



Drug Therapy 2021 “IBD: New Treatment Paradigms”

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Faculty/Presenter Disclosure

➤ Waqqas Afif

Relationships with Commercial Interests:

- Grant/Research Support: Abbvie, Janssen, Pfizer, Takeda
- Advisory Boards/Honoraria: Abbvie, Amgen, Arena Pharmaceuticals, Dynacare, Fresenius-Kabi, Janssen, Merck, Novartis, Pfizer, Sandoz, Takeda.

LEARNING OBJECTIVES

1. Describe the treatment goals and medications used to achieve these goals in patients with IBD
2. Understand the utility of biosimilar medications in patients with IBD
3. Provide IBD chronic disease co-management in a planned and proactive manner

CANMEDS Roles

X	Medical Expert (as <i>Medical Experts</i> , physicians integrate all of the CanMEDS Roles, applying medical knowledge, clinical skills, and professional values in their provision of high-quality and safe patient-centered care. <i>Medical Expert</i> is the central physician Role in the CanMEDS Framework and defines the physician's clinical scope of practice.)
	Communicator (as <i>Communicators</i> , physicians form relationships with patients and their families that facilitate the gathering and sharing of essential information for effective health care.)
X	Collaborator (as <i>Collaborators</i> , physicians work effectively with other health care professionals to provide safe, high-quality, patient-centred care.)
X	Leader (as <i>Leaders</i> , physicians engage with others to contribute to a vision of a high-quality health care system and take responsibility for the delivery of excellent patient care through their activities as clinicians, administrators, scholars, or teachers.)
	Health Advocate (as <i>Health Advocates</i> , physicians contribute their expertise and influence as they work with communities or patient populations to improve health. They work with those they serve to determine and understand needs, speak on behalf of others when required, and support the mobilization of resources to effect change.)
X	Scholar (as <i>Scholars</i> , physicians demonstrate a lifelong commitment to excellence in practice through continuous learning and by teaching others, evaluating evidence, and contributing to scholarship.)
	Professional (as <i>Professionals</i> , physicians are committed to the health and well-being of individual patients and society through ethical practice, high personal standards of behaviour, accountability to the profession and society, physician-led regulation, and maintenance of personal health.)

IBD: Diagnosis

Red flag questionnaire for IBD CD & UC

- (1) Nonhealing or complex perianal fistula or abscess or perianal lesions (apart from hemorrhoids)
- (2) First-degree relative with confirmed IBD
- (3) Weight loss (5% of usual body weight) in the last 3 months
- (4) Chronic abdominal pain (>3 months)
- (5) Nocturnal diarrhea
- (6) Mild fever in the last 3 months
- (7) No abdominal pain 30–45 min after meals, predominantly after vegetables
- (8) No rectal urgency (*Reversed from 'presence of rectal urgency' to obtain a positive rounded coefficient*)

IBD, inflammatory bowel disease.
1. Danese S et al. J Crohns Colitis. 2015;9(8):601-606; 2. Fiorino G et al. J Crohns Colitis. 2020;14(12):1777-1779.

Fecal calprotectin as a screen for IBD



- Protein released by white blood cells
 - Indicative of inflammation within the bowel
 - Can help distinguish IBD from IBS
- Primary care FC testing can avoid unnecessary invasive investigations and reduce time from diagnosis to treatment¹
 - FC test has extremely high negative predictive value - therefore inflammation of the bowel is unlikely if a negative result²
 - Negative result = useful reassurance that no concurrent bowel inflammation in patients less likely to have IBD

FC, fecal calprotectin; IBD, inflammatory bowel disease; IBS, irritable bowel syndrome.
1. Hicks A et al. *Inflamm Intest Dis.* 2020;5(4):191-199; 2. McDonald BS. *Clin Exp Dermatol.* 2021;46(3):573-574.

