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Nutritional management of diabetes in pancreatic cancer

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POLL: Fact or myth?

- You must not eat sugar if you have diabetes
- Avoid drinking large volumes of high sugar drinks if you have diabetes
- You need to follow a strictly controlled diet if you have diabetes
- Type 3c diabetes is caused by damage to the pancreas, not what you eat
- It is important to have enough calories when you have 3c diabetes
- If you have diabetes and high BGLs you are eating too much
- You must not eat grapes if you have diabetes

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Case Study

- 68 year old male
- Presented to GP with weight loss
- PMH: enlarged prostate

- CT
  - solid mass in neck and head of pancreas involving hepatic artery/unresectable
  - gross pancreatic duct dilatation and complete obstruction in the neck of pancreas

- Histology – pancreatic ductal adenocarcinoma

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What would you do next?

- Give nutrition support advice
- Investigate his enlarged prostate
- No input required currently, review in a few months
- For BSC as unresectable pancreatic cancer
- Ask some more questions

Poll – multiple answers possible

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What Happened Next….

- Seen in HPB clinic
- Weight: 94 kg, BMI 30.7 kg/m^2
- Usual weight ~ 110 kg, has lost 15% in 2 months

- Diet Hx:
  - BF – ½ bowl cereal + semi skimmed milk
  - L – soup +/- low fat yoghurt
  - EM – beans on toast + jelly
  - Snacks – rich tea biscuit or fruit

- Reduced intake owing to loss of taste, poor appetite, feeling unwell
- Bowels – reports they are entirely normal
- Random blood glucose – 7.3 mmol/L

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What would you do next?

- Give nutrition support advice for weight loss and reduced intake
- Investigate his enlarged prostate
- No input required currently, seems to be doing fine
- For BSC as unresectable pancreatic cancer
- Check faecal elastase for PEI
- Check HbA1c

Poll – multiple answers possible

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What Happened Next….

- Faecal elastase <15
- A low fat intake had masked PEI
- Diet Hx:
  - BF – ½ bowl cereal + semi skimmed milk
  - L – soup +/- low fat yoghurt
  - EM – beans on toast + jelly
  - Snacks – rich tea biscuit or fruit
- Started on PERT
- Given oral nutrition support advice – encouraged with milky drinks, food fortification etc

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What happened next….

- 2 weeks later returned to clinic….
  - Still losing weight
  - Very thirsty, passing urine every hour
  - Oral thrush

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What would you do next?

- Give more nutrition support advice
- Give nutritional supplements
- Ask for urology opinion on increase urinary frequency
- Treat oral thrush
- Tell him to drink more for the thirst
- Check HbA1c
- Check random glucose

Poll – multiple answers possible

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What Actually Happened….

- Drs considered placing a catheter for urinary frequency….
- However BGL checked – 27.8 mmol/L!!
- Pt admitted into the hospital and started on insulin

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Now....

- Weight has stabilised
- Eating well
- Taking PERT
- BGLs well controlled on basal bolus insulin regime
- Had chemotherapy and doing well

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Key Learning Points

- Malabsorption can be masked by low fat diets
- Diabetes can be masked by malabsorption
- Important to think about the wider picture

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Aims of Nutritional Management

Prevent:

- Hypoglycaemia
- Hyperglycaemia
- Exacerbation of malnutrition
- Malabsorption
- Co-morbidities associated with diabetes

Nutritional Management of T3c

- More similar to advice for T1 than T2
- Most info out there is for T2 and largely not appropriate
- Carb counting can be useful if well and established on insulin
- Eligible for DAFNE
- Many other factors to take into account in addition to those considered for T1

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Need to Consider

- Activity
- BGLs
- Context
- Intake
- PERT
- Patterns

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Management strategies for T3c

- Regular meal pattern with regular starchy CHO
- Not skipping meals
- Small, frequent meals
- Avoid alcohol; smoking cessation
- Minimise high sugar/GI foods or fluids
- Ensure adequacy of PERT (will affect BGLs too)
- Measure BGLs frequently, particularly if on insulin, if intake is low, after physical activity, if hypo symptoms
- Consider diary to record diet/BGLs/PERT/PAL
- Routine dietitian assessment/monitoring

Adapted from Duggan and Conlon, 2017

Dietary Management

- Liaise with DM team, oncologists and surgeons
- Hypo treatment knowledge. Ensure PERT with low GI hypo treatment
- Minimise simple sugars between meals in most cases
- High GI: sugar and sugary foods, sugary soft drinks, white bread, potatoes, white rice
- ‘Slow release’ or low GI carbs help stabilise blood glucose levels

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Sick Day Rules

- Sip sugar-free fluids regularly (aim for 200-300mls/hr)
- Keep eating regularly if possible
- If you can’t eat meals then snacks/ small portions/ nourishing fluids every 2 hours
- Monitor BGL every 2-4 hours
- Test for ketones if BGL >15mmol/l
- May need to increase insulin injected
- GP/111 if vomiting uncontrollably/ high BGLs and not sure what to do/ above not working

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Suitable snacks when ill

- 2 Ryvita or crispbreads
- 1 slice toast
- 2 plain sweet biscuits
- 2 Weetabix
- 3 tablespoons special K
- 3 tablespoons cooked porridge
- 1 small pot ordinary jelly or custard
- 2-3 scoops of ice cream
- 1 ice lolly
- 2-3 scoops mashed potato
- 3 tablespoons cooked rice

Suitable Drinks when you are not able to eat

Try to have 200-300mls of any of the following:

- Milk
- Unsweetened fruit juice
- Tea with 3 teaspoons sugar
- Hot lemon juice with 3 teaspoons sugar
- Herbal tea with 3 teaspoons sugar
- Ordinary soft drink
- Lucozade
- Cola

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The challenges and importance of glycaemic management

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Importance of Staying in BGL Range

- Short term
  - Hypos, fatigue, increased urination, disturbed sleep, ability to withstand treatment, DKA
- Long term
  - Incidence of retinopathy, renal dysfunction, neuropathy & microangiopathic complications thought to be similar to that of T1 and T2
  - Macrovascular complications may be less common due to undernutrition and malabsorption but research is lacking

Duggan & Conlon, 2017

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Challenges

pain	weight loss	hospital visits/ starving	GOO
chemo Sx	psychological impact	nausea/ vomiting	malabsorption
steroids	changing absorption	variable intake	variable activity levels

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Challenges

- Impaired glucagon secretion, hypo more likely and harder to treat
- Impaired and irregular nutrient absorption due to PEI (incl CHO)
- Incretin and GLP-1 secretion dependent on normal fat hydrolysis - decreased secretion reduces insulin release
- Someone with no pancreas must always have insulin and glucose or they will get DKA
- Guidelines written for T1 and T2

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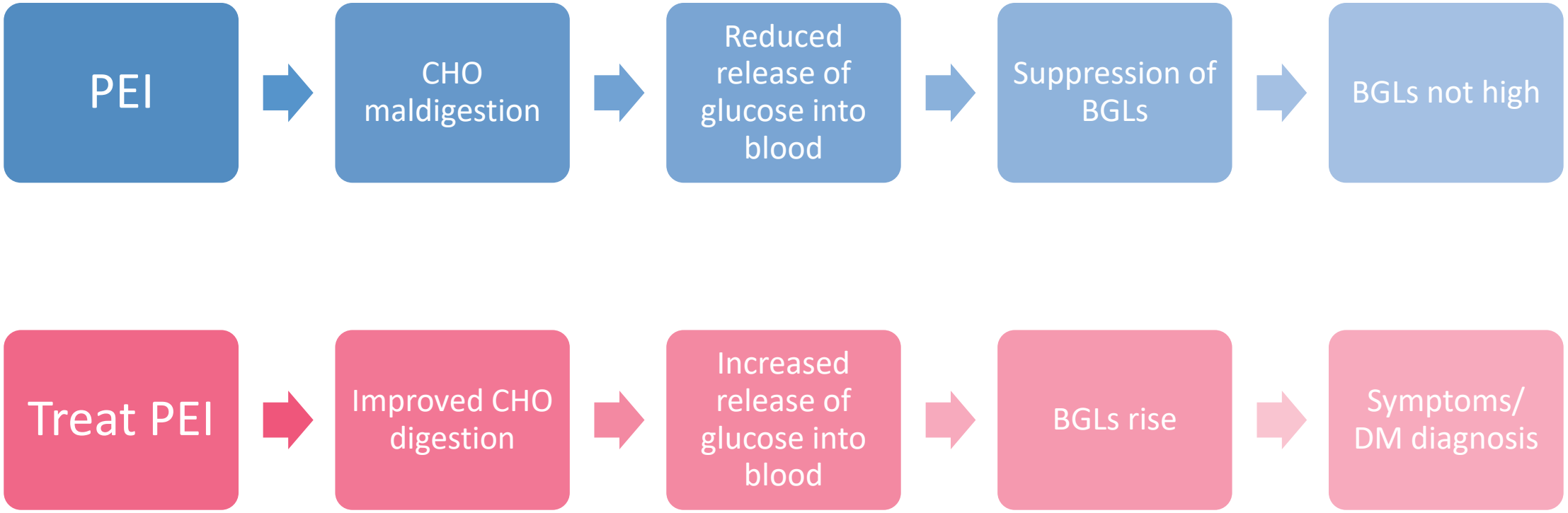
Unmasking Diabetes



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Managing diabetes at the end of life

