

Patient Information:

Irritable Bowel Syndrome

How Common is Irritable Bowel Syndrome?

Irritable bowel syndrome (IBS) is the most common *functional* gastrointestinal (GI) disorder with worldwide prevalence rates ranging from 9-23%. *Functional* disorders are conditions where there is an absence of anatomical or biochemical abnormalities on diagnostic tests, which could explain symptoms. It is a chronic (long-term) functional bowel disorder characterized by abdominal pain or discomfort and alterations in bowel habits. It is the most common disorder diagnosed by gastroenterologists (specialists whom study the stomach and intestines). Women tend to suffer from IBS over men by a rate of nearly 2:1. The direct and indirect cost to society in terms of lost productivity and absenteeism is considerable and estimated to be \$30 billion annually. In terms of the college student, IBS can lead to interruptions in social life, class absenteeism, poor performance on tests and lost study productivity.

SYMPOTMS OF IBS

The hallmark symptoms of IBS are chronic abdominal pain and/or discomfort and alterations in bowel habits, such as diarrhea, constipation or alternating diarrhea and constipation. Abdominal pain has been reported as primarily cramping or as a generalized ache with superimposed periods of abdominal cramps. Cramps, although often sharp, may be dull, gas-like, or nondescript pains. The location and intensity of the pains varies between IBS sufferers, and even varies in the person throughout the day. The severity may be intense enough to interfere with daily activities. Several factors may exacerbate or reduce the pain of IBS. Defecation may provide temporary relief whereas the ingestion of food may exacerbate the discomfort in some patients. Many college students report increased symptoms during periods of stress or emotional upset such as during an exam cycle or during periods of conflict with roommates, a boyfriend, or girlfriend. Other symptoms of IBS include bloating, even visible abdominal distention (swelling or bulging), and mucus in the stool.

IBS CLASSIFICATION: Based on Signs and Symptoms

Based on bowel habits, patients are commonly sub-

classified into those having mainly diarrhea, mainly constipation, and those alternating between the two patterns.

- ◆ **Diarrhea predominant IBS** patients report frequent bowel movements (more than 3 per day), loose and/or watery stools, and sudden urge to move bowels (e.g. have a BM, "go poop", defecate, "go number two").
- ◆ **Constipation predominant IBS** patients report infrequent BMs (less than 3 per week), hard stools, straining, and the sensation of incomplete bowel evacuation (feeling like "you still have to go").
- ◆ **Mixed-pattern IBS** is simply an alternating pattern of both diarrhea and constipation with phases of each symptom changing for days to weeks at a time.

UPPER GASTROINTESTINAL SYMPTOMS AND IBS

Upper gastrointestinal (UGI) symptoms are commonly reported by IBS patients. 25 to 50% of patients report heartburn, early satiety (feeling "full" quickly), nausea, abdominal fullness, and bloating. In addition, a significant number report intermittent upper abdominal discomfort or pain (dyspepsia). Overlapping symptoms are more challenging to separate and treat, as the treatments for IBS and UGI symptoms are similar in some ways, but different in other respects, particularly in the medications used.

PSYCHOLOGICAL SYMPTOMS AND IBS

Some IBS patients also have *psychological distress symptoms* such as anxiety and depression, especially in those suffering moderate to severe IBS. Somatization (psychological needs expressed as physical symptoms), anxiety, and depressive disorders are more commonly seen in IBS patients than in non-IBS patients. Psychosocial trauma and early adverse life events (e.g. parental divorce or distant mother-child relationship, physical/verbal/sexual abuse, emotional or physical neglect, parental or sibling death) may *profoundly* affect symptom frequency and severity, daily GI function, and overall health outcome. It is hypothesized that during the years from birth to the age of 10 the human brain is particularly vulnerable to the effects of stress. The

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"hard-wiring" of the nervous system that occurs in these formative years are set for life. Unfortunately for many patients with stressful and traumatic histories, an *enhanced stress response* is developed. IBS symptoms result from the enhanced stress response re-activating in stressful or upsetting situations as the student goes through college life. More and more data is becoming available to support this neurobiological model of the stress and emotional relationship to IBS.

