Sick day rules

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Disclosures

• I have received payment for articles, presentations and involvement on advisory boards for all the major pharmaceutical companies who support diabetes
What will this session cover?

• How does illness affect blood glucose levels and why?
• General sick day rules
• What to monitor during illness and how often
• Simple advice about adjustment of tablets and insulin
• Some meal replacements for people unable to eat normally
• When to advise the individual to seek urgent medical help
How does illness affect blood glucose levels?

- Stress and counter-regulatory hormones increase blood glucose levels as part of the mechanism to fight infection. Insulin is needed to utilise this (French et al, 2019)

- Risk of infection is increased in people with diabetes especially bone and joint infections, sepsis and cellulitis (Carey et al 2018)

- The effect of illness and its management will depend on:
  - Type of diabetes
  - Type of illness
  - Type of treatment
Acute diabetes complications associated with intercurrent illness

- Dehydration from osmotic diuresis
- Diabetic ketoacidosis (DKA)
  - More common in type 1 diabetes
  - Rapid onset. Mortality < 1%
  - Blood ketones 3 mmol/L or greater, BG > 11 mmol/L, venous pH < 7.3
- Hyperosmolar Hyperglycaemic State (HHS)
  - Typically elderly with co-existing co-morbidities
  - High mortality (10-20%)
  - BG > 30 mmol/L but < ketones 3 mmol/L
  - Osmolality > 320
    - (JBDS 2013, 2012)
General sick day rules: aim is to maintain reasonable BG control, avoid dehydration and unplanned hospital admission

- Rest - avoid strenuous exercise
- Monitor BG (and ketones if type 1 diabetes)
- Fluids - 2.5 to 3.5 litres (4 to 6 pints) over 24 hours
- Meal replacements if not eating
- Treat symptoms - e.g. cough syrup
- See GP for antibiotics if an infection
- Adjust insulin
What to monitor and how often?

• Depends on type of diabetes and treatment
• People with type 1 diabetes should have blood ketone strips and know how to interpret the results
• **All** people with diabetes who are unwell and vomiting should have blood ketones checked
• If using insulin, test at least 4 times daily (at mealtimes even if not eating, and at bedtime)
• Type 1 diabetes with ketones need to test 2 hourly to guide extra insulin doses
Ketone testing

• <0.6 mmol/L: normal
• 0.6 - 1.5 mmol/L: Risk of DKA. Re-test in 2 hours
• 1.6 - 2.9 mmol/L: Test 2 hourly and give 10% of total daily insulin given as a quick-acting insulin 2 hourly
• 3 mmol/L: High risk of DKA. Needs 20% of total daily insulin given as a quick-acting insulin 2 hourly

• No improvement or starts to vomit: hospitalisation
Simple advice for adjusting insulin

• If the blood glucose is persistently > 11 mmol/L:
  • 11.1 to 17 mmol/L: add 2 extra units to every dose
  • 17.1 to 22 mmol/L: add 4 extra units to every dose
  • Over 22 mmol/L: add extra 6 units to every dose

• If usual total daily dose is over 50 units, double these amounts
• Reduce insulin as blood glucose levels improve
• (More comprehensive algorithms are available for people with type 1 diabetes)
People with type 1 diabetes or long-standing type 2 diabetes: never stop insulin completely even if not eating!
Other medications

• Continue medications as usual but:

  • Metformin: dehydration and acute reduction in renal function = risk of lactic acidosis

  • SGLT2 inhibitor: DKA risk in certain circumstances

  • Acute abdominal pain- acute pancreatitis?

  • GLP-1 receptor agonists and insulin-DKA concerns when insulin reduced too rapidly or stopped
Meal replacements if unable to eat usual meals

- Being ill consumes calories
- Starvation and dehydration increases risk of ketone development
- The following are 10g carbohydrate, equivalent to a small potato, or 1 tbs of cooked rice or pasta
  - Fruit juice: 100ml
  - Milk: 200ml
  - Ice-cream: 1 large scoop
  - Yoghurt: small 150g pot
  - Tomato soup: ½ large can
  - Rich tea or malted milk biscuits: 2
When to seek urgent medical attention:

- Pregnancy and type 1 diabetes
- Persistent vomiting and unable to retain fluids
- If blood ketones are 1.6 mmol/L or greater and unsure how to treat
- If drowsy, breathless, confused
- Acute abdominal pain
- Unable to keep BG >3.5 mmol/L
Useful resources:

• For people with diabetes:
  • Type 1 diabetes: What to do when you are ill
  • Type 2 diabetes: What to do when you are ill

• For healthcare professionals:
  • Managing diabetes during intercurrent illness in the community

• www.trend-uk.org/resources
References:


