Pancreatic Enzyme Replacement Therapy

Laura McGeeney
Pancreatic Dietitian
Malnutrition

‘Lack of proper nutrition, caused by not having enough to eat, not eating enough of the right things, or being unable to use the food that one does eat’

Oxford English Dictionary
Malnutrition

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Oxford English Dictionary
PERT

• Why?
• Who?
• What?
• How?
• When?
• How much?
• Monitoring
• Trouble shooting
Distal/subtotal pancreatectomy

- Head & Neck of Pancreas preserved
- Resected (removed) Pancreatic Body & Tail, and Spleen
- Parts of the body removed
Whipple’s/ PPPD

Illustration of a Pyloric Sparing Whipple procedure using R & Y bowel reconstruction.
Incidence of PEI

80–90% of patients with pancreatic cancer
Keller & Layer 2005

55-100% of patients following pancreatic head resection

19-80% following distal pancreatectomy
Ianono et al 2013, Belyave 2013
Consequences of PEI

- Weight loss/struggle to regain weight
- Vitamin & mineral deficiencies and associated complications e.g. osteoporosis, poor wound healing
- Malnutrition
- GI effects

- QoL

Bruno et al 1998
PERT

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Symptoms:
- Oily, pale, orange or yellow stools
- Stools that float/are difficult to flush
- Undigested food in the stools
- Loose stools
- Offensive smelling stools
- Wind, bloating, abdo pain or cramps
- Nausea, reflux symptoms
- Weight not inline with intake
- Vitamin deficiencies
- Hypos

However… these symptoms can often be masked by other medications and self imposed fat restrictions
Faecal Elastase

<100: severe pancreatic exocrine insufficiency
100-200: moderate pancreatic exocrine insufficiency
200-500: mild pancreatic exocrine insufficiency, treat if symptomatic
>500: normal pancreatic exocrine function

• Test not affected by PERT
• Highly sensitive to detect mod-severe PEI
• Not accurate on watery stools
Questions

• Colour? Texture?
• Frequency? Urgency?
• Food particles? Bulky? Greasy? Floating?
• Bloating/ wind?
• Post prandial discomfort? Trigger foods?
• Medications that may mask symptoms:
  • Anti-diarrhoeals; opiates etc….
• Weight in relation to intake?
• Pancreas on CT?
• Blood sugars?
• Micronutrients?
1.6 Nutritional management

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

1.6.2 Consider enteric-coated pancreatin before and after pancreatic cancer resection.

1.6.3 Do not use fish oils as a nutritional intervention to manage weight loss in people with unresectable pancreatic cancer.

1.6.4 For people who have had pancreatoduodenectomy and who have a functioning gut, offer early enteral nutrition (including oral and tube feeding) rather than parenteral nutrition.

1.6.5 For more guidance on nutrition support, see the NICE guideline on nutrition support in adults.

www.nice.org.uk/guidance/ng85
PERT

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What PERT is

• Creon Micro, Creon 10,000, Creon 25,000
• Pancrex V powder, Pancrex granules, Pancrex V Capsules, Pancrex V capsules 125mg, Pancrex V tablets
• Nutrizym 22 capsules
• Pancrease HL capsules
What PERT is

- Creon Micro, Creon 10,000, **Creon 25,000**
- **Pancrex V powder**, Pancrex granules, Pancrex V Capsules, Pancrex V capsules 125mg, Pancrex V tablets
- **Nutrizym 22 capsules**
- Pancrease HL capsules
What is in them?

Lipase – to digest fat
Proteases – to digest protein
Amylase – to digest starch

- Microspheres/microtablets in the capsules/ granules
- All are pork based
PERT

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How to take PERT orally

• At start of/during eating/ milky drink
• With a cold drink (ie not hot)
• Do not chew/ crush
• If can’t swallow then open capsule and take on one spoon of soft food and follow with liquid
• If taking a multivit, take with the enzymes
• Self medicating on the ward is generally encouraged
Foods not needing PERT

- Fruit and dried fruits
- Vegetables (except potato, avocado and beans/pulses)
- Sweets such as chewing gum, mints, jelly babies, dolly mixtures, marshmallows, fruit pastilles, wine gums
- Jelly
- Squash, juice, water, most alcoholic drinks
- Tea and coffee (unless they are very milky, for example ½ milk)

For all other meals, supplements or snacks, they need to take enzymes at the same time
Foods likely to need more PERT

• Fried foods, such as fried eggs, crisps, chips, sausages
• Anything deep fried such as samosa, pakora, battered fish, popadums
• Pastries, croissants, doughnuts, pasties
• Most takeaways
• Foods containing cheese or chocolate
PERT

• Why?
• Who?
• What?
• How?
• When?
• **How much?**
  • Monitoring
  • Trouble shooting
• Patients are not all the same

<table>
<thead>
<tr>
<th>Enzyme</th>
<th>Mean intra-digestive</th>
<th>Post prandial peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amylase</td>
<td>50 – 250u/min</td>
<td>500 – 1000u/min</td>
</tr>
<tr>
<td>Lipase</td>
<td>up to 1000u/min</td>
<td>3000 – 6000u/min</td>
</tr>
<tr>
<td>Proteases (Trypsin)</td>
<td>50 – 100u/min</td>
<td>200 – 1000u/min</td>
</tr>
</tbody>
</table>

Enzymes release continues for approximately 2 hours post prandially (360,000-720,000u lipase)

Keller & Layer, 2005
• Symptomatic with steatorrhoea at <10% normal function
• BUT malabsorbing before steatorrhoea evident
• Minimum suggested starting dose of 25,000–50,000 units lipase per meal

Keller & Layer, 2005

• Varies with tube feeding
PERT

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Monitoring

• Largely symptom led
• Weight changes in relation to intake
• Check if eating/drinking without PERT
• Need to look at how and when they are taking the enzymes as well as how many in total
• Wait 3-4 days after making a change
Monitoring

• Remember other causes of loose stools and medications which may effect the bowels
  – Laxatives
  – Chemo
  – Antibiotics
  – Anti-diarrhoeals/ opiates – masking Sx

• When looking at where to increase the dose look at balance of diet with PERT

• Many patients can adjust their doses well on their own with education
“What is the maximum I can have in a day?”

- There is no maximum dose
- If you do take more than your body really needs, you can get irritation of the anus
PERT

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Things to be wary of
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- Total Fat: 0g
- Saturated Fat: 0g
- Cholesterol: 0g
Things to be wary of
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PEI =

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Soft blobs with clear-cut edges</td>
</tr>
<tr>
<td>6</td>
<td>Fluffy pieces with ragged edges, a mushy stool</td>
</tr>
<tr>
<td>7</td>
<td>Watery, no solid pieces. Entirely Liquid</td>
</tr>
</tbody>
</table>
Things to be wary of
Things that help

• Patients and staff knowing what PERT is for, how and when to take it
• Written information
• Self medicating by most patients

Patient Information

Department of Nutrition and Dietetics

Information for people taking pancreatic enzymes for pancreatic insufficiency

You have been prescribed pancreatic enzymes. This information sheet explains why you need them and how to take them.
Summary

• PEI is very common in PC and should always be considered
• Suggested starting dose 50,000u/ meal
• With (almost) everything eaten & milky drinks - no daily dose
• No foods banned
• Porcine - informed consent
• Self medication in hospital encouraged
• Monitoring is important
Thank you for listening

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