3 IMBALANCES, 5 BACTERIA AND 10 PROBIOTICS

# BONUS PRESENTATION CLINICAL MASTERY OF THE DIGESTIVE SYSTEM

THE ROAD TO HEALTH IS PAVED WITH

## GOOD INTESTINES


THANK YOU FOR BEING HERE

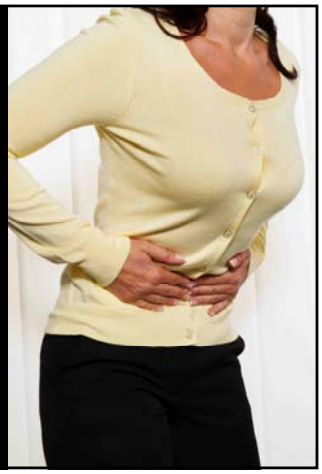
## TAKING OUR KNOWLEDGE FURTHER

## IN THIS PRESENTATION

- three important digestive imbalances
- five important invasive organisms
- most reliable testing for each
- ten probiotic bacteria that can help
- how to choose probiotics for the WHOLE person

FIRST DIGESTIVE IMBALANCE

## D LACTIC ACID OVERGROWTH



## D LACTIC ACID OVERGROWTH

- Organisms producing too much D-lactic acid
- Insufficient organisms breaking down D-lactic acid
- Our bodies have difficulty neutralizing D-lactic acid
- Often hand-in-hand with adrenal fatigue
- Changes the environment in the small intestine IF the bacteria are located there
- Interferes with our absorption of minerals and amino acids
- Displaces beneficial bacteria and encourages yeasts and parasites

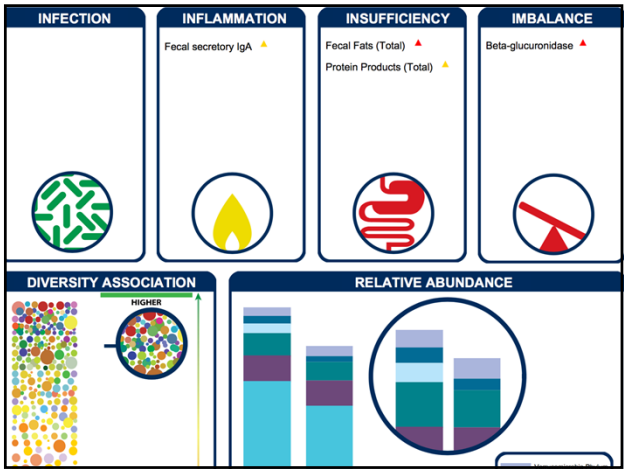
SOME OF THE MOST COMMON BACTERIA INVOLVED IN D-LACTIC ACID OVERGROWTH

E COLI
(ESCHERICHIA COLI)
ENTEROBACTER
(ALSO CITROBACTER)
KLEBSIELLA

## E COLI

- Anaerobic or Aerobic depending on the environment
- Many subspecies' including Shigella, hundreds of E Coli strains identified
- Some strains have also been linked to UTIs and mastitis
- Produce K2, glutathione, Beta-glucoronidase, D-lactic acid
- Common in the large intestine, can interfere with the environment in the small intestine
- Some strains can become easily resistant to drugs, herbs, oils and extracts (including the UTI E coli) and have a double cell wall
- Some strains have been found to cause obesity
- Can feed Candida

