# Inflammatory Bowel Disease: Role of the Primary Care Provider in Identification and Management

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# Learning Objectives

- Review IBD 101: Epidemiology, Pathophysiology
- Understand treatment strategies and therapeutic target goals
- Discuss role of the primary care provider in IBD
- Develop a health maintenance plan and provide preventative care for a patient with IBD

# Definition and Epidemiology of IBD

- Idiopathic, chronic inflammatory disease
  - Crohn's disease (CD): any part of GI tract
  - Ulcerative colitis (UC): involves only colon
- Characterized by activation or dysregulation of the immune system
- Periods of remission & relapse
- Symptoms vary widely based on location and severity
- IBD is not irritable bowel syndrome (IBS)

# Increasing Incidence of IBD with Time

## Ulcerative colitis

- Europe: 24.3 per 100,000 PY
- North America: 19.2
- Asia & Middle East: 6.3

## Crohn's disease

- Europe: 12.7 per 100,000 PY
- North America: 20.2
- Asia & Middle East: 5.0

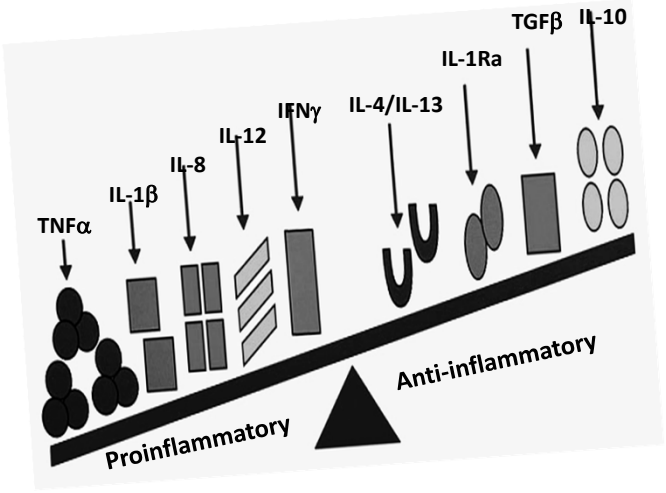
- Data traditionally from large Canadian & European populations, and analysis of predominantly Caucasian population

In United States:

- Incidence of IBD among African Americans approaching Caucasians
- Incidence of UC among Hispanics is increasing relative to Caucasians
- Limited data of incidence/prevalence of IBD among Asians

SC Ng et al. Lancet October 2017
Molodecky NA et al. Gastroenterology 2012
Afzali A. World Gastroenterology News April 2015
Afzali A, Cross RK. Inflamm Bowel Dis July 2016

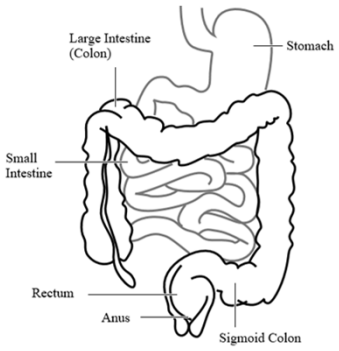
# Chronic Inflammation:
## Proteins Called Cytokines Are the Light Switch




"On" "Off"

## Symptomatology of Ulcerative Colitis

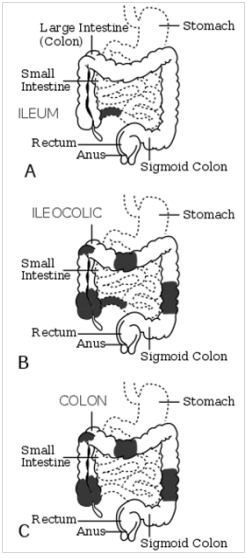
- Altered bowel movements
  - Increased stool frequency
  - Decreased stool consistency
- Abdominal pain
  - LLQ cramping, relieved with defecation
  - Tenesmus
- Blood in stool
- Simple Colitis Activity Index (SCAI)




Author: Connormah

## Symptomatology of Crohn's Disease

- **Diarrhea – chronic or nocturnal**
- **Abdominal pain – post prandial, RLQ, distension**
- **Weight loss**
- **Fever**
- **Rectal bleeding**
- **Harvey Bradshaw Index (HBI)**



## Clinical Features of IBD

**Common Physical Examination Findings**

- Abdominal tenderness
- Palpable mass
- Perianal disease
- Extra-intestinal manifestations

**Common Laboratory & Radiographic Findings**

- Anemia
- Leukocytosis
- Elevated ESR/CRP*
- Small bowel disease
- Fistulas
- Strictures

Podolsky DK. N Engl J Med. 2002

# Differential Diagnosis for IBD

- **Clinical symptoms not specific for disease**
- **DDX: 'IBD Mimickers'**
  - **Infection:**
    - **Ileocolonic - bloody diarrhea: Campylobacter, Salmonella, E-coli, Shigella**
    - **Terminal ileum - RLQ pain: Yersinia enterocolitica, appendicitis**
    - **Proctitis - rectal pain: Chlamydia trachomatis**
  - **Ischemia, Radiation, Drugs (NSAIDs)**

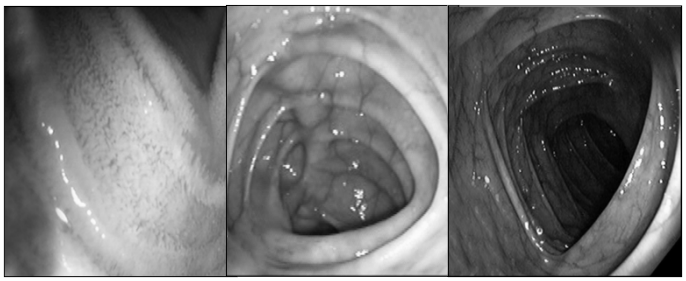
# Endoscopic Features for IBD

- **Ulcerative Colitis**
  - Contiguous & circumferential
  - Erythema
  - Loss of vascular pattern
  - Friability
  - Granularity
  - Edema

- **Crohn's Disease**
  - Discontinuous, patchy
  - Aphthous or punched out ulcers
  - Serpiginous, linear ulcers
  - Noncaseating granulomas (~5-15%)
  - Rectal sparing (*more common with CD)
  - Strictures
  - Fistulas

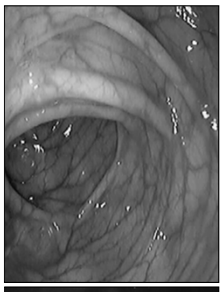
# Role of Colonoscopy in IBD

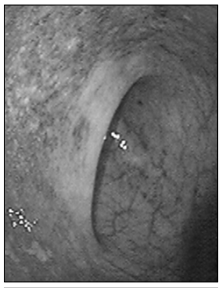
## Normal findings of terminal ileum and colon



