Are incretin mimetics becoming the first line of treatment for obesity class 1 and 2?

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CONFLICT OF INTEREST DISCLOSURE

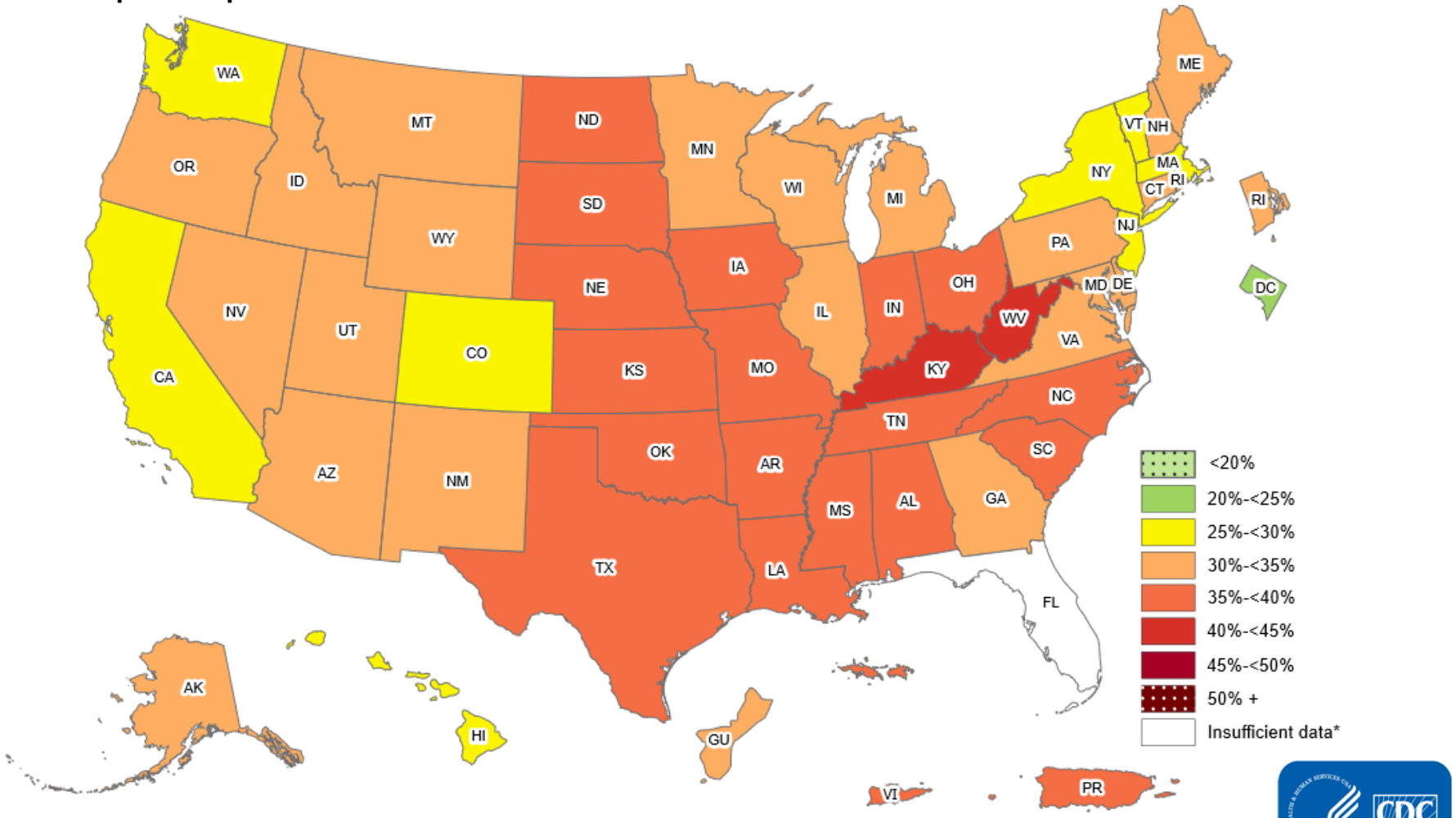
[ ] I have no potential conflict of interest to report

[X] I have the following potential conflict(s) of interest to report:

- Receipt of honoraria or consultation fees: Medtronic, Ethicon, WL Gore, Stryker, Novo Nordisk, Vivus

Prevalence¶ of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2021

¶ Prevalence estimates reflect BRFSS methodological changes started in 2011. These estimates should not be compared to prevalence estimates before 2011.