# GENOVA TEST (CDSA)




| Digestion and Absorption | | | |
|---|---|---|---|
| Pancreatic Elastase 1 † ⬥ | 334 | 100 200 | >200 mcg/g |
| Products of Protein Breakdown (Total*) (Valerate, Isobutyrate, Isovalerate) | 9.7 | | 1.8-9.9 micromol/g |
| Fecal Fat (Total*) | 114.1 H | | 3.2-38.6 mg/g |
| Triglycerides | 6.5 H | | 0.3-2.8 mg/g |
| Long-Chain Fatty Acids | 69.9 H | | 1.2-29.1 mg/g |
| Cholesterol | 2.9 | | 0.4-4.8 mg/g |
| Phospholipids | 34.8 H | | 0.2-6.9 mg/g |
| **Inflammation and Immunology** | | | |
| Calprotectin † ⬥ | <17 | 50 120 | <=50 mcg/g |
| Eosinophil Protein X (EPX)† | <DL | 1.1 4.6 | <=4.6 mcg/g |
| Fecal secretory IgA | 655 | | <=885 mcg/g |
| **Gastrointestinal Microbiome** | | | |
| **Metabolic** | | | |
| Short-Chain Fatty Acids (SCFA) (Total*) (Acetate, n-Butyrate, Propionate) | 75.5 | | >=23.3 micromol/g |
| n-Butyrate Concentration | 13.8 | | >=3.6 micromol/g |
| n-Butyrate % | 18.3 | | 11.8-33.3 % |

| | | | |
|---|---|---|---|
| *Bacteroides vulgatus* | 1.3E10 | H | <=2.2E9 |
| *Barnesiella* spp. | 1.6E9 | H | <=1.6E8 |
| *Odoribacter* spp. | 2.0E8 | H | <=8.0E7 |
| *Prevotella* spp. | 4.1E6 | | 1.4E5-1.6E7 |
| **Firmicutes Phylum** | | | |
| *Anaerotruncus colihominis* | 1.8E7 | | <=3.2E7 |
| *Butyrivibrio crossotus* | 2.4E6 | H | 5.5E3-5.9E5 |
| *Clostridium* spp. | 4.1E9 | | 1.7E8-1.5E10 |
| *Coprococcus eutactus* | 1.2E6 | | <=1.2E8 |
| *Faecalibacterium prausnitzii* | 2.3E10 | H | 5.8E7-4.7E9 |
| *Lactobacillus* spp. | 1.4E9 | | 8.3E6-5.2E9 |
| *Pseudoflavonifractor* spp. | 5.8E8 | H | 4.2E5-1.3E8 |
| *Roseburia* spp. | 2.7E9 | | 1.3E8-1.2E10 |
| *Ruminococcus* spp. | 7.0E9 | H | 9.5E7-1.6E9 |
| *Veillonella* spp. | 2.1E7 | | 1.2E5-5.5E7 |
| **Actinobacteria Phylum** | | | |
| *Bifidobacterium* spp. | 8.9E8 | | <=6.4E9 |
| *Bifidobacterium longum* | 2.8E7 | | <=7.2E8 |
| *Collinsella aerofaciens* | 1.8E9 | | 1.4E7-1.9E9 |
| **Proteobacteria Phylum** | | | |
| *Desulfovibrio piger* | <DL | | <=1.8E7 |
| *Escherichia coli* | 1.4E8 | H | 9.0E4-4.6E7 |

# BIO-HEALTH 401 TEST

## GI Pathogen Screen with H. pylori Antigen - 401H

| Parameter | Result |
|---|---|
| ***** Stool Culture ***** | |
| Preliminary Report | Normal flora after 24 hours |
| Final Report | * Escherichia coli isolated * |
| Amount of Growth | Abundant |
| ***** Ova & Parasites ***** | |
| Ova & Parasites #1 | No Ova/Parasites detected |
| Ova & Parasites #2 | No Ova/Parasites detected |
| Ova & Parasites #3 | No Ova/Parasites detected |
| Ova & Parasites #4 | No Ova/Parasites detected |
| Trichrome Stain | No Ova/Parasites detected |
| ***** Stool Antigens ***** | |
| Cryptosporidium Antigen | Not detected |
| Giardia lamblia Antigen | Not detected |
| ***** Additional Tests ***** | |
| Fungi | No fungi isolated |
| C. difficile Toxin A | Not detected |
| C. difficile Toxin B | Not detected |
| Yeast | No yeasts isolated |

