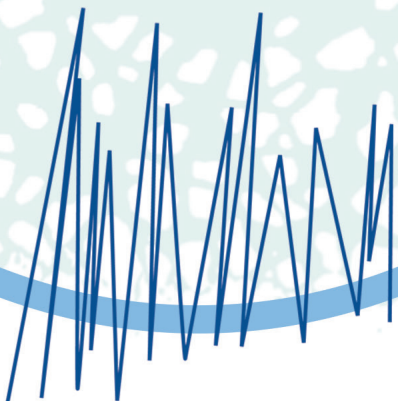
NHS
Royal Papworth Hospital
NHS Foundation Trust

Pancreatic enzyme supplements

A patient's guide



Compassion
Excellence
Collaboration

What is the pancreas?

The pancreas lies underneath the stomach and produces:

- Insulin - a hormone that helps us control our blood glucose levels.
- Enzymes - that help us to break down and digest our food.

The pancreas produces three main types of enzyme to help us digest our food:

- Protease (breaks down protein)
- Amylase (breaks down carbohydrate)
- Lipase (breaks down fat)
- In conditions like Cystic Fibrosis (CF), the pancreas can be affected so that its ability to produce these enzymes is reduced.

Small amounts of proteases are also produced in your gut and small amounts of amylases are also produced in your saliva.

The majority of your lipase is produced in your pancreas so it is usually your ability to digest fat that is the most affected part of digestion.

If your pancreas is not producing enough lipase, it can be hard to absorb all the nutrition you need from food. What often happens is that fat which can't be digested fully passes through the body and comes out when you go to toilet. This is called malabsorption. The symptoms of malabsorption can vary from person to person and are discussed later in this leaflet.

Pancreatic enzymes - why are they important?

If your pancreas is not producing enough enzymes to digest food properly this can have longer-term health consequences.

In the short term not absorbing fat properly can lead to weight loss and fatigue. It can also cause unpleasant bowel symptoms which can vary from person to person.

In the long term not absorbing fat can lead to malnutrition and weight loss which can affect life expectancy.

This can lead to problems with constipation, bowel blockages as well as noting deficiencies in fat-soluble vitamins. This could affect your bones or eyes if not treated.

When you are not producing these enzymes sufficiently yourself you can mimic the function by taking synthetic enzymes with food. This is known as pancreatic enzyme replacement therapy (PERT).

Pancreatic enzyme replacement therapy comes in different forms and strengths. They usually come as capsules and have a different number or letters after their name to indicate the strength. All of the preparations contain a mixture of all the pancreatic enzymes: amylase, protease and lipase.

It is important that you are taking the optimum dose of enzymes, at the correct time to ensure you get all the nutrients from the food you eat. Every person has different needs depending on the amount of pancreatic function they still have and the diet they eat.

Your dietitian will be able to advise you on what strength and dose of enzyme you need. This may change over time as you become older, eat differently or make changes to your other treatments. We have also noted some patients have seen a reduction in the amount of enzymes they require when starting on CFTR modulator treatments. Speak to your dietitian for more information.

