



Royal Surrey  
NHS Foundation Trust

# The key benefits of pancreatic enzyme replacement therapy

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Declaration of interests: Honoria received for speaking from Mylan, Sanofi, Vitaflo, Nutricia Clinical Care, Abbott Nutrition and Merck.

# Introduction

Causes and impact  
of pancreatic  
exocrine  
insufficiency

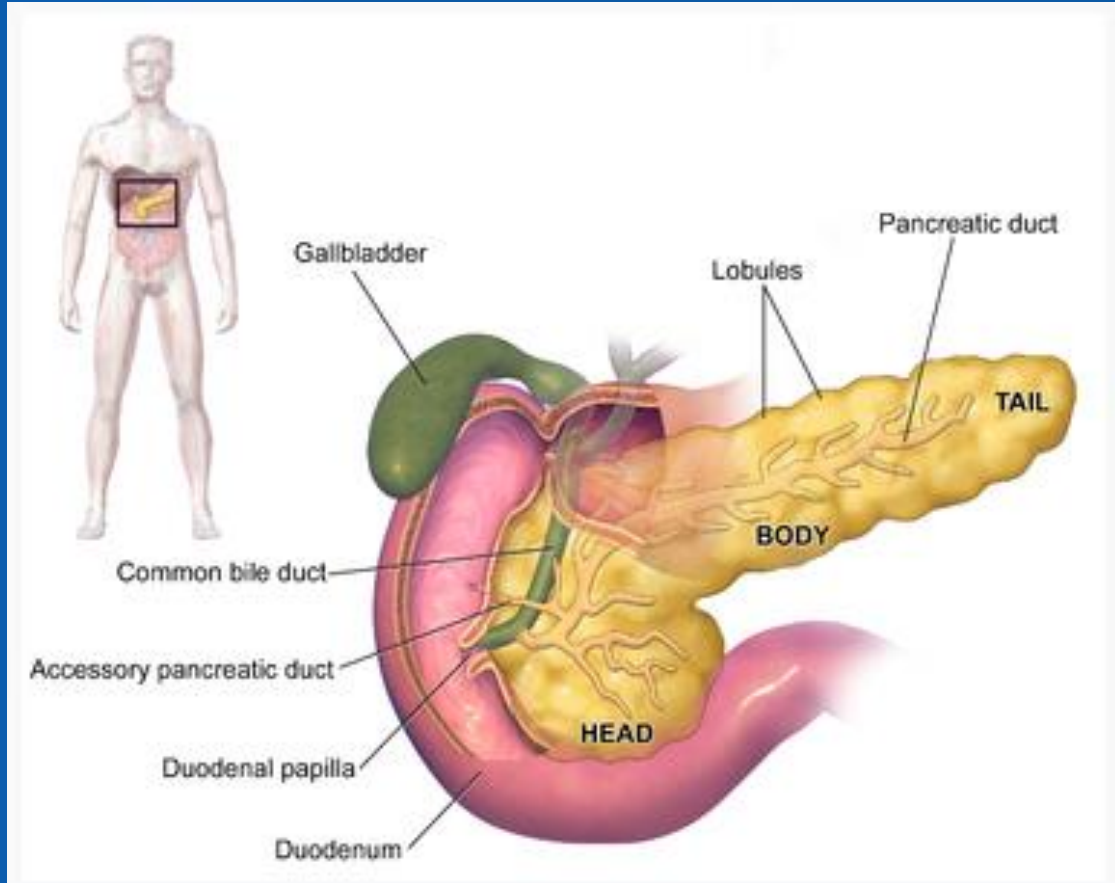
Benefits of  
pancreatic enzyme  
replacement  
therapy

Why are we here?



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# What does the pancreas do?

