

# Insulin Therapy

When GLP1 is not enough or not appropriate



**Reminder:**  
**Benefits of good glycaemic control**

**Microvascular benefits**  
**Macrovascular benefits**  
**Legacy effects**  
**Late benefits**

**Dr Chee Khoo**

## Was commenced on GLP1 agonist 2 years ago

<b>Before</b> HbA1c 8.3%	Self - monitored blood glucose (mmol/L)							Comments	
	Breakfast		Lunch		Dinner		Before Bed		Overnight
	Before	After	Before	After	Before	After			
Day 1	6.7	8.8	8.0	10.9	8.5	13.6	11.2		
Day 2	7.1	9.4	8.2	10.7	8.7	12.5	10.9		
Day 3	6.9	8.7	7.7	9.6	6.1	11.1	9.2		

<b>Now</b> HbA1c 7.6%	Self - monitored blood glucose (mmol/L)							Comments	
	Breakfast		Lunch		Dinner		Before Bed		Overnight
	Before	After	Before	After	Before	After			
Day 1	6.4	7.8	7.0	8.4	7.8	11.2	10.2		
Day 2	6.5	8.2	7.5	9.1	8.2	11.5	10.9		
Day 3	6.9	8.1	7.1	9.2	7.7	11.1	9.2		

# What if Jim ...

HbA1c 7.6%	Self - monitored blood glucose (mmol/L)								Comments
	Breakfast		Lunch		Dinner		Before Bed	Overnight	
	Before	After	Before	After	Before	After			
Day 1	6.7	8.8	8.0	10.9	8.5	10.6	9.2		
Day 2	8.1	9.8	8.7	10.4	9.3	11.5	10.4		
Day 3	7.9	9.3	8.4	9.9	8.1	10.5	9.2		

**What treatment options might be suitable for Jim?**

# What if Jim ...

HbA1c 9.3%	Self - monitored blood glucose (mmol/L)							Before Bed	Overnight	Comments
	Breakfast		Lunch		Dinner					
	Before	After	Before	After	Before	After				
Day 1	8.1	10.2	9.4	11.1	9.2	12.4	11.2			
Day 2	9.1	10.9	9.2	10.9	9.0	12.5	10.9			
Day 3	8.8	10.6	8.7	10.6	8.7	11.1	9.8			

**What treatment options might be suitable for Jim?**

# What if Jim ...

HbA1c 9.3%	Self - monitored blood glucose (mmol/L)							Comments	
	Breakfast		Lunch		Dinner		Before Bed		Overnight
	Before	After	Before	After	Before	After			
Day 1	8.4	8.9	8.2	10.4	9.5	11.6	10.2		
Day 2	<b>8.3</b>	<b>9.1</b>	<b>8.7</b>	<b>10.2</b>	<b>9.7</b>	<b>11.5</b>	<b>10.9</b>		
Day 3	7.9	8.7	7.9	9.6	9.1	11.1	9.8		

**What treatment options might be suitable for Jim?**

# What if Jim ...

HbA1c 8.3%	Self - monitored blood glucose (mmol/L)						Before Bed	Overnight	Comments
	Breakfast		Lunch		Dinner				
	Before	After	Before	After	Before	After			
Day 1	7.3	8.1	7.4	10.3	9.3	10.6	8.8		
Day 2	8.2	8.8	7.9	10.4	9.4	11.4	9.9	Type equation here.	
Day 3	8.4	10.1	8.8	11.2	10.1	10.9	9.4		

What treatment options might be suitable for Jim?

	Insulin Dose			
	Insulin Type	Dose in Units		
		Breakfast	Lunch	Dinner
Day 1				10 units
Day 2				10 units
Day 3				10 units

**What if Jim was lost to follow up for two years. He is on diamicron 60mg bd, Qtern 10mg/5mg, 2g metformin daily and now presents with...**

HbA1c 12.3%	Self - monitored blood glucose (mmol/L)							Comments	
	Breakfast		Lunch		Dinner		Before Bed		Overnight
	Before	After	Before	After	Before	After			
Day 1	19.2	24.0	16.4	20.7	17.3	22.3	17.3		
Day 2	18.2	21.5	17.2	19.1	16.3	22.5	10.1		
Day 3	18.7	20.8	17.4	18.3	17.0	20.5	19.9		

