

## Meet Mary Ann

### Learning Outcomes

- Escalation of diabetes therapy from dual to triple oral agents
- Consideration of other medical comorbidities which may affect agent of choice
- Calculation of cardiovascular risk in patients with diabetes
- Consideration of pregnancy in patients with type 2 diabetes
- Individualising glycaemic treatment targets depending on patient wishes, comorbidities and hypoglycaemia risk



### VISIT ONE

Mary Ann is a 31-year old woman who is Aboriginal. She was diagnosed with polycystic ovary syndrome (PCOS) at the age of 18 and type 2 diabetes three years ago. Mary Ann recalls an eye examination at diabetes diagnosis but has not had any complication screening since. She has been on her current treatments for three years.

Mary Ann underwent surgery as a child to correct vesico-ureteral reflux. She has normal renal function and no hypertension. On ultrasound there is evidence of some renal scarring from previous episodes of pyelonephritis. She has no other medical problems.

Family history is significant for type 2 diabetes affecting her mother and father. Her father had a stroke at 47 years of age. Her mother had a heart attack at 47 years of age. Mary Ann has a sedentary job as a campaign manager at the mayor's office. She walks her dog every day for one hour. She lives with her husband and seven-year old son. She does not drink alcohol. She has smoked 10 cigarettes/day for the last 15 years.

#### Current medications

Metformin 1 g twice daily  
Gliclazide MR 120 mg daily

#### Allergies

Nil known drug allergies

#### Examination

Blood pressure 125/80 mmHg  
Weight 74 kg, Height 162 cm, BMI 28 kg/m<sup>2</sup>  
Ankle jerks present, monofilament sensation intact, pedal pulses present

#### Investigations

HbA<sub>1c</sub> 58.5 mmol/mol (7.5%)  
Urine albumin/creatinine ratio (ACR) <2.5 mg/mmol  
eGFR 80 ml/min/m<sup>2</sup>  
Urine MC/S no abnormality detected  
Total cholesterol 4.0mmol/L, LDL 1.9 mmol/L, HDL 1.0 mmol/L

### What are the management issues for this patient?

- Calculation of absolute cardiovascular risk given her strong family history of cardiovascular disease
  - > Demonstrate that smoking cessation will halve her absolute risk of cardiovascular disease in the next five years.
  - > Mary Ann's low absolute risk of cardiovascular events in the next five years suggest that antihypertensive, antiplatelet and lipid lowering therapies are not yet indicated, however this should be reconsidered if her absolute risk becomes moderate
- Due to her history of vesicoureteral reflux and associated renal tract scarring, she is at increased risk of genitourinary tract infection and therefore SGLT2 inhibitors may not be the best therapeutic option
- Diabetes is associated with increased rates of congenital

malformations, the rate of which increases with poor glycaemic control

- > Pre-pregnancy planning and use of contraception when not desiring pregnancy is essential

### What is your management plan?

1. Patient's age and lack of medical co-morbidities suggest that an HbA<sub>1c</sub> target of 48-53 mmol/mol (6.5-7%) would be appropriate.
2. Start a DPP-4 inhibitor.
3. Complete diabetes screen – retinal examination.
4. As Mary Ann is of childbearing age, advise her of the importance of pre-pregnancy planning and the use of contraception when not desiring pregnancy.
5. Advise to quit smoking and support efforts.

## VISIT TWO

Mary Ann presents the following year for review. Her blood glucose levels are well controlled with no episodes of hypoglycaemia. Her diet and lifestyle remain excellent and she is no longer smoking. She is considering another pregnancy in the next 12 months.

### What are the management issues for this patient?

- As limited data are available regarding the use of the newer glucose lowering agents such as DPP-4 inhibitors in pregnancy, it would be recommended to switch over to agents with more evidence for use prior to pregnancy
- Referral to a specialised multidisciplinary team comprising an obstetrician, endocrinologist, diabetes educator and dietician for pre-pregnancy counselling and ante-natal diabetes management
- Given the clear benefits of tight glycaemic control for reducing the risk of miscarriages, congenital malformations, perinatal mortality and other complications, women planning pregnancy should be advised to not attempt conception until glycaemic control is optimal
- Folic acid 5mg daily should be prescribed to reduce the risk of neural tube defects and other congenital malformations

### Cardiovascular risk calculation in Aboriginal and Torres Strait Islander adults

Absolute cardiovascular risk in Aboriginal and Torres Strait Islander adults aged 35–74 years, who are not known to have Cardiovascular disease or to be at clinically determined high risk, should be calculated using the Framingham Risk Equation. Although the Framingham Risk Equation might underestimate risk in this population, available evidence suggests that this approach will provide an estimate of minimum cardiovascular risk.