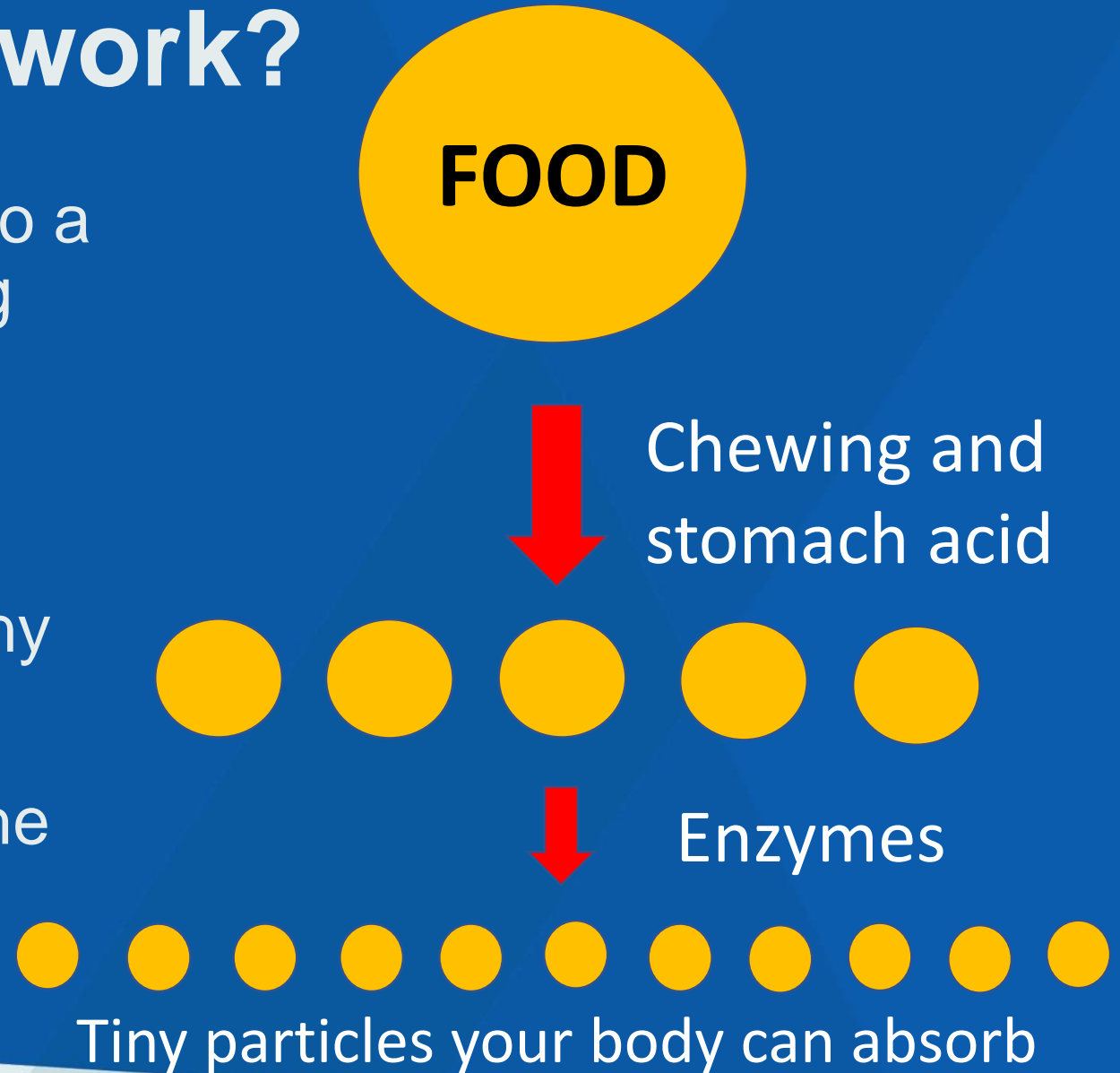


- Produces digestive enzymes
- Produces bicarbonate
- Produces hormones such as insulin



# How does digestion work?

- Food is broken down from solids to a partly liquid substance by chewing and the action of stomach acid
- Enzymes from your pancreas and small bowel then continue this process to breakdown food into tiny particles.
- This allows your body to absorb the nutrition from food

