Andrew Gentry
Gastroenterology
Disclosures

- Andrew Gentry MD, Pfizer, research on C Diff vaccination and oral stool transplant delivery system
- Hoffman Reactor
Clostridium Difficile History

- In early 2000’s increased incidence of severe C difficile
- Common strain in all cases
  - Toxinotype III, restriction endonuclease analysis group BI
  - Pulsed field gel electrophoresis as North American pulsed field type NAP1
  - Polymerase chain reaction as type 027
  - OR - BI/NAP1/027
- Single hospital outbreak 2003-2005 in United Kingdom
  - 334 infections
  - 38 deaths
- Biggest difference between these isolates and old strains
  - Fluoroquinolone resistance
IDSA Guidelines March 2017

- Metronidazole taken off as primary treatment
- Cascade testing
Review of Clostridium difficile

● What is C. difficile?
  ○ *C. difficile* is a spore-forming, gram-positive anaerobic bacillus that produces two exotoxins: toxin A and toxin B.
  ○ It accounts for 15-25 percent of all episodes of antibiotic-associated diarrhea.
THE IMPACT OF C. difficile Infection (CDI)

CDI IS SERIOUS, DEADLY, AND EXPENSIVE

- 29,000 US deaths/year within 30 days of diagnosis
- 1 in 5 (83,000) recurrences within 2 months

CDI adds up to:
- 12 days in the hospital
- $27,160 per case in direct costs

MORE THAN 1/3 OF CDI CASES ARE NOT ASSOCIATED WITH INPATIENT STAY

- 29% outpatient healthcare exposures including doctor and dentist offices
- 6% not healthcare-associated
- 65% at least one overnight, inpatient hospital stay

EVERYONE CAN HELP REDUCE THE RISK OF CDI

For more information, visit http://bit.ly/reduce-cdi

PATIENTS
- Use antibiotics only when necessary
- Don't demand antibiotics for viral infections like colds or flu
- Antibiotics are the single most important risk factor for CDI and should be used only when necessary
- Wash your hands thoroughly after using the bathroom

HEALTHCARE PROFESSIONALS
-Prescribe antibiotics carefully — change the prescription if needed once you get culture results
-Order a C. difficile test when appropriate
-Promptly identify and isolate infected patients
-Use gloves, wash your hands frequently, and practice good patient contact precautions

HEALTHCARE ENVIRONMENTS
-Thoroughly clean using an EPA-approved, spore-killing disinfectant
-Notify other facilities when transferring patients with CDI

National Foundation for Infectious Diseases
nfid.org/cdifficile
Use of probiotics

- Theoretical benefit of preventing CDI, limited clinical data
- No recommendation for or against use in 2017 CDI Guidelines
- Recently a meta-analysis including >6000 hospitalized patients concluded that administration of probiotics closer to the first dose of antibiotic reduces the risk of CDI by >50% in hospitalized adults
  - Multiple probiotic products used, no correlation with particular probiotic species/strength/formulation
- More studies warranted
- Adverse effects of probiotics: minimal
Side Track - Risk of Probiotics: D-Lactic Acidosis

- D-Lactate Acidosis
  - Evaluation of bloating patient with and without brain fogginess

3 months of >=2: mental confusion, cloudiness, impaired judgment, poor short term memory and difficulty with concentration
Based on Sensitivity of Testing

- Step one - dose the patient have diarrhea
  - 3 unformed stools in one day
  - Without use of laxatives
  - Without use of contrast for imaging studies