Biomarkers for Detection of Endoscopic Activity in Symptomatic IBD Patients

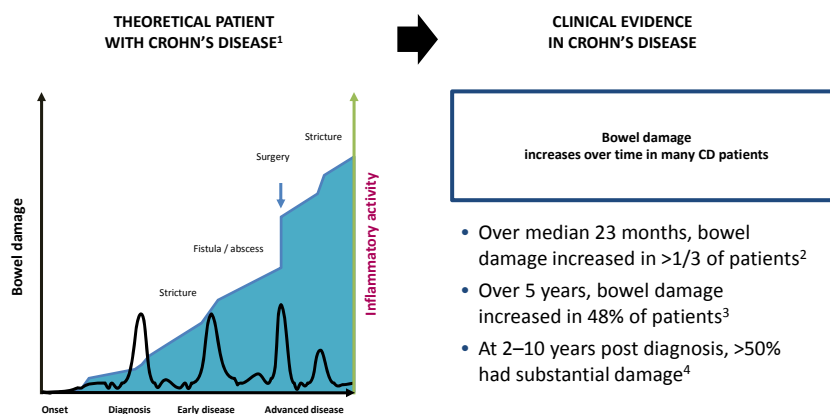
DIAGNOSTIC ACCURACY OF FECAL CALPROTECTIN, STOOL LACTOFERRIN, AND C-REACTIVE PROTEIN FOR ENDOSCOPICALLY ACTIVE DISEASE						
Marker	Sensitivity	Specificity	Positive LR	Negative LR	AUC	Diagnostic OR
C-reactive protein						
IBD	0.88 (0.84, 0.92)	0.79 (0.68, 0.87)	4.2 (2.8, 6.4)	0.15 (0.11, 0.20)	0.91 (0.89, 0.94)	28 (18, 46)
CD	0.87 (0.82, 0.90)	0.71 (0.63, 0.78)	3 (2.3, 3.9)	0.18 (0.13, 0.24)	0.88 (0.85, 0.91)	19 (14, 28)
UC	0.88 (0.84, 0.92)	0.79 (0.68, 0.87)	4.2 (2.8, 6.4)	0.15 (0.11, 0.20)	0.91 (0.89, 0.94)	28 (18, 46)
Sensitivity analysis 1 ^a	0.87 (0.82, 0.90)	0.71 (0.63, 0.78)	3 (2.3, 3.8)	0.19 (0.14, 0.24)	0.87 (0.84, 0.90)	16 (11, 23)
Sensitivity analysis 2 ^a	0.87 (0.83, 0.91)	0.71 (0.63, 0.78)	3 (2.3, 3.9)	0.18 (0.13, 0.24)	0.88 (0.85, 0.91)	19 (14, 28)
Sensitivity analysis 3 ^a	0.88 (0.84, 0.91)	0.73 (0.66, 0.79)	3.2 (2.5, 4.1)	0.17 (0.13, 0.21)	0.89 (0.86, 0.92)	19 (14, 28)
Sensitivity analysis 4 ^a	0.87 (0.83, 0.90)	0.72 (0.65, 0.78)	3.2 (2.5, 3.9)	0.17 (0.13, 0.21)	0.88 (0.85, 0.91)	17 (12, 24)
Stool lactoferrin						
IBD	0.82 (0.73, 0.88)	0.79 (0.62, 0.89)	3.8 (2.0, 7.5)	0.23 (0.14, 0.38)	0.87 (0.84, 0.90)	16 (6, 48)

AUC, area under the curve; CD, Crohn's disease; IBD, inflammatory bowel disease; LR, likelihood ratio; OR, odds ratio; UC, ulcerative colitis.
^aSensitivity analysis 1: excluding studies that included healthy controls that did not undergo colonoscopy; sensitivity analysis 2: excluding studies that included any patient not known to have a diagnosis of inflammatory bowel disease; sensitivity analysis 3: excluding one study that examined patients presenting with lower gastrointestinal symptoms; and sensitivity analysis 4: excluding two studies that were published in abstract form.
 Mosli, MH et al. *Am J Gastroenterol* 2015; 110(6): 802-19.

Treatment Targets in IBD

Progressive nature of IBD

CD and UC are chronic progressive conditions, with a major clinical and patient burden.



1. Pariente B, et al. *Inflamm Bowel Dis* 2011;17:1415–22; 2. Duveau N, et al. *J Crohns Colitis* 2015; 9(Suppl1):S57; 3. Bhagya Rau B, et al. *J Clin Gastroenterol* 2016;50:476-82; 4. Giletta C, et al. *Clin Gastroenterol Hepatol* 2015;13:633-40



Treat-to-Target recommendations (IBD)

COMPOSITE ENDPOINT

CLINICAL / PRO REMISSION

- Defined as resolution of abdominal pain and normalisation of bowel habit
- Assessed at minimum of 3 months during active disease
 - Patients' individual goals should also be addressed

AND

ENDOSCOPIC REMISSION

- Defined as resolution of ulceration
- Should be assessed within 6–9 months after start of therapy
 - When endoscopy cannot adequately evaluate inflammation, assess resolution of inflammation by cross-sectional imaging

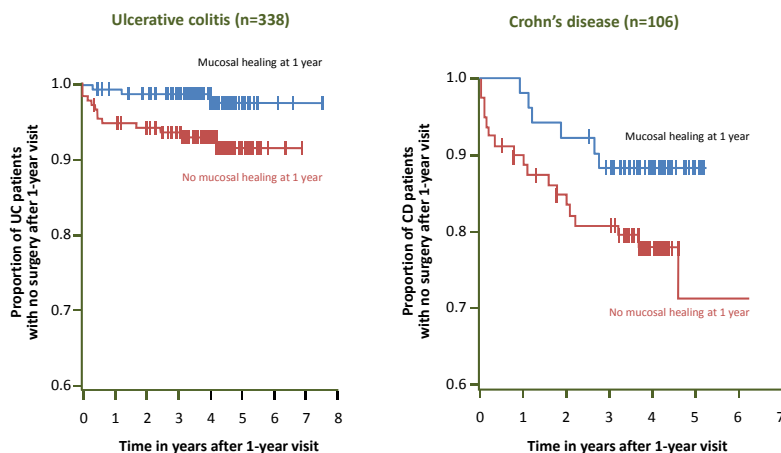
ADJUNCTIVE MEASURES

- Biomarkers:** CRP and faecal calprotectin are adjunctive measures of inflammation, not targets, for monitoring CD
- Histology:** histologic remission is not considered a target