# UC - Spectrum of Disease

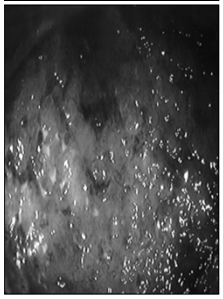
Normal

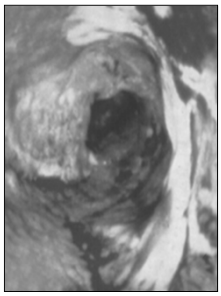




Mild

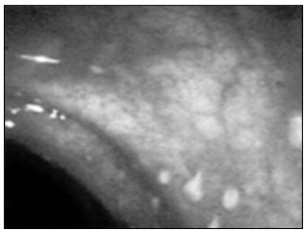
Moderate

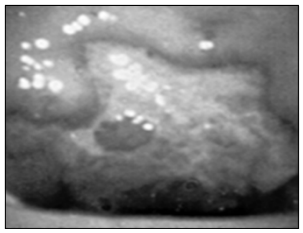


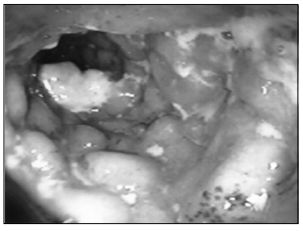


Severe

# CD: Spectrum of Disease

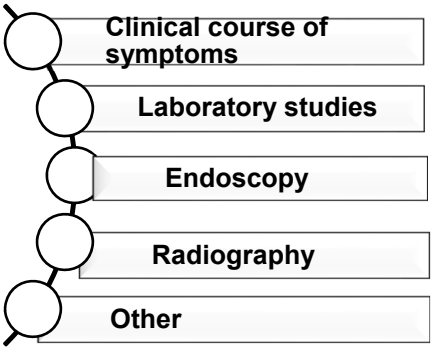






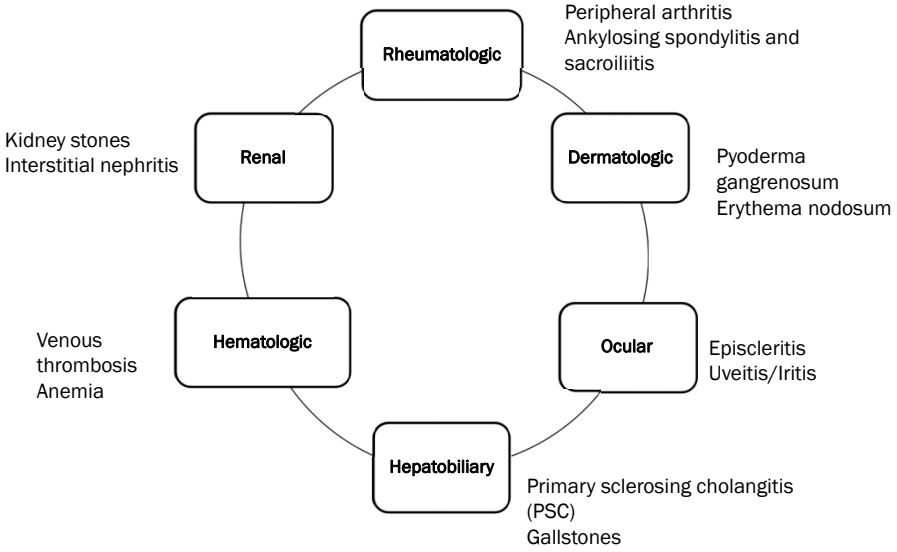
## Components of IBD Diagnosis

- History
- Physical Examination
- Labs
  - CBC, CMP, ESR, CRP, iron studies, vitamin B12, vitamin D, zinc, folate
  - Fecal calprotectin
  - Stool
    - C difficile toxin PCR
    - O&P, Giardia
- Endoscopy
  - Colonoscopy, EGD (if CD suspected)
- Cross-sectional imaging
  - CT or MRI enterography
- Additional diagnostic studies
  - Capsule endoscopy
  - Device assisted balloon enteroscopy



