

Advice on the use of SGLT-2 inhibitors in Type 2 Diabetes, Heart failure and Chronic Kidney Disease

Introduction - This document is designed to collate information on the use of SGLT-2 inhibitors in Type 2 diabetes, heart failure and chronic kidney disease to support prescribing in primary care. It is based on the NICE guidance and Technology Appraisals for all of the specialities, and these should be used for first line reference when deciding to initiate medications.

Approved BNSSG Area Prescribing and Medicines Committee October 2024. Review October 2027

Drug		Canagliflozin	Dapagliflozin	Empagliflozin	Ertugliflozin
Licensed Indications	Type 2 Diabetes (T2DM)	✓ TLS Green	✓ TLS Green	✓ TLS Green	✓ TLS Green
	Heart failure (HF) with reduced and preserved or mildly reduced ejection fraction (with or without T2DM)	✗	✓ TLS Amber no SCP	✓ TLS Amber no SCP	✗
	Chronic Kidney Disease	✓ <u>Diabetic kidney disease (DKD)</u> TLS Green	✓ Chronic kidney disease (CKD) (with or without T2DM) TLS Green	✓ Chronic kidney disease (CKD) (with or without T2DM) TLS Green	✗
Dose		<ul style="list-style-type: none"> T2DM - 100mg OD, titration if needed to 300mg OD DKD - 100mg OD 	<ul style="list-style-type: none"> indications - 10mg OD with no titration 	<ul style="list-style-type: none"> T2DM - 10mg OD, titration if needed to 25mg OD HF & CKD - 10mg OD 	<ul style="list-style-type: none"> T2DM - 5mg OD, titration if needed to 15mg
Renal considerations <i>After initiation, renal function usually declines slightly, but resolves within 1-3 months. No specific renal monitoring required before 3 months. If eGFR drops <30ml/min/1.73m² or >25% from baseline during treatment, do not stop treatment without discussion with heart failure & renal specialist</i>		<p>Glycaemic control T2DM -</p> <ul style="list-style-type: none"> Only titrate to 300mg OD if eGFR ≥60ml/min/1.73 m². If eGFR <60ml/min/1.73 m² reduced glucose lowering effect so consider additional diabetes drugs Should not be initiated in patients with eGFR <30ml/min/1.73 m² If eGFR <30ml/min/1.73 m² can continue 100mg if ACR ≥30 until dialysis 	<p>No dose reduction is required in renal impairment but consider the following:</p> <p>All indications -</p> <ul style="list-style-type: none"> Do not initiate if eGFR <15ml/min/1.73 m². If eGFR drops < 15ml/min/1.73m² whilst on dapagliflozin, do not stop without discussion with heart failure or renal specialist (A&G route for NBT renal consultant opinion) <p>Glycaemic control T2DM -</p> <ul style="list-style-type: none"> if eGFR <45ml/min/1.73 m² reduced glucose lowering effect so consider additional glucose-lowering drugs if HbA1c is above agreed, individualised target 	<p>Glycaemic control T2DM -</p> <ul style="list-style-type: none"> Only titrate and continue 25mg if eGFR ≥ 60ml/min/1.73 m². If eGFR <60ml/min/1.73 m² reduced glucose lowering effect so consider additional diabetes drugs. If eGFR <45ml/min/1.73 m² reduced glucose lowering effect so consider additional glucose-lowering drugs if HbA1c is above agreed, individualised target <p>HF -</p> <ul style="list-style-type: none"> If eGFR < 20ml/min/1.73 m² stop after advice from specialist <p>All indications -</p> <ul style="list-style-type: none"> Do not initiate if eGFR <20ml/min/1.73 m². 	<ul style="list-style-type: none"> Do not initiate if eGFR <45ml/min/1.73 m² Only titrate to 15mg OD if eGFR ≥ 45ml/min/1.73 m² Stop if eGFR <30ml/min/1.73 m²
Hepatic considerations		<ul style="list-style-type: none"> No dose reduction is required in hepatic impairment Not recommended with severe hepatic impairment 	<ul style="list-style-type: none"> In patients with severe hepatic impairment a starting dose of 5mg is recommended. If well tolerated dose may be increased to 10mg 	<ul style="list-style-type: none"> No dose reduction is required in hepatic impairment Not recommended with severe hepatic impairment 	<ul style="list-style-type: none"> No dose reduction is required in hepatic impairment Not recommended with severe hepatic impairment