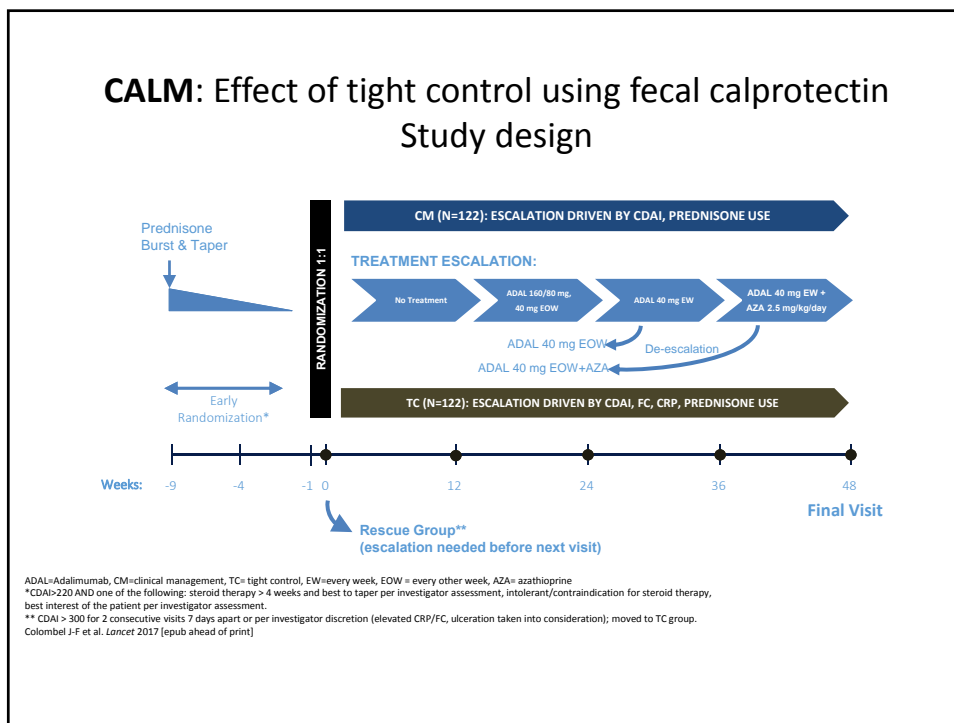
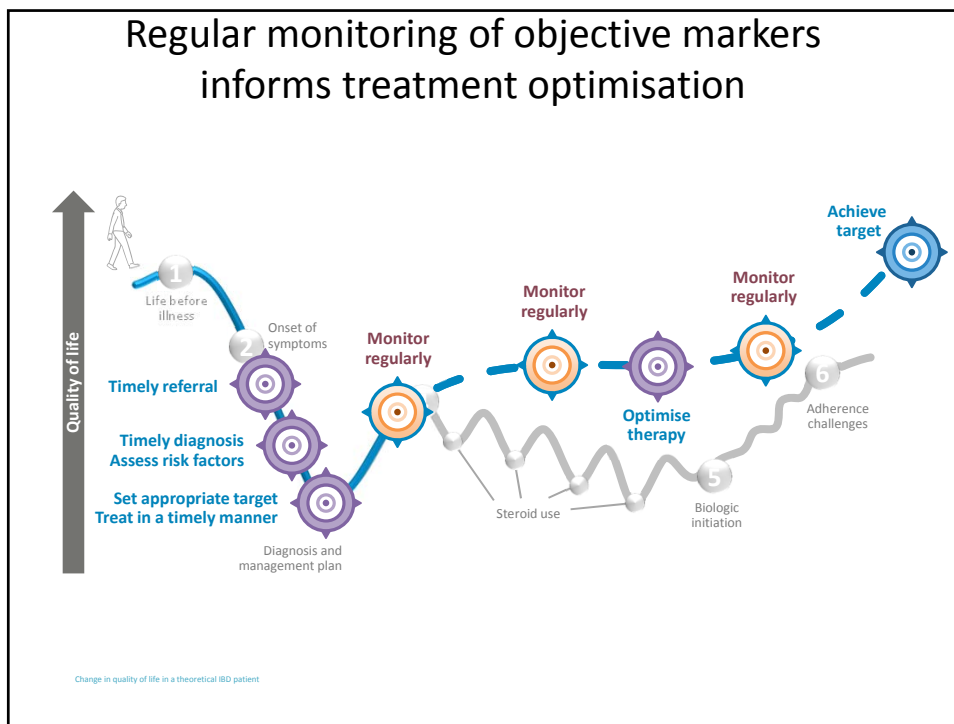
Peyrin-Biroulet L, et al. *Am J Gastroenterol* 2015;110:1324–38

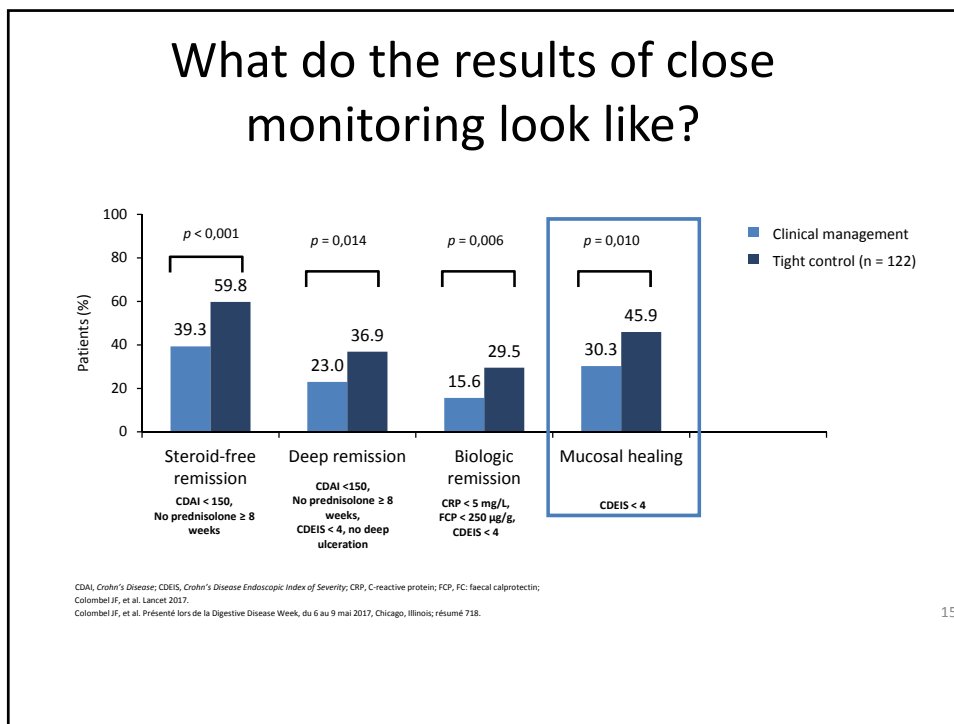
Importance of mucosal healing for long-term outcomes in IBD: IBSen cohort

