

# NUTRITION FOR THE CCA PATIENT

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# Overview

## Nutrition for the Cholangiocarcinoma Patient

- Why is nutrition important?
- Factors affecting nutritional status
- Weight loss, cachexia, sarcopaenia
- Healthy eating
- Managing side effects of anti-cancer treatments
- Bile Acid Malabsorption (BAM)
- Small intestinal bacterial overgrowth (SIBO)

# Nutrition in Cholangiocarcinoma

## Why is it important?

- Nutritional concerns, issues and needs will vary between patients
- Systemic effects of cancer will impact nutritional status
- Side effects of treatment modalities
- Evidence that poor nutritional status before/during/after treatments can negatively affect patient outcomes
- Tolerance and response to treatment (Chemotherapy, radiotherapy, surgery)
  - Functional status
  - Quality of life
  - Survival
- Dietary adjustments may be needed temporarily or long term to manage symptoms

# Cholangiocarcinoma: symptoms and signs

- Few or vague symptoms such as nausea and loss of appetite, in the early stages
- At diagnosis, nutrition-related symptoms may be more severe:
  - Jaundice
  - Nausea and vomiting
  - Prolonged loss of appetite
  - Weight loss
  - Pale stools
  - Abdominal pain
  - Tiredness, lethargy
- Nutritional status may already be impaired prior to starting treatment or undergoing surgery

# Nutritional status

**Patients with cancer are at particularly high risk for malnutrition because both the disease *and* its treatments threaten their nutritional status.**

## **Factors affecting nutritional status**

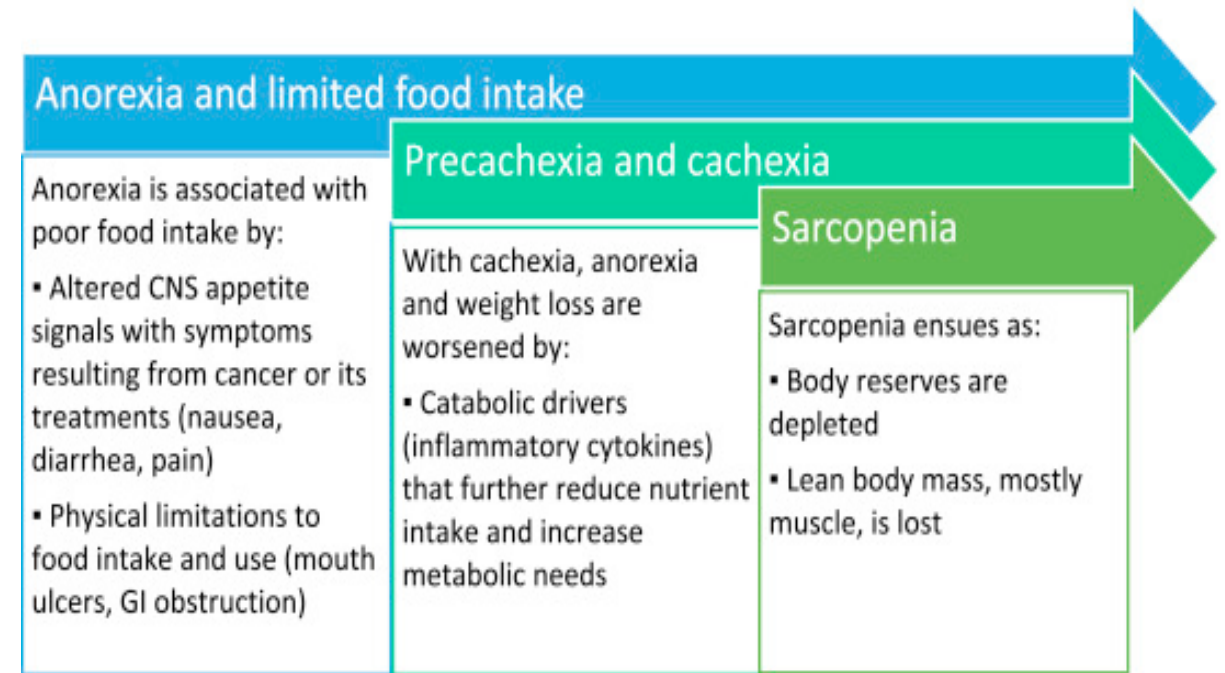
- Systemic impact of disease:
  - Negative energy balance and muscle loss due to reduced food intake and alterations in metabolism (proteins, fats, carbohydrates)
  - Inadequate nutritional intake - appetite suppression
  - Increased energy needs (Increased resting metabolic rate)
- Poor appetite, reduced food intake
- Gastrointestinal symptoms: nausea, vomiting, early and prolonged “fullness”, diarrhoea, constipation
- Poor absorption of nutrients (malabsorption)
- Taste changes
- Dry or sore mouth, mouth ulcers
- Pain
- Fatigue
- Low mood

