

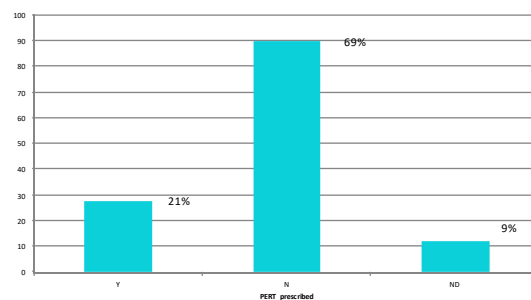
Changing practice for patients with pancreatic cancer in New Zealand

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Nurse Maude

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PERT 1: Number of patients with metastatic pancreatic cancer prescribed pancreatic enzyme replacement



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PERT 2 (complete and submitted for publication):

Prospective study of pts routinely prescribed PERT

- Education on function and use of PERT
- Weight
- QOL measured - EORTC QLQ C30 & PAN 26 before commencing PERT and after
- Nutritional assessment
- Regular monitoring and support
- Dose reviewed

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Results

Between June 2013 and May 2015 97 patients were assessed by Dietitian:

- 44 consented to the study
- 29 completed all study assessments
- Average age 69.8 years
- 66% female

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Further Results

- Significant improvements in
 - Pain
 - Shortness of breath
 - Bowel habit
 - Digestive symptoms
 - Bloating



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PERT 4: (recruiting)

Qualitative study

- Gooden published study looking at unmet psychosocial.

AIM: is to explore patient experiences of PERT and other interventions that have improved quality of life
– 11 interviews completed

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Pancreatic Exocrine Insufficiency (PEI)

- PEI -amounts of pancreatic enzymes secreted in the duodenum in response to the ingestion of a meal are not sufficient to maintain normal digestive processes
- Three main causes for non-CF PEI:
 - Insufficient enzyme synthesis
 - Reduced stimulation of enzyme synthesis
 - Impaired enzyme delivery

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Symptoms



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Diagnosis of Malabsorption in PC

- Clinical assessment
 - Weight, weight history
 - GI symptoms
 - Imaging/CT scan results
 - Laboratory tests
- Treat the **symptoms** and **history**, not the lab result alone

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Faecal elastase

- Pancreas-specific protease
- Benefits:
 - Single sample specimen
 - Not affected by dietary fat intake
 - Not affected by PERT
- Limitations:
 - Risk of false positives
 - Not useful in PEI post gastrectomy
 - Needs to be formed stool

Faecal elastase

- Interpretation of results:
 - >200ug/g – pancreatic sufficiency
 - 100-200ug/g – moderate pancreatic insufficiency
 - <100ug/g – severe pancreatic insufficiency
 - Interpret in line with clinical symptoms and history

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Faecal Elastase

- Faecal elastase testing in NZ
 - Conducted in ChCh
 - Turn around time 1-2 weeks
 - Consider commencing PERT prior to receiving results if strong suspicion of PEI and patient is at risk of malnutrition/further weight loss

What is PERT?

- Gelatin capsules containing mini-microspheres of lipase, amylase and proteases (porcine origin)
- Lipase is contained in higher amounts as it is more rapidly denatured by other proteases in the duodenum
- As fat absorption in PEI is significantly more affected than carbohydrate and protein absorption PERT is dosed based on the fat content of foods

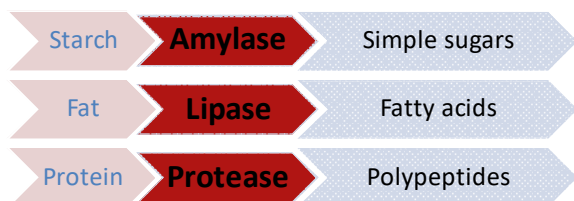


Pancrealipase products

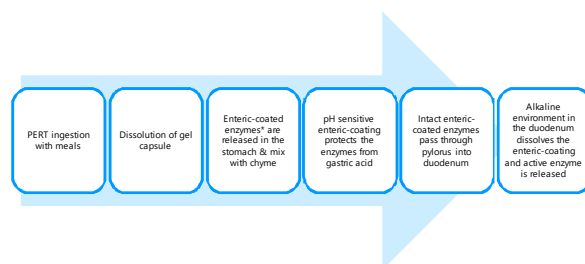
	Creon Micro® per scoop	Creon 10 000® per capsule	Creon 25 000® per capsule	Creon 40 000® per capsule	Panzytrat® per capsule
Lipase (BP units)	5000	10 000	25 000	40 000	25 000
Amylase (BP units)	3600	8000	18 000	25 000	22 500
Protease (Ph. Eur. Units)	200	600	1000	1600	1250
Granule size (diameter mm)	0.7 - 1	0.7 - 1.6	0.7 - 1.6	0.7 - 1.6	2
Available in New Zealand**	x	✓	✓	x	✓

Currently no non-porcine or non-enteric coated preparations in NZ

What is PERT?