DIAGNOSIS OF IBS

The diagnosis of IBS is based on the practitioner identifying characteristic symptoms and excluding systemic disease. There are *no physical findings or diagnostic tests that confirm the diagnosis of IBS*. Therefore, diagnosis of IBS involves identifying symptoms consistent with the disorder and excluding other conditions that may have a similar presentation. The ROME II Criteria are a consensus statement developed by top GI specialists which states that IBS is the *likely* diagnosis in those patients who have had:

At least 12 weeks, which need not be consecutive, in the preceding 12 months of abdominal discomfort or pain that has two of three features:

1. Relief with defecation: and/or
2. Onset associated with a change in the frequency of stool: and/or
3. Onset associated with a change in the form (appearance) of stool

In a ROME II Criteria validation study, after patients having symptoms suggesting medical conditions *other than IBS** were excluded, these criteria proved 100% accurate in diagnosis of IBS. (*Non-IBS symptoms or alarm signs e.g. bloody stools, unexplained weight loss, family history of colon cancer, and refractory and severe diarrhea). Study accuracy was supported by the fact that at two years follow-up, *none* of the patients in the study initially diagnosed with IBS based on the Rome II Criteria required a change in the diagnosis.

In students *under the age of 50* with no "alarm signs", a medical history, physical examination, and in some cases blood laboratories may be obtained. They can help exclude medical conditions other than IBS. Remember, "blood work" isn't always done on the first visit, especially if your history is very consistent with an IBS diagnosis. Your practitioner may order routine blood tests (blood count, inflammatory markers, liver and pancreatic function, thyroid function, electrolyte levels, markers for *H. pylori* infection) and stool studies (for blood, inflammation, cultures for infectious bacteria, parasite analysis) if your

symptoms are severe, resistant to treatment, and/or ill-defined. Depending on your history, examination, laboratory results and response to treatment, a referral to a gastroenterologist or surgeon *may* be made. These specialists *may* recommend barium enemas (special X-rays) or endoscopic procedures such as upper endoscopy, sigmoidoscopy, and/or colonoscopy. Fortunately, among the average college-aged population who receive them, *most* of these tests are normal. For the student *50 years or older, with new onset IBS symptoms* a referral to a specialist for endoscopy is indicated *with or without "alarm signs"*.

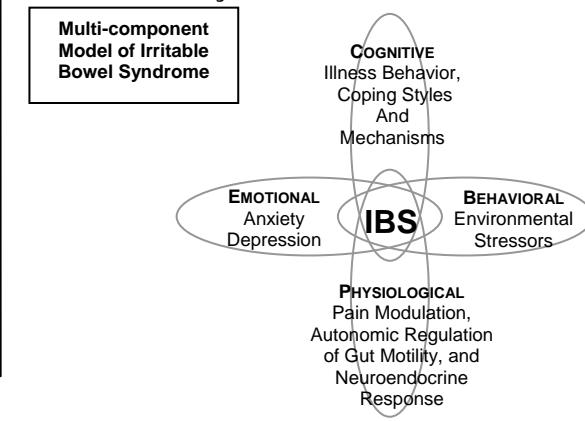
CAUSES OF SYMPTOMS OTHER THAN IBS

While uncommon, these are many of the conditions that may present with symptoms similar to those seen in IBS, but with *uniquely* identifying features – including inflammatory bowel disease (Crohn's and ulcerative colitis), gastrointestinal infections (bacteria, amoeba, parasites), medication effects (laxatives, recent antibiotic use, many antidepressants), bacterial overgrowth, endocrine disorders (diabetes and thyroid disease), lactose intolerance, gluten intolerance (Celiac sprue), and colorectal cancer.

CAUSES AND MECHANISMS OF IBS

Although psychological and physiological abnormalities have been described, the overall cause of the disease (*pathophysiology*) is not well understood. A *multi-component conceptual model* of development of IBS has been formulated. It involves the interrelation of genetic, physiologic, emotional, cognitive and behavioral factors.

Altered Intestinal Motor Function: Altered intestinal motility has been found in IBS, particularly exaggerated intestinal contractions in the lower (sigmoid) colon to psychological stress and food intake. These changes in bowel motility are likely due to alterations in the autonomic nervous system (part of the nervous system that controls involuntary



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actions of the internal organs).

Increased Gut Sensitivity: There has been much evidence to support that IBS patients have enhanced perception of bowel (colon and small intestine) stimuli such as food or gas distensions of the gut wall. The term *visceral (organ)* hypersensitivity has been used to describe this condition.

Increased Stress Mediators in IBS: There is increased evidence to support the prominent role of stress in the development of symptoms of IBS. Several studies have reported increases in catecholamines (epinephrine and norepinephrine) and cortisol levels in IBS patients. Studies are on-going to determine the role these stress substances have in the development and severity of IBS symptoms.

