The Joy of Healthy Digestion

Kathleen Auen Stienstra, MD
Objectives-
Participants will learn

- The physiology of normal digestion.
- Ways that food choices and timing impact the health of the gut.
- Effective dietary and medical interventions for
  - GERD (Heartburn and reflux)
  - Irritable bowel (and many causes)
  - Constipation
  - Diverticulosis/prevention of Diverticulitis
Digestion

- Saliva/chewing
- Acid/pepsin
- Pancreatic juices
- Bile from Gall Bladder/Liver
- Intestinal enzymes
- Bacterial interaction with food
Poor Digestion

- Inadequate chewing
- Low stomach acid
- Pancreatic insufficiency
- Bile insufficiency
Functions of HCl-stomach acid

- Converts pepsinogen to pepsin—enzyme that starts protein digestion
- Kills unwanted germs
- Increases absorption of important minerals-calcium, iron, zinc, magnesium, copper
- Lack of stomach acid increases osteoporosis risk
Stomach Acid’s Role in Heartburn/Reflux and Gastroparesis—poor emptying

- Acid signals the nervous system to tighten the lower esophageal sphincter
- Pyloric sphincter doesn’t relax until sufficient acidity signals-
Low stomach acid related

- Dilated capillaries in face/rosacea
- Bloating and belching soon after meal
- Flatulence/intestinal gas
- Weak peeling fingernails
- Feels like food sits in stomach
- Iron deficiency
- Undigested food in stool
- Chronic intestinal infections
Autoimmune Diseases associated with low acid

- Hypo and Hyperthyroidism
- Addison’s (adrenal insufficiency)
- Vitiligo
- Chronic Hives
- Sjogren’s Disease (dry eyes and mouth)
- Lupus, Rheumatoid arthritis, myasthenia
- Celiac
- Eczema
How to tell if you have enough stomach acid?

Empiric-Try the following:

- Add a capsule of betaine HCl/pepsin at the beginning of a meal.
- If you get a warm burning sensation, you don’t need extra acid (or you have an inflamed stomach)
- Next meal try 2, and next meal try 3 (max dose for most). If you get a warm/burning feeling, back down by 1 capsule
Testing for Stomach Acid

- Gastro string test
- Heidelberg capsule
- Smart pill
- CDSA – Comprehensive Digestive Stool Analysis
- Common Sense-visibly undigested food in stool
CDSA Testing
Comprehensive Digestive Stool Analysis (w/parasites)

- Undigested meat fibers imply poor stomach acid production
- Visibly undigested plant foods in stool suggestive of low acid
- Functional medical labs
  - www.gdx.net (Genova Lab)
  - www.metametrix.com
  - www.greatplainslaboratory.com
<table>
<thead>
<tr>
<th>Digestion</th>
<th>Reference Range</th>
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<tbody>
<tr>
<td>Chymotrypsin</td>
<td>0.9-26.8 U/g</td>
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<tr>
<td>Putrefactive SCFAs (Total*)</td>
<td>1.3-8.6 micromol/g</td>
</tr>
</tbody>
</table>

* Total values equal the sum of all measurable parts.

<table>
<thead>
<tr>
<th>Inside</th>
<th>Outside</th>
<th>Reference Range</th>
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</thead>
<tbody>
<tr>
<td>Meat Fibers</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Vegetable Fibers</td>
<td>Rare</td>
<td>None - Few</td>
</tr>
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</table>
Causes for Low Stomach Acid

- **Medications-**
  - PPI (prilosec, nexium, prevacid, Aciphex)
  - H2 blockers (zantac/ranitidine, pepcid/famotidine or tagamet/cimetidine)

- **Aging, autoimmune process**

- **Stress, Fasting**

- **Infection-viral or bacterial/fever**

- **Any debilitating chronic condition-takes 6-800 calories/day to concentrate the acid**
Low Stomach Acid Consequences

- Small Intestinal Bacterial Overgrowth (Carbohydrate intolerance + immediate bloating after eating)
- Dysbiosis—growth of less desirable organisms: Candida (yeast), bacteria, and parasites
- Mineral deficiencies
- B12 deficiency
Vitamin B12