# Weight loss

## Cachexia and sarcopaenia

**Cancer cachexia is a multifactorial syndrome characterised by an ongoing loss of muscle mass (with or without loss of fat mass) that cannot be fully reversed by normal nutritional support and leads to progressive functional impairment.**

- Common side effect of advanced or metastatic cancer: occurs in ~50-80% of cancer patients
- Driven by appetite suppression and reduced food intake combined with abnormal metabolism
  - Progressive weight loss (involuntary)
  - Muscle wasting
  - Weakness, fatigue
  - Difficulty doing regular daily activities
  - Psychological impact
- **Muscle wasting and loss of function = sarcopaenia**



### Negative impact on patient outcomes:

- Performance status and fitness for treatment
- Treatment toxicity/complications
- Function and independence
- Quality of life
- Overall survival and prognosis

# Goals of Nutritional therapy

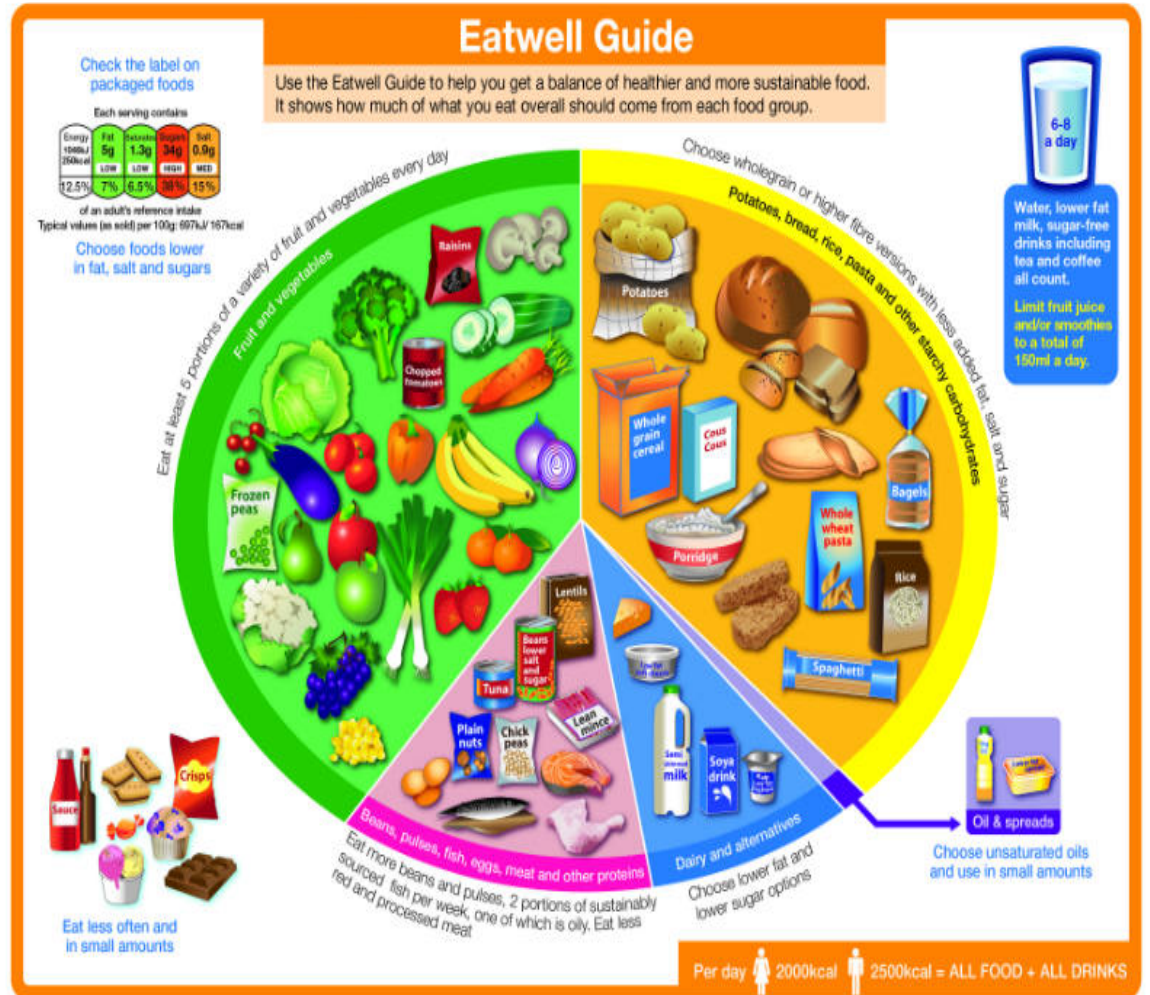
- 1) Optimise nutritional status before and during treatment – ensure adequate reserves
- 2) Increase lean body (muscle) mass
- 3) Prevent body tissue breaking down
- 4) Maintain strength, resilience
- 5) Maintain defences against infection
- 6) Manage side effects of anti-cancer treatment
- 7) Preserve food enjoyment



