Metabolic Surgery for Prevention and Treatment of Type 2 Diabetes

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Disclosures:

”I receive an honorarium from Blue Cross Blue Shield of Michigan for leadership and participation in the Michigan Bariatric Surgery Collaborative.”

ELSEVIER

Surgery for Obesity and Related Diseases ■ (2022) 1–12

SURGERY FOR OBESITY AND RELATED DISEASES

Original article

2022 American Society for Metabolic and Bariatric Surgery (ASMBS) and International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO): Indications for Metabolic and Bariatric Surgery

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Major updates to 1991 National Institutes of Health guidelines for bariatric surgery

- Metabolic and bariatric surgery (MBS) is recommended for individuals with a body mass index (BMI) $\geq$35 kg/m^2, regardless of presence, absence, or severity of co-morbidities.
- MBS should be considered for individuals with metabolic disease and BMI of 30-34.9 kg/m^2.
- BMI thresholds should be adjusted in the Asian population such that a BMI $\geq$25 kg/m^2 suggests clinical obesity, and individuals with BMI $\geq$27.5 kg/m^2 should be offered MBS.
- Long-term results of MBS consistently demonstrate safety and efficacy.
- Appropriately selected children and adolescents should be considered for MBS.

(Surg Obes Relat Dis 2022;■:1–12.)

Keywords: Obesity; Metabolic and bariatric surgery; IFSO; ASMBS; Criteria; Indications

Audience Survey Question

What percentage of your patients who qualify for surgery do you refer to a surgery program?

Metabolic Surgery in the Treatment Algorithm for Type 2 Diabetes: A Joint Statement by International Diabetes Organizations

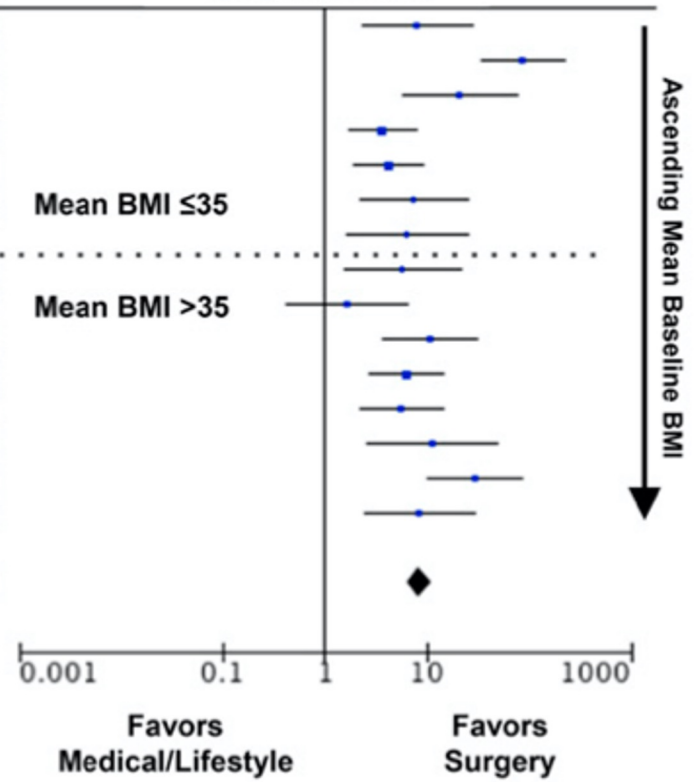
Diabetes Care 2016;39:861–877 | DOI: 10.2337/dc16-0236

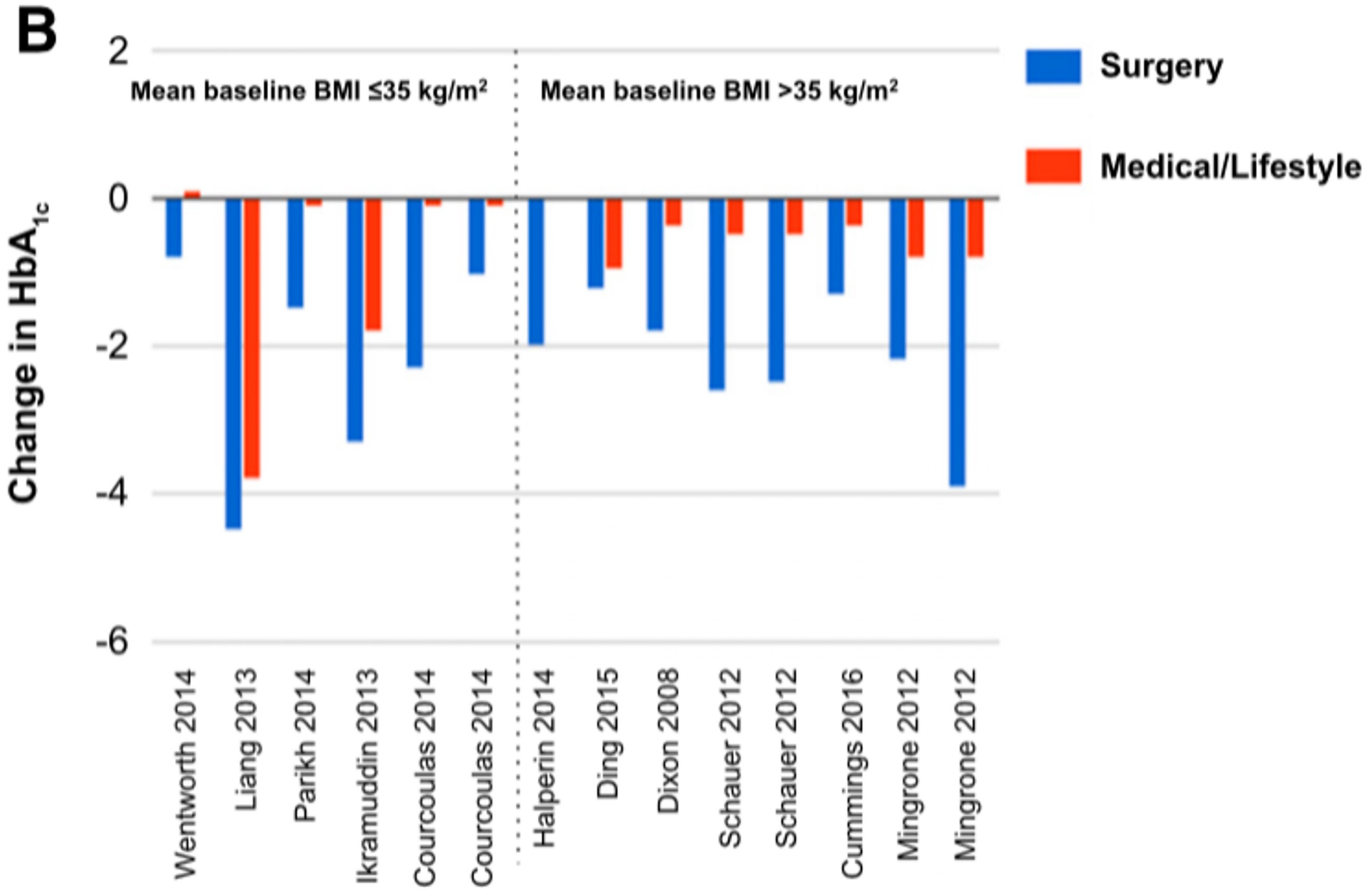
*Francesco Rubino,[1] David M. Nathan,[2] Robert H. Eckel,[3] Philip R. Schauer,[4] K. George M.M. Alberti,[5] Paul Z. Zimmet,[6] Stefano Del Prato,[7] Linong Ji,[8] Shaukat M. Sadikot,[9] William H. Herman,[10] Stephanie A. Amiel,[1] Lee M. Kaplan,[2] Gaspar Taroncher-Oldenburg,[11] and David E. Cummings,[12] on behalf of the Delegates of the 2nd Diabetes Surgery Summit**

A

Study (Operation) [Follow-up; HbA_{1c} end point]	Surgery Glyc. Endp.	Surgery *N*	Medical/ Lifestyle Glyc. Endp.	Medical/ Lifestyle *N*	Weight	Peto, Fixed, 95% CI
Wentworth 2014 (LAGB) [24 mo; ≤7.0%] (17)	12	23	2	25	4.9%	8.11 [2.37, 27.84]
Liang 2013 (RYGB) [12 mo; ≤7.0% off meds] (16)	28	31	0	70	8.4%	86.76 [33.89, 222.08]
Parikh 2014 (RYGB/LAGB/SG) [6 mo; ≤6.5% off meds] (18)	13	20	0	24	4.5%	21.15 [5.85, 76.51]
Ikramuddin 2013 (RYGB) [12 mo; ≤7.0%] (13)	28	57	11	57	12.5%	3.72 [1.72, 8.04]
Ikramuddin 2015 (RYGB) [24 mo; ≤7.0%] (21)	26	60	8	59	11.8%	4.25 [1.92, 9.38]
Courcoulas 2014 (RYGB/LAGB) [12 mo; ≤6.5% off meds] (14)	18	41	0	17	5.1%	7.51 [2.24, 25.21]
Courcoulas 2015 (RYGB/LAGB) [36 mo; ≤6.5% off meds] (24)	14	37	0	14	4.0%	6.44 [1.65, 25.21]
Halperin 2014 (RYGB) [12 mo; ≤6.5% off meds] (15)	11	19	3	19	4.4%	5.82 [1.59, 21.39]
Ding 2015 (LAGB) [12 mo; ≤6.5%] (22)	6	18	5	22	3.9%	1.68 [0.42, 6.66]
Dixon 2008 (LAGB) [24 mo; ≤6.2% off meds] (10)	22	29	4	26	6.7%	10.83 [3.79, 30.96]
Schauer 2012 (RYGB/SG) [12 mo; ≤6.0%] (12)	34	99	0	41	10.4%	6.39 [2.74, 14.88]
Schauer 2014 (RYGB/SG) [36 mo; ≤6.0%] (19)	27	97	0	40	8.7%	5.73 [2.28, 14.42]
Cummings 2016 (RYGB) [12 mo; ≤6.5% off meds] (23)	9	15	1	17	3.4%	11.48 [2.63, 50.13]
Mingrone 2012 (RYGB/BPD) [24 mo; ≤6.5% off meds] (11)	34	40	0	20	6.4%	30.08 [10.28, 88.06]
Mingrone 2015 (RYGB/BPD) [60 mo; ≤6.5% off meds] (20)	19	38	0	15	4.9%	8.44 [2.46, 29.01]
Fixed-Effects Model		**624**		**466**	**100.0%**	**8.45 [6.44, 11.10]**

Heterogeneity: $Chi^2 = 45.43$, df = 14 ($P < 0.0001$); $I^2 = 69\%$
Test for overall effect: Z = 15.36 ($P < 0.00001$)

