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International Foundation for Gastrointestinal Disorders (www.iffgd.org)

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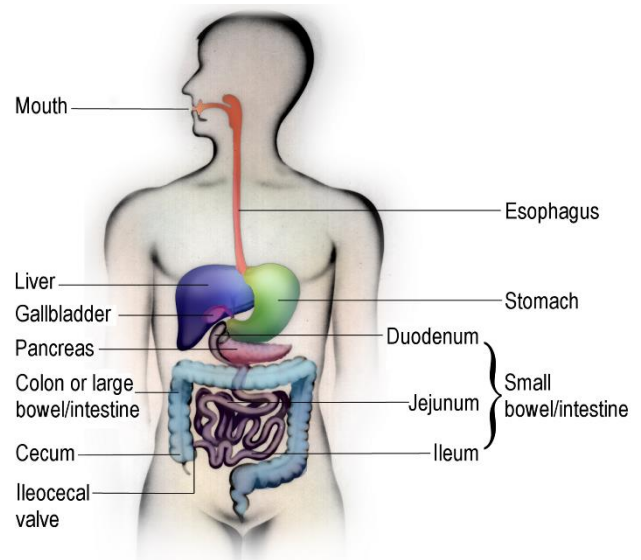
Short bowel syndrome (SBS) is broadly described as a condition in which nutrients are not properly absorbed because a large part of the small bowel is missing. This is most often due to defects existing at birth (congenital), or surgical removal of part of the small bowel. There may not be enough functioning 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 then may lead to malabsorption and resulting malnutrition, diarrhea, and fluid and electrolyte imbalances.

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

Understanding Malabsorption

The food and liquid must be converted into forms that the body can use as nourishment. What we eat and drink is broken down into small molecules that are absorbed into the blood to nourish cells. The process is carried out in the digestive system, which includes the mouth, esophagus, small intestine (or small bowel), and large intestine (colon or large bowel). The liver and pancreas produce digestive chemicals or juices important for digestion.



Digestion begins in the mouth where food is chewed, mixed with saliva, and swallowed. It moves down the esophagus to the stomach. It is then passed to the small intestine where most of the nutrients are absorbed into the body. The small intestine has 3 segments:

- the duodenum: digest fats and fat-soluble vitamins (Vitamin A, D, E, and K carbohydrates, and fats)
- the jejunum: the majority (about 90%) of nutrient absorption occurs here. Nutrients include proteins, carbohydrates, vitamins, and minerals
- the ileum: absorbs water, bile salts, and vitamin B12

Depending on which parts of the small bowel are removed or not functioning properly, deficiencies of certain nutrients will result. These deficiencies can be many and complex. Examples include:

- Iron deficiency (duodenum)
- Vitamin and mineral deficiency; and malabsorption of carbohydrates, proteins, and fats (jejunum)
- Vitamin B12 deficiency and malabsorption of bile acids (ileum)
- Small intestinal bacterial overgrowth (SIBO) and increased fluid losses (ileocecal valve)

Nutrition Strategies for Short Bowel Syndrome (SBS)

Nutrition strategies aim to prevent malnutrition and dehydration and maintain the best possible nutrition status. This may include oral eating, enteral nutrition, and parenteral nutrition. All methods may be used by patients in their homes. Nutrition support specialists (registered dietitians, nurses, healthcare providers) play a key role in helping manage SBS. Nutrition specialists will tailor the approach used to each person according to their individualized needs and provide detailed dietary guidelines. Nutritional needs may change over time.

IFFGD's **Dietitian Listing** is a resource that allows you to search for a dietitian that is in your area or treats a specific condition.
<https://www.iffgd.org/resources/dietitian-listing.html>

The three ways to intake nutrition is through

- Oral Eating
- Enteral nutrition
- Parenteral nutrition

Oral Eating

Oral eating is preferred whenever possible. Recommended diet components and balance of nutrients will vary in each person with SBS. Numerous factors influence this including the resection site(s) and remaining bowel.