*Patients may require specialist individualised nutritional management adapted to their specific needs, therefore early Dietetic intervention and support, if indicated, is important!*

# Healthy Eating

- Healthy eating is important to ensure overall dietary balance
- Appropriate if your appetite is good and your weight is stable.
- Wide variety of foods across all food groups
- At least 5 portions of fruit and vegetables per day
- Starchy carbohydrates (bread, cereals, rice, pasta, grains)
- High fibre options – wholegrain, seeded, brown
- Lower fat and lower sugar foods
- Adequate dairy sources (3 portions per day)
- Reduced intake of salt and salty foods
- Alcohol in moderation
- Good fluid intake: 1.2L or 6-8 glasses per day



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# Treatment options for cholangiocarcinoma

- Chemotherapy
- Radiotherapy
- Surgery
  - Removal of bile ducts (Biliary reconstruction)
  - Partial liver resection +/- bile ducts +/- gallbladder
  - Whipple procedure
  - Biliary bypass, stent insertion to relieve blockage

# Chemotherapy and Radiotherapy

- **Many patients have eating problems during and after treatment**

## **Managing symptoms/side effects:**

- Poor appetite +/- weight loss
- Nausea and vomiting
- Dry or sore mouth/ ulcers/difficulty swallowing
- Taste changes
- Diarrhoea/ constipation
- Fatigue

# Nutrition support

Poor appetite/weight loss

- High protein/high energy diet
- Nutrition support strategies – food first, food fortification, oral nutritional supplements

## **Basic principles:**

- Small frequent meals and snacks (~ 3-4 nourishing snacks per day)
- Avoid large portions if your appetite is small (side plates)
- Make the most of days when your appetite is good → maximise intake
- All foods and drinks should be high in calories and protein (every bite counts)
- On your plate, prioritise the protein source first, alongside carbohydrates. Fruit and vegetables are not as important with a poor appetite.
- Fortify food to maximise the energy/protein content



