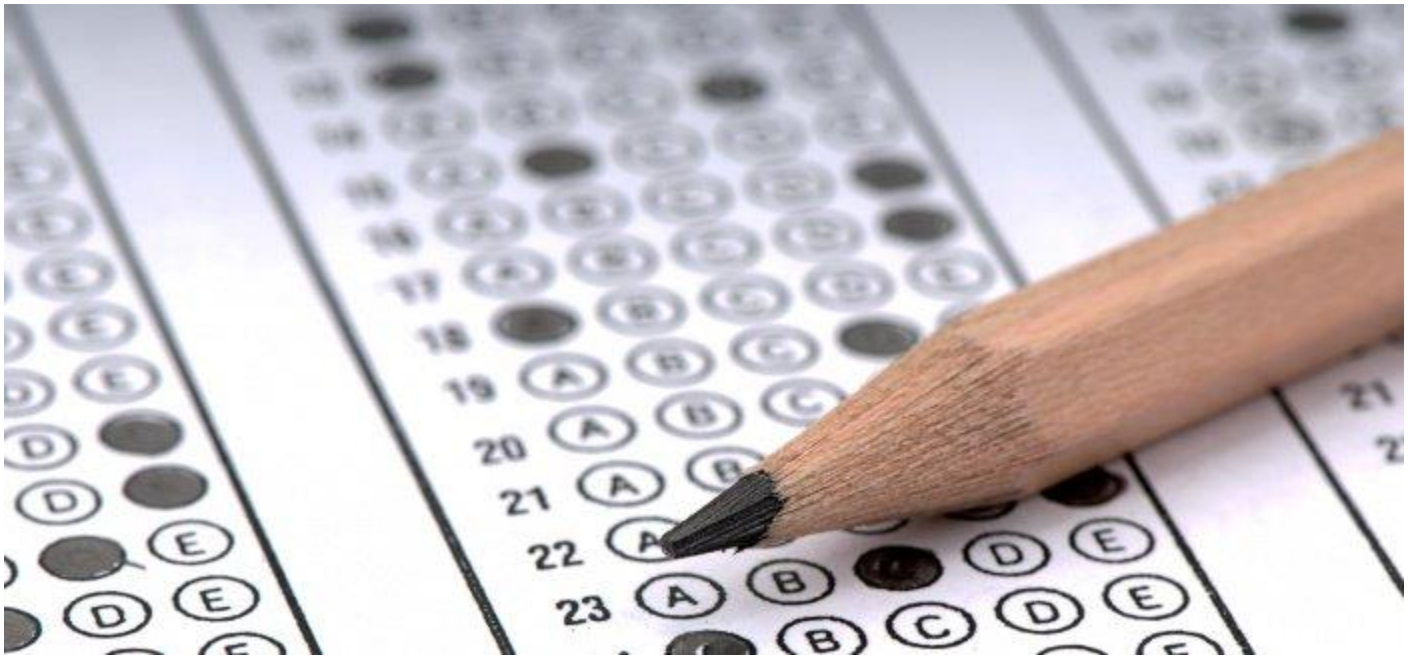
Disclaimer

These are not validated questions.

They have been created to enhance your learning and provide practice in reading and answering multiple choice questions.

Some questions have been created to address specific topic areas.

Sample Exam Questions



Medications

Eric is on glimipride 4 mg, janumet 50/850 bid, and dapagliflozin 10 mg to control his blood glucose. He is experiencing hypoglycemia at work.

Which medication would need to be adjusted?

