Adjuvant Obesity Management Medications (OMM) in patients with suboptimal clinical response

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XXVIII IFSO World Congress

8 - 12 September 2025 | Santiago, Chile

Disclosures

Director – Surgery and Cancer
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Secretary – BOMSS

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IFSO EC – Treasurer

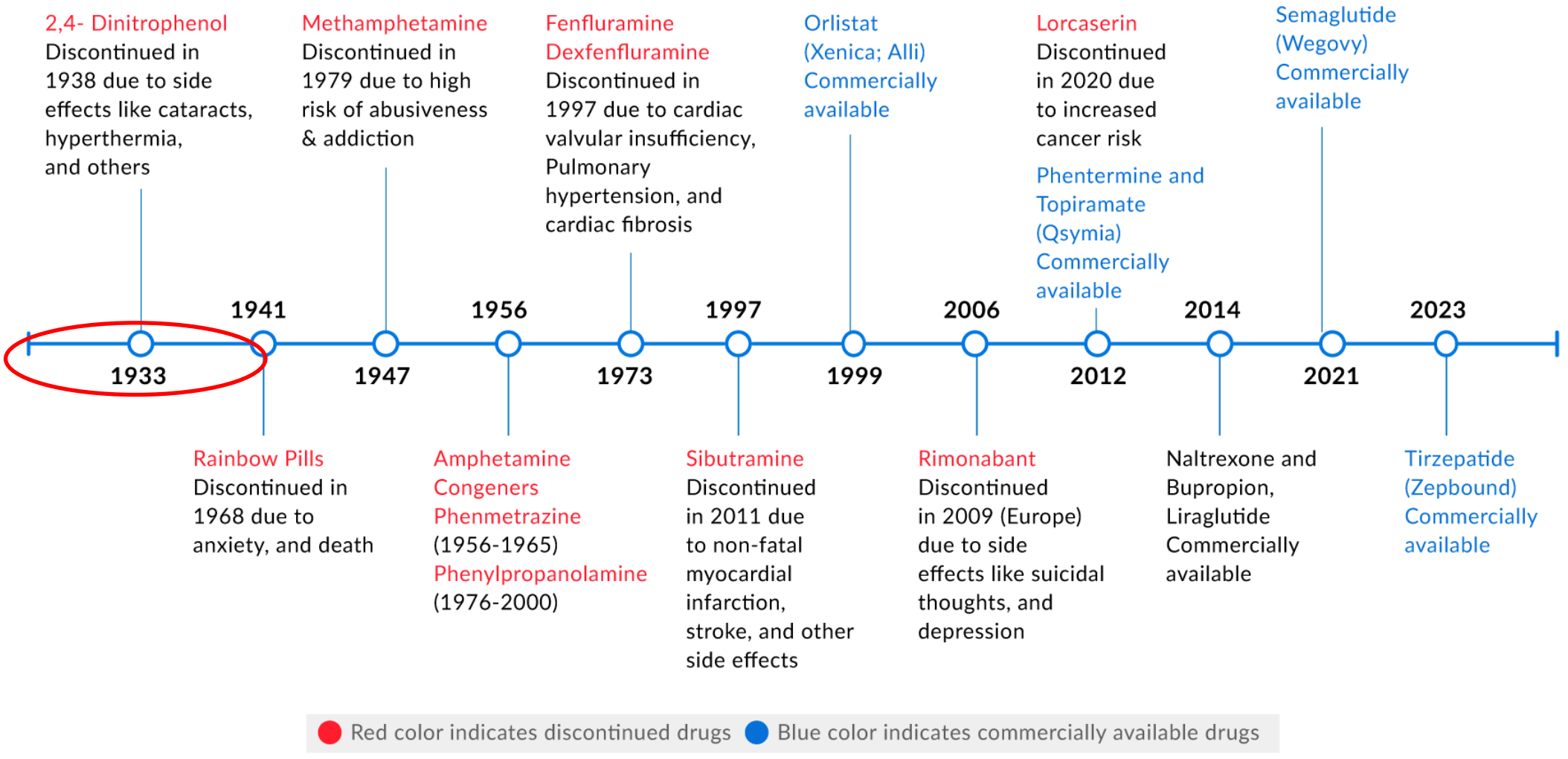
Editor – Obesity Surgery, SOARD, IBC Newsletter, IJS,
Journal of Bariatric Surgery