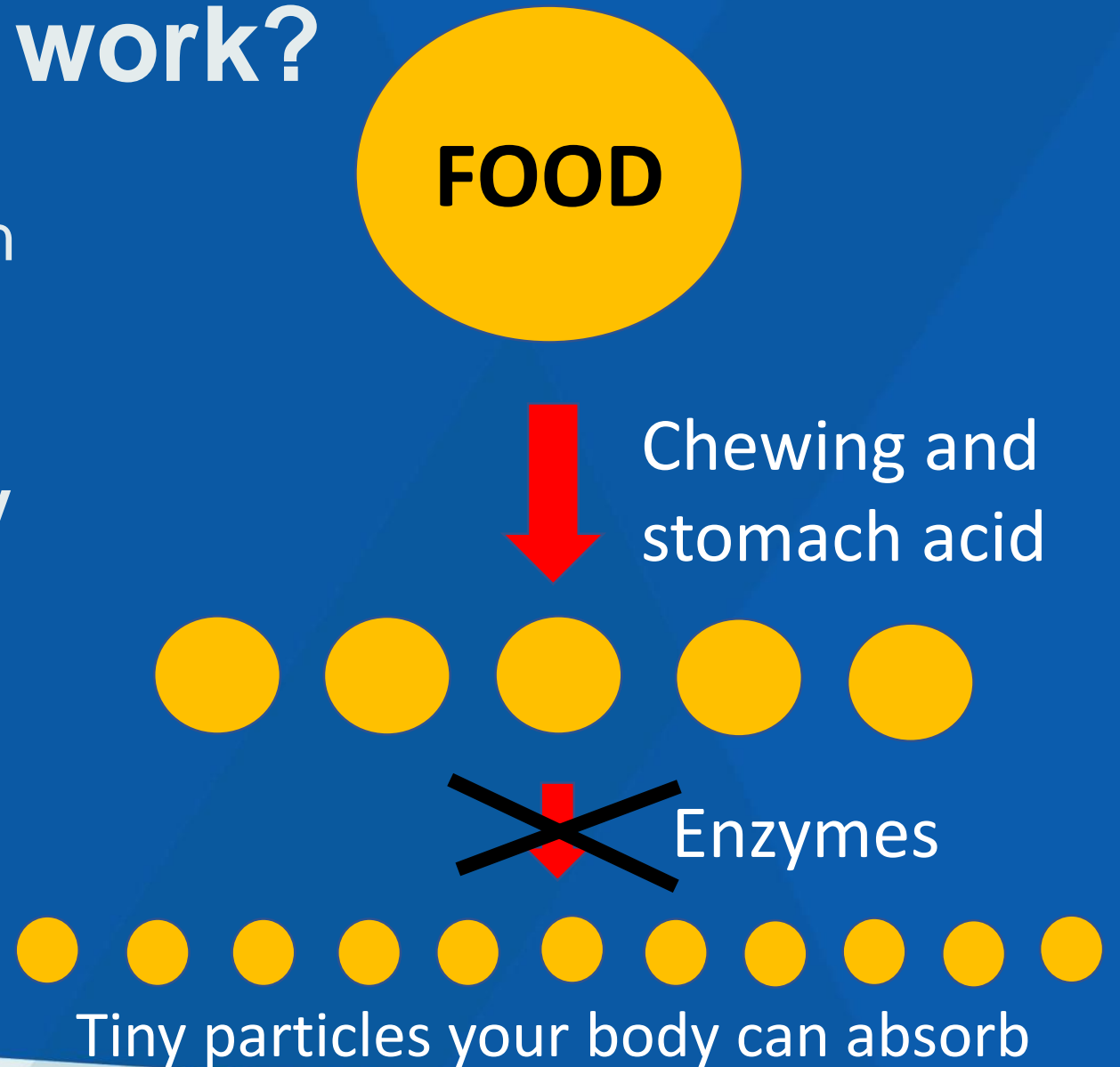


# How does digestion work?

- A lack of the enzymes produced in the pancreas is called:

## Pancreatic exocrine insufficiency (PEI)

- Without these enzymes digestion does not work properly



# Causes of pancreatic exocrine insufficiency

- Pancreatic cancer
  - Damages healthy pancreatic tissue
  - Blocks the flow of enzymes from the pancreas
- Pancreatic cancer surgery
  - Removes some or all of the pancreatic tissue
  - Bypasses physiological processes that “switch on the pancreas”
  - Results in poor mixing of enzymes with food

Layer et al, 2001



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# How common is PEI in pancreatic cancer?

- Present in the vast majority of people with pancreatic cancer
- Progressive
- 66-94% of patients have PEI at first presentation (all comers)
- Function deteriorates at approximately 10% per month
- Function tests can take 2-6 weeks to give results
- Incidence after surgery depends on the type of operation
  - 20-80% tail of pancreas (distal pancreatectomy)
  - Up to 98% head of pancreas (pancreatico-duodenectomy / Whipple)

Sikkens et al, 2014, Tseng et al, 2016, Phillips et al, 2021 (in press), Phillips M, 2015, Okano, 2016



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# PEI causes:

- Malabsorption
  - Malnutrition
  - Difficulty in controlling blood sugar in those with diabetes
  - Reduction in performance status (ability to carry out daily activities)
  - Vitamin and mineral deficiencies
- Abdominal symptoms
  - Diarrhoea, faecal urgency
  - Bloating, flatulence
  - Discomfort on eating
- Massive impact on quality of life