- Food bound B12 requires acid and gastric enzymes to release it from food.
- Intrinsic Factor binds B12 so it can be absorbed in the far end of small intestine
- Intrinsic factor also made by parietal cells (acid producing cells)-if destroyed by autoimmune process-main reason for B12 deficiency
- Most people with B12 deficiency also have achlorhydria (lack of stomach acid)
B12 Deficiency

- B12 level under 200 misses 50% of those with B12 deficiency (some labs still use)
- Under 400 connected with symptoms and nerve effects
- Replace as injection or under the tongue
  - Methyl cobalamin 1000 mcg/day-lozenge or liquid under tongue absorption doesn’t require intrinsic factor
- Large supplemental doses orally-passive absorption across bowel wall
Support Gastric Acidity

● Betaine HCL/pepsin capsule (350-3500 mg) Usually 1-3 capsules at beginning of meal. Titrate dose up to 3 if tolerated. Back off by one capsule if feel burning/warm sensation

● Apple Cider vinegar-2 Tbsp in water

● Umeboshi plums, other vinegars, Swedish bitters, Gentian root

● Stress management
Alternatives to Acid blocking medication for gastritis/esophagitis

- **DGL chewable lozenges-deglycerhinated licorice (won’t raise BP or lower K)** 1 chewed with each meal
  - Activated by saliva
  - Raises protective prostaglandins in mucosa
- **Zinc carnosine-75 mg po bid**
  - Stabilizes gut mucosa
  - Prevents NSAID damage GUT 2006, Jun 15
Help Digestion

- Eat and allow the process to flow as intended.
- Allow 3 to 4 hours between meals
- Adding more food before the digestive process is completed, confuses the body and food doesn’t empty from stomach sometimes for hours
- Use minimal liquids with meals (dilutes the acid and enzymes)
- Use room temperature or warm liquids – enzymes work better at warm body temperature
Avoid eating before bed

- Eat a light supper and avoid eating more before bed.
- Drinking water, decaff tea etc can help to break the habit of snacking at night.
- Allow your stomach and digestive organs to rest while you sleep-less GERD-aids detoxification by the liver.
GERD aggravating foods

- Mint
- High fat
- High spice
- Caffeine
- Coffee
- Alcohol
Elevate the head of bed

- Best to elevate whole bed rather than prop
- Bending in the middle increases intrabdominal pressure
Causes of Gastroparesis - slow emptying of stomach

- Low stomach acid
- High blood sugar/Diabetes
- Infection with Helicobacter Pylori (blood or stool test, biopsy with endoscopy/EGD)
- Viral infection
- Autoimmune disease
- Neuromuscular disorders
- Surgery
Iberogast
Promotes gastric motility

- Iberis amara-glycoside-carbohydrate with effect on hormone producing tissue, flavonoids
- GI protective effects: angelica, chamomile, caraway, St Mary’s thistle, balm leaves, peppermint leaves and licorice root
## Iberogast

<table>
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<tr>
<th></th>
<th>Adults &amp; children over 12 years</th>
<th>Children 3 months to 3 years</th>
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<tbody>
<tr>
<td></td>
<td>Take 20 drops</td>
<td>Give 8 drops</td>
</tr>
<tr>
<td>Children 6 to 12 years</td>
<td>Give 15 drops</td>
<td>Babies under 3 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Give 6 drops</td>
</tr>
<tr>
<td>Children 3 to 6 years</td>
<td>Give 10 drops</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 times daily</td>
</tr>
</tbody>
</table>
Iberogast Evidence Base

- Reduced dyspepsia and IBS compared to placebo over 30 year period
  
  *Forsh Komplementarmed Klass Naturheilkd, 2002*

- Increases gastric volume, motility and relaxation

- Significant improvement on GI Symptom Score scale
  
  *Am J Gastroenterology June, 2007*

- Over 19 clinical trials

- Over 20 million treated. Over 42,000 children under 12-no specific data for pregnant women

- Contains small amount of alcohol (less than a cup of apple juice)
Irritable Bowel Causes