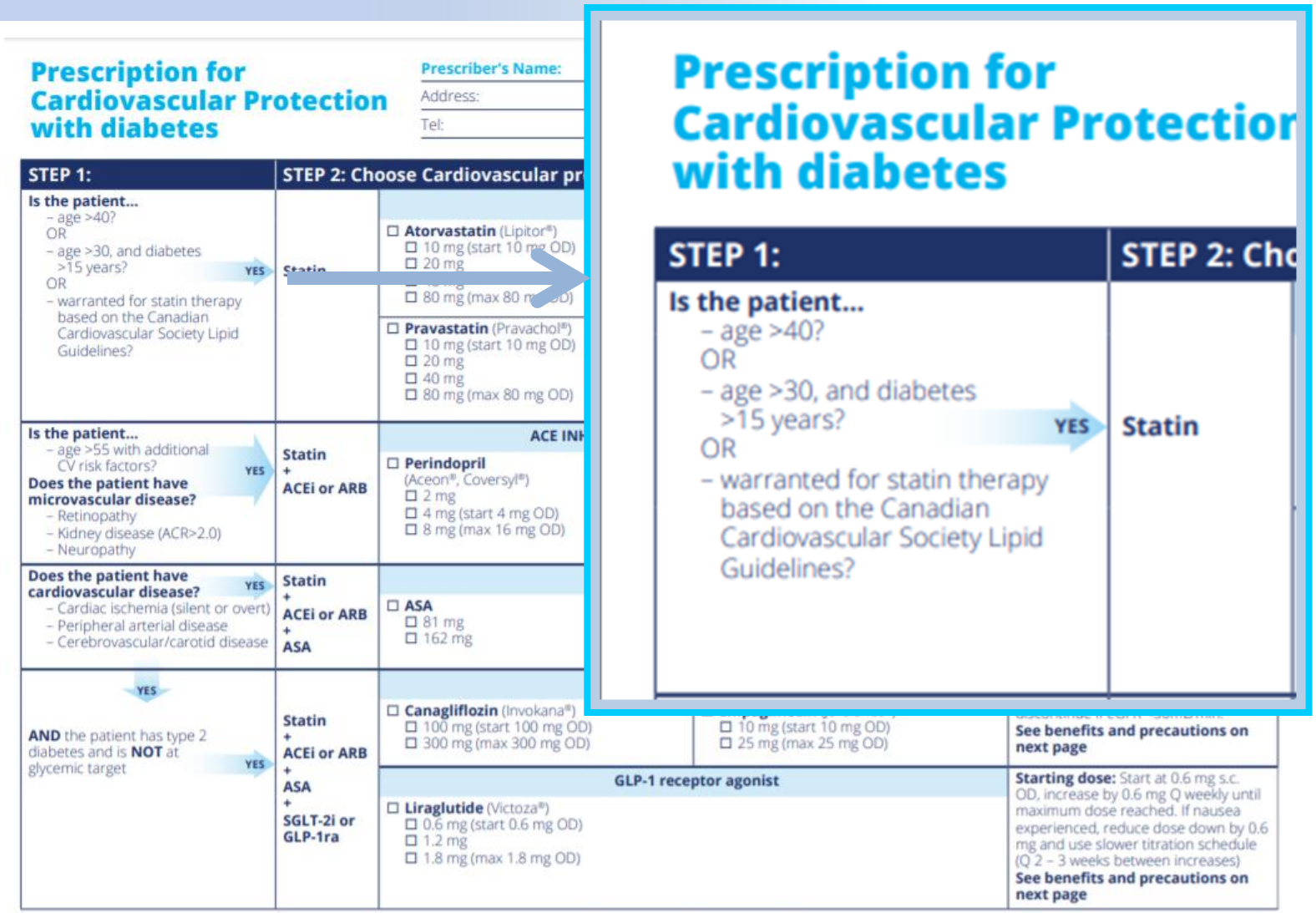
a) Glimipride
b) Janumet
c) Dapagliflozin
d) All his medications

Medications

Eric's educator is concerned that he is not on which class of medication given he just turned 45.