# DOCTORS' DATA COMPREHENSIVE

*Comprehensive Stool Analysis / Parasitology x3*

**BACTERIOLOGY CULTURE**

| Expected/Beneficial flora | Commensal (Imbalanced) flora | Dysbiotic flora |
|---|---|---|
| 3+ Bacteroides fragilis group | 3+ Alpha hemolytic strep | 3+ Klebsiella pneumoniae ssp pneumoniae |
| 1+ Bifidobacterium spp. | 1+ Staphylococcus lugdunensis | |
| 4+ Escherichia coli | | |
| 1+ Lactobacillus spp. | | |
| 2+ Enterococcus spp. | | |
| 3+ Clostridium spp. | | |
| NG = No Growth | | |

**BACTERIA INFORMATION**

**Expected /Beneficial bacteria** make up a significant portion of the total microflora in a healthy & balanced GI tract. These beneficial bacteria have many health-protecting effects in the GI tract including manufacturing vitamins, fermenting fibers, digesting proteins and carbohydrates, and propagating anti-tumor and anti-inflammatory factors.
**Clostridia** are prevalent flora in a healthy intestine. Clostridium spp. should be considered in the context of balance with other expected/beneficial flora. Absence of clostridia or over abundance relative to other expected/beneficial flora indicates bacterial imbalance. If *C. difficile* associated disease is suspected, a Comprehensive Clostridium culture or toxigenic *C. difficile* DNA test is recommended.
**Commensal (Imbalanced) bacteria** are usually neither pathogenic nor beneficial to the host GI tract. Imbalances can occur when there are insufficient levels of beneficial bacteria and increased levels of commensal bacteria. Certain commensal bacteria are reported as dysbiotic at higher levels.
**Dysbiotic bacteria** consist of known pathogenic bacteria and those that have the potential to cause disease in the GI tract. They can be present due to a number of factors including: consumption of contaminated water or food, exposure to chemicals that are toxic to beneficial bacteria; the use of antibiotics, oral contraceptives or other medications; poor fiber intake and high stress levels.

**YEAST CULTURE**

| Normal flora | Dysbiotic flora |
|---|---|
| No yeast isolated | |

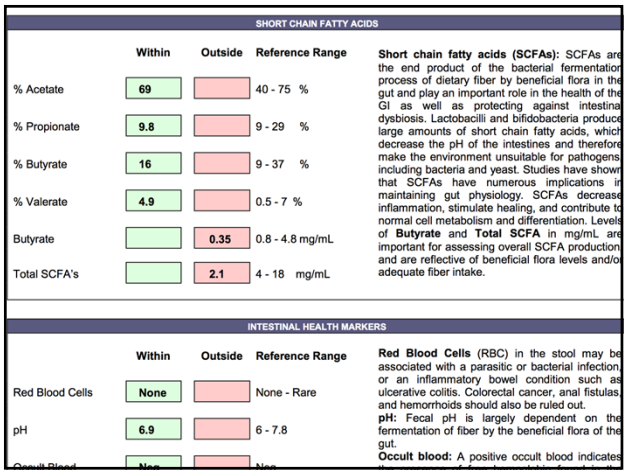
| | Within | Outside | Reference Range | |
|---|---|---|---|---|
| Elastase | 459 | | > 200 | µg/mL |
| Fat Stain | None | | None - Mod | |
| Muscle fibers | None | | None - Rare | |
| Vegetable fibers | Rare | | None - Few | |
| Carbohydrates | Neg | | Neg | |

**Elastase** findings can be used for the diagnosis or the exclusion of exocrine pancreatic insufficiency. Correlations between low levels and chronic pancreatitis and cancer have been reported. **Fat Stain:** Microscopic determination of fecal fat using Sudan IV staining is a qualitative procedure utilized to assess fat absorption and to detect steatorrhea. **Muscle fibers** in the stool are an indicator of incomplete digestion. Bloating, flatulence, feelings of "fullness" may be associated with increase in muscle fibers. **Vegetable fibers** in the stool may be indicative of inadequate chewing, or eating "on the run". **Carbohydrates:** The presence of reducing substances in stool specimens can indicate carbohydrate malabsorption.