Mucosal healing status at 1 year and risk of surgery

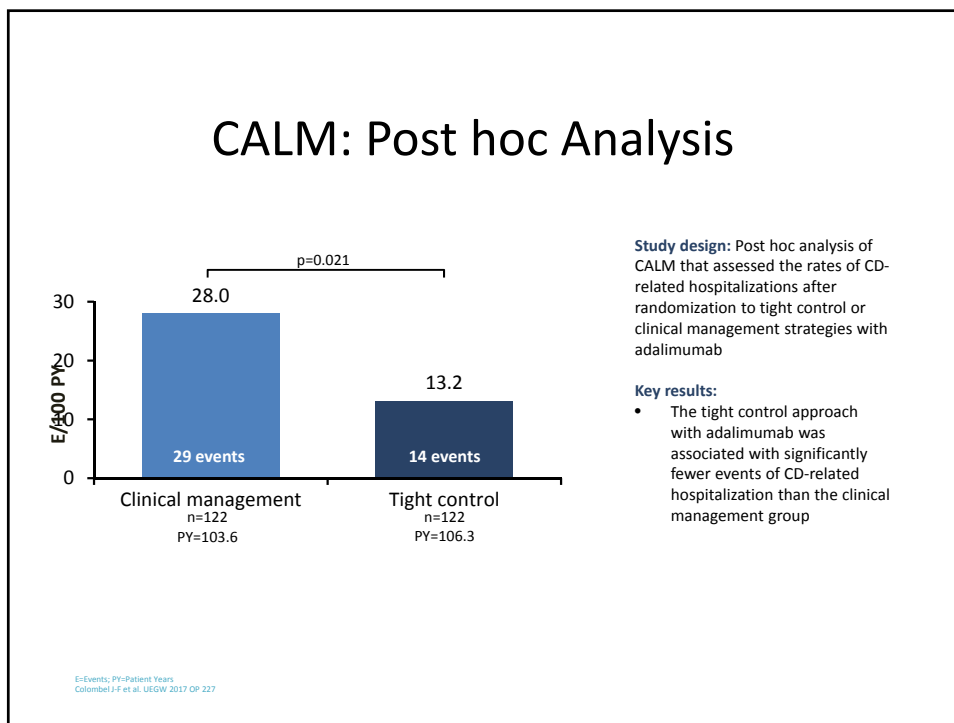


Frosile KS, et al. *Gastroenterology* 2007;133:412–22.






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IBD Treatment

Canadian Association of Gastroenterology: Clinical Practice Guideline for the Management of Luminal Crohn’s Disease

Statement 1. Recommendation: determination of disease severity be based on:



A combination of symptoms



Objective measures of inflammation



Factors that predict an increased risk of complications

Table 1. Factors Associated With High Risk of Relapse, Surgery, or Complicated Luminal CD

Clinical factors	Laboratory factors	Disease factors	Endoscopic factors
<ul style="list-style-type: none"> Younger age Smoking Longer disease duration Early use of corticosteroids Presence of fistulizing perianal CD Previous intestinal resection 	<ul style="list-style-type: none"> Low hemoglobin Low albumin High C-reactive protein (CRP) High faecal calprotectin levels 	<ul style="list-style-type: none"> Disease location (rectal, upper GI, jejunal) Disease extent 	<ul style="list-style-type: none"> Presence of deep ulceration

Panaccione R, and al. JGAG 2019; 2(3): e1-34

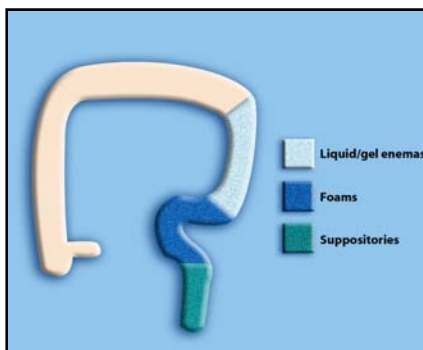
IBD Treatment: Induction/Maintenance

- 5-ASA's
 - UC only for **induction & maintenance** → works in 70% of UC patients
- Corticosteroids
 - CD/UC for **induction only**
 - Prednisone & budesonide
- Immunomodulators
 - Methotrexate (MTX)
 - CD for **induction & maintenance**
 - Thiopurines
 - CD for **maintenance only**
- Biologic medications/small molecules
 - For **induction and maintenance** (+/-thiopurine/MTX)
 - Anti-TNF: infliximab/adalimumab (UC/CD), golimumab (UC)
 - α 4- β 7: vedolizumab (UC/CD)
 - IL 12/23: ustekinumab (UC/CD)
 - JAKi: tofacitinib (UC)

Mild to Moderate Active UC

Treatment of Active Ulcerative Colitis

- 5-ASA suppositories (1g qhs)
- 5-ASAs enemas (2g/4g qhs)
- Oral 5-ASA for disease extending past the splenic flexure (or combo with rectal)
- Corticosteroid foam/enema
- If no help, consider oral budesonide MMX (Cortement)



Proximal distribution of topical preparations

Adapted from: Marshall JK, Irvine EJ. *Am J Gastroenterol* 2000; 95: 1628-1636.