General considerations for SGLT2i in T2DM

- Before starting an SGLT2 inhibitor, check whether the person may be at increased risk of diabetic ketoacidosis (DKA), for example if:
 - they have had a previous episode of DKA
 - they are unwell with intercurrent illness
 - they are following a very low carbohydrate or ketogenic diet
- Clearly document the indication for use of SGLT2i in primary care notes and link the medications to the relevant problem heading(s)
- Ensure HbA1c has been checked for all patients with T2DM
- SGLT2i have reduced effect on glycaemia with lower eGFR. Use of SGLT2i for heart failure or diabetic kidney disease with eGFR <45 ml/min/1.73m² is not associated with a reduction of HbA1c or significant glucose lowering impact. Other diabetes medications should be considered in patients who are not at target
- SICK DAY RULES – Euglycaemic DKA is a very rare complication of SGLT2i. Stop treatment in acute intercurrent illness/volume depletion and peri-operative use (major surgical procedures only). Restart once patient eating & drinking normally. Routine ketone monitoring is NOT necessary. TREND leaflet on [Type 2 Diabetes and DKA](#)

SGLT2i in T1DM

- **SGLT2i are not licensed for use in T1DM for glucose control, heart failure or CKD.**

Rarely they may be used off-license for heart failure or CKD however this must ONLY be started by secondary care endocrinology consultants following referral from the relevant secondary care specialist teams.

Use of SGLT-2i's in Type 2 Diabetes

- Ensure diabetes therapy is optimised when SGLT2i initiated for heart failure or kidney disease in patients with T2DM.
- NICE guideline [NG28 Type 2 diabetes in adults: management](#)

Also see individual NICE Technology Appraisals:

Canagliflozin [NICE TA315](#)

Dapagliflozin [NICE TA288](#), [NICE TA418](#)

Empagliflozin [NICE TA336](#)

Ertugliflozin [NICE TA572](#), [NICE TA583](#)



Use of dapagliflozin and empagliflozin in Heart Failure

See [Use of dapagliflozin and empagliflozin \(SGLT2i\) in patients with heart failure](#) and [BNSSG Primary Care Heart Failure Guidance](#) guidelines

Also see individual NICE Technology Appraisals:

- Dapagliflozin [NICE TA679](#) Dapagliflozin for treating chronic heart failure with reduced ejection fraction and [NICE TA902](#) Dapagliflozin for treating chronic heart failure with preserved or mildly reduced ejection fraction
- Empagliflozin [NICE TA773](#) Empagliflozin for treating chronic heart failure with reduced ejection fraction and [NICE TA929](#) Empagliflozin for treating chronic heart failure with preserved or mildly reduced ejection fraction



Use of canagliflozin, dapagliflozin and empagliflozin in Chronic Kidney Disease

NICE recommends as an add on to standard care e.g. ACEi or ARB (titrated to the highest licensed dose that they can tolerate)

Canagliflozin

- Licensed for Diabetic kidney disease, dose 100mg OD - see [SPC](#)

Dapagliflozin

- Licensed for Diabetic kidney disease *and* Chronic kidney disease, dose 10mg OD - see NICE Technology Appraisal [NICE TA775](#)

Empagliflozin

- Licensed for Diabetic kidney disease *and* Chronic kidney disease, dose 10mg OD - see NICE Technology Appraisal [NICE TA942](#)

See also [CKD Management Outline](#)

