

2023 ASA Update on NPO Guidelines and ASA Guidance on GLP-1

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Objectives

1. Review the 2023 updated NPO Guidelines
2. Enlist different available GLP1s
3. Discuss GLP1 pharmacology , routes of administration and its impact on gastric emptying
4. Recommend strategies to decrease the risk of pulmonary aspiration

Case Scenario 1

- 43 Y/O Female , 75 Kg , BMI 27 , S/p Roux-en-Y bypass
- OSA resolved with weight loss, anxiety, depression, fibromyalgia , pre-diabetes.
- Stopped dulaglutide (TRULICITY) 3 mg/0.5 mL pen injector for 3 weeks
- Scheduled for colonoscopy for left lower abdominal pain
- NPO 25 hs for food (clear liquids), and 8 hs for fluids
- MP2, no predictors of DA
- NO GI Symptoms

Case Scenario 2

- 54 Y/O Male , 136 Kg , BMI 43, OSA, T 2 DM
- Scheduled for large abdominal herniorrhaphy, with mesh and muscle flap closure
- Stopped dulaglutide (TRULICITY) 3 mg/0.5 mL pen injector for two weeks
- No issue with glucose, also on Glucophage and Jardiance
- NPO 8.5 hs for food, and 4.5 hs for fluids
- MP4, short TM, short thick neck
- Morning sugar 231, Hb A1c 7.1 . +ve GI Symptoms

Case Scenario 3

- 38 Y/O Female , 149.7 Kg, BMI 47.3
- Scheduled for EGD for heart burn on black Friday
- She is also interested in bariatric surgery
- Off and on Trulicity for 2 years, last dose (SQ) on Monday
- Stomach feels full
- MP2, thick neck

ANESTHESIOLOGY

Pulmonary Aspiration of Gastric Contents: A Closed Claims Analysis

Mark A. Warner, M.D., Karen L. Meyerhoff, M.D., M.P.H.,
Mary E. Warner, M.D., Karen L. Posner, Ph.D.,
Linda Stephens, Ph.D., Karen B. Domino, M.D., M.P.H.
ANESTHESIOLOGY 2021; 135:284-91

What This Article Tells Us That Is New

- In a closed claims analysis of 115 cases of pulmonary aspiration, death occurred in 57% of the claims and severe permanent injury in another 14%
- Sixty-one percent of the patients in the claims had either gastrointestinal obstruction or another intraabdominal process
- Anesthetic practice was judged to be substandard in 59% of the 115 claims

NAP4

- **Aspiration** was the single most common primary cause of mortality (rather than cerebral hypoxia per se)
- Aspiration accounted for 8 anesthesia deaths and two cases of brain damage

PRACTICE PARAMETERS

Practice Guidelines for Preoperative Fasting and the Use of Pharmacologic Agents to Reduce the Risk of Pulmonary Aspiration: Application to Healthy Patients Undergoing Elective Procedures

*An Updated Report by the American Society of Anesthesiologists Task Force on Preoperative Fasting and the Use of Pharmacologic Agents to Reduce the Risk of Pulmonary Aspiration**

Practice Guidelines for Preoperative Fasting and the Use of Pharmacologic Agents to Reduce the Risk of Pulmonary Aspiration: Application to Healthy Patients Undergoing Elective Procedures. An Updated Report by the American Society of Anesthesiologists Task Force on Preoperative Fasting and the Use of Pharmacologic Agents to Reduce the Risk of Pulmonary Aspiration. *Anesthesiology*. 2017; 126(3): p. 378-393.