- I would say 50% of our studies get rejected for being solid

- Diarrhea is definitely in eye of the beholder
Continued

<table>
<thead>
<tr>
<th>Test</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Substance Detected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxigenic culture</td>
<td>High</td>
<td>Low&lt;sup&gt;a&lt;/sup&gt;</td>
<td><em>Clostridium difficile</em> vegetative cells or spores</td>
</tr>
<tr>
<td>Nucleic acid amplification tests</td>
<td>High</td>
<td>Low/moderate</td>
<td><em>C. difficile</em> nucleic acid (toxin genes)</td>
</tr>
<tr>
<td>Glutamate dehydrogenase</td>
<td>High</td>
<td>Low&lt;sup&gt;a&lt;/sup&gt;</td>
<td><em>C. difficile</em> common antigen</td>
</tr>
<tr>
<td>Cell culture cytotoxicity neutralization assay</td>
<td>High</td>
<td>High</td>
<td>Free toxins</td>
</tr>
<tr>
<td>Toxin A and B enzyme immunoassays</td>
<td>Low</td>
<td>Moderate</td>
<td>Free toxins</td>
</tr>
</tbody>
</table>

<sup>a</sup>Must be combined with a toxin test.

- Test for the organism or its major toxin A and B
  - Toxigenic culture - culture for organism ---- takes several days
  - Cell Cytotoxicity neutralization assay - detects toxin directly
  - Glutamate dehydrogenase immunoassays -
    - Detects metabolic enzyme for both toxic and non toxic forms
  - Nucleic acid amplification test (NAAT) - FDA approval in 2009 -
Cascade Testing
### Comprehensive Enteric Pathogen Panel, NAD

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Ref Range &amp; Units</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campylobacter</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Clostridium difficile Toxin A/B Gene</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Plesiomonas shigelloides</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Salmonella</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Vibrio</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Vibrio cholerae</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Yersinia enterocolitica</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Enterococcal E. Coli (EAEC)</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Enteropathogenic E. Coli (EPEC)</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Enterotoxigenic E. Coli (ETEC) LT/ST</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Shiga-like Toxin-Producing E. Coli (STEC) STX1/STX2</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Shigella/Enteroinvasive E. Coli (EIEC)</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Cryptosporidium</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Cyclospora caytanensis</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Entamoeba Histolytica</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Giardia lamblia</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Adenovirus F 40/41</td>
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<td>Not Detected</td>
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<tr>
<td>Astrovirus</td>
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<td>Not Detected</td>
</tr>
<tr>
<td>Norovirus GI/GII</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Rotavirus A</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
<tr>
<td>Sapovirus (I, II, IV and V)</td>
<td>Not Detected</td>
<td>Not Detected</td>
</tr>
</tbody>
</table>

**Resulting Agency:** BZN

**Narrative:**

This test was performed by multiplexed nested PCR and melting curve analysis on the FilmArray instrument by the US Food and Drug Administration (FDA).
# Testing Result

**CLOSTRIDIUM DIFFICILE INFECTION TESTING CASCADE**

<table>
<thead>
<tr>
<th>CDI Interpretation</th>
<th>Ref Range &amp; Units</th>
<th>11mo ago</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fecal Lactoferrin</td>
<td>Negative</td>
<td>Positive</td>
</tr>
<tr>
<td>Clostridium difficile Antigen</td>
<td>Not Detected</td>
<td>Detected</td>
</tr>
<tr>
<td>Clostridium difficile A/B Toxin</td>
<td>Not Detected</td>
<td>Detected</td>
</tr>
</tbody>
</table>

**Resulting Agency**

BZN

**Narrative**

Clostridium difficile infections are a clinical diagnosis and no laboratory test can definitively diagnose CDI. Medication history must be evaluated, when deciding on diagnosis and treatment of CDIs. Consultation with an infectious disease specialist is advised prior to beginning treatment for CDI.

