METABOLIC SURGERY AND PHARMACOTHERAPY: WHEN TO START MEDICAL TREATMENT AFTER BARIATRIC SURGERY

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Yale School of Medicine

Past-President, American Society of Metabolic and Bariatric Surgery

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Director, American Board of Obesity Medicine

Chronic Disease Management Principles

- Establish a comprehensive care plan tailored to individuals.
- Promote patient education to enhance self-management skills.
- Encourage regular monitoring of symptoms and health metrics.
- Foster strong communication between patients and healthcare providers.
- Integrate lifestyle modifications, including diet and exercise.
- Utilize a multidisciplinary approach involving various healthcare professionals.

TEAM MEMBER: CLINICAL PHARMACIST

Utilizing Clinical Pharmacists to Provide NeoAdjuvant Anti-Obesity Medications to Patients Undergoing Bariatric Surgery: A New Paradigm

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Background

Preoperative weight loss for bariatric surgery patients has been demonstrated to enhance outcomes. Anti-obesity medications (AOM) provide an opportunity to down-stage disease. Barriers to use of AOMs include the approval process and available qualified healthcare providers to support. Here we describe a new paradigm of weight loss services collaborating with clinical pharmacists.

Methods

Within our health system, clinical pharmacists integrated into specialty disease state clinics, including the Digestive Health Service Line, were recognized as integral in enhancing patient outcomes. A need in our bariatric surgery program emerged for pre-operative weight loss. Given access issues, national shortages of GLP-1 medications, and burdensome insurance approval process, clinical pharmacists emerged as ideal health care providers and a pilot program was initiated.

Resul

28 patients have been enrolled to date in the Clinical Pharmacist Weight Management Pilot. There was significant variation in duration of therapy, highest dose achieved, and type of AOM used. There were 6 medications employed including semaglutide (Ozempic®) (61%); liraglutide (Victoza®) (9%); semaglutide (Wegovy®), (4%); liraglutide (Saxenda®) (9%); dulaglutide (Trulicity®) (9%); and tirzepatide (Mounjaro®) (9%). Median duration of therapy was 17 weeks (4-80 weeks). Initial BMI median was 57 (range: 37-74) and latest BMI prior to surgery was 53 (range: 37-71). No patients discontinued medication use due to adverse effects and 25% of patients successfully underwent bariatric surgery without any complications.

Conclusions: This pilot program successfully shows that clinical pharmacists can provide enhanced outcomes through combined therapies of AOMs and bariatric surgery. As previously demonstrated in anticoagulation and diabetes management, clinical pharmacists can both navigate the insurance drug approval process and provide therapy to a well-defined target with low adverse events.

Order Pathway

1. Provider to see patient for initial visit, then enter “REF285” Ambulatory Referral to Pharmacy order
2. Referral order options to be filled out
3. For department, select “YNHH MEDICATION MGMT PHARM CLIN HOWARD”
4. Associate order with appropriate diagnosis for patient, then sign order

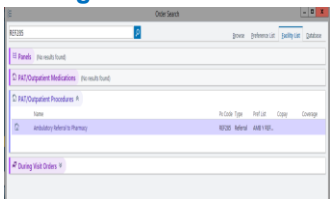


FIG 1

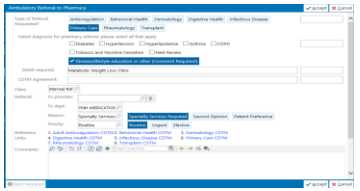


FIG 2

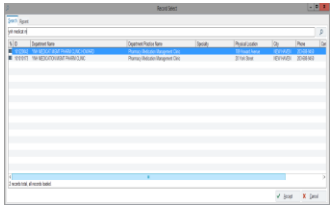


FIG 3

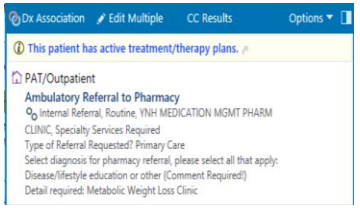


FIG 4

Yale Center of Weight Management

- **Co-Directors: Ania Jastreoff, Waj Mehal, John Morton**
- **Obesity Medicine Specialists, Metabolic and Bariatric Surgery, Access to Specialists from Culinary Medicine to Cardiologists**
- **Certified Bariatric Nurses, RDs, Psychologist/Social Work, Exercise Physiologist, Clinical Pharmacists**

One-stop shopping under one roof

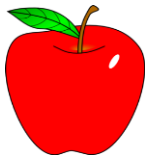
Yale Center for Weight Management

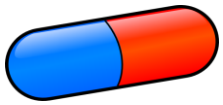
Clinical Review & Education

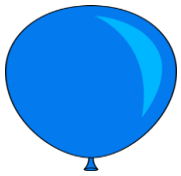
JAMA Insights | CURRENT TOPICS IN OBESITY

Current and Future Medications for Obesity Treatment

Robert F. Kushner, MD; Ania M. Jastreboff, MD, PhD; Donna H. Ryan, MD







Clinical Review & Education

JAMA Insights | CURRENT TOPICS IN OBESITY

Combining Medications With Bariatric Surgery to Treat Obesity

John Magaña Morton, MD, MPH, MHA

Whether it's for meal plans, professional guidance or access to medications like GLP-1s, weight loss clinics can offer personalized assistance for those hoping to make sustainable lifestyle changes. In fact, clinics have consistently proven to produce better long-term outcomes for slimming down than doing it alone, and the U.S. medical weight loss industry is expected to grow by 4.3 percent each year over the next decade.

With so much important progress in the field, *Newsweek* and Statista are partnering for the first time to name America's Best Weight Loss Clinics & Centers 2025, recognizing 200 facilities across the country that have helped people achieve healthy,

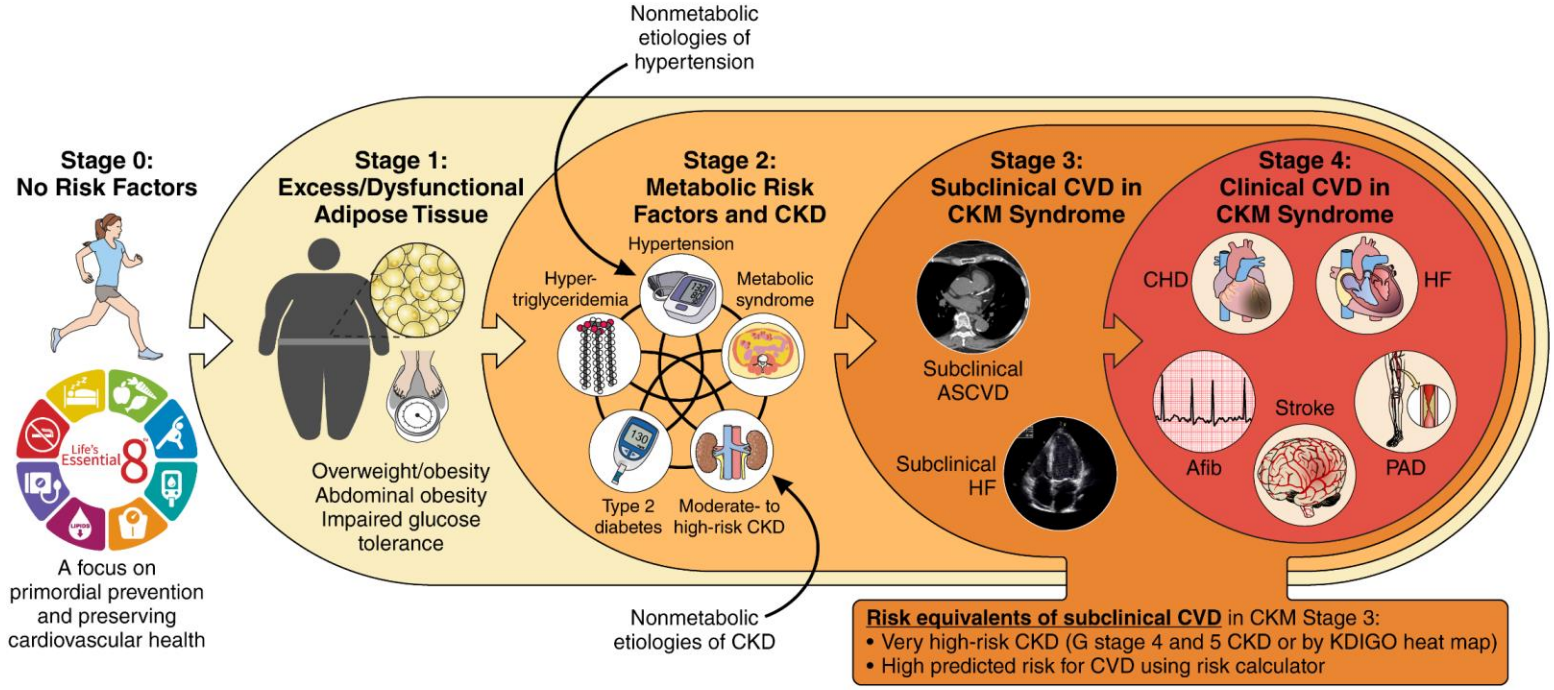
Obesity Pathway

REFERRAL 203-200-3232

Overview | Lifestyle | Medications | Medication Follow Up | Bariatric Surgery | Resources

Yale New Haven Hospital System

Stages of Cardiovascular-Kidney-Metabolic Syndrome



Ndumele, C.E. et al., Cardiovascular-Kidney-Metabolic Health: A Presidential Advisory From the American Heart Association. 2023. *Circulation.*

AHA/ACC/ADA/ASN CKM Guideline 2026

MBS endorsed for CKM Stage 1-3 with obesity (LOE A) and is cost-effective with High Level of Certainty

CLINICAL PRACTICE GUIDELINE

2026 AHA/ACC/ADA/ASN Guideline for the Prevention, Detection, Evaluation, and Management of Cardiovascular-Kidney-Metabolic Syndrome

A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines

Developed in Collaboration With and Endorsed by the American Diabetes Association, the Obesity Association, a division of the American Diabetes Association, and the American Society of Nephrology

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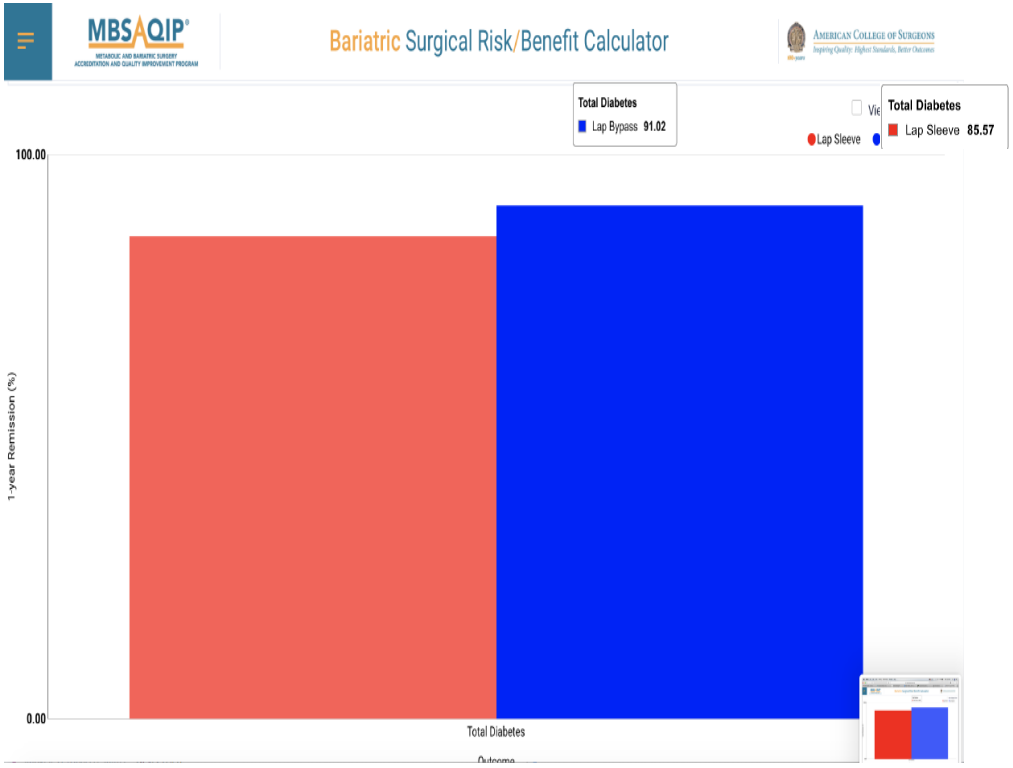
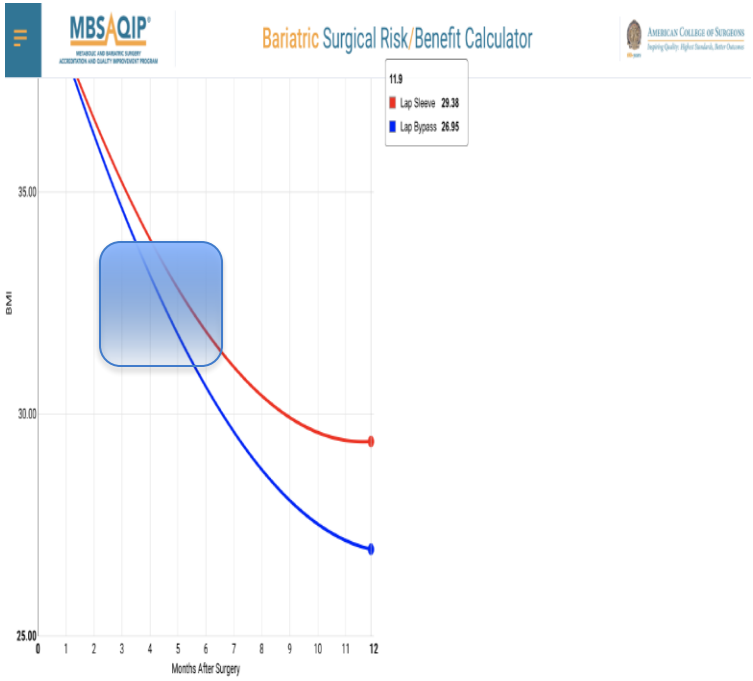
Predictors of weight regain:
BMI >50/DM/Deviation from projected weight loss at **3 months_Time to Start**





Metabolic and Bariatric Surgery
Postoperative Weight Regain

- **Patients who undergo MBS have excellent weight loss at one-year post surgery (25.1-31.2 TBWL %); however, 10% of patients who underwent gastric bypass surgery and 30% of patients who underwent sleeve gastrectomy had inadequate weight loss, defined as less than 20% total body weight loss (PCORnet Cohort Study. Ann Intern Med 2018; 169: 741 – 50)**

- **The NIH-funded Longitudinal Assessment of Bariatric Surgery (LABS), a prospective cohort study of 1406 adults who underwent MBS and were followed up for 6.6 years, reported that patients with >20% of weight gain after MBS had a 42% clinically important decline in quality of life and 35.3% had significant worsening of diabetes (King WC, Hinerman AS, Belle SH, Wahed AS, Courcoulas AP. Comparison of the Performance of Common Measures of Weight Regain After Bariatric Surgery for Association With Clinical Outcomes. JAMA. 2018 Oct 16;320(15):1560-1569. PMID: 30326125)**

- **PCORnet Bariatric Study reported modest weight regain for gastric bypass (mean weight regained, 7.2 kg) and sleeve gastrectomy (mean weight regained, 8.2 kg), $P < 0.001$)**

- **Formal assessment of eating behaviors, new medications, and anatomy should be performed**

- **Revisional Surgery and Obesity Modifying Medications best options for relapse of a chronic disease**

Metabolic and Bariatric Surgery
Postoperative Weight Regain

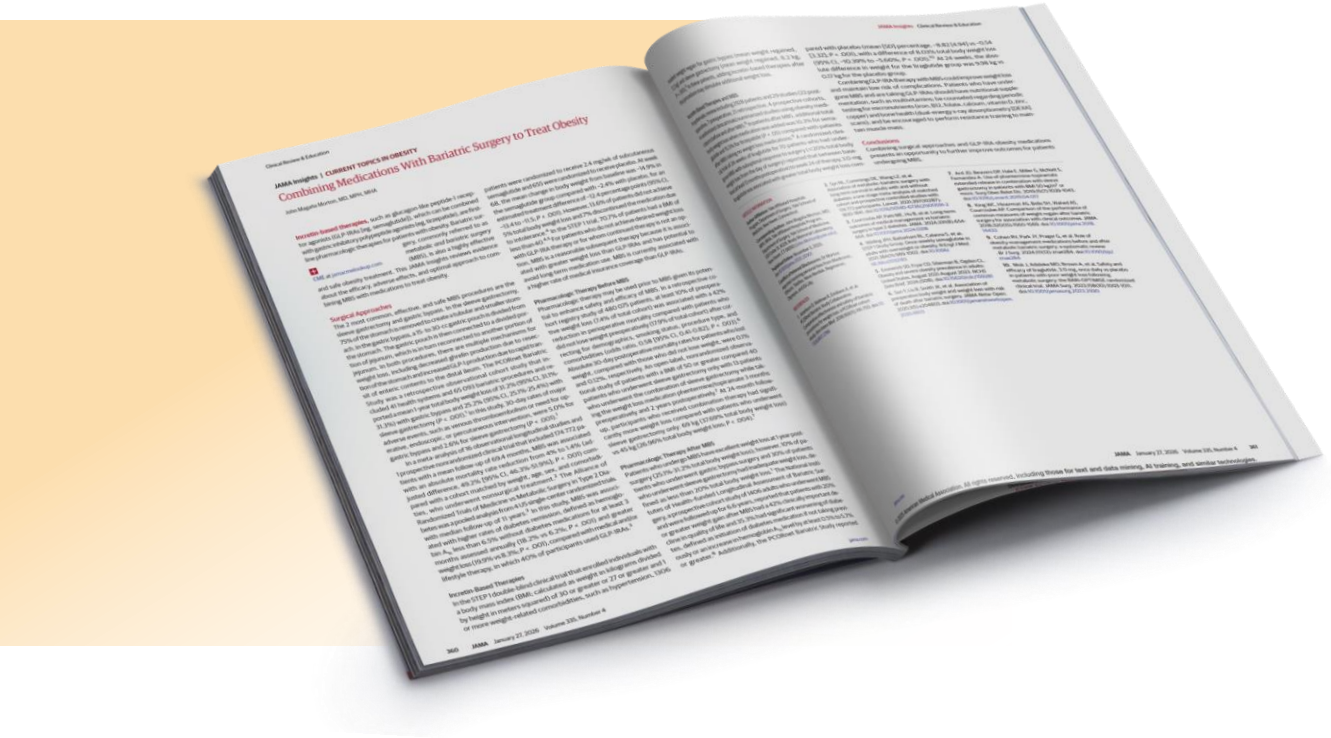
- **Comprehensive evaluation** — Identify behavioral, psychological, pharmacological, and anatomical contributors
- **Intensive behavioral/nutritional therapy**
- **Pharmacotherapy** — Add GLP-1 RA
- **Endoscopic revision** — Transoral Outlet Reduction (± AOM) for GJA dilation after RYGB
- **Surgical revision/conversion** — For anatomical failure or refractory cases

- **BARI-STEP TRIAL**

Estimated change in mean (s.d.) percentage weight loss from baseline to week 68 was -18.0 (9.2) with semaglutide 2.4 mg (n = 34) versus +0.4 (7.0) with placebo (n = 29). The mean adjusted treatment difference in percentage body weight change for semaglutide 2.4 mg versus placebo was -19.18 (95% confidence interval -23.4 to -14.8; P < 0.001).

