

## Pancreatic exocrine insufficiency (PEI)

PEI occurs when the pancreas **doesn't produce sufficient enzymes to ensure adequate digestion**. This can result in food not being digested properly and can lead to malabsorption, malnutrition, and increased risk of mortality.

PEI is very common in pancreatic cancer and should be considered with every diagnosis.

### Common symptoms

Abdominal  
pain and  
discomfort



Indigestion



Weight  
loss



Steatorrhoea\*  
Diarrhoea



Other symptoms include:

- Increased stool volume / frequency
- Constipation
- Nausea
- Burping
- Flatulence
- Bloating

\*Pale, oily, offensive smelling stools that are difficult to flush)

## Pancreatic enzyme replacement therapy (PERT)

The main treatment for PEI in pancreatic cancer is PERT. The probability of PEI in pancreatic cancer patients is high, so clinical suspicion of PEI, based on typical symptoms and signs of malabsorption and malnutrition, justifies the empirical use of PERT without prior testing.

### NICE Guidelines for diagnosing and managing pancreatic cancer

1.6.1 Offer enteric-coated pancreatin for people with unresectable pancreatic cancer

1.6.2 Consider enteric-coated pancreatin before and after pancreatic resection

### Preparations

- PERT contains lipase, amylase and protease.
- Brands available in the UK include: Creon®; Pancrease®; Nutrizym®; Pancrex®
- Normally given as capsules to be swallowed with food.
- Available in different strengths with Creon 25,000 units being the most common.
- PERT contains pork products so discuss this with your patients as this will affect some people with religious beliefs, vegetarians, vegans and people with allergies and intolerances.

### Benefits

Relief from digestive  
symptoms

Tolerance of  
treatment

Better quality of life

Improved survival

### Recommended starting dose



Main meals

50,000 - 75,000 units



Snacks

25,000 - 50,000 units

## How to take PERT

- Capsules should be swallowed with a cold drink.
- Capsules should be taken at the start of and during a meal.

## What not to do:

- Capsules must not be swallowed with hot drinks as this stops them from working properly.
- Capsules must not be chewed as they can cause mouth ulcers.
- Granules must not be mixed with hot food/drinks or sprinkled on food.

## If your patient can't swallow capsules

- They can open the capsules and mix granules inside with a teaspoon of cold, soft, acidic food such as fruit puree, jam or yoghurt.
- They should swallow this straight away, wash down with cool drink and begin eating / drinking.

## Titrating the dose

- **Review the dose regularly** with your patients and increase as needed.
- **Gradually increase dose** until symptoms are sufficiently reduced. Leave at least 3-4 days before increasing the dose to allow for sufficient time for the enzymes to work.
- Encourage patients to **titrate the PERT dose to their diet**, not alter their diet to their symptoms. Fat restriction can exacerbate weight loss.
- Patients will need to take **more PERT for larger meals or food with more fat in.**
- Pancreatic enzyme production may reduce over time due to advancing disease or post-pancreatic resection and PERT dose may need to be increased.

## Troubleshooting

- Check adequacy of dose, timing, diet and storage (below 25C in a cool, dry place).
- Prescribe a Proton Pump Inhibitor (PPI) which can help improve efficacy of PERT.
- Consider differential diagnoses if symptoms persist after a high dose of PERT and PPI.
- Discuss digestive symptoms and PERT every time you see your patient.

## When PERT is required



All meals



All snacks



All milky drinks (more than 50% milk)



Nutritional supplement drinks

## When PERT is not required

- Drinks with a splash of milk, fruit squashes, or fizzy drinks
- Alcoholic drinks (unless creamy)
- Small amounts of fruit (except banana, pear, avocado) or dried fruit
- Small amounts of vegetables (except potato, beans, pulses)
- Sugary sweets like jelly or boiled

## Timing

### Under 15 minute meal

Full dose with first few mouthfuls

### 15 – 30 minute meal

Half at start, half in middle

### 30 – 45 minute meal

Third at start, third in middle, third towards end. Patients may also need to increase the PERT dose for longer meals

If patients forget to take PERT with their food or milky drink, they should wait until their next meal and then take as usual.

## Looking for more information about PERT?

- [Take our short, online course](#) endorsed by the British Dietetic Association
- [Order and download free information](#) for your patients