NPO Guidelines

| Ingested Material | Minimum Fasting Period ² |
|-----------------------------|-------------------------------------|
| Clear liquids ¹ | 2h |
| Breast milk | 4h |
| Infant formula | 6h |
| Non-human milk ¹ | 6h |
| Light meal ¹ | 6h |
| Regular meal | 8h |

2023
ASA Practice Guidelines for Preoperative Fasting

ANESTHESIOLOGY

2023 American Society of Anesthesiologists Practice Guidelines for Preoperative Fasting: Carbohydrate-containing Clear Liquids with or without Protein, Chewing Gum, and Pediatric Fasting Duration—A Modular Update of the 2017 American Society of Anesthesiologists Practice Guidelines for Preoperative Fasting*

Girish P. Joshi, M.B.B.S., M.D. (Co-Chair),
Basem B. Abdelmalak, M.D. (Co-Chair),
Wade A. Weigel, M.D., Monica W. Harbell, M.D.,
Catherine I. Kuo, M.D., Sulpicio G. Soriano, M.D.,
Paul A. Stricker, M.D.,
Tommie Tipton, B.S.N., R.N., C.N.O.R.,
Mark D. Grant, M.D., Ph.D., Anne M. Marbella, M.S.,
Madhulika Agarkar, M.P.H., Jaime F. Blanck, M.L.I.S., M.P.A.,
Karen B. Domino, M.D., M.P.H.
ANESTHESIOLOGY 2023; 138:132–51

Recommendation #1: Carbs Containing Clear Liquids

Healthy adults drink carbohydrate-containing clear liquids until 2 h before elective procedures
The carbohydrates may be simple or complex

Recommendation #1 Evidence

- Participants drinking carbohydrate-containing clear liquids had **lower patient-rated hunger**
- Differences were not detected in thirst, preoperative nausea, or patient satisfaction
- No superiority of complex carbohydrates over simple carbohydrates with respect to residual gastric volume or hunger

How Much Clear Liquid??

- A. Up to 100 mL
- B. Up to 200 mL
- C. Up to 300 mL
- D. Up to 400 mL
- E. Up to 500 mL
- F. Up to 1000 mL

How Much Clear Liquid??

- A. Up to 100 mL
- B. Up to 200 mL
- C. Up to 300 mL
- D. Up to 400 mL
- E. Up to 500 mL
- F. Up to 1000 mL

How Much Clear Liquid?? Evidence

- Trials participants ingested a median of 400 mL of carbohydrate-containing clear liquids up to 2 hours preop.

Carbohydrates in Patients with Diabetes

- Caution with carbohydrate-containing liquids in patients with diabetes, especially patients who skip or reduce their usual hypoglycemics prior to surgery.
- Home glucometer readings may help guide the patient's choice of a carbohydrate or a non-caloric clear liquid.

Recommendation #2: Protein Containing Clear Liquids (No Recommendation)

There is insufficient evidence to recommend protein-containing clear liquids preferentially over other clear liquids

Recommendation #2 Evidence

- All protein-containing clear liquids in the trials included carbohydrates precluding assessment of liquids containing only protein.
- Inconclusive evidence concerning RGV in nonsurgical studies comparing protein-containing vs. carbohydrate-containing clear liquids.

Recommendation #3: Gum Chewing? (Suggestion)

Not delaying elective procedures in healthy adults who are chewing gum
Chewing gum should be removed before any sedative/anesthetic is administered

Recommendation #3 Evidence

- Patients chewing gum had a minimally increased RGV at anesthesia induction compared with fasting
- There was no difference in gastric pH between the groups

Recommendation #4: 1 Vs. 2 hs for Peds? (No Recommendation)

There is insufficient evidence concerning benefits and harms to recommend pediatric patients drink clear liquids until 1 h versus 2 h before Procedures

Recommendation #4 Evidence

- There was no difference in patient-reported hunger or thirst, incidence of aspiration or regurgitation, and gastric pH among pediatric patients fasting for 1 hour compared with 2 hours
- Inconsistent results were reported for RGV

Ultrasound Assessment of Gastric Fluid Volume in Children Scheduled for Elective Surgery After Clear Fluid Fasting for 1 Versus 2 Hours: A Randomized Controlled Trial

Khaled Abdelfattah Sarhan, MD, DESA, Hossam Hasaneen, Msc, Ahmed Hasanin, MD, DESA.

