

### Background

- Bariatric surgery is the most effective long-term treatment for severe obesity, but short-term postoperative risk remains clinically significant.
- An increasing number of patients initiate GLP-1RA before bariatric surgery, yet evidence on the association between preoperative GLP-1RA use and short-term postoperative complications remains limited.

### Objective

- We aim to compare 30-day postoperative outcomes among GLP-1RA users and non-users after bariatric surgery.

### Method

#### Study Design and Data Source

- A retrospective cohort study of adults underwent bariatric surgery from January 2017 to January 2025 using TriNetX, a national wide U.S. electronic health record network.

**Cohort entry (Index) date: Date of bariatric surgery**

**Day 0**

**Inclusion assessment window**  
Day [0, 0]

**Exclusion assessment window**  
Day [0, 0]

**GLP-1 RA prescription window**  
Day [-180, -1]

**Covariates assessment window**  
Day [-365, 0]  
Comorbidities, co-medications, BMI

- Any prescription of semaglutide, liraglutide, tirzepatide, or dulaglutide within the 180 days preceding the index bariatric surgery date.

- Baseline comorbidities were identified using ICD-10-CM diagnosis based on Elixhauser comorbidity framework.

- Baseline BMI was defined as the value closest to the index bariatric surgery date within the 365 days before surgery.

**Follow-up window**  
Days [0, censor]

1/1/2017

End of Study Period

#### Statistical Analysis

- Propensity score matching
  - Step 1: Nearest-neighbor 1:1 matching within a subgroup by diabetes status.
  - Step 2: Pooling 2 matched data for outcome analysis.
- Conditional logistic regression with robust standard errors.

**In adults undergoing bariatric surgery in U.S., preoperative GLP-1 RA use was associated with lower 30-day odds of pulmonary complications, sepsis, acute renal failure, bowel obstruction, and inpatient rehospitalization. Surgical, thromboembolic, and cardiovascular complication rates did not differ between groups.**

