Peri-Procedure Management of Patients on Sodium-glucose cotransporter-2 (SGLT-2) Inhibitors

Note: Patients on SGLT-2 inhibitors have an increased risk of euglycemic (glucose < 250 mg/dL) and hyperglycemic diabetic ketoacidosis (DKA) during the peri-procedure period.

MANAGEMENT PRE-PROCEDURE

**PRESENTATION**

- Patient on SGLT-2 inhibitor and requiring surgical procedure or colonoscopy?

**ASSESSMENT**

- Was SGLT-2 inhibitor held?

**EVALUATION**

- Is the procedure urgent or emergent?

- Obtain basic metabolic panel (i-STAT or sent to lab) prior to procedure

- Does patient have bicarbonate < 18 mEq/L and anion-gap > 12?

- Proceed with procedure?

- Proceed with procedure?

- Reschedule procedure

- See Appendix A for SGLT-2 inhibitor hold recommendations

ACCC = Acute Cancer Care Center
DKA = diabetic ketoacidosis

1. There are insufficient data to make recommendations regarding the need to hold SGLT-2 inhibitors for procedures other than scheduled surgery or colonoscopy
2. See Appendix A for SGLT-2 inhibitor hold recommendations
3. If patient has an anion gap > 12 [anion gap = sodium – (chloride + bicarbonate)] without a metabolic acidosis (bicarbonate < 18 mEq/L) or a normal anion gap metabolic acidosis (bicarbonate < 18 mEq/L and anion gap ≤ 12), DKA is not likely and other etiologies should be evaluated based on patient risk factors
4. If anion-gap metabolic acidosis based on i-STAT results, send STAT basic metabolic panel to lab for confirmation
5. Refer to the Hand-Off Communication Policy (#CLN0513)

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ASSESSMENT

1. If patient has an anion gap > 12 \( \text{anion gap} = \text{sodium} - (\text{chloride} + \text{bicarbonate}) \) without a metabolic acidosis (bicarbonate < 18 mEq/L) or a normal anion gap metabolic acidosis (bicarbonate < 18 mEq/L and anion gap ≤ 12), DKA is not likely and other etiologies should be evaluated based on patient risk factors.

EVALUATION

1. If anion-gap metabolic acidosis based on i-STAT results, send STAT basic metabolic panel to lab for confirmation.

INTERVENTIONS/FOLLOW UP

- Consult Endocrinology-Diabetes
- Admit patient as indicated
- Planned admission post-procedure?
- Yes
- No
- Will patient resume carbohydrate containing diet on the day of procedure?
- Yes
- No
- Follow routine post-operative glucose management
- When patient resumes a carbohydrate containing diet and meets all other clinical criteria for discharge, patient can be discharged to home
- Instruct patient to resume SGLT-2 inhibitor the day after discharge
- For patients post partial pancreatectomy and/or Whipple procedures who are NOT able to resume a carbohydrate containing diet, see Page 3

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PRESENTATION

Post partial pancreatectomy and/or Whipple procedure and NOT able to resume a carbohydrate containing diet⁠¹

ASSESSMENT

Obtain C Peptide and glucose on post-operative day 2 or 3

Is glucose ≥ 150 mg/dL?

Yes

Is C Peptide ≥ 1 ng/mL?

Yes

When patient meets all other clinical criteria for discharge, patient can be discharged to home

Repeat C Peptide and glucose 1 to 2 weeks post discharge

No

Consult Endocrinology-Diabetes for recommendations on restarting SGLT-2

No

See Box A on this page

TREATMENT/FOLLOW-UP

Is C Peptide ≥ 1 ng/mL?

Yes

Consult Endocrinology-Diabetes for recommendations on restarting SGLT-2

No

Do not restart SGLT-2 inhibitors

Consult Endocrinology-Diabetes for recommendations on restarting SGLT-2

Is glucose ≥ 150 mg/dL?