5-Aminosalicylates vs. Sulfasalazine Toxicity

Only sulfa-related

Male infertility
Hemolytic anemia
Agranulocytosis

Both Sulfa and 5-ASA

Alveolitis
Pancreatitis

5-ASA

Nephritis

Sulfa \gg 5-ASA

Rash
Fever
Headache
Nausea
Dyspepsia
Neutropenia
Hepatitis

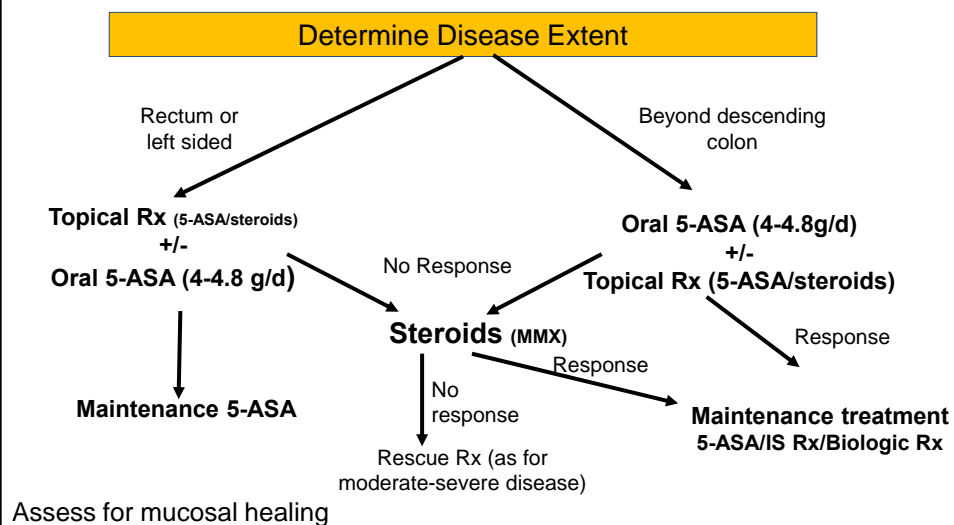


Courtesy of the AGA (Teaching Slides)

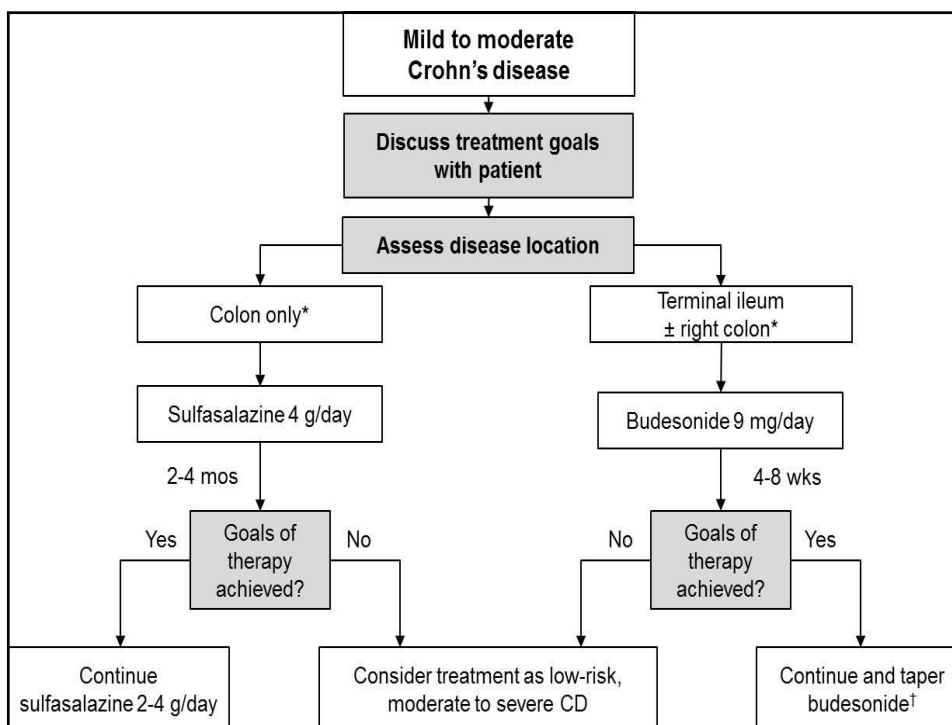
What can you do in the clinic in the patient with a flare of symptoms

