

Pancreatic
Enzyme
Replacement
Therapy

Pancreatic Disorders
Patient Guide



What is the pancreas?

gland:
an organ that releases chemicals for use in the body

enzyme:
a substance produced by the body which brings about a specific reaction

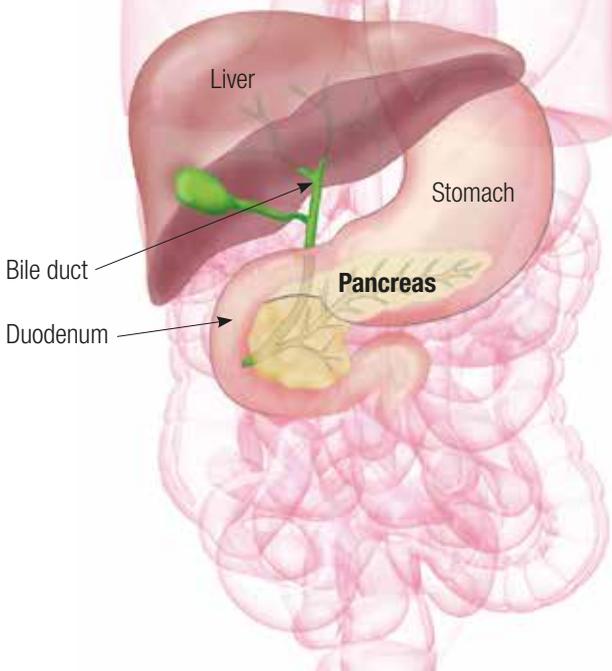
The pancreas is a **gland** that lies underneath the stomach. It produces digestive **enzymes** and insulin. Both of these are essential for you to gain nutrition from the food you eat.

Digestive enzymes help you break down food so that it can be absorbed from your gut into your bloodstream and used by your body. Without these enzymes, food will pass through your digestive system without being broken down and absorbed into your body.

The pancreas produces three main types of enzymes to break down different parts of your food:

- Proteases (to break down proteins)
- Amylase (to break down starchy carbohydrate)
- Lipase (to break down fat)

The pancreas is the main gland in the body that produces the enzyme lipase.



What is malabsorption?

When your pancreas is diseased (i.e. in pancreatic cancer) or inflamed (i.e. in pancreatitis), or if some of your pancreas has been removed or affected by surgery, it may not be producing enough enzymes. Occasionally this may occur after surgery to your stomach or duodenum. Without enough of these enzymes, you may find that some of the food and fluids you take are not absorbed very well. This is called malabsorption.

How do I know if I am suffering with malabsorption?

The colour of your stools may tell you if you are not absorbing your food. If fat is present in your stools, they may look pale or yellow. They may float, and may be difficult to flush away. You may see orange fat globules on them, and they will usually be loose and frequent. You may also lose weight. If you have reduced the amount of fat you eat you may not have these symptoms. If this is the case, it is recommended that you discuss how you have changed your diet with your doctor or dietitian.

If you are not absorbing starchy carbohydrates (i.e. potatoes, pasta, bread, cereal) this can cause bloating, wind and **abdominal** pain. Weaker muscles and weight loss may be the only signs of malabsorption.

It is more difficult to tell whether you are absorbing some of the vitamins and minerals. Blood tests should help identify any deficiencies you may have. It may be necessary to take dietary supplements to improve your stores of these vitamins and minerals.

Long-term deficiencies can cause conditions such as **osteoporosis** and night blindness. It is therefore important to monitor your vitamin and mineral levels and take supplements if necessary.

Erratic or difficult to control blood sugar levels can be a sign of malabsorption.

abdomen:
part of the body containing the digestive organs bounded by the diaphragm and pelvis

osteoporosis:
a condition which causes a thinning of the bones

What is pancreatic enzyme replacement therapy?

To help your body absorb food you can take the enzymes you need in the form of a capsule. This is called pancreatic enzyme replacement therapy. You will usually be prescribed one of the following medications:

- Creon®
- Nutrizym®
- Pancrease®
- Pancrex®

Pancreatic enzyme replacement therapy comes in different forms and strengths. They are usually taken as capsules, and each has a different number or letter following their name to indicate the dose strength. Some also come in powder or granule form. All preparations contain a mixture of all the pancreatic enzymes: lipase; amylase and protease.

