Pharmacological Management of Hyperglycaemia in People Living with Type 2 Diabetes and Chronic Kidney Disease

Medscape UK X Guidelines
Primary Care Hacks

Author: Dr Kevin Fernando, GP Partner, North Berwick Health Centre; Content Advisor, Medscape Global and UK. Email: kfernando@webmd.net

● No dose adjustment needed ● Dose adjustment or further action recommended ● Not recommended

	CKD stage (ml/min/1.73 m²)				
	Stages G1 and G2 eGFR ≥60	Stage G3a eGFR 45–59	Stage G3b eGFR 30–44	Stage G4 eGFR 15–30	Stage G5 eGFR <15
Metformin	3 g total maximum daily dose (in 2–3 daily doses)	2 g total maximum daily dose (in 2–3 daily doses)	1 g total maximum daily dose (in 2–3 daily doses)		
Sulfonylureas		Increased risk of hypoglycaemia if eGFR <60 ml/min/1.73 m². Consider reducing dose. Gliclazide and glipizide are preferred, as they are metabolised in the liver			
Repaglinide					
Acarbose					Avoid if CrCl <25 ml/min
Pioglitazone					Avoid in those on dialysis
Alogliptin			Reduce to 12.5 mg od if CrCl ≤50 ml/min	Reduce to 6.25 mg od if CrCl <30 ml/min or dialysis required	
Linagliptin					
Saxagliptin		Reduce to 2.5 mg od			Avoid in those on dialysis
Sitagliptin			Reduce to 50 mg od	Reduce to 25 mg od	
Vildagliptin			Reduce to 50 mg od if CrCl <50 ml/min		
Canagliflozin	Initiate 100 mg od and titrate to 300 mg od if additional glycaemic improvement required	Initiate or continue 100 mg od only[A]		Continue 100 mg od only.[A] Do not initiate	
Dapagliflozin	Recommended dose is 10 mg od[A]				Continue 10 mg od.[A] Do not initiate
Empagliflozin	Initiate 10 mg od and titrate to 25 mg od if additional glycaemic improvement required	Initiate or continue 10 mg od only[A]			If eGFR ≤20 ml/min/1.73 m², continue 10 mg od only.[A] Do not initiate
Ertugliflozin	Initiate 5 mg od and titrate to 15 mg od if additional glycaemic improvement required		Do not initiate[A]		
Dulaglutide qw					
Exenatide qw					
Liraglutide od					
Lixisenatide od					
Semaglutide sc qw					
Semaglutide oral od				Limited experience in patients with severe renal impairment (eGFR <30 ml/min/1.73 m²)	
Tirzepatide qw	No dose adjustment is required for patients with renal impairment including ESRD. Experience with the use of tirzepatide in patients with severe renal impairment and ESRD is limited				
Degludec + liraglutide (Xultophy®)		Intensify glucose monitoring and adjust dose on an individual basis			
Glargine + lixisenatide (Suliqua®)		Intensify glucose monitoring and adjust dose on an individual basis			
All insulins		Intensify glucose monitoring and adjust dose on an individual basis due to increased risk of hypoglycaemia			

[A] All SGLT2 inhibitors have negligible glucose-lowering effects once eGFR falls below 45 ml/min/1.73 m². Consider adding an additional glucose-lowering agent if further glycaemic improvement is required. Certain SGLT2 inhibitors have beneficial cardio–renal effects at all stages of renal impairment and should be continued—see the Medscape UK Primary Care Hack, *Extra-Glycaemic Indications of SGLT2 Inhibitors*

Table based on the author's clinical experience and interpretation of relevant summaries of product characteristics.

Useful Resources

- The Medscape UK Primary Care Hack *Identification and Holistic Management of Chronic Kidney Disease in Primary Care*
- The Medscape UK Primary Care Hack, *Extra-Glycaemic Indications of SGLT2 Inhibitors*
- ABCD and Renal Association *Clinical practice guidelines for management of hyperglycaemia in adults with diabetic kidney disease*
- *Diabetes Management in Chronic Kidney Disease: A Consensus Report by the American Diabetes Association and Kidney Disease: Improving Global Outcomes*
- *Management of Hyperglycemia in Type 2 Diabetes, 2022. A Consensus Report by the American Diabetes Association and the European Association for the Study of Diabetes*
- *UK Kidney Association Clinical Practice Guideline: Sodium–Glucose Cotransporter-2 Inhibition in Adults with Kidney Disease*.

Abbreviations
ABCD=Association of British Clinical Diabetologists; **bid**=twice daily; **CKD**=chronic kidney disease; **CrCl**=creatinine clearance; **eGFR**=estimated glomerular filtration rate; **ESRD**=end-stage renal disease; **od**=once daily; **qw**=once weekly; **sc**=subcutaneous; **SGLT2**=sodium–glucose co-transporter-2