Consultant with:

- Johnson & Johnson
- Medtronics
- Meril Ltd
- Boston Scientific

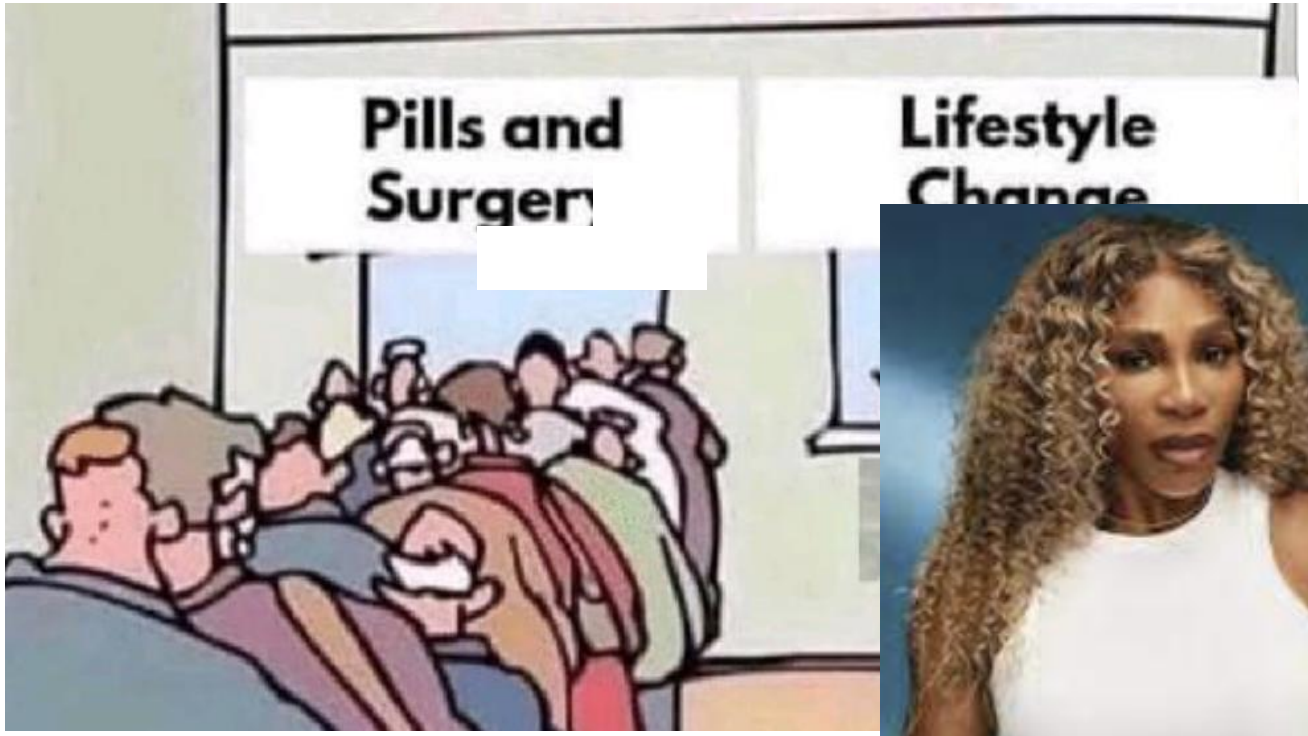
OMM

Obesity Drugs Timeline



Red color indicates discontinued drugs Blue color indicates commercially available drugs

