

Pancreatic Enzyme Replacement Therapy

This leaflet is for people diagnosed with conditions of the pancreas and aims to help you manage your eating and pancreatic enzymes.

Your name: _____

Your dietitian: _____

Dietitian contact number: **0118 322 7116**

What does the pancreas do?

The pancreas is an organ which lies beneath the stomach. It has two main functions:

1. Produces enzymes that help in the digestion and absorption of foods containing fat, protein and carbohydrate.
2. Produces insulin which helps to control the amount of glucose (sugar) in your blood.

Why do I need pancreatic enzymes?

If your pancreas is damaged, partially removed or inflamed, it may not be able to produce enough enzymes to break down your food and as a result you may not be able to absorb enough nutrients. This is called pancreatic exocrine insufficiency (PEI) or **malabsorption**. PEI is diagnosed by testing a sample of your stool (poo) for an enzyme called 'faecal-elastase'. Sometimes, a scan of your abdomen may also be required.

If left untreated, PEI can lead to malnutrition. This may result in bone weakness such as osteoporosis or osteopenia, and deficiency of fat soluble vitamins (A, D, E and K), which may lead to further complications.

Signs of malabsorption include:

- Abdominal (tummy) pain/cramping
- Bloating
- Wind
- Indigestion
- Weight loss
- Fatigue
- Need to open bowels urgently especially after eating
- Stools may be foul smelling
- Stools that float and are difficult to flush
- Pale or yellow coloured, oily stools (steatorrhea) – *steatorrhea occurs when undigested fats in the stomach lead to frothy, foul-smelling poo, which float and are difficult to flush.*

What is Pancreatic Enzyme Replacement Therapy (PERT)

We treat malabsorption by replacing the enzymes that your body is lacking. This is done by taking capsules of synthetic enzymes (PERT) which help your body break down and absorb the fat and other nutrients from your food, drinks and snacks.

PERT contain a mixture of enzymes:

- Lipase which digests fat from your food
- Amylase which digests starchy carbohydrate foods
- Protease which digests the protein from your food

There are several different brands of PERT available:

- Creon®
- Pancrease™ HL
- Pancrex V™

All PERT brands are made from pork products and are not Halal Certified due to porcine origin. However, the Imam will usually allow them to be taken for medical purposes. Patients may wish to discuss this with their family and religious community prior to prescription.

There is currently no alternative to PERT to treat pancreatic enzyme insufficiency, so vegan/vegetarian patients should consider the importance of taking PERT as vegan/vegetarian alternatives sold in health food stores, e.g. papaya enzymes, do not provide adequate doses.

Your PERT dosage will be agreed with your GP / dietitian. Usually, half of the dose your doctor has prescribed for a full meal is what you should take with a snack.

PERT capsules are available in different strengths. Some brands have a number behind the name such as Creon 25'000, which indicates the strength of the dose. This may sound like a lot, but is not as much as a healthy pancreas would normally produce. For example, after eating a small meal of 300-600 calories, the pancreas may normally produce more than 720'000 units of enzymes.

Storing your PERT

Don't store the enzymes in hot places – for example, in the glove box of your car in hot weather, near radiators, in direct sunlight, or in trouser pockets.

How do I take my PERT?

To work effectively, PERT needs to be taken each time you eat or have a milky drink. Follow these simple guidelines:

- Take them just before or within the first few mouthfuls of your food
- If you have been advised to take more than one capsule, split the dose to half at the start of the meal and the other during or at the end of the meal
- If you are eating a large meal, a meal of two or more courses or a meal that lasts longer than half an hour, you may need to have additional capsules during the meal or with each course
- Swallow your capsule whole with a cold drink. Do not take with hot drinks as these may damage the enzymes
- Do not crush, chew or retain in your mouth

- If you struggle with taking capsules you can open the capsule and sprinkle onto a spoonful of soft food or into acidic fruit juice/apple sauce and then take *without* chewing. If the granules aren't swallowed quickly or are caught in your teeth they could lead to mouth ulcers.
- Follow this with a cold drink to wash any residue from your mouth
- Do not open the capsules if you have mouth ulcers or open mouth sores/wounds or a tooth abscess.
- If you forget to take the PERT, wait until your next meal and then take as usual.

For further information, refer to the manufacturer's medication guide and full prescribing information.

What foods should I take my PERT with?

The dosage of PERT required is different for everyone but generally, **the more fat a food contains, the more PERT capsules you will need.**

You will need to take PERT with all meals, snacks and possibly some drinks. You will need to take more enzyme supplements for larger meals and fatty foods, as these need more enzymes to digest them.

To manage your PERT dosages it is helpful to become familiar with the fat content of foods. See below for examples of low and high fat foods.

