



What is Short Bowel Syndrome (SBS)?

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Short bowel syndrome (SBS), also known 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.

Did you know...

The average total length of the normal small bowel in adults is about 7 meters or 22 feet.

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.

The severity of short bowel syndrome in an individual depends on several factors, including:

- length of the remaining bowel,
- site of the resection,
- presence of the muscle that separates the small intestine and the large intestine (ileocecal valve),
- presence of the colon,
- health of the remaining bowel, and
- ability of the remaining bowel to compensate (adapt).

Symptoms of SBS

Symptoms of SBS result when fluids and nutrients are not properly absorbed. These will vary from person to person. Symptoms often include:

- diarrhea
- fatigue
- pale greasy stools (steatorrhea)
- swelling of lower extremities (edema)
- foul smelling stools
- weight loss
- dehydration
- electrolyte losses
- malnutrition

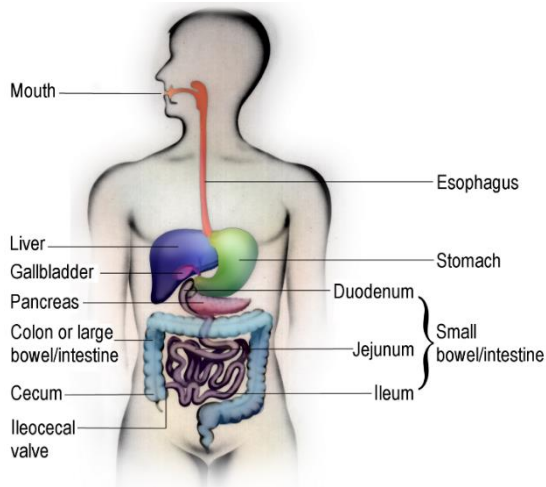
Vitamin and mineral losses can lead to some symptoms. Depending on which vitamin or mineral is deficient, symptom examples include:

- visual disturbances
- excessive dryness of the eyes
- prickling or tingling feeling on the skin
- muscle spasms
- loss of coordination
- loss of bone mass
- easy bruising and/or prolonged bleeding
- lack of energy (lethargy)
- weakness
- difficulty breathing on exertion

Understanding Malabsorption

Food and liquids are 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. Then 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 bowel (small intestine) has 3 segments:

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

Depending on what 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)

What Happens when SBS Develops?

Immediately following surgical resection of the small bowel, the bowel begins to compensate on its own for the loss of absorptive surface area. It undergoes various phases to increase absorption and maintain balance (homeostasis). This process, known as adaptation,

occurs through structural changes that increase surface area in the remaining bowel.

Learn more about the Stages of Short Bowel Syndrome
See IFFGD Fact Sheet No. 291
What are the Stages of Short Bowel Syndrome (SBS)?

Types of Short Bowel Syndrome (SBS)

The result of the adaptive period and the remaining small bowel's ability to compensate determines the "type" of short bowel syndrome a person has. This can be either *Intestinal Insufficiency* or *Intestinal Failure*. Intestinal Insufficiency is when a patient has a reduced length of small bowel remaining but does NOT require IV nutrition or fluids. Those that do require such supportive measures are termed as having Intestinal Failure.

To learn more about Short Bowel Syndrome/Intestinal Failure see, IFFGD Fact Sheet No. 296
Short Bowel Syndrome/Intestinal Failure (SBS/IF)

Risk Factors

Short bowel syndrome can occur in a person of any age. Risk factors for SBS include defects existing at birth and diseases of the small intestine that require extensive or recurrent surgery such as Crohn's disease or gastrointestinal cancers. In addition, SBS can be caused by loss of function due to injury or disease in a normal length small intestine. Other explanations include emergency situations related to injury or trauma, perforated bowel, or blocked or restricted blood flow to the bowel.

Treatment

The aims of treatment for short bowel syndrome are to promote adaptation and maximize the use of the existing bowel, maintain adequate nutritional status, and manage symptoms and complications. Complications can arise as a result of the underlying condition and also, in connection with treatments.

To learn more about the treatments for Short Bowel Syndrome (SBS), see IFFGD Fact Sheet No. 294
Managing and Treating Short Bowel Syndrome (SBS)?

The ultimate goal is for the patient to resume daily life as well as possible. Treatment involves some combination of:

- Nutrition strategies
- Managing gastric acid secretions, bacterial overgrowth, bile salt malabsorption, and diarrhea
- Medications
- Surgery

Treatment of SBS begins immediately after bowel loss. It starts with restoring fluid and electrolyte balance and quickly progresses to nutritional support. Nutritional support includes individualized meal plans and may involve the use of supplements, oral rehydration solutions, enteral nutrition, or parenteral nutrition. Treatment will often include medications, and in some instances surgery. In situations where all other treatment approaches have failed, intestinal transplant is considered. The course of treatment will depend on how well the bowel is able to support individual fluid and nutrient needs.

To learn more about Nutrition and Short Bowel Syndrome see, IFFGD Fact Sheet No. 295
Nutrition and Short Bowel Syndrome (SBS)

Managing Short Bowel Syndrome (SBS)

Managing SBS is challenging for patients, families, and healthcare providers. In addition to dealing with multiple symptoms, special steps must be taken to be sure that fluid and nutrient requirements are met. These steps include high levels of doctor-patient communication, careful patient and/or caregiver education, and high healthcare utilization.

Treatments for short bowel syndrome are aimed at controlling symptoms and maintaining nutritional status. This involves special dietary measures and often use of medications. In some situations, surgery is required. Many people with SBS are unable to take in adequate fluids and nutrients by oral diet alone and must depend on parenteral nutrition (through a vein) or enteral nutrition (through a feeding tube).

Conclusions

Short bowel syndrome is a complex, challenging condition for patients, caregivers, health care providers, and other health specialists. Treatment of the condition involves life-long therapies and approaches that need to be closely monitored. Successful management of SBS depends most strongly on an informed patient and caregivers working closely with a supportive team of healthcare providers.

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