



Questions from last session?  
Anything to share?

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## Becoming a Certified Diabetes Educator (CDE)

- Deadline to apply to write is February 1<sup>st</sup>
- Healthcare professionals who can write include nurses, dietitians, pharmacists
- Need to complete 800 hours of practice in diabetes education within the 3-year period before writing the examination
- Okaki's CDE study group starts in January

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# Diabetes Medications

Diabetes Care Coaching




OKAKI



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## Before We Begin ...



- Our goal is to create a safe space where all participants are comfortable to learn, share, ask questions
  - Everyone brings knowledge and expertise
  - I am always learning too
  - We won't record discussions, but will share monthly education videos
- The coaching sessions will focus on practical pieces of working in diabetes. For details, it is always best to reference the Diabetes Canada Clinical Practice Guidelines ([guidelines.diabetes.ca](https://guidelines.diabetes.ca))

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## What We Plan to Cover Today



- Diabetes medications
    - Classes
    - How they work
    - Supporting management
- (insulin to come next time ...)

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## Medications



Remember diabetes is a life long and progressive disease

Diabetes impacts ALL PARTS of the body ... so treatment should too



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## Helpful References



- Complete Diabetes Medications Table
  - <https://diabeteseducatorsocalgary.ca/medications/complete-medication-table.html>
- Okaki Meds Cheat Sheet
- Meds Poster
  - [https://diabeteseducatorsocalgary.ca/uploads/Complete\\_Med\\_Table\\_/Diabetes\\_Medication\\_Poster\\_Dr\\_Mccabe\\_April\\_2021.pdf](https://diabeteseducatorsocalgary.ca/uploads/Complete_Med_Table_/Diabetes_Medication_Poster_Dr_Mccabe_April_2021.pdf)

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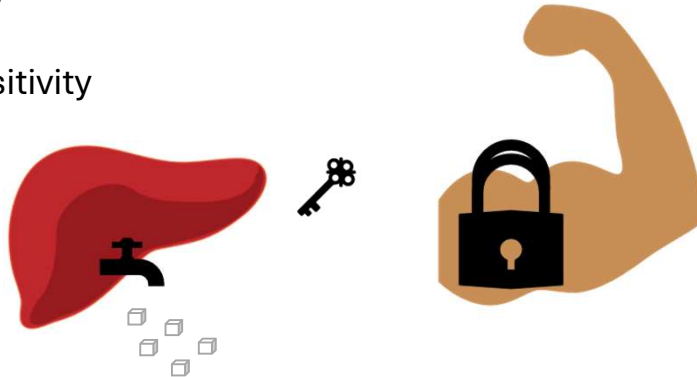
# Biguanide

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## Metformin / Glumetza (extended release)



- Makes liver less leaky
- Improves insulin sensitivity
- Targets fasting BG



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## Biguanides – Metformin, Glumetza



	Decreased glucose output from liver, increased insulin sensitivity
A1C	1% reduction
\$	Affordable
	Weight neutral
	Negligible risk of hypoglycemia
	>45 full dose, 30-45 500-1000 mg, <30 use alternative agent
+	Reduction in myocardial infarction in overweight individuals
-	<ul style="list-style-type: none"> <li>• GI side effects (important to take with food)</li> <li>• Vitamin B12 deficiency</li> <li>• Contraindicated in hepatic failure</li> </ul>

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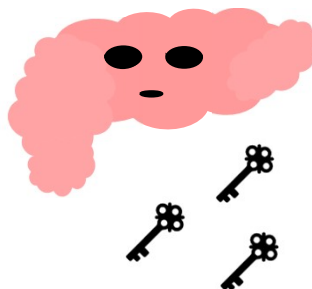
# Sulfonylureas

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Diamicron (Gliclazide)  Diabeta (Glyburide)  Gluconorm (Repaglinide) 



- Helps beta cells release more insulin



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## Sulfonylureas – Gliclazide, Glyburide, Glimepiride