In most people with short bowel syndrome the colon is intact. The general dietary guidelines for those with a colon involve a low fat, high carbohydrate diet. A diet that includes chopped, ground, or well chewed nutrient rich foods, with small frequent meals (up to 6–8 per day) is recommended. Fluids should be taken in between meals rather than with meals. Concentrated sweet foods and liquids should be avoided; and foods high in oxalate limited to avoid kidney stones. Lactose restriction may help some individuals, as well as limiting alcohol and caffeine.

With greater stool losses, recommendations are for beverages formulated to replace fluid and electrolytes

(isotonic). Oral rehydration solutions contain specific amounts of sodium, carbohydrate, and water, which increase fluid absorption in the small bowel. Salty meals and/or snacks, plus a soluble fiber supplement can be helpful when the absorptive colon segment is present. In addition, a probiotic supplement, multivitamin, and mineral supplements may also be advised. A supplement of pancreatic enzymes is often used to aid in digestion and help prevent gas and passing fat in stools (steatorrhea) when other measures are not effective. The type and dose of supplement advised will depend on the site and extent of surgical resection.

Enteral nutrition

Enteral nutrition is used when oral eating does not supply adequate nutrition. Enteral nutrition involves the delivery of liquid food to the stomach or small intestine through a feeding tube. While not without risks, it is associated with fewer complications than parenteral nutrition.

Both enteral nutrition and oral eating stimulate the remaining intestine to function better (adaptation). This may allow patients to avoid or discontinue enteral nutrition.

Parenteral nutrition

Parenteral nutrition bypasses the digestive system. It involves the delivery of fluids, electrolytes, and liquid nutrients into the bloodstream through a tube placed in a vein (intravenous or IV). It is often needed short-term after resection while the remaining bowel adapts. It may be needed long-term depending on the bowel's ability to absorb nutrients. If there is greater than 4 feet of small bowel remaining, then attempts to go from daily parenteral nutrition to a less frequent use can be tried.

Parenteral nutrition is a complex therapy. The long-term use of parenteral nutrition significantly impacts quality of life such as loss of sleep, mobility, and social interactions. It also increases the risk of infections and other complications. Some life-threatening complications include liver failure, vein thrombosis (blood clot), and sepsis (bloodstream infection). A specialist in nutrition support will provide detailed

instructions on how to use and maintain parenteral or enteral nutrition.

The length of remaining and functioning small intestine is a key factor in deciding which nutritional strategy to take. The length needed for adequate absorption will be influenced by whether the colon is intact. When nutritional goals cannot be met by other means, medical management will likely rely on long-term use of parenteral nutrition.

Removal of up to 50% of total small bowel is generally well tolerated from the standpoint of maintaining nutritional requirements. If greater than 50% of small bowel is removed, then the amount of functional small bowel remaining and whether the colon is still present are the determining factors if parenteral nutrition can be avoided.

Working With a Healthcare Team

Managing SBS requires the patient and often family members working together with a team of healthcare professionals. Members of the health care team may include primary care physicians, gastroenterologist surgeons, nutritional specialists, nursing specialists, and pharmacists. Often, the primary care physician will take the lead in managing and coordinating the patient's care. If intestinal transplant becomes necessary, other specialists may be brought in including social workers, psychologists, and financial counselors to help deal with the complexities of organ transplants.

The most important member of the healthcare team is the person with SBS. Family members or parents of children with SBS play essential roles as caregivers. Patients and caregivers need to have a thorough understanding of the condition and how it may best be managed to meet the individual's needs. This will include recurring contact with healthcare providers, and the use of outside resources, all aimed at helping navigate the complexities of managing SBS long term.

About IFFGD

The International Foundation for Gastrointestinal Disorders (IFFGD) is a 501(c)(3) nonprofit education and research organization. We work to promote awareness, scientific advancement, and improved care for people affected by chronic digestive conditions. Our mission is to inform, assist, and support people affected by gastrointestinal disorders. Founded in 1991, we rely on donors to carry out our mission. Visit our website at: www.iffgd.org.

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