***Sample size <50, the relative standard error (dividing the standard error by the prevalence) is or no data in a specific year.**

US Incidence

- 41.9% of adults in the U.S. have obesity
- In the United States, the annual increase in adult obesity is high at 2.1%, and the percentage of U.S. adults with obesity is predicted to reach **58% by 2035**

WHO

- **Worldwide obesity has nearly tripled since 1975.**
- **In 2016, more than 1.9 billion adults, 18 years and older, were overweight. Of these over 650 million were obese.**
- **39% of adults aged 18 years and over were overweight in 2016, and 13% were obese.**
- **Most of the world's population live in countries where overweight and obesity kills more people than underweight.**
- **39 million children under the age of 5 were overweight or obese in 2020**

Balance


Improvements of obesity associated health conditions
With MBS Surgery
With AOMs

ASMBS/IFSO Guidelines for Metabolic and Bariatric Surgery 2022

Created to update old 1991 guidelines

More research in the benefits and durability of MBS

Extensive and rigorous analysis of the literature

Updated to address higher risk groups

ASMBS/IFSO 2022 Guidelines

- Metabolic and Bariatric Surgery (MBS) is recommended for individuals with BMI >35 kg/m2, regardless of presence, absence, or severity of comorbidities and should be considered for individuals with metabolic disease and BMI 30-34.9 kg/m2 who do not achieve substantial or durable weight loss or comorbidity improvement using nonsurgical methods.
- BMI thresholds should be adjusted in the Asian population such that BMI >25 kg/m2 suggests clinical obesity, and individuals with BMI >27.5 kg/m2 should be offered MBS and appropriately selected children/adolescents should be considered for MBS.

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IFSO Guidelines

Bariatric surgery should be considered in patients with class I obesity on an individual basis and after a comprehensive clinical evaluation of the patient's global health and a prediction of its future disease risk. The use of bariatric surgery in patients with class I obesity should be considered only after failure of proper non-surgical therapy.

Indication for bariatric surgery in class I obesity should be based more on the co-morbidity burden than on BMI levels. Co-morbidities should be evaluated considering their likely response to surgery and in relation to how they can be treated by established medical therapies.

The guidelines state that metabolic surgery should be considered an option to treat type 2 diabetes in patients with class I obesity and inadequately controlled hyperglycemia despite optimal medical treatment by either oral or injectable medications (including insulin).

Joint Statement by International Diabetes Organizations

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National Institute for Health and Care Excellence, UK

The National Institute for Health and Care Excellence guidelines are evidence-based recommendations for health and care in England. The most recent National Institute for Health and Care Excellence guideline on obesity was issued in 2014 [49], stating that an assessment for bariatric surgery in people with a BMI of 30 to 34.9 who have recent-onset type 2 diabetes (defined as a duration of ≤10 yr) is considered as long as they are also receiving or will

UK Guidelines

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ASMBS Low BMI Position Statement

- 12 RCTs
- 11 Meta-analyses
- These analyses continue to demonstrate a marked and durable improvement in co-morbid conditions, especially type 2 diabetes, as well as significant weight loss compared with medical therapy in patients with class I obesity.

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ASMBS Low BMI Position Statement

Systematic reviews and meta-analyses of bariatric surgery studies including patients with body mass index <35 kg/m^2.

Author, yr	Types of surgical intervention	N patients (N studies)	Average BMI loss, kg/m^2	Health outcomes
Li et al., 2012 [54]	RYGB, BPD, SAGB, DJB, SG-IT	357 (13)	5 (17 kg)	HbA1C <7% without medication: 80% Significant reduction in HbA1C (2.6%), FPG (4.8 mmol/L), triglycerides (57 mg/dL), and total cholesterol (48 mg/dL)
Reis et al., 2012 [55]	AGB, SG, RYGB, BPD, SAGB, DJB, IT	1209 (29)	5	HbA1C <7% without medication: 84% Significant reduction in HbA1C (3%), FPG (94 mg/dL)
Parikh et al., 2013 [56]	AGB, SG, RYGB, BPD, SAGB, IT	1389 (39)	5	HbA1C <6.5% without medication: 55%
Maglione et al., 2013 [57]	AGB, SG, RYGB, BPD	NR (24)	5–7 (15–20 kg)	Significant reduction in HbA1C (1.85–3.1%) Improvements in hypertension, LDL, triglycerides, OSA, and GERD
Ngiam et al., 2014 [58]	AGB, SG, RYGB, BPD, SAGB, DJB, SG-IT, SG-JT	2258 (53)	Average: 5.5 AGB: 5 DJB: 4 SG: 7 RYGB: 6 SAGB: 6 BPD: 6	Average reduction in HbA1C: 2.8% AGB: 1.7% DJB: 1.7% SG: 3% RYGB: 2.9% SAGB: 3.1% BPD: 3.1%
Adegbola et al., 2014 [59]	AGB	515 (6)	4–8 (EWL 58%–87%)	Improvement of co-morbid conditions including diabetes, hyperlipidemia, metabolic syndrome, arthritis, and depression
Muller-Stich et al., 2015 [60]	AGB, SG, RYGB, BPD, DJB	818 (13)	5.5	Significant reduction in HbA1C (1.4%) Improvement of diabetes, hypertension, and dyslipidemia
Rao et al., 2015 [61]	RYGB	343 (9)	7.4	Significant improvement of diabetes
Panunzi et al., 2015 [62]	AGB, SG, RYGB, BPD	1138 (35)	5.3 (18 kg)	Diabetes remission in 72% Significant reduction in HbA1C (2.7%)
Cummings and Cohen, 2016 [63]	AGB, SG, RYGB, BPD	1090 (11)	NR	Significant improvement of diabetes
Cohen et al., 2017 [64]	RYGB	NR (5)	NR	Significant improvement of diabetes and HDL

STAMPEDE Study

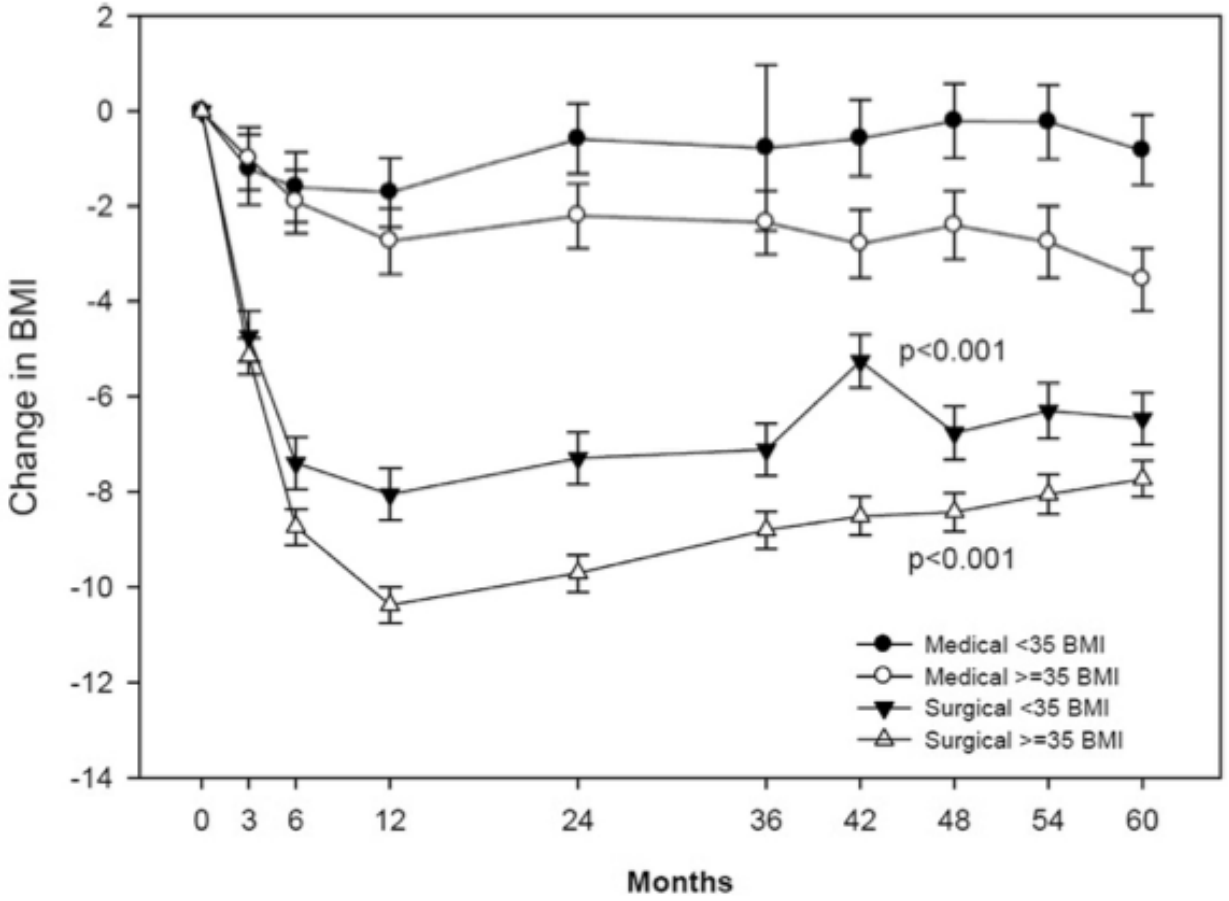

Fig. 2. Findings of Surgical Treatment and Medications Potentially Eradicate Diabetes Efficiently (STAMPEDE) study in patients with mild obesity: change in body mass index in medical versus surgical (gastric bypass and sleeve gastrectomy) groups by BMI subgroup. Adapted from the Massachusetts Medical Association with permission [73].

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ASMBS Low BMI Position Statement

For patients with BMI 30 to 35 kg/m^2 and obesity-related co-morbidities who do not achieve substantial, durable weight loss and co-morbidity improvement with reasonable nonsurgical methods, bariatric surgery should be offered as an option for suitable individuals. In this population, surgical intervention should be considered after failure of nonsurgical treatments.

Currently, the best evidence for bariatric and metabolic surgery for patients with class I obesity and co-morbid conditions exists for patients in the 18 to 65 age group.

ASMBS Low BMI Position Statement

Compared with patients taking metformin, patients on sodium glucose cotransporter-2 (SGLT2) inhibitors and glucagon-like peptide-1 (GLP1) receptor agonists experienced less heart failure, ischemic heart disease, MI, and stroke. However, only metformin fell below the willingness-to-pay threshold of US $150,000 per quality-adjusted life-year (QALY).

First-line SGLT2 inhibitors and GLP1 receptor agonists were projected to improve life expectancy by 3 or more months compared with metformin, typically by reducing rates of macrovascular disease complications (congestive heart failure, ischemic heart disease, MI, and stroke). But SGLT2 inhibitors were estimated to be $478,000 per QALY versus metformin, while oral GLP1 receptor agonists had an even heftier price tag at over $1 million per QALY versus SGLT2 inhibitors.

Current guidelines from the American Diabetes Association and the European Association for the Study of Diabetes recommend SGLT2 inhibitors or GLP1 receptor agonists as first-line therapy, with metformin, in patients with type 2 diabetes and with, or at high-risk for, atherosclerotic cardiovascular disease (ASCVD), heart failure, or chronic kidney disease. The agents are recommended as second-line drugs for diabetic patients without ASCVD, but not if "cost is a major issue."

NEWS • Daily News

Sky-high Cost of SGLT2i and GLP1 Agonists Deter First-line Use

The proven cardiovascular benefits of these agents can't be realized unless prices drop by as much as 90%, researchers say.

by L.A. McKeown | OCTOBER 05, 2022

Based on the willingness-to-pay threshold of less than $150,000 per QALY, SGLT2 inhibitors would need to come down in price to about $1,800 per year, or $5 per day. Similarly, oral GLP1 receptors would need to come down to about $2,100 per year, or $6 per day, the researchers conclude.

5- and 10-Year Cost-Effectiveness of Bariatric Surgery in Super Obese, Middle-Aged Patients: A United States Perspective

R. Ditto, *Thomas Jefferson University* Follow

I. Kim, *Thomas Jefferson University* Follow

- LRYGB was cost-effective with higher QALYs [5 years: 0.3896 QALY; 10 years: 0.8863 QALY] and costs [5 years: $10,831; 10 years: ($848)] than non-operative management. Incremental cost-effectiveness ratios [5 years: $27,799/QALY; 10 years: $957/QALY] were below the $50,000 willingness to pay threshold.

BMC Surg. 2017; 17: 87.
Published online 2017 Aug 3. doi: 10.1186/s12893-017-0284-0
PMCID: PMC5543597
PMID: 28774333

Cost-utility analysis of bariatric surgery compared with conventional medical management in Germany: a decision analytic modeling

Oleg Borisenko,[✉1] Oliver Mann,[2] and Anna Duprée[2]

Over 10 years, bariatric surgery led to the incremental cost of €2909, generated additional 0.03 years of life and 1.2 quality-adjusted life years (QALYs). Bariatric surgery was cost-effective at 10 years with an incremental cost-effectiveness ratio of €2457 per QALY. Over a lifetime, surgery led to savings of €8522 and generated an increment of 0.7 years of life or 3.2 QALYs. The analysis also depicted an association between surgery and a reduction of obesity-related adverse events (diabetes, cardiovascular disorders). Delaying surgery for up to 3 years, resulted in a reduction of life years and QALYs gained, in addition to a moderate reduction in associated healthcare costs.

February 14, 2022

Estimated Cost-effectiveness of Medical Therapy, Sleeve Gastrectomy, and Gastric Bypass in Patients With Severe Obesity and Type 2 Diabetes

Brianna N. Lauren, BS[1]; Francesca Lim, MS[1]; Abraham Krikhely, MD[2]; et al

» Author Affiliations | Article Information

JAMA Netw Open. 2022;5(2):e2148317. doi:10.1001/jamanetworkopen.2021.48317

Conclusions and Relevance These findings suggest that the effectiveness and cost-effectiveness of bariatric surgery vary by baseline severity of T2D. Over a 5-year time horizon, RYGB is projected to be the preferred treatment strategy for patients with severe obesity regardless of baseline T2D severity.

Bariatric surgery – time to replace with GLP-1?

Dominic-Luc Webb [1], Niclas Abrahamsson [2], Magnus Sundbom [3], Per M Hellström [1]

- Combinations of GLP-1 with other gut hormones such as peptide YY (PYY) and cholecystokinin (CCK) may be able to reinforce GLP-1 driven reduction in appetite and food intake. Pharmacological intervention in obesity by use of GLP-1 analogs (exenatide, liraglutide, albiglutide, dulaglutide, lixisenatide, taspoglutide) and inhibitors of dipeptidyl peptidase-IV (DPP-IV) degradation that inactivate GLP-1 (sitagliptin, vildagliptin), leading to reduced appetite and weight with positive effects on metabolic control, are realistically achievable. This may be regarded as a low-risk therapeutic alternative to surgery for reducing obesity-related risk factors in the obese with lower BMIs.

Cost-Effectiveness of Antiobesity Drugs for Adolescents With Severe Obesity

Shweta Mital, PhD[1]; Hai V. Nguyen, PhD[2]

- 10 000 adolescents aged 12 to 17 years
- Among the 4 antiobesity drugs currently approved for pediatric use, **phentermine-topiramate** was the most cost-effective with an incremental cost-effectiveness ratio of **$93 620/QALY** relative to no treatment
- **Semaglutide** offered more QALYs than phentermine-topiramate, its higher cost resulted in an incremental cost-effectiveness ratio **($1 079 480/QALY)**
- Commonly used willingness-to-pay threshold of $100 000 to $150 000/QALY

Cost-Effectiveness of Antiobesity Drugs for Adolescents With Severe Obesity

Shweta Mital, PhD[1]; Hai V. Nguyen, PhD[2]

- Orlistat and liraglutide cost more and were less effective than phentermine-topiramate and semaglutide
- Sleeve gastrectomy and gastric bypass were more effective than phentermine-topiramate but were also more costly: Sleeve $469 060/QALY

> JAMA Surg. 2017 Feb 1;152(2):136-141. doi: 10.1001/jamasurg.2016.3640.

Cost-effectiveness of Bariatric Surgery in Adolescents With Obesity

Matthew J Klebanoff [1], Jagpreet Chhatwal [2], Jacob D Nudel [3], Kathleen E Corey [4], Lee M Kaplan [4], Chin Hur [2]

- **After 3 years**, surgery led to a gain of 0.199 QALYs compared with no surgery at an incremental cost of $30 747, yielding an unfavorable **ICER of $154 684 per QALY**
- When the clinical study results were extrapolated to 4 years, the ICER decreased to $114 078 per QALY and became cost-effective by **5 years** with an **ICER of $91 032 per QALY**

Randomized Controlled Trial > Hepatology. 2017 Apr;65(4):1156-1164.
doi: 10.1002/hep.28958. Epub 2017 Feb 21.

Bariatric surgery for nonalcoholic steatohepatitis: A clinical and cost-effectiveness analysis

Matthew J Klebanoff [1 2 3], Kathleen E Corey [1 4], Jagpreet Chhatwal [1 2 4], Lee M Kaplan [1 4], Raymond T Chung [1 4], Chin Hur [1 2 4]

Surgery was both effective and cost-effective for obese patients with MASH

In overweight patients, surgery increased QALYs for all patients regardless of fibrosis stage, but was cost-effective only for patients with F3 fibrosis

Results highlight the promise of bariatric surgery for treating MASH and underscore the need for clinical trials in this area

> Surg Obes Relat Dis. 2022 Feb;18(2):260-270. doi: 10.1016/j.soard.2021.10.012. Epub 2021 Oct 18.

Impact of metabolic surgery on cost and long-term health outcome: a cost-effectiveness approach

Evelyn Walter [1], Felix B Langer [2], Philipp Beckerhinn [3], Franz Hoffer [3], Gerhard Prager [2]

MBS led to costs of €40,427 and 9.58 QALYs (15.58 LYs) per patient over 20 years

No surgery had costs of €64,819 and 6.33 QALYs (13.92 LYs)

Total cost-savings were €24,392, which offset the cost of the procedure including re-operations

Over 20 years MBS saved -6.7 patient-years per patient with T2D, -5.8 patient-years with CVD, -1.5 patient-years with hyperlipidemia, -1.8 patient-years with depression, and -3.8 patient-years with NASH

> Obes Surg. 2022 Aug;32(8):2504-2511. doi: 10.1007/s11695-022-06144-3. Epub 2022 Jun 10.

A Cost Analysis of Healthcare Episodes Including Day-Case Bariatric Surgery (Roux-en-Y Gastric Bypass and Sleeve Gastrectomy) Versus Inpatient Surgery

Mihaela Ignat [# 1 2 3], Julien Ansiaux [# 4 5], Samah Osailan [4], Antonio D'Urso [4 6], Linda Morainvillers-Sigwalt [7], Michel Vix [4 6], Didier Mutter [4 6]

Hospital stay was significantly shorter (0.65 ± 0.33, versus 2.9 ± 0.4 days, $p < 0.0001$)

The complication rate was 6.6% in both groups

The cost of the care episode was € 4272.9 ± 589.7 for the day-case group versus € 4993.7 ± 695.6 for inpatients, corresponding to a 14.4% cost reduction

Observational Study > Surg Obes Relat Dis. 2019 Nov;15(11):1994-2001.
doi: 10.1016/j.soard.2019.06.029. Epub 2019 Jul 2.

Financial impact of improving patient care setting selection after bariatric surgery

Margaret E Smith [1], Aaron J Bonham [2], Oliver A Varban [2], Jonathan F Finks [2], Arthur M Carlin [3], Amir A Ghaferi [2]

- 36,071 patients underwent bariatric surgery
- 8.4% presented to the ED postoperatively. Approximately 50% of these visits resulted in readmission
- 388 ED visits without readmission and 110 UCC encounters were identified
- **Triaging** a potentially avoidable ED visit to an UCC would **generate a savings of $4238 per patient**, reducing spending in this cohort by $1.6 million

Review > Trends Endocrinol Metab. 2020 Jun;31(6):410-421. doi: 10.1016/j.tem.2020.02.006.
Epub 2020 Mar 16.

How May GIP Enhance the Therapeutic Efficacy of GLP-1?

- Dual GIP/GLP-1 receptor agonist therapy produces profound weight loss, glycemic control, and lipid lowering.

Clinical Trial > Diabetes Care. 2020 Jun;43(6):1352-1355. doi: 10.2337/dc19-1892.
Epub 2020 Apr 14.

Effects of Novel Dual GIP and GLP-1 Receptor Agonist Tirzepatide on Biomarkers of Nonalcoholic Steatohepatitis in Patients With Type 2 Diabetes

Mark L Hartman [1], Arun J Sanyal [2], Rohit Loomba [3 4], Jonathan M Wilson [5], Amir Nikooienejad [5], Ross Bray [5], Chrisanthi A Karanikas [5], Kevin L Duffin [5], Deborah A Robins [5], Axel Haupt [5]

Conclusions: In post hoc analyses, higher tirzepatide doses significantly decreased NASH-related biomarkers and increased adiponectin in patients with T2DM.

Randomized Controlled Trial > Lancet Diabetes Endocrinol. 2022 Jun;10(6):393-406.
doi: 10.1016/S2213-8587(22)00070-5. Epub 2022 Apr 22.

Effect of tirzepatide versus insulin degludec on liver fat content and abdominal adipose tissue in people with type 2 diabetes (SURPASS-3 MRI): a substudy of the randomised, open-label, parallel-group, phase 3 SURPASS-3 trial

Amalia Gastaldelli [1], Kenneth Cusi [2], Laura Fernández Landó [3], Ross Bray [3], Bram Brouwers [3], Ángel Rodríguez [4]

Interpretation: Tirzepatide showed a significant reduction in LFC and VAT and ASAT volumes compared with insulin degludec in this subpopulation of patients with type 2 diabetes in the SURPASS-3 study. These data provide additional evidence on the metabolic effects of this novel dual GIP and GLP-1 receptor agonist.

> Expert Opin Investig Drugs. 2023 May;32(5):355-359. doi: 10.1080/13543784.2023.2206560. Epub 2023 Apr 24.

Is retatrutide (LY3437943), a GLP-1, GIP, and glucagon receptor agonist a step forward in the treatment of diabetes and obesity?

Sheila A Doggrell [1]

24% TBWL at 1 year

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Semaglutide and Cardiovascular Outcomes in Obesity without Diabetes

A. Michael Lincoff, M.D., Kirstine Brown-Frandsen, M.D., Helen M. Colhoun, M.D., John Deanfield, M.D., Scott S. Emerson, M.D., Ph.D., Sille Esbjerg, M.Sc., Søren Hardt-Lindberg, M.D., Ph.D., G. Kees Hovingh, M.D., Ph.D., Steven E. Kahn, M.B., Ch.B., Robert F. Kushner, M.D., Ildiko Lingvay, M.D., M.P.H., Tugce K. Oral, M.D., Marie M. Michelsen, M.D., Ph.D., Jorge Plutzky, M.D., Christoffer W. Tornøe, Ph.D., and Donna H. Ryan, M.D., for the SELECT Trial Investigators*

- A primary cardiovascular end-point event occurred in 569 of the 8803 patients (6.5%) in the semaglutide group and in 701 of the 8801 patients (8.0%) in the placebo group

Observational Study > JAMA. 2021 Nov 23;326(20):2031-2042.
doi: 10.1001/jama.2021.19569.

Association of Bariatric Surgery With Major Adverse Liver and Cardiovascular Outcomes in Patients With Biopsy-Proven Nonalcoholic Steatohepatitis

Ali Aminian [1], Abbas Al-Kurd [1], Rickesha Wilson [1], James Bena [2], Hana Fayazzadeh [1], Tavankit Singh [3 4], Vance L Albaugh [1 5], Faiz U Shariff [1 6], Noe A Rodriguez [1 7], Jian Jin [2], Stacy A Brethauer [1 8], Srinivasan Dasarathy [3], Naim Alkhouri [3 9], Philip R Schauer [1 5], Arthur J McCullough [3], Steven E Nissen [10]

- The cumulative incidence of MACE at 10 years was 8.5% in the bariatric surgery group and 15.7% in the nonsurgical group

Cost Savings of AOM

Not there yet

Cost of Fake Medications

- Compounded = Not always FDA approved
  - Patents last at least 10 years
- Deaths
- Hospitalizations
- $250

Medication Class	Weight Loss Mechanism	Food Intake	Expected Weight Loss
Phentermine	indirect sympathomimetic	↓	5% TBW
Qysmia (phentermine and topiramate)	indirect sympathomimetic and increased satiety	↓	5% TBW at low dose 10% TBW at high dose
Orlistat	decreased fat absorption	↔	>5% TBW
Contrave (naltrexone/bupropion)	affects hypothalamus and dopamine pathways of CNS	↓	10% TBW
GLP-1 Receptor Agonists (incretin hormones)	act on GLP-1 receptor to delay gastric emptying and reduce food intake	↓	4-15% TBW
Tirzepatide (GLP-1, GIP dual agonist)	Acts on GLP-1 receptor and GIP, delays gastric emptying and reduces food intake	↓	20% TBW

Medication	Route	%TBWL- average	$Cost- self pay
Lomaira	Oral, TID	variable	$50/month
Phentermine	Oral Daily	Variable	<$50/month
Qsymia	Oral Daily	>10%	$110-140/month
Contrave	Oral BID- ish	>10%	$90/month
Saxenda/Liraglutide	Daily Inj	>10%	$1100/month
Ozempic/Semaglutide Wegovy	Weekly Inj or daily pill	>>10% 15%	$800/month $1400/month
Mounjaro/Tirzepatide	Weekly Inj	>22%	$1000/month

Most People Stop Using Ozempic and Wegovy After a Year, What Experts Think

- A new report finds 2 out of 3 people on GLP-1 drugs like Ozempic stop within a year.
- Experts point out the cost of these drugs may mean people feel unable to stay on them for more than year.
- Additionally, some people may feel the drugs are also no longer working if they plateau at a new body weight.

Healthline, M Drillinger

Research Letter | Diabetes and Endocrinology

May 24, 2024

GLP-1 Receptor Agonist Discontinuation Among Patients With Obesity and/or Type 2 Diabetes

