



# **'Ask a Dietitian'**

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**Specialist Nutrition Support  
Dietitian**

# Living with pancreatic cancer

- Role of the dietitian
- Role of pancreas
- Impact of pancreatic cancer
- PERT (Pancreatic Enzyme Replacement Therapy)
- Type 3c diabetes
- Eating and pancreatic cancer
- Treatment side effects
- Myth-busting





Dietitians are qualified and regulated health professionals that assess, diagnose and treat dietary and nutritional problems at an individual and wider public-health level.

Dietitians are regulated by the Health & Care Professions Council.



# Share your experience

Have you or your loved one been able to speak to a dietitian following the diagnosis of pancreatic cancer?

# Aims of dietitian input

To:

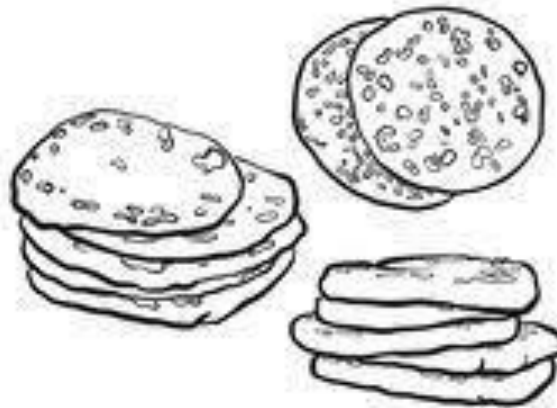
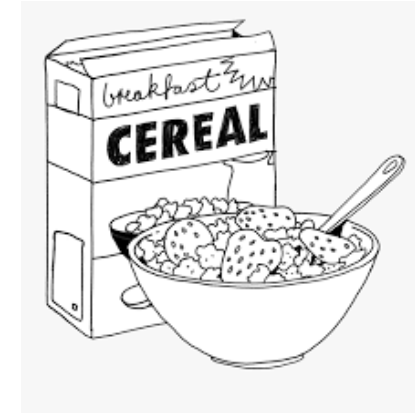
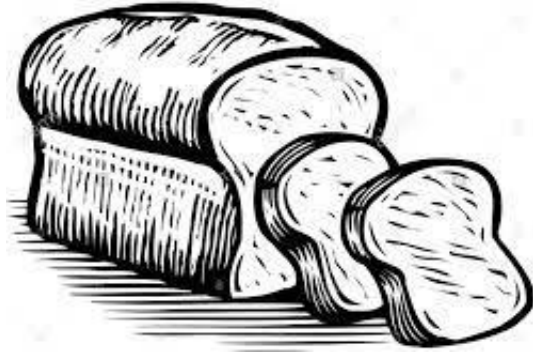
- Optimise nutritional status
- Optimise for further treatment e.g. chemotherapy, surgery
- Improve quality of life





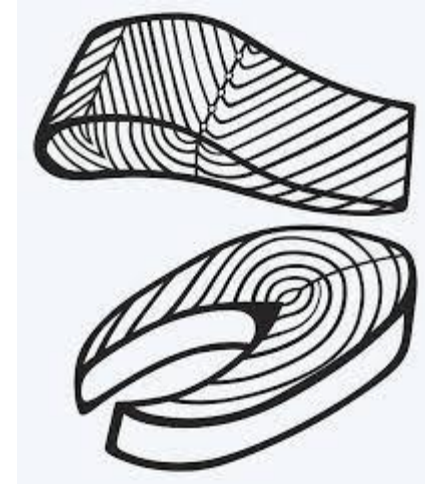
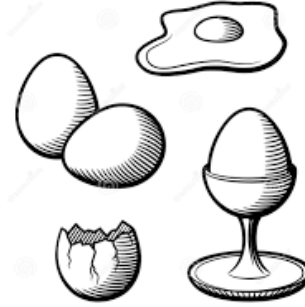
# Macronutrients

# Carbohydrates

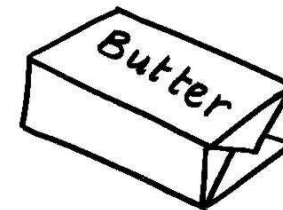
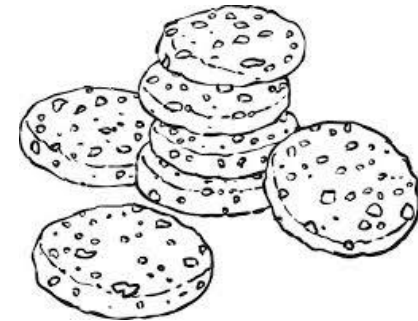
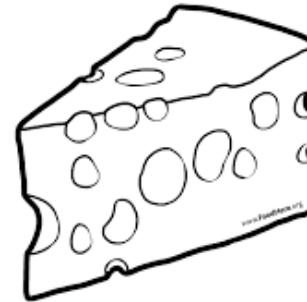
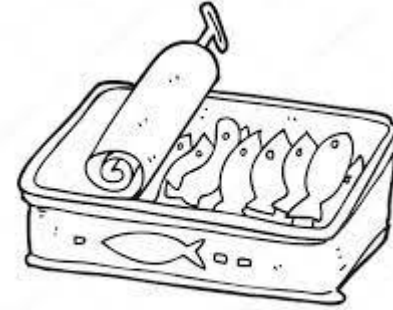




