

Meet Roy

Learning Outcomes

- Review and rationalise glucose lowering therapy to promote medication adherence
- Consideration of medical comorbidities which may affect agent of choice, including cognitive impairment
- Individualising glycaemic treatment targets depending on patient wishes, comorbidities and hypoglycaemia risk



VISIT ONE

Roy is a 74-year old male, diagnosed with type 2 diabetes ten years ago. He has been prescribed his current treatment for several years, however, his HbA_{1c} has remained well over target for the last three years. His past medical history includes gastroesophageal reflux, myocardial infarction and congestive cardiac failure and benign prostatic hypertrophy. He is a widower and lives alone. His meals tend to be erratic as he often sleeps late and misses breakfast. Roy states that he takes his medications as prescribed only on 1-2 days a week, however he is taking the insulin every day and finds the Innolet clock pen device simple to use. He confides that he worries about increasing the dose of insulin. A pill organiser and a multi-dose blister pack have been trialed without success. Roy feels overwhelmed by the number of medications he is prescribed and complains of reflux and abdominal pain due to his medications.

Current medications

Metformin 500mg twice daily
Gliclazide MR 60mg daily
Dapagliflozin 10mg daily
Mixtard® 30/70 (Insulin isophane human 70 units/mL + Insulin neutral human 30 units/mL injection), 20 units twice daily

Aspirin 100mg daily
Amlodipine 10mg daily
Atorvastatin 40mg daily
Carvedilol 6.25mg twice daily
Esomeprazole 20mg daily
Frusemide 40mg mane
Prazosin 0.5mg twice daily
Temazepam 10mg nocte
Valsartan 160mg daily

Allergies

Seafood

Examination

Blood pressure 185/90 mmHg (no medications taken)
Weight 87 kg, Height 175 cm, BMI 31 kg/m²
Chest clear, heart sounds normal, mild swelling of ankles, pedal pulses present

Investigations

HbA_{1c} 77 mmol/mol (9.2%)
Urine albumin/creatinine ration (ACR) 23.5 mg/mmol
eGFR 70 ml/min/m²
Total cholesterol 5.5 mmol/L, HDL 0.9 mmol/L, LDL 3.5 mmol/L, TG 3.2 mmol/L
Transthoracic echocardiogram: ejection fraction 45%, nil valvular abnormality

What are the management issues for this patient?

- Individualisation of glycaemic treatment targets according to patient wishes, comorbidities and hypoglycaemia risk
- Rationalisation of glucose lowering therapy to promote medication adherence
- Assessment of absolute cardiovascular risk

What is your management plan?

1. Patient's age and medical co-morbidities suggest that an HbA_{1c} target of 58-64 mmol/mol (7.5-8%) is appropriate.
2. Cease dapagliflozin, gliclazide, amlodipine (as not taking them).
3. Change metformin to the extended release formulation, which allows once daily dosing.

4. Given Roy's erratic eating habits, to minimize the risk of hypoglycemia, a basal plus regimen comprising basal insulin at bedtime and rapid acting insulin with his main meal is commenced.
5. Continue valsartan, frusemide, aspirin and carvedilol.
6. Arrange home visit and review by pharmacist for home review of all medications and insulin use.
7. Diabetes educator review of home blood glucose monitoring and insulin use.
8. Dietician review.
9. Arrange an Aged Care Assessment Team (ACAT) review to exclude depression or cognitive impairment
10. Consider additional support services – home help, meals on wheels.

VISIT TWO

Roy presents for review two weeks after changing to the basal plus insulin regimen. He states that he has not experienced any hypoglycemia since commencing the new insulins and is much happier that he does not need to wake up early to take it. He states he is better with taking his medications. His BGLs are slightly better (9.0-13.5 mmol/L).

Current medications

Metformin XR 1gm with dinner
Lantus 30 units at bedtime
Novorapid® (Insulin Aspart) 10 units with dinner

Aspirin 100mg daily
Atorvastatin 40mg daily
Carvedilol 6.25mg twice daily
Esomeprazole 20mg daily
Frusemide 40mg mane
Prazosin 0.5mg twice daily
Valsartan 160mg daily

Examination

Blood pressure 150/85 mmHg
Weight 87 kg, Height 175 cm, BMI 31 kg/m²

The Australian absolute cardiovascular risk calculator indicates Roy is at an increased risk of developing cardiovascular disease within the next five years. However, he is already taking the appropriate preventative medication

What are the management issues for this patient?