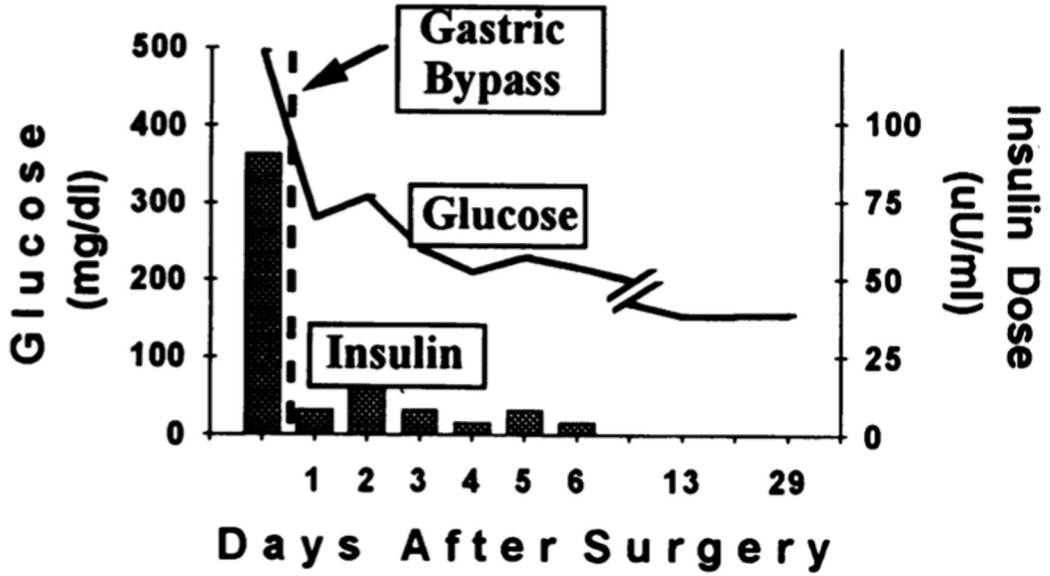



B
Mean baseline BMI ≤35 kg/m²
Mean baseline BMI >35 kg/m²
Surgery
Medical/Lifestyle
Change in HbA1c
2
0
-2
-4
-6
Wentworth 2014
Liang 2013
Parikh 2014
Ikramuddin 2013
Courcoulas 2014
Courcoulas 2014
Halperin 2014
Ding 2015
Dixon 2008
Schauer 2012
Schauer 2012
Cummings 2016
Mingrone 2012
Mingrone 2012

Who Would Have Thought It?

An Operation Proves to Be the Most Effective Therapy for Adult-Onset Diabetes Mellitus

Walter J. Pories, M.D., Melvin S. Swanson, Ph.D., Kenneth G. MacDonald, M.D., Stuart B. Long, B.S., Patricia G. Morris, B.S.N., Brenda M. Brown, M.R.A., Hisham A. Barakat, Ph.D., Richard A. deRamon, M.D., Gay Israel, Ed.D., Jeanette M. Dolezal, Ph.D., and Lynis Dohm, Ph.D.



ANNALS OF SURGERY
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Association of metabolic–bariatric surgery with long-term survival in adults with and without diabetes: a one-stage meta-analysis of matched cohort and prospective controlled studies with 174 772 participants

www.thelancet.com Vol 397 May 15, 2021

Nicholas L Syn, David E Cummings*, Louis Z Wang*, Daryl J Lin*, Joseph J Zhao, Marie Loh, Zong Jie Koh, Claire Alexandra Chew, Ying Ern Loo, Bee Choo Tai, Guowei Kim, Jimmy Bok-Yan So, Lee M Kaplan, John B Dixon, Asim Shabbir*

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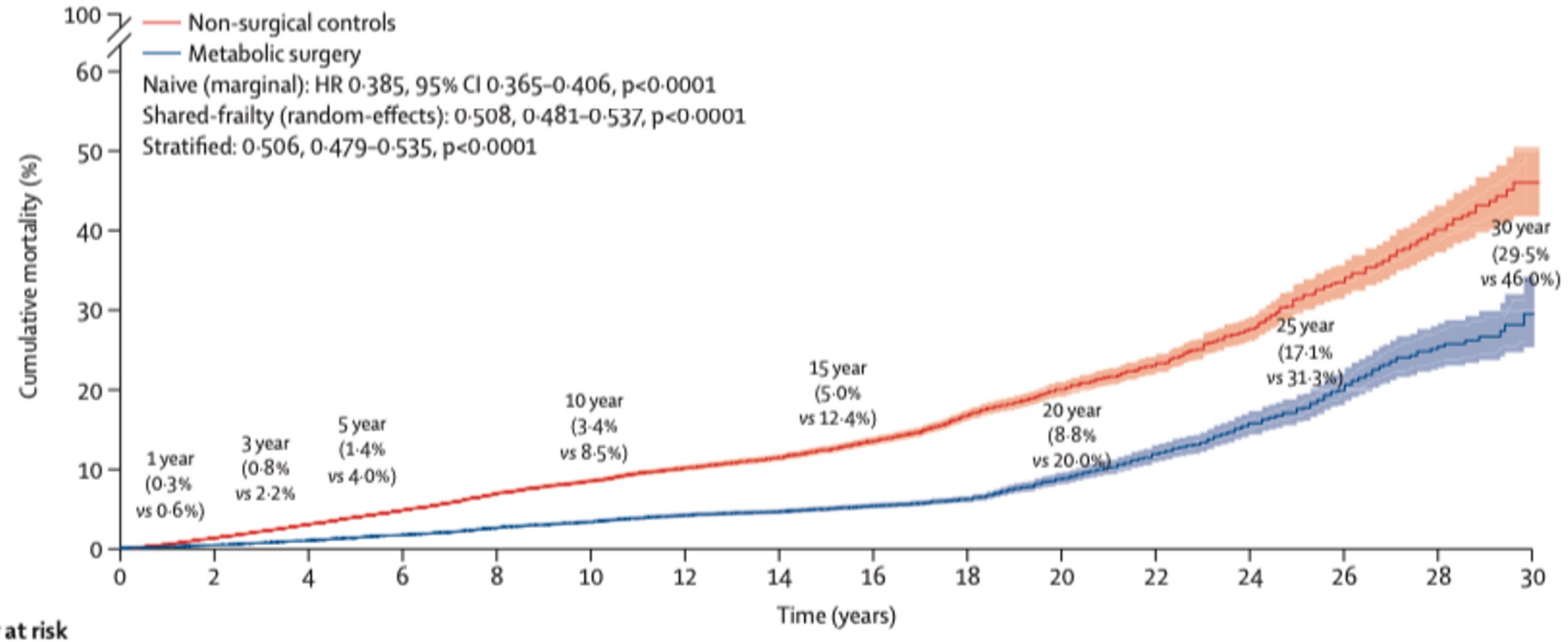


Number at risk

Non-surgical	108 987	96 181	70 908	46 202	19 899	12 878	9230	7399	6019	2756	2101	1566	813	413	206	26
Metabolic surgery	65 785	61 183	48 240	34 847	16 482	13 098	11 605	10 483	9811	6844	1997	1456	878	474	239	34

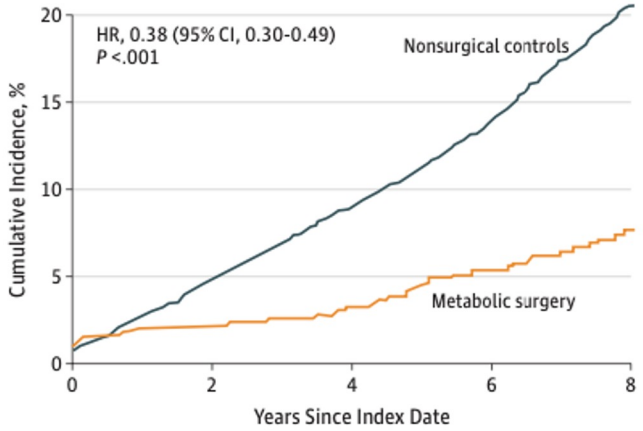
Findings Among 1470 articles identified, 16 matched cohort studies and one prospective controlled trial were included in the analysis. 7712 deaths occurred during 1·2 million patient-years. In the overall population consisting 174 772 participants, metabolic–bariatric surgery was associated with a reduction in hazard rate of death of 49·2% (95% CI 46·3–51·9, p<0·0001) and median life expectancy was 6·1 years (95% CI 5·2–6·9) longer than usual care. In subgroup analyses, both individuals with (hazard ratio 0·409, 95% CI 0·370–0·453, p<0·0001) or without (0·704, 0·588–0·843, p<0·0001) baseline diabetes who underwent metabolic–bariatric surgery had lower rates of all-cause mortality, but the treatment effect was considerably greater for those with diabetes (between-subgroup I^2 95·7%, p<0·0001). Median life expectancy was 9·3 years (95% CI 7·1–11·8) longer for patients with diabetes in the surgery group than the non-surgical group, whereas the life expectancy gain was 5·1 years (2·0–9·3) for patients without diabetes. The numbers needed to treat to prevent one additional death over a 10-year time frame were 8·4 (95% CI 7·8–9·1) for adults with diabetes and 29·8 (21·2–56·8) for those without diabetes. Treatment effects did not appear to differ between gastric bypass, banding, and sleeve gastrectomy (I^2 3·4%, p=0·36). By leveraging the results of this meta-analysis and other published data, we estimated that every 1·0% increase in metabolic–bariatric surgery utilisation rates among the global pool of metabolic–bariatric candidates with and without diabetes could yield 5·1 million and 6·6 million potential life-years, respectively.

JAMA | Original Investigation

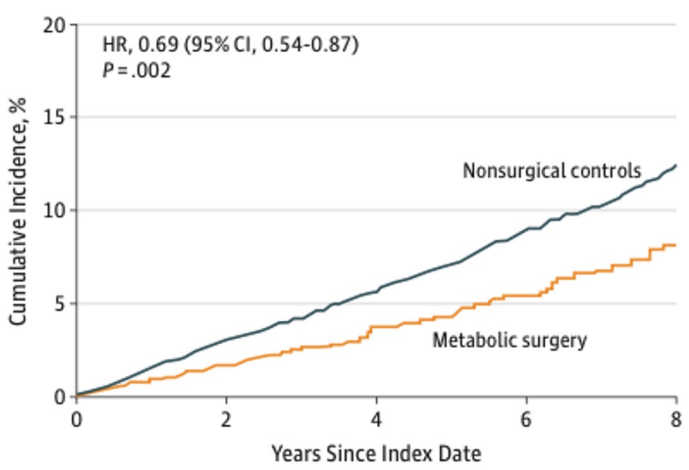
Association of Metabolic Surgery With Major Adverse Cardiovascular Outcomes in Patients With Type 2 Diabetes and Obesity

Ali Aminian, MD; Alexander Zajichek, MS; David E. Arterburn, MD, MPH; Kathy E. Wolski, MPH; Stacy A. Brethauer, MD; Philip R. Schauer, MD; Mi