# Protein



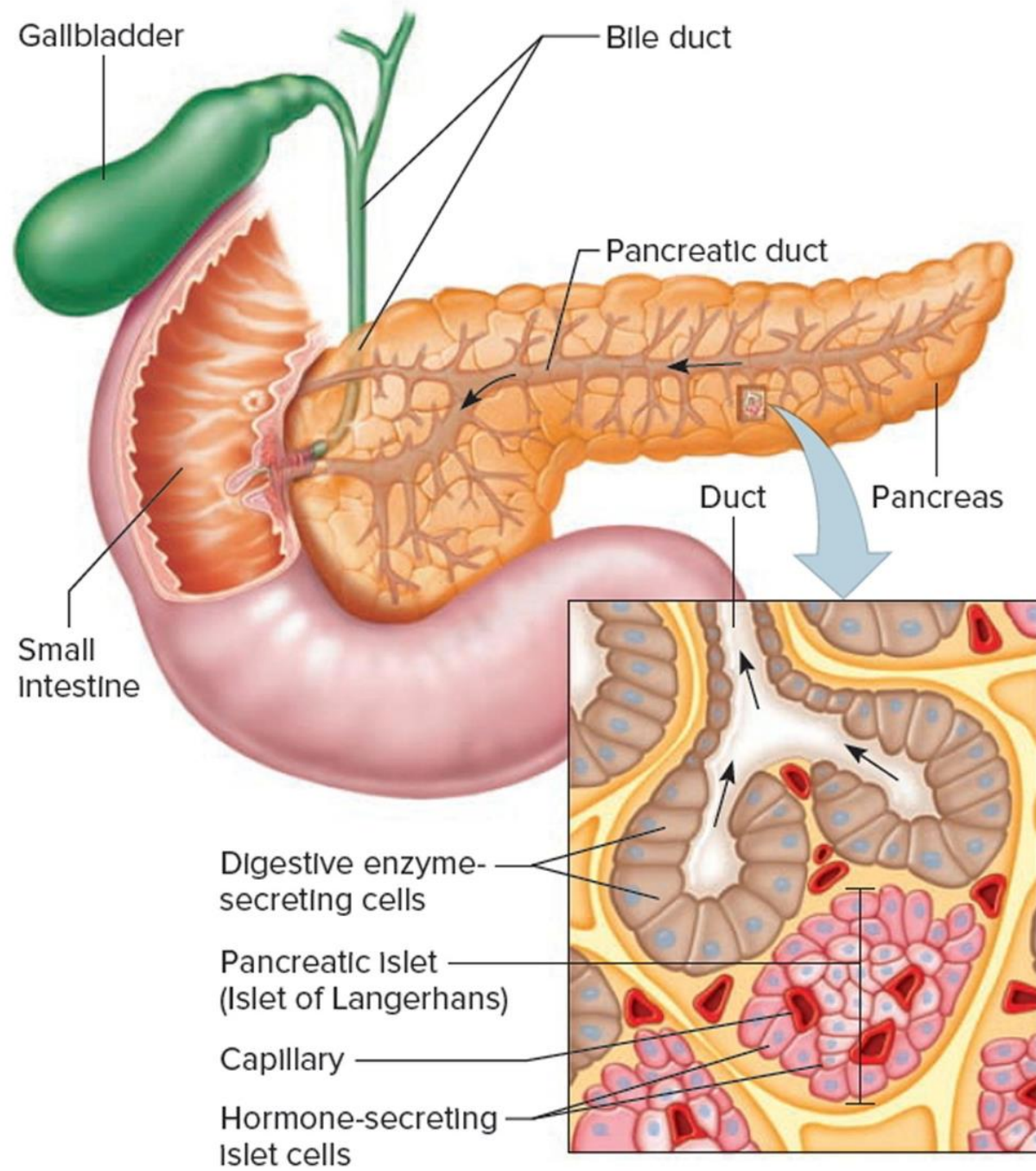
# Fats











# Pancreatic enzymes

## ENZYMES



**AMYLASE**

**Carbohydrates**

**PROTEASE**

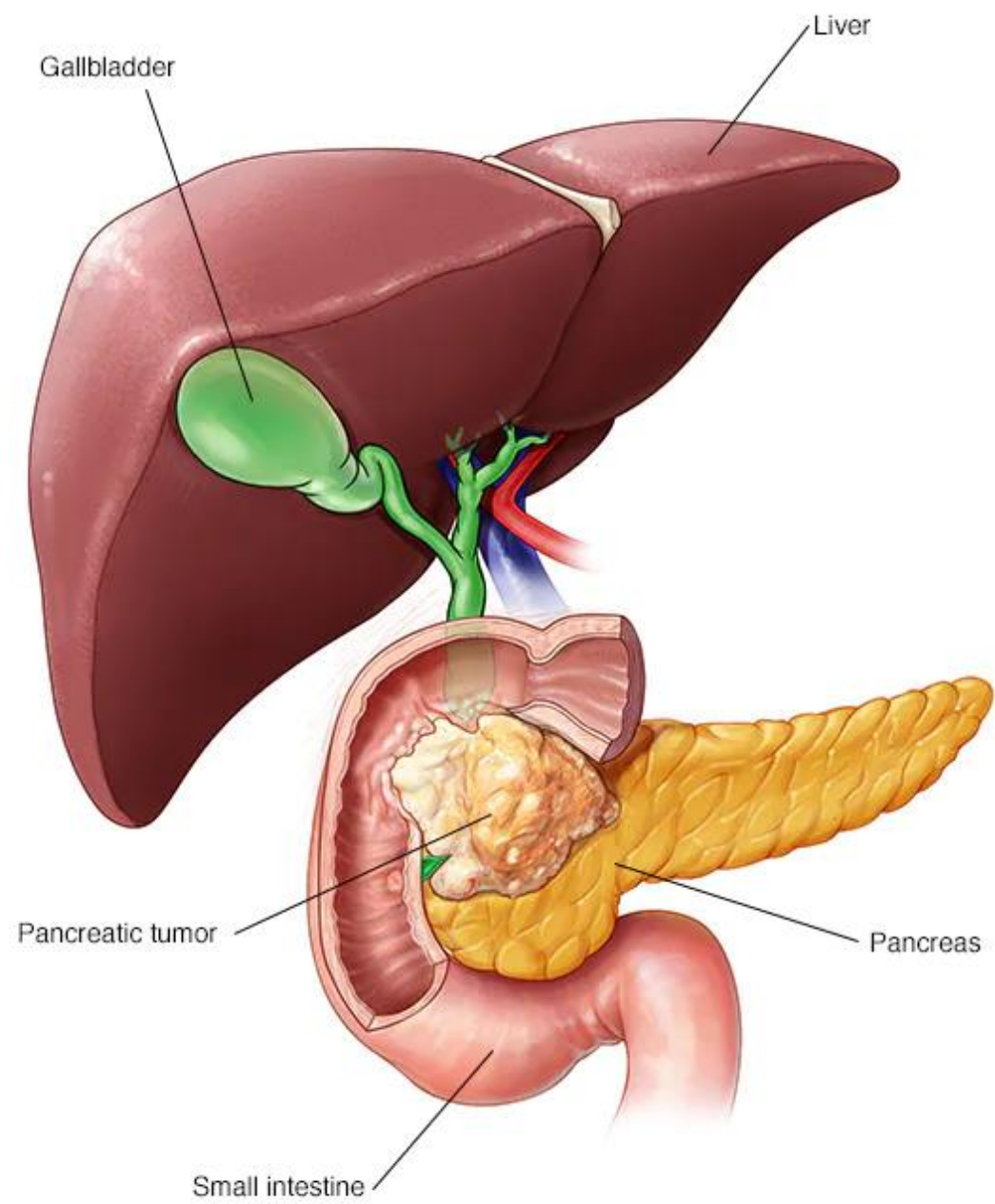
**Protein**

**LIPASE**

**Fats**

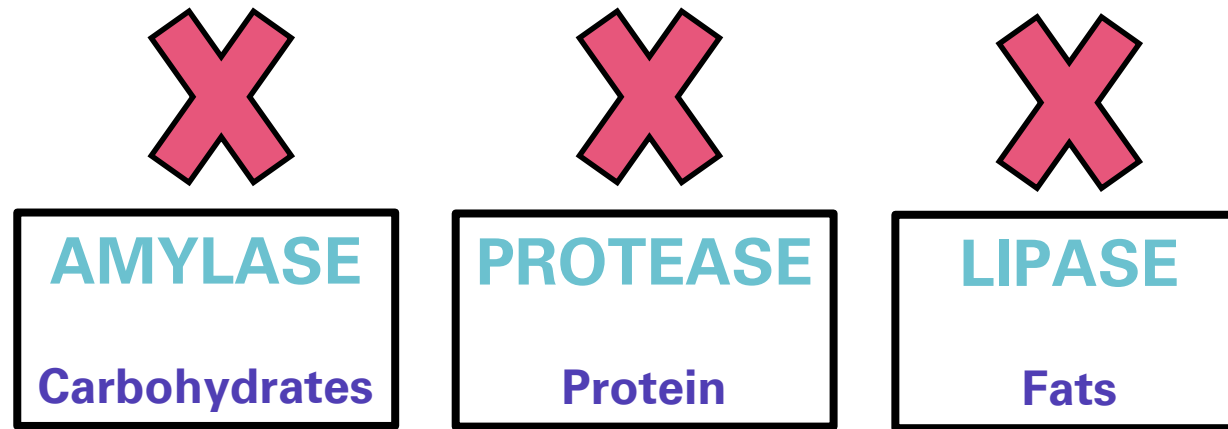
## ABSORPTION





# Pancreatic enzymes

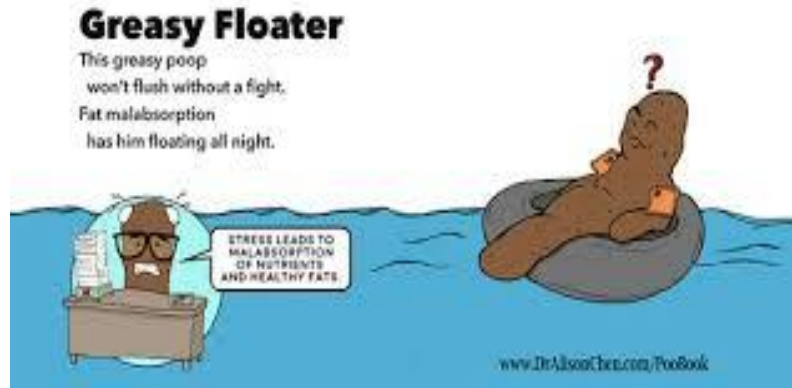