**INFLAMMATION**

| | Within | Outside | Reference Range | |
|---|---|---|---|---|
| Lactoferrin | < 0.5 | | < 7.3 | µg/mL |
| Calprotectin* | 12 | | <= 50 | µg/g |
| Lysozyme* | 58 | | <= 600 | ng/mL |
| White Blood Cells | None | | None - Rare | |
| Mucus | Neg | | Neg | |

**Lactoferrin** and **Calprotectin** are reliable markers for differentiating organic inflammation (IBD) from function symptoms (IBS) and for management of IBD. Monitoring levels of fecal lactoferrin and calprotectin can play an essential role in determining the effectiveness of therapy, are good predictors of IBD remission, and can indicate a low risk of relapse. **Lysozyme*** is an enzyme secreted at the site of inflammation in the GI tract and elevated levels have been identified in IBD patients. **White Blood Cells** (WBC) and **Mucus** in the stool can occur with bacterial and parasitic infections, with mucosal irritation, and inflammatory bowel diseases such as Crohn's disease or ulcerative colitis.



SHORT CHAIN FATTY ACIDS

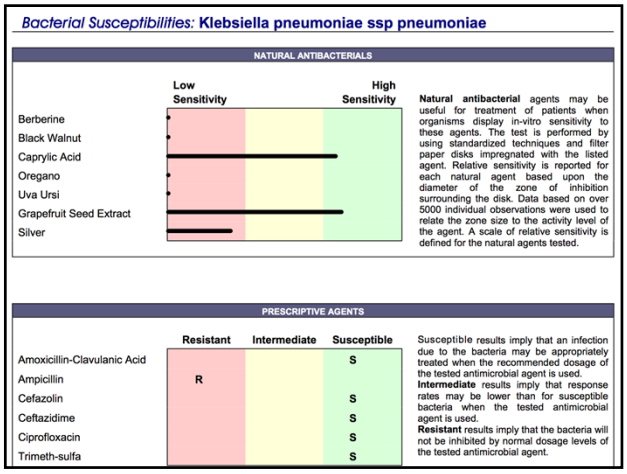
| | Within | Outside | Reference Range |
|---|---|---|---|
| % Acetate | 69 | | 40 - 75 % |
| % Propionate | 9.8 | | 9 - 29 % |
| % Butyrate | 16 | | 9 - 37 % |
| % Valerate | 4.9 | | 0.5 - 7 % |
| Butyrate | | 0.35 | 0.8 - 4.8 mg/mL |
| Total SCFA's | | 2.1 | 4 - 18 mg/mL |

**Short chain fatty acids (SCFAs):** SCFAs are the end product of the bacterial fermentation process of dietary fiber by beneficial flora in the gut and play an important role in the health of the GI as well as protecting against intestinal dysbiosis. Lactobacilli and bifidobacteria produce large amounts of short chain fatty acids, which decrease the pH of the intestines and therefore make the environment unsuitable for pathogens including bacteria and yeast. Studies have shown that SCFAs have numerous implications in maintaining gut physiology. SCFAs decrease inflammation, stimulate healing, and contribute to normal cell metabolism and differentiation. Levels of **Butyrate** and **Total SCFA** in mg/mL are important for assessing overall SCFA production and are reflective of beneficial flora levels and/or adequate fiber intake.

INTESTINAL HEALTH MARKERS

| | Within | Outside | Reference Range |
|---|---|---|---|
| Red Blood Cells | None | | None - Rare |
| pH | 6.9 | | 6 - 7.8 |
| Occult Blood | Neg | | Neg |

**Red Blood Cells** (RBC) in the stool may be associated with a parasitic or bacterial infection, or an inflammatory bowel condition such as ulcerative colitis. Colorectal cancer, anal fistulas, and hemorrhoids should also be ruled out.
**pH:** Fecal pH is largely dependent on the fermentation of fiber by the beneficial flora of the gut.
**Occult blood:** A positive occult blood indicates



*Bacterial Susceptibilities:* **Klebsiella pneumoniae ssp pneumoniae**

NATURAL ANTIBACTERIALS

| | Low Sensitivity | High Sensitivity |
|---|---|---|
| Berberine | | |
| Black Walnut | | |
| Caprylic Acid | | |
| Oregano | | |
| Uva Ursi | | |
| Grapefruit Seed Extract | | |
| Silver | | |

**Natural antibacterial** agents may be useful for treatment of patients when organisms display in-vitro sensitivity to these agents. The test is performed by using standardized techniques and filter paper disks impregnated with the listed agent. Relative sensitivity is reported for each natural agent based upon the diameter of the zone of inhibition surrounding the disk. Data based on over 5000 individual observations were used to relate the zone size to the activity level of the agent. A scale of relative sensitivity is defined for the natural agents tested.

