University of Michigan
Severe Ulcerative Colitis Protocol

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### Daily Checklist for Medical Team Orders

<table>
<thead>
<tr>
<th>Day</th>
<th>Studies</th>
<th>Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission/D1</td>
<td>Comp, CBCPD, ESR, CRP, Lipid panel, TPMT enzyme activity*, Quantiferon**, Abdominal film, C diff toxin, CMV PCR, GI PCR, Hepatitis serologies for Hep A, Hep BsAb, BsAg, Bcore, Hep C, iron saturation, fecal calprotectin, Schedule Flex sig for d2 Record: # stools, # with stool blood, Amount of blood in stools (none, trace, moderate amount, nearly all of BM is blood), urgency time, signs of systemic toxicity. Get GI Consult service involved.*** Call Surgery if patient has already been on OP Steroids &gt;= 20 mg/day for &gt;= 1 week, or IV Steroids at OSH for 5 days. Please note that there is no need for CT or MRI in established ulcerative colitis without severe abdominal pain or systemic toxicity. Please clear with GI fellow if considered. If a patient has never had cross-sectional imaging since their UC diagnosis to rule out Crohn’s disease of the small bowel, a CTE or MRE scan before surgery is reasonable. Notify outpatient GI provider of admission and plan (forward the admission note).</td>
<td>SQ heparin5000 U tid or Lovenox 40q24 IV LR/NS to produce urine output &gt;50cc/hr - order rate for 5-10L delivered in 1st 24hr, titrate to eliminate thirst and maximize clear UOP. NPO Bedside commode IV methylprednisolone 30 mg bid (do not hold for infection testing results unless a very strong suspicion of infection) consider Rectal Rx if urgency: start with mesalamine 1g PR suppository bid. Switch to 4g mesalamine enema bid when urgency mild, able to hold enema for at least 30 min. Usually NPO, but can have clears if very hungry (rare on day 1).</td>
</tr>
<tr>
<td>Day 2</td>
<td>Basic, CBCPD, Flex Sig with biopsies (fellow to call path to rush), CRP Record: # stools, # with stool blood, amount of blood, urgency time, signs of toxicity</td>
<td></td>
</tr>
<tr>
<td>Day 3</td>
<td>Basic, CBCPD, ESR, CRP, PT/PTT, Read PPD, Review Bx results, Abd film, Check C diff result</td>
<td>SQ heparin/Lovenox 40q24 Titrate IV LR/NS to UOP NPO Continue IV steroids Consider Rectal Rx Consider clear liquid diet if very hungry</td>
</tr>
</tbody>
</table>
| Day 4 | Comp, Mg, CBCPD, CRP  
Record: # stools, # with stool blood, amount of blood, urgency time, signs of toxicity  
Consult general surgery (pager #91111 UM) if minimal clinical improvement (CRP not declining, # stools/blood not improving). Recommend IBD School videos 401-404 on YouTube to patient to prepare for surgery consultation.  
If TB Quantiferon is indeterminate, get a CXR and assess for TB risk factors (travel, endemic region, exposure, incarceration) – Do not delay IFX waiting for repeat QFTB | Continue IV steroids  
consider Rectal Rx  
if INR >2.0, consider Vit K  
Consider clear liquid diet if hungry  
Consider IFX or cyclosporine rescue therapy if 3 predictive scores do NOT consistently predict remission.  
SQ heparin/Lovenox 40q24  
Titrate IVF to UOP  
Rectal Rx  
Consider soft diet if hungry |
| Day 5 | Basic, CBCPD, ESR, CRP, PT/PTT, Abd film if pain or systemic toxicity  
Record: # stools, # with stool blood, urgency time, signs of toxicity  
Calculate predictive scores  
Call surgery if CRP not falling by > 10% per day | SQ heparin/Lovenox 40q24  
Titrate IVF to UOP  
Rectal Rx  
Consider soft diet if hungry  
Decide on taper – consider oral steroids vs. Medication Rescue vs. surgery  
Not improving, not eating well – consider NPO |
| Tapering Prednisone for outpatients | Keep in hospital for 24 hours on full diet off of all IV medications, on prednisone. CRP should not rise. Consider 40 mg only for patients who have responded very rapidly. Use 60 mg for patients who had failed outpatient prednisone, received IV steroids prior to transfer, or had high peak CRP and low albumin.  
Taper by 5 mg per week as an outpatient.  
Prescribe a complete taper to zero prednisone for all discharged patients. This is 546, 5mg tablets from 60mg, 25, 2 5mg tablets from 40mg. These can be built in the MiChart taper function. Do not abandon the patient at 20 mg prednisone. Do not |
<table>
<thead>
<tr>
<th>PJP prophylaxis is appropriate when discharging on cyclosporine plus prednisone plus azathioprine or if they have been on &gt;= 20 mg prednisone for &gt; 30 days. PJP prophylaxis is not indicated for prednisone plus a single biologic/immunomodulator.</th>
<th>schedule an outpatient visit before the patient is at 20 mg of prednisone or less (they will be doing fine).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerated Tofacitinib Induction</td>
<td>Consider <strong>at admission</strong> for severe UC with prior biologic failure, and/or high CRP with low albumin. If chosen, fellow to send outpatient prescription for 10 mg po bid tofacitinib to East Ann Arbor Specialty Pharmacy and route note to MiChart Pharmacy Pool. Also fill out (with patient) Xeljanz patient assistance program forms and fax in as the outpatient backup plan if insurance does not approve. Do not route to transitions of care. Do not delay tofacitinib while waiting for prior authorization of an outpatient dose.</td>
</tr>
<tr>
<td>Infliximab Rescue</td>
<td>Consider if IV steroids failing by criteria at 72h, and IFX naïve, especially if Albumin &gt; 3. Send message to outpatient provider and MIST pool (UM) to ensure induction doses are scheduled at 2 and 6 weeks from last inpatient dose (regardless of number of inpatient doses). Send immediately to avoid delays.</td>
</tr>
<tr>
<td>Cyclosporine Rescue</td>
<td>Consider if IV steroids failing by criteria at 72h, and there is an exit strategy (thiopurines, vedolizumab, ustekinumab)</td>
</tr>
<tr>
<td>Discharge Checklist</td>
<td>Full prednisone taper sent to pharmacy Patient referred to IBD Transitions of Care program Scheduled follow-up with PA/MD when patient on &lt;= 20 mg of prednisone Notify outpatient provider of pending discharge Ensure follow-up infliximab scheduled if applicable Ensure 30-90 day supply of tofacitinib if applicable</td>
</tr>
</tbody>
</table>
*Obtain TPMT enzyme activity, not genotype, if considering thiopurines as therapy. Do not re-order if already measured when outpatient during lifetime.
** Do not repeat Quantiferon TB if negative in past 6 months, unless there are new risk factors (close contact, travel to/from endemic areas, homelessness, correctional facilities, nursing homes)
*** If not admitted to a primary GI service
**Key Points for Surgical Team**

