What are the key considerations when creating a diabetes meal plan?

Dr Trudi Deakin RD PhD
Learning Outcomes

By the end of the session delegates will be able to:

1. Identify four dietary approaches suitable for people with T2DM
2. State the factors and safety concerns that need to be considered when supporting patients in choosing their preferred dietary approach
3. List four essential components for any dietary approach
4. Choose a suitable breakfast, lunch and evening meal for each dietary approach
Should devising a meal plan be the dietitian’s responsibility or the patient’s?
Collaboration versus instruction
People need to understand their condition
Hyperinsulinaemia and insulin resistance

Metabolic Syndrome

The metabolic syndrome is defined as having three or more of the risk factors below. The international cut points are:

- **Increased waist size:** Greater than 94 cm in Caucasian men and greater than 80 cm in Caucasian women, or greater than 90 cm in South Asian men and greater than 80 cm South Asian women

- **Reduced HDL-cholesterol:** less than 1.03 mmol/l in men; less than 1.29 mmol/l in women

- **Raised blood pressure:** Systolic greater than 130 mmHg; Diastolic greater than 85 mmHg (or on medication to reduce blood pressure)

- **Raised fasting glucose:** Fasting plasma glucose greater than 5.6 mmol/l
7 Lifestyle Factors for Optimal Health

- Eating a Healthy Diet
- Undertaking Physical Activity
- Achieving or Maintaining a Healthy Weight
- Drinking Alcohol in Moderation
- Remembering to take Prescribed Medication
- Stopping or Reducing Smoking
- Learning to Manage Stress and Sleep Well
- Based around foods, not macronutrients
- Support an individualised approach
- Offers flexibility in dietary approaches, including a Mediterranean diet and carb restriction
Nutrition for Health Model

**Fruit & Vegetables**
Providing a variety of vitamins and minerals, fibre and antioxidants and can help prevent illness and reduce the risk of future health problems.

**Processed Foods**
Most processed foods are not good for you, so avoid them.

**Proteins**
Essential for growth and repair of the body. They also provide essential vitamins and minerals, e.g. red meat is a good source of iron.

**Carbohydrates**
A source of energy and can provide us with fibre.

**Fats**
Essential to life. There are natural healthy fats that are good for us and processed fats that can cause ill health (see pages 49 to 52).

**Milk & Dairy**
Provide vitamins and minerals, including calcium which is essential for healthy bones and teeth.
Portion sizes

Important: a serving is not always (or even normally) the same as a portion!

- Portion of carbs ~ 15g carbs (e.g. 1-4 tbs cereal, 1 slice of bread, 1-2 tbs rice/pasta, 3 tsp sugar)
- Portion of fruit and veg = 80g
- Portion of protein = 85g red meat, poultry or oily fish, 120-140g white fish, 2 eggs, 100g pulses or 60g nuts
- Portion of milk and dairy = 200ml milk, 125g yoghurt or 30g cheese
- Portion of fat 10g fat (e.g. 10ml oil, 2 tsp natural fats like butter)
Nutrition for health

- **Fruit & Vegetables**: 5-9 portions
- **Proteins**: 2-4 portions
- **Milk & Dairy**: 2-3 portions
- **Processed Food**:
  - Low fat: 5-14 portions
  - Mediterranean: 4-8 portions
  - Low carb: 0-4 portions
- **Carbohydrates**:
  - Low fat: 5-14 portions
  - Mediterranean: 4-8 portions
  - Low carb: 0-4 portions
- **Fats**:
  - Low fat: 0-4 portions
  - Mediterranean: 4-8 portions
  - Low carb: 5-10 portions
Which dietary approach?

**Short-term**
- Very low energy diets

**Sustainable long-term**
- Low fat
- Mediterranean
- Low carb
- Intermittent fasting
Which dietary approach?
Case study 1

- 50 year old South Asian male
- BMI 35 kg/m$^2$
- Waist 110 cm
- HbA1c 64 mmol/mol
- Meds – Metformin 850mg BD; Gliclazide 80mg BD; Dapagliflozin 10mg OD
- Patient goal – omit diabetes medication
- Lifestyle – sedentary with a 9-5 job
Case study 2

- 80 year old white Caucasian women
- BMI 27 kg/m^2
- Waist 80 cm
- HbA1c 53 mmol/mol
- Meds – Metformin 500mg BD
- Patient goal – continued good health
- Lifestyle - retired and enjoys daily walking
Case study 3