# Food fortification techniques

## Energy

- Include high energy food at each meal i.e. pasta, bread, rice
- High energy, nourishing snacks

### Tips for Adding extra energy:

- Choose full fat foods where possible
- Choose full cream milk and full fat yoghurt
- Add extra fats such as butter, oil, mayonnaise, cream and cheese to meals (toast, pasta, sandwiches, potatoes and vegetables)
- Use oil in cooking ie. Fried foods
- Add cream, sour cream, plain yoghurt or crème fraîche to soups, sauces, meat dishes
- Add extra cheese to pasta, sauces, vegetables

## Protein

- Include high protein sources at each meal:
  - meat, chicken, fish, cheese, egg
  - Milk, cheese, yoghurt (dairy or soy)
  - Nuts, beans, peas, lentils soya beans, tofu



### Tips for adding extra protein:

- Use fortified milk instead of regular milk (2-4 tbspn skimmed milk powder to 1 pint (568ml) full fat milk)
- Add cheese to food for extra protein, energy and flavour. Grate into mashed potatoes, baked beans, scrambled egg, sauces and soup.
- Add lentils, dried beans and peas to soups and casseroles.

# Oral nutritional supplements



30ml = 100kcal & 2g protein

4 x 30ml = 400kcal & 8g protein

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## Struggling to take your supplements?...

- Serve chilled +/- ice for palatability
- Try diluting with milk or a similar flavour fruit juice to improve flavour
- Sip slowly, avoid taking full volume in one go
- Take in divided doses across the day
- Allow at least one 1 hour before/after meal
- Freeze into ice-lollies or ice-cream
- Incorporate into food for ex. Custard, porridge, sauces, smoothies, milky drinks, ice-cream

**Or, as an alternative, you can make your own  
Nourishing drinks!**

# Nausea and vomiting

- **Common side effect of disease, chemotherapy, post surgical**
- **General Tips:**
  - Symptom control is key – do not wait until you already feel sick to take anti-sickness medication
  - Eat at times of the day you feel less nauseous and are less likely to be sick
  - Wear loose clothes and avoid lying down after eating
  - Avoid taking favourite foods or nutritional supplements if you feel sick as you may develop a dislike for them
  - Avoid hot foods and food smells, excessive fluid during a meal, strong tea/coffee, greasy or high fat foods

## **Food suggestions:**

- Dry toast, crackers or plain biscuits first thing in the morning before you get up
- Eat small, frequent and regular meals every 2-3 hours
- Starchy bland foods such as crackers, pretzels, crisps, toast, rice cakes
- Food and drinks containing ginger: crystallised ginger, ginger beer, ginger biscuits
- Drink fluids continuously throughout the day – fruit juices, soda water. Sip through a straw
- Peppermint tea can help to relax your stomach muscles and reduce nausea
- If you are vomiting, drink plenty of fluids, particularly sports drinks and fruit juices



# Sore mouth or throat

- Certain types of chemotherapy may cause a sore mouth with ulceration
- Infection (thrush)
- Problems with teeth/dentures

## Tips to help manage a sore mouth

- Symptom management – analgesia, soothing or antiseptic mouthwashes or sprays – this is **KEY**
- Soft, moist foods: add extra gravy, sauce, butter, milk, custard and/or cream to moisten food
- Soften food by mincing, liquidising, mashing, chopping
- Avoid dry/rough textured foods – toast, crackers, crisps, raw vegetables
- If you are struggling - request referral to a Dietitian for advice on a soft or puree diet

## Recommended foods:

- Cold foods and drinks – yoghurt, milk, ice-cream, sorbet
- Avoid acidic foods and drinks (lemon, oranges, grapefruit)
- Avoid very salty or spicy foods such as crisps, chilli, pepper, curry
- Avoid very hot drinks or food – allow to cool
- Little and often if you cannot manage normal sized meals
- Chilled nourishing drinks and/or supplement drinks if unable to manage solids





# Taste changes

- Occur with certain types of chemotherapy
- Foods may taste metallic, bitter or bland