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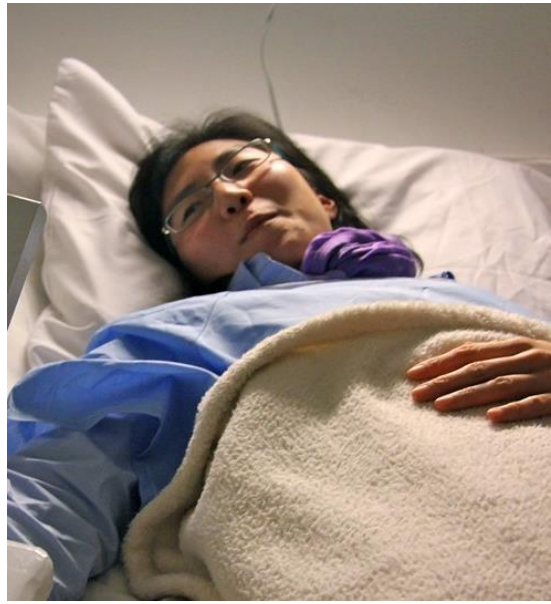
Managing Diabetes at the End of Life



- Aim for people to live as well as possible until they die
- Goals are likely to change
- Intake and activity levels likely to change
- Insulin requirements likely to change, therefore insulin administered changes
- Aim to maintain independence
- Need to balance symptoms and consequences, focus on QoL
- ‘Pointless’ vs ‘giving up’
- With no pancreas insulin and glucose are required to sustain life

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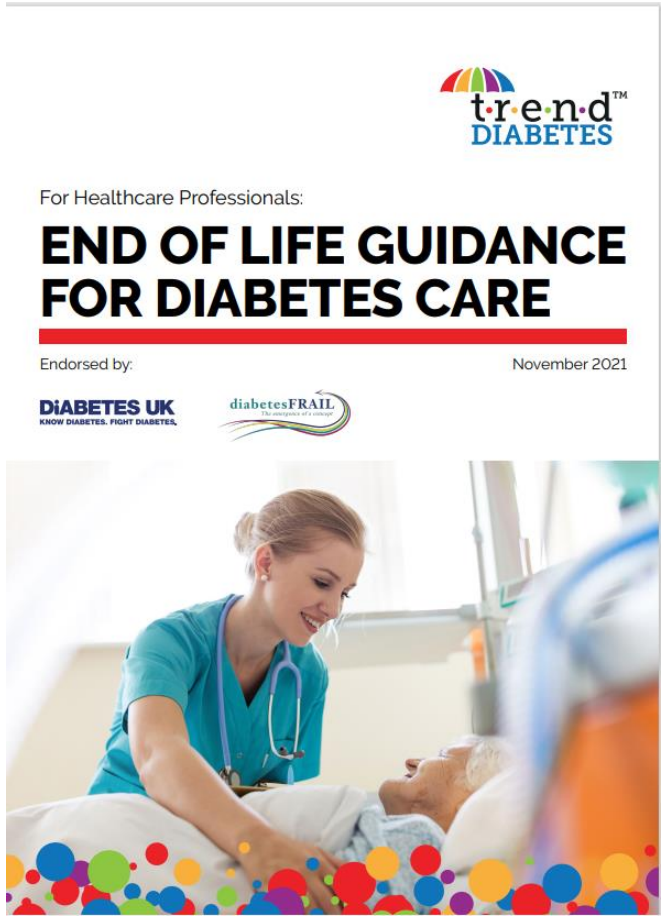

- Early identification and GSF
- BGL aim 1 – no <6 mmol/l
- BGL aim 2 – no >15 mmol/l
- Non-insulin therapies reduced and eventually stopped
- Insulin not to be stopped in someone not producing it
- Benefits vs risk of harm

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Table 2: Insulin therapies (Type 1 and Type 2 Diabetes)
• Doses may need to change with changes in renal function including those in renal replacement therapy
• Hypoglycaemia risk will need to be reassessed with changes in eating patterns
• A change of insulin regimen may be needed to match changes in activity levels
• Equipment for insulin delivery may need to be reassessed if physical capabilities alter, vision is poor, or carers become involved in giving insulin
• Evening Isophane (Insulatard / Humulin I, or Insuman Basal) (cloudy insulin) in combination with daytime oral hypoglycaemic drugs may be a good first line treatment choice in individuals with type 2 diabetes
• The simplest regimen should be chosen if switching to insulin only: both once or twice daily injection can be considered
• Consider using an analogue basal insulin if the individual is at high risk of hypoglycaemia
• Do not stop insulin in individuals with type 1 diabetes

- Insulin pumps: continue to use provided person/ carers happy to manage
- In last days of life when eating little or nothing and no longer able to manage own pump, it can be used to deliver basal insulin requirements

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