**What treatment options might be suitable for Jim?**

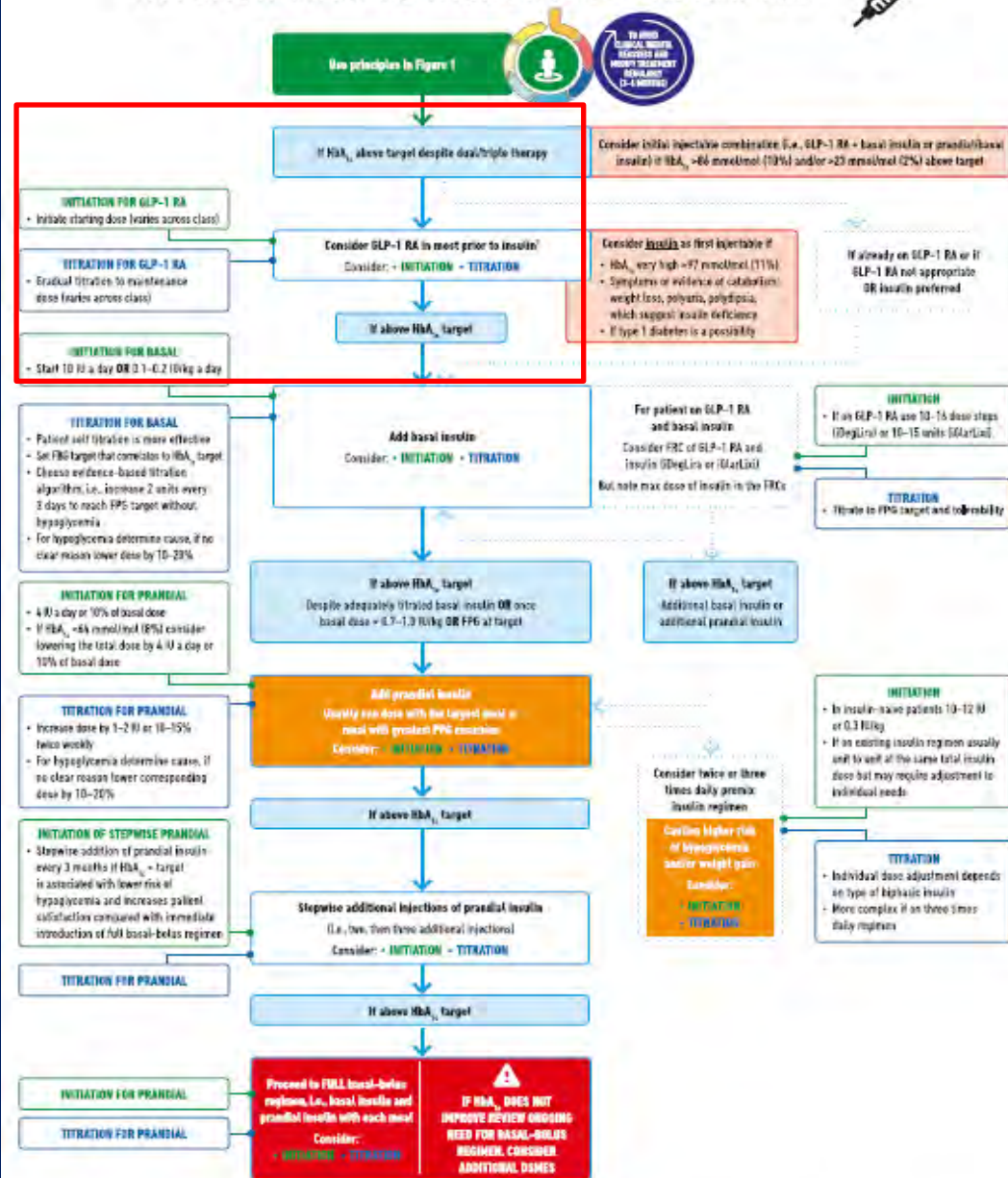


**What if Jim HbA1c 9 months ago was 8%. He is on diamicron 60mg bd, Qtern 10mg/5mg, 2g metformin daily and now presents with...**

HbA1c 12.3%	Self - monitored blood glucose (mmol/L)							Comments	
	Breakfast		Lunch		Dinner		Before Bed		Overnight
	Before	After	Before	After	Before	After			
Day 1	19.2	24.0	16.4	20.7	17.3	22.3	17.3		
Day 2	18.2	21.5	17.2	19.1	16.3	22.5	10.1		
Day 3	18.7	20.8	17.4	18.3	17.0	20.5	19.9		

**What treatment options might be suitable for Jim?**

# INTENSIFYING TO INJECTABLE THERAPIES



ADA/EASD Guidelines Oct 2018

1. Consider choice of GLP-1 RA considering: patient preference, HbA<sub>1c</sub> lowering, weight-lowering effect, or frequency of injection. If CVD, consider GLP-1 RA with proven CVD benefit.