Combining medications with bariatric surgery to treat obesity

Morton, *JAMA* 2026



Morton JMM. *JAMA*. 2026;335(4):360-361.

Preop (NeoAdjuvant)

Utilization of Low-Dose Phentermine for Weight Loss Prior to Metabolic and Bariatric Surgery: A Prospective, Randomized, and Placebo-Controlled Trial

Luis Garcia[1] | Homero Rivas[2] | John Morton[3]

TABLE 2 | Participant characteristics after follow up.

	Follow up 1			Follow up 2		
	Lomaira $\bar{x} \pm SD$	Control $\bar{x} \pm SD$	*p*-value	Lomaira $\bar{x} \pm SD$	Control $\bar{x} \pm SD$	*p*-value
%TWL	2.7 ± 2.6	1.1 ± 2.8	0.1	4.7 ± 4.3	1.1 ± 3.6	0.001
ΔWeight (kgs.)	−3.3 ± 2.9	−1.3 ± 2	0.04	−6.2 ± 6	−1.1 ± 4.5	0.001
ΔBMI (kg/m^2)	−1.2 ± 1.1	−0.5 ± 0.8	0.09	−2.3 ± 2.5	−0.46 ± 1.7	0.002
ΔSBP (mmHg)	−0.62 ± 16.9	−5.2 ± 9.9	0.4	−2.1 ± 15.8	−6.8 ± 12.2	0.3
ΔDBP (mmHg)	1.3 ± 9.4	−6.6 ± 7.6	0.04	−0.5 ± 6.3	−2.7 ± 11.2	0.5

Obesity Science & Practice, 2025; 11:e70043
https://doi.org/10.1002/osp4.70043

Original article

Use of phentermine-topiramate extended release in combination with sleeve gastrectomy in patients with BMI 50 kg/m^2 or more

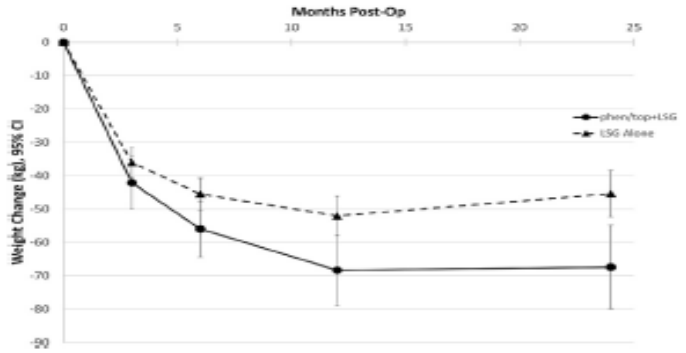
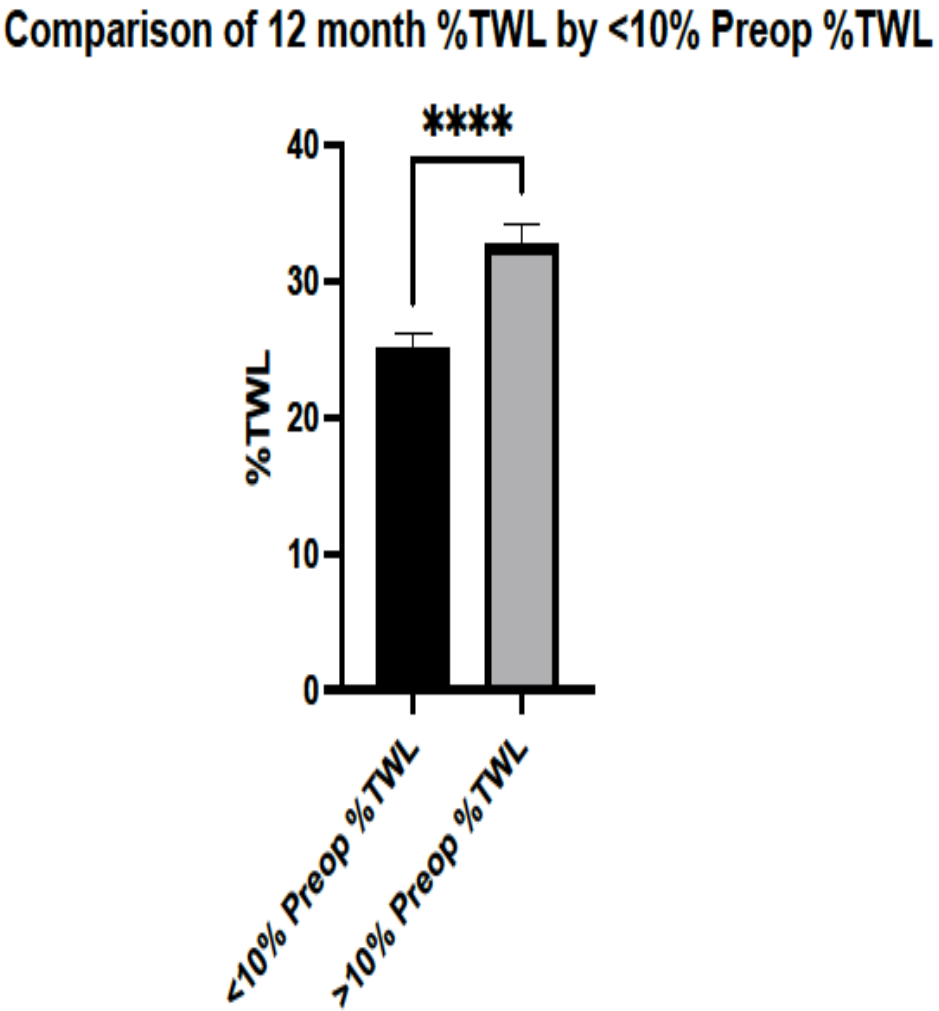
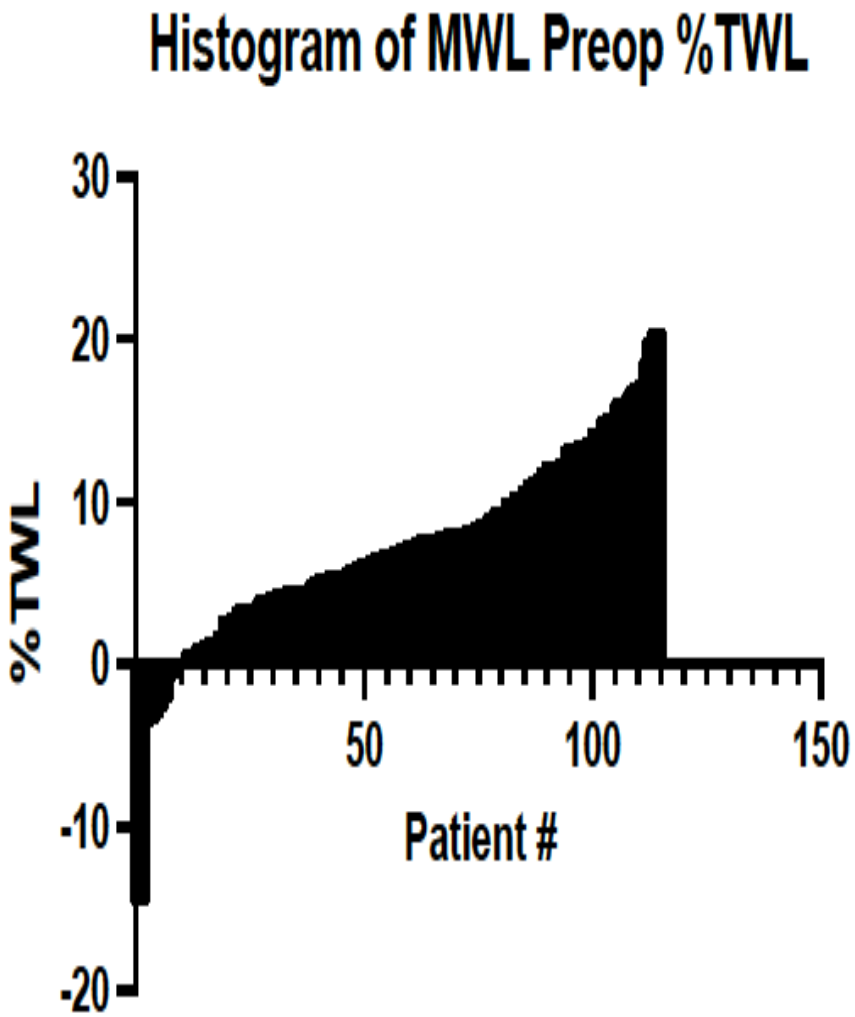


Fig. 1. Change in weight (kg) after laparoscopic sleeve gastrectomy (LSG) for those treated with phentermine and topiramate extended release (phen/top) + LSG versus LSG alone

Surgery for Obesity and Related Diseases 15 (2019) 1039–1043

Logistic Regression Analysis by Time





Post-op (Adjuvant)

Role of obesity-management medications before and after metabolic bariatric surgery: a systematic review

Table 2 Summary of the current literature on postoperative OMMs for suboptimal initial clinical response and/or recurrent weight gain, including traditional and modern agents