## **Tips for making food taste more palatable:**

- Prepare foods that look and smell appetising: colourful fruit fruits and vegetables
- Avoid foods that have lost their taste or appeal, but re-try after a few weeks as your taste may have returned to normal
- Experiment with different flavours, textures and temperatures (Cold foods)

## **Tips to make your food taste more palatable**

- Try adding herbs and seasonings to food: lemon juice, garlic, paprika, ginger, mint, bacon pieces, cloves
- If food tastes bitter: avoid artificial sweeteners (saccharin)
- If food taste sweeter than normal: try adding sour or salty flavours to counteract the sweetness: lemon/lime juice, soy sauce, vinegar
- If food has a metallic taste: try marinating meat with fruit juice, wine or sweet marinades, add pickle or chutney to cold meats, try sharp flavours such as lemon juice\*, pineapple\*, boiled sweets (\* avoid if sore mouth)



# Diarrhoea

- Due to illness, treatment (Chemotherapy and radiotherapy) or medications (for ex. antibiotics)
- If severe - symptom management is important – loperamide (Imodium). Take as directed and as needed

## **Tips for avoiding and managing diarrhoea:**

- Avoid high fibre “roughage” foods such as wholegrain bread, cereals and fibrous vegetables such as raw salads and fruit skins
- Avoid fatty and spicy foods
- Avoid caffeine (gut motility) – try herbal teas instead
- Adjust dairy intake (reduced ability to digest lactose): yoghurt, cheese, custard may be better tolerated than milk due to lower lactose content
- Avoid gas-producing foods: beans, fizzy drinks, cabbage, sprouts, broccoli
- Probiotic drinks can ease antibiotic-related diarrhoea. Do not take probiotics if you are Neutropaenic. Check with your Dietitian.
- Ensure adequate hydration ~ 1.5-2L fluid per day – juices, sports drinks, jelly, soup, herbal teas

# Fatigue

- Common side effect of both radiotherapy and chemotherapy
- Often worse towards end of course of treatment and can persist for weeks

## **Tips to help cope with tiredness:**

- Use convenience foods such as tinned foods, frozen meals and ready meals
- Use online food shopping delivery
- Keep pantry foods well stocked
- Plan ahead. When feeling active, cook extra and freeze
- Allow family and friends to help do shopping and to cook for you
- If very fatigued, try a nourishing drink such as a smoothie, milky hot drink with fortified milk, or a supplement drink/pudding
- If you are struggling, your GP can arrange meal delivery or home help for meal preparation

# Surgery

- Removal of bile ducts (Biliary reconstruction)
- Partial liver resection +/- bile ducts +/- gallbladder
- Whipple procedure
- Biliary bypass, stent insertion to relieve blockage