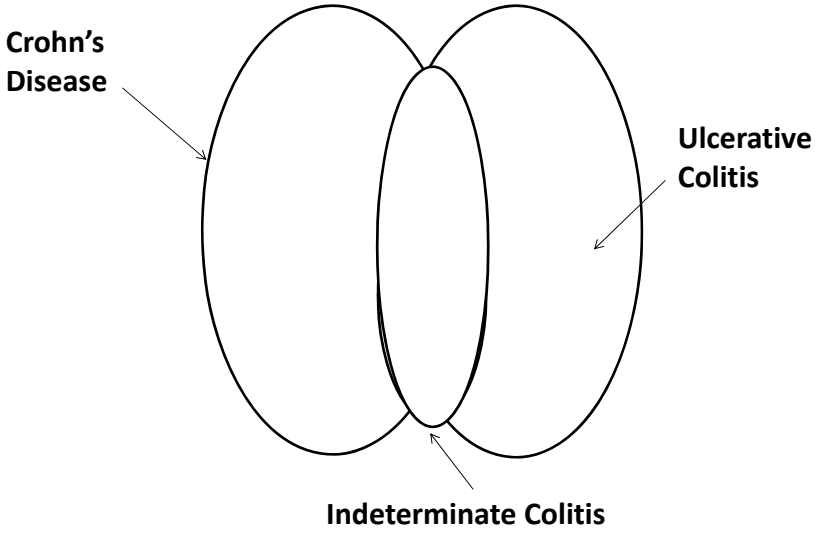

Mill J, Lawrence IC. WJG. 2014
Kornbluth A, et al. Am J Gastroenterology. 2010

## Extraintestinal Manifestations of IBD

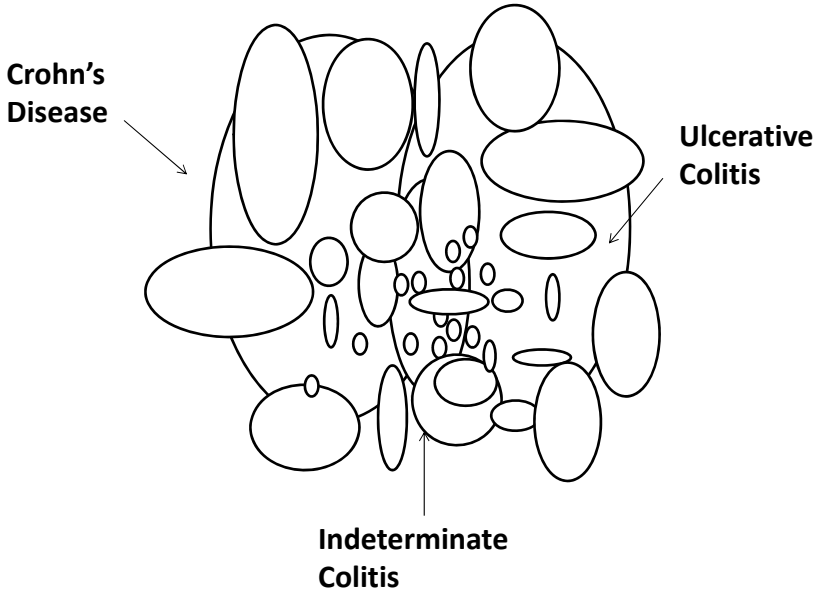



Levine JS, et al. Gastroenterol Hepatol 2011

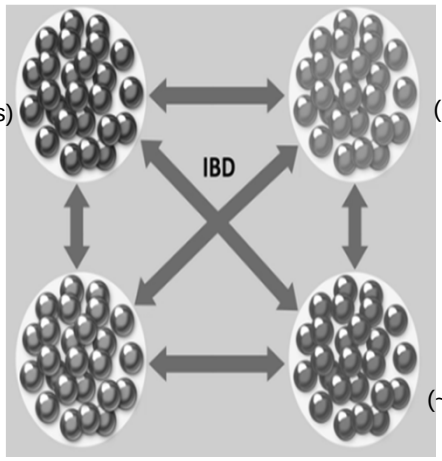
# Spectrum of IBD




# Spectrum of IBD



## The “-omes” in IBD Pathogenesis




**Exposome**
(countless factors)

**Genome**
(~200 associations)

**Microbiome**
($10^{14}$ bacteria)

**Immunome**
(~1000 cells, molecules)

Adapted from Fiocchi C. Dig Dis 2015

## Right Patient, Right Treatment, Right Time

- **Integration of clinical variables (i.e. age, gender), disease characteristics, genetic and conventional laboratory testing**

  ⇨ **to guide treatment decisions - INDIVIDUALIZE**

- **Decrease risk of adverse events and disease complications**
- **Potential to optimize efficacy and outcomes**
- **Similar model used: Diabetes, hypertension**

# Individual Predictive Markers for Severe CD

| Marker | Predicted Outcome |
|---|---|
| Ileal location | Complications, surgery |
| Location proximal to the last third of ileum | Relapses, surgery |
| Colonic or rectal disease | Perianal disease |
| Anal lesions | Disabling disease |
| Stricturing penetrating behavior at diagnosis | Surgery |
| Age <40 years | Disabling disease |
| Smoking | Relapses, complications |
| Deep colonic ulcers | Surgery |
| CARD15 variants | Complications, surgery |
| IBD5/OCTN variants | Perianal disease |
| Antiglycan antibodies | Complications, surgery |
| Antibacterial antibodies | Complications, surgery |

Falvey JD et al. Inflamm Bowel Dis 2015

# Individual Predictive Markers for Severe UC

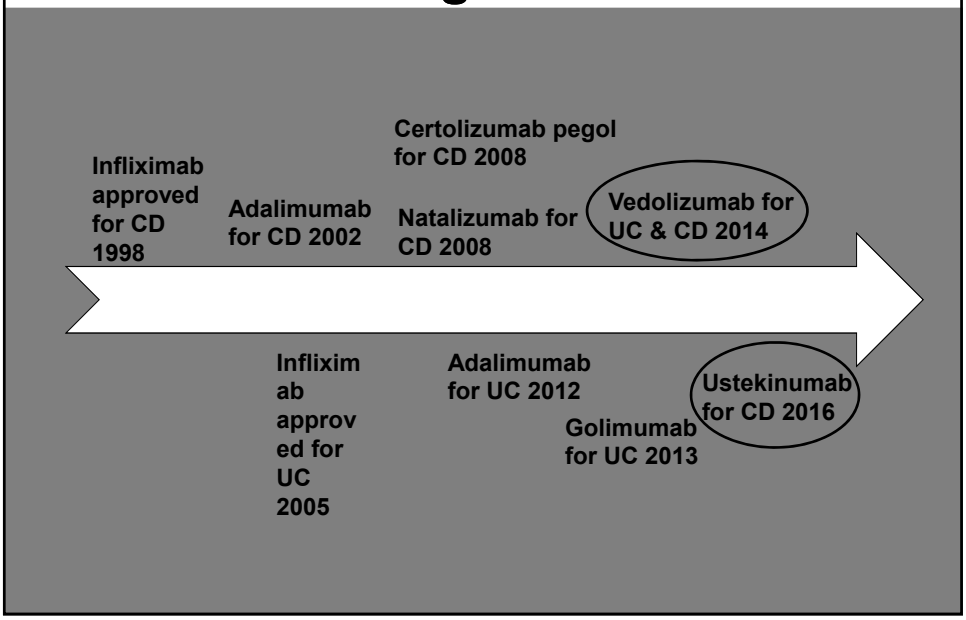
| Marker | Predicted Outcome |
|---|---|
| Extensive colitis | Colectomy, cancer, mortality |
| Colitis extension | Colectomy |
| Sclerosing cholangitis | Cancer |
| Extra-intestinal manifestations | Colectomy |
| Young age | Colectomy, cancer |
| Non smoking | Relapses, colectomy |
| Systemic inflammation | Colectomy |
| No response to first line therapy | Colectomy |
| No mucosal healing 1 year after diagnosis | Colectomy |
| HLA variants | Colectomy |
| ANCA | No response to anti-TNF |

Falvey JD et al. Inflamm Bowel Dis 2015

# IBD Medicine Cabinet

- Over-the-Counter
- Antibiotics
- 5-Aminosalicylates/mesalamine
- Corticosteroids, budesonide
- Immunomodulators – AZA/6MP, MTX
- Biologics – Target-protein specific

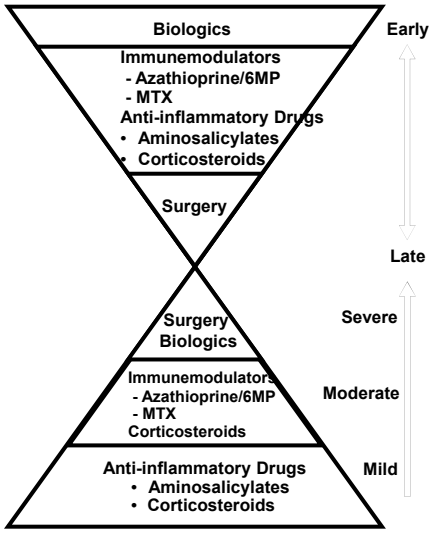
# New Targets: Mechanisms of Action Biologics IBD