Altered Brain-Gut Communications in IBS: An evolving theory is that normal gastrointestinal function results from *an integration of intestinal motor, sensory, autonomic, and central nervous system activity*. IBS symptoms may relate to *dysregulation* of these systems. MRI and PET scans have shown distinctly different brain activation patterns in IBS patients versus non-IBS patients.

Post-infectious IBS: Symptoms of IBS occur in 7-30% of patients following GI infections, often persisting for years following complete resolution of infections by *Salmonella*, *E. coli*, and *Campylobacter* species. Low-grade inflammation affecting nerves in the gut lining is hypothesized to be the cause. The role of acute viral gastroenteritis common to college campuses (rotaviruses, adenoviruses, reoviruses, and noroviruses) in the development of post-infectious IBS is unknown.

Gender Differences in IBS: Studies have supported the influential role of ovarian hormones (estrogen and progesterone) on bowel function and pain sensitivity. Researchers have reported variations in GI symptoms during different phases of the menstrual cycle, especially increased abdominal pain and loose stools prior to menses.

TREATMENT OF IBS

Treatment of IBS includes both non-pharmacologic and pharmacologic therapy. Most IBS patients have mild conditions and are usually treated by primary care practitioners, rather than specialists. Treatment involves education, reassurance, achievement of a healthier lifestyle, and occasional medication use.

REASSURANCE AND EDUCATION

As a student, being told you have a chronic medical condition may be difficult to accept. IBS is a medical condition with a potential impact on health-related quality of life but *without* significant long-term health risk. IBS is a condition of which you must educate

yourself, as lifestyle can influence symptoms. There are several excellent web sites that can help: www.iffgd.org, www.aboutIBS.org, www.uclachs.org, and www.uclamindbody.org. There are a number of excellent books on IBS on Amazon.com. There will be a number of opinions and theories on IBS. Purchase them with the knowledge that the authors may not be medically trained, information may not be well researched, and there may be an underlying agenda to sell IBS products.

ACHIEVEMENT OF A HEALTHY LIFESTYLE

Sleep, Exercise, and Counseling: It has been established that stress and emotions can be major factors in aggravating IBS symptoms. As a college student it is imperative that you manage your time such that you can achieve 7-9 hours of sleep each night, going to bed and rising at the same time each day (yes, including weekends!). Manage your time so that you can find 30 minutes for moderately intense exercise on most days of the week. These activities will help you adapt to the chronic stress you are under, burn off some of the stress mediators floating in your blood stream and release neurotransmitters that modulate mood and feelings of well-being. Some students feel so stressed and "out of control" that professional counselors at Cook Counseling Center or off-campus are integrated into their care for a holistic approach to IBS.

Diet: The evidence shows that digestion of food is *normal* in those with IBS. However, certain foods may aggravate IBS symptoms in some persons. On one day the salad bar may prompt cramps and diarrhea, but not the following week. Confusing huh? This is likely due to the *cumulative* effects of diet, stress, behavior, cognition, genetics, and your anatomy and physical condition pushing your underlying condition over the edge and causing symptoms. Believe it or not, some aspects of what we know as a "healthy diet" may actually make an IBS patient feel worse! Merely the act of eating (smelling, tasting, or chewing food) may trigger symptoms before you even swallow food! There are 4 foods that seem to be a factor in IBS. These foods are fiber, chocolate, coffee, and nuts. However, many IBS sources cite more extensive lists of food triggers a few of those are listed below.

Foods that may cause cramping and diarrhea*	Foods that may cause gas and bloating*
Red meat, dairy products, dark poultry meat and skin, egg yolks, fried foods, oils, shortening, butter, fats, solid chocolate, coffee, caffeine, beer, wine, liquor, carbonated beverages, sorbitol, fructose, Olestra, Nutrasweet®, and Splenda®	Beans, cabbage, artichokes, asparagus, green peppers, carrots, legumes, cauliflower, broccoli, lentils, brussel sprouts, raisins, onions, bagels, carbonated beverages, dairy, fructose, sorbitol, wine, and dark beer

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Remember, diet is just one of *many factors* that can influence IBS symptoms. In the college student, coffee, alcohol, chocolate, and fatty foods are popular, but these are among the most common dietary IBS offenders.

IBS Elimination Diet: If you suspect food is a factor in your symptoms, begin by:

Making a list of the likely food suspects that may trigger your symptoms (make sure to include fiber, coffee, chocolate, and nuts!).

One at a time, eliminate a food from your list for 12 weeks to see if you notice symptom improvement.