**Specimen Collected:** 04/17/18 00:35

**Last Resulted:** 04/17/18 02:37
<table>
<thead>
<tr>
<th>Type</th>
<th>Clinical Data</th>
<th>Recommended Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild to Moderate CDI</td>
<td>WBC ≤ 15,000 cells/mL Serum creatinine &lt; 1.5 mg/dl</td>
<td>Vancomycin 125mg 4x per day by mouth for 10 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fidaxomicin 200mg BID by mouth for 10 days</td>
</tr>
<tr>
<td></td>
<td>If the above are unavailable: Metronidazole 500mg 3x per day by mouth for 10 days</td>
<td></td>
</tr>
<tr>
<td>Severe CDI</td>
<td>WBC ≥ 15,000 cells/mL Serum creatinine &gt; 1.5 mg/dl</td>
<td>Vancomycin 125mg 4x per day by mouth for 10 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fidaxomicin 200mg BID by mouth for 10 days</td>
</tr>
<tr>
<td>Fulminant CDI</td>
<td>Hypotension or shock Ileus Megacolon</td>
<td>Vancomycin 500 mg 4x per day by mouth or NG tube. If ileus, consider rectal instillation of Vancomycin. Plus metronidazole 500 mg IV every 8 hours</td>
</tr>
<tr>
<td>First Recurrence</td>
<td></td>
<td>If metronidazole was used for initial episode - vancomycin 125mg 4x per day by mouth for 10 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If a standard regimen of vancomycin was used for initial episode:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o Prolonged taper and pulsed vancomycin regimen (e.g. 125mg 4x a day for 10-14 days, BID x 1 week, daily x 1 week, every 2 to 3 days for 2-8 weeks), OR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o Fidaxomicin 200mg BID by mouth for 10 days</td>
</tr>
<tr>
<td>Second Recurrence</td>
<td>Consult gastroenterology or infectious disease for treatment recommendations.</td>
<td></td>
</tr>
</tbody>
</table>
Bezlotuximab (Zinplava®)

- Indication: *C. difficile* infection, adjunctive therapy
  - To reduce recurrence of *Clostridium difficile* infection (CDI) in patients ≥18 years of age who ARE receiving antibacterial drug treatment AND are at a high risk for CDI recurrence
- Human IgG1 monoclonal antibody which binds to *C. difficile* toxin B and neutralizes it to prevent its toxic effects; it does not bind to toxin A
- Dosing: 10 mg/kg IV as a single dose anytime during antibacterial treatment for *C. difficile*
  - Heart failure exacerbation (13%), infusion related reactions (10%), nausea (7%)
- Toxin B is more virulent than toxin A
Patient Case

- 56 yo female no significant past medical history
- Surgical history Lap Chole uncomplicated in 2016
- Non specific abdominal pain early 2017 treated with prednisone and PPI
- Diverticulitis treated as outpatient end of Oct 2017
Continued

- C diff – 1 Nov by PCR
- Treated with Cipro Flagyl over concerns of continued diverticulitis
- Continued diarrhea
- C diff – 29 Dec by PCR with elevated Calprotectin
- Treated with vancomycin QID and told she had Ulcerative Colitis
- Continued diarrhea
Stool transplant

- Seen in GI clinic
- C diff by PCR again positive (prior to new guidelines)
- Treated with fidaxomicin (Dificid®) with some improvement but continued diarrhea
- Stool transplant March 2018
- Normal colon but continued diarrhea life limiting

- 8 week follow up – “Doing Great”
Stool transplant

Essentially cured of diarrhea
Pictures of our stool transplant patients
Sedation

“Optimal sedation allows the patient the greatest degree of comfort while preserving the greatest degree of safety.”

This has included patient satisfaction.
# Sedation Types

<table>
<thead>
<tr>
<th></th>
<th>Minimal Sedation Anxiolysis</th>
<th>Moderate Sedation/Analgesia (&quot;Conscious Sedation&quot;)</th>
<th>Deep Sedation/Analgesia</th>
<th>General Anesthesia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Responsiveness</strong></td>
<td>Normal response to verbal stimulation</td>
<td>Purposeful** response to verbal or tactile stimulation</td>
<td>Purposeful** response following repeated or painful stimulation</td>
<td>Unarousable even with painful stimulus</td>
</tr>
<tr>
<td><strong>Airway</strong></td>
<td>Unaffected</td>
<td>No intervention required</td>
<td>Intervention may be required</td>
<td>Intervention often required</td>
</tr>
<tr>
<td><strong>Spontaneous Ventilation</strong></td>
<td>Unaffected</td>
<td>Adequate</td>
<td>May be inadequate</td>
<td>Frequently inadequate</td>
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<tr>
<td><strong>Cardiovascular Function</strong></td>
<td>Unaffected</td>
<td>Usually maintained</td>
<td>Usually maintained</td>
<td>May be impaired</td>
</tr>
</tbody>
</table>
Propofol

