Initial Workup (ED or Inpatient)

**Inclusion Criteria**
- Crohn’s disease AND
- Abdominal, pelvic, or perianal pain; or diarrhea, rectal bleeding, vomiting, fever, or acute weight loss

**Exclusion Criteria**
- Ulcerative colitis, elective presurgical admission, GI perforation, toxic appearance, toxic megacolon, non-IBD complications

**Admit Criteria**
- Moderate to severe dehydration
- Abscess
- Obstruction
- Severe pain
- Severe diarrhea
- Severe anemia

**Assessment (ED Crohn’s Plan)**

**Stabilization**
- NPO except medications; assess for dehydration, bolus as needed
- Ondansetron if nausea/vomiting
- Avoid empiric antibiotics or acid blockers

**Pain Management**
- Mild: hot packs and acetaminophen (PO preferred, or IV if unable to take PO)
- Moderate to severe: nalbuphine (or morphine) prn and acetaminophen PO scheduled q 4 hours
- Consider lorazepam q 6 hours prn

**Labs**
- CBC with differential, creatinine, ESR, CRP, albumin, ALT
- Consider lipase, lytes, Mg, Ca, UA, urine culture, urine HCG
- If febrile or suspected abscess: blood culture
- Document TB status or update if at risk for TB

**Consults**
- GI
- Child life
- Pain team if any of the following:
  - pain not responding to opioids
  - perianal, intraabdominal, or pelvic abscess present
  - currently on home opioids
- Consider social work

**Imaging**
Discuss with GI to evaluate for complications based on symptoms:

- Abdominal or Pelvic Abscess Suspected
  - MR abdomen/pelvis with contrast (if unavailable, order CT abdomen/pelvis, with contrast)
  - Consult IR
  - If confirmed, go to Abdominal/Pelvic Abscess Phase

- Perianal Abscess Suspected
  - MR pelvis (imaging should not delay surgical management)
  - Consult general surgery
  - If confirmed, go to Perianal Abscess Phase

- Obstruction Suspected
  - Abdominal x-ray 2-3 view
  - Consult general surgery
  - If confirmed, go to Obstruction Phase

- Fever WITH abdominal pain and tenderness
- Perianal pain or visible abscess
- Emesis, abdominal distention, decreased stool output

**No complications identified**

**Flare**

**Test Your Knowledge**

**Executive Summary**

**Explanation of Evidence Ratings**

**Summary of Version Changes**

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Last Updated: June 2015
Next Expected Review: September 2016
Consider Non-IBD Complications
- Kidney Stones
- Pancreatitis
- Gallstones
- Thromboembolism
- UTI
- Opportunistic Infections
- Drug side effects
- Liver Abscess
- Hepatitis
- Cholangitis

Workup
Labs
- If diarrhea, stool C difficile
  - If at risk from recent exposure or travel: stool culture, ova, parasites
- Consider lipase, creatinine, lypo, Mg, Ca, GGT, UA, urine culture, urine HCG if not already done
- If malnutrition: iron, iron saturation, ferritin, 25-OH-vitamin D, vitamin B12
- Discuss with attending or fellow these considerations:
  - CXR or blood culture
  - 6-methyl-mercaptopurine group
  - Infliximab trough level, HACA antibodies
  - TPMT level
  - Other studies as clinically indicated (e.g. CMV, EBV serologies)

Management
- Maintain hydration
- Ondansetron prn
- Pain Management
  - Mild: hot packs and acetaminophen (PO preferred, or IV if unable to take PO)
  - Moderate to severe: nalbuphine (or morphine) prn and acetaminophen PO scheduled q 4 hours
  - Consider lorazepam q 6 hours prn
  - Consult Pain Management if not responding to opiates or requiring >4 doses of opiates in 24 hours
- Establish nutrition plan and support
- Assess thromboembolism risk, consider prophylaxis
- Medications per GI team
- Discourage empiric use of antibiotics and acid blockers

Consults
- Consult child life
- Consider behavioral health consult
- Day 3: patients unable to tolerate oral intake should have nutrition consult and consider PICC line/TPN