PRESCRIPTIVE AGENTS

| | Resistant | Intermediate | Susceptible |
|---|---|---|---|
| Amoxicillin-Clavulanic Acid | | | S |
| Ampicillin | R | | |
| Cefazolin | | | S |
| Ceftazidime | | | S |
| Ciprofloxacin | | | S |
| Trimeth-sulfa | | | S |

Susceptible results imply that an infection due to the bacteria may be appropriately treated when the recommended dosage of the tested antimicrobial agent is used.
**Intermediate** results imply that response rates may be lower than for susceptible bacteria when the tested antimicrobial agent is used.
**Resistant** results imply that the bacteria will not be inhibited by normal dosage levels of the tested antimicrobial agent.

## WHAT TO DO ABOUT E COLI

- Avoid FODMAPS for a short time
- E-coli specific herbs (basil, berberine, tarragon, bay laurel, lemongrass, sage, thyme)
- E-coli discouraging probiotics (L. Rhamnosus and L. Bulgaricus)
- Alternative approaches including colloidal silver, Floraphage, ozonated water

## ENTEROBACTER

- Anaerobic
- Eats glucose and lactose
- Produces D-lactic acid and *plenty* of histamine
- Common in the large intestine, can interfere with the environment in the small intestine
- Some strains can become easily resistant to drugs, herbs, oils and extracts
- Has been associated with ulcerative colitis, particularly citrobacter
- Can feed Candida

## WHAT TO DO ABOUT ENTEROBACTER

- Avoid FODMAPS for a short time
- Enterobacter specific herbs (berberine, rosemary, cinnamon)
- Enterobacter discouraging probiotics (L. Rhamnosus, L. Bulgaricus, Bifidobacterium)
- Use Bifidobacterium to balance out the histamines, particularly B. Infantis and B Adolescentis
- Direct DAO supplementation
- Alternative approaches

## YEAST OVERGROWTH

- Too many bacteria feeding the yeast
- Too much sugar feeding the yeast
- Not enough action/movement/antioxidant activity in the small and large intestine
- Not enough stomach acid
- Stagnant digestion
- Trace mineral deficiencies
- EMFs

THERE ARE MANY TYPES OF YEASTS BUT SOME OF THE MOST COMMON ARE

CANDIDA
(ALBICANS AND MANY OTHER KINDS)
BREWERS YEAST
(SO MANY KINDS)

## CANDIDA ALBICANS

- Anaerobic or aerobic
- Eats glucose and fermented sugars
- Produces histamine, oxalates and acetylaldehyde
- Can grow almost anywhere in the body
- Can go dormant or fungal
- Has been associated with leaky gut as they have the ability to cling to the intestinal wall

## YEASTS AND BACTERIA

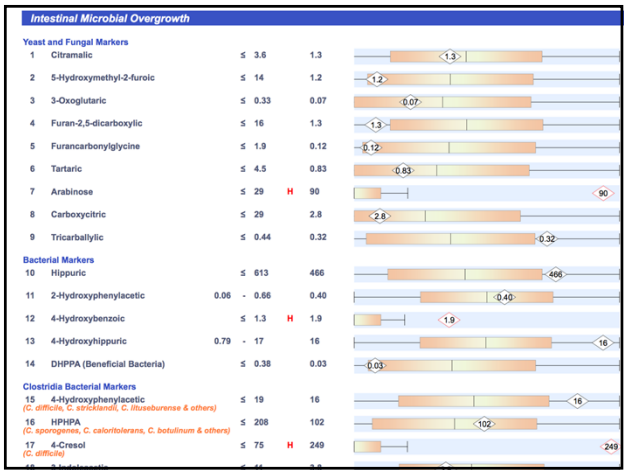
- bacteria break down sugars which can feed candida
- candida provides a home in a biofilm created with bacteria
- antibiotics can give candida the upper hand

