Guard Your Gut!

Susan Buckley RD
Nutrition Manager
South Denver Cardiology Assoc.

Guard Your Gut!

- Americans spend more than $500 million each year on antacid products
- $725 million is spent on laxative products each year in America
- The cost of irritable bowel syndrome in the United States has been estimated at $1.7-$10 billion in direct medical costs, with an additional $20 billion in indirect costs, for a total of $21.7-$30 billion
- Constipation is the *most common gastrointestinal complaint in the United States!*

- Do You Think We Have Gut Issues?

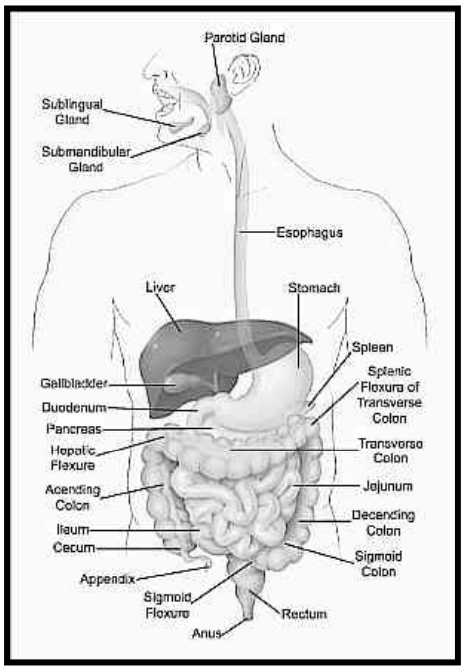
Defining Digestive Health

- *Good digestive health indicates an ability to process nutrients through properly functioning gastrointestinal organs, including the stomach, intestines, liver, pancreas, esophagus and gallbladder. Most people who are in good digestive health are of appropriate weight and don't regularly experience symptoms like heartburn, gas, constipation, diarrhea, nausea or stomach pain.*

American Gastroenterology Gastroenterology Association

Definition – Digestive Health

- Ability to digest, absorb and utilize nutrients
- Eliminate waste products
- Optimizes vitality, and resilience
- Appropriate weight is central theme
- Don't regularly experience bothersome digestive symptoms
- This state of well-being is achieved by:
  - consuming a nutritious diet
  - minimizing emotional stressors
  - embracing physical activity
- Oriented to the prevention of chronic disease.



Gut Brain Connection

- Both our gut and our brain originate early in the embryo from the same clump of tissue which divides during fetal development.
- While one section turns into the *central nervous system,* another piece migrates to become the *enteric nervous system or the nervous system that controls the GI tract*
- Later the two nervous systems connect via a cable called the vagus nerve -- the longest of all the cranial nerves whose name is derived from Latin, meaning "wandering."
- The vagus nerve meanders from the brain stem through the neck and finally ends up in the abdomen.
- There's the brain-gut connection.

The Second Brain

- Network of neurons lining our guts that is so extensive some scientists have nicknamed it our "second brain".
- The second brain contains some 100 million neurons, more than in either the spinal cord or the peripheral nervous system.
- Scientists were shocked to learn that about 90% of the fibers in the vagus nerve carry information from the gut to the brain and not the other way around

The Second Brain

- A big part of our emotions are probably influenced by the nerves in our gut
- “A gut feeling” “Butterflies in the stomach” “Sick to my stomach” when we hear emotionally troubling news
- 95% of the body's serotonin is found *in the bowels, not the brain*
- *70% of our immune system* is aimed at the gut to expel and kill foreign invaders.

Gut Complaints

- Constipation
- Diarrhea
- Irritable Bowel Syndrome
- Gastro esophageal Reflux Disease

Constipation

- **Constipation is one of the most common gastrointestinal complaints in the United States.**
- **More than 4 million Americans have frequent constipation, accounting for 2.5 million physician visits a year**
- **Around $725 million is spent on laxative products each year in America.**

Chronic Constipation

- CC is defined as infrequent stools, difficult stool passage, incomplete evacuation, and prolonged time to pass stool for at least 3 months
- Prevalence of ~15% of adults in America
- Female predominance
- Can be caused by medications, medical conditions as well as diet

Constipation

- Fiber: 25-40 grams per day. Try for 2 cups of fruit and 2 ½ cups vegetables per day
- Add Fiber *slowly!*
- *Vegetables, Fruits, Legumes, Whole Grains*
- Psyllium, Glucomannan, Acacia, Guar Gum increase stool frequency
- Water: 6-8 8oz. Glasses per day
- Tea can be constipating
- Exercise often – very helpful in prevention
- Limit foods high in fat/sugar

Fiber

- **What is Fiber Anyway?**
- •**Dietary fiber** or sometimes called **roughage** is the indigestible portion of plant foods having two main components:
- • **Insoluble fiber: helps bowels move – whole grains, wheat and corn bran, nuts and seeds, flaxseed green beans, cauliflower, avocado, bananas, tomatoes**
- • **Soluble fiber: helps reduce cholesterol and control blood sugar – peas and beans, oats rye, barley, prunes, plums, berries, apples, broccoli, carrots, root vegetables like sweet potatoes, onions, psyllium**

How Much Fiber?