### Additional resources

<https://www.cvdriskchecksecure.com/framinghamriskscore.aspx>

<http://www.framinghamheartstudy.org/risk/gencardio.html>

D'Agostino RB, Vasan RS, Pencina MJ, Wolf PA, Cobain M, Massaro JM, Kannel WB. General cardiovascular risk profile for use in primary care the Framingham Heart Study. *Circulation*. 2008 Feb 12;117(6):743-53.

<https://www.diabetesaustralia.com.au/pregnancy>

<http://adips.org/>

[http://adips.org/downloads/adips\\_pregdm\\_guidelines.pdf](http://adips.org/downloads/adips_pregdm_guidelines.pdf)

Blumer I, Hadar E, Hadden DR, et al. Diabetes and pregnancy: an endocrine society clinical practice guideline. *J Clin Endocrinol Metab*. 2013; 98(11):4227-4249

[www.quitnow.gov.au/Support](http://www.quitnow.gov.au/Support)

### Current medications

Sitagliptin 100mg daily  
Metformin 1g twice daily  
Gliclazide MR 120mg daily  
Ethinyl estradiol and Levonorgestrel 20mg daily

### Investigations

HbA<sub>1c</sub> 48.6 mmol/mol (6.6%)

### What is your management plan?

1. Given that she is considering pregnancy, aim for tight glycaemic control, HbA<sub>1c</sub> target of 42 mmol/mol (6%) whilst avoiding hypoglycaemia.
2. Cease gliclazide and DPP-4 inhibitor.
3. Continue metformin.
4. Commence insulin therapy and titrate to target HbA<sub>1c</sub> of 6.0% while avoiding hypoglycaemia.
5. Commence high dose (5mg) folic acid prior to conception.
6. Screen for retinopathy now and during each trimester as retinopathy, if present, may progress at a much faster rate during pregnancy.
7. Screen for nephropathy as patients with pre-existing microalbuminuria are much more likely to develop pre-eclampsia.
8. Refer to a specialised diabetes in pregnancy service for pre-pregnancy counseling.

#### Framingham Risk Score<sup>1</sup>

Risk assessment tool for estimating a patient's 10-year risk of developing cardiovascular disease

Age:	31 Years
Gender:	<input checked="" type="radio"/> Female <input type="radio"/> Male
Total cholesterol:	4 mmol/L
HDL cholesterol:	1 mmol/L
Smoker:	<input checked="" type="radio"/> Yes <input type="radio"/> No
Diabetes:	<input checked="" type="radio"/> Yes <input type="radio"/> No
Systolic blood pressure:	125 mm Hg
Is the patient being treated for high blood pressure?	<input type="radio"/> Yes <input checked="" type="radio"/> No

This online assessment tool is intended as a clinical practice aid for use by experienced healthcare professionals. Results obtained from this tool should not be used alone as a guide for patient care.

Calculate risk

The risk assessment tool above uses information from the Framingham Heart Study as recommended by the 2009 CCS Canadian Cholesterol Guidelines to predict a person's chance of developing cardiovascular disease in the next 10 years, modified for family history (double the CVD risk percentage if any CVD present in a first degree relative before age 60). In men over 50 or women over 60 of intermediate risk whose LDL-C does not already suggest treatment, hsCRP can be used for risk stratification. Please enter your patient's information in the fields below.

#### Framingham Risk Score - RESULTS<sup>1,4</sup>

Your patient's Framingham Risk Score is **4.5%**

2009 CCS Canadian Cholesterol Guidelines Recommendation<sup>1</sup>

Risk Level	Initiate/consider treatment if any of the following:	Primary LDL-C targets
Low (FRS < 10%)	• LDL-C ≥ 5.0 mmol/L	≥ 50% reduction

Adapted from Genest et al. *Can J Cardiol*. 2009.<sup>1</sup>

Clinical judgment should be used regarding the timing of pharmacological therapy in low risk patients. Please consult guidelines for complete recommendations

Clinicians should exercise judgment when implementing lipid-lowering therapy; lifestyle modifications will have an important long-term impact on health and the long-term effects of pharmacotherapy must be weighed against potential side-effects.

Print results