CONCLUSIONS: In healthy children scheduled for elective surgery receiving 3 mL kg⁻¹ clear fluid, the median GFV after 1-hour fasting was double the volume after conventional 2-hour fasting. These findings should be considered whether weighting the risk/benefit of a liberal approach to preoperative fasting versus the risk of pulmonary aspiration. (*Anesth Analg* 2023;136:711-8)

Recommendation #5: Best Practice Statement

To avoid prolonged fasting in children, efforts should be made to allow clear liquids as close to 2 hours prior to procedures as possible.
In children with shorter clear liquid fasting duration, exercise clinical judgment.

Recommendation #5 Evidence

- Fasting duration is often substantially longer than recommended irrespective of a 1- or 2-hour clear liquid fasting policy

Enteral Tube Feeding and NPO

- Exercise clinical judgment in minimizing feeding interruptions in critically ill patients
- Caveat:
 - Airway is protected with an endotracheal or tracheostomy tube with properly inflated cuff
 - Procedures that does not include reintubation or airway manipulations

GLP1 And The Aspiration Risk

Wide Spread Use for Weight Loss



Anesthetic Considerations in Adult Patients on Glucagon-Like Peptide-1 Receptor Agonists: Gastrointestinal Focus

Girish P. Joshi, MBBS, MD, FFARCSI

Table. Summary of Glucagon-Like Peptide-1 Receptor Agonists

| Generic drug | Brand name | Administration/frequency | Elimination half-life |
|---------------------------|------------------|----------------------------|-----------------------|
| Dulaglutide | Trulicity | SQ injection x once weekly | =5 d |
| Exenatide (ER) | Bydureon, BCise | SQ injection x once weekly | =2.4 h |
| Exenatide (IR) | Byetta | SQ injection x twice daily | =2.4 h |
| Liraglutide ¹ | Saxenda, Victoza | SQ injection x once daily | =13 h |
| Lixisenatide ² | Adlyxin | SQ injection x once daily | 2-4 h |
| Semaglutide | Ozempic, Wegovy | SQ injection x once weekly | =7 d |
| Semaglutide | Rybelsus | Oral, once daily | =7 d |
| Tirzepatide | Mounjaro | SQ injection x once weekly | =5 d |

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GLP1 Facts

- Very effective for diabetes management, and weight loss
- Oral or SQ injections
- Bonus: cardioprotective
- Side effects: nausea, vomiting, fullness, abdominal pain
- Delayed gastric emptying is one of their mechanisms of action
- There's tachyphylaxis to the delayed gastric emptying effect

Ileus is Among the Side Effects of GLP-1 RAs

FDA Adds Warning of Intestinal Blockages to Ozempic Label

Written by Lisa O'Mary

2 min read

Sept. 28, 2023 – Following more than a dozen reports of intestinal blockages among people using the diabetes drug Ozempic, the FDA announced that the potentially life-threatening condition will be listed on the drug's label.

The medical term for intestinal blockage is "ileus," and 18 cases of it in people taking Ozempic have been reported to the FDA.

The FDA has received more than 8,500 reports of gastrointestinal issues among people taking medications like

<https://www.ahajournals.org/doi/10.1161/STROKE.119.048000> accessed 1-16-2024

Can J Anaesth/J Can Anaesth
<https://doi.org/10.1007/s12630-023-02440-3>

CASE REPORTS/CASE SERIES

Semaglutide, delayed gastric emptying, and intraoperative pulmonary aspiration: a case report

- 41 Y/O male, weekly GLP1 for obesity, no info whether stopped or not
- No symptoms, deep sedation MAC, no tube– vomited, stomach suctioned via EGD
- Aspirated, Intubated and suctioned via bronchoscope
- 4 hours intubation in the ICU, discharged the following day

Sandra R Klein¹, Jon A Hobaj¹ Canadian Journal of Anaesthesiology Published online March 2023