Documentation
- Document TB status or update if at risk for TB
- Establish reason for flare and document
- Calculate and document PCDAI (Pediatric Crohn’s Disease Activity Score) in first 24 hours

Discharge Criteria
- No pain or managed with acetaminophen or per pain management plan
- Adequate oral intake
- Established plan to prevent future flare
- Follow-up scheduled in GI IBD clinic

Discharge Instructions
- GI follow up visit labs in 2 weeks

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Last Updated: June 2015
Next Expected Review: September 2016
Crohn’s Disease v. 2.0

**Executive Summary**

**Explanation of Evidence Ratings**

**Test Your Knowledge**

**Summary of Version Changes**

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**ABSCESS**

*(INTRAABDOMINAL OR INTRAPELVIC)*

---

**Days 1-3**

- Maintain hydration
- NPO except for medications
- If fistula on imaging, consult nutrition for PICC/TPN
- Ondansetron prn

**Pain Management**

- Ketorolac IV, acetaminophen PO, scheduled
- Consult pain management team for opioid IV PCA
- Consider lorazepam q 6 hours prn
- Consult child life
- Consult general surgery within 24 hours

**IV Antibiotics**

- **First-line:** piperacillin-tazobactam
- **Penicillin allergic:**
  - ceftriaxone and metronidazole OR
  - ciprofloxacin and clindamycin

**Daily Labs**

- Electrolytes, creatinine if on ketorolac
  AND piperacillin-tazobactam

- CRP, CBC w/diff, assess culture and sensitivity and adjust antibiotics if needed

- Consult nutrition for nutrition support plan

- Offer clear liquid diet if criteria met:
  - No fistula, no pain or managed by acetaminophen, no tenderness, no fever or tachycardia, improved CRP
  - If tolerated, advance daily to full liquids, then GI1, then GI2 (low residue/fructose/lactose diets)
  - If unable to tolerate PO nutrition, arrange home TPN and PICC

**Drainage**

- Consult IR
- Send fluid for culture and sensitivity
- Flush and aspirate with 5ml saline BID for 72 hours

**Abscess < 3 cm**

**Abscess >3 cm**

**IV Antibiotics and No Drainage**

**Resolution or improvement of abscess**

**Fistula Present**

- Plan home IV TPN and IV antibiotics
- Likely surgery one month from admission

**No Fistula**

- Switch to oral antibiotics:
  - **First-line:** Amoxicillin/clavulanate (if allergic, ciprofloxacin/clindamycin)
  - Other if needed based on culture and sensitivity

- Arrange IV antibiotics if oral not tolerated
- Continue for 7 days after imaging shows resolution on ultrasound

**Discharge Criteria**

- No pain or managed with acetaminophen or per pain management plan
- Abscess adequately drained or resolving on antibiotics alone
- Adequate nutrition provided (orally or IV)
- Surgery is scheduled if needed
- Home care is arranged

**Discharge Instructions**

- GI dietitian, labs at 1 week

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Last Updated: June 2015
Next Expected Review: September 2016
**Management**

- NPO
- Maintain hydration
- Ondansetron prn

**Pain Management**

- Ketorolac IV, acetaminophen PO, scheduled
- Consult pain management team for opioid IV PCA
- Consider lorazepam q 6 hours prn

**IV antibiotics**

- **First-line:** piperacillin-tazobactam
- **Penicillin allergic:**
  - ceftriaxone and metronidazole OR
  - ciprofloxacin and clindamycin
- **History of MRSA+:** ciprofloxacin and clindamycin

- Consult child life
- Consult surgery for abscess drainage, exam under anesthesia
- Plan concomitant flexible sigmoidoscopy and biopsy
- Plan MR pelvis if not already performed

**Subsequent Evaluation**

- Determine nutrition PO/NPO
- Continue pain management
- Assess culture and sensitivity, adjust antibiotics if needed
- When drained, switch to oral antibiotics (ciprofloxacin and metronidazole preferred; tailor to culture results)
- If abscess has resolved, consider antiinflammatory, regardless of whether a fistula is present

**Discharge Criteria**

- No pain or managed with acetaminophen or per pain management plan
- Abscess adequately drained or resolving on antibiotics alone
- Adequate oral nutrition and intake