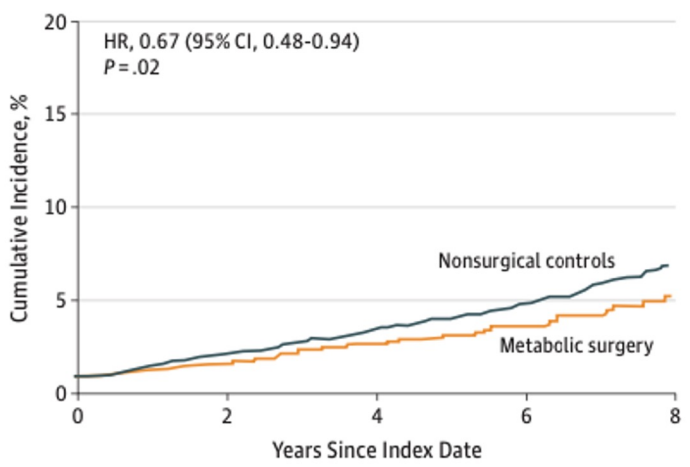
B Heart failure



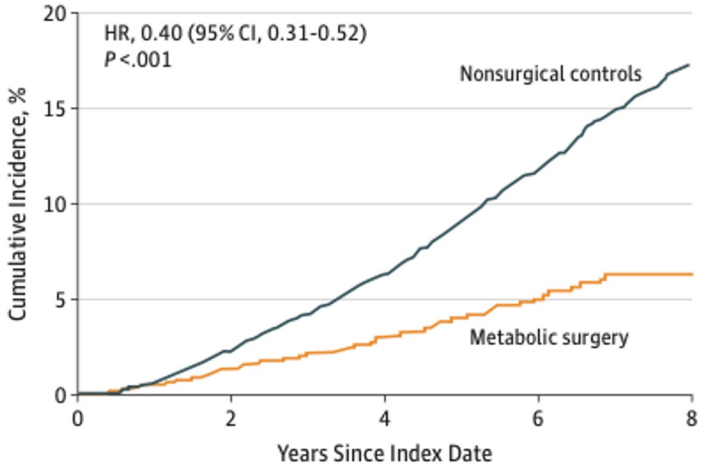
C Coronary artery disease



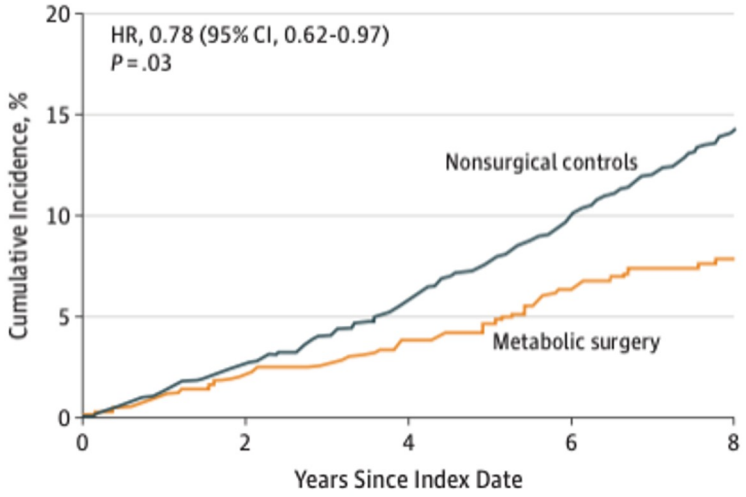
D Cerebrovascular disease



E Nephropathy



F Atrial fibrillation



JAMA | Original Investigation

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

Ali Aminian, MD; Abbas Al-Kurd, MD; Rickesha Wilson, MD; James Bena, MS; Hana Fayazzadeh, MD; Tavankit Singh, MD; Vance L. Albaugh, MD, PhD; Faiz U. Shariff, MD; Noe A. Rodriguez, MD; Jian Jin, MS; Stacy A. Brethauer, MD, MBA; Srinivasan Dasarathy, MD; Naim Alkhouri, MD; Philip R. Schauer, MD; Arthur J. McCullough, MD; Steven E. Nissen, MD

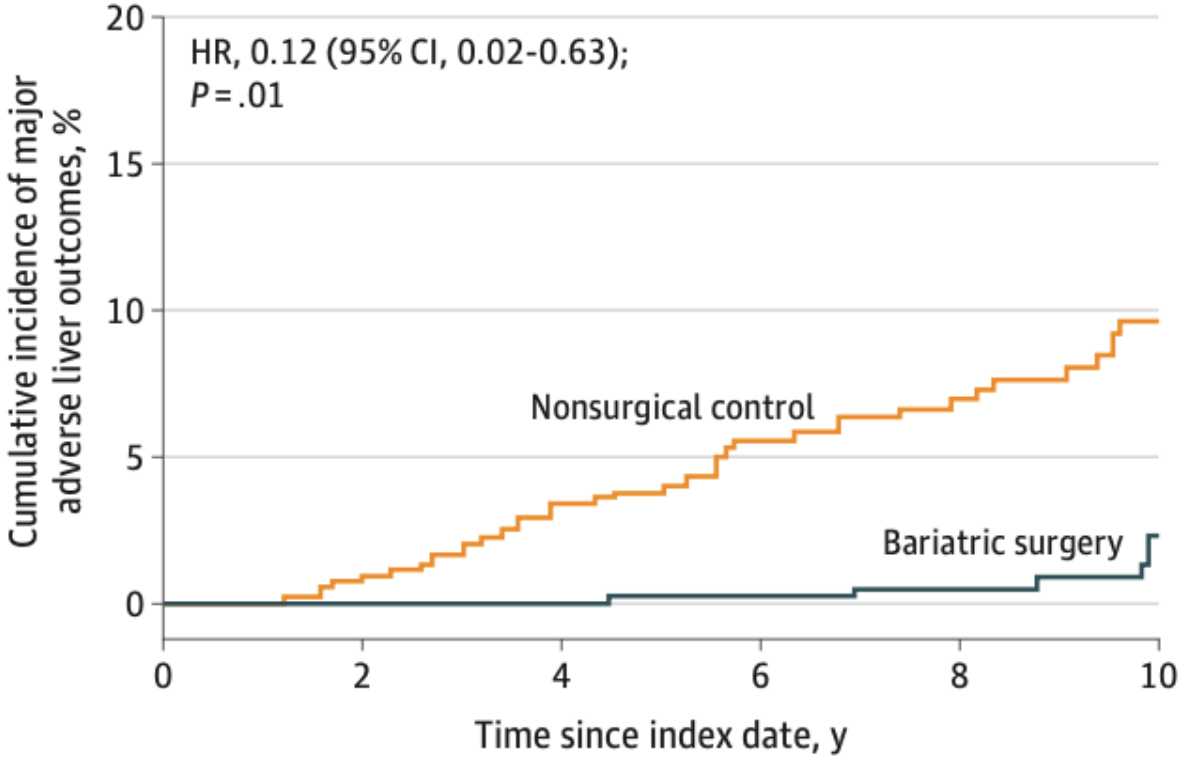
OBJECTIVE To investigate the long-term relationship between bariatric surgery and incident major adverse liver outcomes and major adverse cardiovascular events (MACE) in patients with obesity and biopsy-proven fibrotic NASH without cirrhosis.

DESIGN, SETTING, AND PARTICIPANTS In the SPLENDOR (Surgical Procedures and Long-term Effectiveness in NASH Disease and Obesity Risk) study, of 25 828 liver biopsies performed at a US health system between 2004 and 2016, 1158 adult patients with obesity were identified who fulfilled enrollment criteria, including confirmed histological diagnosis of NASH and presence of liver fibrosis (histological stages 1-3). Baseline clinical characteristics, histological disease activity, and fibrosis stage of patients who underwent simultaneous liver biopsy at the time of bariatric surgery were balanced with a nonsurgical control group using overlap weighting methods. Follow-up ended in March 2021.

EXPOSURES Bariatric surgery (Roux-en-Y gastric bypass, sleeve gastrectomy) vs nonsurgical care.

MAIN OUTCOMES AND MEASURES The primary outcomes were the incidence of major adverse liver outcomes (progression to clinical or histological cirrhosis, development of hepatocellular carcinoma, liver transplantation, or liver-related mortality) and MACE (a composite of coronary artery events, cerebrovascular events, heart failure, or cardiovascular death), estimated using the Firth penalized method in a multivariable-adjusted Cox regression analysis framework.

A Major adverse liver outcomes[a]



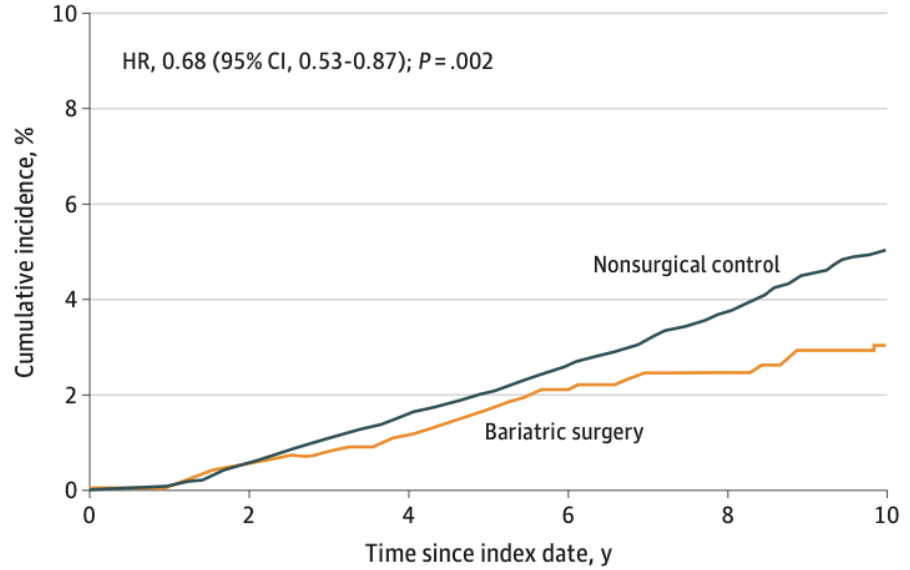
No. at risk						
Nonsurgical control	508	422	376	283	211	146
Bariatric surgery	650	525	463	381	252	153

JAMA | Original Investigation

Association of Bariatric Surgery With Cancer Risk and Mortality in Adults With Obesity

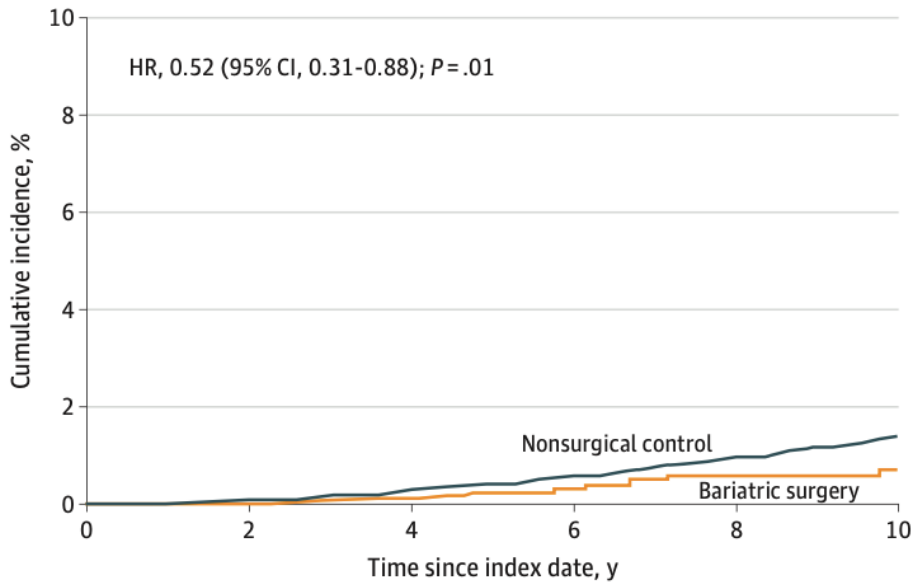
Ali Aminian, MD; Rickesha Wilson, MD; Abbas Al-Kurd, MD; Chao Tu, MS; Alex Milinovich, BA; Matthew Kroh, MD; Raul J. Rosenthal, MD; Stacy A. Brethauer, MD; Philip R. Schauer, MD; Michael W. Kattan, PhD; Justin C. Brown, PhD; Nathan A. Berger, MD; Jame Abraham, MD; Steven E. Nissen, MD