- ✔ Statin
- b) ACE
- c) ARB
- d) ASA

Assessing for Cardiovascular Risk



Prescription for Cardiovascular Protection with diabetes

Prescriber's Name:
Address:
Tel:

STEP 1:	STEP 2: Choose Cardiovascular pr		
Is the patient... – age >40? OR – age >30, and diabetes >15 years? OR – warranted for statin therapy based on the Canadian Cardiovascular Society Lipid Guidelines? YES	**Statin**	☐ **Atorvastatin** (Lipitor®) ☐ 10 mg (start 10 mg OD) ☐ 20 mg ☐ 80 mg (max 80 mg OD) ☐ **Pravastatin** (Pravachol®) ☐ 10 mg (start 10 mg OD) ☐ 20 mg ☐ 40 mg ☐ 80 mg (max 80 mg OD)	
Is the patient... – age >55 with additional CV risk factors? YES **Does the patient have microvascular disease?** – Retinopathy – Kidney disease (ACR>2.0) – Neuropathy	**Statin + ACEi or ARB**	**ACE INH** ☐ **Perindopril** (Aceon®, Coversyl®) ☐ 2 mg ☐ 4 mg (start 4 mg OD) ☐ 8 mg (max 16 mg OD)	
Does the patient have cardiovascular disease? YES – Cardiac ischemia (silent or overt) – Peripheral arterial disease – Cerebrovascular/carotid disease	**Statin + ACEi or ARB + ASA**	☐ **ASA** ☐ 81 mg ☐ 162 mg	
YES **AND** the patient has type 2 diabetes and is **NOT** at glycemic target YES	**Statin + ACEi or ARB + ASA + SGLT-2i or GLP-1ra**	☐ **Canagliflozin** (Invokana®) ☐ 100 mg (start 100 mg OD) ☐ 300 mg (max 300 mg OD) ☐ 10 mg (start 10 mg OD) ☐ 25 mg (max 25 mg OD) **See benefits and precautions on next page**	
		GLP-1 receptor agonist ☐ **Liraglutide** (Victoza®) ☐ 0.6 mg (start 0.6 mg OD) ☐ 1.2 mg ☐ 1.8 mg (max 1.8 mg OD)	**Starting dose:** Start at 0.6 mg s.c. OD, increase by 0.6 mg Q weekly until maximum dose reached. If nausea experienced, reduce dose down by 0.6 mg and use slower titration schedule (Q 2 – 3 weeks between increases) **See benefits and precautions on next page**

Prescription for Cardiovascular Protection with diabetes

STEP 1:	STEP 2: Cho
Is the patient... – age >40? OR – age >30, and diabetes >15 years? YES OR – warranted for statin therapy based on the Canadian Cardiovascular Society Lipid Guidelines?	**Statin**

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Cardiovascular Protection

Prescription for Cardiovascular Protection with diabetes

Prescriber's Name:
Address:
Tel: Fax:

Patient's Name:
Address:
Tel:

STEP 1:	STEP 2: Choose Cardiovascular protection agent(s) from the following list				Dosing
Is the patient... – age >40? OR – age >30, and diabetes >15 years? OR – warranted for statin therapy based on the Canadian Cardiovascular Society Lipid Guidelines? YES	**Statin**	**STATIN**			**Dosing:** see start and maximum doses listed for each statin
		☐ **Atorvastatin** (Lipitor®) ☐ 10 mg (start 10 mg OD) ☐ 20 mg ☐ 40 mg ☐ 80 mg (max 80 mg OD)	☐ **Fluvastatin** (Lescol®) ☐ 20 mg (start 20 mg OD) ☐ 40 mg ☐ 80 mg (max 80 mg OD)	☐ **Lovastatin** (Mecavor®) ☐ 20 mg (start 20 mg OD) ☐ 40 mg (max 80 mg OD)	
		☐ **Pravastatin** (Pravachol®) ☐ 10 mg (start 10 mg OD) ☐ 20 mg ☐ 40 mg ☐ 80 mg (max 80 mg OD)	☐ **Rosuvastatin** (Crestor®) ☐ 5 mg ☐ 10 mg (start 10 mg OD) ☐ 20 mg ☐ 40 mg (max 40 mg OD)	☐ **Simvastatin** (Zocor®) ☐ 10 mg (start 10 mg OD) ☐ 20 mg ☐ 40 mg (max 80 mg OD)	
Is the patient... – age >55 with additional CV risk factors? YES **Does the patient have microvascular disease?** – Retinopathy – Kidney disease (ACR>2.0) – Neuropathy	**Statin + ACEi or ARB**	**ACE INHIBITORS**		**ARB**	**Dosing:** see start and maximum doses listed for each ACEi **ACEi:** see precautions for dosing in kidney and liver disease on next page Increase doses at 2-3 week intervals.
		☐ **Perindopril** (Aceon®, Coversyl®) ☐ 2 mg ☐ 4 mg (start 4 mg OD) ☐ 8 mg (max 16 mg OD)	☐ **Ramipril** (Altace®) ☐ 1.25 mg ☐ 2.5 mg (start 2.5 mg OD) ☐ 5 mg ☐ 10 mg (max 20 mg OD)	☐ **Telmisartan** (Micardis®) ☐ 20 mg ☐ 40 mg (start 40 mg OD) ☐ 80 mg (max 80 mg OD)	
Does the patient have cardiovascular disease? YES – Cardiac ischemia (silent or overt) – Peripheral arterial disease – Cerebrovascular/carotid disease	**Statin + ACEi or ARB + ASA**	**ASA** (if CVD)			
		☐ **ASA** ☐ 81 mg ☐ 162 mg	☐ **Clopidrogrel** (Plavix®) for those unable able to tolerate ASA ☐ 75 mg		
YES **AND** the patient has type 2 diabetes and is **NOT** at glycemic target YES	**Statin + ACEi or ARB + ASA + SGLT-2i or GLP-1ra**	**SGLT-2 inhibitor**			**Starting dose:** lowest dose and titrate up Q 4 weeks. Check eGFR periodically; discontinue if eGFR <30mL/min. **See benefits and precautions on next page**
		☐ **Canagliflozin** (Invokana®) ☐ 100 mg (start 100 mg OD) ☐ 300 mg (max 300 mg OD)	☐ **Empagliflozin** (Jardiance®) ☐ 10 mg (start 10 mg OD) ☐ 25 mg (max 25 mg OD)		
		GLP-1 receptor agonist			**Starting dose:** Start at 0.6 mg s.c. OD, increase by 0.6 mg Q weekly until maximum dose reached. If nausea experienced, reduce dose down by 0.6 mg and use slower titration schedule (Q 2 – 3 weeks between increases) **See benefits and precautions on next page**
		☐ **Liraglutide** (Victoza®) ☐ 0.6 mg (start 0.6 mg OD) ☐ 1.2 mg ☐ 1.8 mg (max 1.8 mg OD)			

Travel

Mrs. Garcia is travelling from Toronto to Rome to visit family. She will be there one month. She takes NPH 36 units at bedtime and Jentadueto 2.5/1000 (linagliptin/metformin) in the morning. Her flight leaves at 8 pm and he arrives in Rome at 9:30 am. How would you advise her to adjust her insulin?

a) No change
b) Decrease NPH by 1/3
c) Increase NPH by 1/3
d) Skip her bedtime insulin as she is on the plane.

(She will lose 8 hours or 1/3 of the day)

Travel

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Travelling through Time Zones

West
Longer day

East
shorter day

Increase basal insulin

Decrease basal insulin

A difference of 3 hours does not require an adjustment of insulin time.

Sweeteners

The acceptable daily intake of sucralose is:

a) 40 mg/kg body weight

b) 10% of carbohydrate

c) 60 gram/day

✓ d) 9 mg/kg body weight

Carbohydrate

How much carbohydrate would be in this meal: 250 ml strawberries, 125 ml milk, 3 arrowroot type cookies?

a) 52 grams

b) 60 grams

c) 45 grams

✔ d) 30 grams

Pregnancy

What is the dose of folic acid recommended for women with Type 1 & 2 diabetes in the first trimester of pregnancy?

✔ a) 1 mg

b) 3 mg

c) 5 mg

d) the usual amount in a prenatal vitamin

Fibre

What is the upper limit of fibre recommended for a person with diabetes?

a) There is no limit

b) 30 grams


c) 50 grams

d) 25 grams

Insulin Pumps

In what case would a temporary rate **not** be used?

a) Illness

b) Exercise

c) Menstrual cycle

✔ d) Hypoglycemia

Insulin Pumps

What insulin would be used in an insulin pump?

