

# T2DM CASE STUDY REDUCING CARDIOVASCULAR, RENAL AND METABOLIC RISK

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# DISCLOSURES

- ▶ Honorarium and conference sponsorship (Novo Nordisk)
- ▶ Honorarium (Astra Zeneca)

# BACKGROUND

- ▶ 54 year old male plumber
- ▶ New patient to practice
- ▶ T2DM diagnosis 5 years ago
- ▶ Non-smoker
- ▶ C/O thirst, fatigue, polyuria
- ▶ FHx father fatal M.I (56)  
?T2DM

# MEDICATIONS

- ▶ Metformin 3G (TDD)
- ▶ Gliclazide 160mg (TDD)
- ▶ Linagliptin 5mg (no change in A1c since starting)
- ▶ Amlodipine 10 mg
- ▶ Atorvastatin 20mg

# ISSUES

- ▶ Compliance
- ▶ Diarrhoea
- ▶ Did not like home blood glucose monitoring
- ▶ Believed weight increased after starting gliclazide
- ▶ Patient does not wish injectable drug

# RESULTS

- ▶ BMI 34 (110kg 180cm)
- ▶ A1c 103 (A1c 97 in 2020)
- ▶ BP 147/92, HR91, Orthostatic BP ↓
- ▶ eGFR 53
- ▶ ACR 40
- ▶ No retinopathy
- ▶ Non-HDL cholesterol 4.6 mmol/L
- ▶ QRISK 37% Heart age 83

# CV ISSUES IN T2DM

- ▶ Life expectancy reduction 8-10 years
- ▶ 64% of T2DM deaths due to CV disease
- ▶ 2-4 fold increase in Major Adverse Cardiovascular Event (MACE)
- ▶ Cardiovascular Autonomic Neuropathy (CAN)
  - ▶ 5-fold increase in mortality
  - ▶ Management – optimise glycaemic control, weight loss, exercise

# GOALS

- ▶ Improve diabetes control
- ▶ Reduce osmotic symptoms
- ▶ Reduce microvascular complications
- ▶ Reduce macrovascular risk
- ▶ Lifestyle changes (including weight loss)
- ▶ Increase life expectancy

Name:  
Name of Doctor/Nurse:

Date:

## Diabetes and high HbA1c

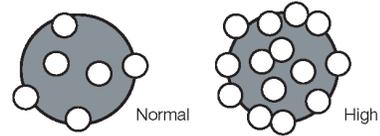
### Information Prescription

Your last two HbA1c results are .... / .... / ....  .... / .... / ....

Good glucose control is important to reduce your risk of devastating complications. Reducing HbA1c has been proven to have health benefits. Discuss and agree with your doctor or nurse a realistic personal target for HbA1c

#### What is HbA1c?

It tells you your average blood glucose for the last two to three months. We all need glucose for energy, but if you have diabetes your body loses its ability to use glucose. HbA1c measures how much glucose is stuck to your red blood cells. A finger-prick test shows you a snap-shot of your glucose at a moment in time, whereas HbA1c acts like a film recording how your glucose levels have changed.



#### When is high HbA1c a problem?

High levels of blood glucose over a long period of time can damage the blood vessels. This puts you at higher risk of going blind, losing a limb or experiencing kidney failure.

#### How can I lower my HbA1c?

It is important to understand that your HbA1c will change for many reasons including: how long you've had diabetes, sickness, depression, change in lifestyle or because of other medicine such as steroids. The actions you take to reduce your HbA1c will depend on whether you have Type 1 or Type 2 diabetes and your overall health. The next column has three main areas for you to consider.

- 1 Medication:** It may be time to increase your dose or introduce new medication – ask for advice.
- 2 Education:** Your healthcare team are there to provide support, but *you* manage *your* diabetes. Education can help you understand what affects your blood glucose. Ask what's on offer in your area.
- 3 Lifestyle:** Discuss what changes can lower HbA1c:

#### Keep to a healthy weight

- Reduce the size of your portions and cut down on fatty and sugary foods.