1. On **day 3**, if the patient is not responsive to IV steroids per the 3 predictive scores (any predict colectomy), the surgical team will be called to:
   a. Describe a three-stage colectomy to the patient.
   b. Explain the details of a subtotal colectomy to the patient.
   c. Explain the difference between an abdominal colectomy with end ileostomy leaving the rectal stump in place with potential for future IPAA/IPRA, and a total proctocolectomy with end ileostomy.
   d. Counsel the patient on the risks and benefits of an urgent surgery vs. an emergency (post-perforation, toxic megacolon) operation.
   e. Help the patient make an informed decision between surgery and rescue therapy (cyclosporine or infliximab) which will start at the end of day 3 if surgery is not the course of action chosen by the patient.
   f. IBD School videos (on YouTube, videos 401-404) can help patients retain information on surgical options and ask more informed questions.

2. Patients transferred in to UM unresponsive to IV steroids be considered already at **day 3** and may require urgent surgical consultation on admission as in point 1.

3. Stop cyclosporine or infliximab or tofacitinib as soon as a decision is made to undertake surgery. The tofacitinib standard washout is 18 hours before surgery, except in cases of perforation or toxic megacolon. Steroids are typically continued up until 12 hours prior to surgery, but that should be at the surgeon’s discretion.

4. Watch for secondary adrenal insufficiency during surgery. Continue IV steroids until operation. After surgery - standard steroid taper:
   - For patients with less than 1 month of continuous steroid therapy before surgery, 10% decrease per day once stable after surgery. Can switch to oral once taking po.
   - For patients with more than 1 month of continuous steroid therapy before surgery, taper by 5 mg of prednisone equivalent per week.

6. Warn patients about ongoing risk of adrenal insufficiency for up to 1 year.

7. No immunosuppressive maintenance therapy is needed after colectomy.

8. Notify surgery team that they need to place GI consult prior to discharge and ask fellow to add them to the consult list.

9. At follow-up outpatient surgery appointment, consider initiating maintenance therapy for rectal stump with Canasa 1g PR qhs or 2g Rowasa (mesalamine enema) (half-volume) PR qhs, to optimize tissue integrity if a future J pouch is being considered.
Infection Concerns and Pitfalls

1. Do not over-react to a few CMV inclusions, or a low level positive CMV PCR. This is most often colonization unless it is very dramatic (hundreds of inclusions). A low-level positive is usually a marker of disease severity and immunosuppression, rather than a causative infection.

2. If *Clostridiodes difficile* (*C. diff*) toxin and *C. diff* PCR are discordant, this could simply be colonization (occurs in 5-10% of IBD). If clinical suspicion for UC flare is high (e.g. bloody stools or endoscopic findings consistent with UC flare), it is reasonable to treat for *Clostridiodes difficile* infection (CDI) while continuing IV corticosteroids for UC flare.

3. Do not delay IV steroids while waiting for a *C. diff* or GI PCR result in a very sick patient. In a very sick patient with high suspicion of CDI, it is not entirely unreasonable to treat with both IV steroids and with antibiotics for *C. diff*.

Trough level Drug Measurements (TDM – Therapeutic Drug Monitoring)

1. Measurement of trough levels of biologic therapies can be useful when outpatients are failing biologic therapy but will generally not return results for 7-10 days. These are generally not useful for inpatient care. On highly selected occasions, trough levels may be helpful for future outpatient dose adjustment. Clear with GI fellow or outpatient IBD specialist before ordering. If this is done, it is the responsibility of the ordering physician to communicate the result to the outpatient IBD specialist so that this test is not repeated.

Fecal Calprotectin (FCP) Measurements

Fecal calprotectin is a protein correlated with inflammation in the GI tract, but it can vary a lot from one bowel movement to the next. While it is a noisy biomarker, it is helpful for tracking steady outpatient changes and responses to therapy, but is can be slower to respond to therapy when compared to CRP. For this reason, FCP is not frequently measured in inpatients with ASUC, beyond a single value during a flare. FCP is currently run in batches on weekdays at Michigan Medicine, so a sample collected on Friday noon will not produce a result until Monday afternoon. FCP may be helpful when a second extra-intestinal source of inflammation is present, and may confound CRP measurements, but standard daily response thresholds in the treatment of ASUC are not established. FCP can be used in relation to prior values, but the high variance of this biomarker must be considered when interpreting changing results over a short period of time. FCP can be elevated by non-IBD factors (usually <500 mg/kg) including PPI use, esophagitis, gastritis, enteric infection, GI malignancy, and diverticulosis, and must be considered in the context of other objective markers and the flex sig results.
Definition of Severe Colitis

*per Truelove and Witts* (1-4)
includes all of:

- ≥6 bloody BM’s a day
- Temp >37.5
- Pulse >90
- Hgb <10.5
- ESR >30
- Weight Loss

Concern for Toxic Megacolon:(5)
Colonic distension ≥ 5.5 cm on supine abdominal film
PLUS at least three of the following:

- Fever >38°C
- Heart rate >120 beats/min
- Neutrophilic leukocytosis >10,500/microL
- Anemia
- Dehydration
- Altered sensorium
- Electrolyte disturbances
- Hypotension

Predictors of Colectomy

General Predictors of Colectomy (6)
Temp >37.5
Pulse >90
CRP >2.5 on admission, or >4.5 mg/dL on day 3 of IV steroids
Severe endoscopic findings
Hypoalbuminemia
Colonic dilation
Non-response to prior steroids
Clostridium difficile infection (suspect, retest if WBC rises to >20K during treatment)
Outside hospital transfer
Prior biologic failure

Prediction of Colectomy on admission (*Truelove and Witts’ criteria*):
≥6 bloody stools/day and one or more of the following criteria:
Temp >37.5, Pulse >90, Hgb <10.5, ESR >30).