If you do not notice improvement after 12 weeks, begin eating that food again, and move to the next item on your list.

Begin with fiber. Evidence shows that the food that most commonly upsets IBS is fiber. There are 2 types – soluble, found in fruit and vegetables, and insoluble which are mainly derived from cereal. Insoluble fiber seems to be the variety causing the most symptoms. Therefore the simple maneuver of removing brown breads, whole grain bread, natural grain and high fiber cereals and breakfast bars from the diet may be helpful. On the other hand, some patients find eating cereal fiber helps them, especially if they have constipation predominant IBS. If so, continue them. If after 12 weeks, there is no change, restart fiber products (See the section in this pamphlet titled "A Final Word on Fiber").

Move on to other food items as noted above, being wary of chocolate, coffee, and nuts. Eliminate them one at a time. With regard to coffee, it does not necessarily seem to be caffeine that causes symptoms, so substituting tea for your morning "pick-me-up" is allowable. Remember that carbonation in fizzy soda can cause gas and bloating problems! If trouble with meal planning is an issue, a dietitian referral within Schiffert Health Center is available.

If the act of eating *alone* sets your symptoms off, you may need to discuss the use of antispasmodic medications like Levsin (hyoscyamine), Bentyl (dicyclomine), or Librax (chlordiazepoxide/clidinium) 30 minutes prior to meals.

OCCASIONAL MEDICATION:

Pharmacologic (drug) therapy is best used in IBS patients with moderate to severe symptoms refractory (which do not respond) to sleep, exercise, counseling, and diet modifications. Therapy usually focuses on the most bothersome symptom, as medications on the market don't globally treat all symptoms of IBS. At the Schiffert Health Center pharmacy, we have many of these medications for prescription. Some students require occasional use of medicines during challenging and stressful times, like test or exam cycles. Others

require medicines considered preventive in addition to those just mentioned.

Anticholinergic/Antispasmodic Agents: These include Levsin® (hyoscyamine), Bentyl® (dicyclomine), Donnatol® (phenobarbital/hyoscyamine), and Librax® (chlordiazepoxide/clidinium). In theory, these drugs relax the tone or contractile nature of the bowel, therefore reducing cramps and pain. While there are several drugs, few of them have studies to support their efficacy in IBS over placebo. They are commonly used, with sedation, dry mouth, dizziness, and constipation being possible side effects.

Antidiarrheal agents: In IBS with diarrhea, drugs like Imodium® (loperamide) and Lomotil® (diphenoxylate/atropine) can decrease bowel movement frequency, improve loose stool form, and increase sphincter tone. These may help persons with diarrhea, urgency, and fecal soiling. Abdominal pain is not usually helped with these drugs.

Psychotropic Medications: The reasons for using this class of drugs in IBS may relate to several factors, such as the effects these drugs have on gut motility and pain sensation as well as the prominent existence of IBS with psychological distress symptoms (depressed mood, worry, "stress", fatigue, poor concentration, etc.). Among the antidepressants, the tricyclic family drugs Elavil® (amitriptyline) and Norpramine® (desipramine) have been shown in studies to be very effective in patients with IBS for treatment of abdominal pain, bowel movement frequency, and stool consistency. Effective doses are usually less than that use for mood enhancement and are taken nightly as a preventive therapy. Selective Serotonin Reuptake Inhibitors like Paxil®, Prozac®, Zoloft®, and Lexapro® are not used for their influences on pain and bowel regulation but more so for the psychotropic (mood enhancing) effects on the IBS patient.

Novel Serotonin Agents: The prominent role of serotonin in GI motility has led to development of novel serotonin agents such as Lotronex® (alosetron) and Zelnorm® (tegaserod) for women with IBS with diarrhea and IBS with constipation respectively. While these drugs benefited many, recently they have been associated with life threatening events, have been pulled from common distribution, and are now only available through specialists enrolled in the Restricted Use Program. Schiffert Health Center does NOT participate in this program.

Constipation Agents - Bulking Agents and Stool Softeners: There is no evidence that IBS with

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constipation predominant can successfully be treated by increasing fluid intake, increasing exercise, or sitting down for regular "toilet time". Bulking agents such as fiber (Citrucel®, Metamucil®, Fibercon®, etc.) do appear to improve stool frequency, but beyond that that, they and stool softeners (Colace/docusate sodium) had minimal effect on symptoms of chronic constipation. Furthermore there is the risk that fiber will worsen flatus, bloating, or cramps in these individuals (See, "A Final Word on Fiber").