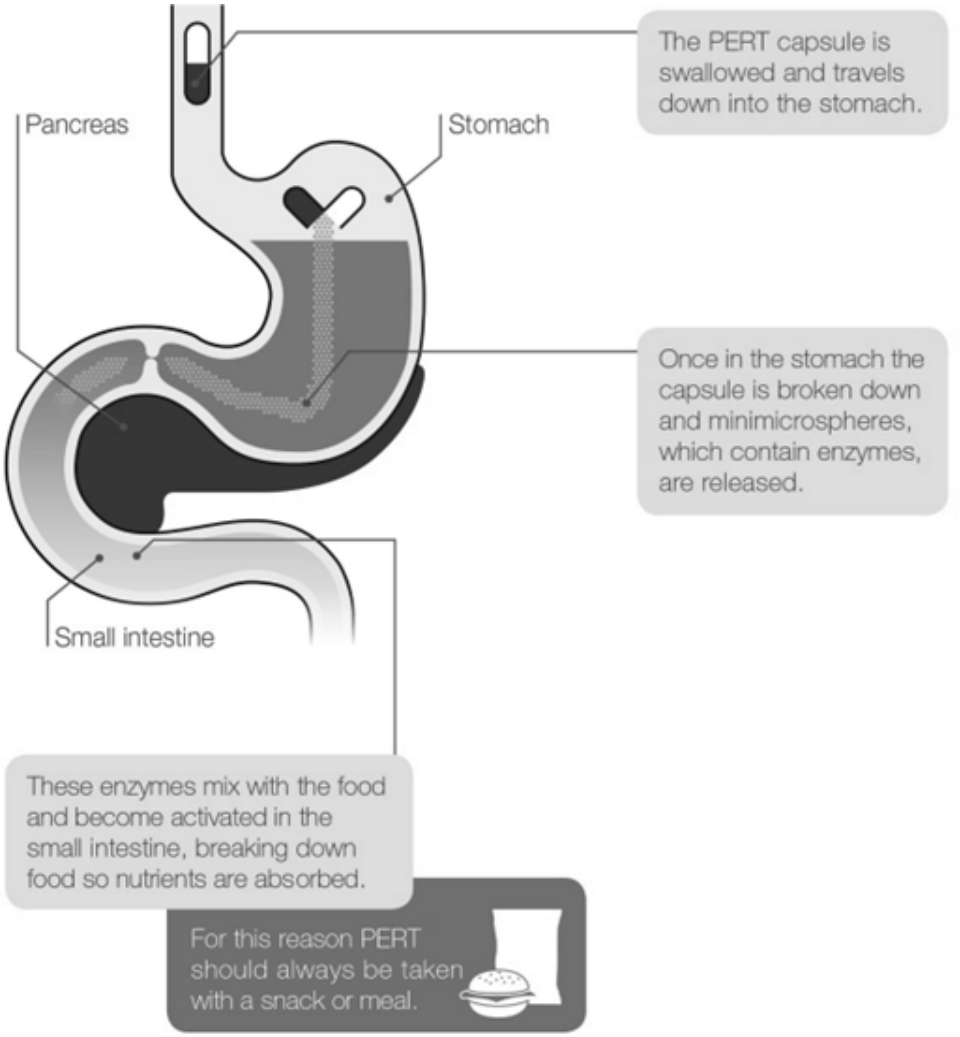
What happens to the enzymes once I've swallowed them?

Newer enzyme preparations have a coating which protects them from the acid in your stomach. This coating that surrounds the capsule is designed to break down and release the enzyme particles when it reaches the duodenum (part of the small intestine) where food is digested.

Once the coating has dissolved, the enzymes are released and start to work on digesting the food you have just eaten.

The action of enzymes can be limited if not taken at the right time. It is important to take them when food is eaten and it can be helpful to spread the enzymes out over the course of the meal, particularly if it takes a while for you to eat or you have several courses. We do not recommend taking your enzymes at the end of your meal.

If you have any questions about when to take your enzymes please discuss this the dietitian.



AHCRE140004
Image supplied by Abbott

Malabsorption

Taking insufficient numbers of enzymes or taking them at the wrong time can result in what is referred to as 'malabsorption'. This is where food is not completely absorbed. The symptoms of malabsorption can vary from person to person and there can be other causes of changes to your bowel habit.

If you are concerned about your symptoms you can discuss these with your dietitian however, there are some classic signs and symptoms to watch out for which suggest inadequate enzymes have been taken:

- Loose, fatty stools that are pale or orangey, or bright yellow in colour.
- Stools that are difficult to flush away and float in the toilet.
- Oily residue in the toilet bowl.
- Bowels opening more frequently than usual or rushing to the toilet after eating.
- Abdominal pain associated with eating.

If you have concerns about your enzyme dose please discuss this with your dietitian.

How to take pancreatic enzyme preparations

- Take with every meal and snack.
- Exceptions are fat free foods such as squash, water, fizzy drinks, fruit, fruit juice, plain vegetables, boiled sweets, jelly and jelly sweets (as these do not contain any fat usually your amylase in your saliva can digest these reasonably well) You may need to take enzymes if you eat very large quantities of these foods to help with the carbohydrate absorption (discuss this with your dietitian).
- Take ideally before and during eating food.
- Enzymes should not be crushed or chewed.

- Enzymes should be swallowed whole for the capsule to protect the enzyme properly.
- Enzymes may be needed with some alcoholic drinks (discuss this with the dietitian).

Enzyme storage

Enzymes preparations can become less effective if they are not stored correctly. Avoid keeping enzymes at high temperatures or in damp conditions.

High temperatures can damage the enzymes and make them less effective. Generally you can store your enzymes in normal room temperature conditions. Your dietitian will advise you if your particular brand needs to be kept in a fridge. Ideally enzymes should not be swallowed with a very hot drink.

Make sure your enzymes have not passed their expiry date as this can also reduce how effective they are. Keep a check on stock rotation and if you have any enzymes in holders that you haven't used in a while.

Guide to adjusting enzyme dose

This is a general guide to adjusting your enzymes according to the quantity of fat in food. Pancreatic enzymes are needed to digest protein, fat and carbohydrate. Fat is the most difficult component to digest and absorb, therefore we use the quantity of fat in foods as a guide as to how many enzymes are needed.