• 63 year old Eastern European male
• BMI 35 kg/m²
• Waist 99 cm
• HbA1c 58 mmol/mol
• Meds – Metformin 850mg BD & Exenatide 10µg
• Patient goal – reduce belly fat
• Lifestyle – shift worker
Case study 4

• 42 year old white Caucasian male
• BMI 30 kg/m²
• Waist 105 cm
• HbA1c 50 mmol/mol
• Meds – none (newly diagnosed)
• Patient goal – diabetes remission
• Lifestyle – chef, light activities
Case study 5

- 70 year old Afro-Caribbean women
- BMI 28 kg/m²
- Waist 88 cm
- HbA1c 70 mmol/mol
- Meds – Metformin 850mg OD & Sitagliptin 100mg OD
- Patient goal – reduce HbA1c
- Lifestyle – retired, wheelchair user
<table>
<thead>
<tr>
<th>Drug group</th>
<th>Hypo risk?</th>
<th>Clinical suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulphonylureas (for example, gliclazide) and meglitinides (for example, repaglinide)</td>
<td>Yes</td>
<td>Reduce/stop (if gradual carbohydrate reduction then wean by halving dose successively)</td>
</tr>
<tr>
<td>Insulins</td>
<td>Yes</td>
<td>Reduce/stop. Typically wean by 30–50% successively. Beware insulin insufficiency*</td>
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<tr>
<td>SGLT2 inhibitors (flozins)</td>
<td>No</td>
<td>Ketoacidosis risk if insulin insufficiency. Usually stop in community setting</td>
</tr>
<tr>
<td>Biguanides (metformin)</td>
<td>No</td>
<td>Optional, consider clinical pros/cons</td>
</tr>
<tr>
<td>GLP-1 agonists (-enatide/-glutide)</td>
<td>No</td>
<td>Optional, consider clinical pros/cons</td>
</tr>
<tr>
<td>Thiazolidinediones (glitazones)</td>
<td>No</td>
<td>Usually stop, concerns over long-term risks usually outweigh benefit</td>
</tr>
<tr>
<td>DPP-4 inhibitors (glipitins)</td>
<td>No</td>
<td>Usually stop, due to lack of benefit</td>
</tr>
<tr>
<td>Alpha-glucosidase inhibitors (acarbose)</td>
<td>No</td>
<td>Usually stop, due to no benefit if low starch/sucrose ingestion</td>
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<tr>
<td>Self-monitoring blood glucose</td>
<td>N/A</td>
<td>Ensure adequate testing supplies for patients on drugs that risk hypoglycaemia. Testing can also support behaviour change (for example, paired pre- and post-meal testing)</td>
</tr>
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Additional medication review for VLED

Have a medication review
If you are taking medication(s) it is essential that you have a review with your healthcare team before you start a VLED. Common medications that can cause issues if not adjusted can include:

- **Insulin or sulphonylureas**: these help remove glucose from the blood, but continue to do so even if blood glucose levels are not raised. As less glucose is entering the blood when following a VLED these medications can cause blood glucose levels to drop too low (“hypoglycaemia” or “hypos”*)
- **SGLT2-inhibitors** can increase the risk of serious complications if taken whilst following a VLED
- **Other diabetes medications**: although these may not carry a risk of hypos they may no longer be necessary when following a VLED
- **Blood pressure medications**: a VLED can lead to a dramatic reduction in blood pressure, so if you continue to take these medications it can drop too low
- **Fibrates** are taken to reduce fat (triglyceride) levels in your blood. It is recommended that people following a VLED stop taking these
- **Any medication that is usually taken with a meal or that shouldn’t be taken on an empty stomach.** The time you take such medications may need to be changed, or you may be prescribed other drugs to help protect your stomach
Breakfast to suit dietary approach?
Breakfast to suit dietary approach?

- Low fat
- Mediterranean
- Low carb
- 5:2 or VLED
Lunch to suit dietary approach?
Lunch to suit dietary approach?

- Low fat
- Mediterranean
- Low carb
- 5:2 or VLED
Evening meal to suit dietary approach?
Evening meal to suit dietary approach?

- Low fat
- Mediterranean
- Low carb
- 5:2 or VLED
Essentials for any dietary approach
What are the key considerations when creating a diabetes meal plan?

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Thank you for your attention