## ENZYMES



# MALABSORPTION



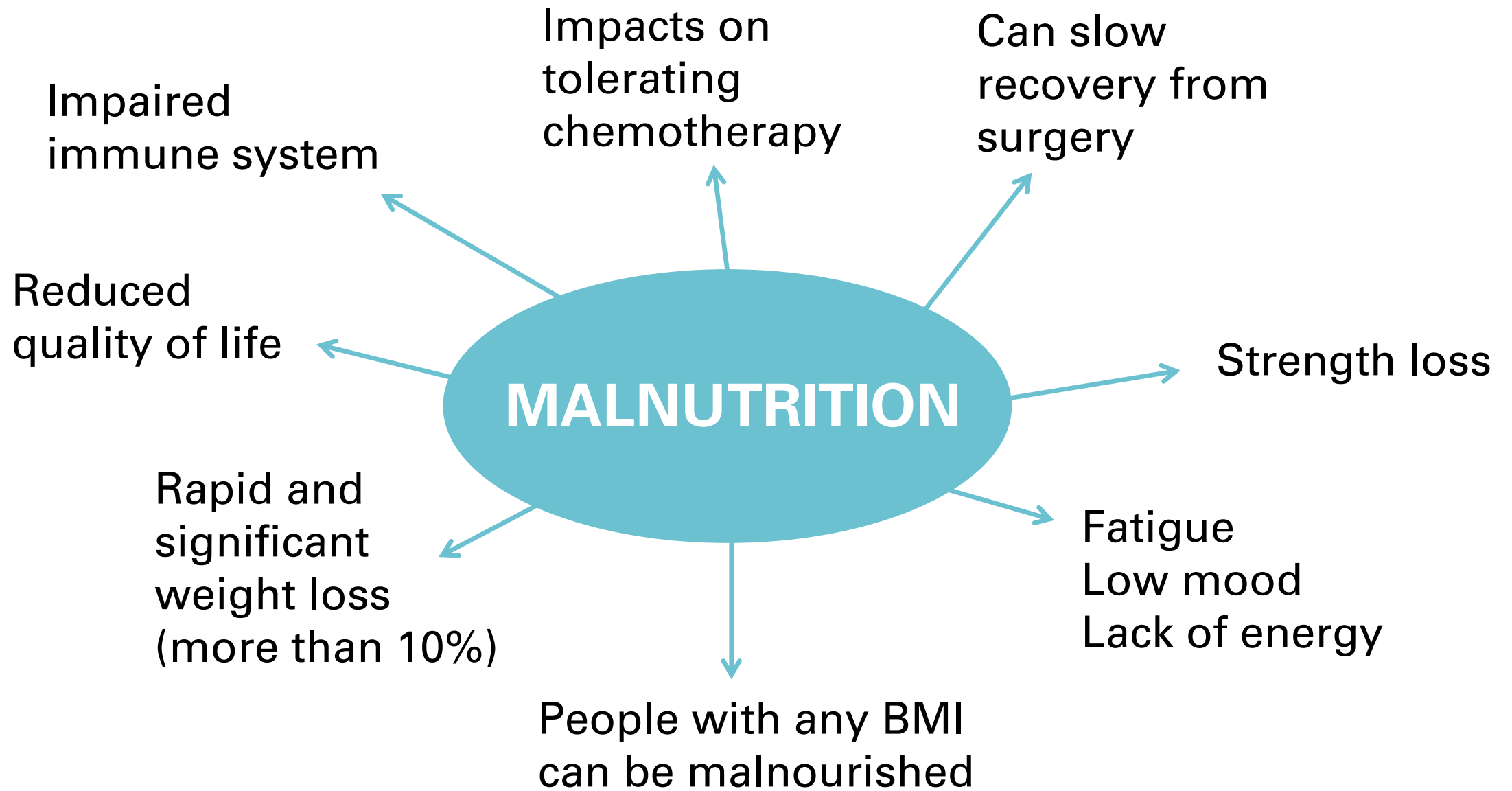
# Common symptoms



**MALABSORPTION**

**=**

**MALNUTRITION**



# Pancreatic Enzyme Replacement Therapy (PERT)



# Share your experience

Are you or your loved one taking pancreatic enzyme replacement therapy (such as Creon or Nutrizym)?