	Stimulates endogenous insulin secretion, dosed bid (MR available)
A1C	0.7-1.3% reduction
\$	Affordable
	+ 1.5-2.5 kg
	Gliclazide - minimal/moderate, Glyburide/glimepiride – moderate
	> 60 full dose, 30-60 caution, <30 use alternative agent
+	Rapid BG lowering response
-	Gliclazide preferred over glyburide/glimepiride due to lower risk of hypoglycemia, CV events, and mortality

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## Meglitinides - Repaglinide



	Stimulates endogenous insulin release, dosed with meals
A1C	0.7-1.1% reduction
\$	\$\$
	+ 0.7-1.8 kg
	Moderate risk of hypoglycemia
	> 30 full dose but greater risk of hypoglycemia, < 30 caution
+	Dosing flexibility
-	Contraindicated when co-administered with clopidogrel or with gemfibrozil

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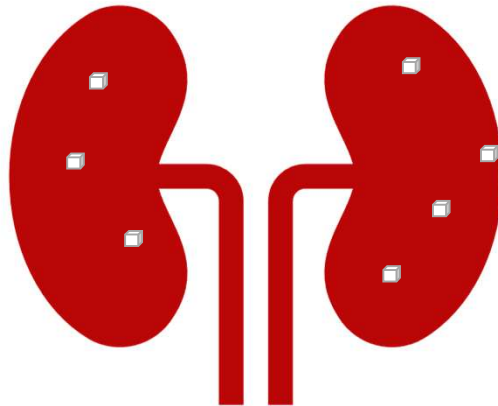
# SGLT-2 Inhibitors

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Jardiance  Forxiga  Invokana   
 (Empagliflozin Dapagliflozin Canagliflozin)



- Helps body get rid of extra sugar by peeing it out






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## SGLT-2 Inhibitors



	Inhibits SGLT-2 transport protein to prevent glucose reabsorption by the kidney (glucose excreted in urine)
A1C	0.4-0.7% reduction
	- 2-3 kg
	Negligible risk of hypoglycemia
+	Reduction in MACE and CV death, renal preservation, heart failure
-	Next slide

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## SGLT-2 Inhibitors



- Yeast infections or UTIs (more common in women)
- Hypotension
- Small increase in LDL-C
- Severe dehydration can be dangerous:
  - Rare cases of euglycemic diabetic ketoacidosis
  - Treatment should be withheld prior to major surgery or with serious illness or infections

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## SGLT-2 Inhibitors



When newly started on SGLT-2i:

- Review sick day management
- Check for low carbohydrate diets
- Emphasize importance of good hydration

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## SGLT-2 Inhibitors



Coverage:

- those who have been on Metformin and Gliclazide
- NIHB *“For the treatment of patients with type 2 diabetes mellitus who did not achieve glycemic control or who demonstrated intolerance to an adequate trial of metformin and a sulfonylurea.”*

Combinations:

- Synjardy
- Invokamet
- Xigduo

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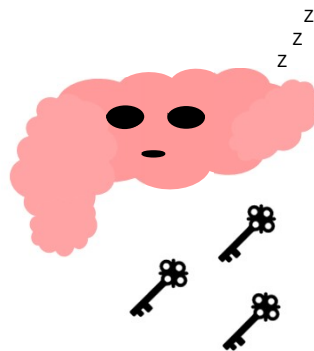
# DPP-4i Inhibitors

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Januvia  Onglyza  Trajenta   
 (Sitagliptin Saxagliptin Linagliptin)








- Helps body make more insulin when eat carbohydrates



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## DPP-4i – Linagliptin, Saxagliptin, Sitagliptin

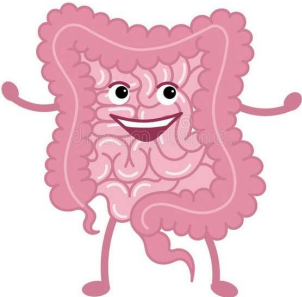


	Increases glucose dependent insulin release, inhibits glucagon release
A1C	0.5-0.7% reduction
\$	\$\$\$
	Weight neutral
	Negligible risk of hypoglycemia
	Lina > 15, Saxa adjust when 15-45, Sita adjust when 30-45, again 15-20
+	Typically well tolerated
-	<ul style="list-style-type: none"> <li>• Rare cases of pancreatitis</li> <li>• Rare cases of severe joint pain</li> <li>• Caution with saxagliptin in participants with heart failure</li> </ul>

