The Colon –
Common Complaints

1. Diarrhea
   Acute and Chronic
2. *C. difficile*
3. Constipation
4. Colon cancer screening
5. Diverticulitis
Colon – Physiology

1. Salt and $\text{H}_2\text{O}$ Absorption

2. CHO Absorption
   - Fermentation
   - Starch

3. Store Stool until convenient to evacuate
What is the smartest sphincter in the body? (and why?)

1. Ileocecal valve
2. Lower esophageal sphincter
3. Anal sphincter
4. Coronary sphincter
Diarrhea - Definitions

Loose/watery stool
Change in stool
  Frequency
  Urgency
  Incontinence
Associated Sx
  Cramps
  Bloating
>200 gm/stool/24 hrs
< 5 – 7 gm fat/24 hrs
GI Fluid Balance

Normal intake 1 – 2 liter

Gut produces 7 – 8 Liter

To colon 1 – 1 1/2 Liter

90% absorption in colon
Less than 1% change → diarrhea
Definitions

Acute - < 2 weeks

Persistent - 2 – 4 weeks

Chronic - > 4 weeks
Which of these pathogens would not cause bloody diarrhea?

- A. Campylobacter
- B. Shigella
- C. Giardia
- D. Salmonella
Infectious Diarrhea Noninvasive - Small Intestine

**Viruses**
- Rotavirus
- Norovirus
- Adenovirus (enteric)
- Astrovirus

**Parasites**
- Giardia lamblia
- Cryptosporidium
- Cystoisospora belli
- Cyclospora
- Strongyloides

**Bacteria**
- Toxigenic *E. coli* (ETEC)
- EAEC
- Vibrio cholera
- *Salmonella* (colon also)
- Listeria (colon also)
## Infectious Diarrhea

### Invasive – Ileo Colonic

<table>
<thead>
<tr>
<th>Bacteria</th>
<th>Parasites</th>
<th>Viruses</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Campylobacter histolytica</em></td>
<td>Entamoeba</td>
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<tr>
<td><em>Salmonella</em> (SI also)</td>
<td>Trichuris (whipworm)</td>
<td>CMV (rare)</td>
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<tr>
<td><em>Shigella</em></td>
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<tr>
<td><em>E. coli</em> 0157:H7</td>
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<tr>
<td><em>C. difficile</em></td>
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<tr>
<td><em>Yersinia</em></td>
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<td><em>Aeromonas</em></td>
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<tr>
<td><em>Plesiomonas</em></td>
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<tr>
<td>Noncholera Vibrio</td>
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<tr>
<td>Chlamydia LGV</td>
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<td></td>
</tr>
<tr>
<td>Listeria (SI also)</td>
<td></td>
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</tbody>
</table>
## Acute diarrhea – Etiology

<table>
<thead>
<tr>
<th>Cause</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virus</td>
<td>50 – 70 %</td>
</tr>
<tr>
<td>Bacteria</td>
<td>15 – 20 %</td>
</tr>
<tr>
<td>Parasites</td>
<td>10 – 15 %</td>
</tr>
<tr>
<td>Unknown</td>
<td>5 – 10 %</td>
</tr>
</tbody>
</table>

1 episode/person/year
Acute Diarrhea – Etiology

Virus 50 – 70 %

- Norovirus
- Rotavirus
- Adenovirus (enteric)
- Astrovirus

Bacteria – 15 - 20%

- **Campylobacter, Salmonella, Shigella, Shiga toxin E coli (0157:H7 and other strains), C difficile

Parasites 10 - 15%

Unknown 5 - 10%
History – What to Ask Everyone

How long – acute or insidious
Stool characteristics - blood and dysentery symptoms
Sick contacts
Other symptoms - Fever, HA, confusion
Travel to high risk areas
Antibiotics or other new medications
Daycare or food handler
Underlying illness, immunocompromised
Additional History May be Helpful

Unsafe foods: raw milk, eggs, meat, shellfish – *Listeria, Salmonella*, noncholera *Vibrios*

Farm; petting zoo, reptiles – Shiga toxin *E. coli (0157:H7)*, *Salmonella*

Receptive or oral anal sexual contact - *Shigella*
Physical Exam

- Hydration
- Fever
- Toxicity
- Abdominal exam
Strategy for Acute Diarrhea

No w/u or Rx
Mild Sx
Short duration
Likely viral gastroenteritis

Evaluation @ 24 - 48 hours
Moderate illness

Evaluation @ 14 days
Mild diarrhea
Strategy for Severe Acute Diarrhea

W/U indicated

- Severe diarrhea (> 5 stools/day)
- Fever or systemically ill
- Blood in stools (dysentery)
- Severe abdominal pain
- Food handler
- Immunocompromised
- Recent antibiotics or hospitalization
- Travel to endemic areas
- Older age (70?)
Stool Culture for Enteric Pathogens

Positive: 1.5 – 5.6%

Cost for positive: $950 – 1200

High yield:
- Food borne outbreaks
- Severe or bloody diarrhea
- Travel – endemic areas
Staying hydrated: What to tell our patients?