- • 25-40 grams per day of total fiber
- Americans consume a daily average of 15.6 grams of dietary fiber (17.8 g for males and 13.6 g for females)
- • RDI for dietary fiber for most groups **– at least** 25 grams of fiber per day
- INCREASE YOUR FIBER !!!!!!

Other Benefits of Dietary Fiber

- Reduces total & LDL cholesterol
- • Improves glycemic control in type 2 diabetes
- • May protect against type 2 diabetes
- • May help prevent colorectal cancer

Fiber & Cholesterol Reduction

- High fiber intake is associated with a 40%-50% reduction in the risk of CHD and stroke compared with low fiber intake
- Each 10 gram increase in fiber intake/day is associated with:
- 14% relative risk reduction for *all coronary events*
- 27% reduction for coronary death

Fiber and Diabetes

- High glycemic load diets and a low cereal fiber content diet increase risk of type 2 diabetes
- • Randomized, crossover study
  • 2 diets: 24 grams vs. 50 grams fiber/day with same macronutrient & energy content
- • High-fiber diet associated with:
  – Improved glycemic control
  – Improved lipid profile

Salmeron J, et al, Dietary fiber, glycemic load, and risk of NIDDM in men. Diabetes Care 1997 Apr;20(4):545-50.

Fiber & Colorectal Cancer Prevention

- Magnitude of CRC risk reduction: 50%-75%
  - Dose associated with decreased CRC risk: Varies @ 25-50 grams/day
- Duration of intervention associated with decreased CRC risk: 10-20 years
- Type of fiber associated with decreased CRC
- risk: Unclear at this time – eat BOTH

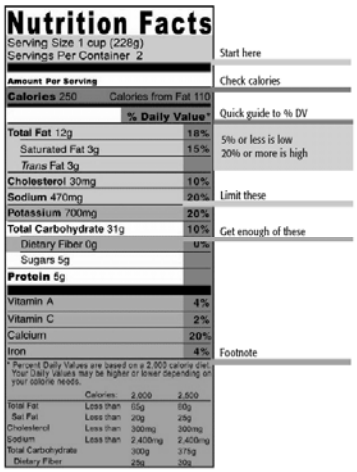
Kim YI. AGA technical review: impact of dietary fiber on colon cancer occurrence. Gastroenterology. 2000;118(6):1235-57.

Fiber Side Effects

- Abdominal bloating
- • Gas
- • Cramping
- • Minimize side effects by:
- – Starting with small amounts and slowly increasing until stools become softer and more frequent
- – Increasing fluid intake
- Beano, Digestive Enzymes

Food Label

- Total Fiber is listed under “Carbohydrates” on the food label



Nutrition Facts

Serving Size 1 cup (228g)
Servings Per Container 2

Amount Per Serving	
Calories 250	Calories from Fat 110
	% Daily Value*
Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	
Cholesterol 30mg	10%
Sodium 470mg	20%
Potassium 700mg	20%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
Protein 5g	
Vitamin A	4%
Vitamin C	2%
Calcium	20%
Iron	4%

* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Start here
Check calories
Quick guide to % DV
5% or less is low
20% or more is high
Limit these
Get enough of these
Footnote

Good Sources of Fiber

- Wheat Bran
- Unrefined breakfast cereal: Kellogs All-Bran Buds (13 grams) , Kellogs FiberPlus Antioxidants (10 grams), Fiber One (9-13 grams), Kashi Go Lean (10 grams), Simply Fiber (14 grams)
- Beans and legumes: 6-8 grams in ½ cup
- Prune juice
- Supplements: Metamucil, Benefiber, Konsyl, Organic Clear Fiber, PGX fiber

Laxatives

- OTC laxatives are available as pills, liquids, or fibrous powders that are mixed with water or juice.
- Some of the active ingredients in laxatives include bisacodyl, docusate, magnesium hydroxide, psyllium, and senna, among others.
- Warning labels on these products caution users not to exceed the recommended dose and not to use the products for more than a week at a time, unless told to do so by a doctor.