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## Understanding DPP-4, GLP-1, and GIP





Incretins: GLP-1, GIP

↓

DPP-4 enzyme inactivates incretins

←

DPP-4 inhibitors (drugs) block DPP-4

Stimulate insulin release




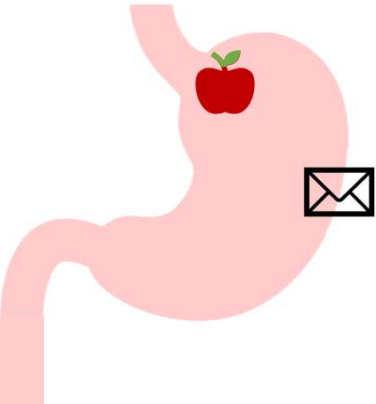
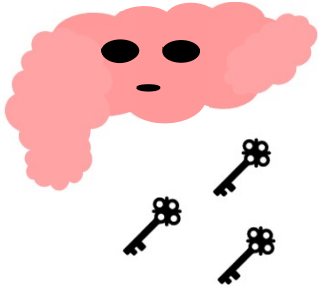
Inhibit glucagon release

Lowering of blood glucose

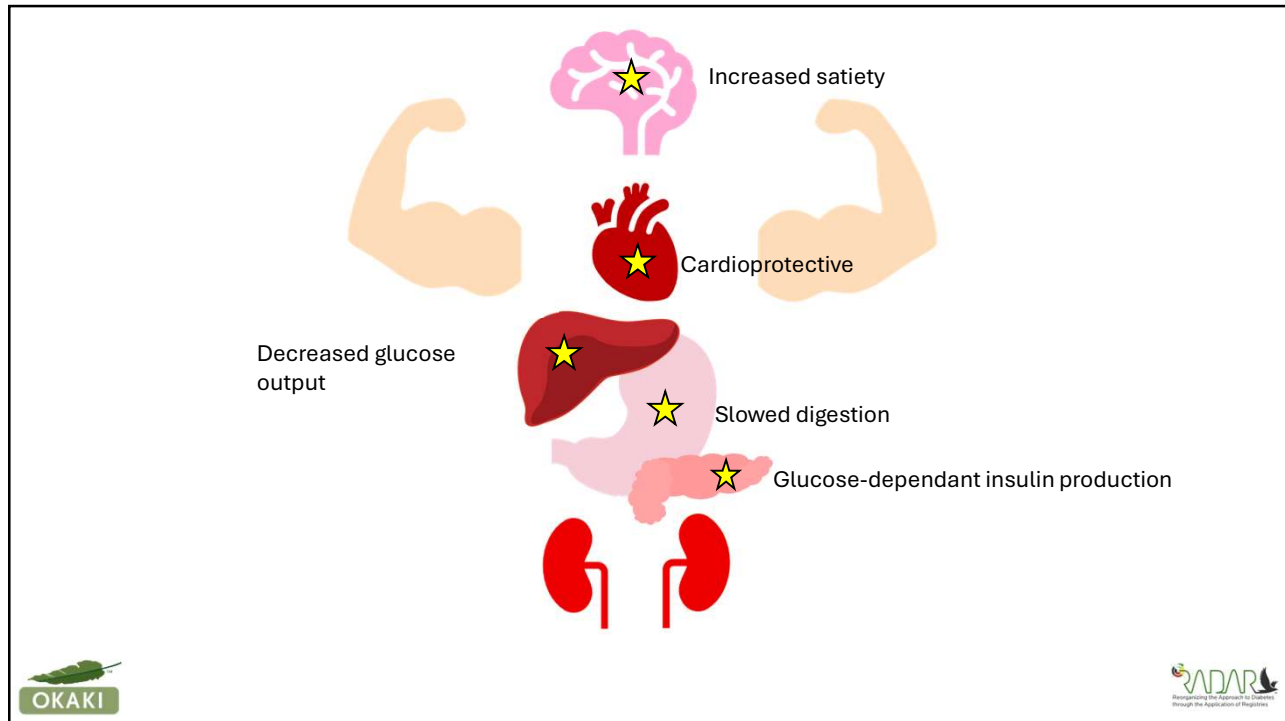
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# GLP-1 Receptor Agonists