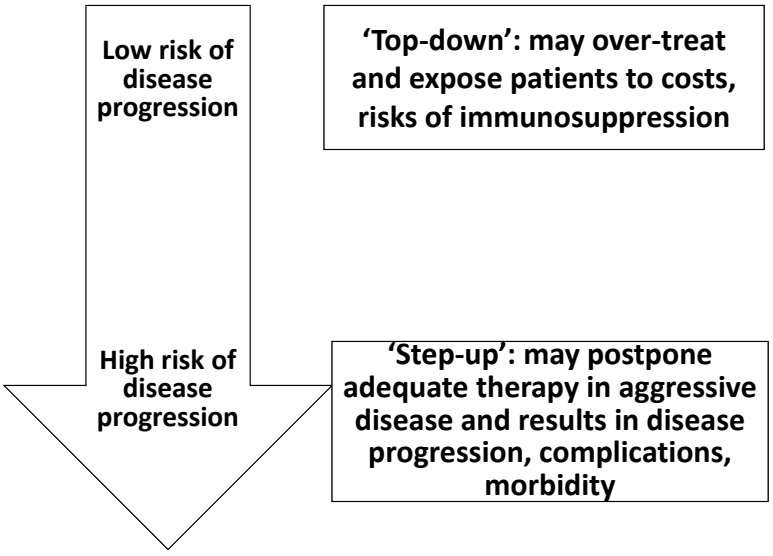
# IBD Treatment Strategy

**"Top-down" Strategy**
- **Early, appropriate use of biologic as initial treatment**
- **Induces rapid clinical response**
- **May enhance quality of life**

**"Step-up" Strategy**
- **Standard, sequential treatment for remission and maintenance**
- **Cost-effective**
- **Minimal side effects**



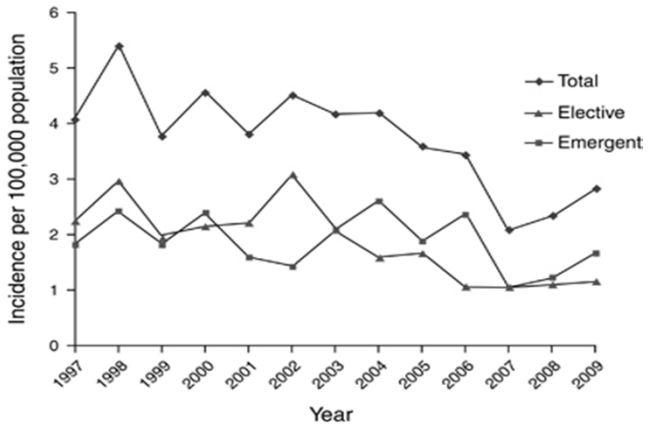

# Treatment Approach Strategies



# Protein Target Specific: Biologics in IBD

- Revolutionized treatment and management of UC and CD
- Why do we use them?
  - Very effective
  - Reduces hospitalization, surgery
  - Steroid free remission
  - Improved quality of life
  - Changes the natural history of disease**
- Limitations: costs, misinformation

# TEMPORAL TRENDS OF COLECTOMY UC




Kaplan GG et al. AJG 2012

**Since introduction of biologic agents/anti-TNFs, decrease in total colectomy in UC patients**

# Risks of Anti-TNFs and Immunomodulators

**If 10,000 patients were treated for 1 year**

| Event | Estimated Frequency |
|---|---|
| NHL (baseline) | 2/10,000 |
| NHL (on IMs) | 4-9/10,000 |
| NHL (on anti-TNF with prior IMs) | 4-9/10,000 |
| Hepatosplenic T-cell lymphoma | Unknown |
| Death from sepsis (lower for younger patients) | 4/1,000 |
| Tuberculosis | 5/10,000 |

**Anti-TNF, anti-tumor necrosis factor; IMs, immunomodulators; NHL, non-Hodgkin lymphoma.**
**Table adapted from Siegel CA. In *Inflammatory Bowel Disease: Translating Basic Science Into Clinical Practice*. Wiley, 2010.**

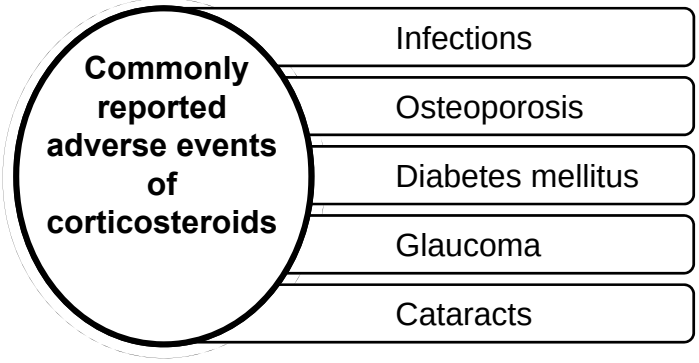
# Safety/Toxicity of Anti-TNFs

- **Serious Infections in Crohn's disease**
  - **Anti-TNF increases risk 43%**
  - **Prednisone increases risk 57%**
  - **Opioid use doubles the risk**
  - **Active Crohn's Disease - Moderate to severe more than doubles the risk**

## Risks of Corticosteroids

- Oral steroids are effective for inducing remission but **not** for maintaining remission
- Approximately 50% of all patients who use corticosteroids will experience adverse events

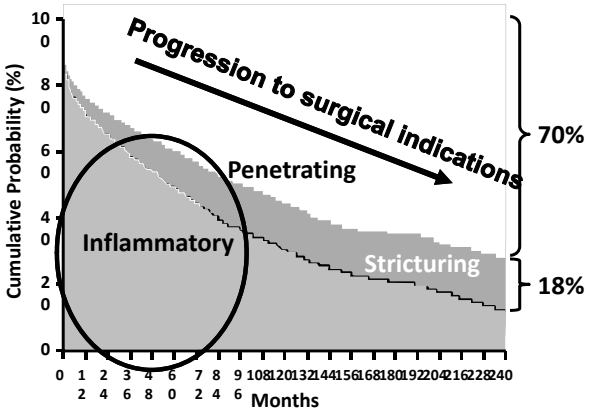
**Oral Corticosteroids Are NOT a Long-term Option**




