

NEWS



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American Society of Anesthesiologists Consensus-Based Guidance on Preoperative Management of Patients (Adults and Children) on Glucagon-Like Peptide-1 (GLP-1) Receptor Agonists

Update: In October 2024, ASA issued an Affirmation of Value for a more recent, multi-society guidance GLP-1 document. [Read more ...](#)

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Glucagon-like peptide-1 (GLP-1) receptor agonists are approved by the Food and Drug Administration for treatment of type 2 diabetes mellitus and cardiovascular risk reduction in this cohort ([see table](#)).¹ In addition, GLP-1 receptor agonists are also used for weight loss. Several entities have recommended to hold these drugs either the day before or day of the procedure.²⁻⁷ For patients on weekly dosing, it is recommended to hold the dose for a week.⁸

The GLP-1 agonists are associated with adverse gastrointestinal effects such as nausea, vomiting and delayed gastric emptying ([see table](#)). The effects on gastric emptying are reported to be reduced with long-term use.^{9,10} This is most likely through rapid tachyphylaxis at the level of vagal nerve activation.¹¹ Based on recent anecdotal reports, there are concerns that delayed gastric emptying from GLP-1 agonists can increase the risk of regurgitation and pulmonary aspiration of gastric contents during general anesthesia and deep sedation.¹²⁻¹⁴ The presence of adverse gastrointestinal symptoms (nausea, vomiting, dyspepsia, abdominal distension) in patients taking GLP-1 agonists are predictive of increased residual gastric contents.¹²

The use of GLP-1 agonists in pediatrics has primarily been reported for the management of type 2 diabetes mellitus and obesity. The published literature on GLP-1 agonists in pediatrics is predominantly from pediatric patients 10-18 years old; concerns are similar to those reported in adults. During the conduct of

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general anesthesia/deep sedation, children on GLP-1 agonists have similar gastrointestinal adverse events at a rate similar to adults.

The American Society of Anesthesiologists (ASA) Task Force on Preoperative Fasting reviewed the available literature on GLP-1 agonists and associated gastrointestinal adverse effects, including the consequences of delayed gastric emptying. The evidence to provide guidance for preoperative management of these drugs to prevent regurgitation and pulmonary aspiration of gastric contents is sparse limited only to several case reports. Nevertheless, given the concerns of GLP-1 agonists-induced delayed gastric emptying and associated high risk of regurgitation and aspiration of gastric contents, the task force suggests the following for elective procedures. For patients requiring urgent or emergent procedures, proceed and treat the patient as 'full stomach' and manage accordingly.

For patients scheduled for elective procedures consider the following:

Day(s) Prior to the Procedure:

- For patients on daily dosing consider holding GLP-1 agonists on the day of the procedure/surgery. For patients on weekly dosing consider holding GLP-1 agonists a week prior to the procedure/surgery.
- This suggestion is irrespective of the indication (type 2 diabetes mellitus or weight loss), dose, or the type of procedure/surgery.
- If GLP-1 agonists prescribed for diabetes management are held for longer than the dosing schedule, consider consulting an endocrinologist for bridging the antidiabetic therapy to avoid hyperglycemia.

Day of the Procedure:

- If gastrointestinal (GI) symptoms such as severe nausea/vomiting/retching, abdominal bloating, or abdominal pain are present, consider delaying elective procedure, and discuss the concerns of potential risk of regurgitation and pulmonary aspiration of gastric contents with the proceduralist/surgeon and the patient.
- If the patient has no GI symptoms, and the GLP-1 agonists have been held as advised, proceed as usual.
- If the patient has no GI symptoms, but the GLP-1 agonists were not held as advised, proceed with 'full stomach' precautions or consider evaluating gastric volume by ultrasound, if possible and if proficient with the technique. If the stomach is empty, proceed as usual. If the stomach is full or if gastric ultrasound inconclusive or not possible, consider delaying the procedure or treat the patient as 'full stomach' and manage accordingly. Discuss the concerns of potential risk of regurgitation and pulmonary aspiration of gastric contents with the proceduralist/surgeon and the patient.
- There is no evidence to suggest the optimal duration of fasting for patients on GLP-1 agonists. Therefore, until we have adequate evidence, we suggest following the current ASA fasting guidelines.^{15,16}

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Summary of Glucagon-like Peptide-1 Receptor Agonists for Adults*

Generic Drug	Brand Name	Indications/ Administration/ Frequency	Gastric Emptying/ Half-life (t _{1/2})	Mechanism of Action*	Add-on Therapy	Adverse Effects