## YEASTS HAVE BEEN ASSOCIATED WITH

- Fibromyalgia
- Headaches
- Fatigue
- Acne
- Dry Skin
- Thyroid Conditions
- Gluten cross-reactivity

## TESTING FOR YEASTS

- saliva test (home)
- bacterial test
- blood test
- blood analysis
- stool testing
- OAT or MOAT test (Meridian Valley)



Intestinal Microbial Overgrowth

| | | | | | | |
|---|---|---|---|---|---|---|
| **Yeast and Fungal Markers** | | | | | | |
| 1 | Citramalic | | ≤ 3.6 | | 1.3 | 1.3 |
| 2 | 5-Hydroxymethyl-2-furoic | | ≤ 14 | | 1.2 | 1.2 |
| 3 | 3-Oxoglutaric | | ≤ 0.33 | | 0.07 | 0.07 |
| 4 | Furan-2,5-dicarboxylic | | ≤ 16 | | 1.3 | 1.3 |
| 5 | Furancarbonylglycine | | ≤ 1.9 | | 0.12 | 0.12 |
| 6 | Tartaric | | ≤ 4.5 | | 0.83 | 0.83 |
| 7 | Arabinose | | ≤ 29 | H | 90 | 90 |
| 8 | Carboxycitric | | ≤ 29 | | 2.8 | 2.8 |
| 9 | Tricarballylic | | ≤ 0.44 | | 0.32 | 0.32 |
| **Bacterial Markers** | | | | | | |
| 10 | Hippuric | | ≤ 613 | | 466 | 466 |
| 11 | 2-Hydroxyphenylacetic | 0.06 | - 0.66 | | 0.40 | 0.40 |
| 12 | 4-Hydroxybenzoic | | ≤ 1.3 | H | 1.9 | 1.9 |
| 13 | 4-Hydroxyhippuric | 0.79 | - 17 | | 16 | 16 |
| 14 | DHPPA (Beneficial Bacteria) | | ≤ 0.38 | | 0.03 | 0.03 |
| **Clostridia Bacterial Markers** | | | | | | |
| 15 | 4-Hydroxyphenylacetic *(C. difficile, C. sticklandii, C. illuseburense & others)* | | ≤ 19 | | 16 | 16 |
| 16 | HPHPA *(C. sporogenes, C. caloritolerans, C. botulinum & others)* | | ≤ 208 | | 102 | 102 |
| 17 | 4-Cresol *(C. difficile)* | | ≤ 75 | H | 249 | 249 |

## WHAT TO DO ABOUT CANDIDA

- Avoid processed foods and simple sugars
- Avoid other yeasts that are causing reactions
- Avoid Kombucha
- Direct DAO supplementation or Bifidum Infantis/Adolescentis
- Alternative approaches
- Biofilm disruptors
- Trace minerals (especially Molybdenum, Germanium, Boron)
- B vitamins, especially B1

## PARASITE OVERGROWTH

- Low levels of stomach acid
- Low motility
- Exposure
- Yeasts and other bacterial co-infections
- Trace mineral and vitamin deficiencies

SOME PARASITE EXAMPLES

## H PYLORI
(SPIROCHETE BACTERIA)

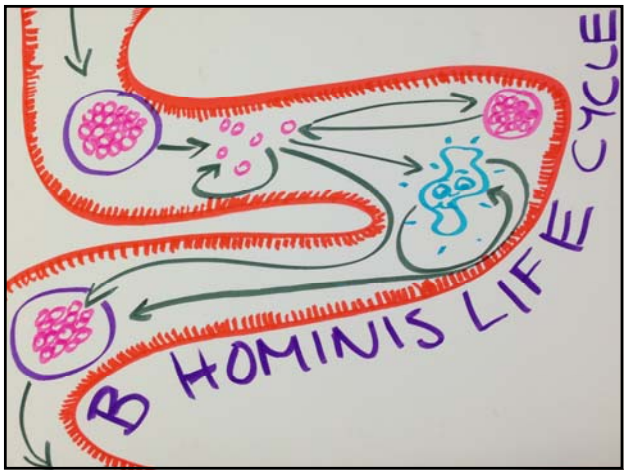
## B HOMINIS
(HAS BEEN CHANGED FROM AN AMOEBA TO BEING IN THE FAMILY OF ALGAE)