**Discharge Instructions**

- GI labs at 1-2 weeks

---

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Last Updated: June 2015
Next Expected Review: September 2016
OBSTRUCTION

Consult Surgery

Partial obstruction

Treatment

Stabilization
- Maintain hydration, fluid balance, daily electrolytes
- Decompression
  - NG Tube, NPO
- Establish nutrition support plan
- IV ondansetron prn
- Discourage empiric use of antibiotics

Pain Management
- Mild: hot packs and acetaminophen (PO preferred, or IV if unable to take PO)
- Moderate to severe: nalbuphine (or morphine) prn and acetaminophen PO scheduled q 4 hours if tolerating PO
- Consider lorazepam q 6 hours prn

Consults
- GI/surgery providers decide treatment and imaging
  - CT with contrast, MR enterography
- Consult child life
- Consider behavioral health consult

Discharge Criteria
- No pain or managed with oral medications
- Adequate oral nutrition and intake
- Established cause of obstruction and prevention plan
- Follow-up scheduled in GI IBD clinic

Discharge Instructions
- GI follow-up in 1-2 weeks

Return to Home
### Inclusion and Exclusion Criteria

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crohn’s Disease and Abdominal, pelvic, perianal pain; or diarrhea, rectal bleeding, fever, or acute weight loss</td>
<td>Ulcerative colitis, elective presurgical admission, GI perforation, toxic megacolon, toxic appearance, non-IBD complications</td>
</tr>
</tbody>
</table>

While most patient with CD are managed in the outpatient setting, the most common CD complications that require ED/inpatient management are:

- Disease flare
- Intraabdominal or intrapelvic abscess
- Perianal abscess
- Bowel Obstruction

**SAFETY!** *If toxic appearance, consider perforation, toxic megacolon, hypovolemic or septic shock*
Potential Non-IBD complications

Patients with CD may also have the following complication unrelated or indirectly related to their disease.

<table>
<thead>
<tr>
<th>Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pancreatitis</td>
</tr>
<tr>
<td>Gallstones</td>
</tr>
<tr>
<td>Hepatitis, cholangitis</td>
</tr>
<tr>
<td>Kidney stones</td>
</tr>
<tr>
<td>Thromboembolism</td>
</tr>
<tr>
<td>Urinary tract infections</td>
</tr>
<tr>
<td>Opportunistic infections e.g. Clostridium <em>difficile</em></td>
</tr>
<tr>
<td>Drug side effects e.g. Mesalamine, Azathioprine, Anti TNF agents</td>
</tr>
<tr>
<td>Liver abscess</td>
</tr>
</tbody>
</table>

Utilize clues from the patient’s history, physical exam and investigations.
Toxic Megacolon and Perforation

Suspect in patients with:

- Symptoms/signs: severe pain, abdominal distention, altered level of consciousness, guarding or rigidity
- Systemic toxicity: fever, tachycardia, dehydration, electrolyte disturbance (esp. hypokalemia), or shock
- For perforation: free air on abdominal film
- For TMC evidence of colon dilatation
  - >=56mm or
  - >40mm in patients <10 years

**SAFETY! Medical / Surgical Emergency**

[Turner 2011 Guideline]
CD Patient with Disease Flare

Flare is defined as symptoms such as the following in the absence of infectious process or bowel obstruction:

<table>
<thead>
<tr>
<th>Abdominal Pain</th>
<th>Diarrhea</th>
<th>Rectal Bleeding</th>
<th>Fever</th>
<th>Acute Weight Loss</th>
</tr>
</thead>
</table>

Since the goal of Crohn’s therapy is inducing and maintaining remission, it is imperative to establish and document the reason for the flare:

- Undertreatment
  - Dose / Frequency
  - Poor Adherence
  - Ineffective Therapy
  - Disease Progression / Complication

*NOTE: Treatment plan adjustment should be discussed and clearly outlined to prevent future flares*

[Deans 2010 Guideline, Expert opinion]

CD Flare: General Treatment Notes

The best treatment plan should be tailored individually

Treatments commonly used at SCH include:

- Enteral nutrition therapy
- Corticosteroids: strongly discouraged and avoided if possible
- Azathioprine
- Methotrexate
- Anti TNF-α antibodies