Dulaglutide	Trulicity	T2D SQ Injection x1 weekly	Delayed by ~120 min, where the effect is largest after the first dose and diminishes with subsequent doses. 4.5-4.7 days ($t_{1/2}$)	<ul style="list-style-type: none"> • ↑ intracellular cyclic AMP in pancreatic β cells leading to glucose-dependent insulin release. • ↓ glucagon secretion and slows gastric emptying 	Optional as monotherapy, or as add-on to OADs +/- insulin	Mild to moderate: <ul style="list-style-type: none"> • Nausea, vomiting, diarrhea • Hypoglycemia • Acute pancreatitis (rare)
Exenatide (ER)	Bydureon BCise	T2D SQ Injection x1 weekly	2.4 h/Sustained release ($t_{1/2}$)	<p>Binding of the drug to pancreatic GLP-1 receptors mediates:</p> <ul style="list-style-type: none"> • ↑ glucose-dependent insulin secretion from pancreatic β cells • Suppresses glucagon secretion and delays gastric emptying • Reduces food intake 	None	<ul style="list-style-type: none"> • Nausea (less occurrence compared to twice daily dose) • Injection-site nodule
Exenatide (IR)	Byetta	T2D/Obesity SQ Injection x2 daily	100-120 min 2.4 h/Sustained release ($t_{1/2}$)	Same as ER version	None	<ul style="list-style-type: none"> • nausea • irritation at injection site
Liraglutide (3 mg)	Saxenda	Obesity (BMI ≥ 30 kg/m ² or ≥ 27 kg/m ² with obesity-related comorbidities) SQ Injection x1 daily	70 min (median) 13 h ($t_{1/2}$)	<ul style="list-style-type: none"> • Delays gastric emptying of solids <p>Effects to relevant phenotype and genotypic biomarkers of gastrointestinal functions (variants GLP1R and TCFL2 genes)</p>	None	<ul style="list-style-type: none"> • nausea • diarrhea • abdominal pain/discomfort • constipation
Liraglutide (1.2 mg 1.8 mg)	Victoza	T2D SQ Injection x1 daily	13 h ($t_{1/2}$)	<ul style="list-style-type: none"> • Induced weight loss • ↑ glucose-dependent insulin release • Improved insulin secretion/β-cell function <p>Reduced liver fat content</p>	+/- long-acting insulin	<ul style="list-style-type: none"> • hypoglycemia • GI-tract events • increased pulse rate
Lixisenatide	Adlyxin	T2D SQ Injection x1 daily	3 h ($t_{1/2}$)	<ul style="list-style-type: none"> • Weight loss • Delays gastric emptying • Delays intestinal glucose absorption • Reduces postprandial insulin secretion 	+/- long-acting insulin	<ul style="list-style-type: none"> • hypoglycemia • nausea (moderate) • vomiting • injection site reaction • headache • dizziness

				May indirectly suppress glucagon secretion		
Semaglutide	Ozempic, Wegovy, others	T2D/Obesity SQ Injection x1 weekly	60 minutes ~1 week ($t_{1/2}$)	<ul style="list-style-type: none"> • ↓ glucagon secretion Delays gastric emptying	+/- long-acting insulin	<ul style="list-style-type: none"> • nausea • diarrhea • constipation
Semaglutide	Rybelsus	T2D Oral x1 daily	60 minutes ~1 week ($t_{1/2}$)	<ul style="list-style-type: none"> • Delays gastric emptying • ↓ in HbA1c • Weight loss • ↓ systolic blood pressure 	+/- long-acting insulin	<ul style="list-style-type: none"> • nausea • diarrhea

* GLP-1 RAs share the same underlying mechanism of action, but they differ in terms of formulations, administration, injection devices and dosages.

Abbreviations: ER=extended release; IR=immediate release; OAD=oral antihyperglycemic drugs; SQ=subcutaneous; T2D=type 2 diabetes; BMI=body mass index.

Date of last update: November 1, 2024

Preprocedure Care of Patients on Glucagon-like Peptide-1 Receptor Agonists: A Multisociety Clinical Practice Guidance

To the Editor:

There is an exponential increase in the use of glucagon-like peptide-1 receptor agonists (GLP-1RAs) in recent years due to their numerous clinical benefits.¹⁻³ However, GLP-1RAs delay gastric emptying with recent reports of aspiration of gastric contents during sedation and general anesthesia despite traditional, preoperative fasting requirements.⁴ The optimal approach to mitigation of aspiration risk remains controversial because of sparse and inconsistent evidence. In 2023, the American Society of Anesthesiologists (Schaumburg, Illinois) published guidance for management of patients on GLP-1RAs with the primary aim of informing clinicians and patients of the heightened risk of aspiration and emphasizing shared decision-making.⁵ Subsequently, other professional societies have also published recommendations for perioperative or periprocedure management of patients on GLP-1RAs.^{6,7}