Low fat foods include:

- Cereals with semi skimmed milk
- Fruit cake / scones / bread
- Low fat milk based dairy foods eg. low fat yoghurts
- Milky drinks made with skimmed or semi skimmed milk

High fat foods include:

- Takeaway and fried foods e.g. fish and chips, fried chicken
- Roast dinners
- Foods made from batter e.g. battered fish
- Cheese and cheese based meals
- Pastries e.g. sausage rolls, quiche
- Naturally high fat meats e.g. burgers, sausages
- Nuts
- Large volume supplement drinks e.g. Enshake
- Chocolate products

Should I be following a low fat diet?

A low fat diet is not recommended as you may become depleted in essential fatty acids that your body needs to function properly. You may be advised to choose high calorie foods, especially if you have lost weight.

Following a healthy balanced diet is important to make sure you get all the nutrition your body needs. This means eating a regular meal pattern e.g. breakfast, lunch and dinner and including a variety of foods from all five food groups. For further guidance visit www.nhs.uk/live-well/eat-well/

Are there any foods / drinks that do not require PERT?

Foods or drinks that contain little fat, carbohydrate and protein do not require enzymes.

These include:

- Most fruit (except coconut and avocado) and vegetables (except potato, beans and pulses) eaten on their own (fresh, tinned, frozen or dried)
- Drinks such as fruit juices, squashes and flavoured waters, fizzy drinks
- e.g. lemonade, clear soups e.g. Bovril and drinks that contain very small amounts of low fat milk e.g. tea
- Sugary foods such as boiled sweets, marshmallows, chewing gum, jelly, jams, marmalade and honey

How will I know if I am taking enough PERT?

If you are taking enough PERT you would expect your symptoms to improve or resolve and your weight to be stable. If you are still showing signs of malabsorption you will probably need to increase your dosage of PERT.

As the amount of PERT required varies between individuals, the starting dosage is often not high enough to manage your symptoms and most people find they have to increase them. It may take some time to work out what the right dosage is for you.

Keeping a food diary to record what you eat and drink, your symptoms and the PERT dosage you take can be helpful to determine whether ongoing malabsorption is due to inadequate dosing or incorrect administration, as well as working out whether you need to increase the amount of PERT.

Don't change what you eat to try to manage your symptoms – for example, don't reduce the amount of fat in your diet if you have steatorrhea, instead make sure you take enough enzymes for what you are eating.

If your symptoms do not improve despite taking PERT correctly, try the following:

1. Increase your PERT dose by one capsule
2. Repeat this after 3 days if no symptom improvement
3. If symptoms continue, speak to your GP about a type of medication called a proton pump inhibitor (PPI) as this may help to reduce the stomach acid and in turn increase the effectiveness of PERT
4. If no symptom resolution, speak to your GP as tests can be arranged to check for other digestion problems.

What if I've lost weight?

Weight loss is a common symptom of malabsorption, especially if you have been struggling with it for some time or if you are not taking sufficient quantities of PERT. This is because you will not be absorbing all the nutrients from your food. It may be necessary for you to increase your PERT dosages and follow a higher fat, higher calorie diet. Consult your GP / dietitian for

advice on how to increase the nutritional adequacy of your diet. They may also suggest you take high calorie nutritional drinks e.g. Homemade fortified milkshakes or over the counter drinks, e.g. Meretine / Complan, or prescribable drinks. You would need to take PERT with these products.

Other supplements

Currently PERT is the only available treatment for malabsorption and there is no evidence for any other ‘over the counter’ malabsorption supplements.

Along with fat, carbohydrate and protein, you may not be absorbing some of the smaller vitamins and minerals from your diet. This can be difficult to identify and so a blood test can be helpful to check for any deficiencies. Discuss this with your GP / dietitian.

Recommended starting dose of Creon® and example meal plan

The recommendation is usually to start with about 50'000 units to 75'000 with main meals and 25'000 – 50'000 units with snacks, depending on fat content.

		Starting dose
Breakfast	Cereal with full cream milk	2 x 25'000 Creon
Lunch	Beans on toast	2 x 25'000 Creon
Main meal	Roast chicken, potatoes and vegetables	2 - 3 x 25'000 Creon
Pudding	Individual portion of apple crumble and custard	1 x 25'000 Creon
Snacks	Yoghurt 1 plain digestive biscuits	1 x 25'000 Creon No Creon
Drinks	2 x cups of tea Small glass orange juice Water Hot chocolate made with full cream milk	No Creon No Creon No Creon 1 x 25'000 Creon

My recommended dosage of PERT = _____

Notes

Berkshire Healthcare Dietitians:

East Berks: 01753 636 724 West Berks: 01635 273 710

Please ask if you need this information in another language or format.

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