• What works
  – Saltines or pretzels and mineral water
  – Chicken broth
  – Salty yogurt drinks

• What does not work
  – Sports drinks (replace sweat)
  – Soda- osmotic diarrhea
  – Coffee- diuretic
Empiric antiobiotic Therapy
acute gastroenteritis

• Community acquired
  – Fever
  – Bloody darrhea and fever
  – Immune commpromised
  – Sx longer than a week

Zollner-Schwaetz Clin Microbiol Infect 2015
Antibiotics are contra indicated in which of these:

• A. Enterotoxigenic E coli
• B. Shiga toxin E coli
• C. Shigella
• D. severe Salmonellosis
When to Use Empiric Antibiotics

- ETEC (Traveler’s Diarrhea)
- Suspected giardia
  - Travel to endemic area
  - > 10 days diarrhea
- Suspected severe C difficile
Which Bugs to Treat?

- **Always:**
  - *Shigella*
  - Severe *Campylobacter*
  - Severe *Samonella*
  - *C. difficile*

- **Unclear:**
  - *Yersinia*
  - *Aeromonas* and *Plesiomonas*
  - Noncholera *Vibrios*

- **Immune suppressed**
  - Treat any pathogen
Guidelines for acute watery diarrhea

Mild: loperamide 4 mg

Mod to severe

• Travel assoc: empiric ABX
• Not travel assoc:
  – Fever more than 3 days
    » Consider culture
  – No fever or less than 3 days
    » Loperamide and w/u if persists

Riddle et al AJG April 2016
Guidelines for acute bloody diarrhea/ dysentery

• No fever
  – Culture and treat all except STEC

• Fever
  – Travel
    • Treat with azithro 1 gm or 500 mg /d x 3 d
  – No travel
    • Culture and treat except STEC
Diagnostic Approach to Chronic Diarrhea

- Bloody - Lower tract
- Fatty - Upper Tract
- Watery - Either upper or lower tract
Alarm Symptoms

• Weight loss
  “Beware the diet that works”

• Blood in stool

• Nocturnal diarrhea
Diarrhea with Blood - Colitis

- Infection
- IBD
- Ischemia
- Radiation
- Some drugs
  - NSAIDS, Isotretinoin
- Diverticular colitis – Segmental colitis associated with diverticulitis (SCAD)
- Diversion colitis
Chronic Bloody Diarrhea

- History + exam
- Stool cultures, O + P, in some
- Colonoscopy and colorectal biopsy - mainstay of diagnosis
Work – up

Chronic Bloody Diarrhea

Stool culture for enteric pathogens, *Yersinia, Aeromonas, Plesiomonas, C. difficile*

Stool O + P – Ameba, Trichuris

Stool ELISA for ameba if concerned
Inflammatory Bowel Disease

• Ulcerative colitis
  – Mucosal inflammation; colon only

• Crohn’s disease
  – Transmural; patchy
  – Entire GI tract
Ulcerative Colitis

• Proctitis

• Left sided colitis

• Pan colitis

• Hallmark:
  Bloody diarrhea
Therapy

• 5 ASA’s – topical and oral
• Steroids
• Azathioprine
• TNF’s
• Colectomy
Crohn’s Disease

- Ileocolitis most common
- Colitis
- Ileitis
- Entire GI tract
Crohn’s Pathophysiology

- Strictures
- Perforations, fistulas
- Abscesses
- 80% will require surgery at some point
Hallmark Symptoms - Many

- Diarrhea
- Abdominal pain
- Obstruction
- Weight loss
Therapy

- Not 5 ASA’s (usually)
- Otherwise same as ulcerative colitis therapy
- Surgery
IBD Refer to GI

- Extensive or severe disease
- Refractory disease
- Uncertain diagnosis
- Considering immunosuppressant rx
- Colon cancer screening at 7 – 10 years
- Probably best to refer all IBD to GI
Fat malabsorption

- Weight loss good clue
- Diet not helpful
- Stool floats: gas, not fat
- Screen with random stool fat
  - If positive, confirm with 24 hr collection
  - Need to eat 100 gm/day of fat at least
  - Normal 5-7 g/24 hr.
Chronic Diarrhea – Fatty - Malabsorption

