QI&CPD Accredited Activity CATEGORY 2

Questions for this month's clinical challenge are based on articles in this issue. The clinical challenge is endorsed by the RACGP Quality Improvement and Continuing Professional Development (QI&CPD) program and has been allocated 4 Category 2 points (Activity ID:23835). Answers to this clinical challenge are available immediately following successful completion online at http://gplearning.racgp.org.au. Clinical challenge quizzes may be completed at any time throughout the 2014–16 triennium; therefore, the previous months answers are not published.

Each of the questions or incomplete statements below is followed by a range of suggested answers or completions. Select the most appropriate statement as your answer.

CPD

Clinical challenge

Case 1

Rochelle is 29 years of age and has type 1 diabetes. She has been maintained for some time on a regimen of multiple daily insulin injections (MDI).

Question 1

Which of the following would be the most appropriate indication for a change to continuous subcutaneous insulin infusion (CSII)?

A. HbA1c level of 6.4%
B. Inadequate control in the setting of pregnancy planning
C. Infrequent hypoglycaemic attacks
D. Poor compliance with regular blood glucose monitoring

Question 2

Likely advantages of CSII over MDI include:

A. decreased requirement for blood glucose testing
B. faster onset and offset of insulin action
C. improved HbA1c levels
D. reduced need for patient knowledge in the area of carbohydrate counting.

Question 3

Rochelle is keen to optimise her blood glucose control before trying to conceive, and has heard that continuous glucose monitoring (CGM) may be helpful in achieving this. With regards to CGM you are able to explain to her that:

A. CGM is well funded and affordable currently
B. Current CGM removes the need for fingerprick glucose testing entirely
C. Maximum benefits of CGM can be achieved from part-time use
D. Subcutaneous glucose levels change more gradually than blood glucose levels.

Question 4

Following consultation with her endocrinologists, Rochelle is commenced on a pump for CSII. Which of the following is NOT part of the necessary pre-pump education?

A. Action plan for rapidly rising blood glucose
B. Awareness of associated costs
C. Commencement requires hospital admission for 2 days
D. Dietician review
E. Re-siting of pumps

Case 2

Fred is 47 years of age and was diagnosed with type 2 diabetes (T2DM) 12 months ago. He has a body mass index (BMI) of 33 kg/m^2 and hypertension that has been difficult to control. He has struggled to incorporate regular exercise into his routine or to make any dietary changes and regularly consumes up to 1 L of soft drink daily, despite intensive support from the diabetes educator. He is established on metformin 1000 mg TID and gliclazide modified release (MR) 60 mg daily. His most recent HbA1c reading was 7.9%. He does not report any symptoms currently.

Question 5

Which of the following would be the next most appropriate step in management of Fred's diabetes?

A. Add a glucagon-like peptide 1 (GLP-1) agonist such as exenatide to his current regimen.
B. Add a dipeptidyl peptidase 4 (DPP-4) inhibitor such as linagliptin to his current regimen.
C. Cease the gliclazide MR and commence insulin.
D. Refer him back to the diabetes educator and leave his medications unchanged.

Question 6

Which of the following is a potential serious adverse effect of GLP-1 agonists that you would need to warn Fred about prior to commencement?

A. Diarrhoea
B. Hypoglycaemia
C. Pancreatitis
D. Urinary tract infection
E. Weight gain

Case 3

Abhay is 59 years of age and has a family history of T2DM and cardiovascular disease, which affected both his parents in their 50s. Following an AusDRisk score of 14, you check his fasting glucose, which is 6.5 mmol/L. A follow-up HbA1C is 44 mmol/mol. Abhay wants to do everything he can to decrease his risk of developing T2DM.

Question 7

According to the Finnish Diabetes Prevention Study, adherence to which of the following will give Abhay the greatest risk reduction for the development of T2DM?

A. At least moderate intensity exercise for >2 hours weekly
B. Dietary fibre intake <15 g/1000 kcal
C. Fat intake <30% of total energy intake
D. Saturated fat intake <5% total energy intake
E. Weight reduction <5%

Abhay tells you he has read about different diets on the internet. Given his family history, he wants to start on a diet that will decrease his risk of heart attack as well as diabetes.

Question 8

Which of the following diets has the best evidence for cardiovascular risk reduction?

A. Alternate day fasting
B. Low carbohydrate diet
C. Low glycaemic index diet
D. Low protein diet
E. Mediterranean diet

Question 9

Abhay decides he will start on the Mediterranean diet. Which of the following is true regarding a kilojoule-reduced Mediterranean diet?

A. A moderate-to-high intake of red wine is recommended.
B. It is associated with weight loss.
C. It has no effect on blood pressure.
D. Low-density lipoprotein levels may decrease.
E. Meat consumption is required.

Unfortunately, despite some dietary modifications, Abhay does develop diabetes. Prior to adding a sulphonylurea to assist with his diabetes control, you counsel him about management of hypoglycaemia.

Question 10

Your advice would include which of the following for initial management of a blood glucose level <4.0 mmol/L according to the rule of 15?

A. After the blood glucose has normalised, check it again in 15 hours.
B. Eat a sandwich and then check the blood glucose again in 15 minutes.
C. Eat 6 jellybeans and then check the blood glucose again in 15 minutes.
D. If the next meal is more than 15 minutes away, drink a whole glass of fruit juice.
E. Take half a can of diet cola immediately and then another half a can in 15 minutes.

Case 4

Mary is 64 years of age and was diagnosed with T2DM 5 years ago. Her most recent HbA1c was 8.8% on maximal oral therapy and you come to a joint decision to commence insulin to try to improve control of her blood glucose levels (BGL).
Mary presents the following week with the blood glucose readings you asked her to record. The readings mmol/L for 1 day are shown below but the pattern is fairly consistent across the 3 days she recorded.

Before	After
Breakfast	
10.8	11.4
Lunch	
9.8	9.8
Dinner	
9.4	9.6
Bedtime	
9.1	

Question 11

Given the above readings, the most appropriate insulin regimen to start with is:

A. Pre-mix insulin pre-breakfast
B. Pre-mix insulin pre-dinner
C. Pre-mix insulin pre-bedtime
D. Basal insulin pre-breakfast
E. Basal insulin pre-bedtime

Question 12

If Mary's readings had instead been the following, which would be the most appropriate initial insulin regimen?

A. Pre-mix insulin pre-breakfast
B. Pre-mix insulin pre-dinner
C. Pre-mix insulin pre-bedtime
D. Basal insulin pre-breakfast
E. Basal insulin pre-bedtime

Before	After
Breakfast	
6.5	12.3
Lunch	
10.5	11.4
Dinner	
10	9.6
Bedtime	
9.1	

Question 13

You elect to commence basal insulin for Mary. Which of the following is the most correct advice about starting basal insulin?

A. It is typically given in the morning.
B. It is typically given twice daily.
C. It is not the best choice for a patient with irregular eating habits.
D. Starting dose is usually 8–10 units.
E. Metformin should be ceased prior to commencement.

Question 14

Mary returns for review after 1 week on 10 units of insulin glargine nocte. Her pre-breakfast (fasting) BGLs are as follows:

Date	BGL (mmol/L)
11/3	9.3
12/3	10.5
13/3	8.2
14/3	9.0
15/3	10.3
16/3	10.6
17/3	9.8

Given the above readings, the most appropriate dose adjustment would be:

A. Decrease the dose by 2 units.
B. Decrease the dose by 4 units.
C. Increase the dose by 2 units.
D. Increase the dose by 4 units.
E. Do not change the dose.