Everyone has individual needs and the correct strength and dose for you can be discussed with the dietitian at clinic. We have broken some meals and snacks into three groups:

- Low
- Medium and
- High fat foods

Your dietitian will discuss the doses for each group of food with you. These lists can then help you to think about which group other foods fit into and give you a guide to how many enzymes to take.

Specific queries and changes can be discussed with your dietitian at clinic.

Lower fat foods dose:

- Cereal & milk (1/2 pint or less of full fat milk)
- 2 x toast with spread, jam or butter
- Porridge
- Doughnut
- Cake bar
- Beans on toast
- Single chocolate bar
- Tea & 2-3 x biscuits
- Yogurt
- Soup
- Croissant
- Crisps
- 1 x cheese on toast
- Breakfast cereal bars
- Tablespoon of nuts
- Snackpots
- Sandwich (not with cheese or mayo)
- Half a pint of milk (full fat)
- Ready bought milkshake
- Stir fry chicken or prawn and vegetables & noodles or rice (no sauces)
- 6 chicken nuggets on own
- Sushi
- Oven chips, fish fingers & beans
- Chicken breast, boiled potatoes & vegetables
- 100g smoked salmon
- 2 x scoops ice cream
- Chocolate mousse
- Rice pudding
- 2 x slices salami or 4 x slices parma ham
- Full fat latte or hot chocolate
- Fortisip Compact®, Ensure
- Compact®, Fresubin®
- 30ml of Calogen®, 30ml of Procal Shot®

Medium fat foods dose:

- Steak, lamb or beef with potatoes & vegetables
- Spaghetti bolognaise
- Individual pizza or two slices takeaway pizza
- Top crust pie or shepherd's pie & vegetables
- ¼ of a quiche potatoes & salad
- Scotch egg or sausage roll
- 2 x snacks chocolate bar & crisps
- Cake bar or crisps & sandwich
- Sandwich with cheese or mayonnaise filling or large sandwich (sub roll or 4 slices of bread with filling).
- 2 x thick sausages & mashed potato
- Scandishake®, Calshake® or Enshake® with full fat milk
- 1 pint of full fat milk
- Macaroni cheese
- Chicken kiev potatoes & veg
- Chilli con carne with rice
- Homemade tomato based curry & rice
- Stirfry lamb or beef with sauce & noodles or rice
- acket potato with butter & tuna mayo or beans
- Hot dog in a bun
- Plain omelette (2-3 eggs)
- 2 x egg on toast with butter
- Takeaway french fries on their own
- ½ avocado
- 75g smoked mackerel
- 30g salmon fillet
- 30g-60g of nuts
- Fish pie & vegetables
- Lasagne 300-450g
- Pasta bake
- Risotto
- Stew & dumplings
- Apple pie & ice cream
- Cheesecake
- Chocolate brownie
- Profiteroles
- Enchiladas
- 2 x fajita wraps
- Chicken kebab

- Breaded fish, oven chips & peas
- 30-40g bag of nuts
- Pot noodle

High fat foods dose:

- Fish & chips takeaway
- Large pizza or more than 3 x slices of take away pizza
- Chinese takeaway especially chow mein or sweet & sour in batter
- Pork pie (150g)
- Curries made with ghee or full fat coconut milk or cream
- Takeaway burger & french fries
- Sunday lunch & dessert
- Fried breakfast including meat
- Individual pie (pastry lid & base) as part of a meal
- Doner meat or lamb kebab
- Fried takeaway chicken or chicken burger
- Lasagne more than 450g

These lists are meant as a guide only to help you to start to recognise which foods contain the most fat. Understanding how much fat your food contains can help you to make decisions about how many enzymes to take. This is called 'titration'.

Often you can get into habits with your enzymes and take set numbers with meals or snacks.This can then cause problems if your eating habits change, or you eat new unfamiliar foods and mis-judge the enzyme dose.

If you are unsure about how to titrate your dose speak to your dietitian.

Royal Papworth Hospital NHS Foundation Trust
A member of Cambridge University Health Partners

Papworth Road
Cambridge Biomedical Campus
CB2 0AY

royalpapworth.nhs.uk

01223 638000

Alternative versions of this leaflet

Large print copies and alternative language versions of this leaflet can be made available on request.

View a digital version of this leaflet by scanning the QR code.

Become a member

As a member of Royal Papworth Hospital Foundation Trust, you could have your say on how the organisation is run, now and in the future. You will receive regular information and news from Royal Papworth and get invited to exclusive events. Membership allows you to vote for your representatives on the Council of Governors, talk to your Council of Governor representatives and stand as a governor.

Scan the QR code or head to royalpapworth.nhs.uk/membership to find out more.

Author ID:	Cystic fibrosis diabetic team
Department:	Dietetics
Printed:	July 2025
Review date:	July 2027
Version:	3.3
Leaflet number:	PI 151