- Genetic susceptibility
- Pancreatic/Digestive enzyme insufficiency
- Small intestinal bacterial overgrowth
- Celiac disease
- Dysbiosis-growth of less desirable organisms-bacteria, yeast or parasites
- Lack of sufficient fiber
Digestive Enzymes

- Lipases-break down fat
- Proteases-break down protein
  - Bromelain, papain, proteolytic enzymes
- Amylases break down carbohydrates
  - Amylase, glucoamylase, alpha galactosidase, phytase, macerase, xylanase, lactase, invertase, cellulase, hemicellulase
Enzyme Insufficiency

- Indigestion 2-4 hours after meal
- Bloating or flatulence 2-4 hours after meal
- Undigested food in stool
- Pale, foul smelling, greasy, bulky floating stool
- Abdominal pain
- Weight loss
- Vitamin deficiencies (fat soluble-vit D)
What contributes to enzyme deficiency?

- Pancreatic injury or illness
- Autoimmune disease
- Toxicity
- Stress
- Nutritional insufficiency
- Food inhibitors
- Free radical oxidation
Assessment of Pancreatic Insufficiency

- Fat in stool - qualitative fat study
- Pancreatic Elastase or Chymotrypsin level in stool
- Empiric
Pancreatic Function

**Absorption**

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Result</th>
<th>Reference Range</th>
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<tr>
<td>Triglycerides</td>
<td>0.3</td>
<td>0.2-3.3 mg/g</td>
</tr>
<tr>
<td>Long Chain Fatty Acids</td>
<td>12.4</td>
<td>1.3-23.7 mg/g</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>0.5</td>
<td>0.2-3.5 mg/g</td>
</tr>
<tr>
<td>Phospholipids</td>
<td>1.5</td>
<td>0.2-8.8 mg/g</td>
</tr>
<tr>
<td>Fecal Fat (Total*)</td>
<td>14.7</td>
<td>2.6-32.4 mg/g</td>
</tr>
</tbody>
</table>

*Total values equal the sum of all measurable parts.

**Digestion/Absorption**

1. Pancreatic Elastase 1*  
   - Result: 67  
   - Reference Range: >= 201 mcg/g

2. Putrefactive SCFAs (Total*)  
   - Result: 3.1  
   - Reference Range: 1.3-8.6 micromol/g

*Total values equal the sum of all measurable parts.
Types of Digestive Enzyme Products-take at end of meal

- Pancreatin-5000-24000 lipase activity
  - Mixture of lipase, protease and amylases
  - Prescription pancrelipase (Creon) or
  - OTC Digestive enzymes-pancreas derived
    - Animal source-cow or pig (Azeopangen from Metagenics)
- Aspergillus-derived enzymes (Beano)
- Lactase for lactose intolerance
- Food-derived enzymes
  - Papaya
  - Bromelain 1200-2400 MCU
Living Foods Have Enzymes

- Fresh produce-green papaya, fresh pineapple, figs, ginger, asparagus, guava, cucumber
- Raw foods
- Cultured foods-yogurt, kefir (soy, coconut), kim chi, sauerkraut, cultured vegetable
- Miso
- Soaked/sprouted nuts, seeds, grains
- Garlic, sea vegetables,
- Powdered “greens” or “reds”
Bile Salts

- Excreted by liver - 700 cc/d and
- Stored by gall bladder
- Breaks up the fat for digestion
- Excretes cholesterol, toxins
Causes for Bile Insufficiency

- Gall bladder removal (free drainage of bile can cause diarrhea too—helped with resin that binds bile)
- Injury or surgical removal of ileum (last part of small intestine where bile is reabsorbed)
- Small intestinal bacterial overgrowth—separates bile from food early
- Reduced production from liver disease or blockage
Bile Insufficiency

- Similar to pancreatic insufficiency
- Poor fat digestion
- Greasy, pale, floating large stools
- Diarrhea
Treatment of Bile Insufficiency

- Add Bile-Ox Bile 500-1000 mg with meals
- Natural Medicines that increase bile excretion:
  - Dandelion root-2-4 gm with meals, tincture-1 tsp with meals
  - Taurine 500-1000 mg with meals
Malabsorption—loss of intestinal villi surface area