If 6 bloody BM/day +1 additional criterion, Risk of colectomy = 9%;
If 6 bloody BM/day +2 additional criteria, Risk of colectomy = 31%;
If 6 bloody BM/day +3 or more additional criteria, Risk of colectomy >40%

Scores for Prediction of Colectomy on DAY 3 (data collected at 72h IV steroids):

<table>
<thead>
<tr>
<th>Travis Index (3)</th>
<th>&gt;8 BM’s a day OR (&gt;2 BM’s and CRP &gt;4.5 mg/dL) at day 3 (3)</th>
<th>Either positive = PPV of colectomy 85%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ho Index (7) (Point System)</td>
<td>Add up points: colonic dilation &gt; 5.5 cm = 4 points albumin &lt; 3.0 on admission = 1 point average daily # stools over 1st 3 days = [&lt;4 (0pts), 4-6 (1pt) 6-9 (2pts) ≥9 (4pts)]</td>
<td></td>
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</tbody>
</table>

8
| total of ≥ 4 Ho Index points on day 3 predicts 85% probability of colectomy |
|-----------------|------------------|
| Lindgren Score(8) = stool frequency/day + 0.14 × CRP (mg/dL) |
| Lindgren Score > 8 at day 3 PPV of colectomy = 72% |

## Protocol Detail

### Admission Day:

**Medical:**
- **Assess Clinical Factors:**
  - # bloody stools
  - Amount of blood in stools (none, trace, moderate amount, nearly all of BM is blood)
  - # stools/24h
  - Urgency time
  - Presence of toxic megacolon on imaging
  - Systemic symptoms
- **Assess Lab Factors:**
  - Comp, pre-albumin
  - CBCPD
  - ESR
  - CRP
  - Lipid panel
  - TPMT enzyme activity if not already obtained during patient’s lifetime, or not already on azathioprine
  - Quantiferon TB test (or PPD) if none in the six months prior
  - Pregnancy test if female
- **Record the number of Truelove & Witts’ criteria, since this helps predict colectomy**
- **Studies:**
  - Acute abdominal series to r/o toxic megacolon
  - Stool Culture
  - Clostridium difficile testing
  - GI PCR
  - Schedule flexible sigmoidoscopy for day 2 with biopsies (fellow to rush path)
- **Treatment:**
  - Solumedrol 30mg IV Q12 (9) or 60mg q 24 (goal – approx. 1mg /kg per day). (5, 10)
  - If urgency a major component, can add Canasa (mesalamine) 1 g PR bid-tid. When urgency is more mild (able to hold enemas for at least 30 min), switch to Rowasa (mesalamine enema) 4 g PR bid.
Infuse 0.9 LR/NS – goal urine SG < 1.005 and urine output >50cc/hr and urine clear. Usually 4-8 L requirement in first 24h.

- Lovenox 40 mg q 24h or SQ heparin 5000 U tid for risk of DVT while active inflammation and iv steroids. (11) Note that risk is likely also increased by the combination of tofacitinib and IV steroids.
- No TPN or PPN – high risk of catheter infection and UE DVT.
- NO narcotics or extended NSAIDs. Options for pain include tramadol, gabapentin, pregabalin (Lyrica), acetaminophen.
- If urgency a major component, and no 5-ASA allergy, can add Canasa 1 g PR bid-tid.
- Note: There are NO convincing prospective data to support the use of prophylactic antibiotics in severe ulcerative colitis.

**Surgical Decision-Making:**
Consult general surgery (pager #91111 UM) on day 1 to evaluate if:

- No response to prior OSH IV steroids or oral steroids > 20 mg for more than 5 days.
- AND blood in stools (suspect *Clostridium difficile* if nonbloody or WBC >20).
- OR evidence of megacolon (diameter ≥ 5.5cm)
- OR concern that this patient is quite severe and at high risk of colectomy.

**Day 2:**
**Medical**
- Assess Clinical Factors:
  - # bloody stools
  - Amount of blood in stools (none, trace, moderate amount, nearly all of BM is blood)
  - # stools/24h
  - Urgency time (15 sec? 5-10 min?)
  - Clear urine output (goal clear and 50+ cc/hr)
  - Presence of toxic megacolon – call surgery if present

- Assess Lab Factors
  - Basic
  - CBCPD
  - ESR
  - CRP – **note that CRP will often go UP** from admission levels at 12-24 hours if a dehydrated patient with ASUC is volume repleted (often 5-10L) – as more cytokines (especially IL6) will travel from the colon to the liver, which will make more CRP in response.

- Studies:
  - Flex Sig
    - One Tap Water Enema or Unprepped.
    - Bx: confirm UC, r/o C diff/CMV/HSV. Take edge (HSV) and center (CMV) of ulcers and also nearby non-ulcerated tissue. Send STAT to path (fellow to call path to rush).

- Treatment
SQ heparin or Lovenox for risk of DVT while active inflammation and IV steroids.

- No TPN or PPN – high risk of catheter infection and UE DVT.
- Solumedrol 30mg IV Q12(9) or 60 mg q 24 (Goal – approximately 1 mg/kg per day).
- Diet as tolerated.
- IVF to keep urine > 800 cc/d.
- NO narcotics or extended NSAIDs. Options for pain include tramadol, gabapentin, pregabalin (Lyrica), acetaminophen.
- If urgency a major component, can add Canasa 1 g PR tid.

Surgical
Consult general surgery (pager #91111 UM) on day 2 if:
- Evidence of toxic megacolon.

Day 3:
Medical
- Assess Clinical Factors:
  - # bloody stools
  - Amount of blood in stools (none, trace, moderate amount, nearly all of BM is blood)
  - # stools/24h
  - Urgency time
  - Presence of toxic megacolon
- Assess Lab Factors
  - Basic
  - CBCPD
  - CRP
  - PT, PTT
  - Pregnancy test if female.
- Studies:
  - QFTB results – in case infliximab used later.
  - Review Bx Results.
  - Abd film r/o Toxic Megacolon.
  - If not turning around, consider imaging evaluation for SB inflammation, r/o Crohn’s if not done previously (SBFT, CTE, MRE).
- Treatment
  - SQ heparin or Lovenox for risk of DVT while active inflammation and iv steroids.
  - Keep NPO, No TPN or PPN – high risk of catheter infection and UE DVT
  - Solumedrol 30mg IV Q12(9) or 60 mg q 24 (Goal – approximately 1 mg/kg per day).
  - IVF to keep urine > 800 cc/d.
  - NO narcotics or extended NSAIDs. Options for pain include tramadol, gabapentin, pregabalin (Lyrica), acetaminophen.
If INR > 2.0, correct vitamin K in case surgery needed.
If urgency a major component, can consider Canasa 1 g PR tid or try switching to Rowasa (mesalamine enema) 4g bid.
Diet as tolerated.