Constipation Agents - Bowel Stimulants/Laxatives: There are several bowel stimulants, laxatives and enemas available over-the-counter and by prescription. These should be used with direction from your health practitioner! These are an option for more moderate to serve IBS with constipation. Theres medications have different mechanisms, but most can be used for episodic constipation. The saline laxatives like Milk of Magnesia®, Citrate of Magnesia®, and Fleet's® Phosphosoda draw water into the bowel lumen after drinking it. Chronic uses of these medications can cause electrolyte imbalances. *Bowel stimulants* such as Dulcolax®, Correctol®, and Senokot® are the most commonly used laxatives. They work by stimulating the colonic musculature. Chronic used has not been shown to create tolerance to medication, addiction, or habituation. *Hyperosmolar agents* such as sorbitol, lactulose, and Miralax® are non-absorbable sugars that have osmotic activity and basically will draw water into the bowel lumen, softening stool, and increasing bowel motility. Cramping and gas are potential side effects with these products. *Enemas* are useful for evacuation of the distal colon and rectum with various agents being used. They are the treatment of choice for fecal impaction.

Gas Reducing Agents: Simethicone (Gas-X®, Mylanta Gas®, Phazyme®) is a foaming agent that joins smaller gas bubbles in the stomach so they can be "belched away". Little evidence supports its efficacy for intestinal gas. Activated charcoal caps (Charco Caps®, Charcoal Plus®) may provide relief of gas in the colon. There are a few studies to support these product's claims. Beano® tablets are the enzyme alpha-galactosides which breaks-down the sugar in beans and many vegetables. It has no effect of gas caused by lactose or fiber.

Herbal Remedies: While studies are lacking, there is anecdotal evidence to support the use of teas and oils/extracts from fennel and peppermint for IBS symptoms. Fennel tea is reportedly good for prevention and treatment of symptoms of bloating and

gas, purporting to "relax the gut". Peppermint oil capsules theoretically help abdominal pain, spasm, and cramps. Ginger has been a time-honored remedy for nausea, in ginger ale soda or extracts. Probiotics like (Culturelle®) are receiving a lot of attention from homeopathic and allopathic medical (gastroenterology) specialists alike. These caps contain live (good) enteric bacteria and are recommended to IBS patients as a preventive treatment.

There are many IBS support websites. One at www.helpforibs.com and has extensive patient information pertaining to diet and lifestyle and many "natural" remedies for IBS symptoms, such as fiber, teas and herbal oils/extracts. For persons who seek a "natural treatment", visit here. Use caution, as most of these products are not FDA approved or regulated, and website sponsors may have sales agenda only.

A Final Word on Fiber: Fiber is a mainstay of IBS non-pharmacologic treatment for constipation predominant IBS, relieving constipation and regulating bowels. Some with diarrhea predominant IBS find it useful in *forming* loose stools and *decreasing* stool frequency. But it may increase gas and bloating! Insoluble fibers (Citrucel®, Metamucil®, oatmeal, oat bran) tend to produce less gas. Soluble forms (pectin, guar gum, other gums) turn to a gel in water and are digested by bacteria in the colon (producing gas). There are multiple brands and selection should be made based on the symptoms you have.

IBS Symptoms	Fiber Treatment
Constipation	Citrucel/ methylcellulose or Metamucil/psyllium
Diarrhea	Metamucil/psyllium
Excessive gas	Citrucel/ methylcellulose or Fibercon/polycarbophil

If you suffer from constipation, diarrhea and/or excessive gas you may consider a trial of a fiber supplement, especially if *eliminating* it didn't alter your symptoms! Dietary and supplemental fiber of any type should be *started at low-dose and gradually increased* to a goal of 20-35 grams a day or to point where symptoms are improved or relieved. Too much too soon will result in gas, loose and frequent stools. The recommendation is to add no more than 4-5 grams of fiber a week, titrating diet intake to soft, formed stools with BMs no more than 2-3 times a day.

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CONCLUSION

IBS is a common and chronic disorder characterized by exacerbations and remissions, which presents with symptoms of abdominal pain and/or discomfort and altered bowel habits. It has a chronic relapsing course and can overlap other functional GI disorders (e.g. dyspepsia) and psychiatric disorders (e.g. depression and anxiety). The life of a college student with IBS offers a number of challenges of controlling

symptoms. Your days are filled with physical and emotional stress, dietary and social "indiscretions" and sleep deprivation. Consider the lifestyle choices you make that influence your symptoms. Medications alone are not likely to make things better if you continue a routine unfriendly to IBS.