Rule out infectious cause →
 stool C/S and *C. difficile*
 Get CRP/FCP

Management of Active UC- Algorithm Mild to Moderate



Mild Crohn's Disease

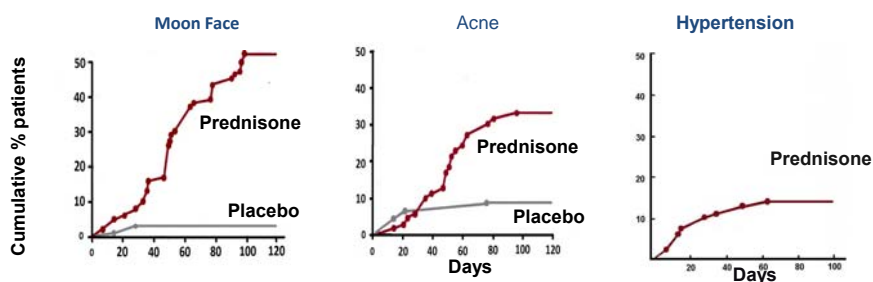


Oral Corticosteroids for IBD Failure of 5-ASA/Cortement/Entocort

- Oral prednisone 40-60 mg/day is effective for inducing remission in moderate to severely active IBD in controlled trials
- Oral prednisone is **NOT** effective for maintenance of remission in controlled trials

Kornbluth et al., ACG March 2010, 105 (3); 501-523.

Corticosteroid side effects



Bone disease : Osteopenia/porosis → duration, dose dependent
Osteonecrosis → high dose, prolonged tx, 0.5-4.3%

Endocrine: HPA suppression, diabetes

Ocular: Glaucoma, cataracts → duration, dose dependent

Neuropsychological issues

Infection risks & increased risk of mortality

Clinical Pearls: Corticosteroids

- Patient should have significant improvement of symptoms prior to tapering (1-2 weeks)
- If patient does not respond, need to consider alternative treatment
- Taper slowly (5 mg/week). If recurrent symptoms, increase dose and consider alternative treatment
- CS are a bridge to another treatment
 - Can not be used to maintain remission

AGA & CAG Guidelines:

Induction of remission (moderate to severe)

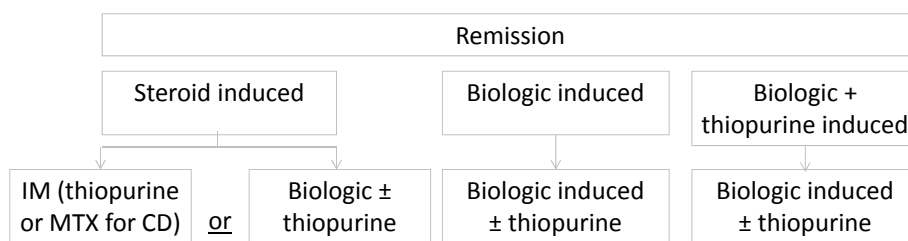
Moderately severe IBD despite standard therapies
(CD: budesonide/corticosteroids & 5-ASA/corticosteroids in UC)

Use **anti-TNF monotherapy** (or combination therapy with thiopurine)
or **ustekinumab** or **vedolizumab**
(or **tofacitnib** for UC as 2nd line)

Adapted from: AGA Institute Clinical Practice and Quality Management Committee. *Gastroenterology* 2013;145:1459-63.

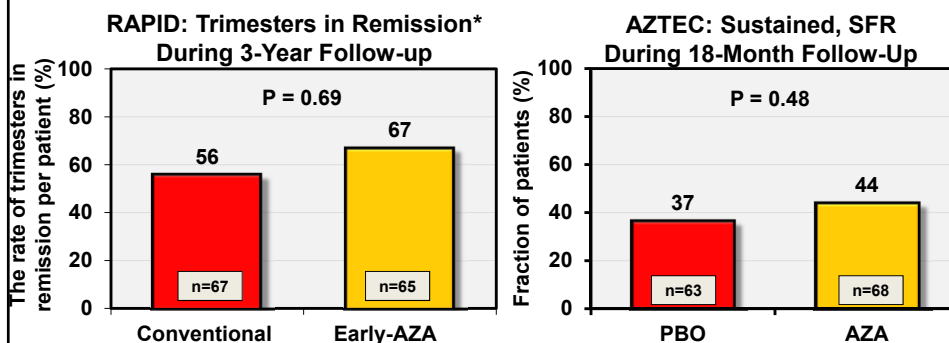
AGA & CAG IBD Guidelines:

Maintenance of Remission



Adapted from: AGA Institute Clinical Practice and Quality Management Committee. *Gastroenterology* 2013;145:1459-63.

Little Benefit of AZA Compared to Standard of Care



- **RAPID:** Prospective, randomized, OL, 24-centre study; N = 142 pts; CD duration < 6 mos (med = 2.5 mos), IS- and Bx-naïve, no previous surgery; ≥ 2 predictors of disabling disease; early-AZA is not superior
- **AZTEC:** Prospective, randomized, DB, 31-centre study; N = 131 pts; CD duration < 8 wks, IS- and Bx-naïve, AZA is not superior to PBO in early, inflammatory, luminal, AZA-naïve CD

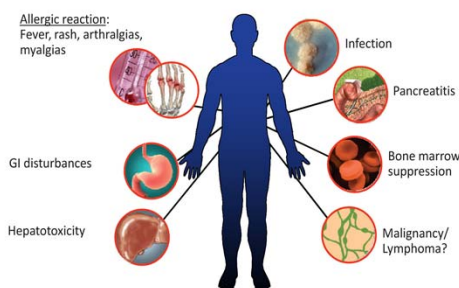
*9 trimesters, 4 months/trimester = 3 yrs Cosnes et al. *Gastro*. 2013; 145 (4): 758-765; Panes et al. *Gastro*. 2013; 145 (4): 766-774

Common Side Effects of Immunosuppressive Therapy

Up to 30% of patients stop treatment because of side effects

- Nausea, vomiting, and malaise most common (early symptoms)
- Symptoms are usually mild, occur early in therapy, and improve over time
- Slower dose titrations or taking the drug with meals may minimize nausea
- If persistent symptoms, could consider switch to 6-MP (60% may improve)