A Obesity-associated cancer cases



No. at risk						
Nonsurgical control	25 265	23 796	18 588	13 055	8334	4571
Bariatric surgery	5053	4487	3409	2453	1588	939

D Cancer-related mortality



No. at risk						
Nonsurgical control	25 265	23 898	18 826	13 345	8590	4778
Bariatric surgery	5053	4508	3440	2497	1622	963

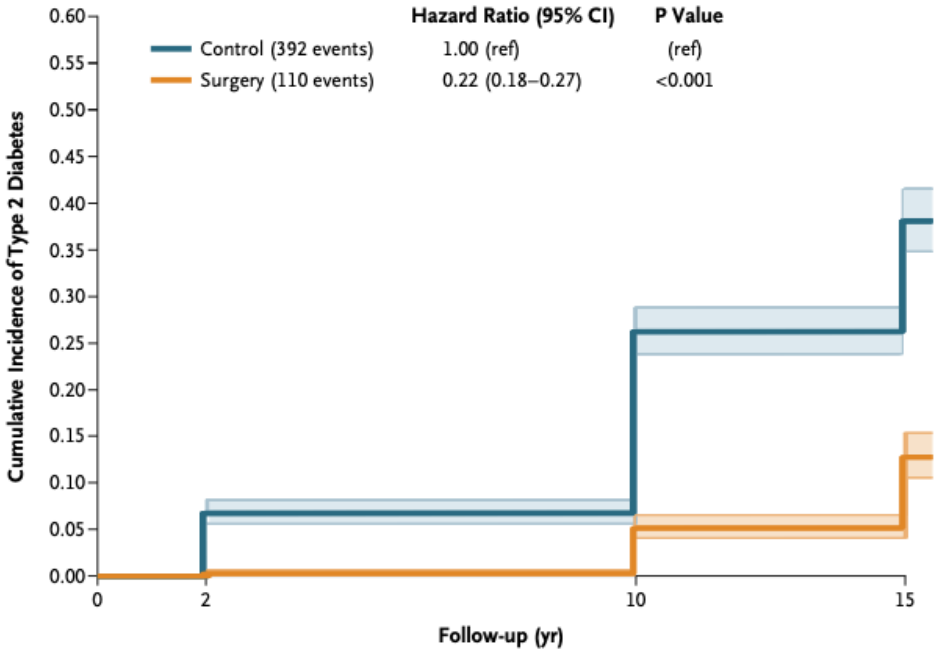
The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 AUGUST 23, 2012 VOL. 367 NO. 8

Bariatric Surgery and Prevention of Type 2 Diabetes in Swedish Obese Subjects

Lena M.S. Carlsson, M.D., Ph.D., Markku Peltonen, Ph.D., Sofie Ahlin, M.D., Åsa Anveden, M.D., Claude Bouchard, Ph.D., Björn Carlsson, M.D., Ph.D., Peter Jacobson, M.D., Ph.D., Hans Lönroth, M.D., Ph.D., Cristina Maglio, M.D., Ingmar Näslund, M.D., Ph.D., Carlo Pirazzi, M.D., Stefano Romeo, M.D., Ph.D., Kajsa Sjöholm, Ph.D., Elisabeth Sjöström, M.D, Hans Wedel, Ph.D., Per-Arne Svensson, Ph.D., and Lars Sjöström, M.D., Ph.D.

A **Surgery vs. Control**



No. at Risk

Control	1771	1513	1076	404
Surgery	1658	1561	1225	576

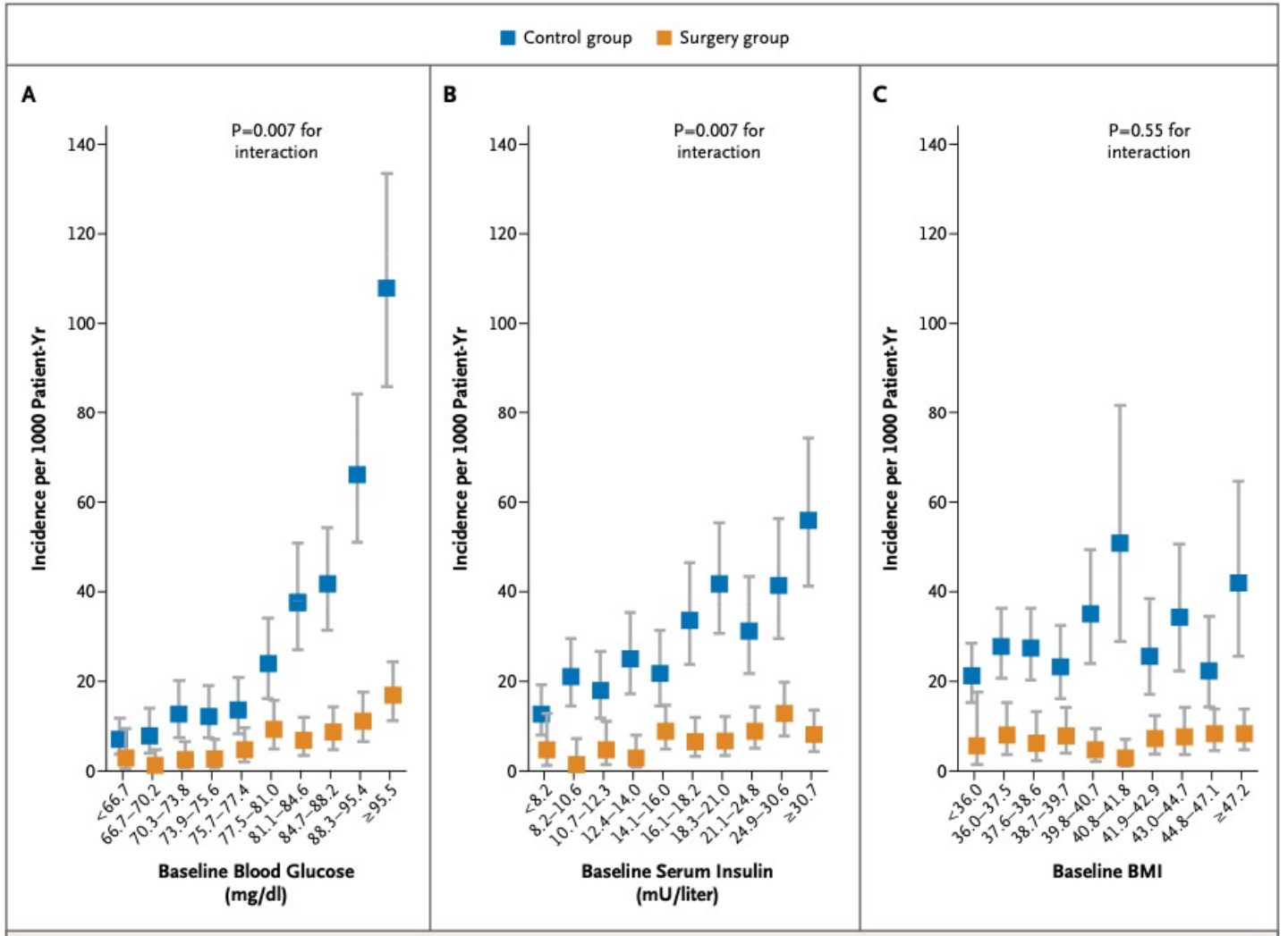
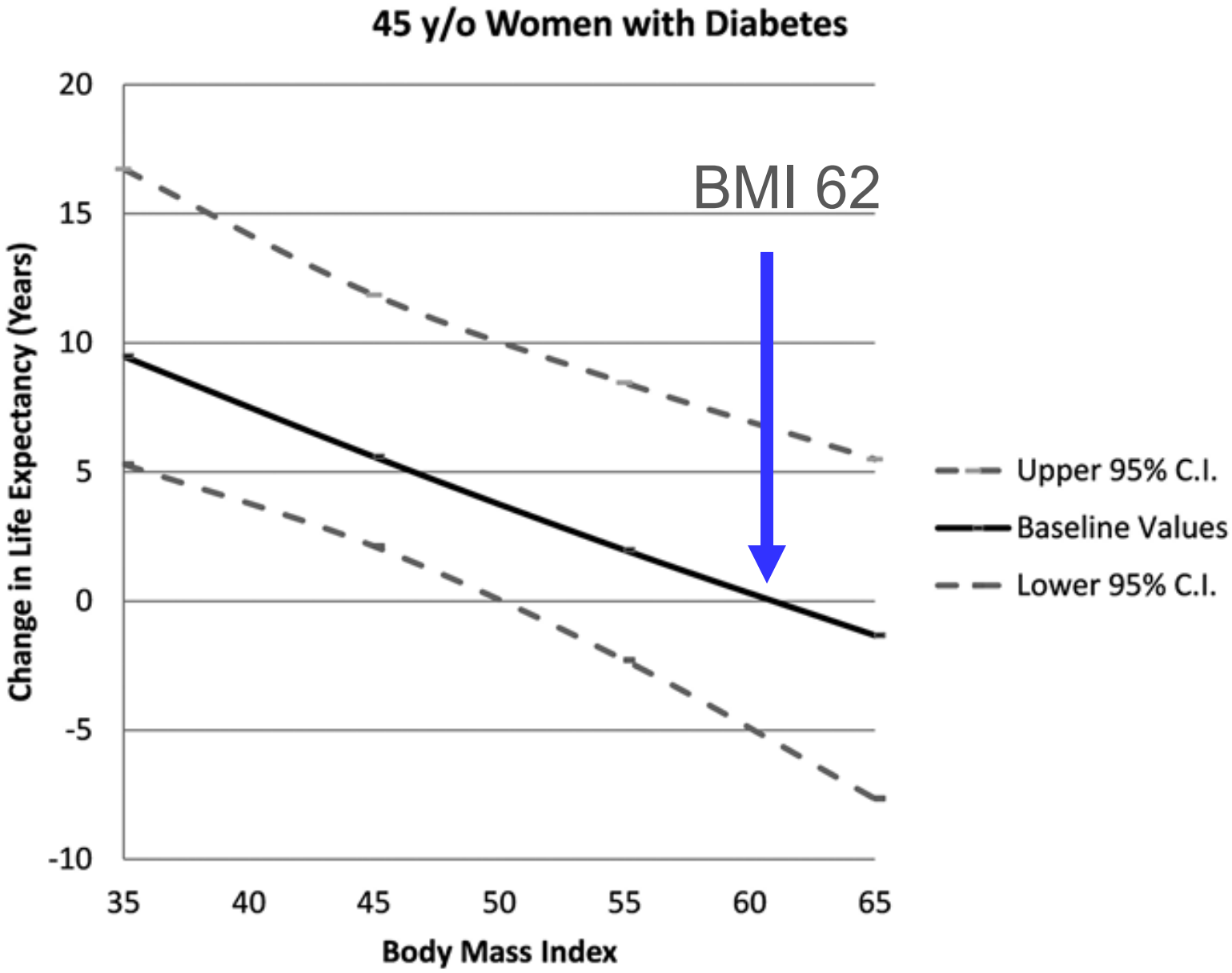


Figure 2. Interaction between Selected Risk Factors and Treatment.