OMM in 2025- everyone wants it

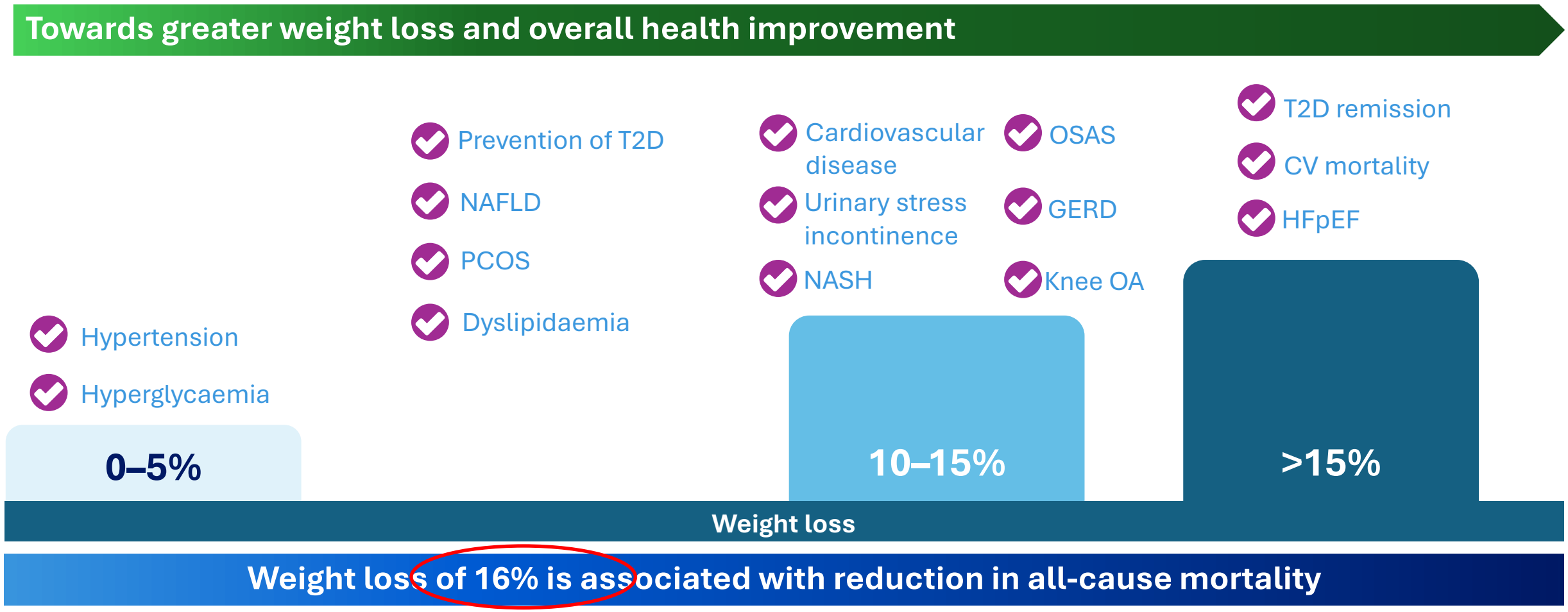


lon Musk

Oprah Winfrey

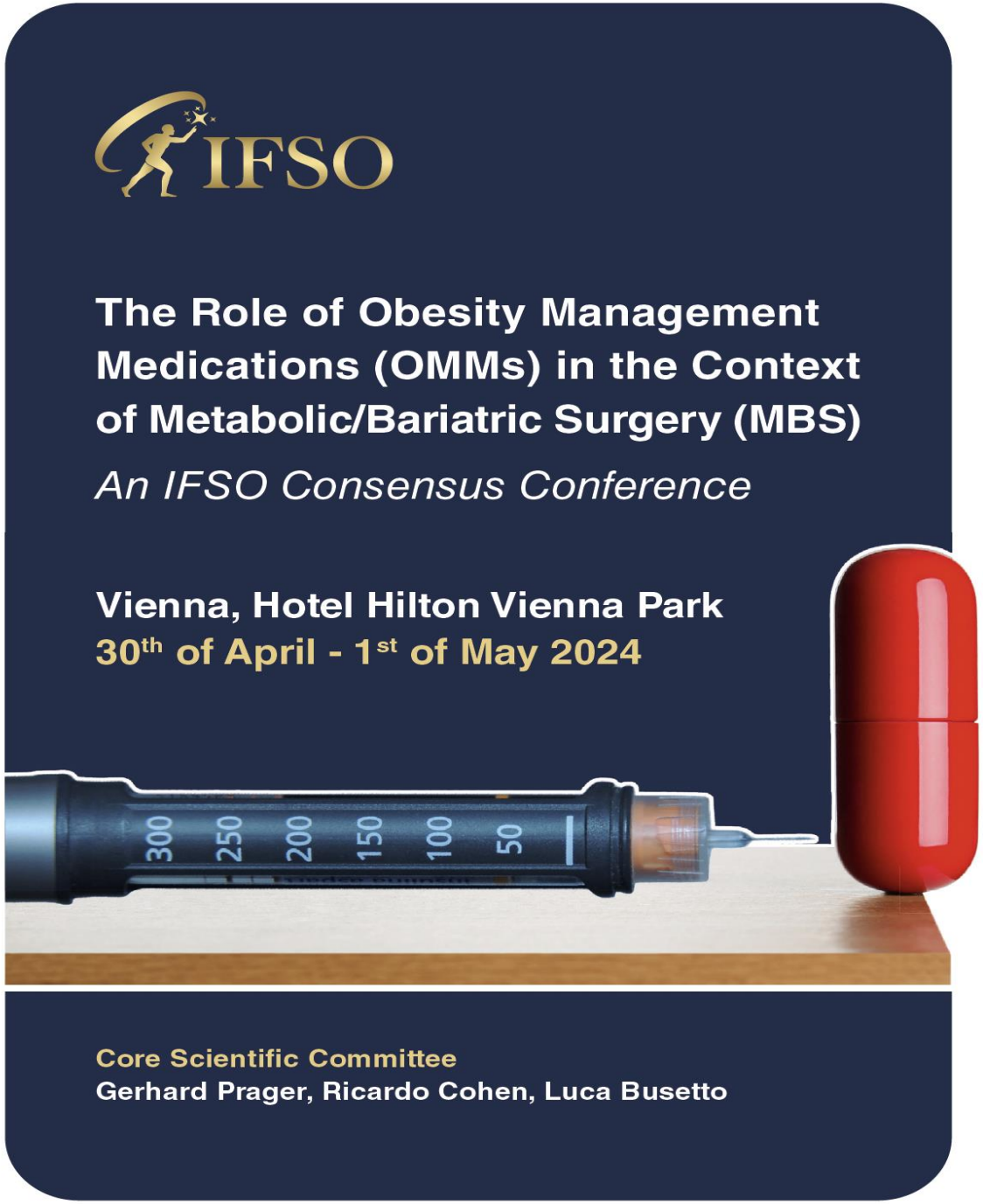
Sharon Osbourne

The effect of weight loss on complications



CV, cardiovascular; GERD, gastro-oesophageal reflux disease; HFpEF, heart failure with preserved ejection fraction; NAFLD, non-alcoholic fatty liver disease; NASH, non-alcoholic steatohepatitis; OA, osteoarthritis; OSAS, obstructive sleep apnoea syndrome; PCOS, polycystic ovary syndrome; TG, triglycerides.

Garvey WT et al. Endocr Pract 2016;22(Suppl. 3):1–203; Look AHEAD Research Group. Lancet Diabetes Endocrinol 2016;4:913–21; Lean ME et al. Lancet 2018;391:541–51; Benraoune F and Litwin SE. Curr Opin Cardiol 2011;26:555–61; Sundström J et al. Circulation 2017;135:1577–85; Ryan D and Yockey S. Curr Obes Rep 2017;6:187–94.



Objectives:

Explore latest developments in OMMs and their synergies with MBS (preoperative/postoperative)

Systematic Review + Delphi consensus

Active participation:

IFSO, ASMBS, WOF, EASO, ID, Patients

Core Scientific Committee

Gerhard Prager, *Austria*
Luca Busetto, *Italy*
Ricardo Cohen, *Brazil*

Systematic Review Committee

Mohammad Kermansaravi, *Iran*
Chetan Parmar, *UK*

Delphi Expert

Randy Levinson, *USA*

Invited Experts

METABOLIC BARIATRIC SURGEONS

Ali Aminian, *USA*
Ricardo Cohen, *Brazil*
Nicola Di Lorenzo, *Italy*
Khaled Gawdat, *Egypt*
Mohammed Hadad, *UAE*
Mohammad Kermansaravi, *Iran*
Lilian Kow, *Australia*
Marina Kurian, *USA*
Muffazal Lakdawala, *India*
Abdelrahman Nimeri, *USA*
Chetan Parmar, *UK*
Silvana Perretta, *France*
Luis Poggi, *Peru*
Jaime Ponce, *USA*
Gerhard Prager, *Austria*
Francesco Rubino, *UK*
Paulina Salminen, *Finland*
Phil Schauer, *USA*
Scott Shikora, *USA*
Michel Suter, *Switzerland*