Risk associated with azathioprine/6-mercaptopurine



Nielsen et al. *Aliment Pharmacol Ther* 2001;15:1699-708
[http://online.library.wiley.com/journal/10.1111/\(ISSN\)1365-2036/issues](http://online.library.wiley.com/journal/10.1111/(ISSN)1365-2036/issues)
 Su, Lichtenstein. *Gastroenterol Clin North Am* 2004;33:209-34
<http://www.sciencedirect.com/science/journal/08898553>
 Lees et al. *Aliment Pharmacol Ther* 2008;27:220-7
[http://online.library.wiley.com/journal/10.1111/\(ISSN\)1365-2036/issues](http://online.library.wiley.com/journal/10.1111/(ISSN)1365-2036/issues)

Kornbluth A, Sachar DB. *Am J Gastroenterol*. 2004;88:1371.
 deBoer N et al. *Nature Clin Pract Gastroenterol Hepatol*. 2007;4:686.

Safety Issues with Biologics

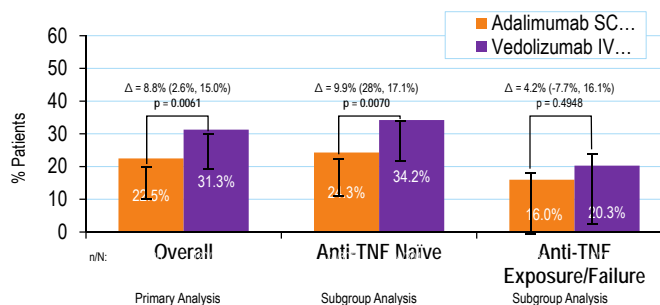
- **Anti-TNF's:**
 - Infectious complications
 - Latent Tb (CXR, PPD/IGRA)
 - Bacterial and granulomatous infections
 - Hepatitis B reactivation
 - No live vaccines
 - “Autoimmune” type reaction (lupus-like)
 - Contra-indications
 - severe CHF, demyelinating disease
- **VDZ/UST:**
 - generally safe with no increased risk of infections (same as placebo)
- **Tofacitinib:**
 - increased risk of HSV, DVT and MACE. Altered lipid profile.

Potential Considerations for Choosing a Biologic ?

Drug Factors	Patient clinical factors at initiation
Clinical efficacy	Active perianal disease
Mucosal healing/fistula healing	Pregnancy
Favourable safety profile	Presence of EIM's
Durability of remission (dose optimization +/- TDM)	Age/co-morbidity
Immunogenicity (need for combo)	Tolerate IS Rx
Rapid induction of remission	Steroid refractory
Patient factors	Physician factors
Mode of administration	Time on the market/comfort level
Ease of use/cost	Ease of use
Work/travel/time spent on Rx	Personal experience

Results of VARSITY: 1st Head to Head Trial (VDZ vs ADAL)

- Overall clinical remission at Week 52



Clinical remission: Complete Mayo score \leq 2 points and no individual subscore > 1 point.
 Full analysis set: includes all randomized patients who received at least 1 dose of study drug.
 Anti-TNF subgroup analysis was prespecified and produced nominal p values.
 anti-TNF: anti-tumour necrosis factor

Biosimilars approved in Canada: New starts/forced switches

ADAL	Amgevita™	Hulio*	Hyrimoz*	Idacio*	Hadlima™	Adalimumab Injection†
Company	Amgen	Mylan/Fujifilm BGP Pharma ULC	Sandoz (Novartis)	Fresenius Kabi	Merck/ Samsung Bioepis	Pfizer
Indications in adults (18+ yr)	RA, PsA, AS, PsO, UC, CD, HS, UV					
Indications in pediatrics (age, yr)	JIA(2+) CD(13+) HS(12+) UV(2+)	JIA(2+) CD(13+) HS(12+) UV(2+)	JIA(2+)	JIA(2+) CD(13+) HS(12+) UV(2+)	JIA(2+) HS(12+) UV(2+)	JIA(2+) CD(13+) HS(12+) UV(2+)
RCTs	PsO, RA	RA	PsO	PsO	RA	RA
Citrate-free	Yes	Yes	No	No	No	Yes
Needle Size						
Syringe	29G	29G	29G	29G	29G	29G
Pen	27G	29G	29G	29G	29G	29G

IFX	Inflectra	Renflexis
Company	Pfizer	Merck
Indications in adults (18+ yr)	RA, PsA, AS, PsO, UC, CD,	

- *Pfizer adalimumab injection is approved by Health Canada but not yet marketed. Primary endpoint for RCTs in RA is ACR20, for PsO PASI 75. ACR20, 20% improvement in American College of Rheumatology criteria; AS, ankylosing spondylitis; CD, Crohn's disease; JIA, polyarticular juvenile idiopathic arthritis; HS, hidradenitis suppurativa; PASI 75, 75% improvement in Psoriasis Area and Severity Index score; PsA, psoriatic arthritis; PsO, plaque psoriasis; RA, rheumatoid arthritis; RCT, randomized controlled trial; UC, ulcerative colitis; UV, uveitis. Adapted from Coghlan J et al. Journal of Pharmaceutical Sciences. 2021;50022-3549(21)00080-0. Complete references to product monographs in notes.

Practical tips and considerations

Non-medical switching is safe and has the potential to save HC system resources¹

IBD guidelines do not recommend automatic substitutions and advise against nonmedical switching in patients with stable IBD doing well on the originator product³.