#### Eat a healthy balanced diet

- Eat less fatty food, processed meats, full-fat dairy, pastries and cakes.
- Carbohydrates change your blood glucose – you may need to eat less carbohydrate and choose wholegrains.
- If you drink, cut down on alcohol.
- Eat plenty of vegetables and fruit – aim for at least five portions a day.
- Aim for at least two portions of oily fish a week.

#### Get more active

- Aim for 30 minutes five times a week to raise your heartbeat. Activities like walking fast and cycling all count. Twice a week add activities like gardening or yoga to strengthen your muscles.

#### Stop smoking

- For help giving up ask for your local stop smoking service.

### Agreed action plan

**My personal goal is:**

**To be achieved when:**

**The two steps that I will take to achieve this are:**

(Discuss and agree with your doctor or nurse. Think about what, where, when and how?)

1

2

# DIABETES RX CHANGES

- ▶ ? Reduce metformin
- ▶ ? Stop gliclazide
- ▶ ? Stop Linagliptin

# RATIONALE FOR REDUCING DOSE OF METFORMIN

- ▶ Reduce / stop diarrhoea
- ▶ Improve compliance

# RATIONALE FOR STOPPING GLICLAZIDE

- ▶ Patient not taking medication
- ▶ Patient not wishing home blood glucose monitoring
- ▶ Avoid weight gain
- ▶ Avoid potential hypos
- ▶ Does not reduce MACE

# RATIONALE FOR STOPPING LINAGLIPTIN

- ▶ No improvement in A1c since starting linagliptin
- ▶ Does not reduce MACE

# POTENTIAL ALTERNATIVE DIABETES MEDICATIONS

- SGLT2i (caution as A1c >86 risk of DKA)
- GLP-1 receptor agonist  
Injectable
- Oral GLP-1 receptor agonist (semaglutide)

# SGLT2 INHIBITOR DAPAGLIFLOZIN

- ▶ Can initiate down to eGFR 45 for glycaemic control
- ▶ In heart failure can use when eGFR > 15.
- ▶ Sick day rules if unwell or infection STOP.
- ▶ Side effects include DKA, Fournier's gangrene and lower limb amputation.
- ▶ All SGLT2i were associated with reduced risk of MACE, weight loss, improved glycaemic control and CKD outcomes.
- ▶ In heart failure RRR 26% NNT 21 and all cause mortality reduction 31%
- ▶ CKD RRR 36% in T2 and 50% in non T2 and NNT 19

# GLP-1 RECEPTOR AGONISTS

- ▶ Incretin type Medication
- ▶ Injectables (liraglutide, semaglutide, dulaglutide) reduce MACE, weight loss and improved glycaemic control
  - ▶ Average reduction in MACE 14% (S/C Semaglutide 26%) (SUSTAIN6)
  - ▶ Exenatide NOT associated with MACE reduction
- ▶ Oral Semaglutide shown to be cardiovascular safe (PINOEER 6)
  - ▶ MACE data in progress

# PATIENT OUTCOMES SINCE STARTING ORAL SEMAGLUTIDE

- ▶ A1c 3/12 fallen to 76 (from 103)
- ▶ Weight loss 5.5 kg
- ▶ More motivated to improve control and exercise
- ▶ Osmotic symptoms stopped
- ▶ Mood improved

# CARDIOVASCULAR RISK REDUCTION

- ▶ BP target <130/80 use ARB (losartan)
- ▶ Increase atorvastatin ?40mg ?80mg
- ▶ Oral GLP1-RA may be cardioprotective
- ▶ Injectable GLP1-RA average MACE reduction 14%
- ▶ Add in SGT2i ( when A1c<86)
- ▶ ? Aspirin

# RENAL PROTECTION

- ▶ Optimise glycaemic control
- ▶ Add in Losartan
- ▶ Add in SGLT2i (Dapagliflozin 10mg)
- ▶ If renal function falls can use finerenone

# OUTCOMES FOLLOWING RENAL PROTECTIVE MEASURES

- ▶ A1c 62
- ▶ BP 122/84
- ▶ Weight loss at 5mths 9kg

QUESTIONS