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Ozempic (Semaglutide)	Victoza (Liraglutide)	Trulicity (Dulaglutide)	OKAKI Diabetes Virtual Care Clinic
			
<ul style="list-style-type: none"> <li>Helps body make more insulin when eating carbs, slows digestion</li> </ul>			
			

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## GLP-1 Receptor Agonists



Key points when starting:

- GI side effects and appetite
- Dosing and Injection technique
- Missed dose - take missed dose of Ozempic as soon as possible within 5 days after the missed dose
- Helpful website: <https://www.ozempic.com/how-to-take/ozempic-pen.html#ifu-video>

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## Rybelsus - Oral Semaglutide



- Works the same as subcutaneous semaglutide - increases glucose dependent insulin release, inhibits glucagon release, slows gastric emptying
- Both fasting and postprandial blood sugars targeted

### Key points when starting:

- Take 30 mins before eating or drinking with water
- GI side effects
- Dosing

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## GLP-1 Receptor Agonists



### Coverage:

- NIHB - Ozempic: *For the treatment of type 2 diabetes in combination with metformin alone, when diet and exercise plus maximal tolerated dose of metformin do not achieve adequate glycemic control.*
- Provincial – Ozempic: *As add-on therapy for the treatment of Type 2 diabetes in patients with intolerance to and/or inadequate glycemic control on:*
  - *a sufficient trial (i.e. a minimum of 6 months) of metformin, AND*
  - *a sulfonylurea, AND*
  - *for whom insulin is not an option.*




### Combinations

- Xultophy – Tresiba and Victoza
- Soliqua – Lantus and Adlyxin

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## GLP-1 Receptor Agonists



	Glucose-dependant insulin release, reduction in glucagon, slowed gastric emptying
A1C	1% reduction
	-1.6-3 kg
	Negligible risk of hypoglycemia
+	Primary CV prevention, secondary prevention of MACE
-	<ul style="list-style-type: none"> <li>• GI side effects common (nausea, constipation, diarrhea)</li> <li>• Contraindicated with personal/family history of medullary thyroid cancer or multiple endocrine neoplasia (MEN) syndrome type 2</li> <li>• Worsening of retinopathy (Sema)</li> <li>• Caution if history of pancreatitis</li> </ul>

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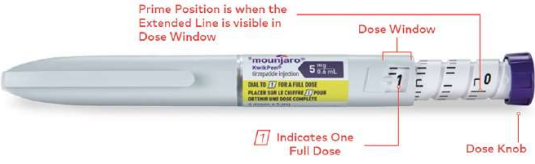


## GLP-1 and GIP Agonist

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## Tirzepatide (Mounjaro)




Prime Position is when the Extended Line is visible in Dose Window

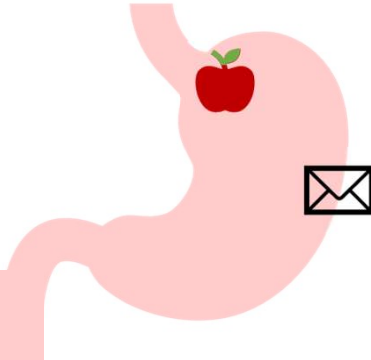
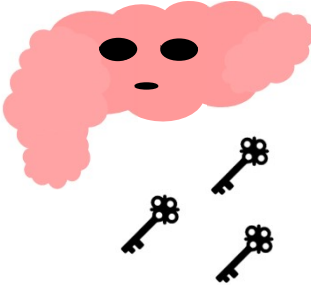
Dose Window