Duy Do, PhD[1]; Tiffany Lee, PhD[1]; Samuel K. Peasah, PhD, RPh, MBA[2]; et al

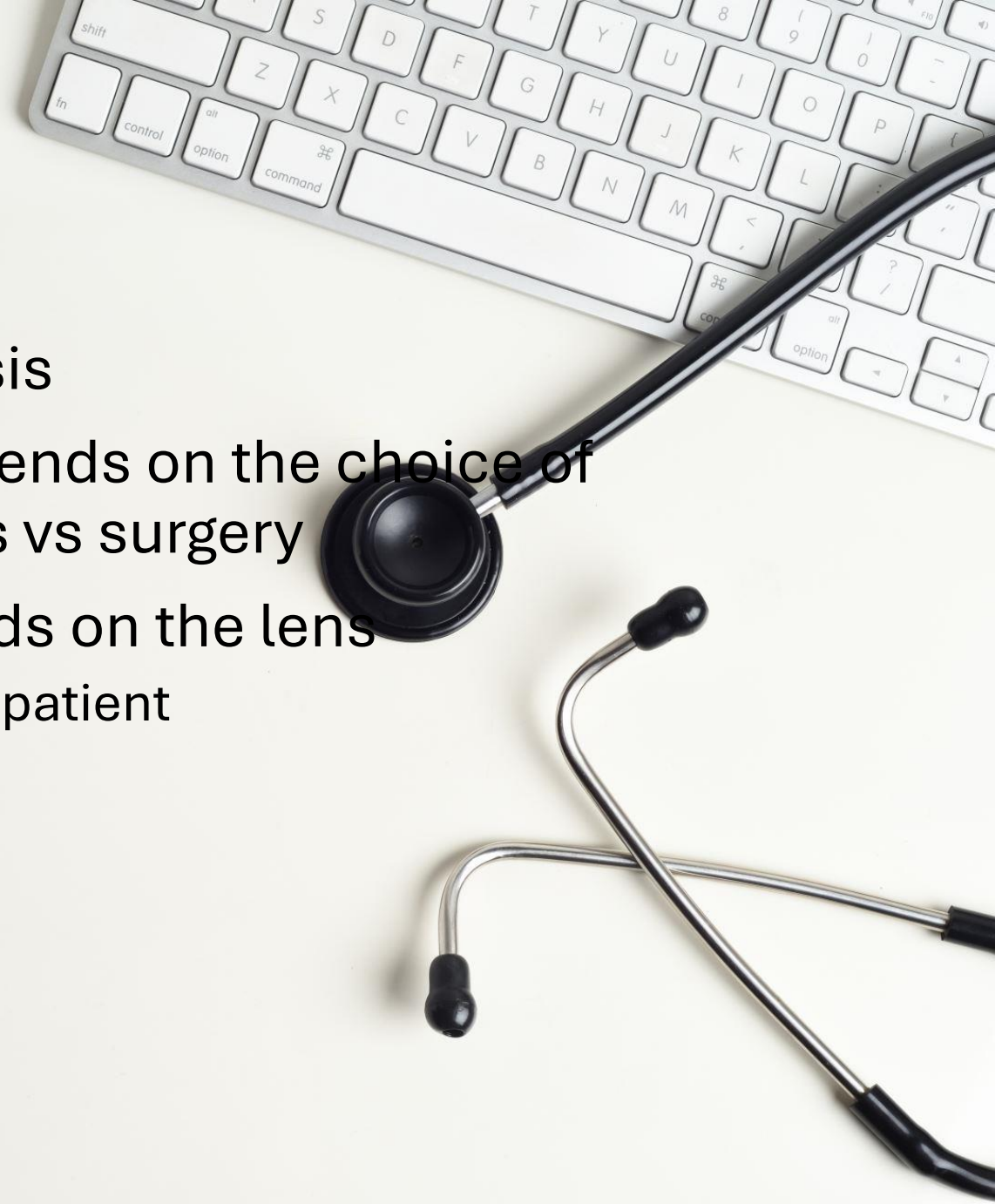
- 195 915 individuals with obesity and or T2D
- Overall prevalence of GLP-1 agonist discontinuation was 26.2%, 30.8%, and 36.5% at 3, 6, and 12 months
- Patients with obesity only had a higher prevalence of discontinuation at 12 months vs those with T2D only and those with both (50.3% vs 35.8% and 34.2%).
- Patients had significantly higher odds of discontinuation at 12 months if they were Black or Hispanic, male, and Medicare or Medicaid enrollees
- Furthermore, each 1–percentage point increase in OOP cost per a 30-day supply of GLP-1 agonist was associated with increased odds of discontinuation (odds ratio, 1.02; 95% CI, 1.02-1.03) (Ta

The Future is a Pill

- centrally acting agents (setmelanotide, neuropeptide Y antagonist [velneperit], zonisamide-bupropion [Empatic], cannabinoid type-1 receptor blockers),
- gut hormones and incretin targets (new glucagon-like-peptide-1 [GLP-1] analogues [semaglutide and oral equivalents],
- amylin mimetics [davalintide, dual amylin and calcitonin receptor agonists],
- dual action GLP-1/glucagon receptor agonists [oxyntomodulin],
- triple agonists [tri-agonist 1706], peptide YY, leptin analogues [combination pramlintide-metreleptin]),
- other novel targets (methionine aminopeptidase 2 inhibitor [beloranib], lipase inhibitor [cetilistat], triple monoamine reuptake inhibitor [tesofensine], fibroblast growth factor 21
- anti-obesity vaccines (ghrelin, somatostatin, adenovirus36).
    - Curr Obes Rep. 2018 Jun;7(2):147-161. Future Pharmacotherapy for Obesity: New Anti-obesity Drugs on the Horizon. Srivastava G(1), Apovian C(2).

Summary

- Obesity is a global crisis
- Cost of treatment depends on the choice of lifestyle ± medications vs surgery
- Best treatment depends on the lens
  - Disease burden of the patient
  - Duration of treatment
  - Increasing QALY
  - Cost Effectiveness



Conclusions

Metabolic Surgery Is Durable with successful and sustained weight loss and remission/improvement of several co-morbid conditions

New medications for treatment of diabetes are promising and need to be studied in conjunction with bariatric surgery

Cost and availability of treatments will impact our ability to treat as well as patients options to improve their health

The Math of Consults

Surgeries/Consults	Bariatric surgery: Wellness
• 58% in 2020 • 49% in 2021 • 48.6% in 2022	• 8:1 in 2020 • 3.8:1 in 2021 • 2.4:1 in 2022

ROI

- BMI> 35 with or without co-morbidities will take medications
- About 20- 30% will see you again for surgical consult
- This can take 6 months to two years to occur