Laxatives

- Overdose or long-term use of laxatives can disrupt the body's chemistry and undermine the body's natural ability to eliminate waste.
- Laxatives are habit-forming if used daily and can be very dangerous in overdose.
- They can deplete the body's potassium supply, leading to an irregular heartbeat.
- At higher doses they frequently cause diarrhea, severe cramps, and **dehydration**.
- People using laxatives for occasional constipation are advised to drink plenty of water along with the medication.

Diarrhea

- Many things can cause diarrhea including diet, medications, IBS and IBD, bacterial infections, food sensitivities
- Elimination diet
- Blood test for food sensitivities
- Drink 8-10 glasses of fluid everyday to avoid dehydration
- If lasts more than 2 days see doctor

Diarrhea

- Limit foods and drinks that contain caffeine: coffee, strong tea and cola
- Eliminate milk and milk products for a time. Use lactose free milk or soy or almond milk
- Limit high fat foods: fatty meats, desserts, butter, margarine and greasy snacks
- Reduce fiber for a short time
- Eat several small meals rather than 1 or 2 large meals

Diarrhea

- If you have gas or cramping, avoid foods that increase gas like dried beans and beans, broccoli, cabbage, onions, Brussels sprouts, carbonated beverages, beer and chewing gum
- When diarrhea is no longer problem, resume normal diet

Diarrhea

- Anti-diarrhea medicines are often overused
- Some people take them much longer than recommended as they try to end their diarrhea problems themselves, when they really should go to their doctor to find out what's causing the trouble.
- The active ingredient in the most often used OTC diarrhea remedies is loperamide hydrochloride.
- These medications should not be used for more than two days.

Diarrhea

- If diarrhea persists beyond that period, or if a fever or blood in the stool develops, a doctor should be consulted.
- Loperamide should not be used in cases of suspected food poisoning from bacteria such as *salmonella, e-coli*, or *shigella*.
- The pathogens that commonly cause sporadic diarrhea in adults in developed countries are Campylobacter, Salmonella and Shigella species; *Escherichia coli*; Yersinia species; protozoa; and viruses.

Anti-diarrhea OTC

- Taken as directed for a few days to treat mild diarrhea, most OTC diarrhea medicines are very safe.
- In cases of overdose, preparations containing loperamide hydrochloride, bismuth subsalicylate, or kaolin and pectin do present dangerous symptoms, including nervousness, drowsiness, and dizziness.

Irritable Bowel Syndrome

- **Irritable bowel syndrome** (**IBS** or **spastic colon**) is a diagnosis of exclusion.
- It is a functional bowel disorder characterized by chronic abdominal pain, discomfort, bloating, and alteration of bowel habits in the absence of any detectable organic cause.
- In some cases, the symptoms are relieved by bowel movements.
- Diarrhea or constipation may predominate, or they may alternate (classified as **IBS-D**, **IBS-C** or **IBS-A**, respectively).
- IBS may begin after an infection (post-infectious, **IBS-PI**), a stressful life event, or onset of maturity without any other medical indicators.

Irritable Bowel Syndrome

- Affects 5%-11% of the population
- Peaks in the 3rd and 4th decades of life
- Female predominance
- Not associated with serious disease or excess mortality
- Health care cost is *significant*

IBS

- Very often associated with food sensitivities
- Blood Test – MRT Testing
- Increase soluble fiber
- Probiotics can be helpful

What are Probiotics?

- Non-digestible food supplements or ingredients
- Not absorbed or degraded
- Alter the balance of intestinal flora
- Stimulate the growth of beneficial bacteria (i.e., Lactobacillus and Bifidobacteria)

Probiotics

- Lactobacilli –
  - casei
  - plantarum
  - acidophilus
  - reuteri
- Bifidobacteria
- VSL #3 (8 separate organisms: 3 Bifidobacteria, 1 Streptococcus, 4 Lactobacilli)
- Enterococcus
- Streptococcus salivarius
- Saccharomyces