- ✔ a) Rapid
- b) Regular
- c) Basal

Insulin Pump

A 35 year old woman has had an insulin pump for the last 3 years. Recently her A1c has been elevated.

What is the most likely cause?

a) She is counting carbohydrate more accurately since purchasing a scale

✔ b) She changes her site every 5 days

c) She is exercising daily

d) She has less hypoglycemia

Hypoglycemia

Seema is presently on glimipride and metformin. Acarbose has been added as the A1c is still elevated.

What would be the most important information to tell her about this change in medication?

a) Acarbose does not cause hypoglycemia

b) Fruit juice is the best way to treat hypoglycemia

c) Hypoglycemia must be treated with glucose tablets or milk

d) Hypoglycemia is best treated with food e.g. crackers

e) If hypoglycemia occurs the metformin should be reduced.

A1c

What vitamin supplements could decrease A1c?

a) Vitamin D

b) Vitamin C & E

c) Vitamin A & E

d) Vitamin B12 & folic acid

Position Statement

Use of Glycated Hemoglobin (A1C) in the Diagnosis of Type 2 Diabetes Mellitus in Adults
Ronald M. Goldenberg1 MD FRCPC FACE, Alice Y.Y. Cheng2 MD FRCPC, Zubin Punthakee3 MD FRCPC, Maureen Clement4 MD CCFP
Canadian Journal of Diabetes 2011, Volume 35, Issue 3, Pag4e 247-9

Table 1. Factors that can affect A1C (adapted from 11)

Factor	*Increased A1C*	*Decreased A1C*	*Variable change in A1C*
Erythropoiesis	Iron deficiency B12 deficiency Decreased erythropoiesis	Use of erythropoietin, iron or B12 Reticulocytosis Chronic liver disease	
Altered hemoglobin			Fetal hemoglobin Hemoglobinopathies Methemoglobin Genetic determinants
Glycation	Alcoholism Chronic renal failure Decreased erythrocyte pH	Ingestion of aspirin, vitamin C or vitamin E Hemoglobinopathies Increased erythrocyte pH	
Erythrocyte destruction	**Increased erythrocyte lifespan:** Splenectomy	**Decreased erythrocyte lifespan:** Chronic renal failure Hemoglobinopathies Splenomegaly Rheumatoid arthritis Antiretrovirals Ribavirin Dapsone	
Assays	Hyperbilirubinemia Carbamylated hemoglobin Alcoholism Large doses of aspirin Chronic opiate use	Hypertriglyceridemia	Hemoglobinopathies

Type 2 in Children

Ravneet is 10 and is newly diagnosed with type 2 diabetes. What is the recommended amount of activity for a child this age?

a) 60 minutes of moderate activity and limit screen time to 2 hours

b) 30 minutes of light activity and limit screen time to 3 hours

c) 60 minutes of light activity and limit screen time to 3 hours

d) 30 minutes of vigorous activity and limit screen time to 2 hours

Eating Disorders

Diabulmia can be described as:

a) People with diabetes using binging and purging to control weight

b) People with diabetes underdosing or omitting insulin to control weight

c) People with diabetes with depression purposely omitting carbohydrate foods

d) A person with both diabetes, depression and bulimia

Fasting

Aziz is newly diagnosed with diabetes. He informs you that Ramadan starts in several weeks and according to his religion he needs to fast from sunrise to sunset. Your most appropriate response would be:

a) You cannot fast because you have diabetes

b) Go ahead and fast

✓ c) Discuss with Aziz what is involved in his fasting routine and ways to do this safely.

d) Tell him to discuss his new diagnosis with his religious leader.

