

A quick guide to pancreatic cancer and pancreatic enzyme replacement therapy (PERT)

Pancreatic exocrine insufficiency (PEI)

PEI occurs when the pancreas **doesn't produce sufficient enzymes to ensure adequate digestion**.^{1 2} This can result in food not being digested properly and can lead to malabsorption, malnutrition, and increased risk of mortality.^{3 4 5 6 7 8}

PEI is very common in pancreatic cancer and should be considered with every diagnosis.⁹

Common symptoms

Common symptoms of PEI include weight loss, abdominal pain and discomfort, increased stool volume/frequency, diarrhoea, constipation, bloating, burping, flatulence, nausea, indigestion, and steatorrhoea (pale, oily, offensive smelling stools that are difficult to flush).^{10 11 12 13}

Pancreatic enzyme replacement therapy (PERT)

The main treatment for PEI in pancreatic cancer is PERT.^{14 15 16} 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.^{17 18 19 20 21}

NICE Guidelines for diagnosing and managing pancreatic cancer²²

- 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®; and Pancrex®. PERT is normally given as capsules to be swallowed with food. PERT capsules are available in different strengths with Creon 25,000 units being the most common. PERT contains pork products so be sure to discuss this with your patients as this will affect some people with religious beliefs, vegetarians, vegans and people with allergies and intolerances.

Benefits

Helps to manage the symptoms of digestive problems^{23 24 25 26} and improve quality of life,^{27 28 29 30 31} helps patients cope better with treatments such as chemotherapy or surgery,³² and improves median survival.^{33 34 35 36 37}

Recommended starting dose

- 50,000 – 75,000 units for main meals^{38 39 40}
- 25,000 – 50,000 units for snacks^{41 42 43 44 45 46}

When PERT is required^{47 48}

- All meals
- All snacks
- Milky drinks (more than 50% milk)
- Nutritional supplement drinks

When PERT is not required⁴⁹

- Drinks with a splash of milk, fizzy drinks, fruit squashes
- Alcoholic drinks (except milky drinks)
- Small amounts of fruit (except banana, pear and avocado) or dried fruit

- Small amounts of vegetables (except potatoes, beans and pulses)
- Sugary sweets like jelly or boiled

Timing ⁵⁰

- Under 15 minute meal: Full dose with the first few mouthfuls
- 15 – 30 minute meal: Half at the start, half in the middle
- 30 – 45 minute meal: Third at the start, third in the middle, third towards the 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. ⁵¹

How to take PERT

- Capsules should be swallowed with a cold drink. ⁵²
- 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. ⁵³
- Capsules must not be chewed as they can cause mouth ulcers. ^{54 55}
- Granules must not be mixed with hot food/drinks or sprinkled on food.

If your patient can't swallow capsules

- They can open the capsule and mix the granules inside with a teaspoon of cold, soft, acidic food such as a fruit puree, jam or yoghurt. ^{56 57}
- They should swallow this straight away, wash it down with a cool drink (to rinse their mouth to avoid mouth ulcers) and begin eating / drinking.

Titrating the dose

- Review the dose regularly with your patients and increase as needed. ^{58 59}
- 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. ^{60 61}
- Encourage patients to titrate the PERT dose to their diet, not alter their diet to their symptoms. ⁶²
⁶³ Fat restriction can exacerbate weight loss.
- Patients will need to take more enzymes for larger meals, or if the food has more fat in. ^{64 65}
- 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 25°C in a cool, dry place). ^{66 67}
- Prescribe a Proton Pump Inhibitor (PPI) which can help improve the efficacy of the PERT. ^{68 69}
- Consider differential diagnoses if symptoms persist after high dose of PERT and PPI. ⁷⁰
- Discuss digestive symptoms and PERT every time you see your patient.

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