[Van Assche 2010 Guideline, Mayberry 2013]

CD Flare: General Treatment Notes (Cont’d)

Antibiotics are only considered appropriate for septic complications, symptoms attributable to bacterial overgrowth, or perianal CD

The role of mesalamines, antibiotics and probiotics for inducing remission in children with CD is unclear

H2 antagonists and PPIs are not routinely indicated

- Consider for heartburn or nausea

[Deans 2010 Guideline, Van Assche 2010 Guideline, Julierat 2012]
CD Pain Management

CD associated abscesses can cause severe pain, especially in the perianal area, even if not visible on exam

**SAFETY!** Pain out of proportion with disease severity should prompt assessment for TMC, bowel perforation or septic complications

**Pain Management**
- Child life resources should be offered
- Relaxation techniques, hot packs, and acetaminophen are 1st line
- Consider benzodiazepines for anxiety component
- Ketorolac can be considered
- Opiates can be used
  - Caution with narcotic bowel syndrome

[Expert opinion]

CD Pain Management (Cont’d)

Consult pain management team when:
- Any patient with an abscess
- If requiring >4 doses of nalbuphine per 24 hours
- Pain not responding to opioids
- Perianal, intraabdominal, or pelvic abscess
- Currently on home opioids

[Expert opinion]
Nutrition is key to patient’s well being and healing

Patients should be allowed PO intake except where

- Demonstrable fistula on imaging: leak is a concern
- Clinically unstable patients
- Bowel obstruction

Diet considerations

- Generally low residue, low lactose and low fructose diet preferred
- Clear liquids only if on opiates
- All patients must have a clear nutrition plan established by day 3
TB Screening

Always know the patient’s TB exposure status

- Immune suppressing treatments can allow TB reactivation and affect TB screen accuracy
- Steroids can affect TB screen accuracy
- Early screening should be done if:
  - TB status not known
  - Not recently available and recent exposure
  - International Travel
  - Incarceration
  - Chronic Cough
  - Living with:
    - Recently Incarcerated
    - Healthcare Worker
    - Known TB Patient

Testing recommendations:
Age ≥5 years QuantiFERON-TB Gold
Age <5 years PPD
Indeterminate results require CXR

For questions contact ibdpathway@seattlechildrens.org

Return to Flare
Flare GI Follow Up Labs:

GI follow up labs and GI follow up with provider in 2 weeks

- CBC Diff
- ALT, Albumin
- CRP
- ESR
Intraabdominal / Intrapelvic Abscess

Principles of managing intraabdominal / intrapelvic abscess

1. Eliminate the infection
   - Wide spectrum IV antibiotics with anaerobic coverage (e.g. if nonallergic: piperacillin-tazobactam)
   - Abscess drainage for >3cm fluid collection diameter
     - IR drainage is preferred due to lower complication risk
     - Culture and sensitivity should be followed

Note: Consider fungal infection (including Candida albicans) with chronic abscesses, immune-suppression, malnutrition or prolonged antibiotic therapy

[Steele 2011, Guideline, Van Assche 2010 Guideline]

Intraabdominal / Intrapelvic Abscess (Cont’d)

2. Control pain (see later)
3. Improve and maintain nutrition
   - NPO 48 hours
   - Enteral challenge on Day 3
     - If clinically well and no fistula is seen on initial imaging:
       - Advance daily with caution
     - Diet: clears, full liquids, G1, G2
       - Monitor closely for clinical change
     - PICC line & TPN if unable to receive enteral intake

[Expert opinion]

Intraabdominal / Intrapelvic Abscess (Cont’d)

4. Treat the diseased bowel /fistula
   - Surgical Resection
     - Isolated ileocecal CD or demonstrable fistula
       - Timing is in 4 weeks
       - Laparoscopy preferred
   - Medical Therapy
     - If no demonstrable fistula AND no prior exposure to anti-TNF agents, immunomodulator
       - Start on Day 6 if abscess resolves

Note: Response to antiinflammatory therapy is lower compared to external (perianal) fistulae

[Feagins 2011, Gervais 2002, Gutierrez 2008, expert opinion]
Subsequent care: Day 6