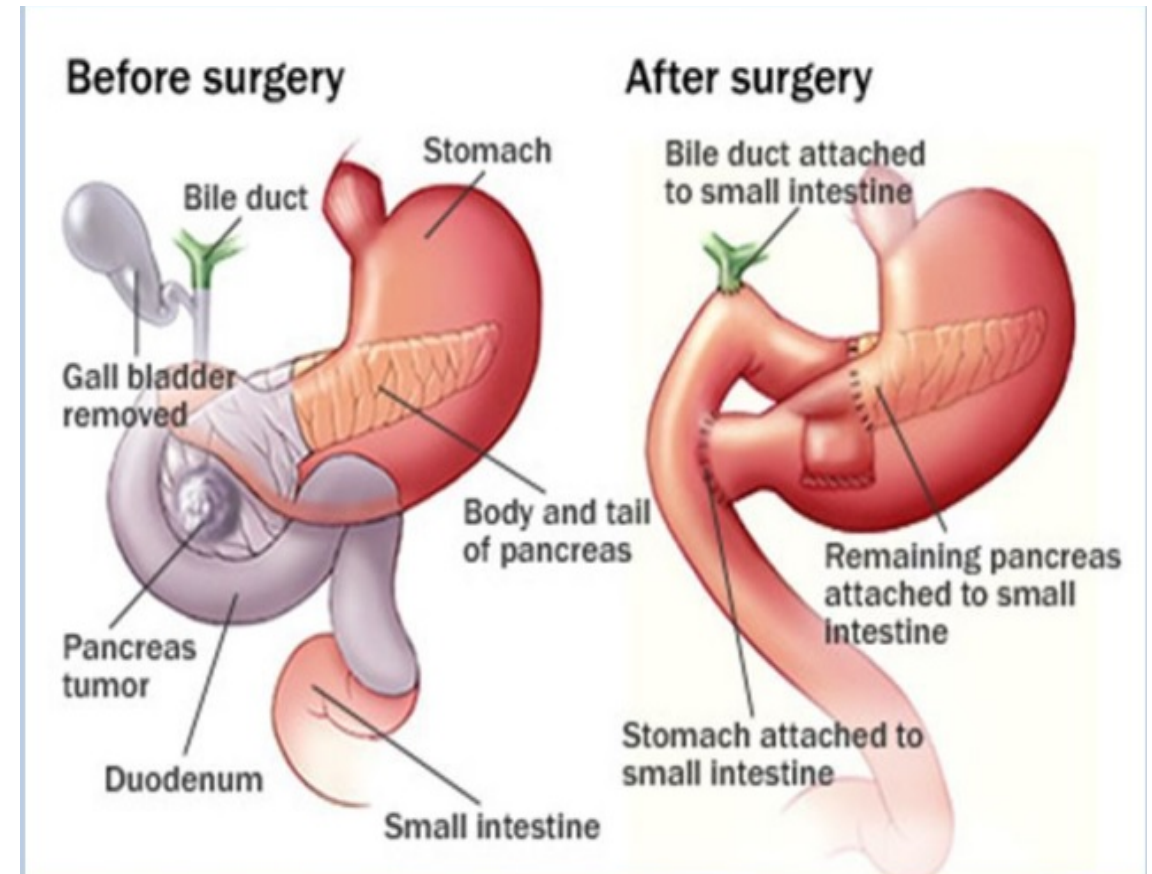
# Surgery – Whipple Procedure

## Whipple procedure:

- Also known as a Pancreaticoduodenectomy
- Complex procedure involving removal of the head of the pancreas, a portion of the bile duct, gallbladder and the duodenum, usually with part of the stomach.
- Significant nutritional impact

## Functions of the Pancreas:

- Exocrine function: production of digestive enzymes to break down food
- Endocrine function: production of hormones insulin and glucagon which help to regulate blood glucose (sugar levels)



# Nutrition considerations following surgery

- Delayed gastric emptying / Gastroparesis
- Diabetes: dependant upon the amount of pancreas removed.
- Pancreatic enzyme insufficiency: (45-100%): reduced enzyme production → impaired digestion and absorption of nutrients (fats, proteins, carbohydrates, vitamins, minerals) → malabsorption → malnutrition

## **Symptoms:**

- Poor appetite
- Nausea
- Early and prolonged satiety
- Abdominal discomfort eg. bloating, cramping, wind, flatulence, reflux
- Weight loss
- Diarrhoea/ Steatorrhoea (fatty stool) – late sign > 90% of pancreatic function lost

**Symptoms may persist for weeks or months post op**

# Pancreatic enzyme replacement therapy (PERT)

- Used to manage Pancreatic enzyme insufficiency (PEI)
- Capsules replace the enzymes that your pancreas would normally make and release in response to food intake → enzymes help to digest your food by breaking down carbohydrates, fats and protein
- Also important for the absorption of fat-soluble vitamins A, D, E, K and minerals Selenium, Zinc, Copper
- Common brands of PERT: Creon, Nutrizym 22, Pancrease HL, Pancrex powder

## Indications for PERT in CCA patients:

- **All** patients who have had a Whipple procedure should be commenced on PERT (46-100% incidence of PEI)
- If bile duct tumour is obstructing the pancreatic duct → will likely require PERT

