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**Short bowel syndrome (SBS)**, also referred to as short gut, is broadly described as a condition in which nutrients are not properly absorbed because a large part of the small bowel is missing. This is most often due to defects existing at birth (congenital), or surgical removal of part of the small bowel. There may not be enough functioning bowel or surface area left in the remaining bowel to absorb needed water and nutrients from food. Sometimes, loss of normal function may occur even when the bowel length is intact. Typically, a loss of half or more of the small bowel will result in SBS.

Short bowel syndrome is a condition characterized by malabsorption – difficulties absorbing both nutrients and fluids. Each year, many patients undergo surgical removal (resections) of large segments of their intestinal tract due to diseases, injuries, or congenital defects. Those patients can be left with too little intestinal absorptive surface areas. This may lead to malabsorption and resulting malnutrition, diarrhea, and fluid and electrolyte imbalances.

The malabsorption caused by this condition can lead to severe weight loss, protein-calorie malnutrition, electrolyte disturbances, vitamin deficiencies, and even kidney stones (specifically calcium-oxalate stones). As a result, a multi-disciplinary team of healthcare providers, dietitians, nurses, and pharmacists are required to help treat such patients. Some patients will develop complications as a result of their SBS. Managing these complications will be a focus of their healthcare team. This fact sheet covers four of these possible complications.

To learn more about Short Bowel Syndrome (SBS), see IFFGD Fact Sheet No. 290  
*What is Short Bowel Syndrome (SBS)?*

## Managing Gastric Acid Hypersecretion

Gastric acid hypersecretion happens when the stomach produces too much acid. It must be addressed after significant resection of the small bowel. It will increase the volume of secretions entering the small bowel and increase acid in the upper gut. Loss of segments in the small bowel results in a change in the levels of hormones involved with digestion that results in continued acid secretion. This increased acid load causes erosion of the gut lining and an increased stool volume contributing to diarrhea, and electrolyte losses. In addition, it alters the ability of bile salts in the body to do their job of breaking down fats, helping in the absorption of fat-soluble vitamins and helping to remove toxins in the body.

The treatment for gastric acid hypersecretion is acid suppression through H2 blockers, and proton pump inhibitors (PPIs).

- Low-dose H2 blockers reduce acid production. Examples of this drug includes famotidine, cimetidine, ranitidine, and nizatidine.
- Proton pump inhibitors (PPIs) affect the glands within the stomach to reduce the amount of acid they produce. Examples of PPIs include pantoprazole, rabeprazole, and omeprazole.

## Managing Bacterial Overgrowth

When a surgical resection results in the loss of the muscle that separates the small intestine and the large intestine (called the ileocecal valve), bacteria from the colon can enter the small bowel. Small intestinal bacterial overgrowth (SIBO) occurs when there are too many bacteria in the small intestine. Symptoms occur after eating because the bacteria in the intestine begin to consume the food in the small intestine before it can be absorbed. These bacteria give off hydrogen and other gases, which cause bloating and diarrhea. These bacteria can also contribute to malabsorption and loss of

nutrients. Treatments for this complication are cycles of antibiotics, and a long-term maintenance approach with probiotics.

### **Managing Bile Salt Malabsorption**

Bile is a fluid produced in the liver and stored in the gallbladder. It is released into the first part of the small intestine (called the duodenum) during a meal to help digest fats and is reabsorbed in the last part of the small intestine (called the ileum). When part of the ileum is lost, it results in malabsorption of bile acids which can lead to diarrhea. This may be treated by medications that bind bile, such as cholestyramine (Questran, Cholybar). However, when too much ileum is removed (greater than 100 cm/3.3 feet of the terminal ileum), more severe bile salt malabsorption may occur, and the liver is unable to compensate. When that happens, cholestyramine may worsen steatorrhea, or undigested fat in the stools.

### **Managing Diarrhea**

Current supportive medical treatments include the use of medications that reduce fluid loss and decrease diarrhea. Reducing motility slows transit time and increases intestinal absorption. Examples of these agents include loperamide (Imodium), diphenoxylate with atropine (Lomotil), opium, and codeine. Octreotide is another drug that may help increase absorption time and decrease diarrhea. It reduces bile and pancreatic secretions and gastric acid production, while inhibiting fluid and electrolyte secretion from the small bowel. In addition, it slows stomach emptying allowing increased transit time.

### **About IFFGD**

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