Afzali, A et al. Medical Therapy of Ulcerative Colitis. 2014

Lichtenstein GR, et al. Gastroenterol. 2006

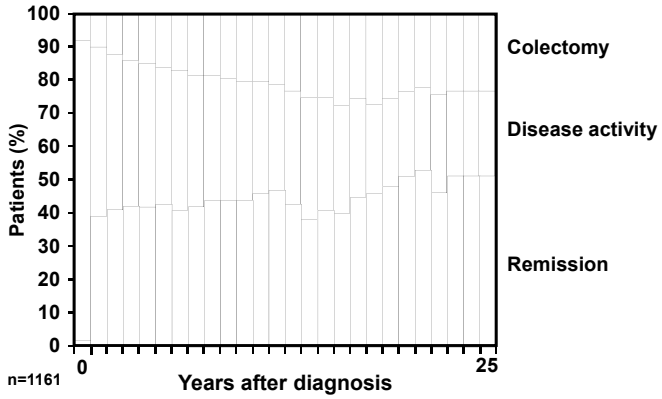
## THE EVOLUTION OF CROHN'S DISEASE: INFLAMMATION LEADS TO DAMAGE




**Over a 20-year period, 88% risk of developing stricturing (18%) or penetrating (70%) disease**

Cosnes J et al. Inflamm Bowel Dis. 2002

# Natural History Of Ulcerative Colitis

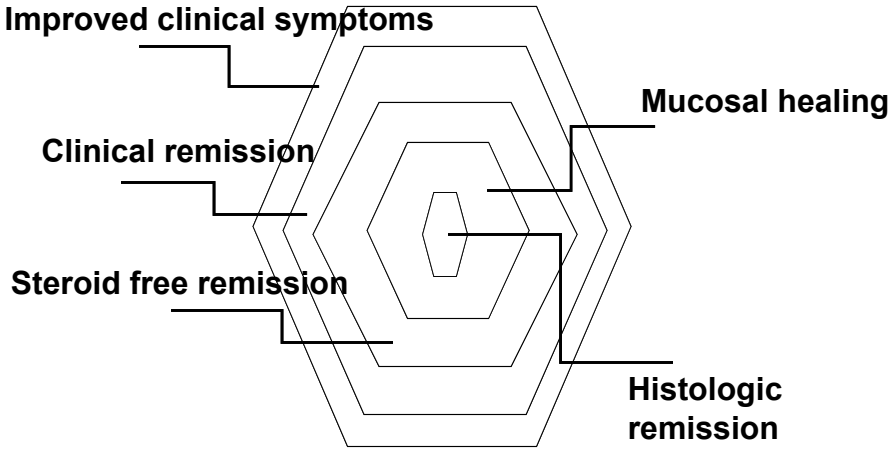



Risk of colectomy: 24% after 10 years
~ 30% after 20 years

Significant Increased risk of cancer

Adapted from Langholz E, et al. Gastroenterol 1994

# Update in the Evolution of Treatment Goals & Strategies




Adapted CCFA Canada Webinar 2015

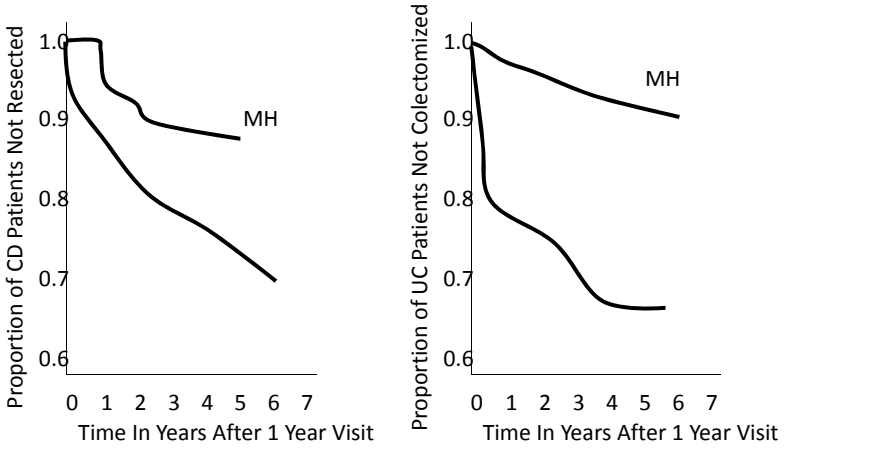
# Clinical versus Endoscopic Indices

- **Does not correlate with clinical course of disease**
- **Does not prevent long-term complications of disease**
- **Symptoms do not always correlate with severity of mucosal disease (bullet)**
  - **Crohn's Disease Activity Index (CDAI) (sub-bullet)**
  - **Crohn's Disease Endoscopic Index Severity Score (CDEIS) poor correlation (sub-bullet)**

**Modigliani M, et al. Gastroenterology 1990**

# Impact of Mucosal Healing (MH): Surgical Outcomes

**Crohn's Disease (CD)** **Ulcerative Colitis (UC)**




Froslie KF, et al. Gastroenterology 2007

# Crohn's Disease: Therapeutic Targets

| Clinical | Endoscopic | Imaging | Biomarkers | Histologic | Patient-Reported Outcomes (PROs) |
|---|---|---|---|---|---|
| Resolution of abdominal pain | Absence of ulcerations | Resolution of lesions | Normalization of CRP, FC | No active inflammation | Direct patient report of function and symptoms |
| Normalization of bowel habits | | | | | |
| TARGET | TARGET | TARGET | NOT TARGET | NOT TARGET | FUTURE* |

**Selecting Therapeutic Targets in IBD (STRIDE): Peyrin-Biroulet L, et al. Am J Gastroenterol 2015**

# Ulcerative Colitis: Therapeutic Targets

| Clinical | Endoscopic | Imaging | Biomarkers | Histologic | Patient-Reported Outcomes (PROs) |
|---|---|---|---|---|---|
| Resolution of rectal bleeding | Mayo clinic endoscopy score of 0 or 1 | Resolution of lesions | Normalization of CRP, FC | No active inflammation | Direct patient report of function and symptoms |
| Normalization of bowel habits | | | | | |
| TARGET | TARGET | NOT TARGET | NOT TARGET | NOT TARGET | FUTURE* |

**Selecting Therapeutic Targets in IBD (STRIDE): Peyrin-Biroulet L, et al. Am J Gastroenterol 2015**

# Impact of IBD

**Medical Impact**

- 85% of patients suffer from diarrhea[1]
- 51% of patients were hospitalized in the last 3 years[2]
- 64% required surgery[2]
- ~90% of CD will have surgery in their lifetime

**Work Disability Impact**

- 55% missed work due to disease in the past year[3]
- 5.3% become permanently work disabled[2]

**Emotional Impact**

- 70% of patients report anxiety or depression, compared with 30% of population norms[4]

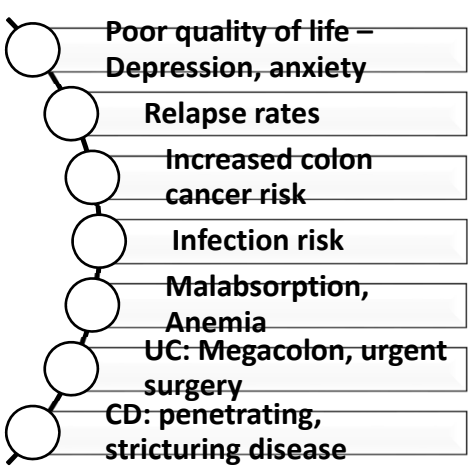
1. Knutson D, et al. *Am Fam Physician*. 2003.
2. Ananthakrishnan AN, et al. *Am J Gastroenterol*. 2008.
3. Kiebles JL, et al. *Inflamm Bowel Dis*. 2010.
4. Feagan BG, et al. Am J Gastroenterol. 2009.