# Pancreatic enzyme replacement therapy

## Symptoms and signs of PEI:

- Abdominal pain
- Bloating
- Excessive wind
- Diarrhoea
- Fatty stools pale in colour, frothy, loose and difficult to flush
- Weight loss despite eating adequately



## PERT: General guidelines

- Must be taken with all food, snacks and drinks containing fat, protein and carbohydrate
- Starting dose commenced, increased gradually. Dose will vary depending on meal size, fat content (higher fat content = more enzymes needed).
- Multi-course meals – dose separately. If eating slowly, take ½ dose before, ½ dose during meal
- Capsule burden with high doses - empty capsules onto acidic food such as yoghurt or apple puree

# Bile Acid Malabsorption (BAM)

- Bile is produced in the liver, stored in the gallbladder and released into the small intestine when food is eaten
- Bile acids – 2 main functions
  - 1) Breaks down fats & vitamins in food, allowing digestion and absorption of nutrients
  - 2) Removes waste products from the liver
- 97% of bile acids are re-absorbed in the small intestine (primarily the terminal ileum) & returned to liver.
- When the cycle is disturbed → BILE ACID (BILE SALT) MALABSORPTION
- Affects 1 in 100 people in the UK .
- Often under diagnosed – similar symptoms to IBS

## Causes of Bile Acid Malabsorption:

- **Type 1:** problem in terminal ileum (part of the small bowel where reabsorption of bile salts takes place) ie. Inflammation or surgical removal
- **Type 2:** no definite cause - Primary Bile Acid Malabsorption
- **Type 3:** Diseases or conditions in the abdomen: Gallbladder removal, coeliac disease, chronic pancreatitis, pelvic radiotherapy



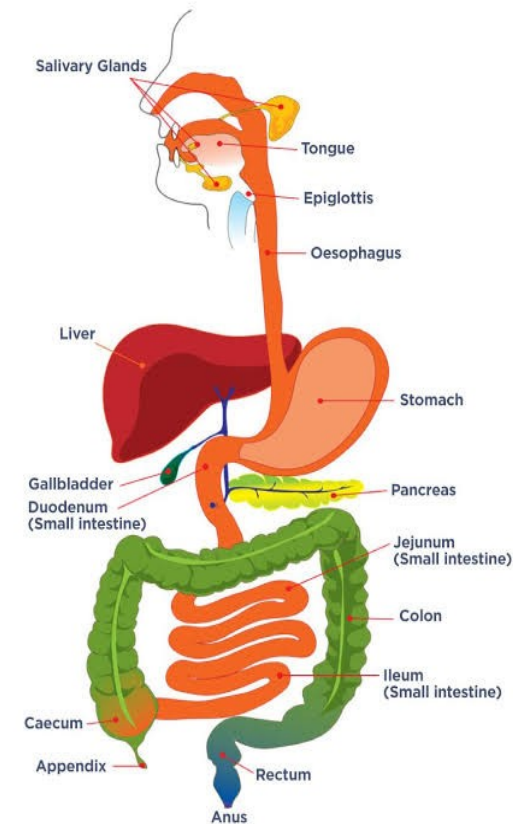
# Bile Acid Malabsorption (BAM)

## Symptoms of BAM:

- Due to the presence of bile acids in the colon → salt and water losses, increased gut motility
  - Diarrhoea, high frequency, urgency, pale, greasy and hard to flush.  
Green or orange in colour
  - Stomach problems:
    - bloating,
    - cramping,
    - abdominal pain
    - excessive wind
- → → no improvement with PERT

## Diagnosis:

- Ideally should be referred to a Gastroenterologist
- SeHCAT scan to determine retained (reabsorbed) bile acids  
→ OR, empirical treatment if high likelihood of BAM