Figure 7—Intensifying to injectable therapies. FPG, Fasting plasma glucose; GLP-1 RA, glucagon-like peptide 1 receptor agonist; FPG, fasting blood

If HbA1c above target despite dual/triple therapy

### INITIATION FOR GLP1-RA

Initiate starting dose (varies across class)

### TITRATION FOR GLP1-RA

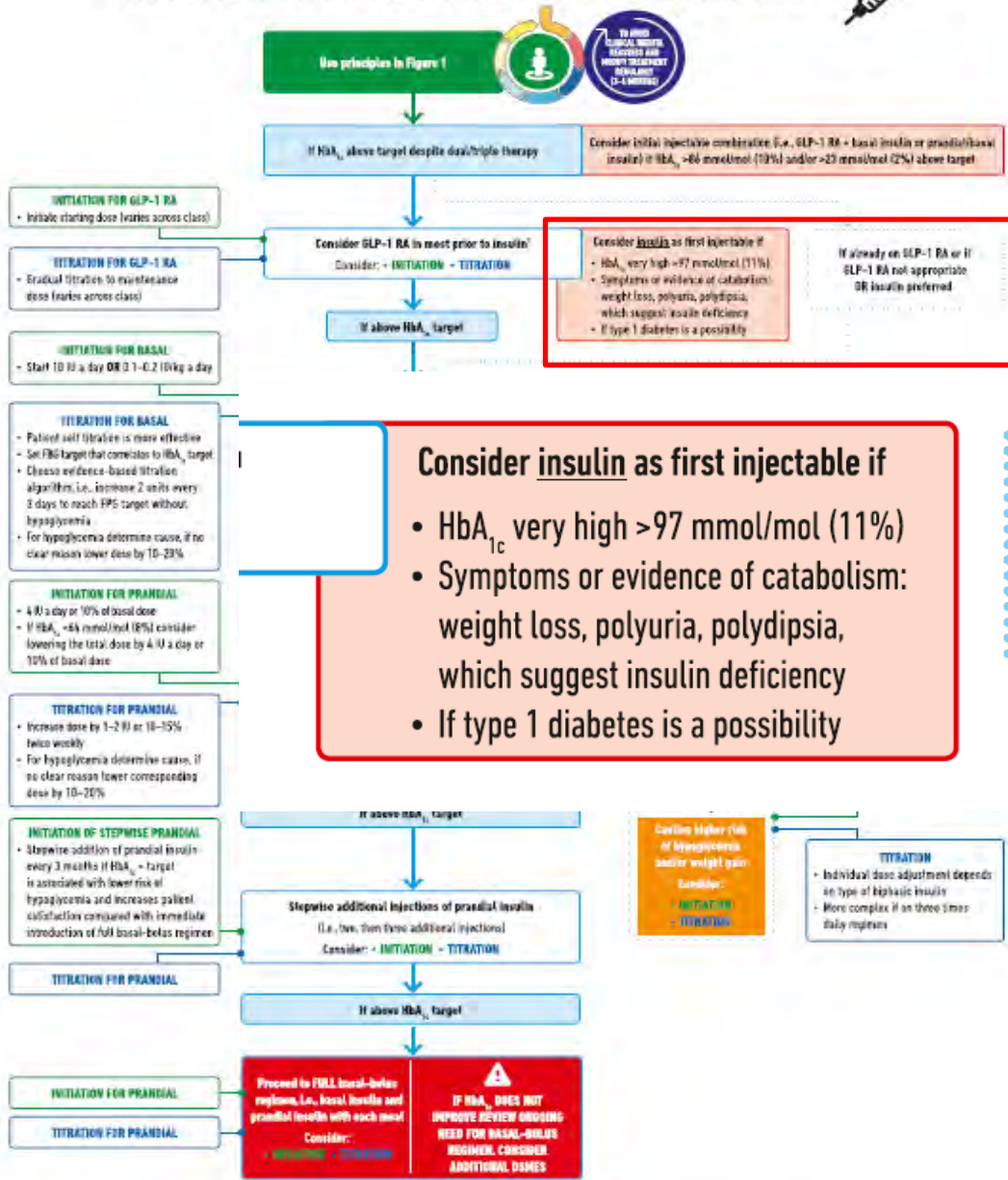
Gradual titration to maintenance dose (varies across the class)

Consider GLP1-RA in most prior to insulin  
Consider: \*INITIATION \* TITRATION

If HbA1c above target

Add insulin  
Consider: \*INITIATION \* TITRATION

# INTENSIFYING TO INJECTABLE THERAPIES



**If already on GLP-1 RA or if GLP-1 RA not appropriate OR insulin preferred**

Oct 2018

1. Consider choice of GLP-1 RA considering: patient preference, HbA<sub>1c</sub> lowering, weight lowering effect, or frequency of injection. If CVD, consider GLP-1 RA with proven CVD benefit.

Figure 7—Intensifying to injectable therapies. FPG, Fasting plasma glucose; GLP-1 RA, glucagon-like peptide 1 receptor agonist; FPG, fasting blood

# PBS Algorithm

Diet + Exercise + Metformin



Sulphonylureas (if appropriate)



Only one of the following

DPP4i

SGLT2i

GLP1-RA

TZD

INSULIN

ACARBOSE

Byetta®

\*Victoza®

\*\*Bydureon®

Insulin +  
Byetta Only