The incidence of type 2 diabetes per 1000 person-years in the bariatric-surgery and control groups is shown according to deciles of baseline blood glucose levels (Panel A), serum insulin levels (Panel B), and body-mass index (BMI; the weight in kilograms divided by the square of the height in meters) (Panel C). In Panel A, P=0.002 for the interaction of treatment with the presence or absence of impaired fasting glucose. All incidence rates are adjusted for age and sex. The P values for interaction are unadjusted. For complete information on all calculated P values for interaction, see Table S7 in the Supplementary Appendix. To convert the values for glucose to millimoles per liter, multiply by 0.5551. I bars indicate 95% confidence intervals.


45 y/o Women with Diabetes
BMI 62
Change in Life Expectancy (Years)
20
15
10
5
0
-5
-10
35
40
45
50
55
60
65
Body Mass Index
Upper 95% C.I.
Baseline Values
Lower 95% C.I.

JAMA Surgery | Original Investigation

Factors Associated With Achieving a Body Mass Index of Less Than 30 After Bariatric Surgery

Oliver A. Varban, MD; Ruth B. Cassidy, MA; Aaron Bonham, MS; Arthur M. Carlin, MD; Amir Ghaferi, MD, MS; Jonathan F. Finks, MD; for the Michigan Bariatric Surgery Collaborative

RESULTS A total of 9713 patients (36%; mean [SD] age, 46.9 [11.3] years; 16.6% male) achieved a BMI of less than 30 at 1 year after bariatric surgery. A significant predictor for achieving this goal was a preoperative BMI of less than 40 (odds ratio [OR], 12.88; 95% CI, 11.71-14.16; $P < .001$). Patients who had a sleeve gastrectomy, gastric bypass, or duodenal switch were more likely to achieve a BMI of less than 30 compared with those who underwent adjustable gastric banding (OR, 8.37 [95% CI, 7.44-9.43]; OR, 21.43 [95% CI, 18.98-24.19]; and OR, 82.93 [95% CI, 59.78-115.03], respectively; $P < .001$). Only 8.5% of patients with a BMI greater than 50 achieved a BMI of less than 30 after bariatric surgery. Patients who achieved a BMI of less than 30 had significantly higher reported rates of medication discontinuation for hyperlipidemia (60.7% vs 43.2%, $P < .001$), diabetes (insulin: 67.7% vs 50.0%, $P < .001$; oral medications: 78.5% vs 64.3%, $P < .001$), and hypertension (54.7% vs 34.6%, $P < .001$), as well as a significantly higher rate of sleep apnea remission (72.5% vs 49.3%, $P < .001$) and higher satisfaction rate (92.8% vs 78.0%, $P < .001$) compared with patients who did not.

Effect of Laparoscopic Roux-En Y Gastric Bypass on Type 2 Diabetes Mellitus

Philip R. Schauer, MD, Bartolome Burguera, MD,† Sayeed Ikramuddin, MD,‡ Dan Cottam, MD,* William Gourash, CRNP,* Giselle Hamad, MD,* George M. Eid, MD,* Samer Mattar, MD,* Ramesh Ramanathan, MD,* Emma Barinas-Mitchel, PhD,§ R. Harsha Rao, MD,† Lewis Kuller, MD DrPH,§ and David Kelley, MD†*

TABLE 3. Resolution of T2DM According to Preoperative Severity and Duration (n = 191)

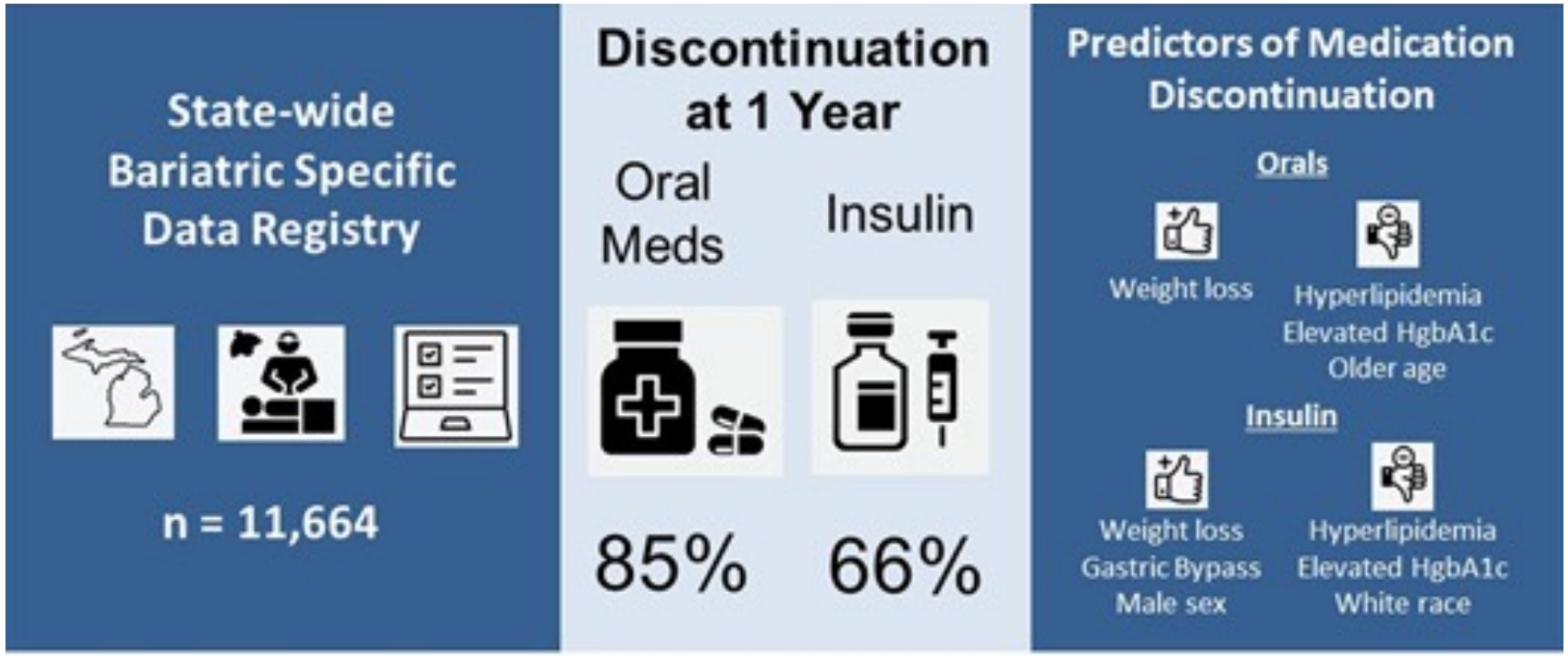
		Improved	Resolved
Number		**33**	**158**
Severity*			
Impaired Fasting Glucose	IFG (n = 14)	0	100%
Diabetes - Diet Controlled	DC-T2DM (n = 32)	3%	97%
Diabetes - Oral Agents	OA-T2DM (n = 93)	13%	87%
Diabetes - Insulin	I-T2DM (n = 52)	38%	62%
Duration*			
	≤5 years (n = 119)	5%	95%
	6 to 10 years (n = 44)	25%	75%
	>10 years (n = 28)	46%	54%

* Indicates $P < 0.001$.

Annals of Surgery • Volume 238, Number 4, October 2003

Independent Predictors of Discontinuation of Diabetic Medication after Sleeve Gastrectomy and Gastric Bypass

Oliver A Varban, MD, FACS, FASMBS, Aaron J Bonham, MS, Arthur M Carlin, MD, FACS, Amir A Ghaferi, MD, MS, FACS, Jonathath F Finks, MD, FACS, Anne P Ehlers, MD, MPH, FACS



Varban et al. J Am Coll Surg, October 2022

JACS

Obesity and Metabolic Disease

Low Severity
Low Chronicity

Time

High Severity
High Chronicity

Improving Outcomes with Surgery

Better:

- Weight loss
- Comorbidity reduction
- Mortality benefit

Less complications

Oral meds to insulin
Diabetes > 5 years
Strong family history
Prevention
BMI >50

Improving Outcomes with Surgery

Better:

- Weight loss
- Comorbidity reduction
- Mortality benefit

Less complications

Max?

- Age
- BMI

Metabolic Surgery Referral

Education

Evaluation

Metabolic Surgery Team

Intake Specialists

Program Coordinator

Surgeons

Dietitians

Psychologist

Nurses

APP/NP

Exercise Physiologists

Weight Management

Obesity Medicine

Metabolic Surgery Evaluation

Routine:

Seminar/Video Education

Medical Evaluation
Dietary Evaluation
Psychological Evaluation

Exercise Class
Endoscopy
Labs/Drug screen
Sleep apnea screening
Smoking cessation

Selective:

Sleep Study
Imaging

Evaluations:
Cardiology
Pulmonology
Nephrology
Hepatology
Hematology

Calculate Individualized Risks and Benefits

MBSC Outcomes Calculator

Outcomes Calculator

Procedure *

Lap Band | Sleeve Gastrectomy | RYGB -Open | RYGB - Lap | BDP/DS

Demographics

Weight (pounds) *

Height (feet) *

Feet

Height (inches) *

Inches

Private Insurance

No

Age *

Age

Gender *

Choose only one

Number of Days After Surgery

ANDROID APP ON Google play

Available on the App Store

MICHIGAN BARIATRIC SURGERY COLLABORATIVE
MBSC

Outcomes Calculator

Procedure *

- [ ] RYGB - Open
- [x] RYGB - Lap
- [ ] Lap Band
- [x] Sleeve Gastrectomy
- [ ] BDP/DS

Demographics

Note: The calculator is not reliable for patients with a BMI >90

Weight (pounds) *	**Height (feet) ***	**Height (inches) ***
225.00	5	5
Private Insurance	**Age ***	**Gender ***
Yes	35	Female
Race *		
Non-Hispanic White		

BMI = 37 kg/m2

Comorbidities

GERD
Yes No

Hyperlipidemia (*)
Yes No

PUD
Yes No

Renal Function Disorder
Yes No

Lung Disease
Yes No

Hernia
Yes No

Urinary Incontinence
Yes No

Psychological Disorder
Yes No

Musculoskeletal
Yes No

Diabetes
Yes No

Insulin Dependent (*)
Yes No

Non-Insulin Dependent (*)
Yes No

Liver Disorder
Yes No

Cholelithiasis
Yes No

Sleep Apnea (*)
Yes No

Cardiovascular Disease
Yes No

WEIGHT LOSS

	RYGB - LAP	SLEEVE GASTRECTOMY
WEIGHT (LOST) AT YEAR 1	150 (75)	163 (62)
WEIGHT (LOST) AT YEAR 2	150 (75)	167 (58)
WEIGHT (LOST) AT YEAR 3	154 (71)	172 (53)

COMORBIDITY RESOLUTION AT 1 YEAR POST-OP

	RYGB - LAP	SLEEVE GASTRECTOMY
NON-INSULIN DEPENDENT	88 %	85 %
HYPERCHOLESTEROLEMIA	85 %	75 %
SLEEP APNEA	83 %	74 %

COMPLICATIONS AT 30 DAYS POST-OP

	RYGB - LAP	SLEEVE GASTRECTOMY
ANY	7.01 %	3.40 %
SEVERE	2.05 %	0.99 %
DEATH	0.05 %	0.02 %

Procedure *

☐ RYGB - Open ☑ RYGB - Lap ☐ Lap Band ☑ Sleeve Gastrectomy ☐ BDP/DS

Demographics

Note: The calculator is not reliable for patients with a BMI >90

Weight (pounds) *	Height (feet) *	Height (inches) *
375.00	5	5
Private Insurance	Age *	Gender *
Yes	55	Male
Race *		
Non-Hispanic Black		

BMI = 62 kg/m2

Comorbidities

GERD
Yes No

Hyperlipidemia (*)
Yes No

PUD
Yes No

Renal Function Disorder
Yes No

Lung Disease
Yes No

Hernia
Yes No

Urinary Incontinence
Yes No

Psychological Disorder
Yes No

Musculoskeletal
Yes No

Diabetes
Yes No

Insulin Dependent (*)
Yes No

Non-Insulin Dependent (*)
Yes No

Liver Disorder
Yes No

Cholelithiasis
Yes No

Sleep Apnea (*)
Yes No

Cardiovascular Disease
Yes No

Outcomes Calculator

WEIGHT LOSS

	RYGB - LAP	SLEEVE GASTRECTOMY
WEIGHT (LOST) AT YEAR 1	257 (118)	278 (97)
WEIGHT (LOST) AT YEAR 2	243 (132)	272 (103)
WEIGHT (LOST) AT YEAR 3	246 (129)	278 (97)

COMORBIDITY RESOLUTION AT 1 YEAR POST-OP

	RYGB - LAP	SLEEVE GASTRECTOMY
NON-INSULIN DEPENDENT	75 %	71 %
HYPERCHOLESTEROLEMIA	68 %	52 %
SLEEP APNEA	41 %	30 %

COMPLICATIONS AT 30 DAYS POST-OP

	RYGB - LAP	SLEEVE GASTRECTOMY
ANY	9.34 %	4.59 %
SEVERE	3.48 %	1.69 %
DEATH	0.18 %	0.09 %

Personalized Outcomes

Shared:
- Goals
- Expectations
- Decision-making

MICHIGAN BARIATRIC SURGERY COLLABORATIVE

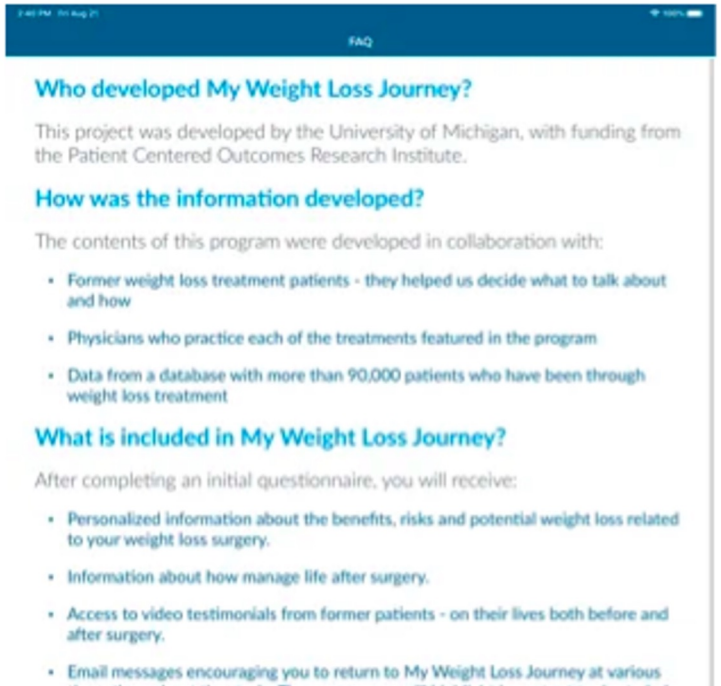
MBSC

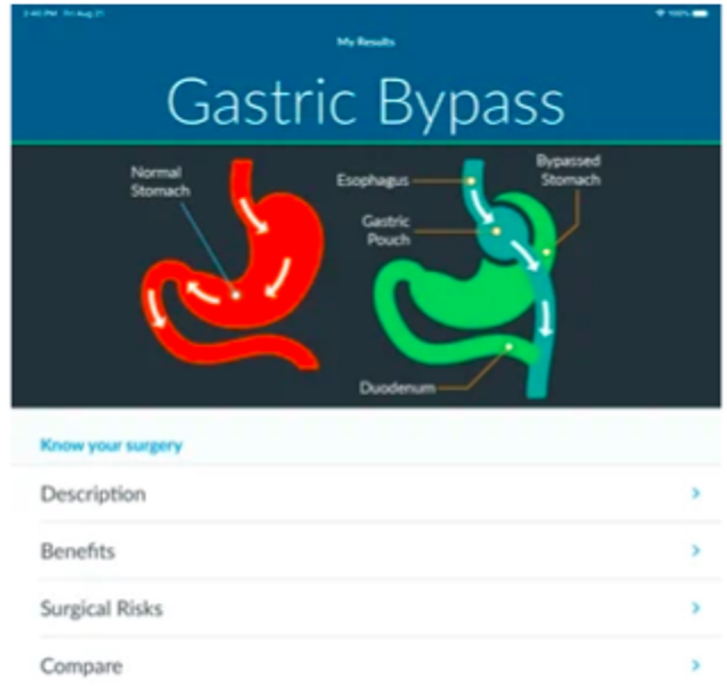
Available on the App Store

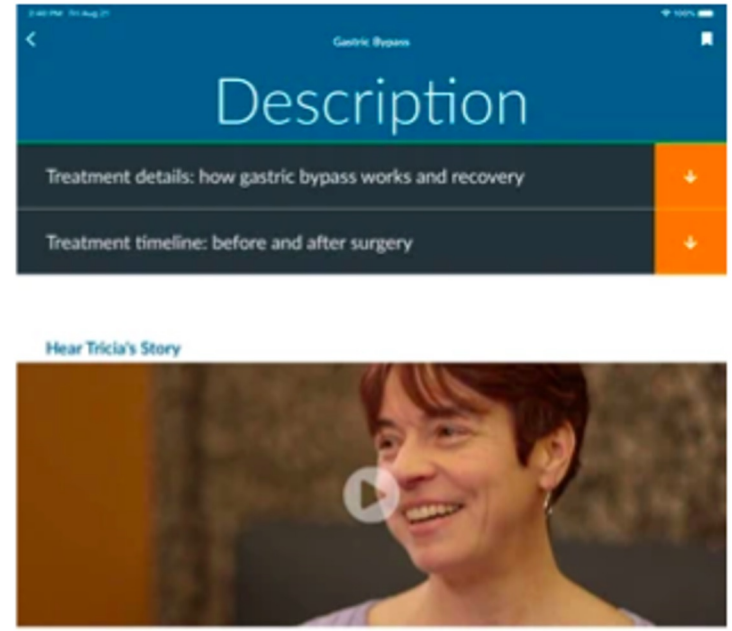
ANDROID APP ON Google play

Screenshots

iPad iPhone



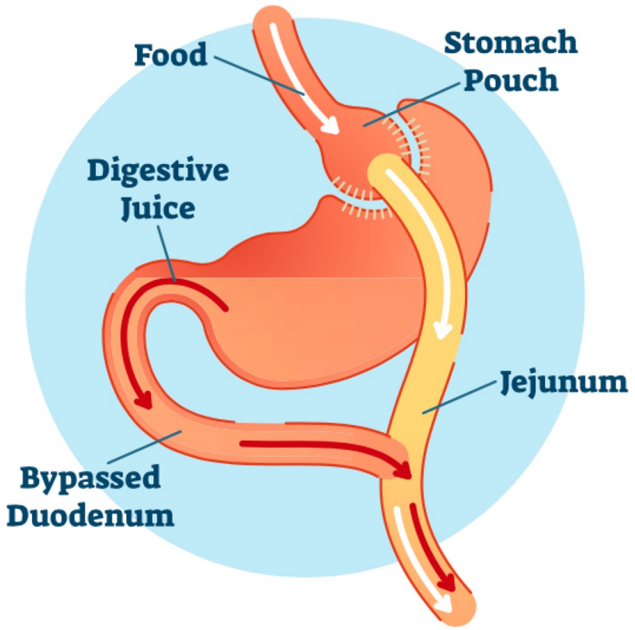




Audience Survey Question

Would you use a one-page hand-out in your clinic? (Yes/No)

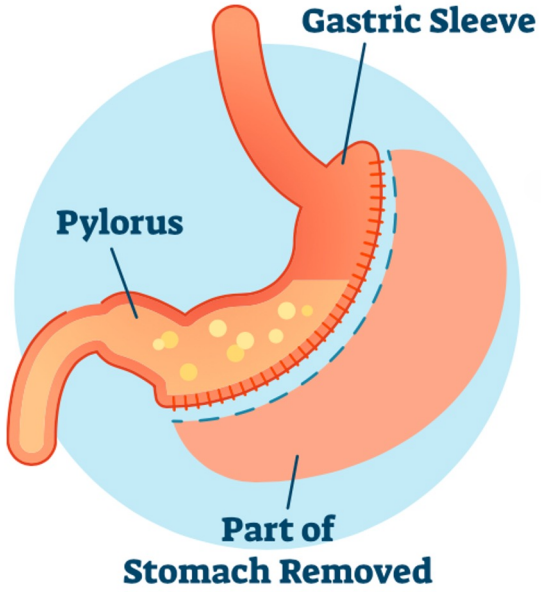
Roux-en-Y Gastric Bypass



Total Body Weight Loss: 30-35%

Complications: 2-5%

Sleeve Gastrectomy



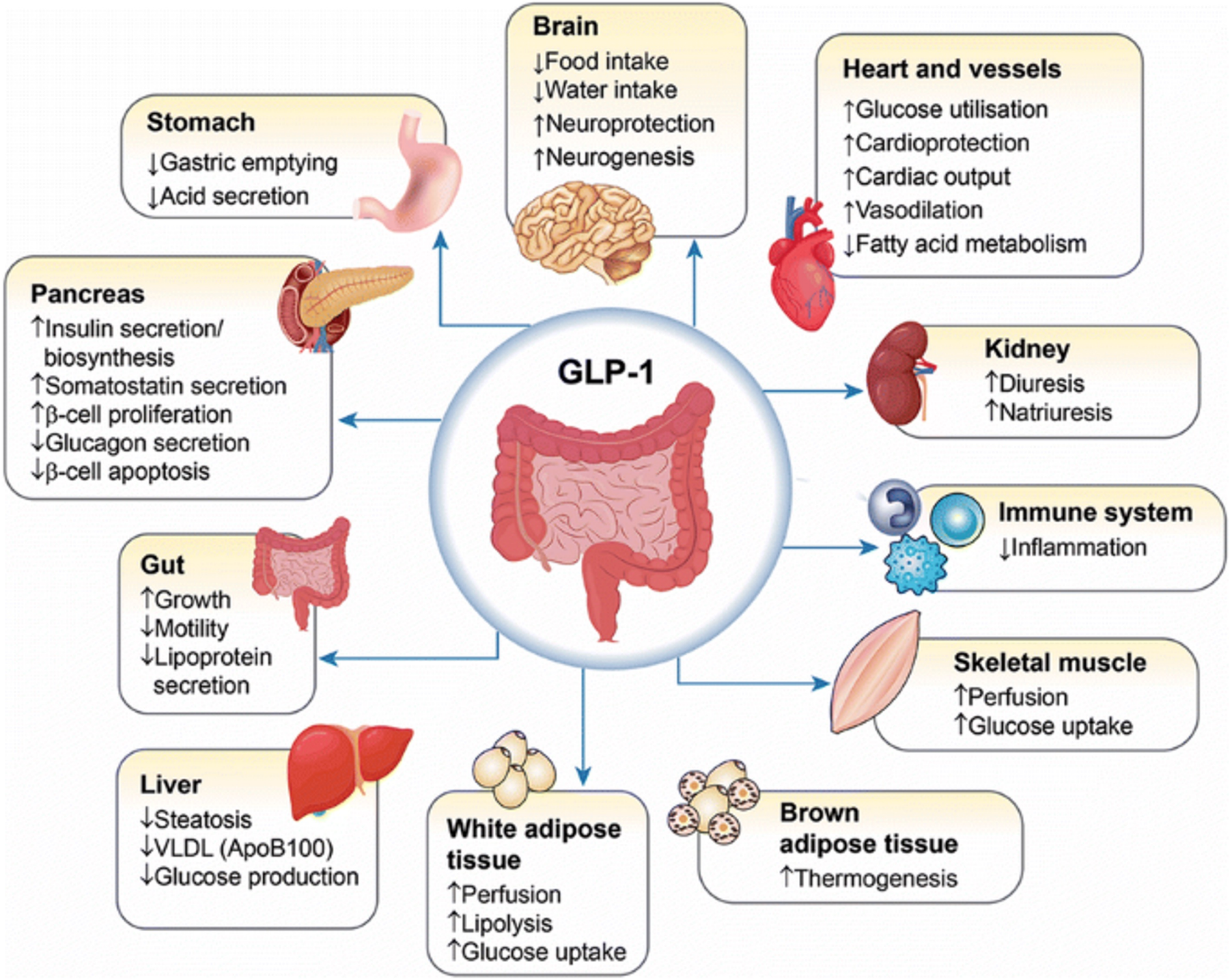
Total Body Weight Loss: 25-30%

Complications: 1-3%

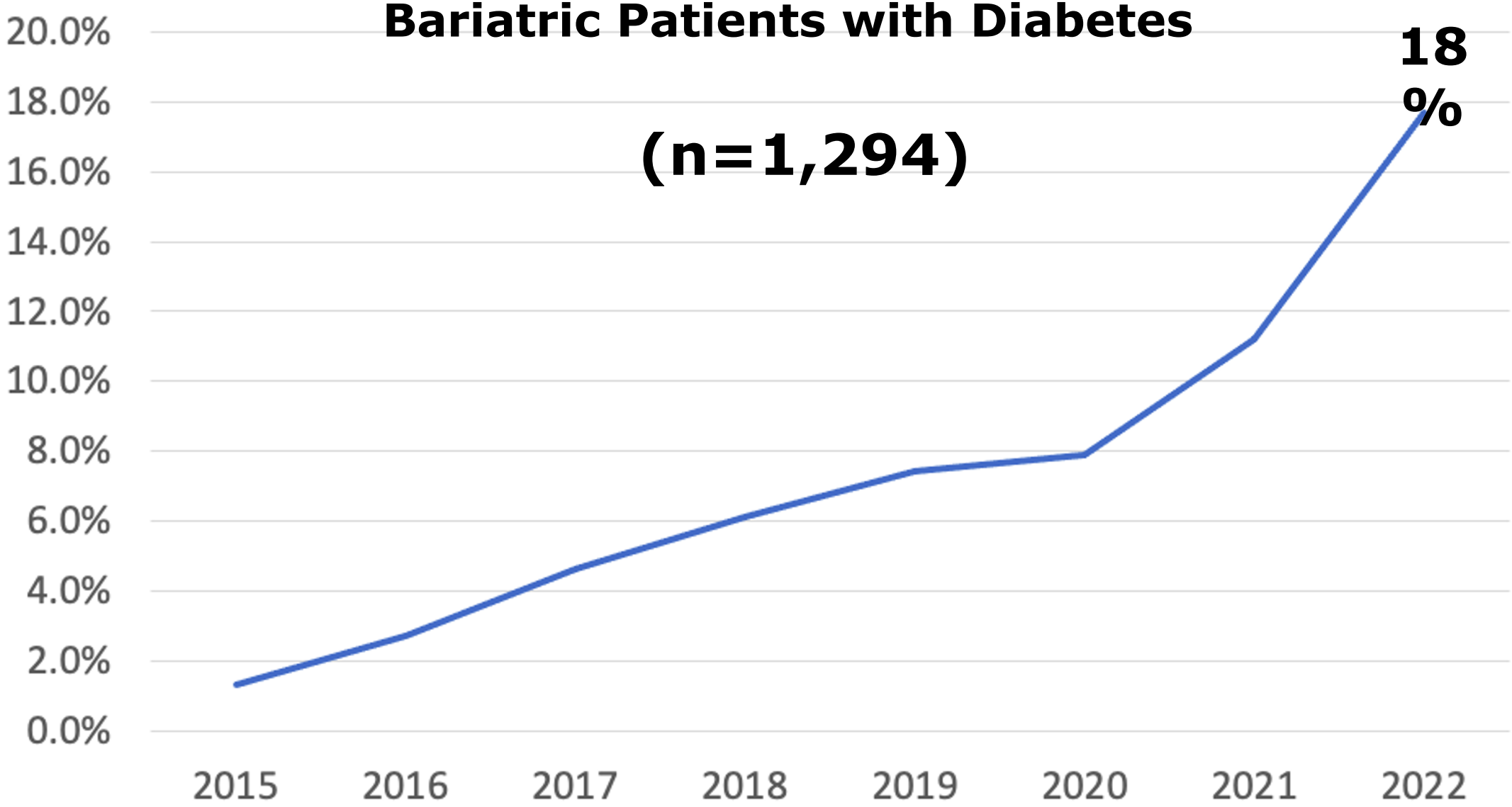
Postoperative Care

1-2 days hospital stay
2-4 weeks return to work
1, 3, 6, 9-month and annual follow up
Diet: Liquid => soft/puree => regular
Multivitamin, Iron, Vit D, Calcium, B12

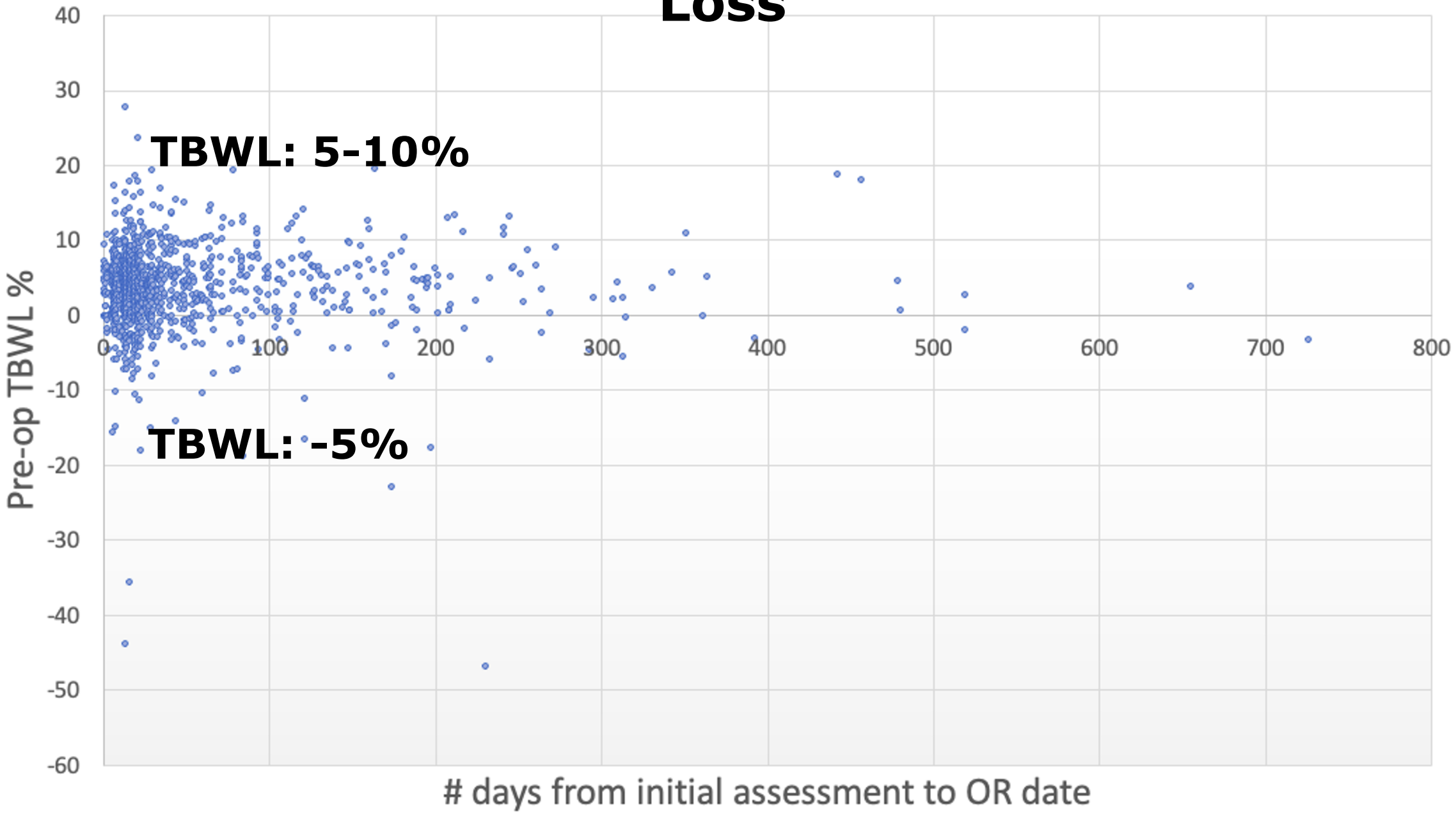

JUST
ONE
more
THING!


