulating  
4. Able to tolerate diet  
5. Incision dry and intact |

| **Investigations** | Obtain accurate in and out | Clear fluids to regular diet as tolerated  
IV to maintenance, TKPO once adequate oral fluid intake  
Bolus as indicated  
Refer to Fluid and Electrolyte Guidelines | 1. Allograft  
2. Adequate pain control  
3. Ambulating  
4. Able to tolerate diet  
5. Incision dry and intact |

| **Medication** | Ceftriaxone/Minocycline IV, if allergy then Clindamycin or Ciprofloxacin & Metronidazole. Refer to the e-formulary  
Pain medication as needed, morphine  
Acetaminophen or ibuprofen for pain management | Acetaminophen as needed for pain/fever  
Ketorolac or ibuprofen as needed for pain management  
Morphine IV bolus PRN | 1. Allograft  
2. Adequate pain control  
3. Ambulating  
4. Able to tolerate diet  
5. Incision dry and intact |

| **Activity** | Obtain history  
Complete physical exam  
Assess vital signs  
Complete pain assessment (refer to Pain Assessment Guidelines)  
Obtain accurate in and out | Complete pain assessment every 4 hours  
Ensure child has adequate pain control (refer to Pain Management Guidelines)  
Monitor vital signs as per Bedside Peers (CPR)  
Monitor pain levels as per Pain Management Guidelines  
Obtain accurate in and out  
Complete abdominal assessment | 1. Allograft  
2. Adequate pain control  
3. Ambulating  
4. Able to tolerate diet  
5. Incision dry and intact |

### Diet
- **Diet**: Advance diet as tolerated
- **Pain**: Acetaminophen and ibuprofen (if not contraindicated) for 48 hours then as needed
- **Intravenous Care**: Leaks and hemorrhages until leak is closed or removed
- **Signs and Symptoms of wound infection**: Fever  
Redness around incision  
Drainage from incision  
Increasing pain around incision
- **Battle sign**: May occur within 48 hours after surgery
- **Activity**: Ambulate in hallway  
May return to normal daily activities as patient feels able

### When to call surgeon’s office:
- Wound infection  
- Vomiting  
- Fever  
- Pain

### Follow-up:
- Confirm need for follow-up with Primary Surgeon  
- Family doctor/pediatrician in 1-2 weeks
**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>
</tr>
</thead>
</table>

**PHYSICIAN CARE**
- History & Physical
- Vital Signs
- Height and Weight
- Pain Assessment (focus on abdomen) every 4 hours
- Accurate In & Out

**THERAPIES**
- IV 8.4% NaCl with 20mEq KCl
- IV as clinically indicated with 0.9% NS or Lactated Ringer's
- Refer to Fluid and Electrolyte Guidelines

**DIET**
- Diet as tolerated
- If NPO, ensure that child is receiving IV fluids with DSW
- Assess need for PN Therapy

**PRE-OPERATIVELY**
- Pain medication as needed (morphine / analgesics)
- Start IV hydration of IV fluids and maintenance (Refer to a formulary for dosing)

**POST-OPERATIVELY**
- Analgesia as needed for pain
- Morphine IV as required
- Please check with Primary Surgeon if NSAIDs can be prescribed (Ketorolac vs. Ibuprofen)
- IV fluid of IV fluids and maintenance (Refer to Fluid and Electrolyte Guidelines)
- IV fluid of IV fluids and maintenance (Refer to Appendix A)

**PAIN MANAGEMENT**
- If on morphine infusion, wean as tolerated
- Asparokinase every 4-6 hours for 48 hours then as needed for pain
- Ketorolac or Ibuprofen every 6-8 hours for 48 hours

**ANTIBIOTICS**
-cefazolin dosage of IV cefazolin and metronidazole
- Consider switching to oral antibiotics upon the child's ability to tolerate oral diet
- Refer to Appendix A for additional information
- Refer to Appendicitis Algorithm

**ACTIVITY**
- Ambulating
- Ambulating to chair daily
- Progress to ambulating in hallway, X 5

**URINARY/BLADDER/OBSTETRIC**
- Consider an abdominal ultrasound to evaluate for drainable intra-abdominal collection if child is not improving or clinically worsens
- If collection is found, refer to Appendicitis Algorithm for patient with drainable collection

**SURGICAL METHODS**
- One-step procedures for parent and child
- Consent for surgery signed

**INCISION CARE**
- Leave skin-strips until fall off on own or remove after 10 days
- Once skin-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

**Bathing**
- May shower or bathe, 48 hours after surgery

**FAMILY / PATIENT EDUCATION**
- Ambulate in hallway and at least 5 times
- May return to normal daily activities as patient feels able

**WHEN TO CONTACT NURSE'S OFFICE**
- Wound infection
- Vomiting
- Fever
- Pain

**FOLLOW UP**
- Confirm need for follow-up with Primary Surgeon
- Family doctor/edcuman can 1-2 weeks

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**PRINTABLE VERSION**

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

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References


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

7. Cincinnati Children’s Hospital: Appendicitis Clinical Pathway- Inpatients

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


14. 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