Authors/study type	Medication	Index operation and time since the intervention	Patients	Follow-up	Outcomes
Zoss *et al.*[49] Prospective	Orlistat 240 mg daily	AGB, at least 12–24 months postop	19 orlistat + diet counselling 19 Diet counselling	8 months, with 9 months extension in the orlistat group	8 ± 3 kg orlistat group 3 ± 2 kg counselling group
Hanipah *et al.*[50] Retrospective	Phentermine Phentermine/topiramate extended-release Lorcaserin Naltrexone slow-release/ bupropion slow-release*	RYGB, SG, AGB Median of 38 months postop	126 RYGB 52 SG 21 AGB	12 months	% of patients > 10% TWL RYGB 17.2% AGB 23.5% SG 2.4% $P < 0.001$
Stanford *et al.*[51] Retrospective	Among 15 agents, topiramate, phentermine, metformin, bupropion, and zonisamide were the most prescribed	RYGB, SG At least 12 months postop	258 RYGB 61 SG	Not available	Topiramate was the only medication that demonstrated a 2× more chance of >10% TWL RYGB pts achieved more TWL than SG
Schwartz *et al.*[52] Retrospective	Phentermine or phentermine–topiramate extended-release	RYGB, AGB Time since MBS not available	51 RYGB 14 AGB	3 months	Phentermine (6.35 kg, 12.8% EWL) and phentermine–topiramate extended-release (3.81 kg, 12.9% EWL $P < 0.001$
Istfan *et al.*[53] retrospective	Topiramate, phentermine	RYGB, 6 months to 6 years	350	Up to 11 years	Topiramate and phentermine decrease cumulative WR by about 10% relative to nadir weight and reduce the odds of rapid WR after RYGB
Pajecki *et al.*[54] Retrospective	Liraglutide 1.8 mg	RYGB, AGB, BPD-DS, SG, 2–13 years	9 RYGB 4 AGB 1 SG 1 BPD-DS	28 weeks	A mean of 7.3% TWL among all patients
Rye *et al.*[44] Retrospective	Liraglutide 3 mg	RYGB, SG, VBG, AGB. Time since MBS not available	7 RYGB 7 SG 3 VBG 3 AGB	28 weeks	Median of 9.7% TWL
Vinciguerra *et al*[55] Retrospective	Liraglutide 3 mg	RYGB, SG, AGB, OAGB	119 patients	28 weeks	Mean TWL 9.3 ± 3.6%
Suliman *et al.*[56] Prospectively collected chart data	Liraglutide 3 mg	SG, RYGB, others	120 SG, 47 RYGB, 21 other	4 months	Mean 6.1% TWL
Muratori *et al.*[57] Retrospective	Liraglutide 3 mg	RYGB, SG, AGB 70.7 months ± 43.7	17 RYGB 22 AGB 23 SG	28 weeks	Mean of 12.2% TWL
Wharton *et al.*[45] Retrospective	Liraglutide 3 mg	RYGB, AGB, SG 7.8 ± 5.7 years	53 RYGB 50 AGB 14 SG	Up to 12 months	RYGB 6.6% TWL AGB 4.9% TWL SG 4.5% TWL|
Jamal *et al.*[58] Retrospective	Liraglutide 3 mg	SG, 1–10 years	57	3 months	8.10% TWL
Horber and Steffen[59] Prospective†	Liraglutide 3 mg	RYGB > 6 years	95	24 months	Liraglutide group lost 4.8 ± 2.9 kg/m² and pouch trimming plus silastic ring, 5.5 ± 2.9 kg/m²
Hany *et al.*[60] RCT	Liraglutide up to 3 mg	Conversions of SG into RYGB	38 Liraglutide 31 placebo	12 months	24.1% TWL for Liraglutide 22.7% TWL placebo ($P < 0.001$)
Mok *et al.*[43] RCT	Liraglutide up to 3 mg × placebo	SG or RYGB with ≤20% body weight loss, >12 months after MBS	Lira 35 Placebo 35	6 months	Liraglutide group 8.8% TWL Placebo group 0.5% TWL
Miras *et al.*[42] RCT	Liraglutide 1.8 mg× placebo	SG RYGB > 1 year since MBS	19 SG 51 RYGB	6 months	Mean difference in weight change from baseline to week 26 for liraglutide *versus* placebo of −4.23 kg ($P = 0.0017$) TWL was a secondary endpoint
Lautenbach *et al.*[61] Retrospective	Semaglutide from weekly 0.25 mg. The maximum dose reached was not disclosed	SG and RYGB 64.7 ± 47.6 months	29 SG 15 RYGB	6 months	10.3 ± 5.5% for both operations

Table 2 (continued)

Authors/study type	Medication	Index operation and time since the intervention	Patients	Follow-up	Outcomes
Bonnet *et al.*[62]*‡ Retrospective	Semaglutide up to 2.4 mg	SG and RYGB Time since surgery not disclosed	28 SG 8 RYGB	6 moths	Median of 9.1% TWL for both operations
Jensen *et al.*[47] Retrospective	Semaglutide 2.4 mg × Liraglutide 3 mg	RYGB and SG 43–90 months since MBS	29 Sema 21 Lira	6 months	9.8% TWL Sema 7.1% Lira ($P < 0.001$)
Murvelashvili *et al.*[48] Retrospective	Semaglutide 1 mg × Liraglutide 3 mg	SG and RYGB Time since surgery not disclosed	115 Semaglutide 92 Liraglutide	12 months	12.9%TWL Sema 8.8%TWL Lira ($P < 0.001$)
Jamal *et al.*[58] Retrospective	Semaglutide 2.4 mg Tirzepatide up to 15 mg	115 SG 1–15 years	70 Semaglutide 45 Tirzepatide	6 mo	10.3%TWL Semaglutide 15.5% TWL Tirzepatide ($P < 0.05$)
Gazda *et al.*[63]	GLP-1RA × non-GLP1-RA× Lifestyle interventions	80 SG 73 RYGB 54 GB		12 months	1.6%TWL lifestyle interventions 5.6% non-GLP-1RA 6.9% GLP-1RA N.S.§

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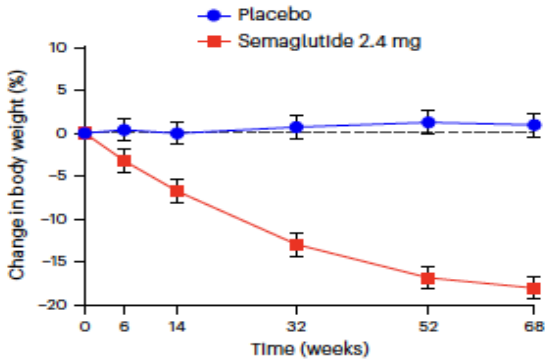


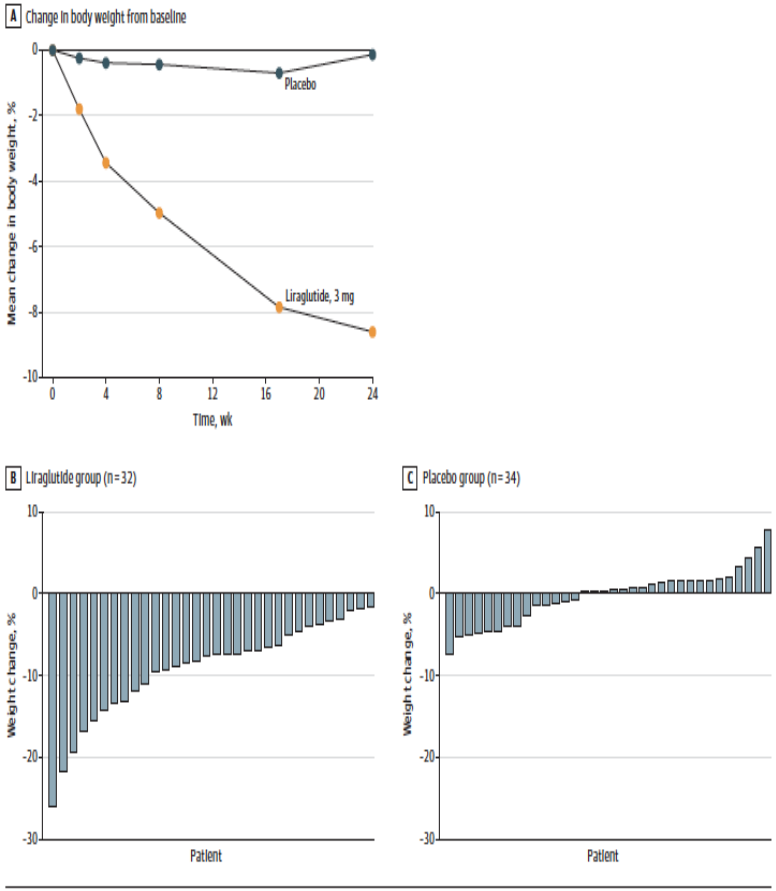
Fig. 2 | Effect of semaglutide 2.4 mg once-weekly versus placebo over time. Adjusted mean change in body weight (%) over time estimated using a repeated-measures, mixed-effects model adjusting for baseline weight, type of surgery, sex, diabetes status and interaction between treatment and visit ($n = 70$ all participants using all available data). The error bars indicate the s.e.m. Two-sided t-statistic with 95% CIs. Week 6: $n = 70$; d.f. = 134; $P = 0.008$. Week 14: $n = 66$; d.f. = 141, $P < 0.001$. Week 32: $n = 64$; d.f. = 144, $P < 0.001$. Week 52: $n = 61$; d.f. = 151, $P < 0.001$. Week 68: $n = 63$; d.f. = 147, $P < 0.001$, not adjusted for multiple comparisons.

Semaglutide versus placebo in individuals with poor weight loss after bariatric surgery: a double-blinded, randomized, placebo-controlled trial. Nat Med. 2026 May 22.