## BLASTOCYSTIS HOMINIS

- Anaerobic and also cyst form
- can be associated with inflammation of the digestive lining
- Can affect the consistency of the digestive mucosa
- Some studies have shown an affinity for living in the liver/gall bladder ducts
- Can go dormant
- Increasing in occurrence, much study needed

## B HOMINIS LIFE CYCLE

- thick walled cysts (fecal-oral)
- vacuoles
- back to thin walled cysts
- amoebas
- cysts (can be thin walled or thick walled, the thick ones surviving to be transmitted to another person)



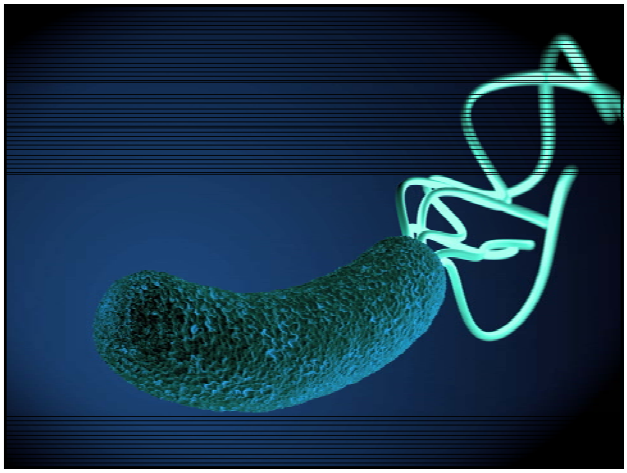


## WHAT TO DO ABOUT B HOMINIS

- Papaya seed extract
- Pomegranate husks
- Anti-parasitic herbs, cloves, wormwood, pumpkin seeds, horseradish
- Colloidal silver
- Ozonated water
- Nitazoxanide

## HELICOBACTER PYLORI

- Spirochetes
- Prefer a low acid (more alkaline) environment
- Can attack the parietal cells and interfere with stomach acid production
- Can hide in the stomach wall and mucosa very effectively if the environment is not to their liking



## H PYLORI

- can exacerbate protein and mineral malabsorption
- can create a situation without the signalling for the liver and pancreas and migrating motor complex to do their work
- has been strongly linked to stomach and duodenal cancer
- can cause GERD/heartburn
- can contribute to leaky gut in the duodenum
- make histamine

## WHAT TO DO ABOUT H PYLORI

- Biofilm disruptors
- Herbs:  Horse Chestnut, Neem, Olive Leaf, Celery Seed
- Antioxidant foods:  Blueberries, Amla, Pomegranate, Sour Cherry, goji berries, cilantro, cloves, turmeric, cinnamon, acai
- Meadowsweet tea
- Vitamin C (3000 mg was shown to be effective in 40% of H. Pylori cases studied)




LACTOBACILLUS ACIDOPHILUS LA5

## SUPPRESSING H PYLORI INFECTIONS

LACTOBACILLUS REUTERI

## ENHANCED IMMUNITY

BIFIDUM INFANTIS

## REDUCTION OF OXALATES

BIFIDUM BREVE

## REDUCE IBS SYMPTOMS

SACCHAROMYCES BOULARDII

## DECREASE COLON CANCER RISK FACTORS

## THIS IS THE PART WHERE I EDITED OUT LIKE 20 MORE SLIDES

YOU'RE WELCOME :)

GO TO
WWW.STEPHJACKSON.COM/CMDS FOR YOUR 12 BACTERIA BENEFITS EBOOK