# Health & Economic Burden of IBD

- Every year in the US, IBD accounts for:
  - 1,300,000 physician visits
  - 92,000 hospitalizations
- Direct treatment costs for IBD patients: $6.3 billion
- Indirect costs: additional $5.5 billion
- In 2006, total costs of Crohn's disease in the U.S. were estimated $10.9-$15.5 billion

Park KT and Bass D. Inflamm Bowel Dis 2011
Yu AP et al. Curr Med Res Opin 2008

## Clinical Consequences of Delayed IBD Diagnosis

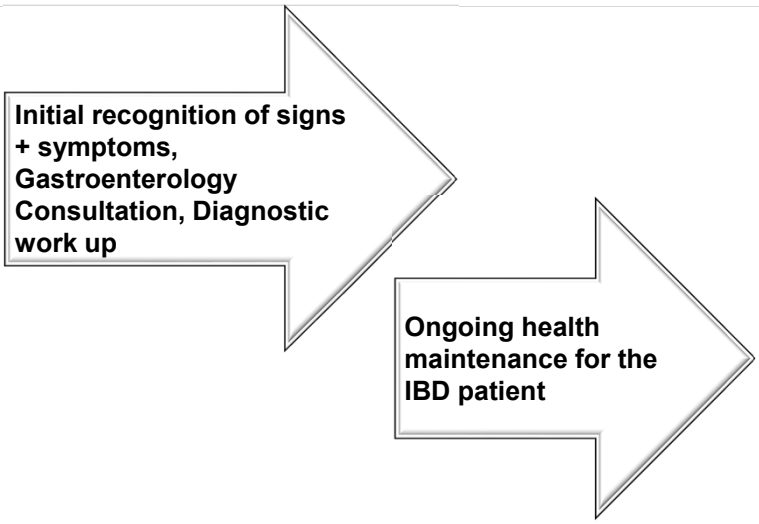



**Early referral to GI is important**

**Delayed diagnosis**
↓
**Delayed treatment**
↓
**Worse outcomes**

Anderson NN, et al. JAMA 2014
Kotlyar D, et al. Gastroenterol. 2015
Lichtenstein GR, et al. Am J Gastroenterol. 2012

## The Role of Primary Care Clinicians in IBD



What is the Role of Primary Care Clinicians in IBD?

| PCP Checklist in IBD Care | |
|---|---|
| ❑ Vaccinations | ❑ Pap smears |
| ❑ Monitoring laboratory studies (WBC, Cr, LFTs, glucose) | ❑ Smoking cessation |
| ❑ Iron deficiency | ❑ Dermatological evaluation |
| ❑ Osteoporosis (DEXA) | ❑ Psychosocial factors |
| ❑ Cancer (surveillance) | ❑ Sexual/reproductive health |
| ❑ Cardiovascular disease | ❑ Ophthalmologic evaluation |
| ❑ Monitoring IBD-related complications, disease relapse | ❑ Medication adherence |

Sinclair JA, et al. Gastroenterology. 2012
Bennett A, et al. World J Gastroenterol. 2015
Gikas A. Int J Gen med. 2014

# Lack of Primary Care

- **Many patients with IBD: young, no other comorbid illnesses**
- **Gastroenterologist will often be their only physician**
- **IBD patients receive less preventive health services than general population patients**

**Selby L et al. Inflamm Bowel Dis 2008**

# Preventative Health in IBD

- Barriers in the implementation of preventative services:
  - Lack of consensus of which provider should offer services: PCP vs GI?
  - More focus on disease/symptom control
  - Disease develops 2nd/3rd decade of life, when number of preventive services is few – overlooked?
- Need to improve preventative strategies
- Pay-for-Performance strategies and quality metrics increasingly being adopted
  - AGA IBD Quality Metrics – Health Care Maintenance

Selby L et al. Inflamm Bowel Dis 2008

# Categories for Preventative Health

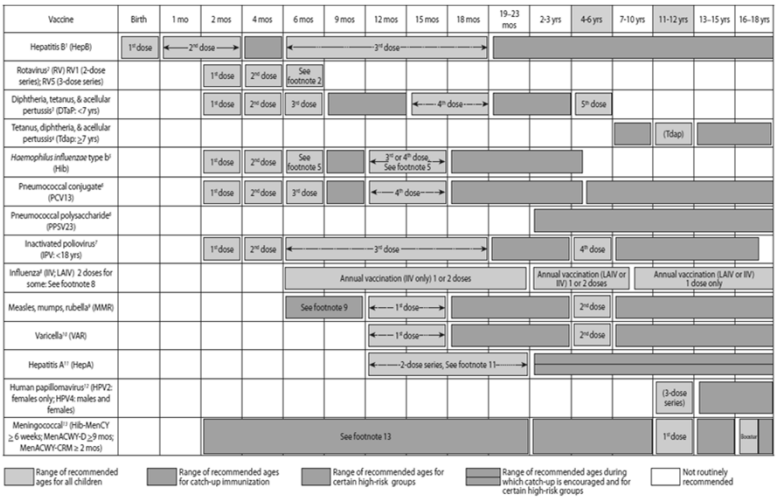
- Vaccinations/immunizations
- Cancer screening
- Smoking cessation
- Osteoporosis
- General health: depression, blood pressure, glucose monitoring, eye exam
- Laboratory examination

# Vaccinations

- **Goal: Infection prevention in an 'at risk' immunosuppressed population**
- **In general, IBD patients should not deviate from general population immunization schedule**
- **Exceptions:**
  - **Early dosing: Prevnar, Pneumovax, Zoster***
  - **Live virus vaccinations: contraindicated with immunosuppression**

**Sands BE et al. Inflamm Bowel Dis 2004**

# CDC Immunization Schedule, 2015 Aged 0 – 18 years




**http://www.cdc.gov/vaccines/schedules/downloads/child/0-18yrs-schedule.pdf**

## Immunization Schedule and IBD

- IBD patients can be vaccinated following the *standard guidelines* applicable to general population
- *Routine vaccinations* recommended to be followed for most IBD patients
- *Lives vaccinations* are contraindicated in the immunocompromised patients

## Expert Consensus: IBD Immunocompromised Patient

- Treatment with glucocorticoids: >prednisone 20mg/d or equivalent for 2 weeks or more
- Ongoing treatment with 6-mercaptopurine, azathioprine, methotrexate and antiTNF therapy
- Within 3 months of stopping immunosuppressive therapies
- Significant protein-calorie malnutrition

Sands BE et al. Inflamm Bowel Dis 2004

# Rotavirus (LIVE virus)

- Rotarix at ages 2 and 4 months or RotaTeq at ages 2, 4, and 6 months
- If levels of biologic drug are detectable, rotavirus is relatively contraindicated in the newborn
  - Mothers on anti-TNF therapy during pregnancy
  - Give vaccine to newborn infant at 6 months (or none)

# Human Papilloma Virus (HPV)

- Most common sexually transmitted infection in the world
- High risk types (e.g. type 16, 18) associated with 70% of all cervical and anogenital cancers
- Higher incidence of abnormal Pap smears in women with IBD
- Immunosuppressive therapy and smoking exhibits association between IBD and cervical dysplasia vs diagnosis of IBD alone