Day 3 Discussions
- Discuss use of Cyclosporine if there is a clear exit strategy (azathioprine, vedolizumab, infliximab, ustekinumab). If previously failed or unable to obtain all of the above, seriously discuss surgery and IFX rescue options.
- Infliximab success rates are comparable to cyclosporine success rates in an UC European RCT of infliximab vs. cyclosporine out to 98 days. (12).
- Published evidence suggests that long high-dose steroid courses worsen the outcomes of surgery, particularly the risk of infections and death. The role of anti-TNFs in postoperative infections is often confounded and controversial, but the best data suggest that anti-TNFs prior to surgery have little adverse effect.(13-16)(REF PUCCINI, Norgard, Xu)
- If child-bearing age female, discuss 50% risk of infertility (though IVF works) after J pouch.(17)
- Discuss surgical options:
  - Abdominal colectomy with end ileostomy leaving rectal stump in place with potential for future IPAA.
  - Total proctocolectomy with end ileostomy.
  - Refer patients to IBD School videos (401-404) on YouTube to prepare them for the surgical consultation.
## Choosing a Medication Rescue Therapy

<table>
<thead>
<tr>
<th>Factors Favoring the Use of Cyclosporine</th>
<th>Factors Favoring the Use of Infliximab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has never tried thiopurines or MTX</td>
<td>Has failed thiopurines at good doses for at least 12 weeks, or completely intolerant of thiopurines</td>
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<tr>
<td>Has not failed vedolizumab</td>
<td>Previous anti-TNF failure</td>
</tr>
<tr>
<td>TPMT &lt;15</td>
<td>Never tried anti-TNF therapy</td>
</tr>
<tr>
<td>Previous anti-TNF failure</td>
<td>TPMT &gt;25</td>
</tr>
<tr>
<td>At risk for TB or Hepatitis B</td>
<td>No latent TB or HBV</td>
</tr>
<tr>
<td>No insurance coverage for IFX</td>
<td>Good insurance coverage for IFX</td>
</tr>
<tr>
<td>Total cholesterol &gt; 100</td>
<td>Total cholesterol &lt; 100</td>
</tr>
<tr>
<td>Low albumin</td>
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</tbody>
</table>

**Please note:** Vedolizumab (Entyvio) is an effective but slow-acting therapy for ulcerative colitis and is NOT recommended as a rescue therapy. Vedolizumab can be very effective maintenance therapy after a patient has had rescue therapy with steroids, cyclosporine, or anti-TNF therapy. Consider vedolizumab as a good maintenance option (after successful inpatient induction with a different drug) in elderly patients with comorbidities or patients at high risk of infectious complications.

### Surgical Decisions

- Calculate Predictive Scores at 72 h of IV steroids: If any score Positive -
  - Travis Rule (>8 BM’s a day OR [ >2 BM’s and CRP>4.5 mg/dL] at day 3), or
  - Ho Index points ≥4, or
  - Lindgren SCORE >8, call surgery to evaluate.
- If evidence of toxic megacolon, consult general surgery (pager #91111).
- If predictive scores positive, discuss with patient and family that steroid treatment is failing, discuss cyclosporine, infliximab, AND plans for surgery as reasonable options, one of which must be started on day 4.
- Discuss with an experienced IBD specialist and a colorectal surgeon. Make a decision and have a clear plan BEFORE day 4.

### Day 4:

#### Medical

- Assess Clinical Factors:
  - # bloody stools
  - Amount of blood in stools (none, trace, moderate amount, nearly all of BM is blood)
  - # stools/24h
  - Urgency time
  - Presence of toxic megacolon
- Assess Lab Factors
  - Total cholesterol from lipid panel
  - Magnesium
  - Comprehensive panel
• CBCPD
• CRP

Studies:
• Abd film r/o Toxic Megacolon if still sick.

Treatment
• Start cyclosporine or infliximab OR colectomy – discuss with experienced IBD specialist and colorectal surgeon – do NOT delay this decision!
• Lovenox or SQ heparin for risk of DVT while active inflammation and iv steroids.
• No TPN or PPN – high risk of catheter infection and UE DVT.
• Solumedrol 30mg IV Q12(9) or 60 mg q 24 (Goal – approximately 1 mg/kg per day).
• If urgency a major component, can consider Canasa 1 g PR tid or try switching to Rowasa (mesalamine enema) 4g bid.
• NPO.
• IVF to keep urine > 800 cc/d.
• NO narcotics or extended NSAIDs. Options for pain include tramadol, gabapentin, pregabalin (Lyrica), acetaminophen.
• Diet as tolerated.
• If tolerated diet, and BMs <4/day, little or no blood, ESR<30 and CRP <1.0, convert to oral prednisone.
• If improving, make a decision about maintenance therapy in collaboration with outpatient provider – return to azathioprine, or start azathioprine, or start a biologic maintenance therapy (biologics usually started as outpatient after insurance approval).

Surgical Decision-making
Consult surgery (pager #91111) on day 4 if:
• Evidence of toxic megacolon
• AND blood in stools (suspect *Clostridium difficile* if nonbloody or WBC >20)
• If toxic megacolon, take to OR
• If not improving, plan to make OR decision on day 5, preferably with surgical procedure on day 5-7.

