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## Short bowel syndrome

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### Summary

- Short bowel syndrome refers to the malabsorption of food nutrients due to disease or surgical removal of parts of the small intestine.
  - Common causes of short bowel syndrome are diseases where a significant proportion of the small intestine has been damaged or surgically removed. This may include Crohn's disease and necrotising enterocolitis.
  - Treatment aims to provide the fluid and nutrients necessary to support health and includes special diets and medications.
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Short bowel syndrome occurs when a person is unable to absorb food nutrients properly due to problems with their small intestine. This may be because of severe disease or they may have had surgery to remove a significant proportion of the intestine.

The most common causes of short bowel syndrome in infants are abnormalities in the way the intestine has developed and necrotising enterolitis. In adults, common causes include Crohn's disease and traumatic injury.

### The small intestine fails to absorb food nutrients properly

Normally, absorption of food nutrients happens in the small intestine. Food is squeezed from the stomach, through a sphincter (valve) and into the first part of the small intestine (duodenum), where it is mixed with digestive enzymes. Next, muscular contractions (peristalsis) massage the food into the lower parts of the small intestine (jejunum and ileum).

Nutrients are absorbed along the length of the small intestine, which is lined with millions of microscopic, finger-like projections called villi. Each villus is connected to a mesh of capillaries so that nutrients can pass into the bloodstream. Short bowel syndrome refers to the malabsorption of food nutrients due to failure of the small intestine.

### Symptoms of short bowel syndrome

The symptoms of short bowel syndrome can include:

- abdominal pain
- diarrhoea
- stools that float or smell particularly bad
- fluid retention
- unintended weight loss
- extreme fatigue.

### Complications of malnutrition in short bowel syndrome

A person with short bowel syndrome is likely to be deficient in a range of important nutrients such as calcium, folate, iron, magnesium, vitamin B12 and zinc. Some of the disorders caused by malnutrition include:

- anaemia
  - skin rashes
  - unusual skin sensations
  - fatigue
  - dehydration
  - increased susceptibility to infections
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- osteoporosis
- impaired growth and development in children.

### Causes of short bowel syndrome

The most common causes of short bowel syndrome include:

- **Small intestine malfunction** – severe abnormality in the way the small intestine functions. This may be caused by a condition or disease such as intestinal pseudo-obstruction, in which the intestine fails to move food and fluid along its length normally and absorption of food is compromised.
- **Bowel surgery** – may be required to remove a significant proportion of the small bowel due to disease or malformation.

Conditions that may require small bowel surgery include:

- **Necrotising enterocolitis** – a condition that tends to target newborns, particularly premature babies, for reasons unknown. Reduced blood supply to the intestinal walls results in the death of the intestinal lining. The dead tissue must then be surgically removed. Around one-third of babies with this condition will die, despite medical treatment.
- **Malformation of the intestine** – failure of the intestine to develop properly.
- **Crohn's disease** – a condition that causes inflammation of the full thickness of the bowel wall and can target any part of the digestive tract, from mouth to anus, for reasons unknown. If the small intestine is affected, absorption of food nutrients will be impaired.

### Intestinal adaptation after bowel surgery

A person can lose more than half of their small intestine before they experience problems such as malnutrition. This shows the remarkable ability of the small intestine to recover and function after disease or extensive surgery, particularly in children. This is called 'intestinal adaptation'.

After a section of the small intestine is surgically removed and the healthy portions are sewn together, the organ dilates and grows bigger. The villi become larger, so that more food nutrients can be absorbed, and the movement of food along the small intestine (peristalsis) slows to allow more time for absorption of nutrients. The mechanisms behind this adaptation are not well understood. Researchers have discovered that the amino acid glutamine is important in cell regeneration after bowel resection surgery.

### Diagnosis of short bowel syndrome

If a person has had major bowel surgery and a significant length of small intestine has been removed, they may experience symptoms such as severe diarrhoea and weight loss. These symptoms may indicate that the person has short bowel syndrome. This condition can improve in time, once intestinal adaptation takes place.

Some of the tests to confirm the diagnosis of short bowel syndrome may include:

- blood tests
- stool (poo) examinations
- x-rays
- intestinal biopsies.

### Treatment for short bowel syndrome

Cases of short bowel syndrome that don't resolve in time need lifelong treatment. The aim of treatment is to provide the correct balance of nutrients and fluid to enable normal growth, weight gain and activity.

Strategies may include:

- special diet – including foods that are high in kilojoules and nutrients, low in fat and low in residue
- vitamin and mineral supplements
- medication to slow peristalsis
- bile salt-binding medication
- medication to reduce stomach acid, if too much acid is a contributing factor

- in severe cases, special fluids containing nutrients may be given intravenously (injected directly into the vein)
- in severe cases where these are complications of intravenous nutrition therapy, a small intestine transplant operation may be considered.

### **Small intestine transplant**

Small intestine transplant operations are becoming a clinical reality, rather than experimental treatments. Since the small intestine contains lymphoid tissue, problems of rejection need to be overcome with powerful immunosuppressive drugs.

### **Where to get help**

- Your doctor
- Gastroenterologist
- Australian Crohn's and Colitis Association Tel. (03) 9726 9008

### **Things to remember**

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- Common causes of short bowel syndrome are diseases where a significant proportion of the small intestine has been damaged or surgically removed. This may include Crohn's disease and necrotising enterocolitis.
- Treatment aims to provide the fluid and nutrients necessary to support health and includes special diets and medications.

**This page has been produced in consultation with and approved by:**

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