- **Onset**
  - < 1 minutes

- **Duration**
  - 4 to 8 minutes
  - No significant effect with liver renal failure

- **Issues**
  - Avoided in patients with egg soy and sulfite allergies
  - Recovery time 12 minutes versus usual 93 minutes
Risks of Anesthesia Services

- Over 3 million colonoscopies between 2008-11
  - 34.4% were with anesthesia services
  - 13% increase in risk of any complication
    - Perforation 1.07
    - Bleeding 1.28
    - Abdominal pain 1.07
    - Stroke 1.04
    - Complications from anesthesia 1.15
Propofol Safety

- 2009 study endoscopy safety, endoscopist directed
  - Review of over 600,000 endoscopist directed propofol sedation
  - No safety difference than anesthesia directed propofol sedation
Death of Michael Jackson

- June 25, 2009
An example of deep sedation would be a screening colonoscopy when there is a decision to use propofol, so as to decrease movement and improve visualization for this type of invasive procedure. Because of the potential for the inadvertent progression to general anesthesia in certain procedures, it is necessary that the administration of deep sedation/analgesia be delivered or supervised by a practitioner as specified in 42 CFR 482.52(a).

42 CFR 482.52(a) is instruction for scope of care of anesthesia services.
### 2018 PAC Summary Data

**Select a Cycle:** 2018

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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<tbody>
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<td>Total Receipts</td>
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<tr>
<td>Total Spent</td>
<td>$4,365,879</td>
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<td>Begin Cash on Hand</td>
<td>$434,621</td>
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<td>End Cash on Hand</td>
<td>$597,670</td>
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<td>Debts</td>
<td>$0</td>
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<tr>
<td>Independent Expenditures</td>
<td>$53,000</td>
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<td>Date of last report</td>
<td>December 31, 2018</td>
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### 2018 PAC Contribution Data

<table>
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<tr>
<th>Description</th>
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<tr>
<td>Contributions from this PAC to federal candidates</td>
<td>$1,613,700</td>
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<tr>
<td>(59% to Democrats, 41% to Republicans)</td>
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<tr>
<td>Contributions to this PAC from individual donors of $200 or more</td>
<td>$3,563,255</td>
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**Official PAC Name:**
AMERICAN SOCIETY OF ANESTHESIOLOGISTS POLITICAL ACTION COMMITTEE (ASA PAC)

**Location:** Schaumburg, IL 60173

**Industry:** Health Professionals; Other physician specialists

**Treasurer:** Lisa Steininger

**FEC Committee ID:** C00259572

*Based on data released by the FEC on March 6, 2019 for independent expenditure and communication cost, contributions to federal candidates, and contributions from individual donor data, which were released by the FEC on February 28, 2018.*

### 2018 PAC Summary Data

**Select a Cycle:** 2018

<table>
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<tbody>
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<td>Total Receipts</td>
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<td>Total Spent</td>
<td>$7,706,807</td>
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<td>Begin Cash on Hand</td>
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<td>End Cash on Hand</td>
<td>$314,553</td>
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<td>Debts</td>
<td>$1,500,000</td>
</tr>
<tr>
<td>Date of last report</td>
<td>December 31, 2018</td>
</tr>
</tbody>
</table>

### 2018 PAC Contribution Data

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<tbody>
<tr>
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<td>$201,500</td>
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<td>(59% to Democrats, 41% to Republicans)</td>
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<tr>
<td>Contributions to this PAC from individual donors of $200 or more</td>
<td>$215,706</td>
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**Official PAC Name:**
AMERICAN COLLEGE OF PHYSICIAN SERVICES INC PAC; AKA ACP SERVICES PAC