- Small Bowel Disease-Celiac, Crohn’s Disease
- Short bowel (surgery)
- Bacterial overgrowth-can injure villi
- Food allergy
- Infection
- Starvation
Celiac/Gluten Sensitivity

- Diarrhea-43%
- Abdominal pain
- Joint aches
- Skin rashes
- Weight loss
- Anemia
The celiac iceberg represents all persons genetically susceptible to celiac disease because of a positive celiac-associated antibody test. The majority of such persons have latent celiac disease. The “tip of the iceberg” represents the minority of persons who present with classic celiac disease.
Testing for Gluten Sensitivity

- Blood or saliva tests: Anti-gliadin, anti-endomysial, anti-transglutaminase Antibodies
- Biopsy of small intestine during endoscopy
- Additional antibody testing for subsegments of gluten molecule
- HLA typing DQ2 and DQ8 (gene testing) for susceptibility
Treatment for Gluten Sensitivity

- Gluten avoidance
- Cross sensitive reactivity testing
- Can take months to heal the lining of small intestine
- Small exposures matter
Healthy Gut

Healthy Villi/Good Absorption

Healthy Tight Junctions
Altered Intestinal Permeability and Malabsorption

- Damaged Villi/ Poor Absorption
- Damaged Cell Junctions
Pathophysiology

- Poor Dietary Choices
- Stress & Emotions
- Infection
- Lectins
- Systemic Disease
- Low Stomach Acid
- Toxic Exposure
- Food Allergy
- Malnutrition
- Dysbiosis
- Toxic Overload
- Elevated Total Toxic & Antigenic Burden
- Systemic Disease
The increased intestinal permeability is an early biological change that often precedes the onset of autoimmune diseases. Such increased permeability could be due to environmental factors (such as infection, toxic molecules, food allergens) that possibly initiate the disease.
Heal Gut

- Glutamine Powder-5 gm 2-3x/day. Whey protein rich in glutamine
- Colostrum-restore IgA-can get dairy free antibody products
- Anti-inflammatory medical foods-powders
- Curcumin 1 capsule 2-3x/day
Disaccharidase Deficiency

- Lactase and Sucrase
- Positive Reducing Substances in stool
- Elimination and reintroduction
- Avoid or add lactase (pills, drops, milk)
- Use stevia or monosaccharide sweeteners – honey, fructose, agave, maple syrup, date sugar etc
Digestive Challenges - Gas

- Lactose Intolerance (avoidance or lactase)
- Sucrose Intolerance (avoidance of cane, beet sugar, sucralose)
- Sugar alcohol substitutes - xylitol, sorbitol, erythritol - undigested (except by bacteria)
- Beans and Gas forming vegetables (broccoli, cauliflower, brussel sprouts, cabbage) - carbohydrates undigested (except by bacteria) Beano and time if one is changing diet in an ongoing way.
Food Sensitivity Testing

The gold standard is the Elimination Diet
Food Sensitivity Testing

- Elimination Diet the Gold Standard
- IgE vs IgG difference
- Eliminate common food sensitizers x 2-3 weeks and reintroduce 1 at a time
- Body will show you sensitivities
- Handout available on Maple Center for Integrative Health’s website

www.themaplecenter.org
Food Sensitivities

- Top 2-dairy and wheat, then corn
- If you have reaction with elimination diet testing-eliminate the food for 6 months
- Reintroduce in rotating fashion(every 4-5 days) if tolerated
Small Intestinal Bacterial Overgrowth (SIBO)

- Common and overlooked contributor to irritable bowel syndrome - 78%
- After treatment 48% no longer had IBS
- >70% of people with Fibromyalgia and Chronic Fatigue have
Distribution of Intestinal Bacterial Flora in Normal Gut and in SIBO

Origin of gas/bloating of IBS patients with SIBO

SIBO

- Occurs with low stomach acid (allows bacteria thru)
- Stress which causes poor motility so food sits there longer and feed bacteria
- Immune deficiencies
- Causes bloating/cramping right after meals
- Weight loss and diarrhea
- Separates bile salts from fat
- Biofilms from bacterial mechanically block villi
- Fat, B12, iron and vitamin D malabsorption
SIBO