JAMA Surgery | Original Investigation

Safety and Efficacy of Liraglutide, 3.0 mg, Once Daily vs Placebo in Patients With Poor Weight Loss Following Metabolic Surgery The BARI-OPTIMISE Randomized Clinical Trial

Figure 2. Effect of Liraglutide, 3.0 mg, Once Daily vs Placebo Over Time



JAMA Surg. 2023;158(10):1003-1011. doi:10.1001/jamasurg.2023.2930
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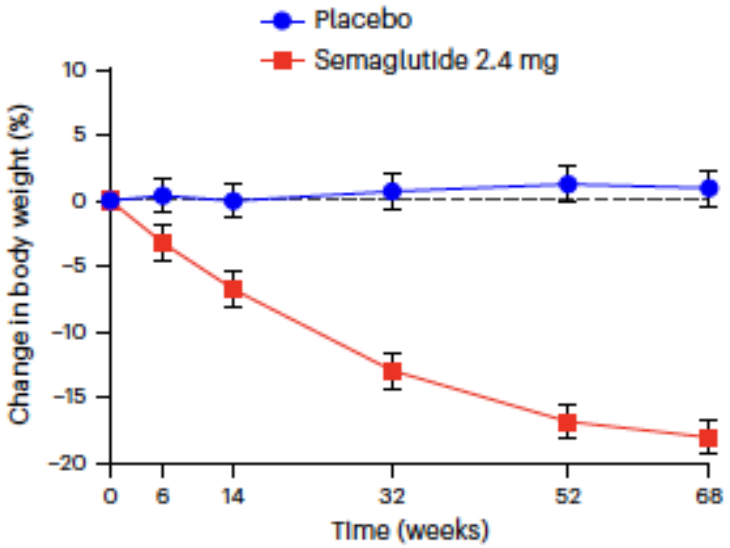

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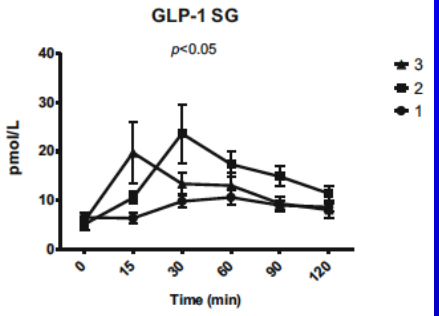
nature medicine
https://doi.org/10.1038/s41591-026-04416-4

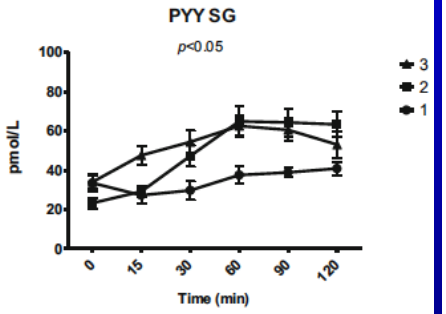
GLP-1 Before GLP-1 was Cool

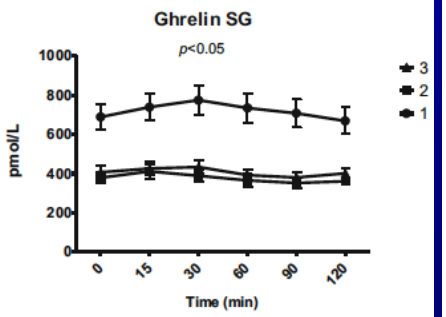
Metabolic and Bariatric Surgery

Auto-Transfusion GLP-1

Clinical Obesity. 2025;15:e12721.







Changes in gastrointestinal motility and gut hormone secretion after Roux-en-Y gastric bypass and sleeve gastrectomy for individuals with severe obesity

TABLE 4 Data of gastric emptying measured with 13C octanoic breath test in severely obese patients measured at baseline and 2 and 12 months after sleeve gastrectomy (SG) or Roux-en-Y gastric bypass (RYGB).

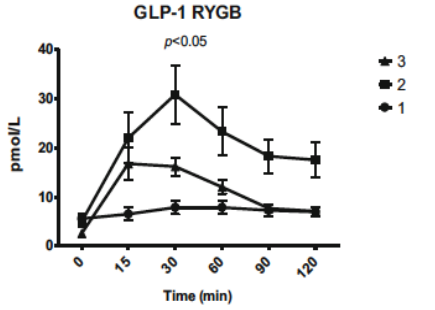
Gastric emptying	T = 0 baseline	T = 2 months	T = 12 months	*p*-value
SG (*n* = 10)				
T1/2 (min)	245 [193–402]	130 [125–154]	125 [97–146]	$p < 0.05$
Tlag (min)	157 [121–169]	101 [86–106]	102 [77–121]	$p < 0.05$
RYGB (*n* = 11)				
T1/2 (min)	263 [250–486]	128 [86–152]	125 [113–144]	$p < 0.0001$
Tlag (min)	221 [164–267]	81 [75–108]	80 [58–100]	$p < 0.0001$

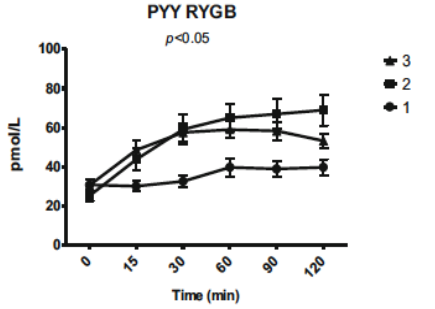
Note: Data are presented as medians with interquartile ranges. *p* values indicate differences between T = 2 months and baseline (T = 0) and T = 12 months and baseline (T = 0).

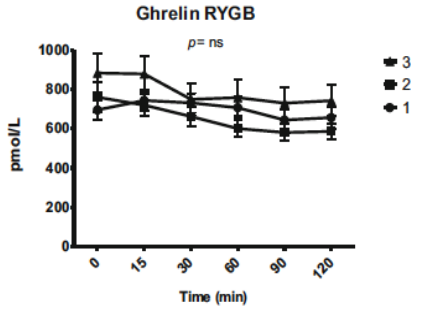
TABLE 5 Oro-cecal transit time measured with lactulose H_2 breath testing at baseline and at 2 and 12 months in severely obese patients before and 2 and 12 months after sleeve gastrectomy (SG) or Roux-en-Y gastric bypass (RYGB).

OCTT (min)	T = 0 baseline	T = 2 months	T = 12 months	*p*-value
SG (*n* = 12)	150 [52.5–210]	105 [75.0–163]	60 [37.5–90.0]	$p < 0.05$
RYGB (*n* = 13)	120 [82.5–225]	105 [52.5–105]	90 [52.5–150]	$p = 0.33$

Note: Data are presented as medians with interquartile ranges. *p* values indicate significant changes between T = 12 months and baseline (T = 0).







GLP-1 Before GLP-1 was Cool

Metabolic and Bariatric Surgery

Preoperative weight loss with glucagon-like peptide-1 receptor agonist treatment predicts greater weight loss achieved by the combination of medical weight management and bariatric surgery in patients with type 2 diabetes: A longitudinal analysis

Diabetes Obes Metab. 2018;**20**:745–748.

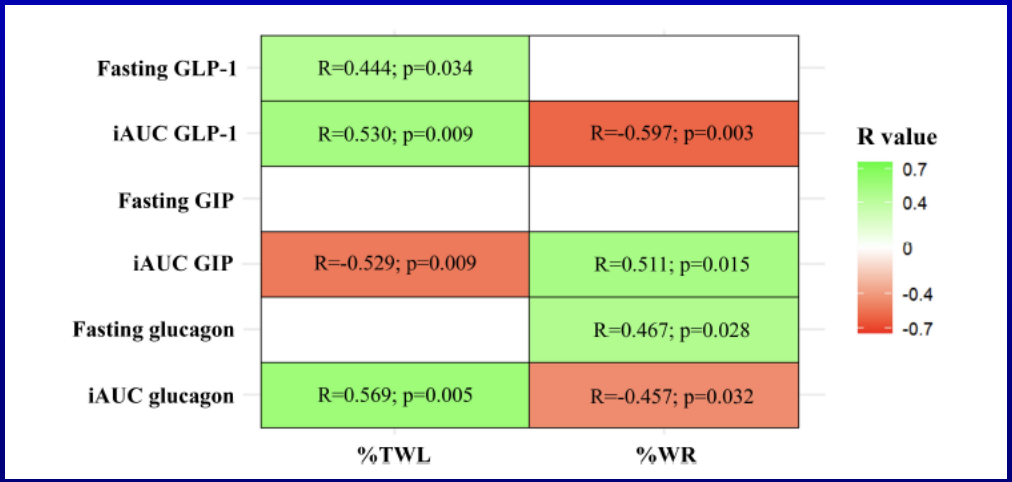
TABLE 1 Correlations between GLP-1RA-induced weight change and TWC calculated from start of MWM to 12 months after bariatric surgery

	r value	P value
Total study population (n = 45)		
Correlations between GLP-1RA-induced weight change in kg, and TWC in kg	0.31	.04
Correlations between GLP-1RA-induced weight change in %, and percentage TWC	0.26	.08
LAGB (n = 26)		
Correlations between GLP-1RA-induced weight change in kg, and TWC in kg	0.42	.03
Correlations between GLP-1RA-induced weight change in %, and percentage TWC	0.40	.045
RYGB/LSG (n = 19)		
Correlations between GLP-1RA-induced weight change in kg, and TWC in kg	0.46	.05
Correlations between GLP-1RA-induced weight change in%, and percentage TWC	0.40	.09

GLP-1 and GIP may play a role in long-term weight trajectories after gastric bypass

Sara Andrade[1,2], Carolina B. Lobato[1,2,3,4], Mariana Machado[1,2], Bolette Hartmann[3], Jens J. Holst[3,5], Rui F. Almeida[6], Mário Nora[6], Mariana P. Monteiro[1,2], Marta Guimarães[1,2,6] and Sofia S. Pereira[1,2*]