**Location:** Washington, DC 20001

**Industry:** Health Professionals; Other physician specialists

**Treasurer:** Trachman, Richard Esq

**FEC Committee ID:** C00483881

*Based on data released by the FEC on March 6, 2019 for independent expenditure and communication cost, contributions to federal candidates, and contributions from individual donor data, which were released by the FEC on February 28, 2018.*
Costs

- Using anesthesia directed sedation
  - Cost 3.2 billion over 10 years
    - Assuming 50% use for screening colonoscopies
    - Range 2.7 – 11.9 billion saved
Joint Statement ASGE, ACG, AGA

“There are insufficient data to demonstrate that improved clinical outcomes or care quality derive from the use of capnography in adults undergoing targeted moderate sedation for upper endoscopy and colonoscopy.”

7 references given supporting no significant clinical impact on use of capnography.
ASA Standards for Basic Anesthetic Monitoring

- Statement was added in Oct 2010 effective date of July 2011:

  “During moderate or deep sedation the adequacy of ventilation shall be evaluated by continual observation of qualitative clinical signs and monitoring for the presence of exhaled carbon dioxide unless precluded or invalidated by the nature of the patient, procedure, or equipment.”

No reference given on effectiveness of capnography.
Obstructive Sleep Apnea Moderate Sedation

- Cardiorespiratory complications
  - 639 patients
    - OSA does not clearly increase the risk of complications

- Case control OSA patients
  - 200 patients
    - No increased risk of complications
Colonoscopy

- Cardiopulmonary
  - Transient hypoxemia 230/100,000 = 0.23%
  - Other studies 6-11% of hypoxemia and 5-7% of hypotension

- Perforation
  - 0.01% to 0.3%

- Hemorrhage
  - 0.1% to 0.6%

- Postpolypectomy Electrocoagulation Syndrome
  - 0.003% to 0.1%
  - 1 to 5 days after procedure symptoms similar to diverticulitis

- Death
  - 0.007% to 0.03%
Colonoscopy Continued

- **Infection**
  - Transient bacteremia with polyp removal - 4%
    - Range 0%-25%
  - No recommendation for antibiotic prophylaxis
  - Still a statement for orthopedic surgery after joint replacement, retired in 2012

- **Gas explosion**
  - 9 reported cases
Uncommon Colonoscopy Complications

- Splenic Rupture
- Acute Appendicitis
- Diverticulitis
- Subcutaneous emphysema
Upper Endoscopy

- **Perforation**
  - 0.04%

- **Perforation with dilation esophagus**
  - Mortality 2% to 36%
    - Much lower with covered stents

- **Perforation with gastric outlet obstructions**
  - 7.4%

- **Bleeding**
  - 3% to 7% varies on location with small bowel being largest

- **Stricture after mucosal ablation of esophagus**
  - 2%-8%
Hemosuccus Pancreaticus

- Bleeding after FNA of pancreatic mass or liver mass
Silver Stool (Thomas Sign)

- Melena of GI bleeding and clay colored stool of jaundice
  - Obstructive mass at sphincter of Oddi
Mortality of ERCP and Cholecystectomy

- **Therapeutic ERCP**
  - 0.4-0.5% Mortality

- **Laparoscopic Cholecystectomy**
  - Case series of 1220 mortality rate 0%
  - Case series of 2117 mortality rate 0.5% (one surgeon had all the mortality)
  - 0.1% in surgical textbooks
  - Case series of 9542 mortality rate 0.1%
ERCP Adverse Events

- 9.7% risk pancreatitis largest meta-analysis
  - Since publication interventions have shown reduction
    - Increased hydration *LACTATED RINGER*
    - Indomethacin 100 mg PR
    - Increased use of pancreatic stents
  - Risk factors
    - Female
    - Age
    - Normal total bilirubin
    - History of pancreatitis
ERCP perforation
Hemorrhoids Banding

- **Pain**
  - Mild pain in 14% severe pain in 5.8%
  - Some newer products support no pain
- **Bleeding** 1.7%
- **Infection** 0.05%
- **Fissure and or fistula** 0.4%
  - Newer products advertise much lower rate
Air Embolize Uncommon