- Diagnose with breath testing or clinical suspicion
- Treat with antibiotics-prescription or natural medicines
SIBO Diagnosis: Breath Testing

- Indirect test
- Measures fermentation: $H_2$ and $CH_4$
- Transit: too fast gives false positive
- Substrate:
  - Glucose spec > sens
  - Lactulose sens > spec
Natural Medicine Options

- Oregano Oil
- Dysbiocide by Biotics
  - Dill (Anethum graveolens) (seed)*
  - Stemona (Stemona sessilifolia) (powder and extract) (root) *
  - Wormwood (Artemisia absinthium) (extract) (shoot & leaf)*
  - Java Brucea (Brucea javanica) (powder & extract) (fruit)*
  - Chinese Pulsatilla (Pulsatilla chinensis) (powder & extract) (rhizome)*
  - Picrasma excelsa (extract) (bark)*
  - Cutch tree (Acacia catechu) (powder & extract) (heartwood & bark)*
  - Hedyotis (Hedyotis diffusa) (powder & extract) (aerial part)*
  - Yarrow (Achillea millefolium) (extract) (leaf & flower)*
Manipulation of dietary short chain carbohydrates alters the pattern of gas production and genesis of symptoms in irritable bowel syndrome

Derrick K Ong,*,† Shaylyn B Mitchell,*,† Jacqueline S Barrett,*,† Sue J Shepherd,*,† Peter M Irving,*,† Jessica R Biesiekierski,*,† Stuart Smith,*,† Peter R Gibson*,† and Jane G Muir*,†

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Key words
breath testing, carbohydrates, dietary therapy, FODMAPs, gastrointestinal symptoms, irritable bowel syndrome.

Accepted for publication 26 April 2010.

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Abstract

Background and Aim: Reduction of short-chain poorly absorbed carbohydrates (FODMAPs) in the diet reduces symptoms of irritable bowel syndrome (IBS). In the present study, we aimed to compare the patterns of breath hydrogen and methane and symptoms produced in response to diets that differed only in FODMAP content.

Methods: Fifteen healthy subjects and 15 with IBS (Rome III criteria) undertook a single-blind, crossover intervention trial involving consuming provided diets that were either low (9 g/day) or high (50 g/day) in FODMAPs for 2 days. Food and gastrointestinal symptom diaries were kept and breath samples collected hourly over 14 h on day 2 of each diet.

Results: Higher levels of breath hydrogen were produced over the entire day with the high FODMAP diet for healthy volunteers (181 ± 77 ppm, 14 h vs 43 ± 18; mean ± SD, P < 0.0001) and patients with IBS (242 ± 79 vs 62 ± 23; P < 0.0001), who had higher levels during each dietary period than the controls (P < 0.05). Breath methane, produced by 10 subjects within each group, was reduced with the high FODMAP intake in healthy subjects (47 ± 29 vs 109 ± 77; P = 0.043), but was not different in patients with IBS (136 ± 45 vs 86 ± 75). Gastrointestinal symptoms and tolerance were significantly improved with the low FODMAP diet.
Examples of FODMAPS

High
- Fruits
  - Apples, pears, peaches, cherries, plums, prunes
- Grains
  - Wheat, rye
- Legumes
  - Lentils, beans
- Sweeteners
  - Fructose products, sugar alcohols
- Dairy

Low
- Fruits
  - Banana, blueberry, grapes, citrus fruits
- Grains
  - Non-gluten grains
  - Spelt
- Sweeteners
  - Glucose, maple syrup, sugar (sucrose), stevia, artificial
- Lactose Alternatives
  - Butter, hard cheese, rice milk, gelato, sorbet

Vegetables
- Artichokes, Asparagus
- Avocado, Beets, Broccoli
- Brussel sprouts, Cabbage
- Cauliflower, Garlic (with large consumption)
- Fennel, Leeks, Mushrooms
- Okra, Onions, Peas
- Radicchio lettuce, Scallions (white parts), Shallots
- Sugar snap peas
- Snow peas