Indicates One Full Dose

Dose Knob

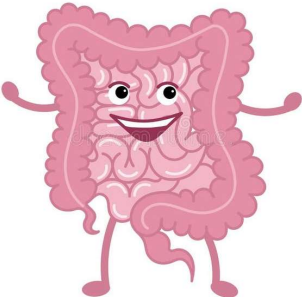
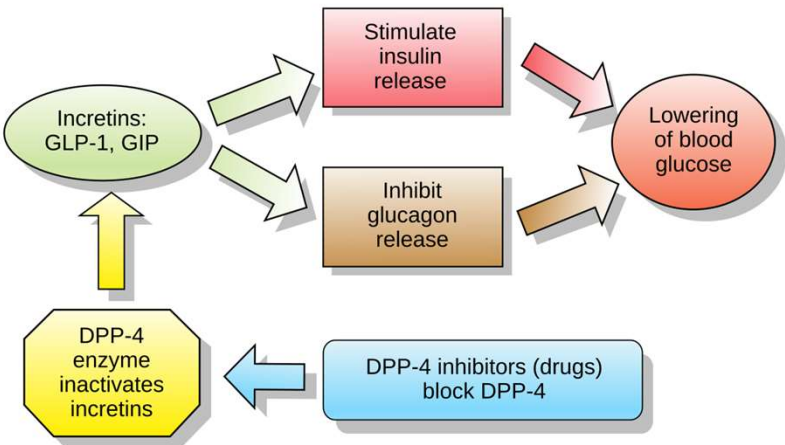



- Helps body make more insulin when eating carbs, slows down digestion, makes body more sensitive to insulin
- Targets GLP-1 and GIP

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## Understanding DPP-4, GLP-1, and GIP

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# Others

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## AlphaglucoSIDase Inhibitors



- Acarbose
- Prevents starch breakdown and glucose absorption
- Postprandial blood sugars targeted





Key points when starting:

- Hypoglycemia treatment

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## AlphaglucoSIDase Inhibitors



	Inhibits pancreatic $\alpha$ -amylase and intestinal $\alpha$ -glucosidase
A1C	0.7-0.8% reduction
\$	\$\$
	Weight neutral
	Negligible risk of hypoglycemia
	<30, use alternative agent
+	n/a
-	<ul style="list-style-type: none"> <li>• GI side effects common</li> <li>• Dosed tid</li> <li>• Must treat hypoglycemia with milk, glucose tabs, or honey</li> </ul>

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## Thiazolidinediones (TZDs)








- Enhances insulin sensitivity in peripheral tissues and liver
- Fasting blood sugars targeted
- Pioglitazone (Actos)




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# Thiazolidinediones – pioglitazone, rosiglitazone



	Enhances insulin sensitivity in peripheral tissues and liver by activation of peroxisome proliferator activated receptor-activated receptor-gamma receptors
A1C	0.8-0.9% reduction
\$	\$\$\$
	+ 2.5-5 kg
	Negligible risk of hypoglycemia
	<60 use with caution
+	Mild increase in HDL-C
-	<ul style="list-style-type: none"> <li>• May induce edema and/or congestive heart failure</li> <li>• Rare occurrence of macular edema</li> <li>• Higher occurrence of fractures</li> <li>• Pioglitazone not to be used with bladder cancer</li> <li>• Controversy regarding MI risk for rosiglitazone</li> </ul>

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# Medications in Practice

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## Medication Management



- Timing
- Consistency
- Managing/understanding side effects
- Teaching why/how the meds work