NEWS

June 29, 2023

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

Girish P. Joshi, M.B.B.S., M.D., Basem B. Abdelmalak, M.D., Wade A. Weigel, M.D., Sulgicio G. Soriano, M.D., Monica W. Harbell, M.D., Catherine I. Kuo, M.D., Paul A. Stricker, M.D., Karen B. Domino, M.D., M.P.H., American Society of Anesthesiologists (ASA) Task Force on Preoperative Fasting

When to Hold Before Surgery

- 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 Surgery, Meds Held

- GI symptoms? **Yes** : severe nausea/vomiting/retching, abdominal bloating, or abdominal pain
 - Consider delaying elective procedure
- GI symptoms? **No** :
 - Proceed as usual

Day of Surgery, Meds Not Held

- GI symptoms? **No** :
- Proceed with 'full stomach' precautions
 - Consider evaluating gastric volume by ultrasound
 - 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'
- We suggest following the current ASA fasting guidelines

Can J Anaesth / Can Anesth (2023) 70:1281-1286
<https://doi.org/10.1007/s12630-023-02550-y>

EDITORIALS

Anesthesia and glucagon-like peptide-1 receptor agonists: proceed with caution!

Philip M. Jones, MD, MSc - Ion A. Hobal, MD, PhD - Patricia M. Murphy, MD

- Same recommendation as the ASA except for:
 - Hold for 3 weeks ??



FOR IMMEDIATE RELEASE

GI Multi-Society Statement Regarding GLP-1 Agonists and Endoscopy

August 11, 2023 – AASLD, ACG, AGA, ASGE and NASPGHAN recognize that the new class of

- No data
- We are familiar with such risks
- Exercise best practices
- Encourage clinicians to study this challenge

JAMA Surgery | Original Investigation

Glucagon-Like Peptide-1 Receptor Agonist Use and Residual Gastric Content Before Anesthesia

Sudipta Sen, MD, Paul P. Potnuru, MD, Nadia Hernandez, MD, Christina Goeh, MD, Caroline Praestholm, MS, Sikanth Sridhar, MD, Omonele O. Nwokolo, MD

- 124 Patients cross sectional prospective
- Increased RGV: solids, thick liquid or >1.5 mL/kg clear liquids
- 56% vs. 19% in patients with vs. without GLP-1 despite fasting
- No association between the duration of interruption and increased RGV

JAMA Surg. doi:10.1001/jamasurg.2024.0111
 Published online March 6, 2024.

Increased risk of aspiration pneumonia associated with endoscopic procedures among patients with Glucagon-like peptide-1 receptor agonist use

Yee Hui Yeo, Srinivas Gaddam, Wee Han Ng, Pin-Chia Huang, Gastrointestinal Motility and Metabolic Pharmacoepidemiology Group, Kevin Sheng-Kai Ma, Ali Rezaie

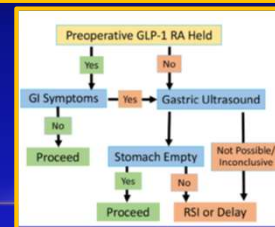
- 114 Million patients from 80 health care systems, only upper and lower endoscopy
- 778 K GLP-1 non users and 47 K users
- Aspiration 0.83% Vs. 0.63%
- HR 1.33
- Propofol HR 1.49
- Upper endoscopy HR 1.82 Lower 0.56 Combined 2.26

PII: S0016-5085(24)00298-1
 DOI: <https://doi.org/10.1053/j.gastro.2024.03.015>
 Reference: YGAST 66186

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Anesthetic Considerations in Adult Patients on Glucagon-Like Peptide-1 Receptor Agonists: Gastrointestinal Focus

Girish P. Joshi, MBBS, MD, FFARCSI



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2022 American Society of Anesthesiologists Practice Guidelines for Management of the Difficult Airway*