- Mucosal
  - Celiac disease
  - Crohn’s disease

- Luminal
  - Pancreatic insufficiency
Steatorrhea – Clinical Clues

Dietary history –
Intake compared to others
  “human garbage disposal”

Weight loss

Stools – Not always diarrhea
  Hard to flush
  Oily droplets floating on toilet water
Steatorrhea – Vitamin Malabsorption

Fat soluble vitamins  D A K E

Osteomalacia  D
Night blindness  A
Easy bruisability  K
Steatorrhea

Luminal
- Pancreatic Insufficiency
- Bile salt deficiency
- Bacterial overgrowth

Mucosal
- Celiac sprue
- Crohn’s dis.
Pancreatic Insufficiency

No good tests
Fecal chymotrypsin and fecal elastase
  Poor sensitivity/specificity
Empiric trial of enzymes – best
  High dose – monitor wt gain or fecal fat
  If respond, evaluate pancreas
May be better to rule out mucosal disease first
Celiac Disease – Not Just Diarrhea

- Weight Loss
- Abdominal distension
- Abnormal LFTs – enzymes
- Iron deficiency
- Infertility
- Recurrent fetal loss
- Microscopic colitis
- Iron deficiency
Celiac Disease

Antibody tests - On gluten
- IgA tTG and Serum IgA (2 - 3 % of sprue patients are deficient)
- tTG preferred over EMA
- Not antigliadin ab

Small bowel biopsy +
Response to therapy
What if they are on a gluten free diet?

Genotype-HLADQ2, DQ8
Rules out if negative
Can use if mild sx, neg serology and borderline biopsy
Watery Diarrhea

If not bloody and

Not steatorrhea,

It’s watery . . .

All the rest
Chronic Diarrhea - Watery

Huge differential

Meds
IBS
IBD
Diabetes
Microscopic colitis
Secretory diarrhea (uncommon)
Watery Diarrhea

1st thing to think about - intake

Diet – fructose (juice, soda)
    sorbitol, mannitol (unabsorbed), “sugar free”
    Coffee > 6 cups/day

Approach – D/C
Watery Diarrhea – History

Medical History

– Other diseases i.e. DM
– Surgery
– Family history
– Sexual history
– Travel History
Diabetic Diarrhea

Neuropathy (Nocturnal)
Bacterial overgrowth
Celiac sprue
Pancreatic insufficiency
Unabsorbed CHO (Sugarless sweets)
Diarrhea – 7% of All Drug Side Effects

Meds, OTCs + supplements – especially “new” ones
- Antimicrobials
- PPIs (lansoprazole)
- Anti-inflammatory (NSAIDS) 5ASA
- SSRIs
- Psycholeptics
- Allopurinol
- ARBs
Post Cholecystectomy Diarrhea

Incidence 20%
Can be delayed
Rarely severe
Low bile acid absorption in TI at night
Rx – bile acid binders
Watery Diarrhea

Work Up – minimum

- H & P
- CBC + chemistries
- Thyroid
- Sprue serology
- Elevated CRP suggests IBD and NOT IBS
- Elevated ESR not as helpful in excluding IBD
Empiric Trials

Loperamide/ lomotil (some need both)
Adsorbents, bulk, Bismuth subsalicylate

Bacterial overgrowth - Metronidazole or Quinolone or Rifaximin

Bile salt malabsorption— many IBS-D have this Cholestyramine
Therapeutic Trials

Unexplained steatorrhea – pancreatic enzymes or conjugated bile acid

Unexplained idiopathic
  Bile acid resins

Opiates helpful in some
  Opium tincture 2 – 20 drops QID

Others
  Octreotide
  Clonidine
  Probiotics
Chronic Diarrhea - Referral Guidelines

Bloody Diarrhea longer than 2 weeks

Immunosuppressed
Malabsorption
  Pancreatic Dz
    CT (-), Consider ERCP
  Mucosal Dz
    (+) endomysial ab
  Fe deficiency
  Low folate
  Ileal resection
Chronic Diarrhea - Referral Guidelines (Cont’d)

Possible IBD

IBS - may need further w/u - Colonoscopy with biopsy

Diarrhea of unknown origin
**C. difficile Infection (CDI)**

- Gram positive anaerobe, spore-forming bacteria

- Toxins A, B cause diarrhea, colitis and pseudomembranous colitis (PMC)

- Marked increase in number and severity of cases since year 2000 – hypervirulent strain Nap 1/BI/027
**Clostridium difficile epidemic**

- Since the year 2000 there has been a dramatic increase in cases - more severe, more deaths
- Nap 1 BI Hypervirulent strain (produces more toxin in vitro, quinolone resistant)
- Half a million cases / year in US
- 29,000 deaths / year in US
CDI Mortality and age

CDC data 2007

- under 54: 3
- 55-64: 6
- 65-74: 16
- 75-84: 38
- over 85: 37
New Risk Factors

- Quinolones
- More community acquired cases
- Inflammatory bowel disease
  - Pts with IBD and CDI have higher morbidity, mortality, more likely to require emergency surgery

Janarthanan AJG 2012; Kwok AJG 2012
In a patient with suspected *C. difficile*, what is the best stool test?