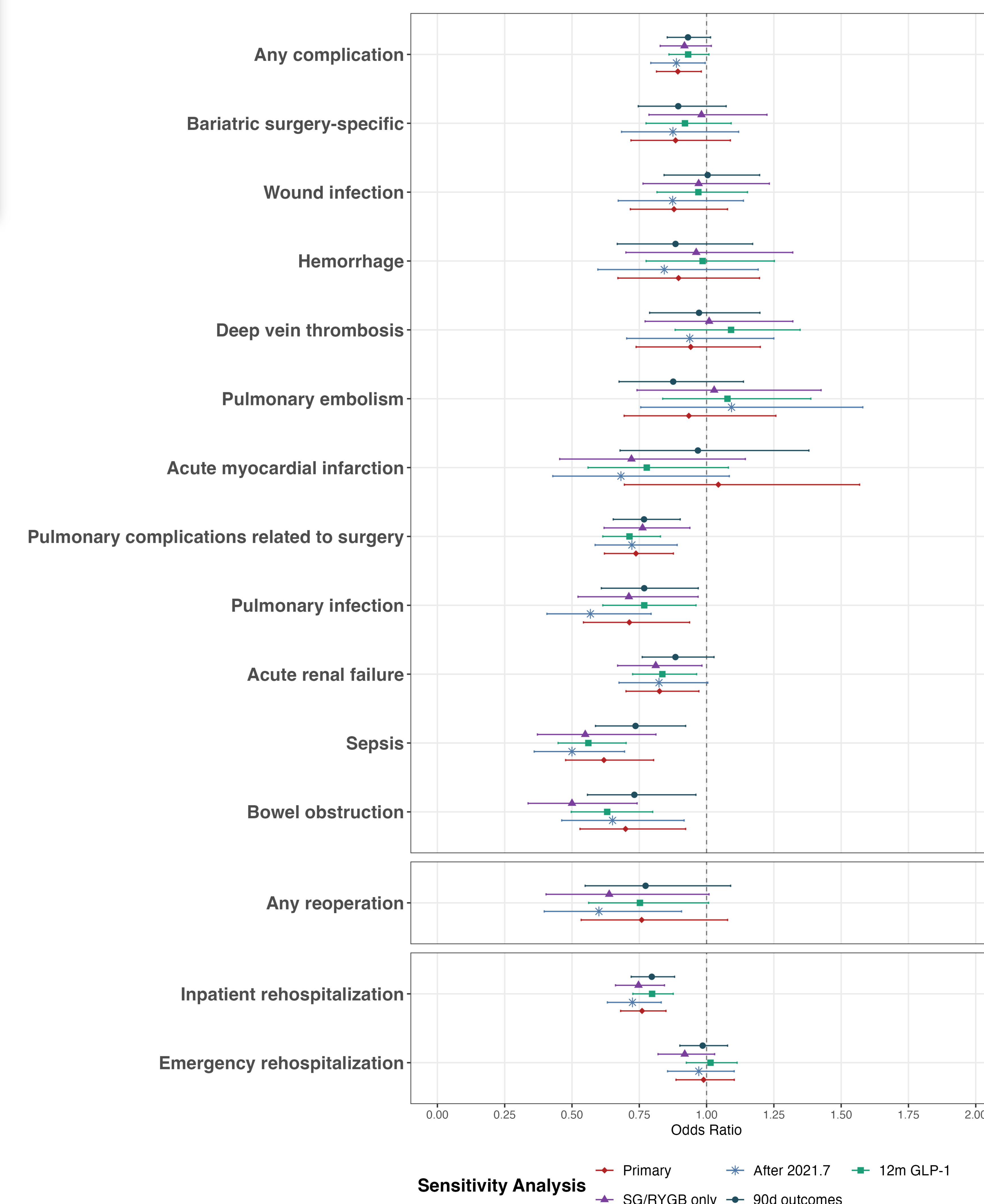
### Results

**Table 1. Baseline Characteristics of Patients underwent Bariatric Surgery Before and After Propensity Score Matching**

	Before PS Matching			After PS Matching		
	No GLP-1RA (N = 145, 525)	GLP-1RA (N = 8,121)	SMD	No GLP-1RA (N = 8,118)	GLP-1RA (N = 8,118)	SMD
<b>Age, mean (SD)</b>	31.30 (14.98)	30.13 (12.20)	0.086	30.24 (12.93)	30.13 (12.20)	0.008
<b>Male sex, n (%)</b>	39,068 (26.8)	1,917 (23.6)	0.075	1,916 (23.6)	1,916 (23.6)	<0.001
<b>Race, n (%)</b>						
American Indian and pacific islander	1,635 (1.1)	104 (1.3)	0.014	104 (1.3)	104 (1.3)	0.000
Asian	1,767 (1.2)	90 (1.1)	0.010	83 (1.0)	90 (1.1)	0.008
Black or African American	31,708 (21.8)	1,952 (24.0)	0.054	1,996 (24.6)	1,952 (24.0)	0.013
White	94,496 (64.9)	4,847 (59.7)	0.108	4,802 (59.2)	4,845 (59.7)	0.011
Other Race	6,742 (4.6)	517 (6.4)	0.076	527 (6.5)	516 (6.4)	0.006
Unknown	9,177 (6.3)	611 (7.5)	0.048	606 (7.5)	611 (7.5)	0.002
<b>Ethnicity, n (%)</b>						
Hispanic or Latino	18,714 (12.9)	1305 (16.1)	0.091	1,308 (16.1)	1,305 (16.1)	0.001
None Hispanic or Latino	106,644 (73.3)	5923 (72.9)	0.008	5,914 (72.9)	5,920 (72.9)	0.002
Unknown	20,167 (13.9)	893 (11.0)	0.087	896 (11.0)	893 (11.0)	0.001
<b>BMI (kg/m<sup>2</sup>) category, n (%)</b>						
Overweight (25–30)	9,762 (6.7)	125 (1.5)	0.262	114 (1.4)	125 (1.5)	0.011
Class I obesity (30–35)	7,787 (5.4)	357 (4.4)	0.044	387 (4.8)	357 (4.4)	0.018
Class II obesity (35–40)	17,110 (11.8)	1,324 (16.3)	0.131	1,362 (16.8)	1,324 (16.3)	0.013
Class III obesity (≥40)	41,782 (28.7)	3,034 (37.4)	0.185	3,030 (37.3)	3,032 (37.3)	0.001
Missing	69,084 (47.5)	3,281 (40.4)	0.143	3,225 (39.7)	3,280 (40.4)	0.014
<b>Comorbidities, n (%)</b>						
Diabetes	33405 (23.0)	5466 (67.3)	0.996	5465 (67.3)	5465 (67.3)	<0.001
Hypertension uncomplicated	66827 (45.9)	5381 (66.3)	0.419	5416 (66.7)	5380 (66.3)	0.009
Chronic pulmonary disease	25379 (17.4)	2006 (24.7)	0.179	1995 (24.6)	2005 (24.7)	0.003
Liver disease mild	19098 (13.1)	1845 (22.7)	0.252	1834 (22.6)	1844 (22.7)	0.003
Depression	31951 (22.0)	2733 (33.7)	0.263	2730 (33.6)	2732 (33.7)	0.001
Hypothyroidism	16789 (11.5)	1334 (16.4)	0.141	1345 (16.6)	1333 (16.4)	0.004
Anemias due to other nutritional deficiencies	20259 (13.9)	1380 (17.0)	0.085	1348 (16.6)	1380 (17.0)	0.011
Solid tumor without metastasis malignant	15043 (10.3)	435 (5.4)	0.186	441 (5.4)	435 (5.4)	0.003
Heart failure	7143 (4.9)	675 (8.3)	0.137	691 (8.5)	675 (8.3)	0.007
Renal kidney failure and disease moderate	6386 (4.4)	598 (7.4)	0.127	562 (6.9)	597 (7.4)	0.017

Table 1 presents selected matching variables. Additional covariates used for matching included surgery type, U.S. geographic region, surgery year, other baseline medications, and the full Elixhauser comorbidity index. A complete list is available upon request.

**Figure 1. Primary and Sensitivity Analyses of Perioperative GLP-1 RA Exposure and 30-Day Postoperative Outcomes**



### Conclusions

- Our findings support the safety and potential benefit of preoperative GLP-1RA use, showing lower 30-day odds of pulmonary complications, sepsis, acute renal failure, bowel obstruction, and inpatient rehospitalization, with no increase in surgical, thromboembolic, or cardiovascular risk.
- Prospective studies are needed to inform perioperative management guidelines for the bariatric surgery population.

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