# Pancreatic Enzyme Replacement Therapy (PERT)



# Benefits of taking PERT

- May have enhanced quality of life
- Have improved overall survival
- Obtain a better symptom score
- May tolerate treatment better

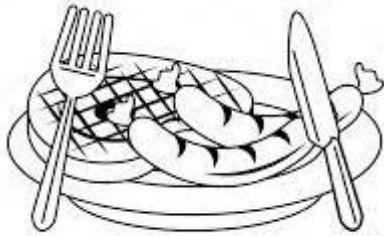
Dominguez-Munoz et al. 2018  
Roberts et al. 2019

# When taken correctly...

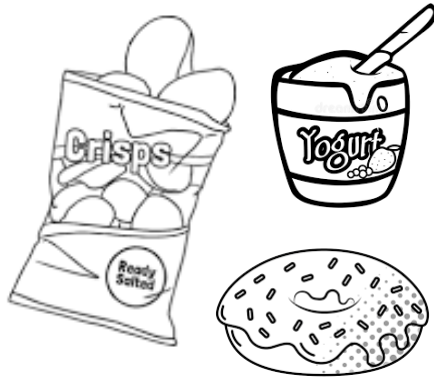
- Aids adequate absorption of nutrients
- Reduction of symptoms of malabsorption
- Formed, 'normal colour' stools
- Weight maintenance, weight regain
- Improved quality of life



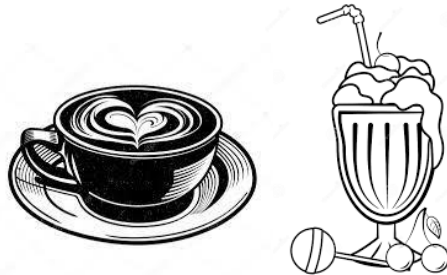
# How to take PERT



**MINIMUM** 50,000 – 75,000iu (2 - 3 x 25,000iu) per main meal. At start/through meal.



**MINIMUM** 25,000 – 50,000iu per snack.



**MINIMUM** 25,000 – 50,000iu per milky/nourishing drink, i.e. made with more than half milk.

# How to take PERT



**ALWAYS** swallow with a **cold** drink, never a hot one. Ideally swallow whole.



If taking more than one capsule, **spread throughout the meal.**



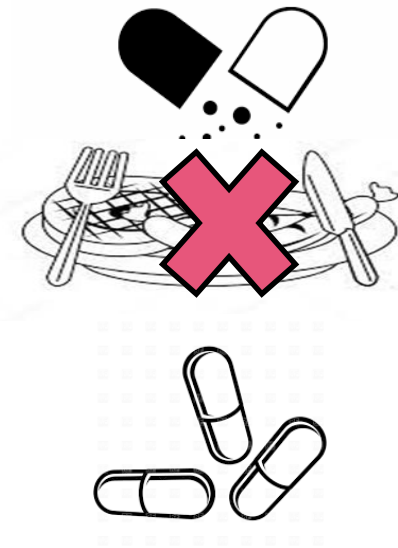
If unable to swallow whole, open capsule and swallow with something acidic e.g. yoghurt, fruit puree, tomato sauce.

**RINSE MOUTH WELL AFTERWARDS.**

# PERT

< 25°C

Store at **less than 25°C**. Avoid window sills, glove compartments, pockets.



**DO NOT** open capsules and sprinkle onto food.

Is your dose correct?

**PPI?**

You may need a **PPI (proton pump inhibitor)** – ask your GP.

# When is PERT not needed?



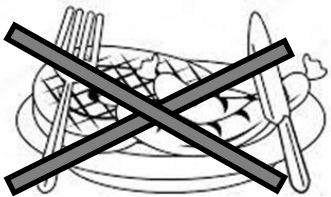
When eating a single portion of fruit or vegetables (except avocado)



When eating sugary sweets e.g. marshmallows, jelly babies, jelly



Tea or coffee with a drop of milk in. Water, squash, fizzy drinks



If you've missed a meal

# PERT: Common Qs

**Can I  
overdose?**

**Should I  
follow a  
low-fat diet?**

**If I don't  
snack, I  
won't have  
to take as  
many?**

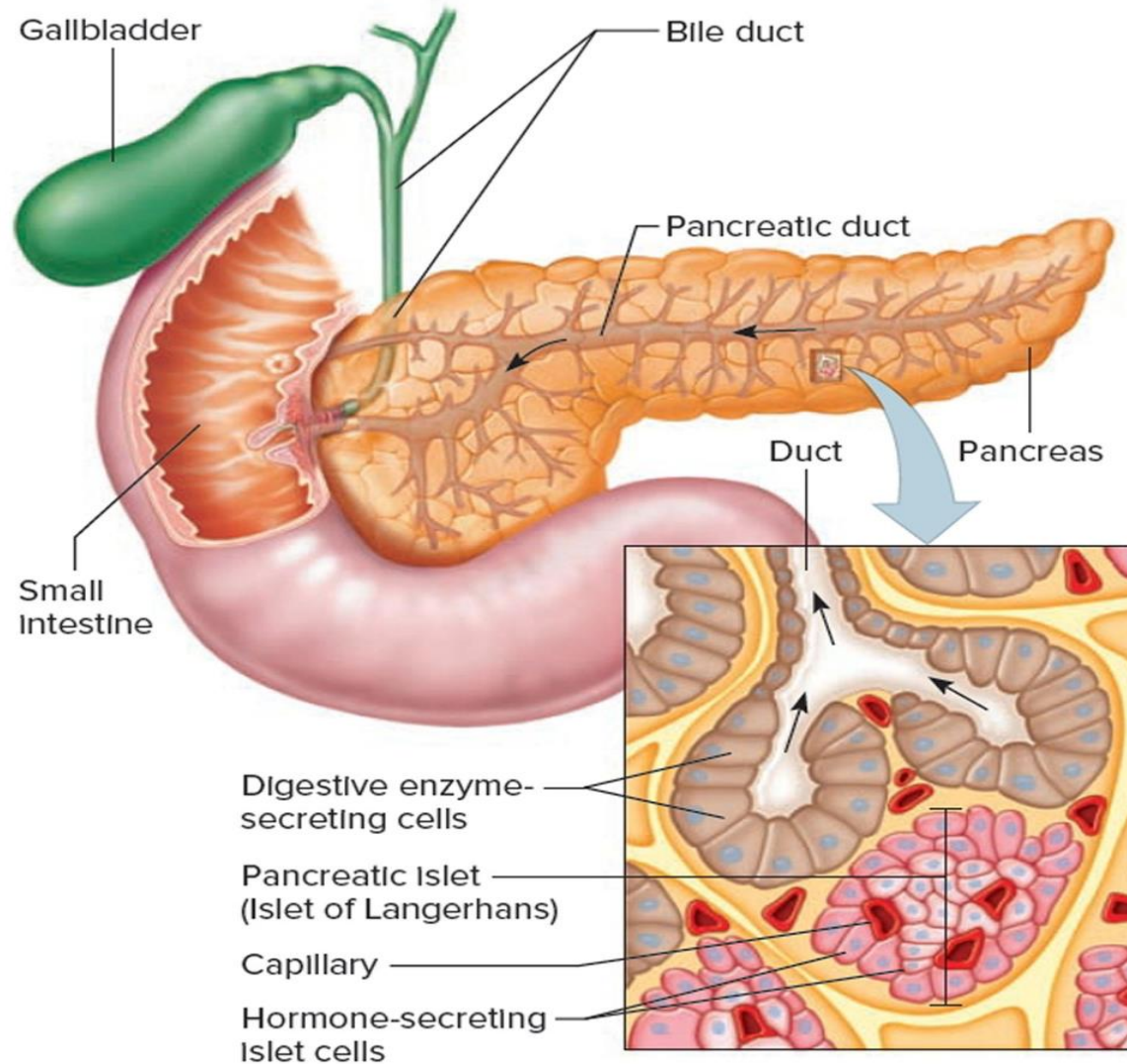
**Does PERT  
contain  
animal  
products?**