Day 5:
Medical
• Assess Clinical Factors:
  • # Bloody stools
  • Amount of blood in stools (none, trace, moderate amount, nearly all of BM is blood)
  • # stools/24h
  • Urgency time
  • Presence of toxic megacolon
• Assess Lab Factors
  • Basic
- CBCPD
- ESR
- CRP
- PT, PTT

**Studies:**
- Abd film rule out toxic megacolon if still sick
- Evaluate predictive Score: If
  - Travis Rule (>8 BM’s a day OR [ >2 BM’s and CRP>4.5 mg/dL] at day 3),
  - Ho Index points ≥4, or
  - Lindgren SCORE >8
  - proceed with surgery vs. 2nd dose of IFX (72h later) vs. choose cyclosporine – Note success rate of cyclosporine changes with Ho index points.
- Criteria for Predicting Cyclosporine response after steroid failure:
  1. Ho Index points at day 5 of IV steroids: Ho index score <6 after at least 5d IV steroids, success with cyclosporine is ~ 95%, while if Ho index ≥ 6, then colectomy-free success is ~58%.(18) (prospective validation).
  2. Cacheaux Criteria: peak HR > 90, peak Temp > 37.5, CRP > 4.5. 6 month colectomy rates 22% if 0 criteria, 47% if 1, 55% if 2, 90% if all 3 present.(6) For 1 or 2 criteria – absence or presence of severe endoscopic lesions can predict cyclosporine response. (Retrospective study)

**Treatment**
- Lovenox or SQ heparin for risk of DVT while active inflammation and iv steroids.
- No TPN or PPN – high risk of catheter infection and UE DVT.
- Solumedrol 30mg IV Q12(9) or 60 mg q 24 (Goal – approximately 1 mg/kg per day).
- IVF to keep urine > 800 cc/d
- NO narcotics or extended NSAIDs. Options for pain include tramadol, gabapentin, pregabalin (Lyrica), acetaminophen.
- If urgency a major component, can consider Canasa 1 g PR tid or try switching to Rowasa (mesalamine enema) 4g bid.
- Choose add 2nd dose IFX vs. continue Cyclosporine (if can bridge to maintenance therapy) vs. Surgery – note that if Ho index score <6 after at least 5d IV steroids, success with cyclosporine is ~ 95%, while if Ho index ≥ 6, then colectomy-free success is ~58%.(18)
- If surgery looks likely, get pre-op EKG if > 50 of age and CXR if the patient has any pulmonary complaints.
- If tolerated diet, tolerated oral prednisone without worsening, stools still <4/d and no blood, plan steroid taper, make plan for outpatient maintenance medication (azathioprine or biologic or small molecule), and prepare for discharge.

**Surgical Decision-making**
o IF failing intravenous steroids (score >8, Ho Index points ≥4, etc.), and not choosing cyclosporine or 2nd dose IFX, proceed with surgical option as detailed by surgeon on day 6 or 7.

o IF failing intravenous steroids (score >8, Ho Index points ≥4, etc.), and previous failure of a good trial of azathioprine or 6MP, revisit the pros and cons of infliximab vs. colectomy.

o Watch for secondary adrenal insufficiency – may need to taper steroids slowly.
**Accelerated Tofacitinib Protocol**

Recent case series (REF PMID: 30458248; PMCID: PMC7194692) and case-control data (REF PMID: 34048936) have suggested that high-risk patients likely to fail 72 hours of IV solumedrol could benefit from initiation of accelerated tofacitinib dosing along with the initiation of IV corticosteroids. This is **NOT** a rescue therapy, but an **initial co-therapy** with corticosteroids. While the case-control study showed an association between tofacitinib 10 mg tid with reduced 90-day colectomy rates by 85%, there was no measurable association with tofacitinib 10 mg bid. This approach has not been supported by a randomized controlled trial, and tofacitinib is not FDA-approved for use in inpatients with this dosing schedule. This approach should only be undertaken in consultation with an IBD specialist and after careful risk-benefit discussion with the patient.

**Patient Selection**

Patients who are most likely to benefit from accelerated tofacitinib plus IV corticosteroids are

- Those who have previously failed biologics, especially infliximab
- Those who have recently failed outpatient prednisone at 40 mg daily or more
- Those who have recently failed IV corticosteroids at another hospital before transfer
- Those with a high CRP to Albumin ratio on admission (CRP in mg/dL divided by Albumin in g/dL > 2, or (SI units) CRP in mg/L divided by Albumin in g/L > 200)

Patients who should be considered to have a relative contraindication to tofacitinib include

- Patients with strong personal history of VTE/PE who are **not** on effective anticoagulation
- Pregnant patients
- Toxic megacolon
- Use of strong CYP3A4 inducing medications (azoles, rifampin, clarithromycin, grapefruit)
- Recent history of incompletely treated malignancy
- Neutropenia with baseline ANC < 100 cells/mm3, Lymphopenia with baseline ALC < 500 cells/mm3
- Severe hepatic or renal impairment

**Use of Accelerated Tofacitinib**

Stop any other small molecule immunomodulators, including thiopurines (azathioprine, mercaptopurine), methotrexate, and tacrolimus, before initiating tofacitinib. If biologics have been dosed in the last 8 weeks, discuss the possibility of risks of additive immunosuppression with an IBD specialist before embarking on a course of accelerated
tofacitinib. If the patient is in the hospital with a UC flare, it is likely that the prior biologic has a low serum level and/or is not producing effective immune suppression.

Along with the initiation of IV corticosteroids, begin tofacitinib at 10 mg tid – with the first dose when IV steroids begin. Vigorously hydrate patients as per the standard protocol, with 5-10L IVF in the first 24 hours, until clear urine with a UOP > 50 cc/hr is sustained. Continue at 10 mg tid for a minimum of 3 days until a goal CRP of less than 5 mg/L (0.5 mg/dL) is reached.

Tofacitinib induction should not be delayed while waiting for outpatient insurance approval. Pfizer programs allow for 30 days of covered medication in the case of an emergency. If the decision is made to start tofacitinib inpatient, the GI fellow should immediately send a 90-day outpatient prescription to East Ann Arbor Specialty pharmacy and route a note to EAA specialty Tech MiChart Pool. As a backup outpatient plan, the Pfizer Xeljanz patient assistance forms should also be filled out and faxed in case insurance does not approve the initial outpatient prescription. Do not discuss with transitions of care pharmacy as they are less familiar with this process.

Monitor CRP and document clinical symptoms every 24 hours. Expect that CRP will fall at least 20% on each of the first 3 days. Note that there may be an initial rise in CRP in the first 12 hours when vigorous hydration is achieved. The fall in CRP may slow to a decay curve after the first 3 days but should keep falling each day on tofacitinib 10 mg tid plus IV corticosteroids.

Anticoagulation with daily enoxaparin should begin with IV corticosteroids and continue until discharge. We have no evidence that this is cost-effective to continue after discharge and have not documented any VTE/PE in 40 previous patients treated with this protocol.

A rise in CRP on this combination therapy is a very bad prognostic sign, and colectomy is nearly inevitable. Tofacitinib should be stopped as soon as a surgical decision is made and should wash out for at least 18 hours prior to surgery unless emergent surgery is required for perforation or toxic megacolon.

