# ENHANCING KNOWLEDGE IN GASTRIC POCUS FOR ANESTHESIA PROVIDERS MANAGING PATIENTS ON GLP-1 RAs

Manu Awal

## Abstract

❖ This quality improvement project aimed to enhance anesthesia providers' knowledge and confidence in utilizing **gastric point-of-care ultrasound (POCUS)** for preoperative assessment of patients on **GLP-1 receptor agonists (GLP-1 RAs)**. By implementing an educational intervention, this project sought to address the knowledge gap regarding **GLP-1 RA-induced delayed gastric emptying** and improve risk stratification for aspiration prevention in anesthesia practice.

## Purpose

❖ **Enhance Anesthesia Providers' Knowledge**: Improve understanding of the perioperative implications of GLP-1 receptor agonists (GLP-1 RAs) and their impact on gastric emptying.

❖ **Increase Utilization of Gastric POCUS**: Educate anesthesia providers on using gastric point-of-care ultrasound (POCUS) to assess gastric contents and mitigate aspiration risk.

❖ **Improve Patient Safety**: Promote evidence-based perioperative decision-making to reduce aspiration-related complications in surgical patients on GLP-1 RAs.
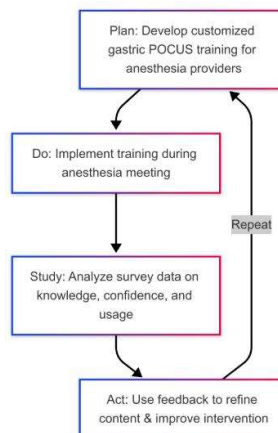
## Background/Significance

❖ **Rising Use of GLP-1 RAs**
  ❖ GLP-1 receptor agonists (GLP-1 RAs) have revolutionized the treatment of **Type 2 diabetes mellitus (T2DM) and obesity**, improving glucose control and weight loss (Sherwin et al., 2023).
  ❖ These medications impact gastrointestinal (GI) function, particularly by **delaying gastric emptying**, which poses **unique anesthetic challenges** (Gulak & Murphy, 2023).

❖ **Anesthetic Implications of Delayed Gastric Emptying**
  ❖ Gastroparesis, a condition of **impaired gastric motility**, increases the risk of **gastric residual volume retention**, leading to **a fivefold increase in aspiration risk** for fasting patients on GLP-1 RAs (Silveira et al., 2023).
  ❖ Symptoms include **early satiety, nausea, vomiting, and erratic glycemic control**, complicating perioperative management (Fujino et al., 2023).

❖ **Gastric Point-of-Care Ultrasound (POCUS) as a Solution**
  ❖ **Gastric POCUS is a non-invasive bedside tool** that allows real-time assessment of **gastric content and volume**, enabling anesthesia providers to **stratify aspiration risk** preoperatively (Li et al., 2020).
  ❖ A prospective observational study found that gastric sonography altered anesthetic plans in 19% of cases, reducing aspiration-related complications (Baettig et al., 2023).
  ❖ This tool is particularly useful for patients on GLP-1 RAs, trauma patients, and those with unknown fasting status, guiding safe anesthetic decision-making (Perlas et al., 2018).

❖ Need for Increased Utilization and Education
  ❖ Despite its benefits, gastric POCUS remains underutilized due to a lack of training and knowledge among anesthesia providers (Baettig et al., 2023).
  ❖ This quality improvement project aimed to increase anesthesia providers' knowledge and confidence in using gastric POCUS for preoperative risk assessment in patients taking GLP-1 RAs.

**Author Contact Information**
**Manu Awal**
manuawal@Arizona.edu

**References**

## Methods

❖ **Project Design:** This quality improvement (QI) project utilized a **quantitative approach** to assess the effectiveness of an **educational intervention** on the use of **gastric point-of-care ultrasound (POCUS)** among anesthesia providers at **Great Falls Hospital**. A **post-pre survey design** was used to measure changes in perceived knowledge, confidence, and implementation.