Yes

Do not restart SGLT-2 inhibitors

Refer to treating primary care physician (PCP)/endocrinologist to re-evaluate use of SGLT-2 inhibitor

No

Restart SGLT-2 inhibitors if indicated

Is glucose ≥ 150 mg/dL?

Yes

No

Obtain post prandial C Peptide and glucose

Is glucose ≥ 150 mg/dL?

Yes

Consult Endocrinology-Diabetes for recommendations on restarting SGLT-2

No

See Box A on this page

¹Carbohydrate containing diet includes enteral nutrition and/or total parenteral nutrition delivered at a goal rate
APPENDIX A: SGLT-2 Inhibitors and Recommended Hold Times

Note: Holding SGLT-2 inhibitors prior to surgery increases the risk for hyperglycemia.

- During the period when SGLT-2 inhibitors are held, it is essential that patients monitor their blood glucose prior to breakfast (fasting) and at bedtime (2 times daily).
- Patients should be instructed to contact their procedural/surgical team and treating primary care physician (PCP)/endocrinologist IMMEDIATELY for any glucose value > 250 mg/dL.
- If a patient is either unable to reach the treating PCP/endocrinologist or the PCP/endocrinologist is uncomfortable with management, an URGENT Endocrinology-Diabetes referral should be placed. For urgent Endocrinology-Diabetes referrals, page the outpatient team through the on-call system.

<table>
<thead>
<tr>
<th>Require holding for 3 days (72 hours)</th>
<th>Require holding for 4 days (96 hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bexagliflozin (Brenzavvy™)</td>
<td>Ertugliflozin (Steglatro™)</td>
</tr>
<tr>
<td>Canagliflozin (Invokana®)</td>
<td>Ertugliflozin/metformin (Segluromet™)</td>
</tr>
<tr>
<td>Canagliflozin/metformin (Invokamet®)</td>
<td>Ertugliflozin/sitagliptin (Steglujan™)</td>
</tr>
<tr>
<td>Canagliflozin/metformin XR (Invokamet® XR)</td>
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</tr>
<tr>
<td>Dapagliflozin (Farxiga®)</td>
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</tr>
<tr>
<td>Dapagliflozin/metformin XR (Xigduo®)</td>
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<tr>
<td>Dapagliflozin/metformin XR (Xigduo® XR)</td>
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<tr>
<td>Dapagliflozin/saxagliptin (Qtern®)</td>
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<tr>
<td>Dapagliflozin/saxagliptin/metformin (Qternmet® XR)</td>
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<tr>
<td>Empagliflozin (Jardiance®)</td>
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<tr>
<td>Empagliflozin/metformin (Synjardy®)</td>
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<tr>
<td>Sotagliflozin (Inpefa™)</td>
<td></td>
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</tbody>
</table>

1 All SGLT-2 inhibitors are non-formulary
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SUGGESTED READINGS


Peri-Procedure Management of Patients on Sodium-glucose cotransporter-2 (SGLT-2) Inhibitors

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DEVELOPMENT CREDITS

This practice consensus statement is based on majority opinion of the Peri-Procedure Management of Patients on SGLT-2 workgroup at the University of Texas MD Anderson Cancer Center for the patient population. These experts included:

Core Development Team Leads

Jolyn Taylor, MD (Gynecologic Oncology and Reproductive Medicine)

Workgroup Members

Wendy Garcia, BS*
Semhar Ghebremichael, MD (Anesthesiology and Perioperative Medicine)
Sonya Khan, MD (Endocrine Neoplasia and HD)
Shannon Popovich, MD (Anesthesiology and Perioperative Medicine)
Sally Raty, MD (Anesthesiology and Perioperative Medicine)
Mona Sarkiss, MD, PhD (Anesthesiology and Perioperative Medicine)
Sonali Thosani, MD (Endocrine Neoplasia and HD)
January Tsai, MD (Anesthesiology and Perioperative Medicine)
Khanh Vu, MD (General Internal Medicine)
Mary Lou Warren, DNP, APRN, CNS-CC*

*Clinical Effectiveness Development Team