If CRP rises or clinical symptoms worsen consistent with tofacitinib failure, infliximab rescue can be (very reluctantly, because of the infectious risks) considered after a minimum 18-hour washout period. Case series data suggests that combination infliximab and tofacitinib carry a high risk for infection, therefore we would not recommend initiating tofacitinib after rescue infliximab has already been attempted. There is one case series with some success (REF PMID: 34159363), but an N of only 5.

At CRP goal of < 5 mg/L (0.5 mg/dL), tofacitinib can be reduced to 3 doses per day of 10/5/10 mg. If this goes well, without recurrence of symptoms or a rise in CRP, the patient can proceed to tofacitinib 10 mg bid the following day. Conversion from IV to oral steroids (see discharge recommendations above) generally occurs on this day. If the patient can tolerate a full diet on tofacitinib 10 mg bid with oral prednisone, and without IV fluids and without severe urgency for 12-24 hours, they are ready for discharge.

Plan for a standard steroid taper by 5 mg per week, with continuation of tofacitinib 10 mg bid for at least 90 days post-discharge while the steroid taper is ongoing. At this point, the
outpatient GI physician and patient can decide whether to stay on tofacitinib as a maintenance therapy, or to use it as a bridge to another therapy. Biologic therapies can be overlapped with tofacitinib for a short time (usually the last 15-30 days of tofacitinib, when finishing prednisone), but extended combination therapy with tofacitinib is not recommended.
**Infliximab (Remicade/Inflectra/Renflexis) Rescue Protocol**

1) Eligible patients:
   a. Proven UC on severe UC protocol.
   b. Meets criteria for severe UC.
   c. Quantiferon TB (or PPD) negative, or Negative CXR without risk factors in the setting of indeterminate QFTB testing
   d. Active inflammation – CRP elevated, flex sig consistent with UC.
   e. No *C diff* (PCR), CMV (get final path read), other infections.
   f. Intravenous steroids for 72 h, with positive Travis index, Ho index, etc.
   g. Patient prefers rescue induction rather than urgent colectomy

2) Initial dosing with 10 mg/kg, starting with 1st dose.

3) 60-66 h after 1st infliximab infusion, check CRP
   a. If CRP >80% of previous level (still high), go to surgery.
   b. If CRP reduced by 20% or more from previous level, but still ≥ 0.7 mg/dL, repeat steps 2 and 3, with next dose 72 h after previous dose. Second dose, if needed, should be 10 mg/kg (with dose rounded up to nearest 100 mg) and this should be discussed with the colorectal surgeon.
   c. If CRP reduced to < 0.7 mg/dL, schedule next infusion for 2 weeks later, then 6 weeks later, then q 8 weeks (notify outpatient nurses ASAP).

4) 60-66 h after 2nd infliximab infusion, check CRP
   a. If CRP > 0.5 (still high) and symptomatic, recommend surgery.
   b. If CRP reduced to ≤ 0.5 mg/dL, schedule next infusion for 2 weeks later, then 6 weeks later, then q 8 weeks (notify outpatient nurses ASAP).
   c. Do not give a 3rd inpatient dose of infliximab. Our experience is that patients who do not respond to sequential doses of 5 and 10 mg/kg will not respond to additional doses.

5) When CRP ≤ 0.5 and symptomatically doing well, convert to oral steroids, 40 mg prednisone daily, advance diet.

**Discharge Criteria:**
- next outpatient infusion scheduled.
- on oral prednisone for 24 h.
- Eating a full diet.
- discharge on prednisone taper by 5 mg per week.

6) Notes for pregnant patients
   a. Plan on usual interval (usually q 8 week) infusions until ~ 24 weeks.
   b. Adjust interval (if insurance will allow) to move last dose to ~ 32 weeks (earlier than q 8 weeks if needed).
   c. Plan on next dose the day after delivery, with 100 mg hydrocortisone premedication.
   d. Continue q 8 weeks, with hydrocortisone used as a premedication for the first 3 post-delivery infusions, then try to infuse without it.

7) Consider adding azathioprine for added effect, reduction of anti-infliximab antibodies, especially in new, high CRP (SONIC-like) patients. Methotrexate is an alternative in patients who are not fertile females and intolerant to azathioprine, but the evidence for combination with MTX (COMMITT study REF Feagan) is substantially weaker than for the Aza combination.
**Logistic Requirements for Discharge of Patients**  
**Starting Infliximab as an Inpatient at the University of Michigan**

| Identify nurse for outpatient GI who will follow up with patient.  
  Send a portal message to nurse, outpatient GI, and MIST identifying:  
  (Send to P TC GI RN IBD SUP and to P MIST INF Nurse) |
|---|
| Send an email to nurse and outpatient GI, identifying:  
  - Patient  
  - Registration number  
  - Date of first dose of IFX  
  - Date on which next dose needed (14 days after last dose)  
  - Dose 10 mg/kg for at least 14 weeks with trough at week1  
  - Patient weight in kg  
  - Whether a previous infusion reaction to IFX occurred |

Do not discharge until an appointment is confirmed for the next infusion.

| Logistic Requirements for Discharge of Patients  
  Starting Infliximab as an Inpatient at the AA VA |
|---|
| Consult attending to write orders for the inpatient use of Infliximab. At discharge, however, an infusion order needs to be placed with the following information:  
  - Patient  
  - Registration number  
  - Date of first dose of IFX  
  - Date on which next dose needed (14 days after last dose)  
  - Dose (5 or 10 mg per kg)  
  - Patient weight in kg  
  - Whether a previous infusion reaction to IFX occurred  
  - Identify follow-up GI provider. Email Suzanne.Krouse@va.gov |
Preparing for Surgery
- Stop cyclosporine or infliximab or tofacitinib as soon as a surgical decision is made.
- Watch for secondary adrenal insufficiency – especially for patients with > 1 month of steroid exposure.
- Standard steroid taper after surgery:
  - For patients with less than 1 month of continuous steroid therapy before surgery, 10% decrease per day once stable after surgery
  - For patients with more than 1 month of continuous steroid therapy before surgery, taper by 5 mg of prednisone equivalent per week.
- No immunosuppressive maintenance therapy is needed after colectomy.
- In 2 weeks at surgery appointment, consider maintenance therapy with Canasa 1g PR qhs or 2g Rowasa (mesalamine enema) PR qhs after subtotal colectomy, to optimize tissue for future J pouch.
- Warn patients about ongoing risk of adrenal insufficiency for up to 1 year.