- A. Stool culture for *C. difficile*
- B. EIA test for toxin A
- C. EIA test for toxins A and B
- D. PCR for gene for toxin B
Diagnostic Testing

- GDH (glutamate dehydrogenase antigen)
  - Very sensitive but not specific
  - If positive, needs confirmatory test
- Enzyme Immune Assays (EIA)
  - Not good stand alone tests
- Polymerase Chain Reaction (PCR) - gene for toxin B
  - New gold standard
Is PCR too sensitive?—overdiagnosis?

Carriers: 3-7%; hosp or LTCF pts up to 50%

- Prospective study toxin and PCR but withheld PCR data
- Half of PCR positive were Toxin negative
- Outcomes similar to C diff neg pts
- Of 19 deaths, only 1 was toxin neg.

- OUR CLINICAL JUDGEMENT IS STILL NEEDED

Polage et al, JAMA Int Med 2015; Sept 2015
HOW TO INTERPRET?

• CARRIERS
  – HEALTH ADULTS  3-7%
  – HOSPITAL EXPOSED  4-15%

  – RULE OUT OTHER CAUSES OF DIARRHEA
  – 20-40 % IN ONE STUDY WERE ON LAXATIVES

  – BOTTOM LINE:  CLINICAL INPUT NECESSARY!
PCR cost effective

- Stand alone test
- More expensive up front
- Saves money long term
  - Earlier diagnosis with treatment and isolation
  - Shorter hospital stays

Schroeder et al, J Clin Microbiol 2014; 52:489
Cliff and C. difficile- smelling the diagnosis

You tube video is great
Cliff

- Trained at Vrije U. in Amsterdam
- Hospital- he sits next to bed when positive
- Detected 25 of 30 cases
  265 of 270 negatives
- Almost as good as PCR!
  You tube video interesting
  Same team now has a spectrometer for point of care analysis

Bomers et al BMJ 2012; Bomers et al AJG 2015
**C. difficile Tests**

- Test only patients with diarrhea since 80% of infants and 5-15% of adults are carriers.
- Do not routinely test 3 stools--Low yield.
- Don’t test for cure (usually)
  - Culture and toxin can stay positive for a month.

Take Home Points

• Diagnostic tests are imperfect
• Even PCR can be negative with pseudomembranous colitis
• If you think your patient has *C. difficile* and is sick, start empiric therapy with vancomycin
• I use vanco trial to determine if diarrhea; some are carriers after all
Treat Based on Disease Severity

• Guidelines for Diagnosis, Treatment, and Prevention of Clostridium difficile Infections  Christina M. Surawicz , MD 1 , Lawrence J. Brandt , MD 2 , David G. Binion et al  American Journal Gastroenterology 2013; 108:478-98

Guidelines do help! Fewer deaths and infection recurrences when providers followed IDSA guidelines (though only 52% did so)

3 Effective Oral Antibiotics for CDI

- Metronidazole
  500 mg tid x 10 days
- Vancomycin – (FDA approved)
  125 mg qid x 10 days
- Fidaxomicin – (FDA approved)
  200 mg bid x 10 days
CDI Treatment Depends on Severity

- Mild to Moderate
- Severe
- Severe and Complicated
Mild to Moderate CDI

• Diarrhea with no criteria for severe CDI

• Diarrhea $\geq 3$ loose-stools/24-hours
Treatment: mild to moderate

- Stop intercurrent antibiotics if possible
- No antiperistaltics
  - Data poor but medicolegally risky
  - Lose parameter to follow
- Metronidazole 500 mg po tid
  - Unless contraindicated
  - Or unable to tolerate
  - Or IBD patients: start with vanco (expert opinion)
CDI Treatment Depends on Severity

- Mild to Moderate
- Severe
- Severe and Complicated
Simple Clinical Diagnosis for Severe CDI

• Hypoalbuminemia (< 3) AND

• Abdominal distension/tenderness
  – and/or

• Elevated WBC (> 15,000)
Treatment of Severe CDI

- Vancomycin 125 mg qid x 10 days

- If not better, can increase Vancomycin to 1-2 gm/day
  (empiric but may work)
CDI Treatment Depends on Severity