OBESITY PHYSICIANS

Nasreen Al Faris, *Saudi Arabia*
Matthias Blüher, *Germany*
Luca Busetto, *Italy*
Lena Carlsson, *Sweden*
David Cummings, *USA*
Dror Dicker, *Israel*
Linong Ji, *China*
Lee Kaplan, *USA*
Arya Sharma, *Germany*
Sara Suliman, *UAE*
Wei Tham, *Singapore*
Josep Vidal, *Spain*
Tarisca Zanata Petry, *Brazil*

INTEGRATED HEALTH EXPERTS

Silvia Leite, *Brazil*
Mary O'Kane, *UK*
Andrea Schroeder, *New Zealand*

PARTNER SOCIETIES' REPRESENTATIVES

Jason Halford
EASO President, *UK*

Carel Le Roux,
WOF Clinical Care Committee
Ireland

Peter Schwarz
IDF President elect, *Germany*

PATIENTS' REPRESENTATIVES

Vickey Mooney, *Ireland*
Ximena Ramos Salas, *Sweden*

41 experts: Endocrinology, diabetology, internal medicine, gastroenterology, allied health, surgery, and **patients**

Day 1: Lectures - 3 Modules:

1. Use of OMMs before MBS
    a. How much weight loss do we need for health? Carel Le Roux
    b. Use and Choice of OMMs prior to MBS Josep Vidal
    c. Are there Subgroups with special Benefits from OMM Treatment prior to MBS? Nasreen Al Faris

2. Use of OMMs after MBS
    a. Evidence &Timing for Omms in case of recurrent weight gain or inadequate initial response Lee Kaplan
    b. Treatment with OMM due to recurrent weight gain/persistent metabolic disease Dror Dicker
    c. Evidence & Rationale for continuous or intermittent use of OMM after MBS Dave Cummings
    d. Endoscopic Procedures and OMM Silvana Perretta
    e. Comparison of the Efficacy of OMM with and without MBS Kwang Wei Tham

3. The Future
    a. A perspective on Cost-Effectiveness of OMM and MBS Ricardo Cohen
    b. What is in the pipeline? Matthias Blüher
    c. What will be the Role of Revisional Surgery with Modern Pharmacotherapy? Phil Schauer
    d. How to deal with the Challenges of MBS and lifelong OMM use Arya Sharma
    e. Potential Need for further Studies Francesco Rubino

Adjuvant: OMM after MBS

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

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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/m^2 and pouch trimming plus silastic ring, 5.5 ± 2.9 kg/m^2
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.§

2. Statements on Use of OMMs **after** MBS:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
Treatments with OMMs after MBS should generally be withheld until the achievement of weight plateau unless there is a compelling clinical need for earlier initiation	A+	100	3	33

Differentiation of the effect of MBS and OMMs

Adjunctive liraglutide treatment in patients with persistent or recurrent type 2 diabetes after metabolic surgery (GRAVITAS): a randomised, double-blind, placebo-controlled trial

- randomised double-blind,
- placebo-controlled trial

- RYGB or Sleeve
- Diabetes relapse >1yr after MBS

- These findings support the use of **adjunctive liraglutide treatment** in patients with persistent or recurrent T2DM after metabolic surgery