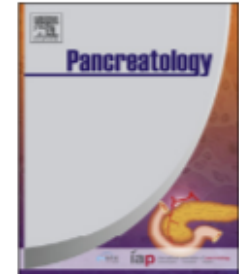




Contents lists available at ScienceDirect

## Pancreatology

journal homepage: [www.elsevier.com/locate/pan](http://www.elsevier.com/locate/pan)



# Enzyme replacement improves survival among patients with pancreatic cancer: Results of a population based study

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# All patients

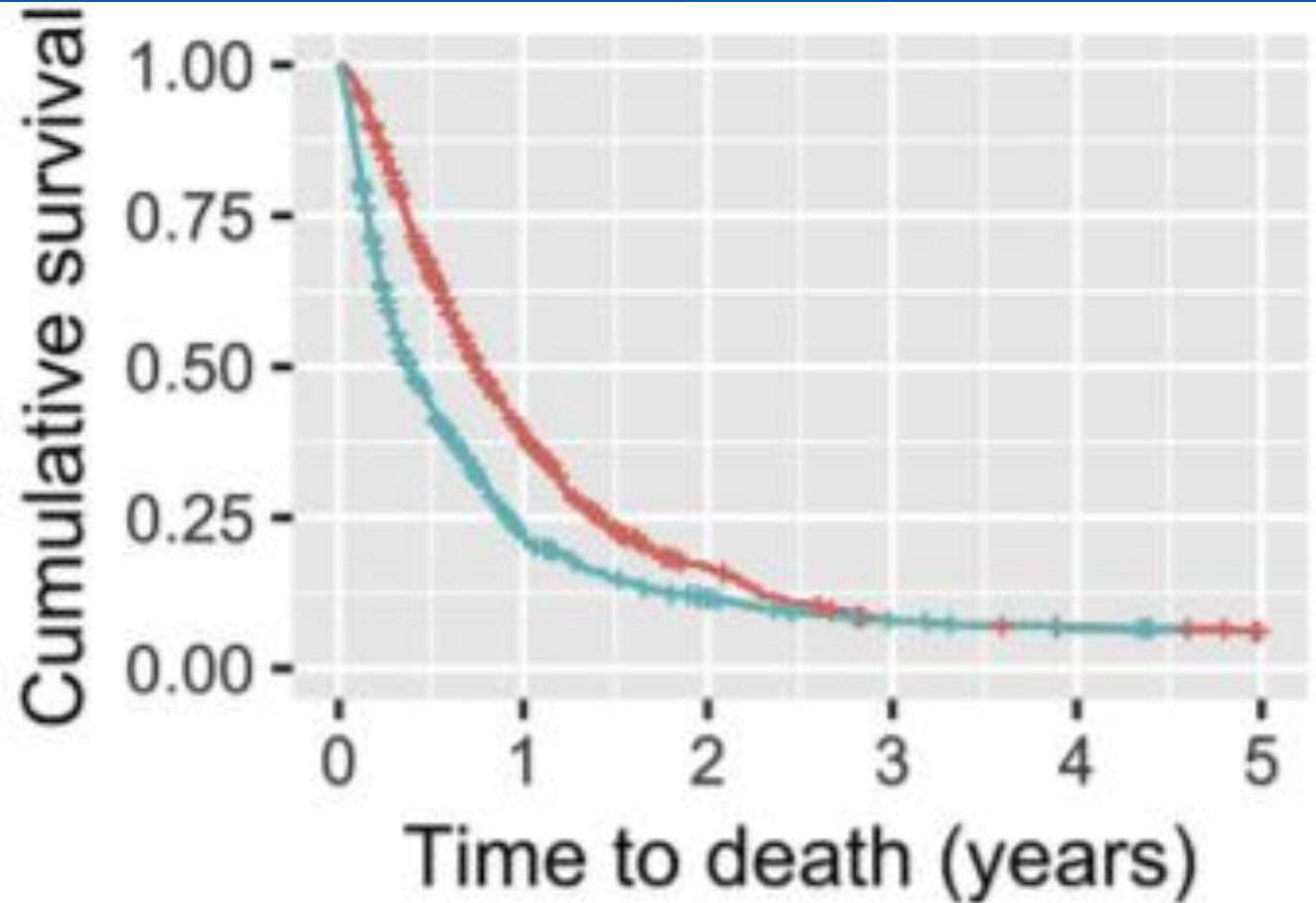
**PERT**

**Non PERT**

N=4554

PERT use – 21.7%

All cause mortality

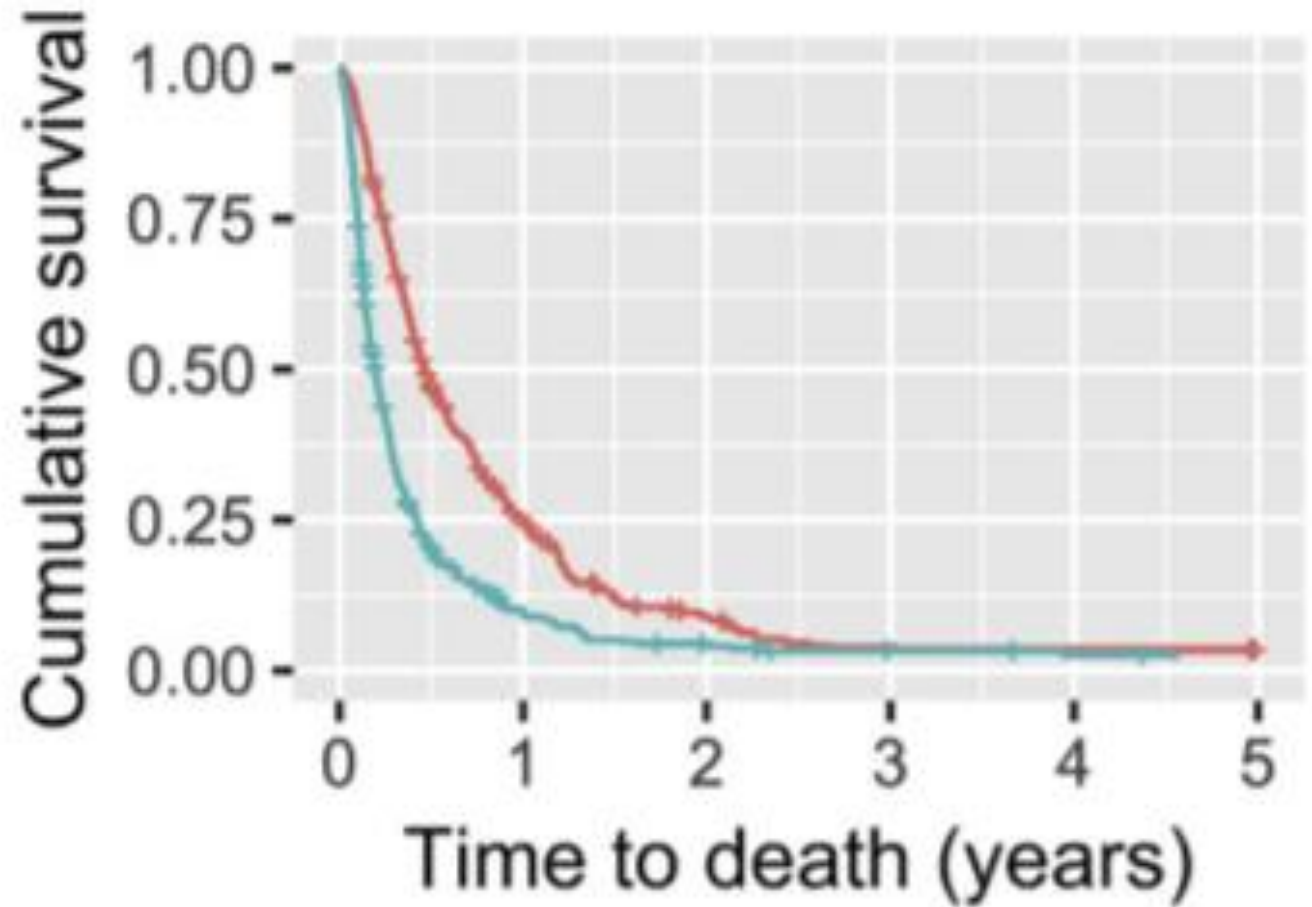


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# No surgery, no chemo

**PERT**

**Non PERT**



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# Quality of Life

“difficulty with digestion” is most common symptom in long term (Cloyd et al, 2017)

PEI guidance primary unmet need in pancreatic cancer (Gooden & White, 2013)

“I don’t want to die on the toilet”



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## Pancreatic cancer in adults: diagnosis and management

NICE guideline

Published: 7 February 2018

[nice.org.uk/guidance/ng85](https://www.nice.org.uk/guidance/ng85)

### 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.



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# Richocet study (2021)