- Reimage: ultrasound preferred if lesion is accessible
- Remove drain if <5ml/day drainage AND not all pus AND abscess resolved
- Switch to oral antibiotics if tolerating enteral intake
  - First line if non allergic is Amoxicillin-clavulanate

<table>
<thead>
<tr>
<th>If no fistula on imaging</th>
<th>If fistula on imaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>consider antiinflammatory therapy</td>
<td>no antiinflammatory agents should be offered</td>
</tr>
</tbody>
</table>

**SAFETY!**

If patients are worsening any time during their course despite antibiotics (with or without drainage): reimage and consider alternative drainage or surgery

[ACR Appropriateness Criteria Crohn Disease 2011]
Intraabdominal / Intrapelvic Abscess

When to discharge?

- No pain or pain managed with acetaminophen
- Abscess adequately drained or resolving on antibiotics
- Adequate nutrition provided (orally or TPN)
- Antibiotics plan set (oral or IV home antibiotics)
  - Should be continued for 1 week after abscess complete resolution
- Home care is arranged
- Surgery and Gastroenterology follow up is scheduled

Abscess GI Follow Up Labs:

GI follow up labs, follow up appointment with dietitian and GI follow up with provider in 1 week
- CBC Diff
- ALT, Albumin
- CRP
- ESR
- TPN labs if patient received TPN
- Ultrasound weekly until resolution
Crohn’s Perianal Abscess

Principles of managing perianal abscess

1. Eliminate the infection
   - Wide spectrum IV antibiotics with anaerobic coverage (e.g. if nonallergic: piperacillin-tazobactam)
   - Incompletely formed abscesses (no fluctuation/no pointing) may be treated with antibiotics only
   - Drainage is the main treatment for a mature perianal abscess
     - Done by the surgery team with an exam under anesthesia
     - Culture and sensitivity should be followed
     - Pre-procedure MRI pelvis and sigmoidoscopy can better define disease but should not delay drainage

[Steele 2011, Guideline]

Crohn’s Perianal Abscess (Cont’d)

2. Control pain (see later)
   - CD perianal abscess is one of the most painful complication of CD

3. Prevent recurrence
   - Target healing of Crohn’s inflammation
     - Antiinflammatory therapy can be initiated after abscess resolution
   - Oral metronidazole and ciprofloxacin help fistula healing
     - Monitor for side effects with prolonged therapy
   - Keep fistula open to avoid clogging and abscess re-formation
     - Seton drain commonly used
     - Keep drain until inflammation is healed (months)
   - Manage and prevent constipation

[Steele 2011 Guideline, Van Assche 2010 Guideline]
When to discharge?

- No pain or pain managed with acetaminophen
- Abscess adequately drained or resolving on antibiotics
- Adequate nutrition
- GI follow up is scheduled

**Perianal GI Follow Up Labs:**

GI follow up labs and GI follow up with provider in 1-2 weeks

- CBC Diff
- ALT, Albumin
- CRP
- ESR
Patients with CD related complete bowel obstruction are managed by the surgery team.

The following can help stabilize the patient:

- Maintain hydration and monitor fluid balance
- Decompression: NPO, NG tube
- Establish nutrition plan and support
- Discourage empiric use of antibiotics
- Pain Management
- GI/surgery providers decide treatment and imaging
  - CT with contrast, MR enterography
Obstruction GI Follow Up Labs:

GI follow up labs, follow up appointment with dietitian and GI follow up with provider in 1-2 weeks

- CBC Diff
- ALT, Albumin
- CRP
- ESR
- TPN labs if patient received TPN
IBD Risk Factors for Venous Thromboembolism

Active Severe disease (UC pancolitis or colonic Crohn’s) AND any of the following:

- Central venous line
- Prior history of VTE or known thrombophilia or 1st-degree family history of VTE
- Oral contraceptives
- Thalidomide
- Obesity
- Smoking
- Age 14 years or older (younger if post-pubertal)

Prophylaxis for Thromboembolism

Patients at risk who have no major GI bleeding (i.e. requiring blood transfusion, noting that some GI bleeding is expected in this setting) should be offered prophylaxis with:

- Enoxaparin subcutaneously
  0.5 mg/kg (max 30mg) twice daily
  If Age ≥18 years: may use 40mg daily
  If obese (BMI>30 kg/m²): dose per formulary
- Continue prophylaxis until resolution of colitis or removal of central line

NOTE: Use Enoxaparin Prophylaxis Orderset

(Bloom, 2004; de Bievre, 2007; Dignass, 2012; Kornbluth, 2010; Mowat, 2011; Zezos, 2006; Zitomersky, 2013)
Objective
To standardize care and provide evidence based preoperative inpatient care for patients admitted with Crohn’s disease.