Vegetables
- Bok choy
- Carrots
- Celery
- Corn
- Eggplant
- Green beans
- Lettuce
- Parsnip
- Scallions (green parts only)
- Tomato
FODMAP Diet Resources

- http://ibsdietchplan.org/the-low-fodmap-diet
- www.fodmapsdiet.com
Ecosystem Within

- Type of bacteria/organisms in gut affects vitamin K production (affects clotting),
- Provide butyric acid and short chain fatty acids that nourish the bowel wall
- Help to digest food
- Good guys: bifidobacter and lactobacillus
- Different microbiome types
Colonization Starts at Birth

- Sterile until birth
- Vag birth (Mom) vs C-section (hospital)
- Breast vs Bottle
- Antibiotics
- Gut Immune system “sets” during the first 6 months
Bacteroidetes vs Firmicutes

- Washington University team, led by Dr Jeffrey Gordon
- In obese people- proportion of Bacteroidetes compared with Firmicutes was less
- Experiment with genetically identical mice
Bacterial Colonization Types Affect Weight

- Genetically identical mice bred for obesity colonized with different bacterial types.
- Bact or Ferm
- Wt gain w/ Fermicutes higher
Obese humans were put on a diet, proportion of Firmicutes decreased, and Bacteroidetes increased, in line with their loss of body fat.

Reason for the bacterial effect not fully understood, perhaps the bacteria dominant in obese people more efficient at 'harvesting energy' from food in their intestines.
The composition of the microbiota can shape a healthy immune response or predispose to disease.
Dysbiosis

- Growth of less desirable organisms in gut-
- Small intestinal bacterial overgrowth
- Large intestine
- Good Guys-make vitamin K and nourishing substances for the lining of gut, support healthy immune function, hormone levels
- Bad Guys-create break down products that irritate, damage the gut lining and make toxins. Thrive with high sugar/low fiber/processed food diet.
Testing for Dysbiosis

- Ova and Parasites
- Culture of organisms and sensitivity testing
- Free fatty acid measurement (indirect indicator)
- Breath Tests for Small intestinal bacterial overgrowth
Short Chain Fatty Acids

- Made by gut organisms
- Nourish the mucosal lining
- Butyrate especially
### Microbiology

#### Bacteriology

<table>
<thead>
<tr>
<th>12. Beneficial Bacteria</th>
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<tbody>
<tr>
<td>Lactobacillus species</td>
</tr>
<tr>
<td>Escherichia coli</td>
</tr>
<tr>
<td>Bifidobacterium</td>
</tr>
<tr>
<td><strong>NG</strong></td>
</tr>
<tr>
<td><strong>NP</strong></td>
</tr>
<tr>
<td><strong>PP</strong></td>
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<table>
<thead>
<tr>
<th>13. Additional Bacteria</th>
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<tbody>
<tr>
<td>alpha haemolytic Streptococcus</td>
</tr>
<tr>
<td>gamma haemolytic Streptococcus</td>
</tr>
<tr>
<td>Citrobacter freundii</td>
</tr>
<tr>
<td>Klebsiella pneumoniae</td>
</tr>
<tr>
<td><strong>NP</strong></td>
</tr>
<tr>
<td><strong>NP</strong></td>
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<tr>
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#### Mycology

<table>
<thead>
<tr>
<th>14. MYCOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candida albicans</td>
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<tr>
<td><strong>P</strong></td>
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</table>

Human microbiota is influenced by environmental factors and the competitive ecosystem of the organisms in the GI tract. Pathological significance should be based upon clinical symptoms and reproducibility of bacterial recovery.