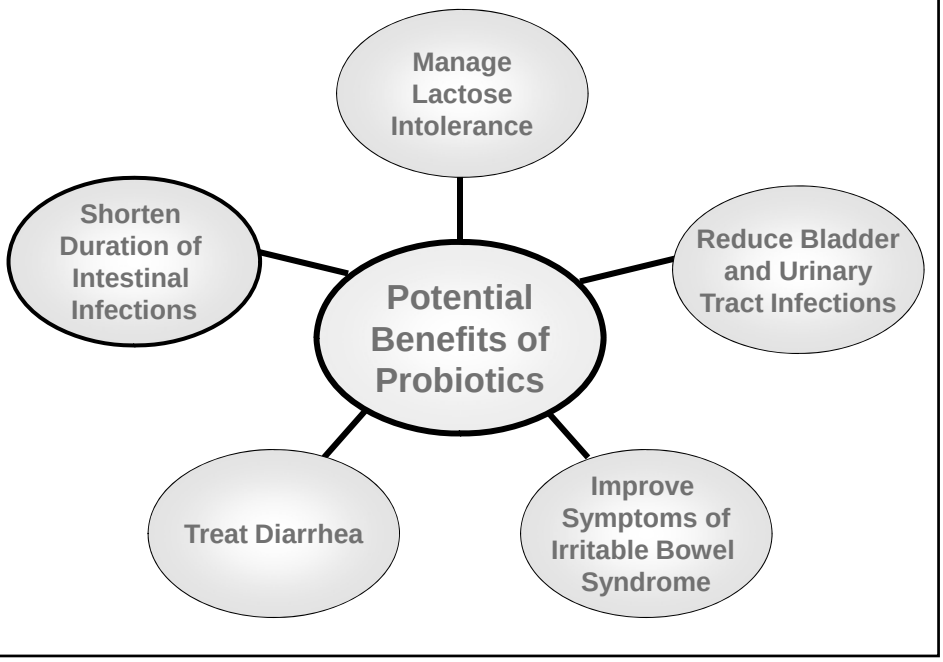
Probiotics

- Live microorganisms
- Help maintain natural balance in intestines
- Promote a healthy digestive system
- > *400 types of "good bacteria"* residing in digestive tract that reduce the effects of harmful bacteria
- Sources: Yogurt, keifer, cultured milk products, sauerkraut, tempeh, miso

SOF
NUTRITION

Health Benefits of Probiotics

- Prevent colon cancer
- ↓ LDL “Bad” Cholesterol
- ↓ blood pressure
- Improve immune function & prevent infections
- Improve mineral absorption
- Prevent harmful bacterial growth in GI tract
- Improvement of intestinal barrier function
- Suppress pro-inflammatory cytokines
- Modulation of pain perception



Probiotics

- Probiotics are commonly consumed as part of fermented foods with specially added active live cultures; such as in yogurt, soy yogurt, or as dietary supplements.
- Naturally found in fermented foods like buttermilk, sauerkraut, kefir, miso, tempeh

Intestinal Flora: A symbiotic relationship with the host

- Human GI tract contains *10x more* bacteria than human cells in the body!
- Protects the host
  - Stimulates immune function
  - Produces antimicrobial substances
  - Most are in the small intestine and colon
  - Include Lactobacillus and Bifidobacterium
  - species, as well as Saccharomycs boulardii

Definitions

Probiotic:

- **live microorganisms that when administered in adequate amounts confer a health benefit on the host**

Prebiotic:

- **nondigestible food ingredients (e.g. oligasaccharides) that may beneficially affect the host by selectively stimulating the growth and/or the activity of a limited number of bacteria in the colon**

Synbiotics:

- combination nutritional supplements comprised of probiotics and prebiotics

Neutraceutical:

- ***Original*: food that provided medical or health benefit**
- ***Current*: dietary supplements that contain a concentrated form of a bioactive substance originally derived from a food.**

FAO/WHO. Guidelines for the evaluation of probiotics in food. 2002

Probiotics & Antibiotic Related Diarrhea

- Meta-analysis of 34 placebo-controlled trials
- • Probiotics reduced the risk of antibiotic-related diarrhea by 52%
- • The benefit was greatest when the probiotics were started within 72 hours of the onset of antibiotic treatment
- • There is little detailed information regarding the optimal dose or timing of supplementation

Probiotics & Infectious Diarrhea

- 2004 Cochrane review of 23 studies:
- – Probiotics reduced overall risk of diarrhea at three days by about 35%
- – Reduced mean duration of diarrhea by ~30 hours
- – Probiotics were a useful adjunct to rehydration therapy in treating acute infectious diarrhea in adults and children

Probiotics & Infectious Diarrhea

- 5 systematic reviews: Overall reduction in duration of diarrhea by 17 to 30 hours
- • Probiotics were generally safe, with no serious adverse effects reported
- • Limited data suggest that the minimal effective dose is 10 billion colony-forming units (Lactobacillus sp.) given within the first 48 hours

Contraindications/Side Effects

- No known absolute contraindications to Lactobacillus sp., Bifidobacterium sp., S. thermophilus or S. boulardii
- • Avoid in severely ill or immunocompromised people, or in children with short-gut syndrome
- • Occasional adverse effects: Flatulence, mild abdominal discomfort, usually self-limited
- • No known interactions with medications or other supplements