Mechanism of PERT activation



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Australasian guidelines for the management of pancreatic exocrine insufficiency
OCTOBER 2010



NUTRITION GUIDELINES FOR CYSTIC FIBROSIS

In Australia and New Zealand

August 2011



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How to take PERT

- Take with or during a meal – high dose split dose
- Wide range of doses have been shown to be safe and effective
- Practice varies internationally



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PERT dosing



- Starting dose: 25,000-50,000 IU/meal and 10,000 - 25,000 IU/snack
- Increase to maximum recommended dose of 75,000-80,000IU/meal
- Pt. with relatively regular meal pattern fine with set dose with additional education for "special" meals e.g. takeaways, long meals

Maximum daily dosing

- 10,000IU lipase/kg/day
- High fat diets
- Enteral support
- Before increasing consider other factors such as adherence, timing etc

85kg man
max. dose =
34 Creon 25,000/day

65kg woman
max. dose =
26 Creon 25,000/day



PERT usually not required

- Fruits
- Juice, juice drinks
- Soft drinks or sports drinks
- Oral rehydration solutions e.g. Pedialyte®, Enerlyte®
- Tea, coffee (without cream)
- Hard candy (like lollipops)
- Fruit snacks
- Jelly beans
- Gum
- Popsicles, freezer pops, flavoured ice



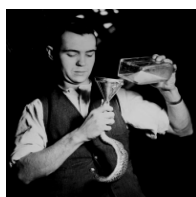
PERT: Administration Guidelines

- Swallow capsules whole
- If required, granules may be mixed with an acidic fruit puree – e.g. apple puree. **Granules should not be chewed**
- Take PERT with all meals, snacks and food containing fat
- PERT is reported to be effective for 30 minutes after consumption
- For slow eaters/feeders or meals/feeds extended over a longer duration the total dose required may be split and half given at the commencement of a meal and half during or towards the end

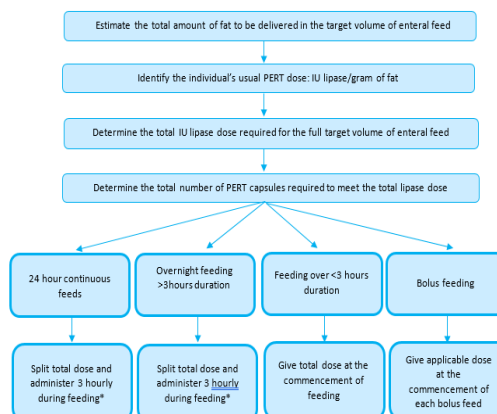
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PERT and Enteral Feeding

- No firm guidelines
- <5g fat/hour likely to be tolerated without PERT if continuous
- Different guidelines for continuous vs bolus feeding as well as gastric vs jejunal feeding
- Wherever possible, try to maintain oral administration of PERT



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PERT: Gastric tube

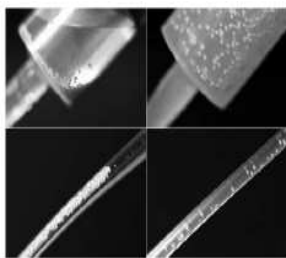


Figure 1. Effect of thickened fluid in preventing tube blockage. Behavior of enzyme microspheres when given in water (left) versus thickened fluid (right).

Table 1. Instructions for Giving Pancreatic Enzyme Supplements Via a Gastrically Placed Feeding Tube

- Step 1 Assemble the equipment: the required dose of pancreatic enzyme capsules or enteric granules, enteral syringe, small clean container, 50-100 mL of mildly thickened ("nectar-thick") fruit juice, water.
- Step 2 Open the pancreatic enzyme capsules (or measure the required dose of granules, if using) and tip the microspheres into the clean container.
- Step 3 Add sufficient mildly thickened fruit juice to coat the microspheres well, and stir gently to suspend them evenly through the juice.
- Step 4 Pause the tube feeds, and flush the feeding tube with water.
- Step 5 Draw up the microspheres with the syringe and deliver into the feeding tube with slow, gentle pressure.
- Step 6 Flush the feeding tube with water and resume tube feeds.

PERT: Small Bowel Feeding Tube

- As tube bypasses the stomach, the enteric coating needs to be degraded and enzymes activated using an alkaline solution prior to administration
- Crush microspheres well and then mix with 8.4% sodium bicarbonate (10ml per 10,000IU lipase)

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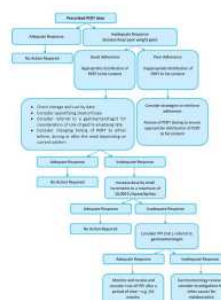
PERT: Storage



- Store capsules in an airtight container in a cool, dry place
 - Specific product information contains more information
 - Ensure capsules have not exceeded the expiry date
- Store at <25 degrees - NOT in a car glove box!!

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Treatment Algorithm



Google Search – Australian Pancreatic Club.

Heading: Australian guidelines for the management of pancreatic exocrine insufficiency.

What if things aren't improving?

- Consider increasing enzyme to dietary fat ratio
- Look at timing of doses particularly if suspected alterations in gastric emptying
 - Delayed gastric emptying:
 - Rapid gastric transit e.g. post Gastrectomy/Whipples: consider opening capsules and mixing granules with apple puree/soft food
- Consider trial of PPI e.g. Omeprazole / Pantoprazole to increase pH of duodenum and maximise release of enzymes

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- Kate Boulton, Surgical Dietitian, CCDHB

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Contact details

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Thank you.

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