Front. Endocrinol. 16:1624001

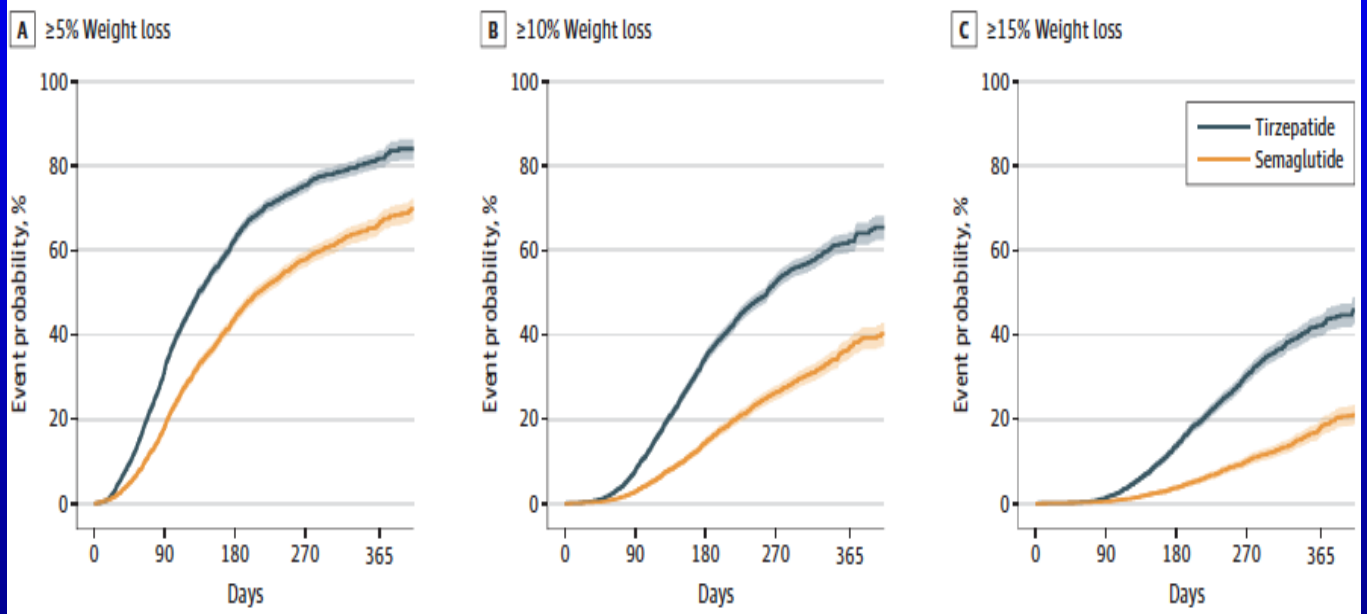


JAMA Internal Medicine | Original Investigation

Semaglutide vs Tirzepatide for Weight Loss in Adults With Overweight or Obesity

Patricia J. Rodriguez, PhD; Brianna M. Goodwin Cartwright, MS; Samuel Gratzl, PhD; Rajdeep Brar, MD; Charlotte Baker, DrPH; Ty J. Gluckman, MD; Nicholas L. Stucky, MD

Figure 2. Event Probabilities for 5% or Greater, 10% or Greater, and 15% or Greater Weight Reduction Among Propensity-Score Matched Patients on Treatment



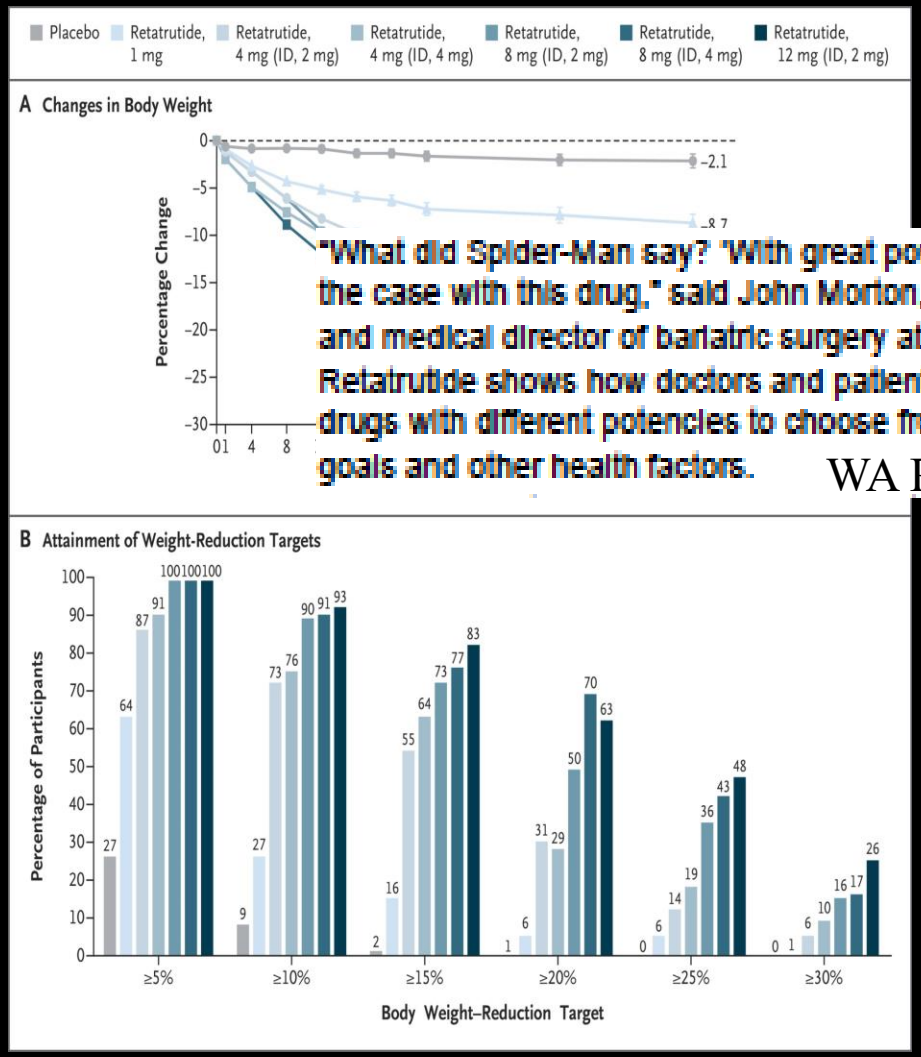
The y-axis represents the event probability (1-survival probability [eg, probability of being event-free]).

Label Indications

Wegovy
Obesity
Diabetes
MACE
MASH

Mounjaro
Obesity
Diabetes
OSA

Changes in Body Weight with Retatrutide as Compared with Placebo.



"What did Spider-Man say? 'With great power comes great responsibility.' That's the case with this drug," said John Morton, a professor at Yale medical school and medical director of bariatric surgery at Yale New Haven Health System. Retatrutide shows how doctors and patients will ultimately have a variety of drugs with different potencies to choose from, depending on their weight-loss goals and other health factors.

WA POST 2026

Table 3. Adverse Events and Safety.*

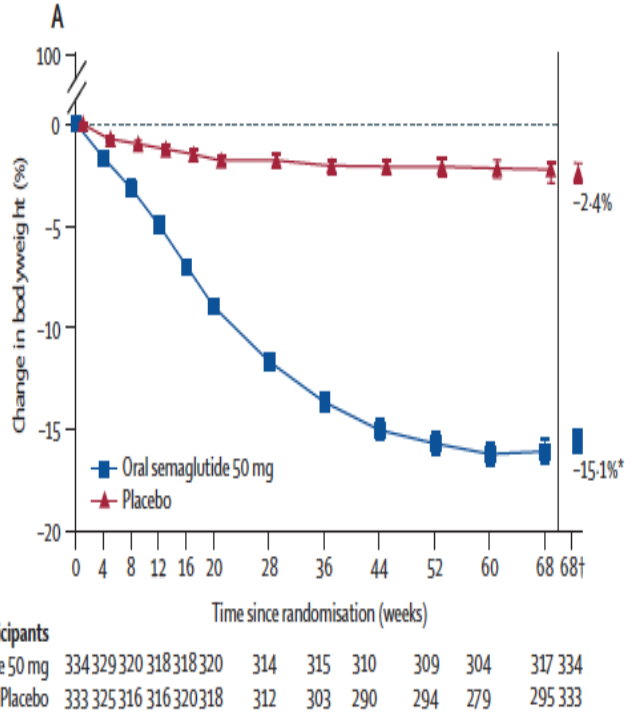
Adverse Event	Placebo Group (N=70)	Retatrutide Groups						Overall (N=337)
		1 mg (N=69)	4 mg (ID, 2 mg) (N=33)	4 mg (ID, 4 mg) (N=33)	8 mg (ID, 2 mg) (N=35)	8 mg (ID, 4 mg) (N=35)	12 mg (ID, 2 mg) (N=62)	
	number of participants (percent)							
Any adverse event during treatment	49 (70)	58 (84)	24 (73)	28 (85)	28 (80)	33 (94)	57 (92)	277 (82)
Serious adverse event	3 (4)	3 (4)	0	2 (6)	1 (3)	2 (6)	2 (3)	13 (4)
Death†	0	0	0	1 (3)	0	0	0	1 (<1)
				(9)	5 (14)	2 (6)	10 (16)	27 (8)
				0	1 (3)	0	3 (5)	4 (1)
				(3)	0	0	1 (2)	3 (1)
				0	1 (3)	0	1 (2)	2 (1)
				0	0	0	1 (2)	2 (1)
				0	0	0	0	2 (1)
				(36)	6 (17)	21 (60)	28 (45)	91 (27)
				(18)	6 (17)	12 (34)	15 (24)	70 (21)
				(24)	4 (11)	11 (31)	18 (29)	62 (18)
				(12)	7 (20)	7 (20)	9 (15)	45 (13)
Vomiting	1 (1)	2 (3)	4 (12)	4 (12)	2 (6)	9 (26)	12 (19)	34 (10)
Constipation	2 (3)	5 (7)	5 (15)	2 (6)	4 (11)	4 (11)	10 (16)	32 (9)
Fatigue	3 (4)	3 (4)	4 (12)	2 (6)	1 (3)	3 (9)	6 (10)	22 (7)
Early satiety	4 (6)	3 (4)	1 (3)	1 (3)	0	2 (6)	6 (10)	17 (5)
Increase in lipase level	2 (3)	2 (3)	3 (9)	2 (6)	1 (3)	2 (6)	5 (8)	17 (5)
Adverse events of special interest§								
Hypersensitivity	2 (3)	7 (10)	1 (3)	2 (6)	3 (9)	7 (20)	8 (13)	30 (9)
Antidrug antibodies during treatment¶	1 (1)	3 (4)	4 (12)	5 (16)	5 (16)	2 (6)	11 (18)	31 (9)
Hyperesthesia or related adverse event	1 (1)	1 (1)	2 (6)	2 (6)	1 (3)	5 (14)	8 (13)	20 (6)
Cardiac arrhythmia‖	2 (3)	3 (4)	0	2 (6)	0	5 (14)	7 (11)	19 (6)
Hepatic disorder	2 (3)	5 (7)	1 (3)	0	1 (3)	2 (6)	2 (3)	13 (4)
Biliary disorder**	0	0	0	0	1 (3)	2 (6)	0	3 (1)
Severe gastrointestinal adverse event	0	0	0	1 (3)	1 (3)	1 (3)	4 (6)	7 (2)
Injection-site reaction	0	1 (1)	0	1 (3)	0	1 (3)	5 (8)	8 (2)
Major depressive disorder or suicidal ideation	1 (1)	0	0	0	0	0	0	1 (<1)
Renal event	1 (1)	1 (1)	1 (3)	0	0	1 (3)	0	4 (1)
Major adverse cardiovascular event††	0	2 (3)	0	0	0	0	0	2 (1)
Pancreatitis††	0	0	0	0	0	0	1 (2)	1 (<1)

