

# Pharmacological Management of Hyperglycaemia in People With Type 2 Diabetes and Chronic Kidney Disease

Medscape Primary Care Hacks

Author: Dr Kevin Fernando, Portfolio GP, East Lothian; Content Advisor, Medscape. Email: kfernando@webmd.net

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

	CKD Stage (ml/min/1.73 m <sup>2</sup> )				
	G1 and G2 eGFR ≥60	G3a eGFR 45–59	G3b eGFR 30–44	G4 eGFR 15–29	G5 eGFR <15
<b>Metformin</b>	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)		
<b>Sulfonylureas (gliclazide, glipizide, glimepiride, tolbutamide)</b>	Increased risk of hypoglycaemia if eGFR <60 ml/min/1.73 m <sup>2</sup> . Consider reducing dose. Gliclazide and glipizide are preferred, as they are metabolised in the liver				
<b>Repaglinide</b>					
<b>Acarbose</b>				Avoid if CrCl <25 ml/min	
<b>Pioglitazone</b>	Avoid in those on dialysis				
<b>Alogliptin</b>			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	
<b>Linagliptin</b>					
<b>Saxagliptin</b>	Reduce to 2.5 mg od. Avoid in those on dialysis				
<b>Sitagliptin</b>			Reduce to 50 mg od	Reduce to 25 mg od	
<b>Vildagliptin</b>	Reduce to 50 mg od if CrCl <50 ml/min				
<b>Canagliflozin</b>	Initiate 100 mg od and titrate to 300 mg od if additional glycaemic improvement required	Initiate or continue 100 mg od only <sup>[A]</sup>		Continue 100 mg od only <sup>[A]</sup> Do not initiate	
<b>Dapagliflozin</b>	Recommended dose is 10 mg od <sup>[A]</sup>				Continue 10 mg od <sup>[A]</sup> Do not initiate
<b>Empagliflozin</b>	Initiate 10 mg od and titrate to 25 mg od if additional glycaemic improvement required	Initiate or continue 10 mg od only <sup>[A]</sup>			If eGFR <20 ml/min/1.73 m <sup>2</sup> , continue 10 mg od only <sup>[A]</sup> Do not initiate
<b>Ertugliflozin</b>	Initiate 5 mg od and titrate to 15 mg od if additional glycaemic improvement required	Do not initiate <sup>[A]</sup>			
<b>Dulaglutide qw</b>					
<b>Liraglutide od</b>					
<b>Semaglutide sc qw<sup>[B]</sup></b>	No dose adjustment is required for patients with mild, moderate, or severe renal impairment. Experience with the use of semaglutide is limited in patients with severe renal impairment				
<b>Semaglutide oral od</b>					
<b>Tirzepatide qw</b>	No dose adjustment is required for patients with renal impairment including ESRD. Experience with the use of tirzepatide is limited in patients with severe renal impairment and ESRD				
<b>Degludec + liraglutide (Xultophy®)</b>	Intensify glucose monitoring and adjust dose on an individual basis				
<b>All insulins</b>	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 m<sup>2</sup>. 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 [Primary Care Hack on the extra-glycaemic indications of SGLT2 inhibitors](#)

[B] Semaglutide is now indicated for the treatment of diabetic kidney disease. See also the [Primary Care Hack on CKD](#).

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

## Useful Resources

- The [Primary Care Hack on CKD](#)
- The [Primary Care Hack on the extra-glycaemic indications of SGLT2 inhibitors](#)
- The [ABCD/Renal Association guideline on hyperglycaemia in diabetic kidney disease](#)
- The [ADA/KDIGO consensus report on diabetes management in CKD](#)
- The [ADA/EASD consensus report on managing hyperglycaemia in type 2 diabetes](#)
- The [UKKA guideline on SGLT2 inhibition in CKD](#).

ABCD=Association of British Clinical Diabetologists; ADA=American Diabetes Association; bid=twice daily; CKD=chronic kidney disease; CrCl=creatinine clearance; EASD=European Association for the Study of Diabetes; eGFR=estimated glomerular filtration rate; ESRD=end-stage renal disease; KDIGO=Kidney Disease: Improving Global Outcomes; od=once daily; qw=once weekly; sc=subcutaneous; SGLT2=sodium-glucose co-transporter-2; UKKA=UK Kidney Association.