Recommendations
1. The clinical picture at presentation should dictate the selection of the appropriate imaging study with focus on avoiding radiation and unnecessary studies.
2. All abscesses >3cm in size should be drained by IR.
3. Children with Crohn’s abdominal or pelvic abscess who are clinically well and have no fistula should be challenged with oral nutrition day 3.
4. Patients with infectious Crohn’s complications will be started on the proposed standard type and dose of antibiotics intravenously.
5. Patients on intravenous antibiotics will have clear criteria for switching to oral antibiotics when clinically stable.
6. Patients admitted with Crohn’s disease complications will have a clear pain management plan within 24 hours with clear initial optimal options.

Rationale
- **Safety of care** will be increased by using standard doses antibiotics and pain medications for children with Crohn’s disease who are admitted with Crohn’s related complications.
- **Quality of care** will improve by emphasizing pain management and reducing variation in care that is not evidence based.
- **Delivery of care** will be improved by selecting the most appropriate study and standard medications and dosing.
- **Engagement** is grounded in the fact that the pathway has been developed by RNs, RDs, pharmacists and MDs from all disciplines involved in IBD care.
- **Patient/Family Satisfaction** will be addressed by clear management endpoints and criteria for progress and home discharge.
- **Costs** will be reduced by decreasing the length of stay for patients with an abscess and effective multidisciplinary approach to reduce readmission rate.

Evidence

Implementation Items
- Developed an algorithm and training module.
- Developed a multi-phase Powerplan.
Metrics Plan
1. Count of Inpatient/cbs discharges
2. Median Length of Stay
3. % of patients with any of the specified ordersets
4. Average charges per case
5. Readmissions
6. Pain (80% of patients have pain management plan within 24 hours of admission)
7. Appropriate tests/imaging to minimize radiation exposure
8. Antibiotic duration and choice is appropriate
9. Within 5 days of admission, 75% patients receive appropriate nutrition
10. Less than 50% of patients receive over 2 courses of steroids within 1 year of hospitalization (before and after)

PDCA Plan
The CSW owner and committee will follow metrics, continue to review medical literature, and make alterations to the pathway as needed.

Revision History
Date Approved: September 2013
Next Review Date: September 2016
IBD Crohn’s Disease
CSW Approval – September 2013

CSW Owner: Ghassan Wahbeh, MD

Approved by the IBD Crohn’s Disease Clinical Standard Work (CSW) Team; September 2013.

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- Mike Leu
- Jennifer Magin

Date: September 2013

Retrieval Website: http://www.seattlechildrens.org/pdf/IBD-crohns-pathway.pdf

Example:
Self-Assessment

- Completion qualifies you for 1 hour of Category II CME credit. If you are taking this self-assessment as a part of required departmental training at Seattle Children’s Hospital, you MUST logon to Learning Center.

1. The following are CD complications that would more often require inpatient or ED care EXCEPT:
   a. Bowel obstruction
   b. Disease flare
   c. Perianal abscess
   d. Pelvic abscess
   e. Headache

2. A Crohn’s patient presents to the ED with abdominal pain, diarrhea, nausea and 102 F temperature. Exam shows a nontender abdomen. The following are appropriate tests EXCEPT
   a. CT abdomen and pelvis
   b. CRP
   c. Serum lipase
   d. Stool C diff
   e. Electrolytes, magnesium

3. 12 year old Crohn’s patient on azathioprine presents with reported severe anal pain. On exam, the perianal area appears normal. The next best immediate step is
   a. Administer lorazepam
   b. IV bolus
   c. Send patient to radiology
   d. Administer morphine
   e. Consult pain management