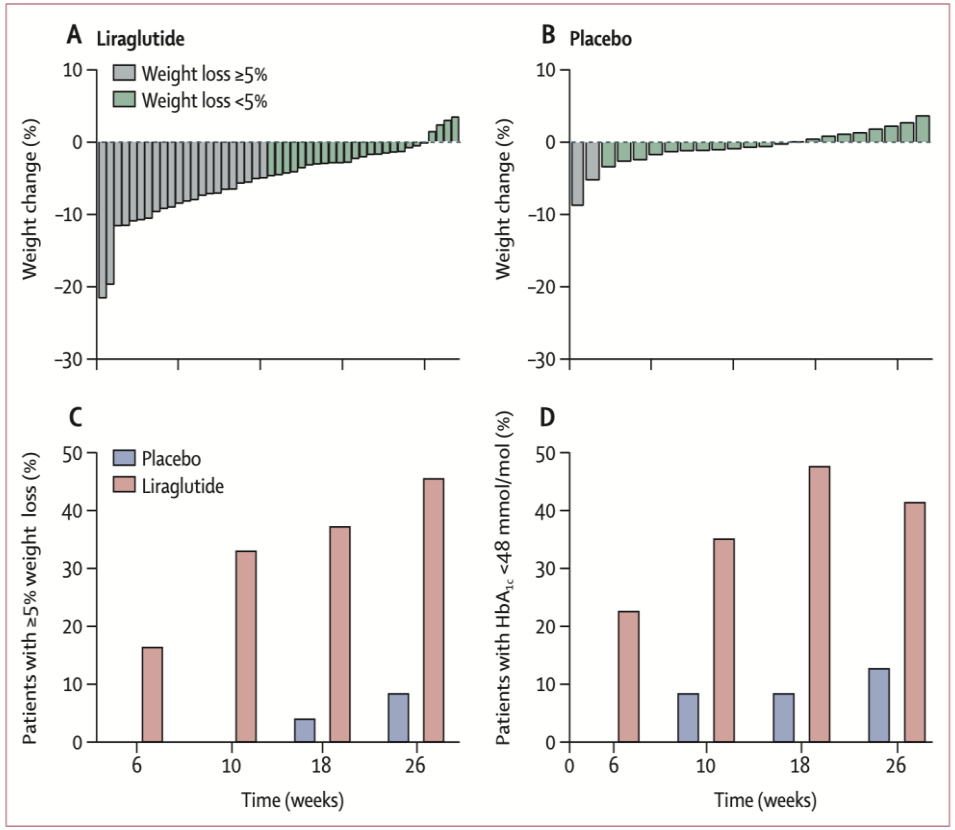


Figure 3: **Weight loss and glycaemic improvement responses in participants who completed the trial**
Waterfall plot showing weight loss responses at 26 weeks in the liraglutide (A) and placebo (B) groups and responses in the placebo and liraglutide groups in terms of patients who achieved weight losses of 5% or greater of baseline weight (C) and patients who achieved HbA1c concentrations lower than 48 mmol/mol (6·5%; D) at 6, 10, 18, and 26 weeks.

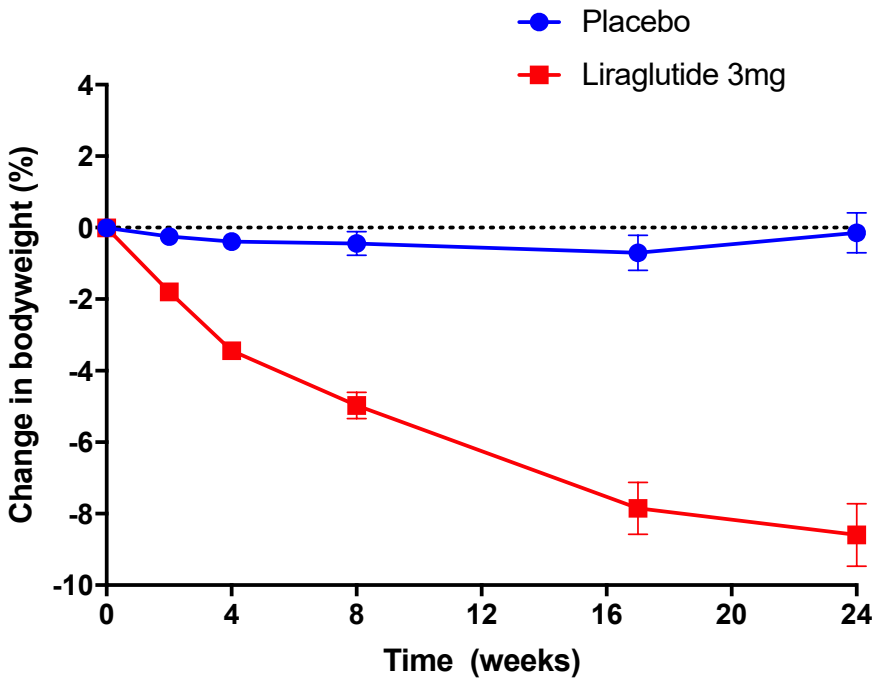
Lancet Diabetes Endocrinol 2019; 7: 549–59