* Safety end points were analyzed with data from all the participants who underwent randomization and took at least one dose of retatrutide or placebo. Covid-19 denotes coronavirus disease 2019.
† An external committee of physicians was responsible for determining whether any death that occurred during the trial was cardiovascular-related; the single death in this trial was adjudicated as undetermined. The death (from drowning) was assessed by the site investigator as not related to retatrutide.
‡ Adverse events that led to discontinuation in two or more participants are shown here.
§ With the exception of antidrug antibodies, the adverse events of special interest were evaluated with the use of prespecified standardized *Medical Dictionary for Regulatory Activities* (MedDRA) search queries or customized clusters of MedDRA preferred terms.
¶ Data on antidrug antibodies were not available for 10 participants (2 in the placebo group, 1 in the 1-mg group, 1 in the 4-mg group with an initial dose of 4 mg, 3 in the 8-mg group with an initial dose of 2 mg, 1 in the 8-mg group with an initial dose of 4 mg, and 2 in the 12-mg group).
‖ This category includes supraventricular arrhythmias and cardiac conduction disorders.
** This category includes cholecystitis (in one participant), and cholelithiasis (in two participants).
†† These events were confirmed by an independent clinical end-point committee. Adverse events of special interest that did not occur in any participants are described in the text.

Jastreboff AM et al. N Engl J Med2023;389:514-526

The NEW ENGLAND JOURNAL of MEDICINE

Oral semaglutide 50 mg taken once per day in adults with overweight or obesity (OASIS 1): a randomised, double-blind, placebo-controlled, phase 3 trial



Number of participants

Oral semaglutide 50 mg	334	329	320	318	318	320	314	315	310	309	304	317	334
Placebo	333	325	316	316	320	318	312	303	290	294	279	295	333

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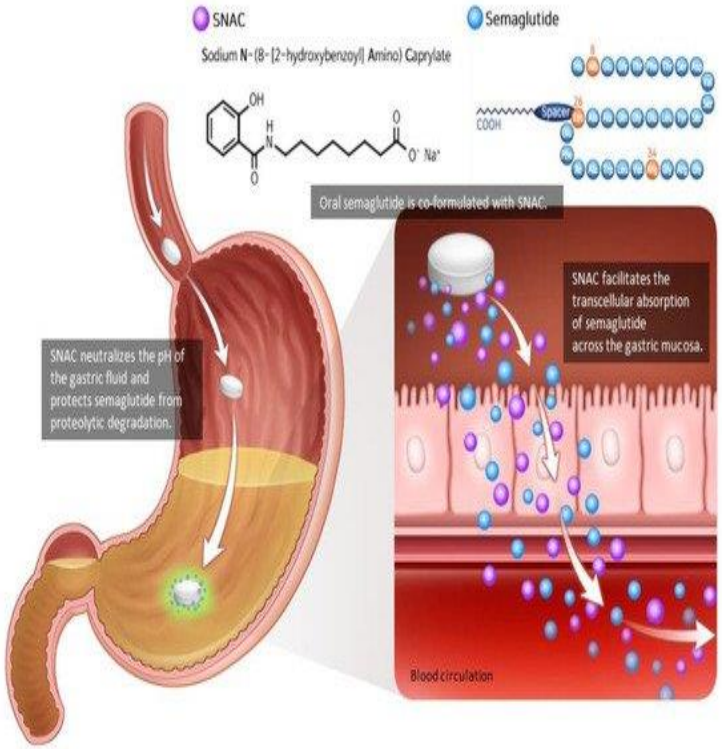
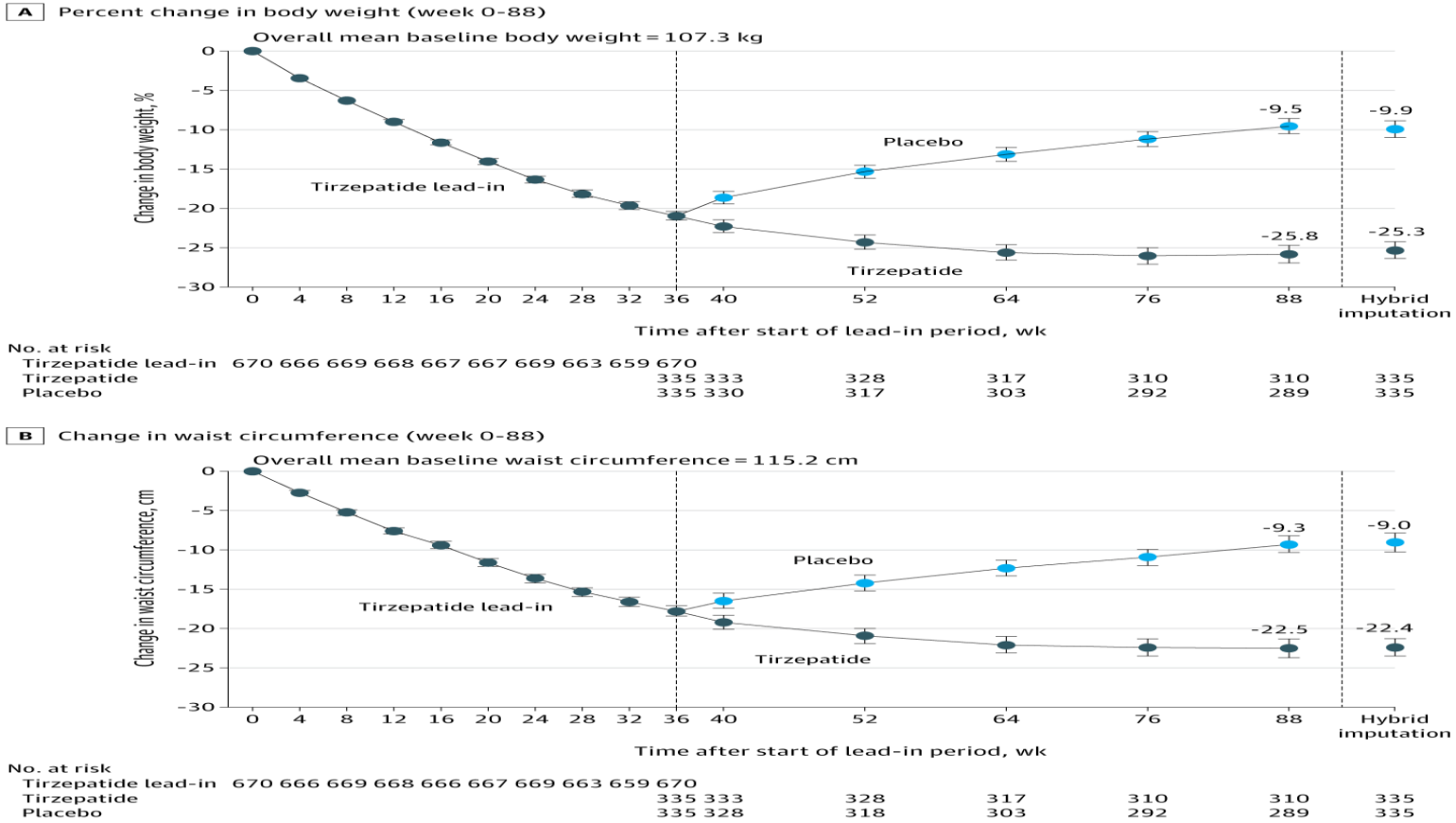