- Individualisation of glycaemic treatment targets depending on patient wishes, comorbidities and hypoglycaemia risk
- Selecting appropriate insulin therapy, matching insulin action profiles with the patients' needs

What is your management plan?

1. Titrate insulin and metformin doses.
2. Review medication adherence.
3. Review hypoglycaemia management.

VISIT THREE

Roy returns in three months for review. Following review by the home pharmacist, all excess and unused medications at Roy's house were safely disposed. Medications were further rationalised and weaned under the guidance of Roy's GP. Roy is now more comfortable with his prescribed medications and states the taking them on almost all days. He presents his BGL record to allow titration of insulin doses.

Current medications

Metformin XR 1gm with dinner
Lantus 36 units at bedtime
Novorapid® (Insulin Aspart) 12 units with dinner

Aspirin 100mg daily
Atorvastatin 40mg daily
Carvedilol 6.25mg twice daily
Esomeprazole 20mg daily
Valsartan 160mg daily

Examination

Blood pressure 138/75 mmHg
Weight 78 kg, Height 175 cm, BMI 25 kg/m²

Investigations

HbA_{1c} 65 mmol/mol (8.1%)
eGFR 70 ml/min/1.73m²

What are the management issues for this patient?

- Safe use of medicines

What is your management plan?

1. Ongoing support and surveillance of medication use.
2. Monitor renal and liver function.
3. Monitor HbA_{1c} and blood pressure at three monthly intervals, foot examination, urine ACR and lipid profile annually, biannual eye review.
4. Cardiovascular risk will be reassessed every year.

Pharmacy Home Medication Review

A pharmacist conducts a home visit to comprehensively assess all aspects of a client's medication management. This includes assessing the patient's ability to manage their medications and medication aids. Education about medicines and health conditions is also provided. Recent inpatient admissions as well as outpatient appointments are reviewed to enable the pharmacist to explain medication changes, possible omissions and potential ways to optimise the patient's medication regimen.

Australian absolute cardiovascular disease risk calculator

Enter patient information below:

Sex Male Female

Age 74 years

Systolic blood pressure 165 mmHg

Smoking status Yes No

Total cholesterol 5.5 mmol/L

HDL cholesterol 1.0 mmol/L

Diabetes Yes No

ECG LVH Yes No Unknown

COMPARE RESET

You are at increased risk of developing getting cardiovascular disease in the next 5 years. A score is not provided because your risk factors show increased risk not needing numerical calculation of absolute risk. If you would like further information, please refer to the RVDPS absolute cardiovascular risk assessment guidelines or see your doctor.

Please note: the absolute risk calculator score is only a guide to your heart and stroke risk score. Print out this page and take it to your doctor for further information on your personal risk.

View guidelines and resources

Diabetes Australia
KIDNEY HEALTH AUSTRALIA
Heart Foundation
strokefoundation

An initiative of the National Vascular Disease Prevention Alliance

Metformin and Lactic acidosis

Metformin does not worsen renal function. However, in patients with renal impairment, metformin is associated with an increased risk of lactic acidosis particularly in situations where lactate production is also increased. The incidence of metformin-associated lactic acidosis is 0.03 per 1000 patient years, but mortality may be as high as 50%.

Consider withholding metformin in the following situations:

- Significant renal insufficiency, including both intrinsic renal disease and renal hypoperfusion
- Significant hepatic impairment
- During episodes of severe intercurrent illness
- Cardiovascular collapse (shock) from whatever cause, acute congestive heart failure, acute myocardial infarction and other conditions characterized by hypoxemia
- 48 hours subsequent to the procedures requiring iodinated contrast
- Any surgical procedure (except minor procedures not associated with restricted intake of food and fluids) and restarted when the patient's oral intake has resumed and providing that the serum creatinine level has not risen significantly

Additional resources

<http://www.nps.org.au/topics/ages-life-stages/for-individuals/older-people-and-medicines>