



Comparative Cost-Effectiveness Analysis of Bariatric Surgery and GLP-1 Receptor Agonists for the Management of Obesity



Joseph E Sanchez,^{1,2} Alexander Lundberg,² Whitney N Jones,^{1,2} Catherine S Valukas,^{1,2} Tara Lagu,² Ezra N Teitelbaum,^{1,2} Anne Stey^{1,2}

¹Department of Surgery, Northwestern University Feinberg School of Medicine, Chicago, IL, ²Northwestern Quality Improvement, Research, & Education in Surgery (NQUIRES), Northwestern University, Chicago, IL

BACKGROUND

- Glucagon-like Peptide Receptor-1 Receptor Agonists (GLP-1RA) are **new, life-long medications** indicated for the management of obesity.
- Despite being available in the treatment of obesity for over a decade, the recent approval to treat the overweight/ obese population has made them **incredibly popular and in high demand**.
- However, given the expensive nature of these medications, it is **imperative to assess the cost-effective nature of these medications** when compared to other weight-loss options.
- **This is the first study to assess the comparison of cost-effectiveness of GLP1RAs to standard bariatric surgeries.**

RESEARCH OBJECTIVES

To quantify and compare the cost-effectiveness of GLP-1RAs and the bariatric surgeries of sleeve gastrectomy and Roux-en-Y gastric bypass

METHODS

Data from United States sources were abstracted from existing literature on cost and health state utilities related to the GLP-1RAs **Semaglutide and Liraglutide**. Similarly, data were abstracted for the procedures of Sleeve Gastrectomy (SG) and Roux-en-Y Gastric Bypass (RYGB).

A **Markov Model** of wholesale cost was developed with three intervention arms:

- (1) Bariatric Surgery alone
- (2) GLP-1RAs alone
- (3) Bariatric Surgery + GLP-1RA combination

Outcomes: Incremental cost-effectiveness ratios (ICERs) and Quality Adjusted Life Years (QALY) were calculated between each arm.

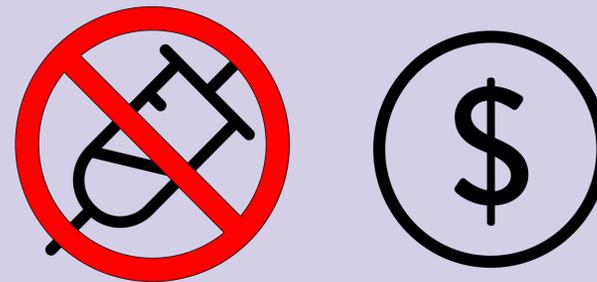
A total gross cost under **\$50,000 USD per QALY** was considered cost-effective.

Sensitivity analysis: Price adjustment was conducted adjusting for yearly incremental GLP-1RA cost until patient expiration.

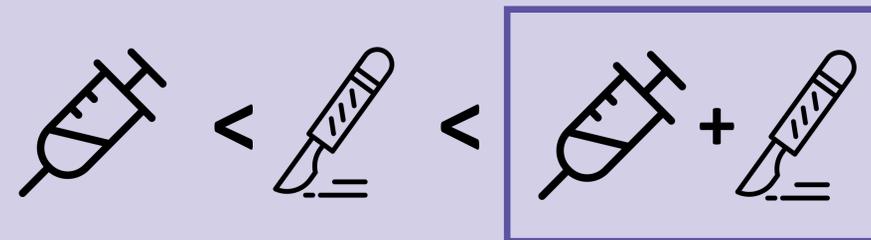
Software utilized for the cost-effectiveness analyses performed was **TreeAge Pro Version 2023**.

CONCLUSIONS

GLP-1RAs are not cost-effective when compared to bariatric surgeries in the treatment of obesity.



Bariatric surgeries, such as Sleeve Gastrectomy and Roux-en-Y gastric bypass, financially dominate GLP-1RAs alone until a monthly cost adjustment to **\$568**.



A combination of both bariatric surgery and usage of GLP-1RAs offers the most cost-effective option when compared to individual interventions alone.

RESULTS

Figure 1. Intervention Cost



Table 1. Multivariable logistic regression models assessing perioperative and oncologic outcomes.

Strategy	Cost (USD)	Incremental Cost	QALY	Incremental QALY	ICER
Bariatric Surgery Alone	\$29,342	-	22.4		
GLP-1RA Alone	\$50,104	\$20,762	20.1	-2.3	-\$9,094
Bariatric Surgery + GLP-1RA	\$51,301	\$21,959	25.4	3.0	\$7,239

Figure 2. Sensitivity Analysis of Markov Model Adjusting for Annual GLP-1RA Cost

