22. **Cardiovascular disease**

- What is cardiovascular disease (CVD)?
- What conditions does the term CVD include?
- What is the aetiology of CVD?
- What are the risk factors for CVD?
- How do you assess the absolute risk of CVD? What tools would you use in the UK, USA, Europe and Scotland?
- Discuss the primary prevention of CVD.
- Discuss the role of functional foods in the prevention and management of CVD.
- Describe lipid digestion, absorption and metabolism.
- Why is a high density lipoprotein (HDL) level considered beneficial? How does the level of HDL vary with gender, age and ethnicity?

**Case study 1 Transient ischaemic attack**

**Nathalie Sutherland**

Mrs Spence is 48 years old and lives with her husband and two adult children. She was born in Jamaica and has been living in the UK since she was 10 years old. She works as a bus driver 5 days a week on a late shift from 14.30 to 22.00. She does all the cooking for the whole family. She was referred following a transient ischaemic attack (TIA), her second in 6 months. Her blood pressure was 170/90 mmHg at the time. Both her parents died after strokes and her 52-year-old brother was diagnosed with type 2 diabetes 2 years ago. The relevant biochemistry results are:

- Total cholesterol 5.4 mmol/L
- LDL 3.1 mmol/L
- HDL 1.8 mmol/L
- TG 1.1 mmol/L
- FBG 4.7 mmol/L

She attends a 45-minute aerobics class once a fortnight and has a 10-minute walk to and from the bus stop 5 days a week.

- How would you assess Mrs Spence using the ABCDE formula?
- What is a TIA? How does this relate to a stroke?
- What are the risk factors for TIA?
• Comment on her lipid profile and FBG.
• What is the dietetic diagnosis?
• Calculate her energy requirements and prescribe an energy level that will result in weight loss. What rate of weight loss do you recommend? Why?
• Describe the dietetic intervention. What aspects of her diet should you focus on?
• Mrs Spence eats two meals a day and has a lot of snacks. Given her working pattern, how can you help her to have a more balanced diet?
• What type of snacks do you associate with a Caribbean diet? Suggest suitable snacks for Mrs Spence.
• Describe the DASH diet? What is the rationale for its use?
• Comment on her lifestyle and recommend an achievable physical activity level. How can she increase her activity during her everyday life?
• What are the barriers to change? How can you help her overcome these barriers?
• How would you evaluate and monitor her progress?

Case study 2 Coronary heart disease

Ravita Taheem

Mr Bains is a 45-year-old Sikh man who lives with his wife, teenage children and mother. He was born in the Punjab and moved to the UK as a small child. He works varying shifts as a bus driver. Mr Bains underwent a NHS health check and was found to have a CVD risk of over 15%. The eligibility criteria for participation in the local healthy heart programme are male, from a Black and ethnic minority group, and aged between 40 and 75 years with a raised CVD risk of 15% or more. At the GP surgery Mr Bains’ blood pressure was 127/84 mmHg, weight 136.5 kg, height 1.78 m and waist circumference 137 cm. Mr Bains’ biochemistry results are:

• TC 4.2 mmol/L
• HDL 0.83 mmol/L
• TC:HDL ratio 5.1

• What are the dietary rules and restrictions associated with Sikhism?
• What types of foods might someone from the Punjab include in their diet? Why is it important to measure waist circumference and BMI?
• What is Mr Bains’ BMI?
• What are the BMI and waist circumference targets for this man? How do they change with ethnicity? Why do they vary?
• What are the normal ranges for lipids and blood pressure?
• How was Mr Bains’ CVD risk calculated?
• Mr Bains was referred by his GP following a NHS health check. Discuss the aims and objectives of this scheme. Why are eligibility criteria set for participating in the healthy heart programme?

• Design a healthy heart programme. What are the SMART aims? How might dietary advice to a group differ from the advice you would give to an individual? What are the advantages and disadvantages of dietary programmes for groups of people? Discuss these from the point of view of the patient and the dietitian. How would you evaluate the success of the programme?

Case study 3
Thomina Mirza

Mr Ali is a 33-year-old married man living with his family in social accommodation. He works full time in an office in London. Mr Ali is second generation British. He is a devout Muslim and will only eat Halal foods. Mr Ali also observes the fast during Ramadan and other Islamic festivities. He has a family history of type 2 diabetes and CVD. He has declined to start atorvastatin as he wants to reduce his cholesterol through dietary changes. The relevant biochemistry results are:

- TC 7.8 mmol/L
- LDL 4.5 mmol/L
- HDL 0.4 mmol/l
- TC:HDL ratio 5.5 mmol/L

His current weight is 84.5 kg and height 1.71 m.

• How would you assess Mr Ali using the ABCDE format?
• What dietary restrictions are associated with Islam? How do they impact on his risk of coronary heart disease (CHD)?
• What is his BMI? What other anthropometry would you like to perform?
• What is the dietetic diagnosis?
• What risk factors does he have for CHD?
• What tool could you use to predict Mr Ali’s risk of CHD? If he lived in Edinburgh, what tool could you use? Why is there a difference in these tools?
• What is the difference between CHD and CVD? Do the risk factors vary between these two conditions? If so, how?
• What is the dietetic intervention?
• What are the short and long term aims and objectives?
• What are the barriers to change? How can you help him overcome them?
How would you evaluate and monitor his progress?

Case study 4

Mandy Fraser

Mrs Williams is a 66-year-old African-Caribbean woman who moved to the UK from St Lucia to work as a midwife in the 1960s. She is divorced and lives alone. Since retiring her weight has increased and she has become more reliant on her car. Two evenings a week she attends social functions with the West Indian Family and Friends Association (WIFFA). These events can include games evenings, health checks and dances. She attends Pentecostal church prayer meetings four times a week and fasts for 6 hours every Sunday. Church members bring food to meetings to share with the group. She enjoys cooking and often bakes patties and cakes to share with the group. Following a health check at a WIFFA meeting, Mrs Williams sought GP advice as her father had hypertension and diabetes and died in his 70s following a stroke. The relevant test results are:

<table>
<thead>
<tr>
<th>Test</th>
<th>WIFFA MOT 1/7/2011</th>
<th>GP surgery 14/7/2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure (mmHg)</td>
<td>140/95</td>
<td>147/95</td>
</tr>
<tr>
<td>TC (mmol/L)</td>
<td>6.2</td>
<td>6.0</td>
</tr>
<tr>
<td>Blood glucose (mmol/L)</td>
<td>9.8</td>
<td>5.6</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>77</td>
<td>75</td>
</tr>
</tbody>
</table>

- Why are there differences between these sets of results?
- How would you assess Mrs Williams using the ABCDE format?
- Assume her height is 1.65 m and calculate her BMI. What does this tell you about her risk of non-communicable disease?
- What other measurements or tests would you conduct or request from her GP?
- Use an appropriate prediction tool to estimate her 5-year CHD risk. Comment on the result.
- What conditions are people of African-Caribbean descent at increased risk of?
- What is the dietetic intervention?
- Describe the cardioprotective diet.
- What are the short and long term aims and objectives?
- What changes can you help her to make while maintaining her social life and cultural customs regarding food?
- How would you assess her level of motivation?
- What are the barriers to change? How can you help Mrs Williams overcome them?
How could you evaluate and monitor her progress? What outcome measures could you use?

Case study 5
Elzbieta (Ela) Szymula

Mr Nowak is a 57-year-old Polish man who came to the UK 6 years ago. He works as a handy man doing building work, painting and decorating. He lives in flat share accommodation with three other Polish men. His English is very limited. He has hypertension and had a myocardial infarction 6 weeks ago. This was treated with percutaneous coronary intervention and a stent. He was referred by his local hospital to the community based cardiac rehabilitation programme following his heart attack. His current weight is 87 kg, height 1.80 m and waist circumference 105 cm. The results of his most recent biochemistry are:

- Lipid profile (NB: he has been prescribed statins):
  - TC 4.5 mmol/L
  - LDL 2.7 mmol/L
  - HDL 1.2 mmol/L/
  - TG 1.4 mmol/L
- FBG 5.3 mmol/L
- Liver function:
  - Gamma glutamyl transferase 92 U/L
  - Aspartate transaminase 57 U/L
  - Alanine transaminase 39 U/L
  - BP (treated) 135/85 mmHg

- How would you assess Mr Nowak using the ABCDE format?
- Calculate his BMI. What does this tell you? If he were a muscular sportsman, how would you interpret the results?
- What other anthropometric measurements would you conduct?
- What are the normal ranges for the above tests? What do the results mean? What do the liver function tests indicate in terms of Mr Nowak’s alcohol consumption? How does this relate to heart disease?
- What foods would you associate with a Polish diet? Comment on their energy, fat and salt content.
- What is the dietetic diagnosis?
- What is the dietetic intervention?
- Mr Nowak’s English is limited. How can you communicate the key messages about dietary and lifestyle changes? How can you ensure he understands them?
• What are the other barriers to change? How can you help Mr Nowak overcome them?
• What are the guidelines for the secondary prevention of CHD?
• What is the difference between primary and secondary prevention?
• How could you evaluate and monitor Mr Nowak’s progress?