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## Sick Day Management

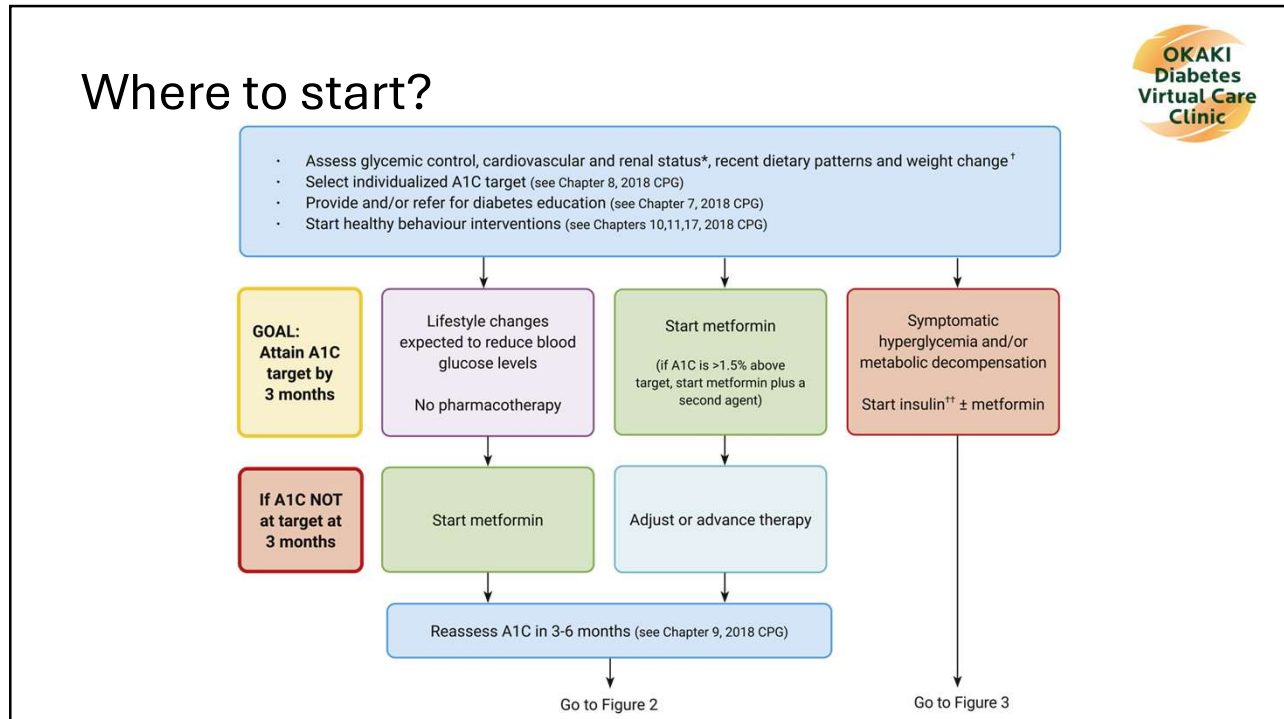


- S** • Sulfonylureas – diamicron, diabeta
- A** • ACE Inhibitors – ramipril, lisinopril, coversyl
- D** • Diuretics – lasix, hydrochlorothiazide
- M** • Metformin
- A** • ARBs - candesartan, losartan, telmisartan
- N** • NSAIDs – advil, motrin, aleve
- S** • SGLT-2 Inhibitors – jardiance, forxiga, onglyza

If unsure,  
call 811

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## New Diagnosis and A1c > 1.5% above target

If no signs of metabolic decompensation:

- Metformin first

**Why?**

- Efficacy
- Safety
- Cost
- Weight neutral
- Minimal hypoglycemia risk
- Possible heart benefits

If not within target in 3 months, dose adjustments or additional agents

**OKAKI Diabetes Virtual Care Clinic**

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## Next step: how to choose?

- Patient preference and goals
- A1C
- Glucose patterns
- Medical history
- Potential for pregnancy
- Weight
- Hypoglycemia risk
- Renal function
- Contraindications
- Lifestyle
- Coverage**

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Type 2 diabetes is a **progressive** disease, with **ongoing decline** in beta cell function.

It is normal to require additional agents to help manage glycemic control!

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## Wrapping Up...



- Do you have one or two takeaways that you can use in your work?
- Next Session: January 15<sup>th</sup> at 9:00 AM