**I don't have  
symptoms of  
malabsorption  
– do I still need  
PERT?**

**I forgot  
PERT with  
my meal –  
should I  
take it now?**

# **Type 3c diabetes**

# Type 3c diabetes



# Type 3c diabetes

- T3c diabetes can further exacerbate malnutrition
- Symptoms of high blood sugar include:
  - Frequent urination, especially overnight
  - Extreme thirst
  - Non-healing wounds
  - Recurrent UTIs
  - Weight loss
- Starting on PERT may 'unmask' type 3c diabetes





# Management of type 3c diabetes

- Medication: oral or injectable
- Regular monitoring of blood glucose levels
- Potentially some dietary changes but restriction is **inappropriate** in people who are malnourished
- Medication dose should be altered to match oral intake; **oral intake should never be restricted** to match medication dose

# Diet and type 3c diabetes

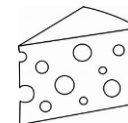
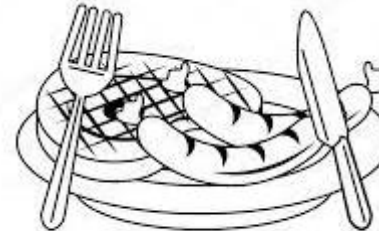
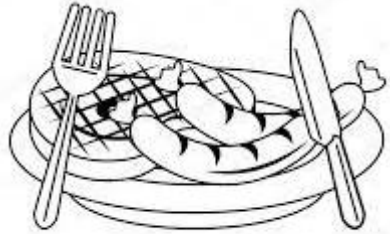
## AIM

- Prevent low blood sugars
- Prevent high blood sugars
- Prevent malnutrition
- Avoid complications associated with diabetes, e.g. nerve damage, sight loss

## HOW

- Don't skip meals
- Regular dietary pattern
- Monitor blood sugars regularly
- Ensure absorption with PERT
- Consider sugar and refined carb intake

# Diet and type 3c diabetes



## CHOOSE

Wholegrains  
Oats  
Pules  
No added sugar  
Fruits  
Vegetables

## HIGH GI FOODS

Broken down quickly by the body and cause a rapid spike in blood sugar levels.

Includes: white carbs, added sugars

# **Dietetic care for people with pancreatic cancer**

# Aims of dietitian input

To:

- Optimise nutritional status
- Optimise for further treatment e.g. chemotherapy, surgery
- Improve quality of life



# Dietary recommendations

- **EAT ANYTHING!**
- Aiming 3 meals, 2 snacks and 1 pint milk daily
- Some choices are more **nourishing** than others
- Carbohydrates for energy
- Protein for strength and wound healing
  - minimum 2-3 portions daily
- Fat adds flavour and calories
- Enrich/fortify food
- Nutritional supplement drinks – require PERT

# Enriching food

**Process of adding additional calories (energy) and protein to enrich (fortify) foods**

**ALWAYS** choose full fat options

Where possible, add:

- Skimmed milk powder, or vegan alternative e.g. pea protein powder
  - E.g. into porridge, soup, coffee, puddings, mash
- Nut butter, seeds, nuts/ground nuts
  - E.g. into yoghurt, porridge, into sauces
- Butter, olive oil spread, cheese (including vegan), double cream (or vegan alternative)
  - E.g. into mash, soup, porridge, custard, rice pudding
- Condensed milk, honey, syrup, nuts, dried fruit
  - Onto cereal, yoghurt

# Every little helps!

## DAY A

### **Breakfast**

Porridge with semi-skimmed milk

### **Mid-morning**

2 biscuits

### **Lunch**

Tomato soup, slice of bread

### **Evening meal**

Shepherds pie, low fat yoghurt

### **Supper**

Banana on toast

### **Drinks**

Cordial, coffee, Oxo

## DAY B

### **Breakfast**

Porridge with whole milk, 1 tbsp skimmed milk powder, honey/jam, 1 tbsp double cream

### **Mid-morning**

2 crackers with butter and cheese

### **Lunch**

Tomato soup with handful of grated cheese, roll with butter

### **Evening meal**

Shepherds pie, (MASH: 1 tbsp skimmed milk powder, 1 tbsp cream cheese, whole milk)

High protein yoghurt

### **Supper**

Banana and peanut butter on toast

### **Drinks**

Fruit juice, milky coffee, Bovril



# Every little helps!

## DAY A

### Breakfast

Porridge with semi-skimmed milk

### Mid-morning

2 biscuits

### Lunch

Tomato soup, slice of bread

### Evening meal

Shepherds pie, low fat yoghurt

### Supper

Banana on toast

### Drinks

Cordial, coffee, Oxo

**900kcal  
35g protein**

## DAY B

### Breakfast

Porridge with whole milk, 1 tbsp skimmed milk powder, honey/jam, 1 tbsp double cream

### Mid-morning

2 crackers with butter and cheese

### Lunch

Tomato soup with handful of grated cheese, roll with butter

### Evening meal

Shepherds pie, (MASH: 1 tbsp skimmed milk powder, 1 tbsp cream cheese, whole milk)