Why Not to Consider a Second Rescue Medication
Occasionally, after failure of steroids and failure of a 1st rescue medication, the patient would like to try a 2nd rescue medication rather than surgery. When this combines cyclosporine with infliximab, this carries increased risk of serious infection (20-40%) and a risk of death, often by pneumonia or pulmonary embolism (26-28). These risks must be discussed with the patient, and considered relative to the risk of urgent (rather than emergent) colectomy. Remember that infliximab often stays in the system for 8 weeks or more after use. “Switching” from infliximab to cyclosporine is not truly a switch – it is a combination.

The combination of infliximab and tofacitinib (or the sequential use of tofacitinib after infliximab) is associated with significantly increased infectious risks, and is not recommended.

The combination of cyclosporine and tofacitinib is not well studied, and given the many infections associated with the combination of cyclosporine and infliximab, is not recommended. While in theory, these drugs have short measurable serum half-lives, they do have extended biologic activity (they work intracellularly), and may interact in unexpected ways.

Only after extensive consultation with both an IBD specialist and the surgical team should a second rescue medication be considered. These discussions of significantly increased risk must be documented carefully in the medical chart.

If switching from cyclosporine to infliximab:
- Stop cyclosporine for at least 48 hours before infliximab is begun
- Continue iv steroids
- Continue prophylaxis with trimethoprim/sulfamethoxazole.
- The duration of the biologic effects of cyclosporine is not well known, though the half-life is short.

If switching from infliximab to cyclosporine:
- Last dose of infliximab should be at least 72 hours prior to cyclosporine initiation.
- Continue iv steroids
- Continue prophylaxis with trimethoprim/sulfamethoxazole.
- Be aware that the biologic effects of infliximab will continue for at least 8 weeks.

**Cyclosporine (19-22) Rescue Protocol**

**Labs before use:**
- Creatinine.
- Cholesterol >80 mg/dl – if 80-120 and choose to proceed, use seizure protocol.
- Magnesium > 1.5 mg/dl.
- Pregnancy test. Women should be on birth control if doing therapy.

**Inpatient use of cyclosporine IV (23)**

**Induction**
- Surgical discussions, and detailed discussion of colectomy option, should always occur before cyclosporine is initiated.
- There must be a clear exit plan – what will the maintenance therapy be after cyclosporine induction? Options include thiopurines, anti-TNFs, Vedolizumab, Ustekinumab. But there must be a clear and viable maintenance plan before induction is begun.
- Start at 2 mg/kg/day (21) of intravenous cyclosporine as a continuous infusion. Always infuse in volume of 100cc, over 24 hours (rate 4.2 mL/hour). ONLY make changes in the number of milligrams to prevent confusion over the rate.
- For example, for a 72-kg patient, the order is written as follows: "Infuse cyclosporine 144 mg in 100 cc D5W in a glass bottle over 24 hours as a continuous infusion."
- **Continue IV Steroids.**
- **Continue DVT prophylaxis.**
- No TPN or PPN – high risk of catheter infection and UE DVT.
- While patients are on triple therapy (cyclo, Aza, steroids) patients should be maintained on DS Bactrim/Septra (MWF) for PCP prophylaxis due to risk of infection.(22)
- Monitoring the first hour of infusion:
  - monitor for signs of allergy or anaphylaxis (hypotension, hives, wheezing, laryngeal spasm) every 15 min. Discontinue the infusion if any such signs develop and treat with subcutaneous epinephrine and diphenhydramine, as necessary, as with any allergic reaction.
  - if unable to tolerate cyclosporine, need to re-address and discuss options of colectomy and infliximab.
- Monitoring at 18-24 hours: check cyclosporine level, if >300 (likely to overshoot goal), decrease rate by 25%.

**Monitoring on Therapy**
Review for adverse effects | Daily
---|---
Blood pressure | Q4h while awake
Cyclosporine level | start on 2nd day - Daily until stabilizes, then q2d
Serum creatinine | Every 2nd day *
Serum potassium | Every 2nd day *
Serum magnesium | Every 2nd day *
Serum cholesterol | Daily if <140 mg/dl
Liver function tests | Every 2nd day *
ESR and CRP | Every 2nd day
Stool number and presence of blood | Daily

* Daily, if abnormal.
- Monoclonal radioimmunoassay should be used to obtain cyclosporine levels starting on day 2 of therapy, with the aim of achieving whole blood levels of 300 (range 200-400) ng/ml. This blood test is obtained in a lavender-top tube.
- The intravenous cyclosporine dosage is rarely raised above 4 mg/kg/day, in rare patients who are fast metabolizers.

**Cyclosporine Dose adjustment table**

<table>
<thead>
<tr>
<th>Cyclosporine Level</th>
<th>Dose/rate adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-100</td>
<td>Increase mg by 50%</td>
</tr>
<tr>
<td>100-150</td>
<td>Increase mg by 33%</td>
</tr>
<tr>
<td>150-200</td>
<td>Increase mg by 20%</td>
</tr>
<tr>
<td>200-400</td>
<td>No change</td>
</tr>
<tr>
<td>400-500</td>
<td>Decrease mg by 20%</td>
</tr>
<tr>
<td>500-600</td>
<td>Decrease mg by 33%</td>
</tr>
<tr>
<td>Over 600</td>
<td>Decrease mg by 50%</td>
</tr>
</tbody>
</table>