Fasting

Aziz is taking 20 units of glargine at bedtime, 500 mg metformin twice daily, gliclazide 30 mg bid, Candesartan 16 mg and rosuvastatin 40 mg. What would you recommend to do with his medications during Ramadan?

a) No changes are require
b) Discontinue the glargine
c) Discontinue the metformin
✓ d) Discontinue or reduce the am dose of gliclazide

Surgery

Which statement is **not** correct?

a) Blood glucose targets for a critically ill patient would be 8.0-10.0 mmol/L

✓ b) Blood glucose target for a critically ill patient would be 5.0-8.0 mmol/L

c) Basal bolus insulin is the best choice to control blood glucose post-operatively

d) Hyperglycemia is associated with increased morbidity and mortality post-operativley

Driving Guidelines

According to the *Diabetes and Driving:2015 Canadian Diabetes Association Updated Recommendations for Private and Commercial Drivers Driving* Which answer is correct?

a) A commercial drivers should test their blood glucose before driving and every 4 hours

b) A commercial driver should have a medical review of their diabetes every 2 years

c) A driver should wait 45minutes after an episode of hypoglycemia before resuming driving

✓) All of the above

Motivational Interviewing

Which would best describe motivational interviewing?

a) Open ended questions, affirmation, reflective listening, summary of the interaction
b) Objectives, assessment, realistic expectations, SMART goals
c) Observation, appropriate eye contact, review of diagnosis, stages of change evaluation
d) Asses what the person knows, determine most pressing concern, determine preferred learning style