A multisociety consensus for the management of patients on GLP-1RAs was developed by representatives from the American Society of Anesthesiologists, the American Gastroenterological Association (Bethesda, Maryland), the American Society for Metabolic and Bariatric Surgery (Gainesville, Florida), the International Society of Perioperative Care of Patients with Obesity (Lynnwood, Washington), and the Society of American Gastrointestinal and Endoscopic Surgeons (Los Angeles, California).⁸ This practice guidance emphasizes that the approach to managing patients on GLP-1RAs should be based on shared decision-making of the patient, the prescribing care team, the proceduralist or surgeon, and the anesthesiologist.⁸ One of the first steps is preprocedure assessment of aspiration risk, performed with enough time in advance to identify patients at risk and allow for adjustments in periprocedural care if needed. Factors that may increase the risk of aspiration include the escalation phase of dosing, long-acting GLP-1RAs, higher doses, the presence of gastrointestinal

symptoms of delayed gastric emptying (e.g., nausea, vomiting, and abdominal discomfort), and medical conditions other than GLP-1 RA usage that might delay gastric emptying.⁸

The multisociety clinical practice guidance suggests that patients without risk factors may continue GLP-1RA therapy as usual in the perioperative period. Bridging therapy is not a viable option for most patients. For patients identified with an increased risk profile, use of a liquid diet for at least 24 h before the procedure to decrease the risk of retained gastric contents on the day of the procedure (as usually performed in patients undergoing colonoscopy and bariatric surgery) allows for the continuation of GLP-1RA therapy in the perioperative period.⁸ If an unacceptable safety profile exists to continue GLP-1RA, patients may be asked to withhold therapy; however, this should be balanced with the risk of inducing a metabolic disease state, like hyperglycemia, that may complicate postprocedure patient care. The duration of holding should follow the guidance of the American Society of Anesthesiologists consensus-based guidance (*i.e.*, holding the day of surgery for daily formulations and a week before surgery for weekly formulations).⁵

On the day of procedure, if GLP-1RAs are continued, patients should again be assessed for symptoms suggestive of delayed gastric emptying. A point-of-care gastric ultrasound could also be considered to assess for retained gastric contents but presents technical and logistical difficulty. For patients determined to be at higher risk of aspiration on the day of procedure, rapid sequence induction of general anesthesia may be considered, if appropriate. These recommendations apply to all patients receiving GLP-1RAs, irrespective of the indication for GLP-1RA therapy.

In summary (table 1), this multisociety consensus provides guidance for management of patients on GLP-1RAs; however, it is not an evidence-based guideline. This approach emphasizes shared decision-making and provides recommendations for balancing continuation of GLP-1RA therapy perioperatively for surgery and procedures while minimizing the risk of aspiration.

Competing Interests

Dr. Joshi has received honoraria for consultation from Merck Sharpe and Dohme Inc. (Rahway, New Jersey), Vertex Pharmaceuticals (Boston, Massachusetts) and Haisco Pharmaceuticals (Bridgewater, New Jersey). Dr. LaMasters has received honoraria for consulting and speaking from WL Gore (Newark, Delaware), Intuitive Surgical (Sunnyvale, California), Novo Nordisk (Bagsvaerd, Denmark), and Ethicon Endosurgical (Rarity, New Jersey). Dr. Kindel declares no competing interests.

Table 1. Modified Summary Recommendations from the Multisociety Clinical Practice Guidance on Perioperative Use of GLP-1RAs

Recommendation 1	Standardized preoperative assessment for risk of delayed gastric emptying (yes/no): 1. Presence of gastrointestinal symptoms suggesting delayed gastric emptying; recent dose increases, higher doses, and weekly administered medications may increase the risk of gastrointestinal symptoms 2. Medical conditions beyond GLP-1RA usage, which may also delay gastric emptying
Recommendation 2	Selective preoperative care plan based on delayed gastric emptying assessment and shared decision-making: 1. Continue GLP-1RA therapy preoperatively if there is no concern for delayed gastric emptying 2. If elevated risk of delayed gastric emptying exists: a. Recommend liquid only diet for at least 24 h before procedure with usual recommended fasting protocol, or b. Evaluation of the feasibility of medication bridging if GLP-1RAs need to be discontinued
Recommendation 3	On the day of procedure, reassess for delayed gastric emptying and mitigate risk if clinical concern: 1. Proceed with procedure as planned if there is no concern for delayed gastric emptying 2. If elevated risk of delayed gastric emptying exists: a. Consider point-of-care gastric ultrasound and/or b. Consider rapid sequence induction of general anesthesia, if appropriate c. Minimize procedure cancellation when possible

GLP-1RA, glucagon-like peptide-1 receptor agonist.

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Intraoperative Vasopressors and Delirium: Comment

To the Editor:

We read with a great interest the multicenter retrospective cohort study by Ma *et al.*¹ demonstrating higher odds of developing postoperative delirium with phenylephrine use in comparison to ephedrine for the management of intraoperative hypotension. Additionally, a dose-dependent effect of phenylephrine on the delirium following surgery under general anesthesia was observed, making authors to suggest that using ephedrine over phenylephrine for intraoperative hypotension may be useful in reducing the risk of postoperative delirium.