Pancreatic enzyme supplements are made from pork products. There is currently no alternative. Please discuss this with your dietitian or doctor if you have any concerns.



How do I take pancreatic enzymes?

The enzymes inside the capsules replace those that your pancreas is unable to produce.

To work effectively, these enzymes need to be taken each time you eat, including meals, snacks and milky drinks. Take them just before you begin eating or with the first few mouthfuls of food as they need to be taken with the food/milky drink to work. If you take more than one capsule you should space them out throughout your meals.



If you are having a large meal with more than two courses, or one lasting more than half an hour, you may need to take additional enzymes with each course.

It is important that you swallow your capsules with a cold drink. Swallowing them with a hot drink (like tea or coffee) may damage them and make them less effective.

Pancreatic enzymes can be damaged at high temperatures. You will need to read the information leaflet for your medicine for details about the maximum storage temperature. Do not keep the capsules in warm places such as window sills, near radiators, in the car or in direct sunlight. They may also be affected by your body heat if they are kept in trouser pockets.

How many enzymes do I take?

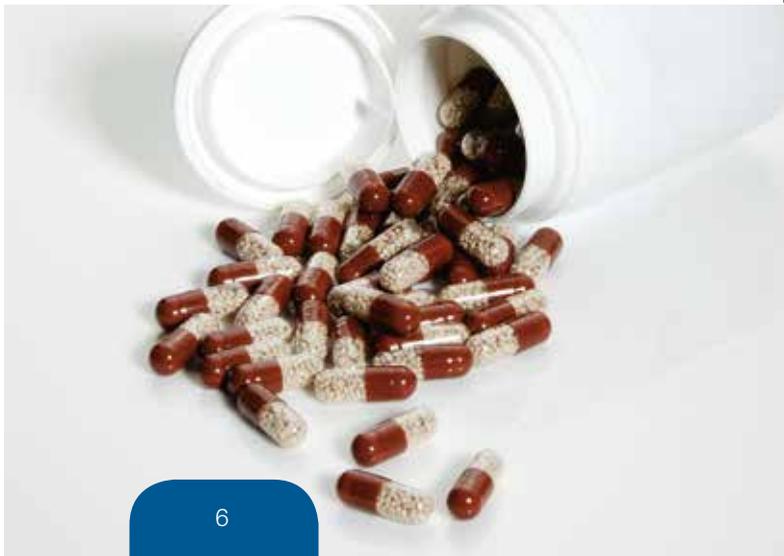
You will need to take enough enzymes to enable your body to digest and absorb food adequately. Your initial dose will be decided by your doctor or healthcare professional. This dose may be gradually increased until your symptoms are controlled. You may need more enzymes to help you digest very fatty foods (such as fried food, takeaways and foods containing lots of cheese, chocolate and pastry).