• Mild to Moderate

• Severe

• Severe and Complicated
  – Also called fulminant, refractory
Severe and Complicated CDI

- Admission to ICU
- Hypotension
- Fever > 38.5 °C
- Ileus
- WBC > 35,000 or <2000
- Serum lactate > 2.2 mmol/L
- Evidence of end organ failure (renal or pulmonary)
Treatment of Severe and Complicated CDI

Vancomycin 500 mg qid p.o.
and
Metronidazole 500 mg tid IV
Treatment of Severe and Complicated CDI

• Continue enteral feeding if possible
  – Nutrition for microbiome

• Consider vancomycin enemas if ileus
  – 500 mg IV vancomycin in 100 ml NS via rectal tube, clamp 60 min. Repeat qid
When to get a Surgery Consult

• No response to maximal medical therapy in 3-5 days in severe/complicated
• Hypotension/shock/sepsis
• Renal or pulmonary decline
• Rising WBC and creatinine/dropping albumin
• Progressive abdominal distension
Recurrent *C. difficile* infection

- Most CDI responds to standard therapy
- 10-20% will have a recurrence
- Second recurrence: 20-40%
- Third recurrence: 40-60%

Why does this happen?

- **Immune factors**
  - In one study, recurrence occurred in patients with lower antibody to Toxin A levels

- **Gut microbiome factors**

Kyne et al Lancet 2001; Leav et al Vaccine 2010
Recommendation: Treatment of CDI Recurrences

- The first recurrence of CDI can be treated with the same regimen that was used for the initial episode (but pts usually want a different one).
- If severe, however, vancomycin should be used.
- The second recurrence should be treated with a pulsed vancomycin regimen.
RCDI – Pulsed Vancomycin Regimen

- Vancomycin 125 mg qid x 10 days, then Vancomycin 125 mg a day every 3 days x 10 more doses

- Simple and not too expensive

Courtesy of Dr. Scott Curry, U. of South Carolina
If this doesn’t work?

• Fecal Microbiota Transplant, aka “Stool Transplant”
Fecal Microbiota Transplant

• Putting stool from a healthy person into the colon of someone with a disease (to restore normal microbiome presumably)

• Methods:
  – Enema or colonoscopy
  – Upper endoscopy, NG or nasoduodenal tube
  – Oral capsules
Sources of stool

- Patient identified donors
  - Rigorous screening like organ donor
- Stool banks
  - Prescreened donors (like Open Biome, 3% accepted)
  - Stool is frozen and shipped
  - Oral capsules now available
When was Stool Transplant First Documented?

A. 1700 years ago in China?

B. 1958 in post op patients in Denver?

C. On Grey’s Anatomy in 2008?
Where did this idea come from?

- In 1958, a surgeon in Denver treated patients who got a severe pseudomembranous colitis after surgery with enemas of stool.
- They got better!
- We forgot about this strategy until decades later when we started to see more severe C diff infection and nothing else was working.
- We found out about the Chinese practice a few years ago.
Grey’s anatomy: 2008, “in the midnight hour”—in the ER!
FMT – Methods

• Colonoscopic route – healthy spouse donor stool to right colon via colonoscopy

• Stool Per NG tube – two series

• Per enema, done at home

Persky and Brandt, Am J Gastroenterol 2000; 95:3283
Aas et al, Clin Inf Dis 2003; 36:580
Silverman et al, Clin Gastro Hep 2010; 8:471
Efficacy of FMT

• Multiple case reports and small series
• Meta-analyses
• Now 5 Randomized Controlled Trials with positive results
• Overall efficacy around 90%
RCDI Treatment

- **1st recurrence**
  - Repeat initial regimen

- **2nd recurrence**
  - Vancomycin pulse regimen

- **3rd recurrence**
  - Consider FMT
C. difficile

- Treatment depends on disease severity
- Severe disease needs aggressive therapy
- Fecal microbiota transplant may be best option for multiple recurrences of C. difficile infection
Case

• 25 y.o. woman complains of constipation
  – 1-2 stools per week
  – Hard stools with straining
  – Urge but difficulty passing BM
  – No abdominal pain or bloating
  – No new medications
Constipation

Define: 3 BM/day – 1 BM q 3 days = normal

Initial approach

Treat empirically

Work up if no response to medical therapy or if alarm symptoms
Constipation

• Rule out secondary constipation
  – Opioid-induced, other medications, obstruction, metabolic/endocrine, etc.