Brain
↓Food intake
↓Water intake
↑Neuroprotection
↑Neurogenesis
Heart and vessels
↑Glucose utilisation
↑Cardioprotection
↑Cardiac output
↑Vasodilation
↓Fatty acid metabolism
Stomach
↓Gastric emptying
↓Acid secretion
Pancreas
↑Insulin secretion/ biosynthesis
↑Somatostatin secretion
↑β-cell proliferation
↓Glucagon secretion
↓β-cell apoptosis
GLP-1
Kidney
↑Diuresis
↑Natriuresis
Immune system
↓Inflammation
Gut
↑Growth
↓Motility
↓Lipoprotein secretion
Skeletal muscle
↑Perfusion
↑Glucose uptake
Liver
↓Steatosis
↓VLDL (ApoB100)
↓Glucose production
White adipose tissue
↑Perfusion
↑Lipolysis
↑Glucose uptake
Brown adipose tissue
↑Thermogenesis

Annual Rate of GLP1RA Use in Preoperative Bariatric Patients with Diabetes



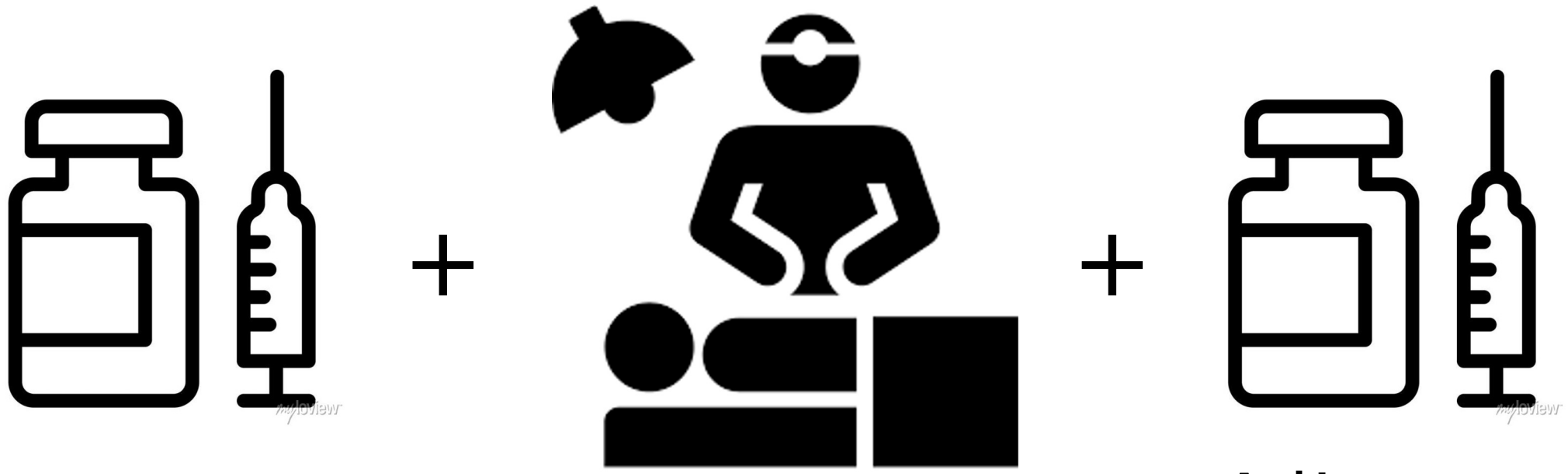
Variation in Preoperative Weight Loss



Summary of Observations

- Use of GLP1RAs have increased over time: ***18% in 2022***
- Patients on a GLP1RA prior to bariatric surgery:
  - More likely to have ***higher rates of metabolic disease*** (HTN, HLD, IDDM)
  - Mean preop weight loss (***3.6% TBWL***)
- Variation in preoperative weight loss exists:
  - Top tercile: ***8% TBWL*** vs Bottom tercile: ***- 2.3% TBWL***
  - Top tercile: ***Higher BMI but lower rates of IDDM***

Future Considerations



Neoadjuvant

Adjuvant

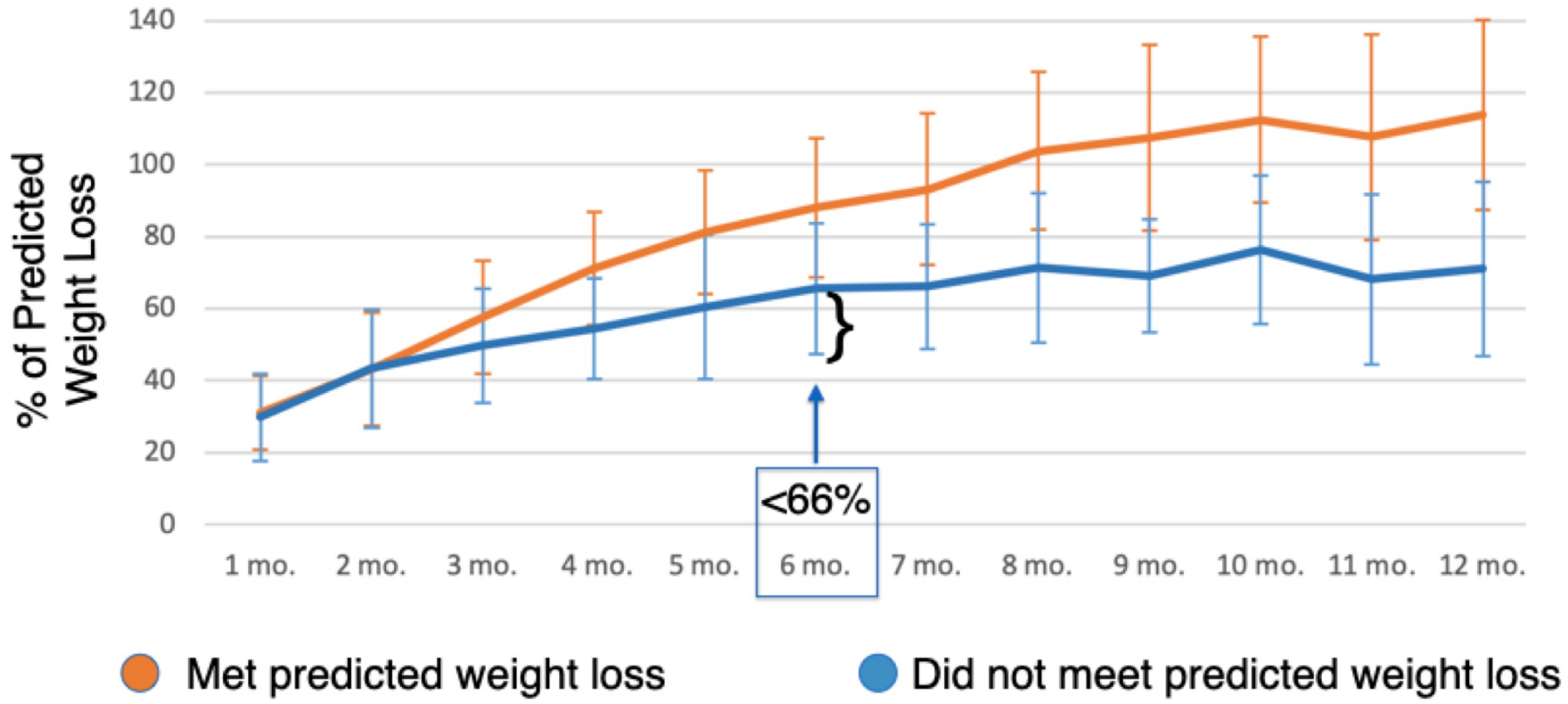
> Obes Surg. 2021 Jul;31(7):3210-3217. doi: 10.1007/s11695-021-05397-8. Epub 2021 Apr 6.

Am I on Track? Evaluating Patient-Specific Weight Loss After Bariatric Surgery Using an Outcomes Calculator

Oliver A Varban [1], Aaron J Bonham [2], Amanda L Stricklen [2], Rachel Ross [2], Arthur M Carlin [3], Jonathan F Finks [4], Amir A Ghaferi [4 2]

Affiliations + expand

PMID: 33825152 DOI: 10.1007/s11695-021-05397-8



Final Thoughts…

Multimodal treatment of metabolic disease

through

Multidisciplinary collaboration

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FASMBS
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Home Collaborative Initiatives Data Registry For Members For Patients PCP Toolkit More Contact Us

MICHIGAN BARIATRIC SURGERY COLLABORATIVE

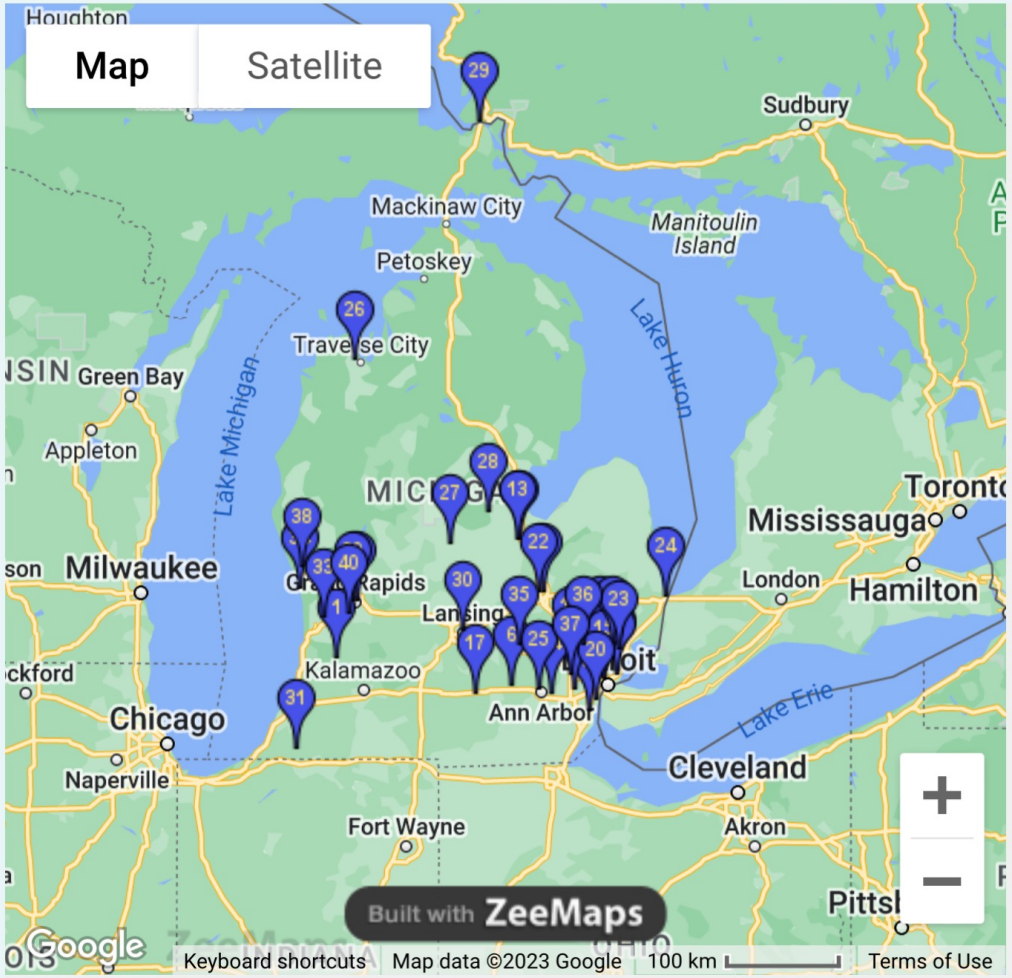
Advancing the Science and Practice of Bariatric Surgery

The Michigan Bariatric Surgery Collaborative is a regional group of hospitals and surgeons that perform bariatric surgery in Michigan. Formed in 2005, MBSC aims to innovate the science and practice of metabolic and bariatric surgery through comprehensive, lifelong, patient-centered obesity care-in Michigan and across the United States.

MBSC Fact Sheet

https://www.mbscsurgery.org

MBSC PARTICIPATING SITES



Name
1 Ascension Borgess Hospital
2 Ascension Macomb-Oakland Madison Heights
3 Ascension Providence Hospital Southfield
4 Ascension St. John Hospital
5 Ascension St. Mary's Hospital
6 Chelsea Hospital
7 Corewell Health Beaumont Grosse Pointe Hospital
8 Corewell Health Beaumont Troy Hospital
9 Corewell Health Dearborn Hospital
10 Corewell Health Trenton Hospital
11 Corewell Health Wayne Hospital
12 Corewell Health William Beaumont University Hospital
13 Covenant HealthCare
14 Forest Health Medical Center
15 Harper University Hospital
16 Henry Ford Hospital
17 Henry Ford Jackson Health
18 Henry Ford Macomb Hospital

Page 1 of 1

https://www.mbscsurgery.org/collaborative