- Reduce cyclosporine infusion mg if drug levels are greater than 400 ng/ml or if serum creatinine increases by 30% over baseline, serum liver enzymes double, diastolic blood pressure exceeds 90 mm Hg, or systolic blood pressure exceeds 150 mm Hg despite anti-hypertensive treatment.
- Increase cyclosporine infusion mg if drug levels are less than 100 ng/ml after the 2nd day, and < 200 ng/mL after the 3rd day.
- If hungry, and negative markers – BM <8, CRP < 4.5, albumin >3, etc., discuss stress testing colon on following day with clear liquids. Advance diet slowly only if tolerated.
- If unable to eat by day 9, and albumin <2.5, consider drip elemental feeds via Dobhoff or G tube at a rate of 5-20 cc/hr to nourish intestine.
- Evaluate stool, stool blood, ESR, and CRP response on day 10 (day 5 of cyclosporine). If not 50% response, plan expectantly for surgery ~ day 12.
- Evaluate stool, stool blood, ESR, and CRP response on day 12 (day 7 of cyclosporine). If not 90% response, plan for surgery ~ day 13.
- NOTE: case series of patients who have failed cyclosporine and tried salvage infliximab rather than colectomy have had little success and a high rate of serious adverse events.
Maintenance
In patients who respond to 3-7 days of intravenous cyclosporine, the drug is changed to the oral formulation:
- Solumedrol is changed to oral Prednisone, 40-60 mg daily. Consider 40 mg for patients who have responded rapidly. Use 60 mg for patients who had failed outpatient prednisone, received IV steroids prior to transfer, or had high peak CRP and low albumin.
- On that evening, intravenous cyclosporine is discontinued at 8 PM.
- The following morning, cyclosporine level is determined at 8 AM immediately preceding the first oral dose.
- The oral dose is calculated to be approximately twice the daily intravenous dose or approximately 5 mg/kg, rounded to nearest 25 mg, and is administered every 12 h (i.e., a 70-kg patient treated with 2 mg/kg/day, intravenous cyclosporine, or 140 mg daily, is treated with 150 mg q 12 h of the oral cyclosporine capsules). Oral cyclosporine solution can be administered as Neoral gel capsules available in 25-, 50-, or 100-mg doses.
- The patient may be discharged home after 1-2 days of observation on oral cyclosporine with daily levels and is continued on Prednisone, 60 mg/day.
- Plan to taper prednisone by 10 mg q week until at 40 mg, then by 5 mg q week.
- Start azathioprine – 2-2.5 mg/kg if TPMT > 13, 1-1.5 mg/kg if TPMT <13.
- While patients are on triple therapy (cyclo, Aza, steroids) patients should be maintained on Bactrim/Septara daily for PCP prophylaxis due to risk of infection.(22)

Outpatient Monitoring on Therapy
- Patients are followed weekly for the first month and then bi-weekly for the second month and then at least monthly.
- At each visit, assess their clinical status, ask specifically for any drug-associated adverse effects.
- Check a complete blood count, serum chemistries, serum magnesium, and 12-h trough cyclosporine levels. Aim for trough cyclosporine levels of 150-300 ng/ml during the outpatient phase.
- Never increase the oral dose above 8 mg/kg/day.
- Oral MgSO4 or magnesium injections (magnesium sulfate 50% solution, 1-2 ml intramuscularly) are often required to correct hypomagnesemia.

Test Frequency

<table>
<thead>
<tr>
<th>Test</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office visit and review for adverse effects</td>
<td>Weekly x 4 then biweekly x 2 then Q3-4 weeks</td>
</tr>
<tr>
<td>Cyclosporine level, serum chemistries,</td>
<td>With each visit as above and within 1 weeks</td>
</tr>
<tr>
<td>magnesium, CBC, ESR</td>
<td>after any dose change</td>
</tr>
</tbody>
</table>

Tapering prednisone and cyclosporine
- Lower the daily Prednisone dosage by 10-mg decrements each week until 40 mg is reached and then reduce the daily dose by 5 mg weekly or every other week, as tolerated.
- Patients who cannot be clinically maintained on 20 mg of Prednisone daily by week 8 are considered cyclosporine failures and are referred for surgery.
- After 15-20 mg of daily Prednisone, some patients will require even smaller dose reductions (2.5 mg q week).
- All patients should be entirely weaned off Prednisone within 6 months of hospital discharge.
- Discontinue cyclosporine at 3 months by reducing the dose by 50% for 2 weeks, followed by complete cyclosporine withdrawal.
- A flexible sigmoidoscopy is generally performed after 6-8 weeks of therapy and colonoscopy at 4-6 months, in anticipation of discontinuing cyclosporine.
- At 6 months, the patient who is in remission is then maintained on azathioprine or methotrexate, and (optionally) also a maintenance dose of a 5-ASA drug.
- **Consider ambulatory colorectal surgery referral to discuss 2- and 3-stage proctocolectomy, and recommend IBD School videos 401-404 to the patient to prepare for this consultation**

### Preparing for Discharge

1. A patient approaching safe discharge will have a low CRP, generally < 5 mg/L (0.5 mg/dL), is able to take a full diet, has fewer than 5 BM/24 hours with some form, and has minimal if any blood in the stool.
2. Patients with significant iron deficiency anemia can receive IV iron therapy during their admission and be set up for continued repletion as outpatients.
3. Patients should be transitioned to oral prednisone for 12-24 hours prior to discharge. As 60 mg of solumedrol is roughly equivalent to 80 mg of prednisone, very few patients should go directly from IV solumedrol to 40 mg of prednisone (only those who responded very rapidly). Most should transition to 60 mg of daily prednisone. They should be able to tolerate a full diet, not need IV fluids, be able to walk the floor (not restricted to room by urgency) and be prepared to function at home on prednisone to minimize readmissions.
4. The standard prednisone taper is 5 mg per week. Patients should be sent home with a **complete** steroid taper to zero mg prednisone. This requires 546 5mg tablets from a 60 mg starting dose, or 252 5mg tablets from a 40 mg starting dose. Do not abandon the patient at 20 mg prednisone by ending their prescription early.
5. Refer all post-ASUC patients to the IBD Transitions of Care program. Make sure all patients have access to the Epic patient portal. Let the patient know that a nurse practitioner will contact them about their medications and symptoms. This program will monitor outpatient CRP and FCP and patient symptoms during the steroid taper.
6. Schedule an outpatient visit with the IBD PA or their outpatient GI for when the patient is at 20 mg of prednisone or less.
7. Please notify the outpatient IBD PA or their outpatient GI of pending discharge and any pertinent details they need to follow up on.

8. If the patient was started on either infliximab, cyclosporine, or tofacitinib, long-term maintenance therapy plans should be in place with either an adequate supply of oral or SQ maintenance medication in hand or a follow-up infusion plan with scheduled infusion visits before discharge. Outpatient providers should be notified and participate in the formulation of this long-term maintenance plan. Do NOT expect the outpatient team to do this.

9. Recommend DEXA at outpatient visit if patient has been on corticosteroids for more than 3 months (lifetime) without a prior DEXA evaluation.

10. Patients who have not received Prevnar or pneumovax in the past 5 years should be recommended for these at their follow up when off prednisone.
References:


