Building Competency in Diabetes Education: The Essentials
Evaluation of Learning

1. Which of the following physiological actions is NOT a function of insulin?
   a) Insulin helps circulating triglycerides be stored as fat.
   b) Insulin helps liver and muscle tissue store glycogen.
   c) Insulin helps muscle tissue release amino acids for use by the liver.
   d) Insulin helps glucose to be used as fuel.

2. Which of the following is a counterregulatory hormone?
   a) Insulin
   b) Cortisol
   c) Thyroid
   d) Estrogen

3. Please indicate whether this statement is more closely associated with type 1 or type 2 diabetes.
   “Insulin resistance is usually present to some degree”.
   a) Type 1 Diabetes
   b) Type 2 Diabetes

4. Please indicate whether this statement is more closely associated with type 1 or type 2 diabetes.
   “This type usually has its onset under age 30”.
   a) Type 1 Diabetes
   b) Type 2 Diabetes

5. Please indicate whether this statement is more closely associated with type 1 or type 2 diabetes.
   “Autoimmune destruction of the beta cell is usually present in this type”.
   a) Type 1 Diabetes
   b) Type 2 Diabetes

6. Please indicate whether this statement is more closely associated with type 1 or type 2 diabetes.
   “This type is usually associated with central obesity”.
   a) Type 1 Diabetes
   b) Type 2 Diabetes
7. Please indicate whether this statement is more closely associated with type 1 or type 2 diabetes.

“People with this type are more prone to ketoacidosis”.

a) Type 1 Diabetes
b) Type 2 Diabetes

8. Please indicate whether this statement is more closely associated with type 1 or type 2 diabetes.

“This type usually occurs in people ≥40 years of age”.

a) Type 1 Diabetes
b) Type 2 Diabetes

9. Which of the following features is NOT associated with hyperosmolar hyperglycemic state?

a) An absolute need for insulin therapy.
b) Negative to low blood ketone levels.
c) Extreme dehydration.
d) Anion gap ≤10.

10. The diagnosis of impaired glucose tolerance can be made on the basis of which of the following lab results?

a) Fasting blood glucose of 6.1–6.9 mmol/L.
b) Fasting blood glucose of ≥7.0 mmol/L.
c) 1-hour post–75 g oral glucose tolerance test (OGTT) value of ≥10.6 mmol/L.
d) 2 hour post–75 g OGTT value of 7.8–11.0 mmol/L.

11. Which of the following is a characteristic effect of glucagon-like peptide (GLP)-1?

a) Reduces beta-cell mass.
b) Suppresses glucagon secretion.
c) Stimulates gastric emptying.
d) Increases food intake.

12. As of 2005, what is the prevalence of people with diagnosed diabetes among the adult population of Canada?

a) 2.5%
b) 3.2%
c) 5.5%
d) 8.3%

13. Which of the following ethnic groups living in North America do NOT have a higher prevalence rate of diabetes than the general population?

a) Those of Russian descent.
b) Those of Aboriginal descent.
c) Those of Asian descent.
14. In the Diabetes Control and Complications Trial (DCCT), people in the intensively treated group had a reduction in the development of retinopathy. By how much was it reduced?
   a) 25%
   b) 85%
   c) 50%
   d) 76%

15. In the United Kingdom Prospective Diabetes Study (UKPDS), intensive therapy resulted in a risk reduction for the microvascular complications of diabetes. By how much was the risk of retinopathy reduced?
   a) 21%
   b) 25%
   c) 34%
   d) 76%

16. Which risk factor does NOT contribute to the development of long-term complications?
   a) Smoking
   b) Dyslipidemia
   c) Genetics
   d) Gender

17. The DCCT showed a significant reduction in the risk of complications for patients with type 1 diabetes for all but 1 of the following complications. Which one?
   a) Retinopathy
   b) Neuropathy
   c) Cardiovascular disease
   d) Nephropathy

18. The Epidemiology of Diabetes Interventions and Complications (EDIC) trial (ongoing DCCT follow-up) showed delayed progression of complications in the conventional therapy group as compared to the intensively treated group, as both groups had the same glycated hemoglobin (A1C) in follow-up.
   a) True
   b) False

19. Which of the following is classified as a microvascular complication?
   a) Retinopathy
   b) Cataracts
   c) Conjunctivitis
20. Which is NOT an example of a macrovascular complication?
   a) Stroke
   b) Intermittent claudication
   c) Myocardial infarction
   d) Gastroparesis

21. Neuropathy involves all aspects of the nervous system. Which of the following statements about neuropathy is TRUE?
   a) Neuropathy affects patients with type 2 diabetes more than patients with type 1 diabetes.
   b) Neuropathy affects 20% of patients after they have had diabetes for 25 years.
   c) Neuropathy affects patients with type 1 diabetes more than patients with type 2 diabetes.
   d) Neuropathy affects patients with type 1 and type 2 diabetes equally.

22. Which of the following is NOT a diabetes complication involving the autonomic nervous system?
   a) Anhydrosis.
   b) Orthostatic hypotension.
   c) Reduced sensation in the feet.
   d) Gastroparesis.

23. Which is NOT a common symptom of peripheral neuropathy?
   a) Numbness in the feet.
   b) Burning pain in the feet.
   c) Tingling in the hands.
   d) Tingling in the penis.

24. Which statement about diabetic retinopathy is TRUE?
   a) It causes blindness in people with type 1 diabetes more than type 2 diabetes.
   b) It is estimated to be the most frequent cause of new cases of blindness among children.
   c) Higher lipid levels.
   d) It occurs in 20% of patients with type 1 diabetes mellitus after 20 years' duration of diabetes.
   e) It reduces the risk of developing cataracts.

25. Which is NOT an important predictor of the progression of retinopathy?
   a) Longer duration of diabetes.
   b) Higher blood pressure.
   c) Low blood glucose.

26. People with diabetes should have a dilated eye examination performed by which of the following health professionals?
27. Which of the following is not related to risk reduction for diabetic eye disease?
   a) Good blood glucose control.
   b) Blood pressure control \(<130/85\) mm Hg.
   c) Regular physical activity.
   d) Total cholesterol/high-density lipoprotein (HDL) cholesterol ratio \(<4\).

28. How frequently should all patients with type 2 diabetes have their eyes checked?
   a) Annually, starting 5 years after puberty.
   b) At diagnosis, then every 1–2 years.
   c) At diagnosis, then annually.
   d) When they notice floaters or blurred vision.

29. Which of the following are both risk factors for diabetic nephropathy?
   a) Smoking and drinking alcohol.
   b) Urinary tract infections and high cholesterol.
   c) Drinking alcohol and urinary tract infections.
   d) Smoking and high cholesterol.

30. Which is the standard screening method for diabetic nephropathy?
   a) 24-hour urine for protein.
   b) Albumin/creatinine ratio.
   c) Timed urine collection for microalbumin.
   d) Kidney biopsy.

31. Which of the following statements best describes why screening for diabetic nephropathy in people with type 2 diabetes should be done at the time of diagnosis?
   a) People with type 2 diabetes do not maintain close follow-up with their physicians.
   b) The incidence of diabetic nephropathy is higher in type 2 diabetes than type 1 diabetes.
   c) Many people with type 2 diabetes may already have signs of nephropathy at diagnosis.
   d) It is harder for people with type 2 diabetes to do a 24-hour urine collection.

32. Which of the following statements regarding the prevention and treatment of nephropathy is FALSE?
   a) People taking angiotensin-converting enzyme (ACE) inhibitors or angiotensin II receptor antagonists (ARBs) should have serum creatinine and potassium levels checked 1 to 2 weeks after initiation of therapy.
b) Progression of nephropathy can be slowed by the use of ACE inhibitors.
c) People with type 2 diabetes should use ARBs only to delay the progression of nephropathy.
d) Women with diabetes planning pregnancy should stop taking ACE inhibitors or ARBs prior to conception.

33. The glucose-lowering effect of exercise can occur at which of the following times?
   a) During or immediately following activity.
   b) Immediately following and 1 to 2 hours following activity.
   c) 1 to 2 hours following and 12 to 24 hours following activity.
   d) All of the above.

34. The benefits of exercise include which of the following?
   i) Weight control, increased energy level, decreased risk of osteoporosis.
   ii) Stress reduction, improved glycemic control for type 1 and type 2 diabetes, improved lipid levels.
   iii) Decreased risk of heart disease, decreased incidence of depression, improved glycemic control for type 1 diabetes.
   iv) Stronger muscles and bones, improved self-esteem, improved glycemic control for type 2 diabetes.
   a) i and ii
   b) iii and iv
   c) i and iv
   d) All of the above.

35. Which of the following is more of a concern for the person with diabetes who exercises than for the person without diabetes?
   i) Blisters resulting from ill-fitting footwear.
   ii) Alcohol intake immediately following activity.
   iii) Sore muscles.
   iv) Increased energy requirements.
   a) i and ii
   b) iii and iv
   c) i and iv
   d) ii and iii

36. For the person who takes insulin, which of the following behaviours is required to prevent exercise-induced hypoglycemia?
   i) More frequent self-monitoring of blood glucose.
   ii) Increased carbohydrate intake or decreased insulin dose.
   iii) Decreased food intake and decreased insulin dose.
   iv) Increased protein intake following exercise.
   a) i and ii
   b) i and iv
   c) ii and iv
   d) i and iii
37. Use the following information to answer questions 37 and 38.

Bill’s friend has just called him to see if he is able to play racquetball in 45 minutes. Bill knows that it will be a strenuous workout, and he’s excited about the challenge. Bill agrees to play. He took his injection of rapid-acting insulin and ate his regular lunch (75 g carbohydrate) 30 minutes ago.

What risk is associated with this unplanned activity?

- a) Possible hyperglycemia due to decreased insulin sensitivity associated with exercise.
- b) Likely none, due to the timing of Bill’s last insulin injection.
- c) Exacerbation of gastroparesis when activity is done within 2 hours after eating a meal.
- d) Hypoglycemia due to the unplanned exercise.

38. How should Bill cope with this unplanned exercise?

i) Take an additional injection of rapid-acting insulin just prior to activity.
ii) Monitor his blood glucose during and after activity.
iii) Take a motility agent prior to activity to improve gastroparesis.
iv) Eat additional carbohydrate during activity.

- a) i
- b) ii
- c) ii and iv
- d) ii and iii

39. How many grams of fat are in a diet of 8400 kJ (2000 kcal) that derives 29% of its energy from fat?

- a) 116 g
- b) 64 g
- c) 82 g
- d) 145 g

40. Use the following information for questions 40 and 41.

Holly is 175 cm tall and weighs 90 kg.

What is her body mass index (BMI)?

- a) 51 kg/m2
- b) 46 kg/m2
- c) 29 kg/m2
- d) 19 kg/m2
41. Based on her BMI, what is your assessment of Holly’s body weight?
   a) She is underweight and at increased risk for the health problems associated with being underweight.
   b) She is morbidly obese.
   c) Her body weight is within a healthy range.
   d) She is overweight and at increased risk for the health problems associated with being overweight.

42. For whom is it NOT appropriate to use BMI to assess body weight?
   a) Children, adolescents and the elderly.
   b) Pregnant and lactating women.
   c) Muscular athletes.
   d) All of the above.

43. What proportion of energy intake should be made up of carbohydrates?
   a) 40–50%
   b) 40–60%
   c) 50–55%
   d) 30–50%

44. Which of the following are reasons why it is important to include 25–50 g of dietary fibre in the diet on a daily basis?
   i) Fibre can improve renal complications.
   ii) Fibre improves symptoms of gastroparesis.
   iii) Fibre has a beneficial effect on blood lipids.
   iv) Fibre has a beneficial effect on blood glucose.
   a) i and ii
   b) i and iii
   c) ii and iii
   d) iii and iv

45. What proportion of energy intake should be made up of protein?
   a) 15–20%
   b) 40%
   c) ≤30%
   d) 20–30%

46. What proportion of energy intake should be made up of fat?
   a) 20–30%
   b) ≤30%
   c) 20–35%
   d) 35–40%
47. Which of the following describes the additional risk(s) associated with alcohol for the person with diabetes?

i) Alcohol increases the workload of the kidney, increasing the risk of renal complications.

ii) Alcohol decreases circulation to the eyes, resulting in blurry vision.

iii) Alcohol inhibits gluconeogenesis and therefore can cause delayed hypoglycemia in individuals who are treated with insulin and/or insulin secretagogues.

iv) Alcohol increases blood glucose and therefore can contribute to the development of ketoacidosis.

a) i and ii
b) ii and iii
c) iii
d) iv

48. Which of the following is/are recommended with respect to intake of sucrose for someone who has diabetes?

i) Intake of sucrose should contribute no more than 10% of the energy in the diet.

ii) Sweets should be avoided by anyone who has diabetes.

iii) Intake of sweets should be restricted by those who are striving for weight loss.

iv) Sweets should be included if only glycemic control is good.

a) i and iii
b) i and iv
c) ii
d) iii and iv

49. How should carbohydrates be distributed throughout the day?

a) 6 small meals per day.

b) 50% at breakfast, 25% at lunch and 25% at dinner.

c) 3 meals and inclusion of snacks determined on an individual basis.

d) 25% at breakfast, 40% at lunch and 35% at dinner.

50. Which of the following factors may be related to weight gain following diagnosis and initial treatment of diabetes?

a) Excess energy intake.

b) Improved glycemia.

c) Treatment of frequent hypoglycemia.

d) Any of the above.

51. Which of the Beyond the Basics food choice groups are considered to contain enough carbohydrate to affect blood glucose?

a) Grains and Starches, Fruits, Meat and Alternatives, Other Choices.

b) Grains and Starches, Fruits, Meat and Alternatives, Oils.

c) Grains and Starches, Fruits, Milk and Alternatives, Other Choices.

d) All food choice groups.
52. Which meal-planning method allows for the greatest flexibility in food choices?
   a) Carbohydrate counting.
   b) The Zone Diet.
   c) The Beyond the Basics poster pinup/meal plan.
   d) Dr. Atkins’ New Diet Revolution.

53. How much carbohydrate will be provided by a 17.5 oz/525 mL bottle of kiwi strawberry fruit juice drink?
   a) 60 g
   b) 15 g
   c) 33 g
   d) 30 g

54. Rhonda recognizes that it is healthier to include breakfast in her diet and is willing to give it a try. She established her goal carbohydrate at breakfast to be 38 g. She had been eating 2 large pieces of toast with peanut butter and black coffee, but during the winter she would prefer some plain oatmeal, and she likes the instant packages.

How many packages of oatmeal can Rhonda have, and does she need to include any other food to achieve her goal of 38 g of carbohydrate?
   a) 1 package.
   b) 2 packages.
   c) 1 package plus another carbohydrate choice.
   d) 1 package plus half a carbohydrate choice.

55. Peter uses short-acting (regular) insulin with meals and NPH at bedtime.
He has completed food records and counted his carbohydrate intake.

What is (are) his goal carbohydrate(s) for each meal period?
   a) 328
   b) 67, 42, 77, 20, 92, 30
   c) 119, 97, 122
   d) 236, 92

56. Which classification(s) of oral antihyperglycemic agents can cause hypoglycemia?
   i) Sulfonylureas
   ii) Meglitinides
iii) Incretin mimetics
iv) Thiazolidinediones
v) Biguanides

a) i
b) ii and iii
c) i and iv
d) i and ii

57. It is recommended that baseline creatinine and/or liver function tests be done prior to the initiation of which of the following oral antihyperglycemic agents?
i) Alpha-glucosidase inhibitors
ii) Biguanides
iii) Sulfonylureas and meglitinides
iv) Thiazolidinediones
v) Incretin mimetics

a) i and ii
b) ii and v
c) ii and iv
d) ii, iv and v

58. Name the oral antihyperglycemic agent(s) that is/are not associated with weight gain.
i) Sulfonylureas and meglitinides
ii) Metformin
iii) Thiazolidinediones
iv) Incretin mimetics
v) Alpha-glucosidase inhibitors

a) ii
b) ii, iv and v
c) ii and iv
d) ii, iii and iv

59. Which of the following statements are true?
i) Sulfonylureas are more likely to cause hypoglycemia.
ii) Thiazolidinediones are contraindicated in patients with congestive heart failure and hepatic impairment.
iii) Biguanides are contraindicated in patients with renal or hepatic impairment.
iv) Pure glucose must be used to treat hypoglycemia in patients taking alpha-glucosidase inhibitors.

a) All of the above
b) None of the above
c) i, ii and iii
60. Fill in the blanks: An increase in the dose of regular insulin can result in a/an __________ in the strength as well as (a/an) __________ in duration of action.

a) Decrease, no effect
b) Increase, increase
c) Increase, no effect
d) Increase, decrease

61. List the injection sites in order from the fastest to slowest rate of insulin absorption.

a) Arms, thighs, abdomen, buttocks.
b) Abdomen, thighs, arms, buttocks.
c) Buttocks, thighs, arms, abdomen.
d) Abdomen, arms, thighs, buttocks.

62. Identify the variables that can affect the rate of insulin absorption.

i) Injection site.
ii) Timing of meal.
iii) Injecting insulin adjacent to an exercising muscle.
iv) Failure to resuspend intermediate, long-acting or premixed insulin prior to injecting.

a) All of the above.
b) i
c) i, ii and iii
d) i, iii and iv

63. Which statements are NOT true?

i) The abdomen is the preferred site for insulin administration.
ii) Daily absorption can vary up to 10% using same site at the same time.
iii) Patients should inject within the same anatomical area and systematically rotate their injection within that site.
iv) Injection of insulin into a lipohypertrophy site increases the rate of insulin absorption.

a) i and iv
b) ii and iv
c) ii and iii
d) iii and iv

64. Janet is 56 years old and has had type 2 diabetes for 8 years. She is taking metformin 1000 mg BID and glyburide 10 mg BID. Janet states that her blood glucose readings fluctuate between 8 and 11 mmol/L in the morning, but during the day her readings range from 6 to 8 mmol/L. She is following the dietitian’s meal suggestions, is walking 1 hour every day and has lost 4.5 kg. As her diabetes educator, what would you suggest to Janet?
a) That she walk 2 hours each day.
b) That you and she speak with her doctor about the addition of a third oral antihyperglycemic agent.
c) That you and she speak with her doctor about the addition of basal insulin at bedtime.
d) That you and she speak with her doctor about switching to BID insulin.

65. What are the limitations of a twice-daily insulin therapy regimen?
i) It requires 2 injections per day.
ii) There is a lack of mealtime flexibility.
iii) There is an increased risk of nocturnal hypoglycemia.
iv) Daytime control of blood glucose levels may be more difficult.
   a) All of the above.
   b) i and ii
   c) iii and iv
   d) ii, iii and iv

66. Tom is 64 years old and has had type 2 diabetes for 12 years. He takes metformin 1000 mg BID and glyburide 10 mg BID. His fasting blood glucose readings are elevated, and his family doctor suggested that he start taking basal insulin at bedtime. Tom weighs 90 kg. What should his starting dose of basal insulin at bedtime be?
   a) 8 units
   b) 12 units
   c) 18 units
   d) 27 units

67. What are the advantages of multiple daily injections (rapid-acting insulin before meals and long-acting insulin at bedtime and breakfast)?
i) The ability to make adjustments to insulin dose based on changes in food/activity.
ii) Consistency in timing of meals.
iii) Reduced risk of overnight hypoglycemia.
iv) The ability to correct blood glucose that is out of target more quickly.
   a) i, ii and iii
   b) i, iii and iv
   c) ii, iii and iv
   d) All of the above.

68. Michael is 29 years old and has had type 1 diabetes for 16 years. His insulin regimen consists of 5 units of rapid-acting insulin and 12 units of NPH at breakfast, and 7 units of rapid-acting insulin and 11 units of NPH before dinner. Michael’s doctor has recommended that he switch to a multiple daily injection regimen, given that his A1C is 8.4% and the timing of his meals is irregular. What is the most appropriate starting dose for Michael (breakfast, lunch, dinner, bedtime), given his current total daily dose and A1C?
   a) 7–6–7–14
b) 6–7–8–17

c) 7–7–7–17

d) 6–5–6–14

69. Mr. Lori is 60 years old and has had type 2 diabetes for approximately 18 years. He has been taking insulin 30/70 BID. Mr. Lori informs you that his cardiologist has just started him on beta blockers. What information should be conveyed to Mr. Lori regarding the effect of beta blockers on glycemic control?

i) Beta blockers do not impact glycemic control.
ii) Beta blockers can increase blood glucose levels.
iii) Beta blockers can decrease blood glucose levels.
iv) Beta blockers can decrease recognition of low blood glucose levels.

a) i
b) ii and iii
c) iii
d) iv

70. Which 1 of the following statements is TRUE?

a) Corticosteroids can cause hyperglycemia.
b) Corticosteroids have no effect on blood glucose levels.
c) Corticosteroids have an effect on glycemic control in patients with diabetes only.
d) Corticosteroids can cause hypoglycemia.

71. Sandra Parker is 56 years old and has type 2 diabetes. She is taking insulin BID. She has presented to your clinic seeking advice regarding her diabetes self-management. Mrs. Parker states that she has seen the dietitian and has been following her suggestions as best as she can. Her usual doses of insulin 30/70 are 20 units before breakfast and 14 units before dinner. What recommendations would you make?

<table>
<thead>
<tr>
<th>Before breakfast</th>
<th>Before lunch</th>
<th>Before dinner</th>
<th>Before bed</th>
<th>3:00 AM</th>
<th>Insulin</th>
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<tr>
<td>15.4</td>
<td>7.2</td>
<td>4.0</td>
<td>12.6</td>
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<td>16.8</td>
<td>6.1</td>
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</tbody>
</table>

a) Increase both the before-breakfast and before-dinner doses and check blood glucose at 3:00 am.
b) Increase the before-dinner dose by 10% and check blood glucose at 3:00 am.
c) Increase the before-breakfast dose by 10%.
d) Increase the before-dinner dose by 30% and check blood glucose at 3:00 am.

72. The rationale for self-monitoring of blood glucose includes which of the following?

i) To understand the effect of food, exercise and medication on blood glucose levels.

ii) To adjust food to insulin.
iii) To make choices and take action by making changes to food, exercise and medications based on blood glucose results.

a) i and ii  
b) ii and iii  
c) i and iii  
d) All of the above.

73. Which of the following may be (a) barrier(s) to self-monitoring of blood glucose?

i) Cost.

ii) Fear of pricking finger.

iii) Fear of high blood glucose results.

iv) Inconvenient to do at work.

a) i and iii  
b) ii and iii  
c) i and iv  
d) All of the above.

74. Which of the following is a suggested pattern of testing blood glucose if a person is taking an oral antihyperglycemic agent plus insulin and is above target?

a) ≥ 3 to 4 times per day.  
b) ≥ 1 time per day.  
c) ≥ 2 times per day.  
d) ≥ 1 time per day, postprandial.

75. When selecting a blood glucose meter, which factor is NOT a consideration?

a) Meter portability.  
b) Flexibility of strips.  
c) Flexibility of strips.  
d) Dexterity of the patient.

76. Which of the following statements about A1C is NOT true?

a) An optimal A1C for most adults is <7%.  
b) A1C is an indicator of overall glycemic control in the preceding 2–3 months.  
c) A1C reflects blood glucose levels over a 14– to 20– day period.  
d) A1C has a different method of measurement than blood glucose levels.

77. Which of the following are possible causes of hypoglycemia?

i) A dose of insulin or sulfonylurea that is too high.  
ii) Very tight blood glucose control (i.e. goal <5 mmol/L before meals).  
iii) Too much insulin, an increase in the level of activity and insufficient carbohydrates.
iv) Decreased renal function.
   a) i and iii
   b) i and iv
   c) ii and iv
   d) All of the above.

78. Use the following information to answer questions 78 to 80.

Mr. Jones is a 65-year-old married man, recently diagnosed with type 2 diabetes. He tests his blood glucose levels before breakfast and before supper. His levels range between 14 and 18 mmol/L. He was started on metformin 500 mg and glyburide 2.5 mg before breakfast and supper. He plans to start walking 30 minutes each morning. His blood glucose goals are 5 to 8 mmol/L. Mr. Jones has been taught the signs/symptoms and treatment of hypoglycemia.

The signs and symptoms of mild hypoglycemia include all except which of the following:
   a) Tremors
   b) Seizures
   c) Sweating
   d) Hunger

79. Mr. Jones calls you and states that after his first morning walk he felt shaky and was sweating. He thought that he was having a hypoglycemic event and tested his blood glucose level, but it was 6.8 mmol/L. He did not understand, because he thought that his blood glucose should be <4.0 mmol/L when he felt the symptoms of hypoglycemia. You explain to Mr. Jones that what happened may have been:
   a) Somogyi effect
   b) Dawn effect
   c) Pseudo-hypoglycemia
   d) Delayed hypoglycemia

80. Two months later, Mr. Jones’ blood glucose levels range between 6.0 and 8.0 mmol/L. Again, he was sweating and shaky and tested his blood glucose levels; the result was 3.1 mmol/L. What would be the correct action for Mr. Jones to take?
   i) Assess the cause to prevent a recurrent hypoglycemic event.
   ii) Eat 25 g carbohydrate, wait 10 to 15 minutes, retest blood glucose.
   iii) Eat 15 g carbohydrate, wait 10 to 15 minutes, retest blood glucose.
   iv) Have a chocolate bar and a glass of Coke.
   a) i and ii
   b) ii and iv
   c) i and iii
   d) i and iv
81. Use the following information to answer questions 81 to 83.

Jackie is a 19-year-old college student who has been diagnosed with type 1 diabetes. She attended the intensive diabetes therapy workshops and is doing extremely well.

Jackie asks you what the glycemic targets for most patients should be fasting and 2 hours after meals.

a) 3.8–6.1 and 4.4–7.0 mmol/L.
b) 7.1–10.0 and 11.1–14.0 mmol/L.
c) 4.0–7.0 and 5.0–10.0 mmol/L.
d) >10.0 and >14.0 mmol/L.

82. Jackie became very active, joined the college basketball team and was working out extensively to build stamina. However, on 2 occasions she miscalculated and had severe hypoglycemic events. She was found unresponsive and unable to swallow. She re-evaluated her exercise and insulin regimen to prevent further severe hypoglycemic events. Jackie’s roommate and teachers were taught how to administer glucagon. Which of the following are key points they must remember when administering glucagon to Jackie?

i) As soon as she is alert, give her a fast-acting carbohydrate followed by a fast-acting snack.
ii) Glucagon cannot be premixed. Mix just prior to use.
iii) Turn her on her side to avoid aspiration.
iv) Glucagon can cause nausea and vomiting; do not leave her alone.

a) i and iv
b) ii and iii
c) iii and iv
d) All of the above.

83. Jackie is doing very well. She has had no further severe hypoglycemic events, but on the weekend she attended a party. The next day she was feeling very sick and did not want to eat. She was not sure if she should take her insulin. Some of the information about sick-day management that you discuss with Jackie would include the following:

i) She should not take her insulin when she is unable to eat.
ii) If she cannot eat as usual, she should replace solid food with glucose-containing fluids.
iii) Insulin should always be taken; extra insulin may be needed by the body.
iv) She should check blood glucose and urine ketones every 8 hours around the clock.

a) i and ii
b) ii and iii
c) i and iv
d) iii and iv

84. Mrs. Winters has had type 1 diabetes for 15 years. She has had difficulty with her overnight control and frequent hypoglycemia. She thinks a pump may help. She also doesn’t want to worry about her food anymore. Which are valid reasons for Mrs. Winters to switch to the insulin pump?
i) Poor overnight control.
ii) Hypoglycemia.
iii) Diabetes for 15 years.
iv) Desire for a totally free diet.
   a) i and ii
   b) i and iii
   c) ii and iv
   d) iii and iv

85. What should a person on pump therapy do when he or she tests and sees an unexplained high blood glucose?
   i) Test for ketones.
   ii) Give an extra insulin bolus and retest.
   iii) Call the doctor or go to the emergency department.
   iv) Treat with glucose tablets.
   a) i and ii
   b) i and iv
   c) ii and iii
   d) ii and iv

86. Which of the following is a risk associated with intensive diabetes therapy?
   a) Developing a supportive relationship with the diabetes healthcare team.
   b) Less hypoglycemia.
   c) Possible increased risk of hypoglycemia.
   d) Less financial cost.

87. Mr. Wong’s blood glucose goal is 4 to 8 mmol/L. He takes rapid-acting insulin 8 units at breakfast, rapid-acting insulin 10 units at lunch, rapid-acting insulin 15 units at dinner and a long-acting basal insulin analogue 29 units at bedtime. His food intake and activity levels are consistent. What dose adjustment would you suggest?

<table>
<thead>
<tr>
<th>Before breakfast</th>
<th>Before lunch</th>
<th>Before dinner</th>
<th>Bedtime</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.2</td>
<td>5.8</td>
<td>6.3</td>
<td>10.3</td>
</tr>
<tr>
<td>5.9</td>
<td>6.3</td>
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</tr>
<tr>
<td>6.3</td>
<td>7.2</td>
<td>7.5</td>
<td>11.5</td>
</tr>
<tr>
<td>4.9</td>
<td>5.5</td>
<td>6.3</td>
<td>10.5</td>
</tr>
</tbody>
</table>

   a) Decrease the breakfast rapid-acting insulin by 1 to 2 units.
   b) Increase the lunch rapid-acting insulin by 1 to 2 units.
   c) Increase the dinner rapid-acting insulin by 1 to 2 units.
   d) Increase the basal analogue at bedtime by 1 to 2 units.
88. Mr. Nader takes rapid-acting insulin 8 units and NPH 4 units at breakfast, rapid-acting insulin 7 units at lunch, rapid-acting insulin 10 units at dinner and NPH 30 units at bedtime. His blood glucose goal is 4 to 7 mmol/L. He eats lunch at 12:00 noon, has no afternoon snack and eats dinner at 7:30 to 8:00 pm.

What insulin dose would you suggest he adjust?

<table>
<thead>
<tr>
<th></th>
<th>Before breakfast</th>
<th>Before lunch</th>
<th>2 hours after lunch</th>
<th>Before dinner</th>
<th>Bedtime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr. Nader's current dose</td>
<td>6.3</td>
<td>7.3</td>
<td>10.3</td>
<td>11.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.2</td>
<td>5.2</td>
<td>11.9</td>
<td>9.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.0</td>
<td>8.2</td>
<td>9.0</td>
<td>13.2</td>
<td>10.2</td>
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<tr>
<td></td>
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<td>6.8</td>
<td>7.5</td>
<td>12.5</td>
<td>9.8</td>
</tr>
</tbody>
</table>

a) Increase the lunch rapid-acting insulin by 2 units.
b) Increase the lunch rapid-acting insulin by 1 unit.
c) Increase the breakfast NPH by 2 units.
d) Increase the dinner rapid-acting insulin by 2 units.

89. There are 4 goals for intensive therapy. Which is NOT a goal of intensive therapy?

a) Near-normal blood glucose.
b) Reduction in the risk of complications.
c) Low blood glucose.
d) Improved quality of life.

90. Which characteristic would exclude a person from using intensive diabetes therapy?

a) Hypoglycemia unawareness.
b) Unwilling to monitor more than 2 times per day.
c) Concern regarding weight gain.
d) Erratic schedule.

91. Which is NOT a factor to be considered when setting glycemic targets with patients?

a) Awareness of hypoglycemia.
b) Type of diabetes.
c) History of cardiac events.
d) Individual blood glucose goals.

92. A patient with type 1 diabetes taking multiple daily insulin injections (using rapid-acting insulin at meals and NPH at bedtime) has consistently elevated fasting blood glucose levels. What should the patient do to correct this?

a) Increase the pre-breakfast dose of rapid-acting insulin.
b) Ask the patient to do a 3:00 to 4:00 am blood glucose test and, if it is also elevated, increase the bedtime NPH by 1 to 2 units.
c) Decrease the bedtime NPH to reduce risk of nocturnal hypoglycemia and the Somogyi effect.
d) Adjust nutrient intake and encourage exercise.
93. As described in the taxonomy of educational objectives, there are several levels of learning within each domain. What level of learning does the following objective describe? “Given 4 days of blood glucose results, all taken before each meal and at bedtime, the person is able to identify a pattern in the results.”

a) Knowledge  
b) Application  
c) Analysis  
d) Synthesis

94. Getting a group of learners involved in a lecture-style session is challenging. Which of the following is NOT a suggested strategy to increase learner involvement in lectures?

a) Begin with the most complex concept to catch learners’ interest.  
b) Have learners introduce themselves.  
c) Begin with a cartoon or a joke.  
d) Have learners reflect on their attitude or experiences with the subject.

95. Teaching methods appropriate for learning objectives in the affective domain include all but which of the following?

a) Lecture  
b) Group discussion  
c) Brainstorming  
d) Values clarification

96. Which of the following is the correct definition of the change process called “reinforcement management”?

a) Avoiding situations/stimuli that elicit the behaviour targeted for change.  
b) Assessing one’s own resources, barriers, temptations, supports and successes.  
c) Rewarding oneself or being rewarded by others for making positive change.  
d) Increasing use of alternatives available in society.

97. Which of the following objectives is the best written (i.e. realistic, clear, specific, measurable)?

a) Understand the pathophysiology of type 2 diabetes.  
b) Know the types of insulin available.  
c) Be aware of one’s attitudes toward various ethnic groups.  
d) Be able to define the following terms: polyuria, polydipsia, polyphagia.

98. Using the principles of motivational interviewing, identify the most appropriate response to the following patient statement: “My doctor said I should come to talk to you about the pump. He says it would be good for me, but I’m not sure I can see myself being attached to this thing all the time. I’d really rather take more injections to make it work.”

a) I am sure your doctor would not recommend something if it were not the best for you.  
b) Let’s compare multiple daily injections to pumps. Can multiple daily injections be equal to a pump?  
c) Can you help me understand how you feel about “being attached”? What worries you about this?  
d) All our patients love it! Why don’t you try it and see?