4. For the above patient, what is the imaging study of choice
   a. Ultrasound
   b. MR pelvis
   c. MR enterography
   d. Small bowel follow through with barium
   e. CT abdomen and pelvis

5. A Crohn’s patient with an 5cm intraabdominal abscess has been on antibiotics for 3 days. A drain is in place. There is no fever, pain is controlled with acetaminophen and only minimal tenderness on exam. The most appropriate next step is
   a. Order PICC line and start TPN
   b. Keep NPO for 2 more days
   c. Order ultrasound
   d. Review initial imaging study and consider allowing PO clears
   e. Switch to oral antibiotics
6. **In the presence of a perianal fistula after abscess drainage, it contraindicated to start antiinflammatory therapy**
   a. True
   b. False

7. **A 14 year old female with Crohn’s disease presents with increasing abdominal pain, distension and emesis. The child was recently started on azathioprine. Which of the following are potential causes**
   a. Ectopic pregnancy
   b. Pancreatitis
   c. Acute gastroenteritis
   d. Bowel obstruction
   e. All of the above

8. **The following are appropriate initial antibiotics for a CD pelvic abscess EXCEPT:**
   a. Vancomycin and gentamicin
   b. Piperacillin-tazobactam
   c. Ceftriaxone and metronidazole
   d. Ciprofloxacin and clindamycin
1. The following are CD complications that would more often require inpatient or ED care EXCEPT:
   a. Bowel obstruction
   b. Disease flare
   c. Perianal abscess
   d. Pelvic abscess
   e. Headache

   a-d are the main CD complications leading to inpatient or ED care

2. A Crohn’s patient presents to the ED with abdominal pain, diarrhea, nausea and 102 F temperature. Exam shows a nontender abdomen. The following are appropriate tests EXCEPT
   a. CT abdomen and pelvis
   b. CRP
   c. Serum lipase
   d. Stool C diff
   e. Electrolytes, magnesium

   In the absence of abdominal tenderness, abscess is less likely to be present. This scenario suggests flare, infection or pancreatitis

3. 12 year old Crohn’s patient on azathioprine presents with reported severe anal pain. On exam, the perianal area appears normal. The next best immediate step is
   a. Administer lorazepam
   b. IV bolus
   c. Send patient to radiology
   d. Administer morphine
   e. Consult pain management

   Perianal abscess, even if not visible, can be extremely painful. Pain should be promptly attended to and opiate medications used followed by pain management consult. Imaging is necessary but should not hold up pain medication use

4. For the above patient, what is the imaging study of choice
   a. Ultrasound
   b. MR pelvis
   c. MR enterography
   d. Small bowel follow through with barium
   e. CT abdomen and pelvis

   MR pelvis is the study of choice to assess for perianal abscess. For patients who are unable to obtain an MR or when MR is not available, CT pelvis can be ordered. CT is associated with radiation exposure.

5. A Crohn’s patient with an 5cm intraabdominal abscess has been on antibiotics for 3 days. A drain is in place. There is no fever, pain is controlled with acetaminophen and only minimal tenderness on exam. The most appropriate next step is
   a. Order PICC line and start TPN
   b. Keep NPO for 2 more days
   c. Order ultrasound
   d. Review initial imaging study and consider allowing PO clears
   e. Switch to oral antibiotics

   If no fistula is demonstrated, patients who are clinically well can be challenged with clear liquids and advanced daily if tolerated. otherwise a PICC line should be placed and TPN started to support nutrition.

6. In the presence of a perianal fistula after abscess drainage, it contraindicated to start antiinflammatory therapy
   a. True
   b. False

   Once an abscess is drained and patient is clinically well, antiinflammatory therapy can be started with no apparent added risk. CD fistulae that cause abscesses require antiinflammatory therapy along with drainage (seton drains) to prevent recurrence.