Singh H et al. Gastroenterology 2009

# HPV Vaccination Recommendation

- HPV under vaccination: Misconception that HPV not adult vaccine or assumption patient already vaccinated
- Vaccination can be used for all IBD patients including immunocompromised
- Both males and females should get vaccinated
- Annual pap smears recommended for women on immunosuppressant

Chaudrey K et al. WJG 2015

# Pneumococcal Vaccine

- *Streptococcus pneumoniae* (pneumococcus) is the leading cause of bacteremia, meningitis, and pneumonia in adults in the U.S.
- Major risk factors applicable to IBD: >65 yrs or older, smoking and use of immunosuppressive agents

# Pneumococcal Vaccination Recommendations

- **2 types: PPSV23 (Pneumovax) and PCV13 (Prevnar)**
  - **PPSV23 commonly used, recommended for all adults**
- **For adults already received 4 doses during childhood, first revaccination to be given 5 yrs after last dose, then *lifetime* revaccination at age 65yrs**
- **If not vaccinated as child, 2 doses given 8 weeks apart, then revaccination at 5 years, then age 65**

# Pneumococcal Vaccination Recommendations in IBD

- **PPSV23 is the commonly used, recommended for all adults**
- **Immunocompromised IBD patients:**
  - **CDC and ACIP recommends PCV13 given in addition to PPSV23**
  - **PCV13 preferred before PPSV23**
    - **If no prior vaccine: PCV13 then 8 weeks later PPSV23; then 5 yrs after last dose PPSV23, then *lifetime* revaccination at age 65yrs**
    - **If prior vaccine: PCV13 dose at least 1 year after PPSV23; then 5yrs; then lifetime at 65yrs**
- **Interval between vaccine and initiation of immunosuppressive at least 2 weeks**

**Chaudrey K et al. WJG 2015**

# Influenza Vaccine in IBD

- Infectious viral illness that can be fatal as primary infection or complicated by superimposed bacterial infection
- Annual vaccination recommended in all patients > 50 years old
- All IBD patients
  - Antigenic drift leads to new annual vaccine
  - Intranasal is LIVE vaccine
- Safe, well tolerated and risk for IBD-flare low
- Combination therapy affects vaccine response and associated with lower titers

Rahier JF et al. Gut 2011
Cullen G et al. Gut 2012

# More Vaccinations in IBD

- <u>Td/Tdap (Tetanus, Diphtheria and acellular Pertussis):</u>
  - Childhood DTaP 5 series injection, Td every 10 years
  - For adults, replace 1 Td booster with Tdap
  - Tetanus: No difference between inactive IBD and healthy controls
- <u>Meningococcal:</u>
  - Included risk factors: household crowding/college, military recruits, chronic underlying illness, travel in epidemic regions
  - MCV4 vaccine, 2 doses at least 2mo apart
  - First year college students up to age 21 years
  - Immunogenic profile in IBD not studied
- <u>Hepatitis A, B virus:</u>
  - high risk, all who wish, all IBD patients

Chaudrey K et al. WJG 2015

# Live Virus Vaccines

- **"Live virus" vaccine – contains 'living' virus that is able to produce immunity, usually without causing illness**
  - **Bacille Calmette-Guerin (BCG)**
  - **Influenza inhaled (LAIV) – parenteral attenuated**
  - **Measles, Mumps, Rubella (MMR)**
  - **Typhoid (oral) – parenteral attenuated**
  - **Vaccinia (smallpox)**
  - **Varicella (chickenpox)**
  - **Yellow Fever**
  - **Zoster (Herpes, Shingles)***

# Live Virus Vaccines and IBD

- **Contraindicated in patients on anti-TNF therapy**
  - **Debate on whether they can be given when patient on azathioprine/6-MP/methotrexate alone**
- **Theoretical concerns:**
  - **Reactivation of underlying disease**
  - **Disseminated disease caused by live virus**

# Vaccinations in IBD Summary

- **Quick Reference Summary**

| Vaccine | How often | Live vaccine | Patients on immunosuppressive therapy |
|---|---|---|---|
| Influenza (Flu Vaccine) | 1 dose every year | Nasal spray | Use flu shot only |
| Varicella (Chicken Pox) | If no documented immunity: 2 doses 4-8 wk apart | Yes | Contraindicated |
| Measles, mumps, rubella | If no documented immunity: 2 doses, 4 wk apart | Yes | Contraindicated |
| Zoster (Shingles) | 1 dose starting at age 60 yr or older | Yes | Contraindicated |
| Tetanus, Diphtheria, Acellular Pertussis (Td/Tdap) | If no prior vaccination: 3 doses (0, 1, 6-12). Then 1 dose of Tdap followed by a booster of Td every 10 yr | No | Follow recommended regimen |
| Human papilloma virus | Female: 3 doses through age 26 (0, 2 and 6 mo) | No | Follow recommended regimen |
| Pneumococcal (pneumonia vaccine) for subset of patients | Male: 3 doses through age 21 (0, 2 and 6 mo)<br>If no prior vaccination: (0, 2 then 5 yr) 1 dose at 65<br>If had prior vaccination: 1 dose 5 yr after the last dose and 1 dose at age 65 | No | Follow recommended regimen |
| Meningococcal (meningitis vaccine) for subset of patients | 2 doses, 2 mo apart | No | Follow recommended regimen |
| Hepatitis A | 2 doses, 6 mo apart | No | Follow recommended regimen |
| Hepatitis B | 3 doses (0, 1 and 6 mo) | No | Follow recommended regimen |

**Taken from Chaudrey K et al. WJG 2015**

# Categories for Preventative Health

- **Vaccinations/immunizations**
- **Cancer screening**
- **Smoking cessation**
- **Osteoporosis**
- **General health: depression, blood pressure, glucose monitoring, eye exam**
- **Laboratory examination**

# Cancer Screening: Colorectal Cancer in IBD

- **Meta-analysis of population-based studies**
- **Pooled SIR of CRC in IBD: 1.7 (95%CI 1.2-2.2)**
- **High Risk Groups:**
  - **Extensive colitis: SIR 6.4 (95%CI 2.4-17.5)**
  - **IBD diagnosis before age 30: SIR 7.2 (95%CI 2.9-17.8)**
  - **PSC: RR 9.13 (95% CI 4.52-18.5)**
- **Recommendations:**
  - **Surveillance colonoscopy every 1-2 years after 8 years diagnosis**
  - **Start surveillance immediately in patients with PSC**

**Lutgens M et al. Inflamm Bowel Dis 2013**

# Cancer Screening: Skin Cancer in IBD

- **Recommendations:**
  - **Screening: Annual skin examination by Dermatology if on immunosuppressives**
  - **Sunscreen in all sun-exposed areas**

| IBD overall | | |
|---|---|---|
| **Medication** | **Melanoma** | **NMSC** |
| Any use | | |
| 5-ASA | 1.06 (0.77-1.45) | 0.99 (0.92-1.08) |
| Biologic | 1.88 (1.08-3.29) | 1.14 (0.95-1.36) |
| Thiopurine | 1.10 (0.72-1.67) | 1.85 (1.66-2.05) |
| | | |