• Primary constipation
  – Slow transit constipation
  – Dyssynergia
  – Constipation-predominant IBS
Alarm Symptoms Merit Evaluation

Anemia
Weight loss
Blood in stool
Abdominal mass
Clinical judgment

Nausea
Vomiting
Anorexia
Acute change in BM
Most Common Etiologies

• Slow colon transit
  - inertia = severe

• Pelvic floor dysfunction

• Other
  - Weak abdominal muscles
  - Drugs
  - Depression
  - Diet
### Laxatives

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<th>Class</th>
<th>Medications</th>
<th>Mechanism</th>
<th>Side effects</th>
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</thead>
<tbody>
<tr>
<td>Bulk (fiber) agents</td>
<td>Psyllium Methylcellulose</td>
<td>Retain water, Increase bulk</td>
<td>Flatulence, Bloating</td>
</tr>
<tr>
<td>Stool softeners</td>
<td>Docusate</td>
<td>Detergent-like action</td>
<td>Cramping</td>
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<tr>
<td>Stimulant laxatives</td>
<td>Senna Bisacodyl</td>
<td>Increase peristalsis</td>
<td>Abd discomfort, Melanosis coli, Tolerance</td>
</tr>
<tr>
<td>Osmotic laxatives</td>
<td>Lactulose Sorbitol Magnesium PEG</td>
<td>Osmotic water binding</td>
<td>Bloating, Flatulence</td>
</tr>
</tbody>
</table>

About half of patients with chronic constipation do not have adequate relief with these conventional therapies.
Constipation – Workup

History, Physical exam
CBC
TSH
ESR
Ca
LFT
Colonoscopy – role unclear < 50 y o
Constipation – Initial Management

- Moderate exercise
- Bulk laxatives
  Psyllium or Methylcellulose
- Stool softeners – marginal benefit
- Increase fiber to 20 – 30 g/d over 2 wks
  - Not if colon inertia – will worsen bloating
  - Prunes and Yogurt do work
Next – Saline Laxatives or Hyperosmolar Compounds

- Milk of magnesia
- Magnesium citrate
- Lactulose
- PEG (Miralax)
Constipation – 3rd Line

Stimulant laxatives

- Senna
- Bisacodyl
Lubiprostone (Amitiza)
Activates chloride channel
Linaclotide (Linzness)
Bind guanylate cyclase C → secretion
Both cause secretion of fluid
Misoprostil (abortofacient)
Back to our case

• Review any meds
• Fiber supplementation good first step
  – Hard with diet alone
• Exercise
• Counsel: hot caffeinated drink in am is good
• Take the call when get the urge to go
Constipation

When to Refer:
- Chronic severe symptoms
- Megacolon
- Bleeding
- No response to initial approach
- Warning signs
Case

• 55 yo man who asks if he should be screened for colorectal cancer, and if so, how?

• What do you tell him?
Incidence of Colon Cancer Worldwide
GLOBOCAN 2002 Database

- Colon: 1,023,152
- Breast: 1,151,298
- Prostate: 679,023
- Lung: 1,352,132
GETTING SCREENED CAN MAKE ALL THE DIFFERENCE

If found early, colon cancer is highly treatable:\(^1\):
Stage I = 94\%* survival rate
Stage II = 82\%* survival rate
Stage III = 67\%* survival rate
Stage IV = 11\%* survival rate

*Based on 5-year survival rate.


BeSeenGetScreened.com
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Colon Cancer

- Marked increase in incidence after age 50
- Distal more common (below splenic flexure) until age 70, when prox > distal
- Family history a major risk factor in 1/3
- Polyp → cancer
  5 – 10 years to develop
80 % by 2018

• NATIONAL COLORECTAL CANCER ROUND TABLE/CDC GOAL
• SCREEN 80% OF ELIGIBLE POPULATION IN US BY 2018
HOW ARE WE DOING?

• A. 50%
• B. 60%
• C. 70%
• D. 80%
COLORECTAL CANCER SCREENING

AVERAGE RISK: AGE 50

HIGH RISK:

FAMILY HISTORY OF COLON CANCER OR NEOPLASTIC POLYP DX (ADENOMA) BEFORE AGE 60.

AGE 40 OR 10 YRS BEFORE YOUNGEST PERSON DX WITH CANCER OR POLYP
For African Americans, start earlier

- Age 45: 2 GI societies (ACG and ASGE)
- Age 40: ACP
Dramatic rise in CRC in young adults

• Born in 1990: double risk of CRC and 4 x risk of rectal cancer c/w born in 1950
• 1 in 7 new CRC cases now in younger than 50

• J Natl Cancer Institute Feb 2017
WHY?

- EPIDEMIOLOGY SUGGESTS POSSIBILITIES
- SMOKING
- DIET
- OBESITY **
WHAT DO DO ABOUT IT?