7. A 14 year old female with Crohn’s disease presents with increasing abdominal pain, distension and emesis. The child was recently started on azathioprine. Which of the following are potential causes
   a. Ectopic pregnancy
   b. Pancreatitis
   c. Acute gastroenteritis
   d. Bowel obstruction
   e. All of the above

   All of the above complications could cause pain and vomiting

8. The following are appropriate initial antibiotics for a CD pelvic abscess EXCEPT:
   a. Vancomycin and gentamicin
   b. Piperacillin-tazobactam
   c. Ceftriaxone and metronidazole
   d. Ciprofloxacin and clindamycin

   Broad spectrum antibiotics with anaerobic coverage are most appropriate to treat a CD related pelvic abscess
We used the GRADE method of rating evidence quality. Evidence is first assessed as to whether it is from randomized trial, or observational studies. The rating is then adjusted in the following manner:

Quality ratings are *downgraded* if studies:
- Have serious limitations
- Have inconsistent results
- If evidence does not directly address clinical questions
- If estimates are imprecise OR
- If it is felt that there is substantial publication bias

Quality ratings can be *upgraded* if it is felt that:
- The effect size is large
- If studies are designed in a way that confounding would likely underreport the magnitude of the effect OR
- If a dose-response gradient is evident

**Quality of Evidence:**
- ★★★★★ High quality
- ★★★★ Moderate quality
- ★★★☆ Low quality
- ★★☆☆☆ Very low quality

Expert Opinion (E)

Summary of Version Changes

- **Version 1 (9/11/2013):** Go live
- **Version 1.1 (9/11/2013):** Clarified exclusion criteria
- **Version 2.0 (7/6/2015):** Added ED powerplan name, added recommendations for thrombosis prophylaxis
Medicine is an ever-changing science. As new research and clinical experience broaden our knowledge, changes in treatment and drug therapy are required.

The authors have checked with sources believed to be reliable in their efforts to provide information that is complete and generally in accord with the standards accepted at the time of publication.

However, in view of the possibility of human error or changes in medical sciences, neither the authors nor Seattle Children’s Healthcare System nor any other party who has been involved in the preparation or publication of this work warrants that the information contained herein is in every respect accurate or complete, and they are not responsible for any errors or omissions or for the results obtained from the use of such information.

Readers should confirm the information contained herein with other sources and are encouraged to consult with their health care provider before making any health care decision.
Literature Search

Studies were identified by searching electronic databases using search strategies developed and executed by a medical librarian. Two searches were executed. The scout search focusing on Crohn’s was performed on November 23rd and 26th, 2012 in the following databases: on the Ovid platform – Medline (1996 to date), Cochrane Database of Systematic Reviews (2005 – June 2011); elsewhere – Embase, National Guidelines Clearinghouse, Clinical Evidence, and TRIP. Retrieval was limited to English language, literature from 2007-forward, humans, and children 0-18. A secondary search was preformed on April 4th and 5th, 2013. For this search Clinical Evidence was omitted and the Cochrane Central Register of Controlled Trials was included. The search focused on specific types of Crohn’s. Limits of human, English language and 2002-present were used. Additional articles were identified and added by the team throughout the process. As per the owners request, the team also reviewed pertinent literature from the Ulcerative Colitis project.

In Medline, appropriate Medical Subject Headings (MeSH) were used, along with text words, and the search strategy was adapted for other databases using their controlled vocabularies, where available, along with text words. Owner assisted with identifying appropriate MeSH. Search publication limits of consensus development, guidelines, meta-analyses, practice guidelines, controlled clinical trial, randomized controlled trial, multicenter studies, overall, technical report, and systematic reviews were used. Additional MeSH publication headings of critical pathways, clinical protocols, guidelines as topic, and practice guidelines as topic were also included. The use of clinical queries therapy, prognosis, & causation (all specified) filters, EBMR Reviews, and the command exp epidemiologic studies were also included. Systematic reviews as a title word rounded out the publications search.

Jamie Graham, MLS
August 23, 2013

Identification

665 records identified through database searching
2 additional records identified through other sources

Screening

662 records after duplicates removed

Eligibility

662 records screened
541 records excluded

121 full-text articles assessed for eligibility

Included

76 full-text articles excluded,
52 did not answer clinical question
22 did not meet quality threshold
2 older studies

45 studies included in pathway

Flow diagram adapted from Moher D et al. BMJ 2009;339:bmj.b2535


Bibliography


Anticoagulation:


*Articles for anticoagulation not included in literature flow diagram