**Long MD et al. Gastroenterology 2012**

## Categories for Preventative Health

- Vaccinations/immunizations
- Cancer screening
- Smoking cessation
- Osteoporosis
- General health: depression, blood pressure, glucose monitoring, eye exam
- Laboratory examination

# Smoking and IBD

- The association of smoking in IBD is complex
  - Effect on Crohn's disease - detrimental
  - Effect on Ulcerative colitis - protective
- Smoking chemicals: nicotine, free radicals and carbon monoxide
  - Targets mucus layer, cytokines, macrophage function and microvasculature

# Smoking and IBD

- Two-fold risk of CD (males, early adult onset)
- Two-fold risk of disease progression
- Increased risk for change in disease location ileal or colonic to ileocolonic
- Higher risk or need for steroids (females)
- Increased risk for extraintestinal manifestations of disease (arthritis, skin)

Lakatos PL et al. Inflamm Bowel Dis 2013

# Smoking and IBD

- How much is too much?
- Light smokers (1-10 cig/d) vs. Heavy (>10 cig/d):
- BOTH associated with active disease, hospitalization rate and intestinal resection
- Passive smokers: increased risk for need of therapy - immunosuppression (p=0.039) and infliximab (p=0.013); risk for pouchitis (p=0.023)

Van der Heide F et al. Inflamm Bowel Dis 2009
Seksik P et al. Inflamm Bowel Dis 2009

# Smoking and IBD

- Negative impact on cancer risk and cardiovascular/pulmonary disease still far outweighs any IBD benefits
- Complete smoking cessation always advised (regardless of CD or UC)
- Smoking cessation discussion only documented ~50% current smokers
- Better efforts needed

Davis J et al. Inflamm Bowel Dis 2013

# Categories for Preventative Health

- Vaccinations/immunizations
- Cancer screening
- Smoking cessation
- Osteoporosis
- General health: depression, blood pressure, glucose monitoring, eye exam
- Laboratory examination

# Bone Health and IBD

- Osteoporosis reported up to 40% in IBD
- ACG/AGA Practice Guidelines for Screening Recommendations in IBD:
  - Steroid use (>3 mo)
  - History of low trauma fracture
  - Hypogonadism
  - Post-menopausal Men/Women >50 yrs
- Recommendations: DEXA, minimize steroid use, adequate calcium/vitamin D

⇨ **DEXA**

Bernstein CN et al. Gastroenterology 2003
Bernstein CN et al. ACG 2003

# Vitamin D and IBD

- ~50% of IBD patients have Vitamin D deficiency
- Lower levels of Vitamin D (<20ng/mL):
  - Higher risk for hospitalization (OR 2.1)
  - Need for surgery (OR 1.8)
- Vitamin D supplementation reduced frequency of disease relapse in CD vs. placebo (p=.06)
- Recommendations: Annual serum 25(OH)-D levels

Mouli VP and Ananthakrishnan AN. Aliment Pharmacol Ther 2014

## Categories for Preventative Health

- Vaccinations/immunizations
- Cancer screening
- Smoking cessation
- Osteoporosis
- General health: depression, blood pressure, glucose monitoring, eye exam
- Laboratory examination

# Depression and IBD

- Prevalence of depression (other anxiety d/o) may influence response to treatment and quality of life, irrespective of disease or symptom severity
- Rates of depression 15 – 35% in IBD
- Two-fold increase risk compared to controls
  - 27.2% vs. 12.3%, OR 2.20 (95% CI 1.64-2.95)
- Recommendations: Clinical assessment/counseling, therapy, medications

Walker JR et al. Am J Gastroenterol 2008

# General Health in IBD

- Blood Pressure Screening
  - Risk for secondary HTN related to medications
- Glucose Monitoring
  - Risk for steroid-induced diabetes
- Ophthalmologic Exam
  - Risk for cataracts/glaucoma with chronic steroid use; optic neuritis, iritis/uveitis, episcleritis EIMs
  - Recommendation: Annual Eye Exam

# Categories for Preventative Health

- Vaccinations/immunizations
- Cancer screening
- Smoking cessation
- Osteoporosis
- General health: depression, blood pressure, glucose monitoring, eye exam
- Laboratory examination

# Tuberculosis and IBD

- Exposure history:
  - PPD or TB Quantiferon, Chest Xray, referral to ID
- Tuberculin skin testing PPD:
  - >5mm POSITIVE; BCG vaccine older than 10 yrs doesn't affect results
- Quantiferon and T-Spot:
  - ? More expensive; Benefit in BCG treated
- False negatives in setting of immunosuppression
- Recommendations: screen for TB prior to initiation of immunosuppressants; then every 1-2 years

# Anemia and IBD

- Prevalence of anemia as high as 74%
- Iron Deficiency and Anemia of Chronic Disease are most common
  - Other - B12 deficiency and drug associated (i.e. azathioprine)
- Recognized as a frequent extraintestinal manifestation
- Common cause of fatigue and hair loss
- Recommendations: At least annual iron panel/ferritin, Folate, Vitamin B12; supplement PO or IV based on severity

Reinisch W et al. Journal of Crohn's & Colitis 2013
Gisbert JP, Gomollon F. Am J Gastroenterol 2008

# Laboratory Exams and IBD

| Drug | Medication-specific Monitoring |
|---|---|
| Mesalamine/5ASA | Serum creatinine annual or biannual |
| Corticosteroids | Annual DEXA<br>Annual Eye exam |
| Thiopurines | TPMT, thiopurine methyltransferase prior to initiation<br>CBC weekly x 1 month, then at least every 3 months<br>LFTs every 3 months<br>Annual skin examination |
| Methotrexate | Periodic CBC, LFTs every 3 months |
| Biologics | TB and Hepatitis serologies prior to initiation<br>1-2yrs TB test<br>Periodic CBC, LFTs every 3-6 months |

**Baseline labs prior to initiation of therapy helpful:**
**CBC, CMP, ESR/CRP**
**Nutrition labs at least annually**

**Adapted from Moscandrew M et al. Inflamm Bowel Dis 2009**

# OSUWMC IBD CENTER: Precision Medicine

- **Multidisciplinary Case Conference: First Tuesday of each month**
- **IBD-Surgery Clinic: Shared visits starting January 2018**
- **IBD-Pharmacy Clinic**
- **Pediatric-to-Adult IBD Transition Clinic with NCH**
- **Telemedicine in IBD**
- **Clinical trials: 10+ studies to come**
- **IBD Fellowship at OSU (4$^{th}$ year)**
- **Largest IBD Symposium in Columbus and Midwest: Save the Date March 24, 2018**
- **And this is just the beginning!**