• GUIDELINES FOR SCREENING STAY THE SAME
• EDUCATE ABOUT SX OF CRC
• DON’T IGNORE SYMPTOMS IN YOUNGER ADULTS
  – EVALUATE EARLY
  – ACCESS TO INSURANCE WILL BE IMPORTANT
TESTS FOR SCREENING

• STOOL TESTS
• RADIOLOGY
• SIGMOIDOSCOPY/ COLONOSCOPY
Stool tests

• Traditional guaiac-based FOBT
  – Heme present in blood, lots of false positives

• Fecal Immunochemical Test - FIT
  – Labeled antibodies attach specifically to human hemoglobin, more specific
  – Fewer false positives
Advantages of FIT over gFOBT

Improved compliance
– No diet restriction needed
– Single sample

Increased sensitivity for cancer
– 82% vs. 64% for SENSA

• Specific for lower GI bleeding
– 97% vs. 91% for SENSA
FIT

- SHOULD REPLACE HEMOCCULTS
- DO YEARLY
- WORK UP POSITIVES
FECAL DNA TESTS

• HUMAN DNA SHED BY CANCERS AND POLYPS
• DIFFERENT FROM BACTERIAL DNA
• COST EFFECTIVE IF LESS THAN $350
• CURRENTLY $500
Screening – Endoscopy

Flexible Sigmoidoscopy Q 5 yrs
• Detects 70 – 85% of distal lesions
• If positive → colonoscopy
• Misses right colon lesions
• Perforation

Colonoscopy Q 10 yrs
• Detects 85 – 97%
• Risks:
  - Sedation
  - Perforation
Screening Colonoscopy

Advantages

- Direct visualization
- More sensitive for detection of polyps and cancer (than FOBT) with one time application
- Opportunity to detect and remove polyps throughout the colon
Screening Colonoscopy

• Disadvantages
  – Risks
    • Prep, Sedation, Perforation, Bleeding
  – Costs
    • Polyps & polyp follow-up
  – Only indirect evidence supporting its use (i.e. no clinical trials)
What are Limitations of Colonoscopy?

- Operator experience
  Gastroenterologists better

- Withdrawal time – 6 minutes

- Quality of prep

- In hospital better than office
Colon Cancer Miss Rates Higher

Older age

Female

Diverticulosis

Increasing comorbidity
Other Limitations of Colonoscopy

- Inadequate polyp removal
- Missed lesions
- Rapid cancer growth
Screening - Radiology Tests

DC Barium enema Q 5 yrs
  • Detects 40 - 73%
  • If positive → colonoscopy

CT colography Q 5 yrs
  • Detects 85 – 97%
    • Ignores small polyps (<6mm)
    • Radiation risk
  • If positive → colonoscopy
Screening tests- options

- Flex sigmoidoscopy every 5 yrs
- FIT-DNA every 1-3 yrs
- Heme FOBT yearly
- CT Colography every 5 yrs
- Flex sig every 10yr with FIT yearly
- FIT with DNA yearly
- Colonoscopy every 10 yrs

- USPSTF REPORT JUNE 2016
What is the best screening test for colorectal cancer?
What Screening Test is Best?

- “The best test is the one that gets done"
When Should Screening Stop?

Inadomi JM and Sonnenberg A. Gastrointest Endosc 2000;1:517-23
When Should Screening Stop?

- **average risk**

  - When it is no longer of likely benefit
  - **General rule:**
    - Colonsocopy  Age 77
    - FIT  Age 80
  - **Rule of thumb**
    - If the individual is not expected to live at least 5 more years
Failure of PCP’s To Properly Screen

• 33% of PCP’s use only in-office DRE FOBT

• 30% recommend a repeat FOBT to follow-up a positive FOBT

• 32% recommend sigmoidoscopy for a positive FOBT

Diverticulosis: An Endoscopic View
Diverticulosis
30-50% of Americans > 60 yrs

Uncomplicated
85-95%

Asymptomatic
Symptomatic

Complicated
<5%

Diverticulitis
<5%

Bleeding
<1%

Chronic, nonspecific, gastrointestinal symptoms

Diverticular Colitis

Courtesy of Dr. Lisa Strate
<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Adjusted HR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber</td>
<td>0.53 (0.38-0.75)</td>
</tr>
<tr>
<td>Physical activity</td>
<td>0.75 (0.58-0.95)</td>
</tr>
<tr>
<td>Nuts</td>
<td>0.80 (0.63-1.01)</td>
</tr>
<tr>
<td>NSAIDs</td>
<td>1.72 (1.40-2.11)</td>
</tr>
<tr>
<td>Aspirin</td>
<td>1.25 (1.05-1.45)</td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>1.78 (1.08-2.94)</td>
</tr>
</tbody>
</table>