High protein yoghurt

### Supper

Banana and peanut butter on toast

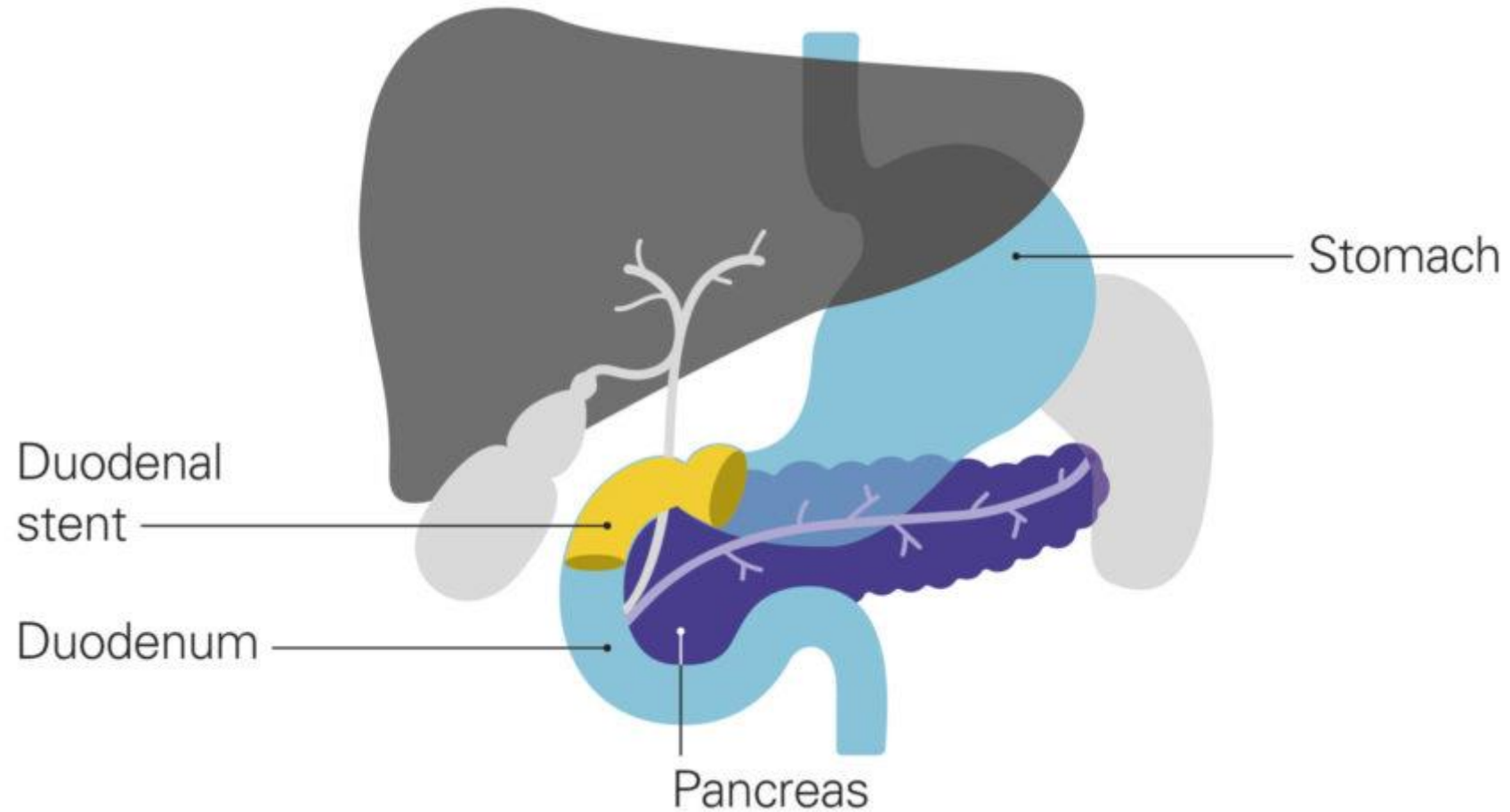
### Drinks

Fruit juice, milky coffee, Bovril

**1800kcal  
80g protein**

# **Duodenal stents and pancreatic cancer**

# Duodenal stent



# Diet and duodenal stent

## Day of stent insertion:

Tea, coffee, fruit juice, smooth soups, ice cream, jelly, oral nutritional supplement drinks.

## 24-48 hours after stent:

Smooth diet progressing to soft diet – yoghurts, mousses, scrambled egg, cereals, mash, pasta, rice, fish in sauce, cottage pie, bolognaise, chicken casserole, well-cooked vegetables.

# Diet and duodenal stent

## Problematic foods / foods to avoid

- Bread
- Overcooked chips / roast potatoes
- Grilled cheese toppings
- Stodgy foods e.g. pastry
- Nuts or chocolate with fruit and nut in
- Stringy vegetables e.g. green beans, celery
- Pith and skin-on fruit e.g. oranges, grapes, sweetcorn, peas, baked beans, raw onion

# **Cancer treatment and diet**

# Share your experience

Have you, or your loved one with pancreatic cancer, experienced any of these difficulties with eating?

# Impact of cancer treatment on diet

- Side effects of the disease, and effects of cancer treatments, can make eating and maintaining weight a difficult task
- Eating can often be a chore/task rather than a pleasurable experience
- Cancer itself and treatment can alter the way your body uses the food you eat

## Eating a nutritious diet during cancer treatment can help:

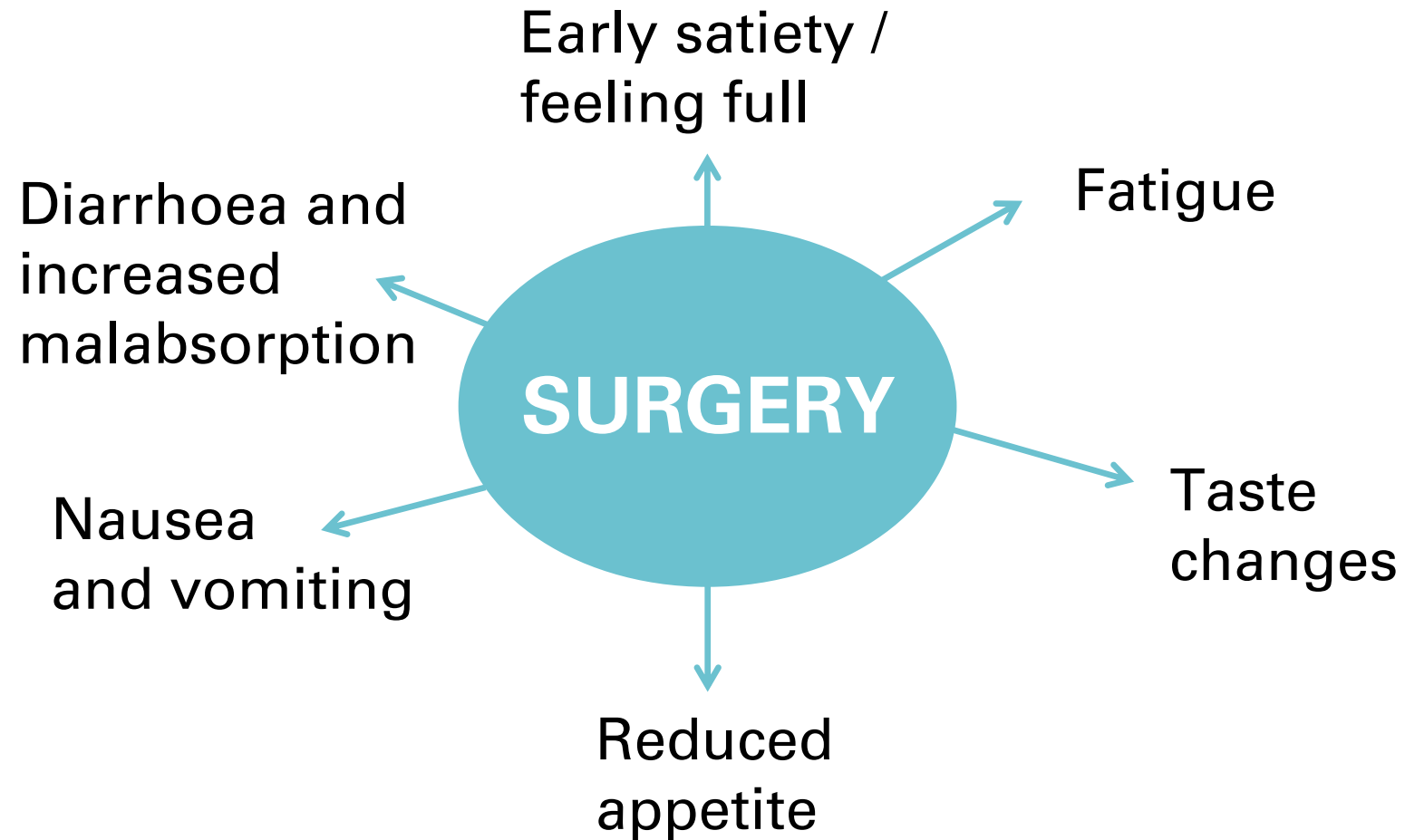
- Minimise or prevent weight loss
- Minimise delays in treatment
- Reduce treatment-related side effects
- Help with quality of life and overall survival