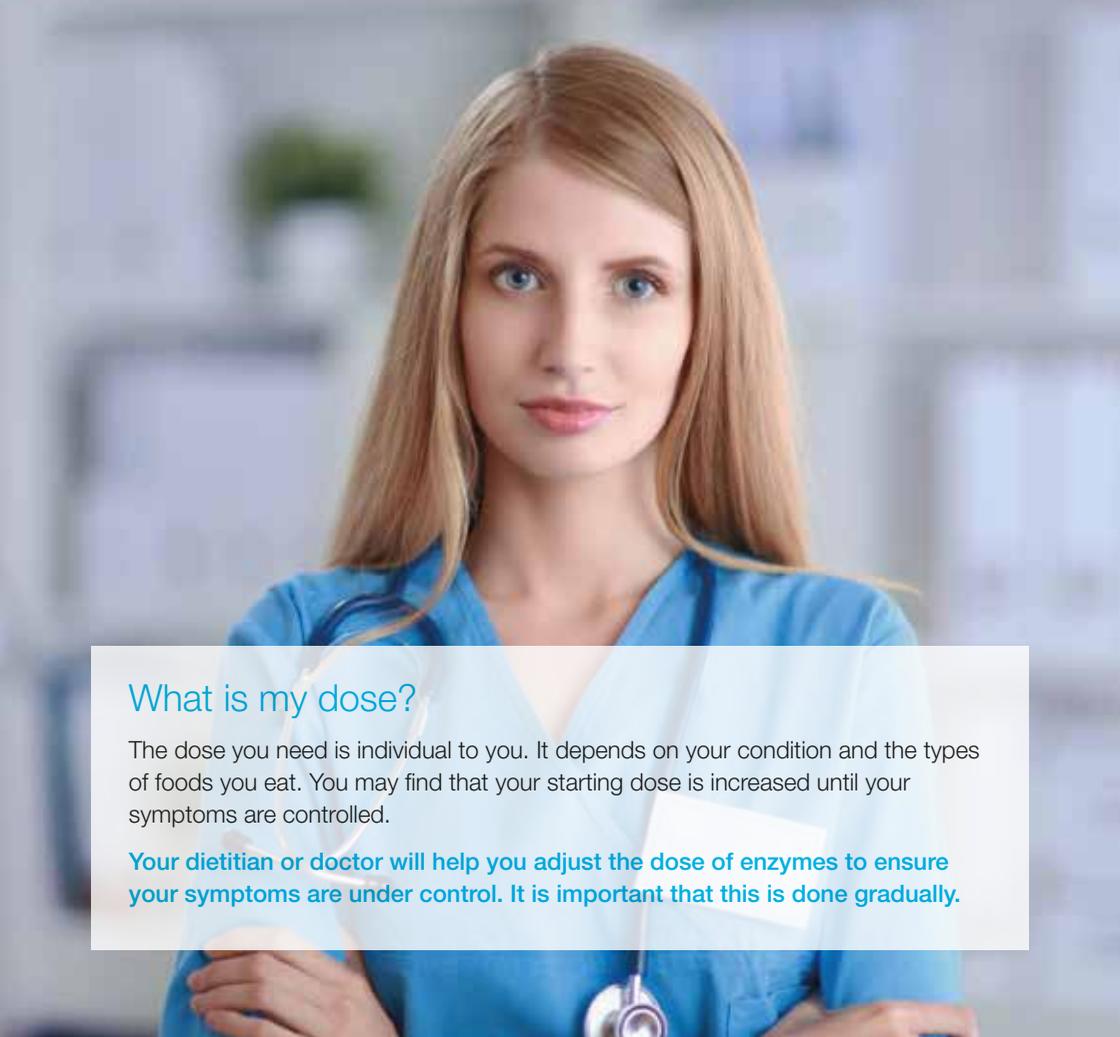
Your dietitian will explain how you can tell how many enzyme capsules are needed with each meal or snack. This includes even small snacks and any drink which is at least half milk.

It is important that you take your enzymes with all your meals and snacks. Without them, symptoms of malabsorption may recur along with weight-loss and vitamin and mineral deficiencies. Sometimes you can experience deficiencies without other symptoms, so it is important you don't stop taking your enzymes even if you feel you no longer need them.

Other medications such as painkillers, can mask some of the symptoms of malabsorption, making it difficult to adjust your enzyme dose. Speak to your doctor or dietitian if you experience symptoms like constipation.

Reducing your pancreatic enzyme dose may seem to help with constipation, but usually does so by causing malabsorption. This will cause malnutrition. It is better to take a laxative or take other steps to treat constipation in this instance.





What is my dose?

The dose you need is individual to you. It depends on your condition and the types of foods you eat. You may find that your starting dose is increased until your symptoms are controlled.

Your dietitian or doctor will help you adjust the dose of enzymes to ensure your symptoms are under control. It is important that this is done gradually.

Your starting dose is:

When not to take enzyme supplements

- If you miss a meal. Do not take enzymes on an empty stomach
- With drinks that are less than half milk such as tea, non-milky coffee, fruit squashes and fizzy drinks
- If you are eating small quantities of any of the following:
 - Fruit (other than avocado or pear)
 - Vegetables (other than potatoes, beans and pulses)
 - Dried fruit
 - Sugary sweets: jelly babies, wine gums, dolly mixtures, marshmallows, fruit pastilles, chewing gum, and mints
- If you take a **very small quantity** of another food, for example:
 - An individual chocolate
 - A small plain biscuit



Some people can manage larger quantities of low fat foods without enzymes. This can be assessed by your dietitian, doctor or nurse specialist once you have established the dose that works best for you.

It is important that you take your enzymes with all other meals and snacks.

What if I can't swallow them?

You can open the capsules and mix the granules (without crushing) with an acidic fruit puree, such as apple sauce. You will need to swallow the mixture straight away, without chewing.