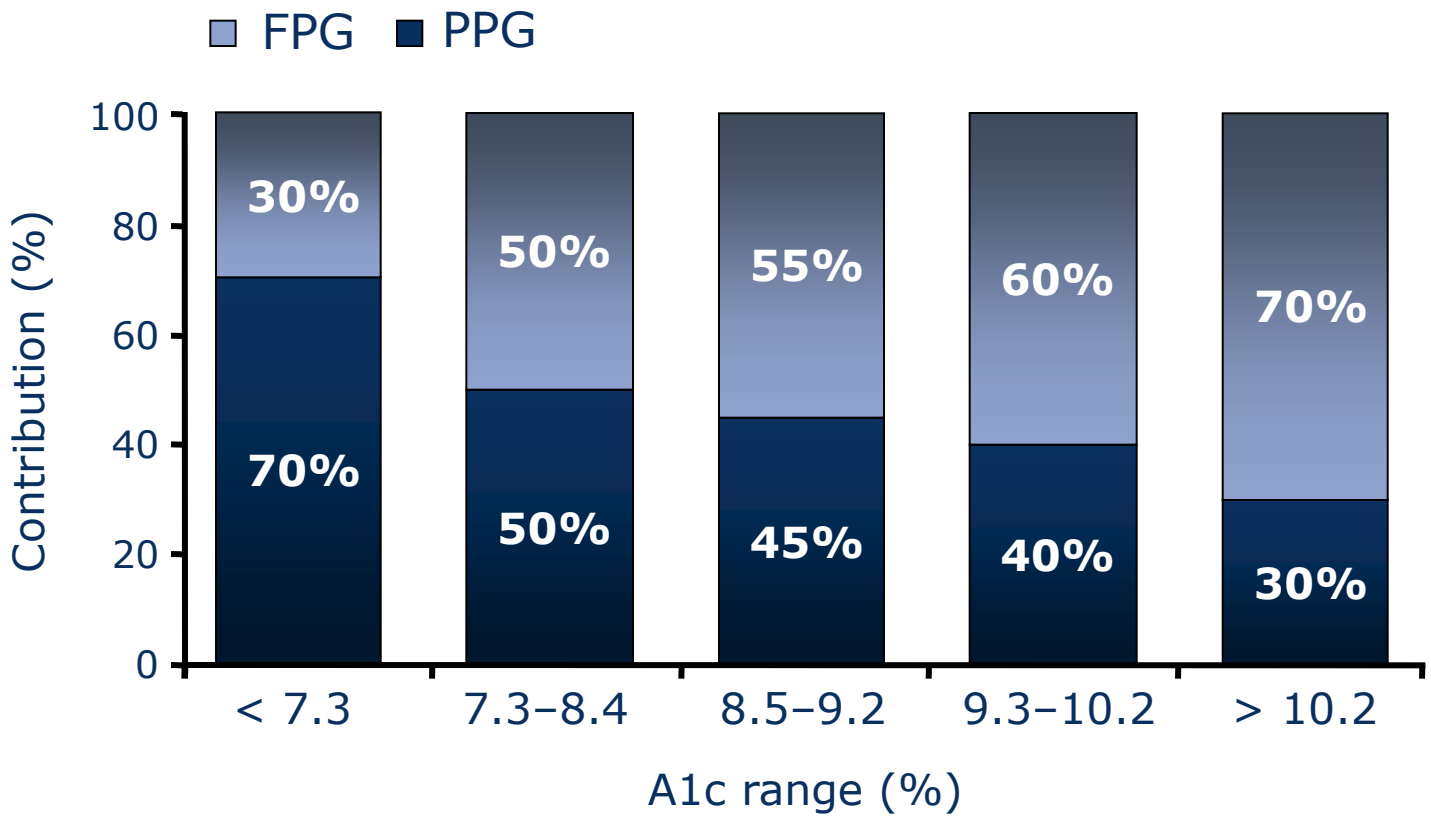
A1c reduction

Tom has had type 2 diabetes for 1 year. He is presently taking metformin 500 mg tid, empagliflozin 25 mg, vitamin D 1000 mg and candesartan 16 mg. His A1c is 8.7%.

The focus of improving his glycemic control should be

1. Reduce postprandial blood sugars
2. ✓ Reduce fasting blood sugar
3. Reducing his weight
4. Maintaining his weight

PPG contributes up to ~70% of glucose load



FPG = fasting plasma glucose; PPG = postprandial glucose

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Adapted from Monnier L, et al. *Diabetes Care* 2003;26:881

A1c reduction

Six months later Tom returns for follow-up. His A1c is now 7.1mmol/L. Tom is 54 and has no problems except his hypertension. He is on synjardy (empagliflozin + metformin), januvia 100 mg, vitamin D and candesartan.

What would a target A1c be for Tom?

1. 7.0
2. 7.0-8.0
3. ✓ ≤ 6.5
4. 6.5-7.5

Conversion of units

Kelly is travelling in the Caribbean and loses her blood glucose meter. The new meter she purchases give her very different numbers in mg/dl. What would 180 be in mmol/L.

✔ a)10 mmol/L

b) 8 mmol/L

c) 5 mmol/L

d)18 mmol/L

Insulin Adjustment

Insulin Adjustment

Adjust to

1.Get rid of hypoglycemia

2.Fix fasting first

3.Address high sugars

Paul

Paul is 45 and has Type 1 diabetes. He works in a physical job doing landscaping.

He takes Toronto 16, NPH 30 in the am; Toronto 10 at dinner; NPH 30 at HS

He doesn't have benefits.

He has started drinking juice at work to make it to lunch.

Paul

	FBS	pc	ac L	Pc L	ac D	Pc D	HS
Sun	7.1		4.2	10.9	7.9	7.6	
Mon	6.4	4.0	4.6	11.6	9.5	8.1	
Tues	6.3	5.1	6.1	11.8	9.3	10.6	
Wed	5.6	5.2	3.8	3.9	8.2	7.7	
Thur	5.3	5.5	4.0	8.2	9.2	7.5	
Fri	6.2	3.4	5.2	7.3	8.6	8.6	
Sat	7.4	4.3	4.7	7.9	6.9		

What would you change?

a) Decrease NPH in the morning

b) Decrease Toronto in the morning

c) Increase NPH in the Morning

d) Increase Toronto at dinner

e) Decrease NPH at bedtime

Toronto 16, NPH 30 in the am; Toronto 10 at dinner; NPH 30at HS

Paul

What would you change?

a) Decrease NPH in the morning

✔ b) Decrease Toronto in the morning

c) Increase NPH in the Morning

d) Increase Toronto at dinner

e) Decrease NPH at bedtime

Paul

Paul visits a diabetes educator. His BMI is 22 and A1c is 7.9%.