Wegovy > Weight Loss
Foundayo>Side-effects

JAMA Network™

From: **Continued Treatment With Tirzepatide for Maintenance of Weight Reduction in Adults With Obesity: The SURMOUNT-4 Randomized Clinical Trial**

JAMA. 2024;331(1):38-48. doi:10.1001/jama.2023.24945



Date of download: 3/16/2026

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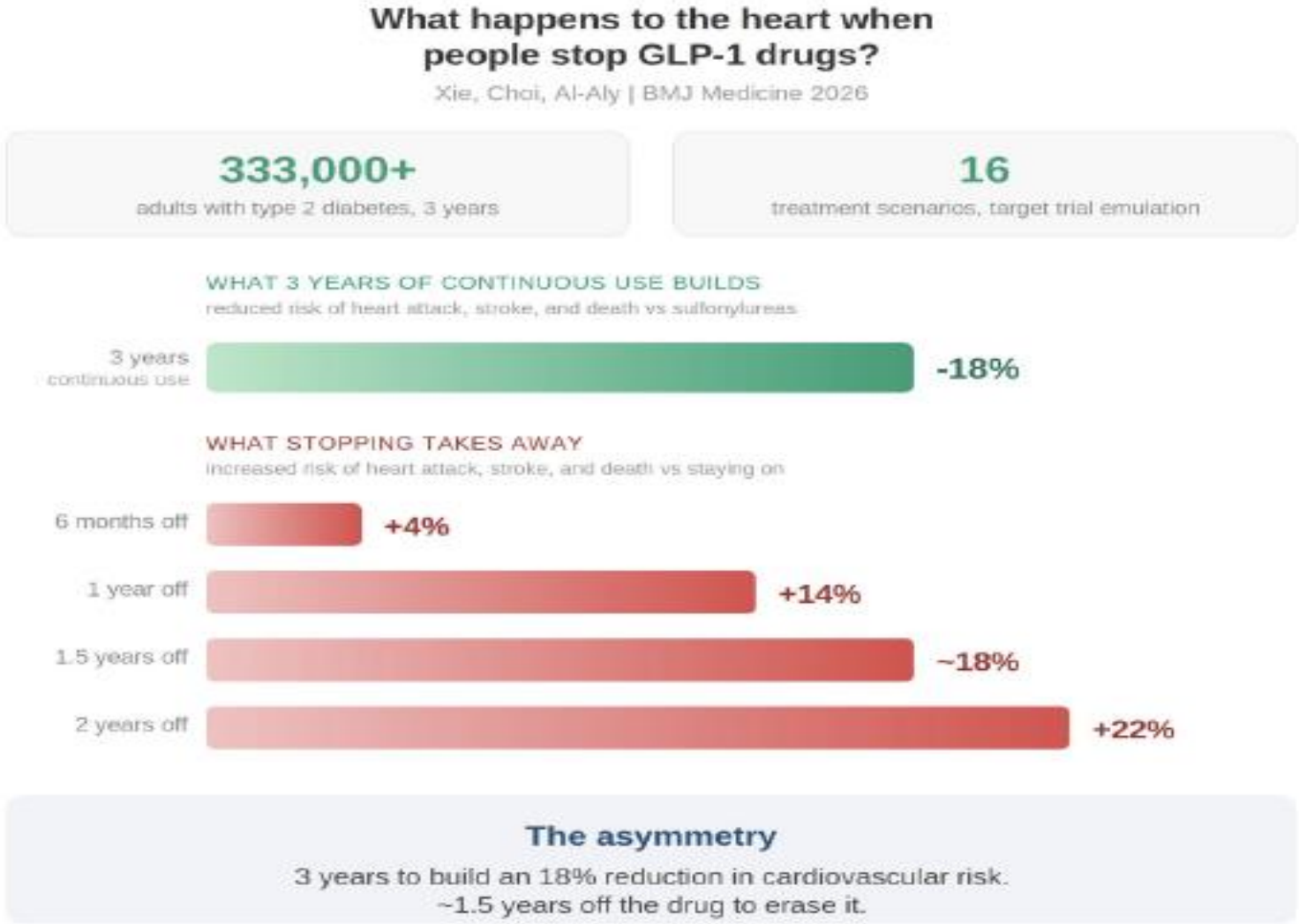
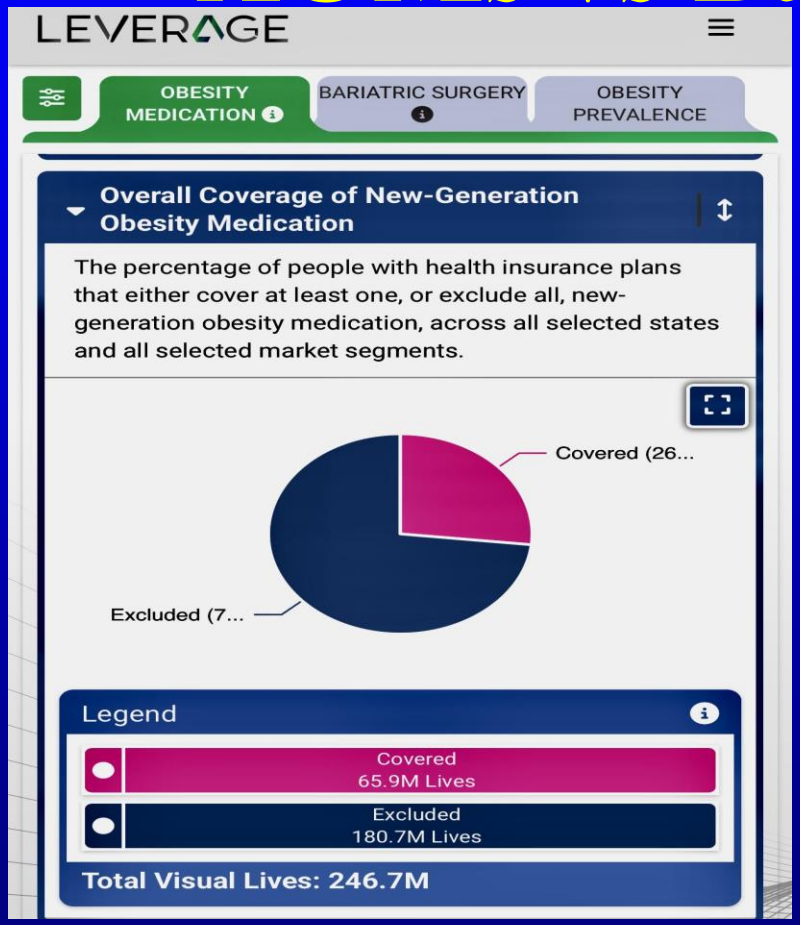
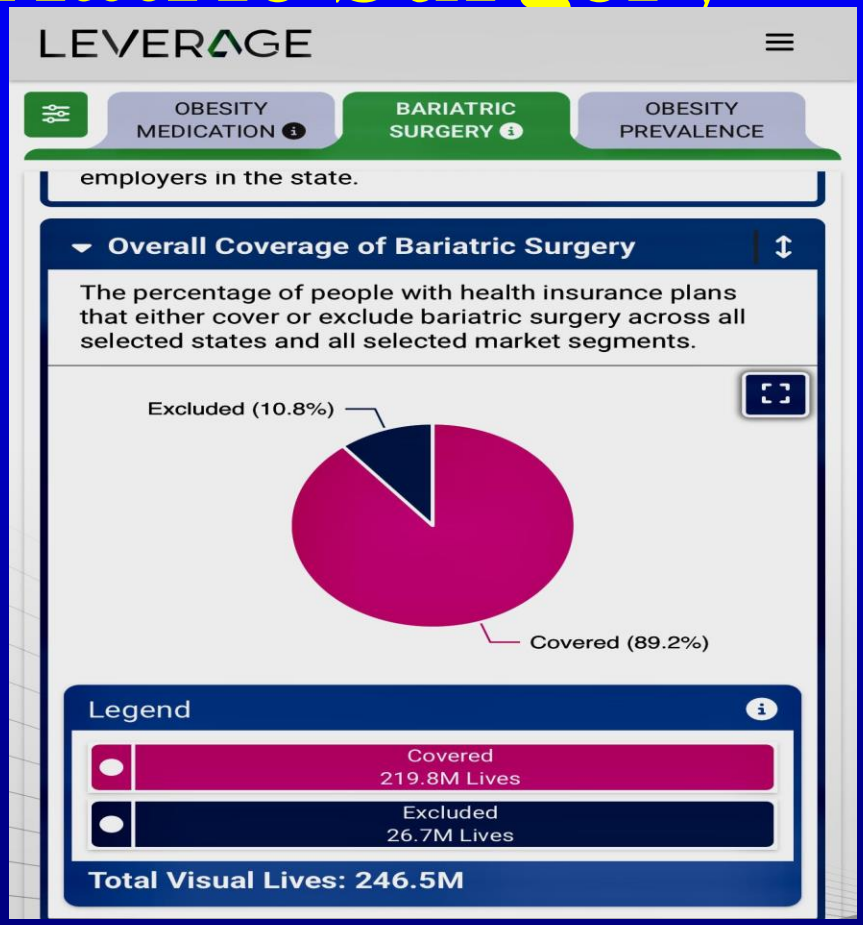
Real World Adherence: GLP-1s



National Coverage
AOMs vs Bariatric Surgery





https://leveragegc.com/rwjf/platform

Bariatric Surgery & GLP-1 Will Thrive Together
Challenges & Opportunities

- Coverage
- Cost
- Side-Effects
- Life-Long Need
- Contraindications
- Non-Responder Rate
- Weight Regain

- Readiness to Change Breached
- GLP-1 Before It Was Cool
- Bariatric Multiple Mechanisms
- Expanded Indications
- Combination Therapy

Thank You

John. Morton@ Yale.edu

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