



**University
Hospitals Sussex**
NHS Foundation Trust

Pancreatic Exocrine Insufficiency (PEI)

Patient information

What does my pancreas do?

The pancreas produces enzymes, which help you to digest food. These enzymes break up proteins, fats and carbohydrates from the food that you eat, into smaller pieces which your intestines can then absorb. Your pancreas also produces insulin, which controls your body's glucose levels.

What is pancreatic exocrine insufficiency?

Pancreatic exocrine insufficiency (PEI) means that your pancreas can't produce enough enzymes to digest your food properly. This means that your body can't absorb enough nutrients, proteins and vitamins from your food. In severe cases, this will mean that you lose weight and run low on certain vitamins, particularly fat-soluble vitamins (A, D, E & K).

However, before these problems appear, most people notice that the food which is not being absorbed properly goes 'straight through' the small bowel into the colon. This causes diarrhoea (loose, runny poo), wind, cramps, bloating or Steatorrhoea (where too much fat in your poo causes bad-smelling, greasy, yellow diarrhoea which is difficult to flush).

What are the causes of pancreatic exocrine insufficiency?

Anything which affects your pancreas can cause pancreatic exocrine insufficiency, for example: acute or chronic pancreatitis, pancreatic surgery, cystic fibrosis or even pancreatic cancer. Other conditions such as gastric-bypass surgery and coeliac disease are also associated with PEI.

Most commonly however, there is no obvious reason why someone has developed PEI. Unless there are symptoms which suggest that you have one of these other conditions, we would not usually investigate any further to find out why you have PEI.

How is pancreatic exocrine insufficiency treated?

PEI is treated by taking supplements to replace the enzymes that your pancreas can't produce. Taking these supplements WITH FOOD will allow your body to absorb nutrients normally again and stop the symptoms which come from poor absorption.

These enzyme supplements are called Pancreatin, but are produced under brand-names such as: Creon®, Pancrex®, Nutrizym®

and Pancrease®. Creon is the most commonly used variety. The supplements can be taken as powders, tablets or capsules.

All of these enzyme supplements start out as porcine (pig) enzymes. However, they have been deemed acceptable for use by the chief Rabbi and also by most Muslim groups, due to the lack of alternative treatment and the extensive processing which they have undergone.

When should I take Creon®?

These tablets need to be taken every time you eat a meal, have a milky drink, or a snack. It is very important that you take the supplements WITH the food. They must go through your gut with the meal in order for them to work.

The tablets / capsules need to be swallowed whole, with water, not crushed or chewed. Do not hold the tablets in your mouth, because if they dissolve they could irritate the inside of your mouth.

If you find the tablets or capsules difficult to swallow, then there is a powder alternative.

How much Creon® should I take?

Creon® comes in different unit strengths (for example, Creon®25 000 or Creon®40 000). The amount that you need to take will depend on how severe your PEI is and how much you are eating.

A standard starting-dose would be 40 000 units with each main meal and 25 000 with a snack or a milky drink. It sounds like a lot, but a healthy pancreas produces 720,000 units or more for just a small meal.

A larger meal, or meals that contain more fat (such as curry, pizza, pastry, fried food), will need more enzymes to digest. In these situations simply take two, or more, of the 40,000 unit capsules with the meal.

It is also important to remember to take supplements when you have a snack containing a lot of fat, particularly crisps, cake and chocolate. There is no maximum to the amount of Creon that you can take. Any extra enzymes will just pass through your system without harming you. However, people commonly make the mistake of not taking enough enzyme supplements. If your symptoms persist, try to gradually increase the dose that you are taking. It may take some time to work out the best dose for you.

What are the side effects?

People who have been affected by PEI for a long time will often have become used to having their bowel completely empty. This means that when they first start to use Creon, they may feel full, bloated or uncomfortable, and report more wind. This fullness can even lead to some people feeling sick. For this reason, it is a good idea to build these medicines up slowly. Your bowel will usually adjust and these issues resolve with time. Please refer to the packet insert for information on other side effects.

Do I need to take any other medication?

If you still have symptoms despite being on a good dose of Creon, then taking medicine to protect the supplements, by reducing stomach acid, may be effective. These medicines are called Proton Pump Inhibitors and examples include Omeprazole and Lansoprazole.

Should I change my diet?

Once you are on the enzyme supplements, you should be able to eat a normal healthy balanced diet. If you suffer from bloating and discomfort when you first start on the Creon, consider reducing the fibre content of your diet for a while, for example by reducing your intake of beans, pulses, peas, sweetcorn and wholegrain cereals. You should be aiming to get back to a full diet as soon as possible.

If you have PEI as a result of pancreatitis, then remember that alcohol (and smoking) are likely to make the pancreatic inflammation worse and should be strictly avoided.

This leaflet is intended for patients receiving care in Brighton & Hove or Haywards Heath

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