What recommendation might they give to the prescribing physician?

a) Paul should also be on metformin

b) No change is required

c) Paul could benefit from being on a long acting analogue insulin instead of NPH

d) He should be taking an ACE or ARB

Jeff

Age 61 and has limited finances

He lives in a boarding house and has cooking facilities

A1c 9.9 %

Metformin 1 gm bid, Glyburide 10 mg bid

His Dr. recommends he start NPH 20 units at bedtime, which he did reluctantly.

Jeff

20 units of NPH at bedtime

	FBS	pc	Ac L	Pc	Ac D	pc	HS
Sun	10.9		12.3				
Mon	9.2						13.6
Tues	8.7				17.4		11.8
Wed					17.6	22.0	
Thur	13.9			15.2			
Fri	10.1				15.6		

Based on the previous blood glucose readings what would the next step would be:

a) Increase the NPH at bedtime

b) Switch the NPH to morning as his evening sugars are higher

c) Add an additional dose of NPH in the morning

✓ **d) Switch to a long acting analogue**

Jeff

Based on Jeff's medications, how many times per day should he test his blood glucose according to the CPG ?

✔ a) Once per day

b) Before each meal

c) Twice daily

d) Fasting and altering 2 hr after various meals

Jeff

What would be the best time for Jeff to test his blood glucose?

a) Bedtime

b) Altering before each meal

✔ c) Fasting

d) 2 hr after various meals

Jeff

Suggested SMBG Patterns for People Using Insulin

Basal Insulin Only – NPH or long-acting insulin analog, typically given at bedtime. *SMBG at least as often as insulin is being given.* Optional, less frequent SMBG can be done at other times of day to ensure glycemic stability throughout the day.

	BREAKFAST		LUNCH		SUPPER		BEDTIME	NIGHT
	before	after	before	after	before	after		
Insulin							NPH/long (basal)	
SMBG pattern	**SMBG test**							
Adjustment	Basal insulin ↑ if BG high ↓ if BG low							

Jeff

Jeff gets a new job as a truck driver.

According to the driving guidelines for commercial drivers what would be the most important information to share with Jeff ?

a) He should test within 30 minutes of starting to drive

b) He should have simple sugar/snacks within reach while driving

c) He should test every 4 hours while on the road

✓) All of the above

Switching Insulin

Barry's job involves extensive travel. His A1c is above target at 7.6%. He sporadically misses injections due to the changed time zones, and not knowing when to take his insulin. What would you suggest?

a) Get another job

b) Switch to twice daily basal

✔ Use degludec with longer duration

d) Use regular insulin instead of rapid

Switching Insulin

What would you tell Barry about the use of degludec?

a) Its duration is 42 hours

b) You can take a missed dose up to 8 hours after you missed the injection

c) It is titrated every 4-5 days

d) It can be left 56 days at room temperature

✔ All of the above

Switching insulins

Florence is taking 100 units of glargine at bedtime. She doesn't like taking two injections and wonders if there is another insulin she could use.

How would you transfer her to toujeo?

- ✔ Unit for unit
- b) Decrease by 20%
- c) Increase by 20%
- d) Cut the dose in half as it is more concentrated

Insulin: Carbohydrate ratio

Craig has type 1 diabetes. He takes determir 5 units in am and 10 units at bedtime. He currently takes lispro 12/10/13 at meals. Calculate the insulin:carbohydrate ratio.

a) 1: 2

b) 1:1

c) 1:5

✔ 1:10

Insulin : Carbohydrate ratio

Favio has seen the diabetes educator and they have determined the insulin:carbohydrate ratio is 1:10.

He goes out for lunch and orders a single serving pizza (60 g carbohydrate). How much insulin would he give?

a) 10 units

✔ 6 units

c) 13 units

d) 5 units

Insulin : Carbohydrate ratios

Robyn is struggling with her blood sugar control. She decides to work on carbohydrate counting. For lunch she has 1 white pita bread, lettuce, cucumber, ground beef, cheese, 15 ml sour cream, 15 ml salsa, diet coke and 125 ml grapes. She took 8 units of insulin. Presuming her pre/post meal blood sugars were in target, what would her I:C ratio be for this meal.

a) 1:10
b) 1:8
c) 1:4
d) 1:1