Rinse your mouth around with water and swallow to ensure you take all the enzymes and they don't get stuck in your teeth, gums or dentures.

Alternatively you can ask for a lower dose enzyme capsule. These are smaller than the higher dose enzyme capsules and you will need to take more of them in order to receive your required dose.

Granulated enzymes

If you have been prescribed granulated enzymes then there are a few things that you need to do differently. Granulated enzymes can cause mouth ulcers if they get stuck between your teeth and gums. To reduce this risk, follow these four steps:

1. Mix your prescribed dose with one spoonful of apple sauce or fruit purée
2. **Do not chew**
3. Swallow immediately
4. Take a cold drink to wash the enzymes clear of your mouth

What happens if I take more than I am prescribed?

Read the instruction leaflet carefully. This is not usually dangerous. Drink plenty of fluids and continue taking your enzymes with the next meal as usual. If you feel unwell, contact your doctor.

Are there any side effects?

Since some people experience side effects from enzyme replacement therapy, it is important to read the medicine information leaflet, or speak to your doctor or pharmacist if you have any concerns. The most frequent side effects are nausea, vomiting and abdominal discomfort. These usually settle with time, or by changing the brand of enzymes.

If the enzymes move through you too fast you may experience irritation of the anus. This usually occurs if you have severe diarrhoea before you start taking enzymes. Using antidiarrhoeal medication can help reduce diarrhoea. These symptoms are usually temporary and clear when your diarrhoea stops. If you get severe diarrhoea, let your doctor, nurse or dietitian know.

If you experience discomfort or burning around your anus (this is usually worse after a bowel motion) let your doctor know. Make sure you keep the area clean by washing gently after every bowel motion. This will help to prevent infection.

After washing and drying the area, apply a barrier cream which can be purchased from the pharmacy.

Do I need to have a low fat diet?

It is not usually necessary to follow a low fat diet, though it's useful to identify high fat foods in your diet so you can take more enzymes with them. But don't feel you need to avoid high fat foods.

Higher fat foods may be beneficial for those who have lost a lot of weight, or are below an ideal weight. Your dietitian can provide you with more information on this.

What about other supplements?

Sometimes it is necessary to take some high energy nutritional supplements to stabilise your weight or help gain weight. It is important that these are balanced with your enzyme capsules. Your dietitian will offer advice.

Vitamins and minerals

People taking pancreatic enzymes often need additional vitamins and minerals to help prevent long-term deficiencies, such as **osteopenia** and osteoporosis.

If you need a vitamin and mineral supplement, please read the information leaflet supplied. These supplements should be taken with a meal to improve absorption.

However, if you are taking a calcium supplement this must be taken outside meal times.

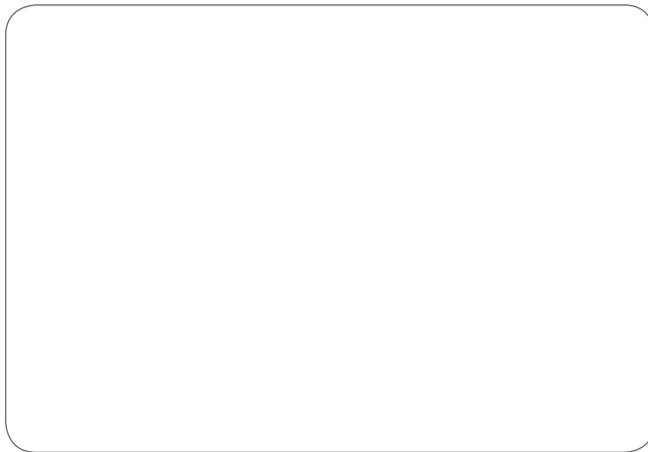
osteopenia:
a slight thinning of
the bones, less
severe than
osteoporosis



Summary

- Lifelong pancreatic enzyme supplementation is important for your nutrition and long-term health
- Dose and frequency varies between individuals
- Your dietitian and doctor are there to help with any queries or concerns

For more information contact your dietitian, doctor or clinical nurse specialist:



Reporting of side effects

If you get any side effects, talk to your doctor, pharmacist, dietitian or nurse. This includes any possible side effects not listed on the package leaflet. You can also report side effects directly via the Yellow Card Scheme at www.mhra.gov.uk/yellowcard.

By reporting side effects you can help provide more information on the safety of these medicines.

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