<table>
<thead>
<tr>
<th><strong>NG</strong></th>
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<tbody>
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<td>No Growth</td>
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<tr>
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<td>Non-Pathogen</td>
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<td>Potential Pathogen</td>
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<td>Pathogen</td>
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### Prescriptive Agents

<table>
<thead>
<tr>
<th>KLEBSIELLA PNEUMONIAE</th>
<th>S</th>
<th>I</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ampicillin</td>
<td></td>
<td></td>
<td>R</td>
</tr>
<tr>
<td>Amox./Clavulanic Acid</td>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cephalothin</td>
<td>S</td>
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<tr>
<td>Ciprofloxacin</td>
<td>S</td>
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</tr>
<tr>
<td>Tetracycline</td>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trimethoprim/Sulfa</td>
<td></td>
<td>R</td>
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</tbody>
</table>

**S** Indicates susceptibility to prescriptive agents

**I** Indicates intermediate susceptibility to prescriptive agents

**R** Indicates resistance to prescriptive agents

### Natural Agents

<table>
<thead>
<tr>
<th>KLEBSIELLA PNEUMONIAE</th>
<th>Low Inhibition</th>
<th>High Inhibition</th>
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<tbody>
<tr>
<td>Berberine</td>
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</tr>
<tr>
<td>Oregano</td>
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<td></td>
</tr>
<tr>
<td>Plant Tannins</td>
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<td></td>
</tr>
<tr>
<td>Uva-Ursi</td>
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</tr>
</tbody>
</table>
Bacterial Dysbiosis-Remove per Sensitivities-RX / Natural Meds

- Standard Antibiotics x 7-10 d
- Natural Meds x1-2 months
- Treat the predisposing factors (unhealthy diet, achlorhydia, pancreatic insufficiency, SIBO)
Replenish

- Probiotics (Lactobacilli and Bifidobacter species)
  - Capsules, powders, enteric coated
- Probiotic foods
  - Yogurt-dairy, soy, coconut milk (avoid high added sugar products-flavored activia)
  - Kefir
  - Cultured vegetables-sauerkraut, etc
- www.bodyecology.com
Yeast Overgrowth

- Candida can over grow in gut (and vagina and sinuses and skin)
- Loves sugar and acidic environment
- Affects gut lining immunity
- Makes toxins
- Can cause a variety of symptoms in sensitive individuals
Treatment of Yeast Overgrowth

- **First 2 wks:**
  - Remove simple carbs from diet (Yeast Connection Book great reference), increase fiber
  - Probiotic capsule bid (bifidobacter and lactobacillus)
  - Milk thistle (silymarin) capsule bid

- **Then**
  - Continue above
  - Gradually add antifungal med (prescription or natural medications for 1-2 months)
  - Thereafter, continue a source of probiotic and avoid simple carbs-re-treat if needed (antibiotic course, etc).
Diverticulosis/itis
Constipation

- Increase fiber containing food:
  - Plants-fruits, vegetables, whole grains, legumes, beans
- Increase fluid
Fiber and Fluid

- Large soft fiber filled stools do not generate high pressure
- Less likely to create more pockets
- Less likely to block the openings
Flax Seed Tips

- Great source of fiber but also of healthy omega 3 oil and phyto-estrogens that are protective against breast cancer
- Buy whole (so won’t go rancid)
- Grind in coffee grinder when use
- Start with small amount and build up dose slowly
Helpful Lab Work-up

- CDSA with parasites, bile salts, C diff, H pylori, elastase
- Stool for Culture and sensitivity, Ova & Parasites, reducing substances, qualitative fat, occult blood, WBCs
- Serum testing for gluten/celiac
- Breath test for small intestinal overgrowth
Achlorhydria

- Add Betaine HCL or vinegars
- B12 deficiency commonly accompanies
- May be cause of GERD rather than hyperacidity
- May contribute to gastroparesis, SIBO, dysbiosis
GERD/Gastritis/esophagitis/NS AID protection

- DGL lozenges tid with meals
- Zinc carnosine 150 mg bid
- Check for H pylori
- ? Stress factors
- Iberogast drops
Fat maldigestion

- Treat upstream issues
- Supplement with digestive enzymes after meal
- Bile or cholegogues if bile low
- Probiotics
SIBO/IBS

- Check for gluten issues
- Elimination Diet/FODMAP diet
- ? Upstream issues like achlorhydria or gastroparesis
- Treat with antibiotic (or natural med)
- Probiotic supplementation
- Gut repair support-glutamine, colostrum, anti-inflammatory herbs/foods
Dysbiosis

- Treat upstream issues
- Antibiotic or antifungals based on culture and sensitivities
- Probiotics
- Provide food that supports the growth of desired organisms.