Jeffrey L. Apfelbaum, M.D., Colin A. Haggart, M.D., Richard T. Conns, Ph.D., Basem B. Abdelmalak, M.D., Madhulika Agarwal, M.P.H., Richard P. Dutton, M.D., John E. Fralton, M.D., Robert Graf, M.D., P. Alan Klock, Jr., M.D., David Mendler, M.D., Sheila N. Myatra, M.D., Ellen P. O'Sullivan, M.D., William H. Rosenblatt, M.D., Massimiliano Sorbello, M.D., Avery Tung, M.D.
Anesthesiology 2022; 136:31-81

2022 ASA Guidelines: Part 1

DIFFICULT AIRWAY INFOGRAPHIC: ADULT PATIENTS

Part 1: Pre-Airway Management Decision Making Test (planning)

- Assessed difficult laryngoscopy or intubation with direct or video laryngoscope?
 - NO → Proceed directly to awake airway management
 - YES → Suspected difficult ventilation with increased or no significant desaturation?
 - NO → Proceed directly to awake airway management
 - YES → Significantly increased risk of aspiration?
 - NO → Proceed directly to awake airway management
 - YES → Increased risk of rapid desaturation?
 - NO → Proceed directly to awake airway management
 - YES → Proceed to awake airway management with induction of anesthesia

Part 2: Awake Airway Management | **Part 3: Airway Management with Induction of Anesthesia**

Note: The awake airway management strategy should be chosen based on the patient's clinical status and the availability of resources.

Any one factor alone (assessed difficulty with intubation or ventilation, or aspiration or desaturation risk) may be clinically important enough to warrant an awake intubation.

Case Scenario 1

- 43 Y/O Female , 75 Kg , BMI 27 , S/p Roux-en-Y bypass
- OSA resolved with weight loss, anxiety, depression, fibromyalgia , pre-diabetes.
- Stopped dulaglutide (TRULICITY) 3 mg/0.5 mL pen injector for 3 weeks
- Scheduled for colonoscopy for left lower abdominal pain
- NPO 25 hs for food (clear liquids), and 8 hs for fluids
- MP2, no predictors of DA
- NO GI Symptoms

Case Scenario 1 Management

- MAC (GA without a tube)
- Procedure was completed successfully
- PACU → DC home

Case Scenario 2

- 54 Y/O Male , 136 Kg , BMI 43, OSA, T 2 DM
- Scheduled for large abdominal herniorrhaphy, with mesh and muscle flap closure
- Stopped dulaglutide (TRULICITY) 3 mg/0.5 mL pen injector for two weeks
- No issue with glucose, also on Glucophage and Jardiance
- NPO 8.5 hs for food, and 4.5 hs for fluids
- MP4, short TM, short thick neck
- Morning sugar 231, Hb A1c 7.1 . +ve GI Symptoms

Case Scenario 2 Management

- Pre-op US: +ve stomach content
- Awake FO intubation
- Post-intubation OG suction: 700 cc →
- Procedure was completed successfully
- Extubated, PACU, and hospital admission

Case Scenario 3

- 38 Y/O Female , 149.7 Kg, BMI 47.3
- Scheduled for EGD for heart burn on black Friday
- She is also interested in bariatric surgery
- Off and on Trulicity for 2 years, last dose (SQ) on Monday
- Stomach feels full
- MP2, thick neck

Case Scenario 3 Management


- Gastric US not available/feasible
- Awake FO intubation
- Additional finding of a long omega shaped epiglottis
- Procedure was completed successfully
- Extubated, PACU, and D/C home

Summary

- Every effort should be made to minimize the risk of Aspiration
- The 2023 NPO Updates:
 - Recommend Carbs containing clear liquids
 - Does not recommend protein containing clear liquids
 - Remove the chewing gum, and proceed
 - Does not recommend 1 hour fasting for children
 - Decrease the unnecessary prolongation of fasting period for children keeping it close to 2 hours as possible.
- Beware of GLP1s and the aspiration risk
- Hold daily dose the day of, and the weekly dose, one week before surgery



Every life deserves world class care.

Thank you !
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