

Best practices for safe use of SGLT-2 inhibitors developed from an expert panel Delphi consensus process

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BACKGROUND

- Sodium-glucose co-transporter-2 inhibitors (SGLT-2i) are a class of anti-diabetic medications, including: Invokana® (canagliflozin), Farxiga® (dapagliflozin), Jardiance® (empagliflozin), and Steglatro® (ertugliflozin). *Steglatro® was not approved at the time of this study, thus was not considered when forming these statements.*
- Current guidance for monitoring and management of adverse events caused by SGLT-2 inhibitors is based on recommendations from professional diabetes organizations, manufacturer package inserts, and individual review articles
- Currently, there is no consensus guideline for management and monitoring of SGLT-2 inhibitors to reduce adverse events
- The Delphi technique utilizes group facilitation to gain consensus from a diverse group of identified area experts (panelists) through the use of iterative multi-stage structured questionnaires/rounds to reach a consensus regarding topics that are under addressed

STUDY AIM

Develop a consensus statement for best practices for monitoring SGLT-2 inhibitors in patients with type 2 diabetes

METHODS

Identify Panelists

Conduct search of literature and organizations for panelists

Round 1

Capture concepts related to management of adverse events

Round 2

Identify monitoring parameters and actions for monitoring

Round 3

Rate the importance of proposed statements

Round 4

Reach consensus on statements

RESULTS

A 15-member interprofessional (medicine, nursing, pharmacy) panel came to a consensus on 36 best practice statements specific to SGLT-2 inhibitors and 25 statements as general best practices for safe medication use. The SGLT-2 inhibitor specific statements are condensed in summary form below.

#	STATEMENT
HYPERKALEMIA	
1	Use caution when prescribing SGLT-2 inhibitors in patients high risk for hyperkalemia (i.e., ↓ eGFR, taking K+-sparing diuretic, aldosterone antagonist, and/or ACEi/ARB).
2	If increase in K+, consider dose evaluation of SGLT-2i, as well as appropriateness of other medications that may cause hyperkalemia, before decreasing the dose of the SGLT-2i.
ACUTE KIDNEY INJURY (AKI)	
3	A chemistry panel should be obtained prior to therapy initiation if at high risk for AKI.
4	Avoid initiation if eGFR <45 mL/min/1.73 m ² (or eGFR <60 mL/min/1.73 m ² for dapagliflozin).
5	If also on diuretic therapy, consider ↓ the dose of the diuretic, depending on current fluid status, BP, & concomitant conditions, to prevent hypotension and possible dehydration.
6	HOLD the SGLT-2i if AKI occurs.
DIABETIC KETOACIDOSIS (DKA)	
7	Prior to initiation of a SGLT-2i, the risk of DKA should be evaluated.
8	Patients should be counseled to drink plenty of fluids (and stay well hydrated).
9	Before prescribing a SGLT-2i, assess insulin dose.
10	STOP the SGLT-2i if a patient develops DKA.
URINARY TRACT INFECTIONS (UTIs)	
11	At baseline, obtain a history of urinary tract infections.
12	Weigh benefits vs. risks of initiating a SGLT-2i in a patient who has a h/o multiple UTIs.
13	Avoid prescribing a SGLT-2 inhibitor in a patient with an active UTI.
14	Avoid prescribing a SGLT-2 inhibitor in a patient with a history of recurrent UTIs.
15	Discontinue the SGLT-2 inhibitor if UTIs become problematic to the patient.
HYPOTENSION	
16	Patients should be educated about the mechanism & that this may ↓ their BP.
17	Patients should be educated to maintain daily fluid hydration while taking SGLT-2is.
18	Use cautiously in elderly d/t risk for renal impairment, orthostatic hypotension & dehydration.
19	SGLT-2is should be used cautiously in patients with impaired renal function.
20	SGLT-2is should be used cautiously in patients taking loop diuretics.
21	If the patient experiences hypotension while on SGLT-2i therapy and the patient is on an anti-hypertensive (HTN) agent, consider decreasing the dose of any of the anti-HTN agents.
22	If the patient experiences hypotension while on SGLT-2i therapy and the patient is NOT on an anti-HTN agent, consider dose reducing or stopping the SGLT-2i.

RESULTS CONTINUED

#	STATEMENT
DECREASED BONE MINERAL DENSITY AND INCREASED RISK OF FRACTURES	
23	When prescribing SGLT-2 inhibitors, consider fall risk.
24	When prescribing SGLT-2 inhibitors, consider risk or history of hypotension.
GENITAL INFECTIONS	
25	At baseline obtain a history of infections (i.e., yeast, genital).
26	Patients should be educated to maintain daily fluid hydration.
27	Patients should be educated about symptoms to monitor for.
28	Patients should be educated about the mechanism of SGLT-2is (they are peeing out more glucose), and that this can increase their risk for yeast infections.
29	Patients should be educated that genital infections are a potential side effect.
30	Use caution in patients who have a h/o frequent genital mycotic infections.
31	If the patient complains of itching or rash that is new in the genital area, consider prescribing an anti-fungal medication (oral or topical).
32	Discontinue the SGLT-2 inhibitor if genital infections become problematic.
OTHER ADVERSE EFFECTS	
33	Monitor for dizziness (unrelated to hypotension) when initially prescribing.
34	Patients should be educated that they will notice increased urination initially.
PRESCRIBING CONSIDERATIONS	
35	Avoid prescribing a SGLT-2 inhibitor in patients prone to dehydration.
36	An ideal patient would be one with any of the following characteristics: uncontrolled type 2 diabetes, BOTH fasting blood glucose & post-prandial blood glucose uncontrolled, NOT symptomatic, adequate beta-cell reserve OR on adequate exogenous insulin doses, w/o suspected LADA, elevated BP, wants to avoid injections, younger, preserved renal function, eGFR stable and within range, w/o a history of genital mycotic infections or recurrent UTIs.

Note: For the purpose of this poster, shortening of the statements and abbreviations were employed. Full statements will be published in the manuscript to follow.

CONCLUSIONS

A list of best practice statements was developed using the Delphi method, which can be utilized by clinicians to guide the safe use and monitoring of SGLT-2 inhibitors in patients with type 2 diabetes. These statements highlight practical guidance to clinicians for initial patient selection and safety monitoring of SGLT-2 inhibitors.

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