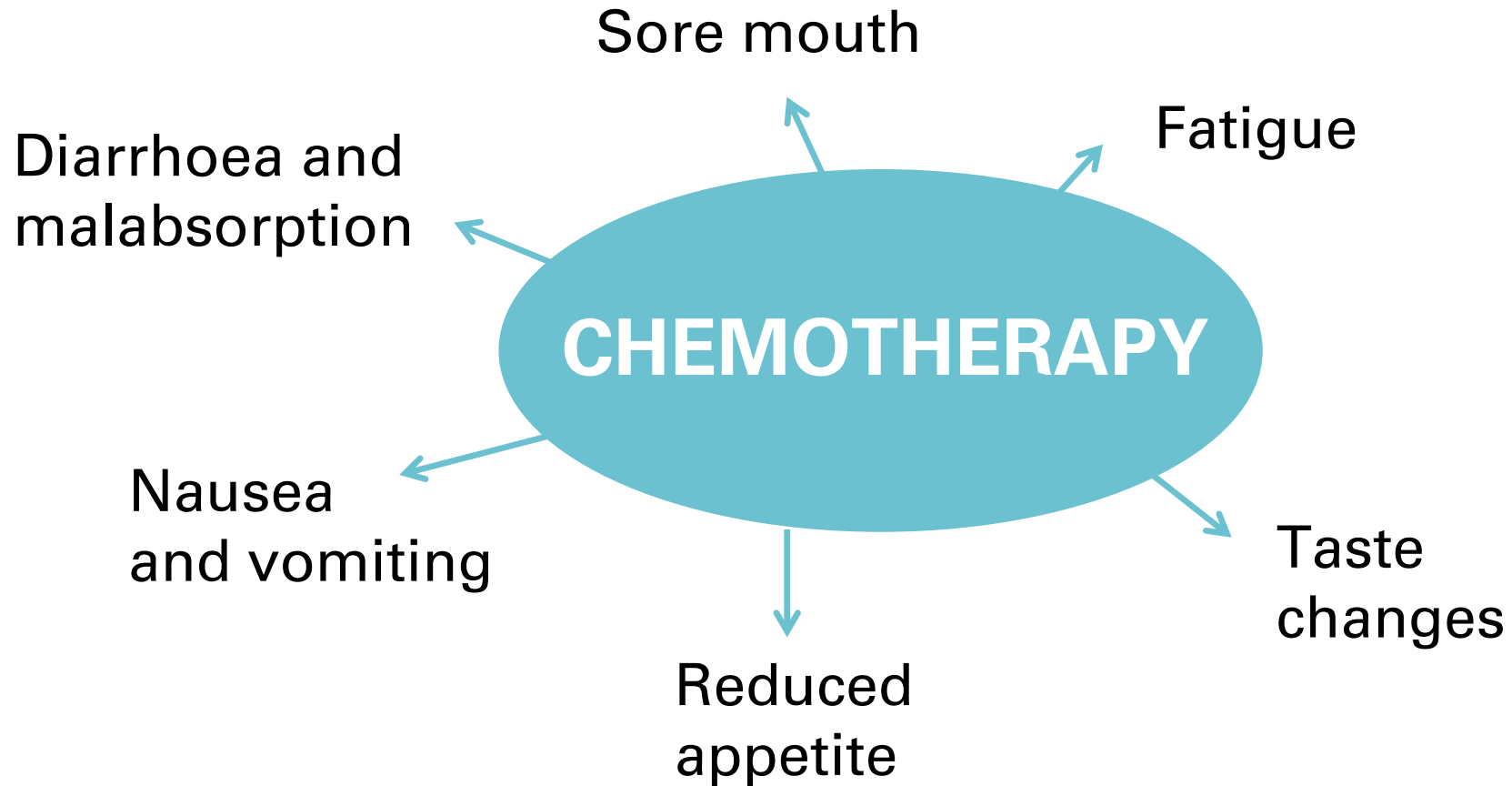
# Problems that may impact on eating

- Cancer and cancer treatments affect everybody differently
- Important to note that side effects can vary from person to person
- Side effects with all types of cancer treatment – surgery, chemotherapy, radiotherapy

# Side effects following surgery



# Side effects with chemotherapy



# **Strategies to help you cope with side effects**

# Reduced appetite

- Food fortification / food enrichment
- Little and often – smaller portions but more frequent
- Avoid filling up with water, fizzy drinks, tea/coffee, non-nutritious soups
- Choose foods you fancy
- Make the most of when you're hungry / have the best appetite
- Blander foods may be better tolerated

# Early satiety/feeling full

- Little and often
- Avoid fizzy drinks
- Avoid filling up on fluids before meals/snacks
- High energy fluids if prefer a drink – milk based, smoothies, enriched soups

# Nausea and sickness

- Empty stomach can make nausea worse
- Eat slowly in small amounts
- Plain foods - carbohydrate based - toast, bread, biscuits, pasta
- Cold foods may be better tolerated – yoghurt, crème caramel, mousse
- Avoid cooking when nauseous - use ready meals, ask someone to cook
- Sip cold fizzy drinks between meals
- Nourishing drinks between meals - milk, milkshake, fruit juice, soup, nutritional supplement drinks
- Try salty foods
- Avoid greasy, spicy foods with strong smells
- Ginger – ginger biscuits, ginger ale, ginger beer, tea



# Sore mouth

- Sip fluids frequently – if lips are sore – try a straw
- Soft, moist, bland foods often easier
- Cold foods may be soothing – ice cream, yoghurt
- Suck ice cubes, ices lollies, frozen fruit (non-acidic - pear, mango, apple)
- Avoid dry, rough foods – nuts, muesli, bread
- Avoid citrus fruits and tomato-based sauces
- Reduce salt and seasonings – chilli, curry
- Use sauces, gravy, custard, cream with foods



# Dry mouth

- Sip fluids frequently to moisten mouth
- Soft, moist foods with sauces are helpful
- Maintain good oral hygiene – teeth-brushing
- Chewing gum / sucking hard boiled sweets can stimulate saliva
- Avoid salty, spicy food and alcohol and caffeine as they can dry out your mouth
- Rinsing your mouth before meals with flavoured fizzy water / sparkling water may help
- Artificial saliva

# Taste and smell changes

- Taste and smell changes usually change over time
- Important to keep trying foods at different intervals
- Eat foods you enjoy
- Try new foods you may not usually eat
- Cold foods may be more easily tolerated
- Try milk/juice based drinks if tea/coffee disliked
- Food presentation can help!
- Monitor mouth/tongue as oral thrush can also cause taste changes (easily treated with meds)