❖ **Educational Intervention:** The intervention consisted of a **PowerPoint presentation and a demonstration video** explaining the **use of gastric POCUS for patients on GLP-1 receptor agonists.** The video covered probe selection, positioning, ultrasound imaging, and gastric content differentiation (empty, liquid, solid). The session was conducted during a **monthly anesthesia department meeting.**

❖ **Data Collection:** Data were collected using a **post-pre survey** administered through **Qualtrics.** A **QR code** was provided to facilitate easy access to the survey. The survey included **Likert-scale questions** assessing knowledge, confidence, and likelihood of implementing gastric POCUS.

❖ **Data Analysis:** Responses were analyzed using **IBM SPSS** for descriptive and inferential statistics. The **Wilcoxon Signed-Rank Test** was conducted to compare **pre- and post-intervention knowledge scores.** Descriptive statistics, including **mean, median, standard deviation, and variance,** were also calculated.



Mean Scores of Pre and Post-Survey Questions
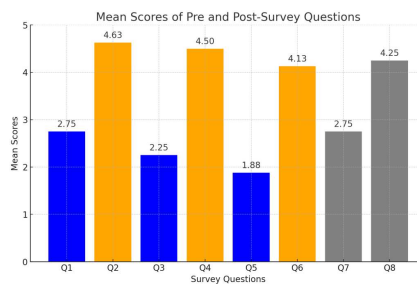
❖ **Implementation Framework:** The **Plan-Do-Study-Act (PDSA) cycle** guided the QI project:
  ❖ **Plan:** Develop and deliver an educational session on gastric POCUS.
  ❖ **Do:** Implement the intervention during a live department meeting.
  ❖ **Study:** Assess changes in knowledge and confidence using survey data.
  ❖ **Act:** Use feedback to refine future educational strategies.



Plan: Develop customized gastric POCUS training for anesthesia providers
Do: Implement training during anesthesia meeting
Repeat
Study: Analyze survey data on knowledge, confidence, and usage
Act: Use feedback to refine content & improve intervention

## Discussion

❖ **Summary**

❖ This project evaluated an educational intervention's impact on anesthesia providers' knowledge and use of gastric POCUS for assessing aspiration risk in GLP-1 RA patients.

❖ A post-pre survey design measured changes in knowledge, confidence, and practice intent, with mean post-survey scores consistently higher.

❖ Wilcoxon Signed-Rank Test effect sizes (r-values) ranged from 0.71 to 0.90, indicating a significant improvement.

❖ Confidence (Q7) and likelihood of implementation (Q8) scores showed most providers felt confident and willing to integrate gastric POCUS, though some hesitancy remained.

❖ **Interpretation**

❖ The intervention significantly enhanced knowledge and confidence in managing GLP-1 RA patients perioperatively.

❖ The greatest improvement was seen in understanding aspiration risks, as reflected in post-survey Likert scores.

❖ Some providers expressed uncertainty about implementation, highlighting the need for hands-on training, institutional support, and standardized protocols.

❖ While education improves competency, sustained adoption requires continued reinforcement and resource allocation.

❖ **Implications**

❖ **Practice**

❖ Educational interventions improve provider awareness of GLP-1 RA-related perioperative risks and gastric POCUS use.

❖ Standardized protocols and institutional support are essential for widespread adoption.

❖ **Education**

❖ Expanding training to interdisciplinary teams can improve collaborative patient management.

❖ Integrating gastric POCUS education into anesthesia residency and continuing education programs can sustain competency.

❖ **Research & Policy**

❖ Further research is needed to assess the long-term impact on patient outcomes.

❖ Institutional policies should support ongoing education and provide necessary resources for gastric POCUS adoption.

❖ Establishing gastric POCUS as a standard preoperative assessment can improve perioperative safety.

## Conclusion

❖ This quality improvement project highlights the effectiveness of an educational intervention in improving anesthesia providers' knowledge, confidence, and attitudes toward gastric POCUS for preoperative risk assessment in GLP-1 RA patients.

❖ Statistically significant improvements across all measured outcomes emphasize the need for continued education to support safe perioperative decision-making.

❖ Future efforts should focus on expanding training, integrating hands-on practice, and fostering interdisciplinary collaboration.

❖ Addressing barriers such as ultrasound access and provider familiarity is key to ensuring long-term adoption and sustained impact.

❖ Incorporating gastric POCUS into routine clinical practice can enhance patient safety and promote individualized, evidence-based perioperative care.