Probiotic Dosage

- Dose varies according to organism, indication and delivery method
- • Limited data suggest that the minimal effective dose is 10 billion colony-forming units (Lactobacillus sp.) given within the first 48 hours
- • The dosages of S. boulardii in most studies range from 250 mg to 500 mg per day

Probiotic Dosage

- Some labels are unreliable and have been found to overstate the number of live microorganisms
- • No current evidence that higher dosages are unsafe; however, they may be more expensive and unnecessary
- • Generally hard to find in yogurt

Probiotics

IBD (Inflamm. Bowel Disease)	VSL #3
Antibiotic-associated diarrhea; C. difficile	Florastor, Cultruelle, Dan Activ Bio K
Gut Transit Time	Activia
Lactose intolerance	All yogurts with live cultures
Irritable Bowel Syndrome	Align
Immune Support	Culturelle, Dan Active
Vaginal applications	FemDophilus

Probiotic Sources

- Supplemens
- Yogurt
- Keifer
- Attune Bars

Prebiotics

- Fuels used by bacteria in digestive tract
- Non-digestible carbohydrates that stimulate growth of beneficial probiotics
- Naturally occur in plants, such as garlic, asparagus, and onion
- Other sources: oatmeal, barley, beans, whole grains, leafy green vegetables, berries, yogurt, and milk

Prebiotics in Digestive Health

- Examples: Inulin, Fructooligosaccharides, Fiber
- • Increase concentration of Bifidobacteria, and short chain fatty acids in the feces
- Many trials, most small, indicate possible GI health benefits (IBS, CC, ulcerative colitis, C. difficile, colitis)

Food Sources of Prebiotics

- Jerusalem artichoke
- Asparagus
- Garlic
- Chickory root
- Soybeans
- Barley
- Leeks and onions
- Banana
- Oats
- Inulin
- Soluble fiber
- Raisins

GERD

- Gastroesophageal reflux disease
- Commonly called “heartburn”
- A condition caused by the reflux of stomach acid into the esophagus
- GERD is a potentially serious medical condition that carries a significant risk of esophagitis and other complications

Gastroesophageal Reflux Disease - GERD

- Affects nearly 19 million Americans
- Esophageal syndromes:
  - Heartburn, chest pain
  - Complications: Esophagitis, stricture, Barrett’s esophagus, adenocarcinoma
- Extra-esophageal syndromes:
  - Cough, laryngitis, asthma, dental erosions

GERD and Lifestyle Modifications

- Multiple recommendations that include dietary factors and management of GERD
- Broadly fall into 4 categories:
  - _ Check for food sensitivities!
  - _ Avoid foods that may precipitate reflux
  - _ Avoid acidic food that may cause heartburn
  - _ Adopt behaviors that may reduce acid exposure

GERD and Lifestyle Modifications

- Foods that may precipitate reflux
  – Coffee, alcohol, chocolate, fatty foods
- Acidic foods that may cause heartburn
  – Citrus, carbonated drinks, tomatoes, spicy foods
- Behaviors that may reduce esophageal acid exposure
  – Lose weight, stop smoking, elevate the head of the bed, avoid laying down for 2–3 hours after meals

Effect of Calories and Fat on GERD

- Thirteen healthy subjects (19-31yo)
- 6-hour esophageal pH monitoring
- Three solid/liquid meals of same volume were tested in random order on separate days:
- – High fat (HF) meal: 670 kcal, 58% fat
- – Balanced (B) meal: 670 kcal, 23% fat
- – Calorie-restricted (CR) meal: 380 kcal, 25% fat

Effect of Calories and Fat on GERD

- Esophageal acid exposure (% time pH <4) was lowest with the CR meal
- Reflux episodes were lower in the CR meal
- There is good evidence that GERD is associated with obesity
- The Nurse's Health Study found a dose dependent relationship between BMI and symptoms
- A large meta-analysis reports similar results in both men and women

GERD

- Acid reflux is increased because obesity:
- Increases intragastric pressure
- Increases episodes of LES relaxation
- Weight loss can be EXTREMELY effective for reducing/eliminating GERD symptoms

Summary

- Take care of your gut and it will take care of you!
- You are what you eat
- You are what you digest
- You are what you assimilate!
- Get lots of fiber, fruits, vegetables, whole grains, beans and legumes in your diet
- Drink lots of water
- Get probiotics and prebiotics on a regular basis

Remember

- Make meal times relaxed
- Take time to eat
- Allow time for food to digest
- Eat at regular intervals
- Eat smaller amounts at any given eating episode
- Take small bites
- Focus on eating, not everything else