# **“Food tastes bitter or metallic”**

**Marinate meat in fruit juice or a fruity sauce to help counteract bitter taste**

**Consider alternative protein source to meat e.g. fish, eggs, lentils, yoghurt, cheese**

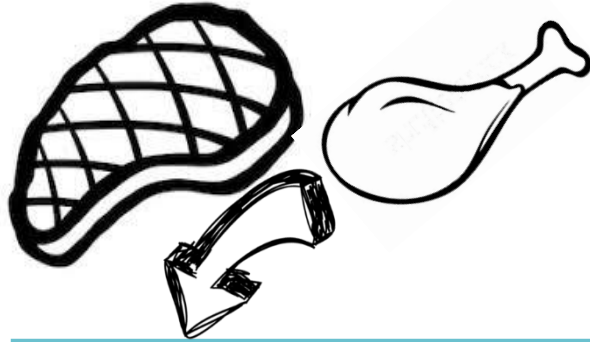
**Try hot chocolate/malted milk drinks as alternatives to tea/coffee**

**Rinse mouth with flavoured sparkling water before food**

**Try using plastic utensils**

**Suck sweets – lemon and lime / sherbet lemon, fizzy sweets between meals to reduce bad tastes**

# "Food doesn't taste of anything, it tastes bland"



## **Marinade**

Wine  
BBQ sauce  
Sweet and sour  
Fruit juice

**Add sauces and dressings:** Chutney, salsa, mustard, soy sauce, balsamic vinegar



## **Use strong/sharp flavours**

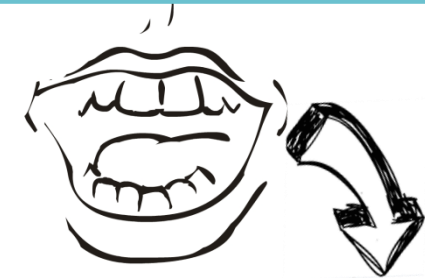
Mustard  
Pepper  
Salt  
Spices  
Herbs  
Lemon juice

## **Choose hot /warm foods**



## **Sharp flavours increase saliva production**

Lemon  
Grapefruit  
Lime  
Citrus fruits  
Bitter lemon  
Pickles  
Vinegar



**Foods that need lots of chewing increase saliva production**

# Diarrhoea

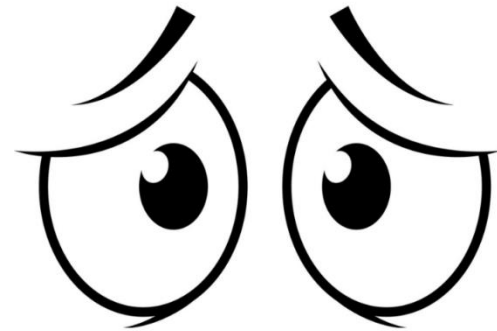
- Keep hydrated with fluids – frequent sips – sports drinks
- Eat little and often
- Limit high fibre foods – beans, wholegrain cereals, raw fruit and veg
- Avoid very greasy/fatty foods during this time
- Avoid citrus, sweeteners and caffeine
- Concentrated fruit juices worsen symptoms

# Fatigue

- Ask family and friends if they can do your shopping/cooking
- Online food shop > delivered to door
- Prepare meals when you have energy
- Batch cook and freeze
- Eat foods that require little preparation
- Make use of oral nutritional supplement drinks
- Try meal services e.g. Wiltshire Farm Foods, Oakhouse
- Light exercise can help reduce fatigue and may increase appetite

# Emotional impact of eating

- Daily activity
- Social activity
- Concern about not eating the 'right' foods
- Concern about not eating enough
- Pressure from family and friends about eating enough



# Tips

- Set **realistic goals** – eating even small amounts can be a great achievement
- Gentle support and encouragement from family and friends
- Activity will help maintain strength and build appetite
- **Take advantage of good days**





# Recipe resources

- Nourishing Your Body During Pancreatic Cancer Treatment - [www.pancreaticcanceraction.org](http://www.pancreaticcanceraction.org)
- The Royal Marsden Cancer Cookbook - Amazon - ~£12.55
- Recipes for people affected by cancer – [www.macmillan.org.uk](http://www.macmillan.org.uk)

# Myth-busting

“

**Sugar feeds  
cancer**

”

“

Sugar feeds  
cancer

**MYTH**

”

# Sugar and cancer

- Carbohydrates are broken down into single sugars (glucose) for absorption by the body
- **All cells, cancerous or not, use glucose (sugar) for energy**
- Cancer cells grow very fast compared to healthy cells, therefore have high demand for fuel...appearing to 'feed the cancer'
- Limit free sugars as part of a healthy diet

“

**I should eat only organic fruit and vegetables, as pesticides used in non-organic foods increase cancer risk.**

**Taking supplements such as wormwood, reishi extract and chaga mushroom extract daily will reduce my risk of cancer developing.**

”

“

I should eat only organic fruit and vegetables, as pesticides used in non-organic foods increase cancer risk.

**MYTH**

Taking supplements such as wormwood, reishi extract and chaga mushroom extract daily will reduce my risk of cancer developing.

”

# Organic foods and cancer

- Organic fruit and vegetables tend to use fewer pesticides
- Very high levels of pesticides may cause cancer in animals
- Levels much lower than these are used as pesticides
- **No evidence** that small amount of pesticides that may be ingested increases cancer risk
- **No evidence** that organic foods affect cancer risk



# Online supplements

- Curcumin 500 with Bioperine – Pure Encapsulations (Turmeric, black pepper, vitamin C)
- Shillington's Liver/Gallbladder Formula (contains wormwood and supports the liver)
- MicroDefense – Pure Encapsulations (kills parasites, balances gut, contains wormwood)
- Reishi Extract – Host Defense
- Chaga Mushroom Extract – Host Defense
- Shillington's Body Balance+ (good source of iron, and balances PH levels, amongst other things)

# Online supplements

Daily dose = £135 per month

£1620 per year

# Other supplements

- High dose antioxidants – coenzyme Q10; selenium; vitamin C; vitamins A, C, E
- May help prevent cell damage
- May stop chemotherapies from working as well
- Important to check with your oncology team before taking any supplements

**Beware of what you read  
on the internet**



# Where to find information

- Specialist nurse, dietitian, GP
- Pancreatic Cancer UK  
[www.pancreaticcancer.org.uk](http://www.pancreaticcancer.org.uk)
- British Dietetic Association  
[www.bda.uk.com](http://www.bda.uk.com)
- NHS Choices  
[www.nhs.uk](http://www.nhs.uk)

Pancreatic  
Cancer  
UK

**BDA** The Association  
of UK Dietitians

**NHS** choices

# Conclusion

- **Malabsorption** can cause **malnutrition**
- Malabsorption is well managed by taking **PERT** correctly
- Dietary restriction is **not** appropriate in people who are malnourished or at risk of malnutrition
- Adequate use of PERT and adopting nourishing dietary strategies will help with weight, cancer treatment tolerance and overall wellbeing
- **Try different strategies** to help manage side effects
- Use **reputable information sources**

**Thank you!**

# References

- Dominguez-Munoz et al (2018) 'Impact of the treatment of pancreatic exocrine insufficiency on survival of patients with unresectable pancreatic cancer: a retrospective analysis' *BMC Cancer*. 18:534.
- Roberts et al. (2019) 'Enzyme replacement improves survival among patients with pancreatic cancer: results of a population based study', *Pancreatology*. 19, pp. 114 – 121.
- British Dietetic Association (BDA). Cancer Diets: Myths and More.