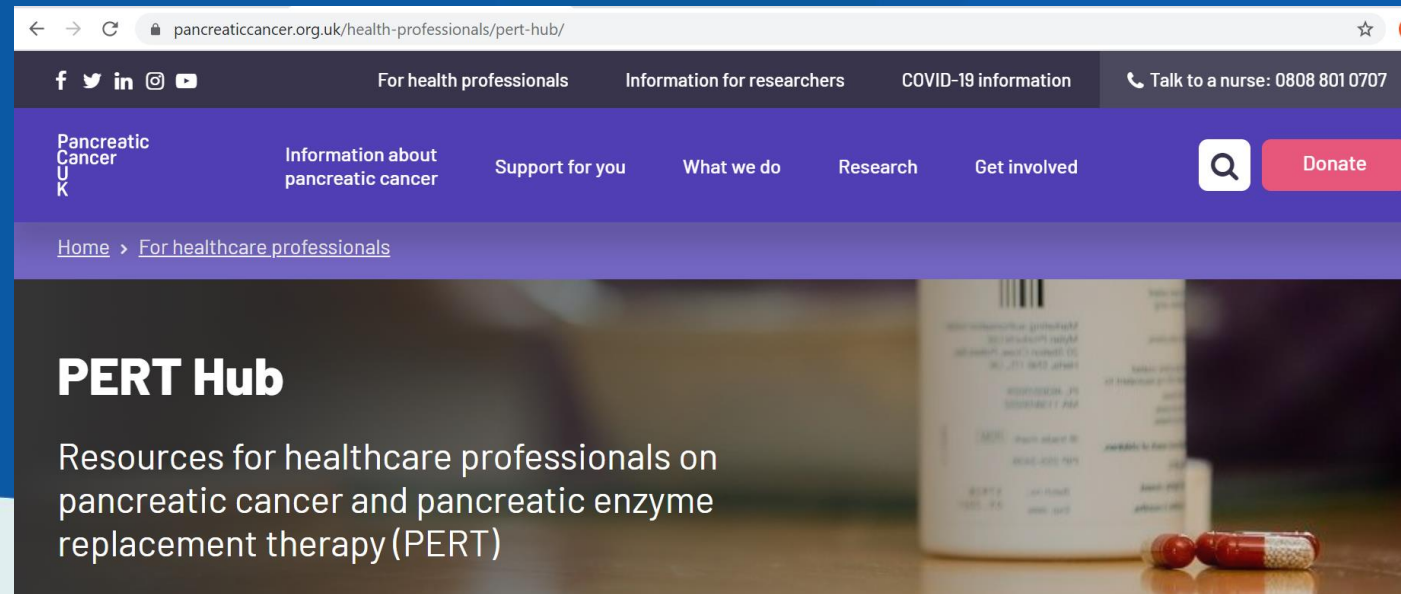
- 45% of unresectable patients prescribed PERT
- 74.4% potentially resectable patients prescribed PERT
- 96.9% of pancreatic head resection patients prescribed PERT
- PERT prescription was more likely if:
  - Seen by a dietitian ( $p = 0.001$ )
  - Seen in a specialist centre ( $p = 0.049$  – HPB;  $p = 0.009$  – pancreas)
  - Seen by a clinical nurse specialist ( $p = 0.028$ )





# Everyone's needs are different

- Right time
- Right dose
- Permission to escalate dose
- Regular review
- Considered in clinical context
- Resources for prescribing and advising on PERT can be found on Pancreatic Cancer UK's PERT hub



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# But why are we here?

- 62 year old male
- Pancreatic ductal adenocarcinoma (pT3N0L0V0G0); Pancreatico-duodenectomy 2 years ago
- Frail – wheelchair user
- Open wound on his back
- Eating and drinking well
- Ongoing diarrhoea 4-5 x per day
- 50% weight loss in 2 years (18 stone to 9 stone)
- On low dose pancreatic enzymes



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# Take home messages...

- PEI is under recognised and under treated
- PEI will be present in the majority of people with pancreatic cancer and is progressive in nature
- PERT improves quality of life, nutritional status and is associated with improved survival in both operable and inoperable pancreatic cancer
- PEI should be treated in combination with assessment of blood sugars, nutritional status and other symptoms impacting quality of life (nausea, pain, constipation etc)
- Please don't assume abdominal symptoms, weight loss and malnutrition are an inevitable part of pancreatic cancer. In some cases these symptoms can be prevented or minimised
- There is still a lot that needs to be done to improve the lives of people with pancreatic cancer



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