

# Medications for the management of Type 2 Diabetes

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## Before we start, a reminder.....


Type 2 Diabetes occurs when your body doesn't produce enough of the hormone called insulin or if the insulin you are producing doesn't work properly.


This leads to high blood glucose (sugar) levels which if left uncontrolled can lead to future complications.


There are 4 cornerstones of management for Type 2 diabetes:

 Knowledge

 Food


 Activity

 Medication

Each element is equally important, but for the purpose of this session we shall focus on  **MEDICATION**




# Metformin


 Introduced in the late 1950's.


Reduction of glucose output from the Liver

Helps to overcome insulin resistance

Weight neutral & Low hypo risk

 Increase dose slowly to minimise any gastrointestinal (GI) side effects.  
Consider modified release GI side effects persist.

 Maximum daily dose is 2g

 Best taken with meals.

## DPP-4 inhibitors (Gliptins)

↓ Reduces the action of the DPP4 enzyme that breaks down naturally occurring GLP-1 Incretin gut hormone.

↑ This can help to stimulate insulin production.

💊 Dose adjustments are needed based on renal function


Name	Trade Name	Cautions
<b>Sitagliptin</b>	Januvia	Reduce dose to 50mg OD if EGFR 30-50 ml/min Reduce dose to 25mg OD if EGFR <30ml/min
<b>Saxagliptin</b>	Onglyza	Reduce dose to 2.5mg if EGFR < 50ml/min
<b>Linagliptin</b>	Trajenta	No dose adjustment required
<b>Alogliptin</b>	Vipidia	Reduce dose to 12.5mg if EGFR 30-50 ml/min Reduce dose to 6.25mg if EGFR < 30 ml/min



## Thiazolidinedione (Glitazone)

### Pioglitazone

Helps the body to use its own insulin more effectively therefore lowering blood glucose levels

 Doses 15mg up to max 45mg daily  
Can be taken once a day, with or without food

**✗** To be avoided in certain groups of patients - heart failure, macular oedema, osteoporosis, previous bladder cancer or being investigated of blood in your urine.

**⚠** Caution with insulin therapy and in over 75 age group.





## Sulphonylureas


**Gliclazide, Gliclazide Modified Release  
Glimperide, Glipizide,**

Stimulates pancreatic beta cells to produce more insulin.  
Effectiveness is based on what residual beta cell function is present.

Can cause hypoglycaemia so blood glucose monitoring is advised.

 Safe driving advice should also be given.


 Should be taken with food


 Use with caution in declining renal function & elderly/frail patients





## Prandial Glucose Regulators


### Repaglinide, Nateglinide

 Stimulate pancreatic beta cells to produce insulin

 Rapid onset and short duration of action

 To be taken within 30 mins before meals

 Blood glucose monitoring recommended

 Hypoglycaemia education needed

## SGLT2 Inhibitors

↓ Reduces the re-absorption of glucose in the kidneys, resulting in increased glucose excretion in the urine.

♥ Can have secondary benefit of weight loss, improved blood pressure & cardiovascular benefit.

⚠ Avoid in the frail elderly due to increased risk of dehydration.

✗ Should be stopped when unwell

Name	Trade Name	Cautions
<b>Dapagliflozin</b>	Forxiga	EGFR to be > 60 to initiate. If EGFR falls below 60 STOP
<b>Canagliflozin</b>	Invokana	EGFR to be > 60 to initiate. Can continue on lower dose if EGFR 45-60 ml/min If EGFR less than 45 ml/min STOP
<b>Empagliflozin</b>	Jardiance	EGFR to be > 60 to initiate. Can continue on lower dose if EGFR 45-60. If EGFR less than 45 ml/min STOP



## GLP1 injectable therapy

💡 GLP1's although injectable are not insulin.

⬆️ They work by increasing the amount of “incretin” hormone in the body.

⬆️ Increasing insulin production

⬇️ reducing the amount of glucose from the liver

🕒 they also slow down how quickly food is digested

🕒 slows gastric emptying which can reduce appetite.

Generic Name	Frequency	Trade Name
Exenatide	Twice daily	Byetta
Exenatide	Once weekly	Bydruon
Liraglutide	Once daily	Victoza
Lixizenatide	Once daily	Lixumia
Dulaglutide	Once weekly	Trulicity
Semaglutide	Once weekly	Ozempic

## Insulin

💡 With Type 2 Diabetes, over time the insulin producing cells work less well.

💡 You may find that the need for medication increases over time even despite ongoing lifestyle and dietary changes.

💡 Insulin is used in Type 2 diabetes, usually when a person is on 2 or 3 different diabetes tablets and the blood glucose levels are still uncontrolled.

💡 Some people need insulin early on in their diagnosis and others much later on, everyone is different.

💡 There may also be other times when insulin is used, such as in hospital during acute illness, during steroid therapy, chemotherapy or after an operation.



## How do we decide which medication?

### ✓ Individual patient assessment

Including but not limited to....

Age, Hba1c, BMI, duration of diabetes, family/social support, lifestyle and dietary changes, blood glucose monitoring, other medical conditions, employment.

### ✓ National and International guidance

NICE, ADA, EASD, evidence based studies.

### ✓ Prescribing

Local formulary, individual medication licences, specialist recommendations

### ✓ Informed choice

Giving full information about options for treatment so our patients can make an informed decision.

**Thank you for tuning in**



**Hopefully its been useful and you've either learnt something new or just consolidated your existing knowledge.**



**Bye for now.....**