# Bile Acid Malabsorption (BAM)

## Treatment of BAM

### 1) Medication:

#### ➤ **Cholestyramine (Questran), Colestipol (Cholestid)**

- bile acid sequestrant (binds bile acids in the gut, preventing reabsorption)
- Powder form only. Mix with water and take 6 times per day before meals or at night time.
- Unpalatable → nausea and constipation if dose excessive
- Avoid taking other medications 1 hour before/6 hours after, including vitamins containing vitamin A,D, E, K - can reduce absorption of certain drugs and vitamins

#### ➤ **Colesevalam (Cholestogel)**

- New medication, available in capsule form. Taken up to 6 times per day with meals
- Better tolerated, less side effects
- Not readily available as not licensed for use in BAM, expensive

#### ➤ **Loperamide, Codeine Phosphate**

# Bile Acid Malabsorption (BAM)

## 2) Dietary adjustment

- Dietary fat restriction is effective in managing symptoms of BAM (borderline → severe BAM)
- May avoid the need for bile acid sequestrant (borderline/mild cases), or improve symptoms in patients on sequestrant but still symptomatic
- Restrict fat to 20% of total energy intake: less than 40g total fat per day
- Full dietary advice provided by a specialist Dietitian.

### ➤ Basic principles:

- Allowance of total fat per day, spread across meals
  - Avoidance of high fat foods more than 3g/100g: processed meats, fried foods, full fat dairy, cheese, oils
  - Grilling / baking / dry frying or oil spray
  - Using low fat or 0% fat alternatives
  - NB ensure adequate energy intake and balance important
- 
- Commence on daily multivitamin if mild → severe BAM
  - Monitor Vitamin A, D, E, K levels

	Low ('a little')	Medium	High ('a lot')
<b>Fat</b>	Less than 3 g per 100 g	3-17.5 g per 100 g	More than 17.5 g per 100g
<b>Saturated fat</b>	Less than 1.5 g per 100 g	1.5-5 g per 100g	More than 5 g per 100 g

# Small intestinal Bacterial overgrowth (SIBO)

- **Caused by the presence of excessive bacteria in the small intestine**
- **Risks for developing SIBO:**
  - Reduced gastric acid secretion
  - Reduced intestinal motility – adhesions (scar tissue) developed after radiation therapy or after multiple abdominal surgeries
  - Damage to the small bowel wall - chemotherapy or radiotherapy (long-term consequences)
  - Gastro-intestinal surgery for ex. Whipple Procedure, removal of the last part of the small bowel.
  - Use of certain medications such as antibiotics , long-term use of acid suppressing medication
- **Significant GI symptoms and signs:** bloating, flatulence, chronic diarrhoea, weight loss, malabsorption, nutritional deficiencies (B12), osteoporosis
- Symptoms can range from mild to severe and can be debilitating .
- High psychological and emotional impact as well as physical → Not routinely considered at Oncology Clinics
- Diagnosis: most commonly - lactulose, methane/ H2 breath test
- Under diagnosed, labelled as IBS. Important to seek Gastroenterology input if ongoing.

# Small intestinal Bacterial overgrowth (SIBO)

- **Treatment:**

- Antibiotics - Rifaximin X 10-14 day course

- **Dietary:**

- **Correct nutritional deficiencies:** B12 +/- oral vitamins, calcium and iron supplements
- **Lactose-free diet:** if intolerance
- Low FODMAP diet - to starve bacteria of fermentable carbohydrates
- Manage appetite –related issues

- Dietetic input and support is recommended
- Breath test should be repeated after treatment to determine improvement



# Key messages

- **Nutrition is important in Cholangiocarcinoma, at all stages of diagnosis and treatment.**
- **Each patient will be different in their nutritional needs, and the support required.**
- **If you are struggling with any nutrition-related issues, request referral to a Dietitian, who can provide an in-depth assessment, a tailored, appropriate nutritional care plan, and ongoing nutritional monitoring.**
- **If you are experiencing adverse gut symptoms, do not delay in advising your Oncology team.**



THANK  
You!

**Any questions?**