- Approximately 49 reported cases
  - High mortality up to 50% many of these prior to use of CO2 for inflation
- Cases
  - ERCP highest rate
  - Stent placement
  - Dilation
- Treatment
  - Trendelenburg, Oxygen
  - Decompression during procedure
  - Hyperbaric oxygen therapy
SIBO Testing

Glucose

Lactose, lactulose or fructose

Glucose fermented if SIBO is present

Lactulose fermented in colon estimates oro-cecal transit time

Fructose or lactose, if malabsorbed in small bowel, reach colon & get fermented

Hydrogen Methane

Hydrogen (ppm)

Time (min)

A
Glucose 100 g

B
Glucose 100 g

C
Lactose 90 g

D
Lactose 90 g

E
FBS 90 mg/dL → PPBS 120 mg/dL

F
FBS 80 mg/dL → PPBS 50 mg/dL

Fructose 25 g
Testing Interpretation

● Increase of 12ppm above base
  ○ Glucose
    ■ Sensitivity 40%
    ■ Specificity 80%
  ○ Lactulose
    ■ Sensitivity 31%
    ■ Specificity 86%
  ○ Double Peak Lactulose Diagnostic

● Increase above 20ppm within 90m
  ○ Considered positive also
Testing limitations

- No gold standard as only 30% of gut bacteria are culturable
- Glucose and Lactulose may not reach end of small bowel if absorbed
- Rapid intestinal transit
- Slow intestinal transit
- Other gases produced not measured
- Positive test may not be caused by SIBO
  - Treat and follow if improved symptoms

- Methane is a marker of constipation and more difficult to test
FODMAP How it Works

- Fermentable Oligo Di Monosaccharides And Polyols
  - Oligosaccharide
    - Fructans
    - Galactooligosaccharides
  - Disaccharides
    - Lactose
  - Monosaccharides
    - Fructose
  - Polyols or sugar alcohols
    - Sorbitol mannitol xylitol
Giardia

- Diagnosed it once on active duty military returning from Iraq
- Not once since moving to Montana
Cryptosporidium

- Diagnosed once on young lady taking care of sick fawn
Chronic Wasting Disease

- First showed up in Colorado in 1960’s
- Transmittable spongiform encephalopathy
  - Mad cow disease
  - Prion mediated and are in all tissues of infected animals
  - Sheds prions to saliva urine and feces
- Carry disease for approximately 2 years
- Detectable visually only several months from death due to the disease

- 5% of dear have delayed presentation (5 years) due to some immunity
<table>
<thead>
<tr>
<th>Most Advanced Finding</th>
<th>Colonoscopy (N = 9989)</th>
<th>Multitarget DNA Test (N = 9989)</th>
<th>FIT (N = 9989)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no.</td>
<td>Positive Results</td>
<td>Sensitivity (95% CI)</td>
</tr>
<tr>
<td>Colorectal cancer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any</td>
<td>65</td>
<td>60</td>
<td>92.3 (83.0–97.5)</td>
</tr>
<tr>
<td>Stage I to III*</td>
<td>60</td>
<td>56</td>
<td>93.3 (83.8–98.2)</td>
</tr>
<tr>
<td>Colorectal cancer and high-grade dysplasia</td>
<td>104</td>
<td>87</td>
<td>83.7 (75.1–90.2)</td>
</tr>
<tr>
<td>Advanced precancerous lesions†</td>
<td>757</td>
<td>321</td>
<td>42.4 (38.9–46.0)</td>
</tr>
<tr>
<td>Nonadvanced adenoma</td>
<td>2893</td>
<td>498</td>
<td>17.2 (15.9–18.6)</td>
</tr>
<tr>
<td>All nonadvanced adenomas, non-neoplastic findings, and negative results on colonoscopy</td>
<td>9167</td>
<td>1231</td>
<td>86.6 (85.9–87.2)</td>
</tr>
<tr>
<td>Negative results on colonoscopy</td>
<td>4457</td>
<td>455</td>
<td>89.8 (88.9–90.7)</td>
</tr>
</tbody>
</table>
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