Patients should not be disadvantaged by switching (i.e., no extra out of pocket expenses, same access to therapeutic monitoring through FC and drug levels)^{1,2}

Switching is based on principles of no incremental costs by patient, and demonstrated cost savings to HC system¹

Switching should be done under medical surveillance only.

There must be a respectful and informed conversation between the prescribing physician and patient prior to switching²

If switching is initiated by someone other than the prescriber, notification must be given to the physician and patient²

- FC, fecal calprotectin; HC, health care; IBD, inflammatory bowel disease. 1. Ontario Rheumatology Association. https://ontariorheum.ca/wp-content/uploads/Final_ORA_Position_on_Administrative_Switching_AND_FAQs.pdf. Accessed 25 February 2021; 2. Canadian Rheumatology Association (CRA) Position Statement on Biosimilars. <https://rheum.ca/canadian-rheumatology-association-cra-position-statement-on-biosimilars/>. Accessed 25 February 2021. 3. Moayyedi P et al. J Can Assoc Gastroenterol. 2020;3(1):e1-e9.

Consequences of the nocebo effect

Nocebo effects are phenomena associated with actual or perceived harm that occur because of patients' negative expectancies¹

May be caused by:^{1,2}

Lack of awareness

Knowledge gaps

Misperceptions

May lead to:¹

Patient non-adherence

Patient discontinuation

Perceived increase in AEs or suboptimal efficacy

AE, adverse effects.

1. Coloca L et al. Front Pharmacol. 2019;10:1372; 2. Rezk MF and Pieper B. Rheumatol Ther. 2017;4:209–218.

IBD: Chronic disease co-management

Therapy Related Testing

- **Mesalamines**
 - Annual renal function monitoring.
- **Corticosteroids**
 - Document plan and use of corticosteroid-sparing therapy. Consider ophthalmology exam.
- **Thiopurines**
 - TPMT, CBC and liver function prior to initiating therapy. Routine CBC and liver function monitoring while on therapy.
- **Methotrexate**
 - CBC, liver, and renal function prior to initiating therapy. Routine CBC, liver, and renal function monitoring while on therapy.
- **Anti-TNF/Ustekinumab**
 - Tuberculosis (TB) screening prior to initiating therapy with PPD skin testing and/or QuantiFeron-TB Gold assay. Chest X-Ray if high-risk and/or indeterminate PPD or QuantiFeron-TB Gold. Perform annual TB risk assessment and consider re-testing if high risk (including travel to endemic region). CBC, liver, and renal function prior to initiating therapy and periodic monitoring while on therapy.
- **Vedolizumab**
 - CBC, liver, and renal function prior to initiating therapy and periodic monitoring.
- **Tofacitinib:**
 - CBC, liver, lipid profile and renal function prior to initiating therapy. Routine CBC, liver, and renal function monitoring while on therapy. Consider stopping OCP. Shingrix vaccination.

Pregnancy

- Avoid antibiotics and corticosteroids in the 1st trimester
- Biologics and thiopurines and 5-ASA's (**not MTX/tofacitinib**) are safe in pregnancy and with breastfeeding.
- No live vaccines (for 12 months) in babies exposed to biologics (no Rotavirus vaccination)

Vaccinations

Patients with immune-mediated disorders should be offered age and gender appropriate vaccinations¹

Immunosuppressive medications and biologics may cause an attenuated response to vaccines¹

Live vaccines should be avoided¹

Vaccination strategies should be part of general health maintenance checklists for IMID patients

There is no evidence that vaccination worsens the course of or causes flare of IBD¹

IMID, immune-mediated inflammatory disease.
1. Papp KA et al. J Cutan Med Surg. 2019;23(1):50-74.

COVID-19

Increased risk of complications with thiopurines/prednisone !

Highlighted themes of accepted statements related to SARS-CoV-2 vaccination for patients with IBD by the International Organization for the Study of Inflammatory Bowel Disease (IOIBD)

- Patients with IBD should be vaccinated against SARS-CoV-2.
- The best time to administer SARS-CoV-2 vaccination in patients with IBD is at the **earliest opportunity to do so**.
- SARS-CoV-2 vaccines including messenger RNA vaccines, replication in competent vector vaccines, inactivated vaccines and recombinant **vaccines are safe to administer** to patients with IBD.
- SARS-CoV-2 vaccination **should not be deferred** because a patient with IBD is **receiving immune-modifying therapies**.
- Patients with IBD vaccinated with SARS-CoV-2 should be counselled that **vaccine efficacy may be decreased when receiving systemic corticosteroids/anti-TNF's**

Disease Flares

- **UC patient with flare:**
 - rule out infection, routine labs/CRP/FCP
 - Ensure compliance. If already on 5-ASA, increase dose or add enema.
- **CD patient with flare**
 - Rule out infection, routine labs/CRP/FCP
 - If symptoms worsening on prednisone taper, can increase the dose.
- Speak with GI if any concerns (existing or new patients)
- IBD pt on high dose CS, IM, anti-TNF
 - High index of suspicion if fever/infectious symptoms

Summary

- Use red flag questionnaire and CRP/FCP as adjunct testing for faster GI access/earlier diagnosis
- Mucosal healing is the target → FCP to help guide treatment
- Increasing use of biologics (and biosimilars) → forced anti-TNF switching coming soon
- Communication with primary care is crucial for appropriate co-management



Thank-you !

Questions/Comments ?
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