Strate et al. Gastro 2009; Strate et al. AJG 2009
Strate et al. Gastro 2011
62 F presents with left lower quadrant pain and constipation over 3 days

PMH: hyperlipidemia, osteoarthritis, obesity

MEDS: simvastatin, ibuprofen

PE: T 100.8  HR 98  BP 130/85
mild distress
focal tenderness and guarding in LLQ

LABS: WBC 14  otherwise normal
What is the best diagnostic test

- A. Colonoscopy
- B. Small bowel enterography
- C. Abdominal CT scan
- D. CT colography
Signs and Symptoms of Diverticulitis

- Abdominal pain: 97%
- Elevated CRP: >90%
- Fever: 90%
- Elevated WBC: 40%
- Change in bowel habits: 40%
- Urinary symptoms: 7%

Chabok BJS 2012
Diagnosis of Diverticulitis

- Classic presentation in patient **with known diverticulosis**

- CT scan evidence
  - Diverticulosis
  - Localized bowel wall thickening
  - ↑ soft tissue density in pericolic fat
  - Soft tissue mass/ abscess
  - Fistula
  - Perforation

- Colonoscopy 6-8 wks. after resolution to rule out carcinoma
Management should include all EXCEPT ONE

• A. Broad spectrum antibiotics
• B. Percutaneous draining of large abscesses
• C. Bowel rest and low residue diet
• D. Segmental colectomy after recovery
Diverticulitis

Surgical Treatment

Medical Management
> 70% of patients

- Broad spectrum antibiotics (PO / IV)
- Bowel rest / low residue diet
- Percutaneous drainage if abscess > 4cm

Inpatient management
- Older age
- Comorbid disease
- Severe/complicated disease
- Inability to tolerate oral intake
- Incomplete response to oral antibiotics

Jacobs NEJM 2007
Diverticulitis

Surgical Treatment

- Emergency colectomy
  - Peritonitis
  - Free perforation
  - Sepsis/failed medical therapy
  - Large, undrainable abscess
  - Obstruction

- Elective surgery
  - Following percutaneous drainage (?)
  - Fistula, chronic stricture
  - Recurrent disease (?)

Medical Management

> 70% of patients

Jacobs NEJM 2007
Are Antibiotics Necessary for Acute Uncomplicated Diverticulitis?

<table>
<thead>
<tr>
<th>Complication</th>
<th>Antibiotics N=314</th>
<th>No Antibiotics n=309</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(abscess, perforation)</td>
<td>1.0%</td>
<td>1.9%</td>
<td>0.30</td>
</tr>
<tr>
<td>Length of stay</td>
<td>3 days</td>
<td>3 days</td>
<td>0.72</td>
</tr>
<tr>
<td>Recurrence in 1 year</td>
<td>16%</td>
<td>16%</td>
<td>0.88</td>
</tr>
</tbody>
</table>

Chabok BJS 2012
What measures would you take if the patient had a second attack of uncomplicated diverticulitis?

- A. Sigmoid colectomy
- B. Repeat colonoscopy
- C. Avoidance of NSAIDs
- D. Mesalamine
# Risk Factors for Recurrent Diverticulitis

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Adjusted HR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &lt; 40 yrs</td>
<td>1.46 (1.35-1.58)</td>
</tr>
<tr>
<td>Complication at Index Event</td>
<td>3.24 (2.56-4.20)</td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>1.01 (1.00-1.02)</td>
</tr>
<tr>
<td>Length of involved colon &gt;5cm</td>
<td>1.7 (1.3-2.3)</td>
</tr>
<tr>
<td>Family history of DD</td>
<td>2.2 (1.4-3.2)</td>
</tr>
<tr>
<td>Prior diverticulits</td>
<td>2.2 (2.1-2.2)</td>
</tr>
</tbody>
</table>

*Hall dis Colon Rectum 2011; Kawatkar DDW 2012; Anaya Arch Surg 2005*
Recurrent Diverticulitis

• **Traditional dogma**
  – Recurrent “attacks” very common
  – Recurrent attacks more serious
  – Operate early especially in young patients

• **Recent population-based data**
  – Recurrent attacks <20%
  – Higher recurrence in young patients (< 40 yrs.)
  – Recurrent events not more serious

Parks BMJ 1969;
Anaya, Flum Arch Surg 2005
Kawatkar DDW 2012 abstract
The Colon – Common Complaints

1. Diarrhea
   Acute and Chronic
2. *C. difficile*
3. Constipation
4. Colon cancer screening
5. Diverticulitis
Thank you for your attention