Research
JAMASurgery | 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

Jessica Mok, BMBS, MPhil; Mariam O. Adeleke, PhD; Adrian Brown, PhD; Cormac G. Magee, MBBChir, MA; Chloe Firman, MRes; Christwishes Makahamadze, MRes; Friedrich C. Jassil, PhD; Parastou Marvasti, PhD; Alisia Carnemolla, PhD; Kalpana Devalia, MBBS, MS; Naim Fakih, MD; Mohamed Elkalaawy, MRCSEd, MS, MD; Andrea Pucci, MD, PhD; Andrew Jenkinson, MBBS, MS; Marco Adamo, MD; Rumana Z. Omar, PhD; Rachel L. Batterham, MBBS, PhD; Janine Makaronidis, MBChB, PhD

Change in bodyweight (%)
0-24 weeks



p<0.001

N = 70
Atleast 1 yr after MBS
20% or less body wt loss

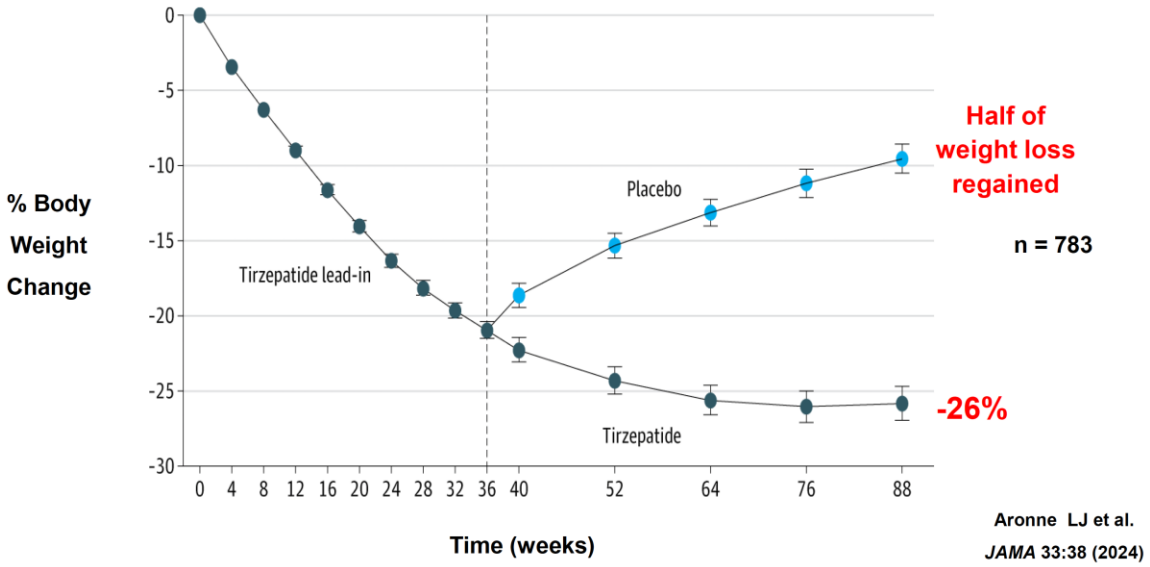
Liraglutide 3.0 mg of once-daily subcutaneous liraglutide, as an adjunct to **diet and exercise**, was associated with clinically **meaningful weight loss in individuals with poor weight loss after bariatric surgery**

2. Statements on Use of OMMs after MBS:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
For patients requiring OMMs to maintain a healthy weight after MBS, the ongoing use of the medications is likely needed	A	94	2	36

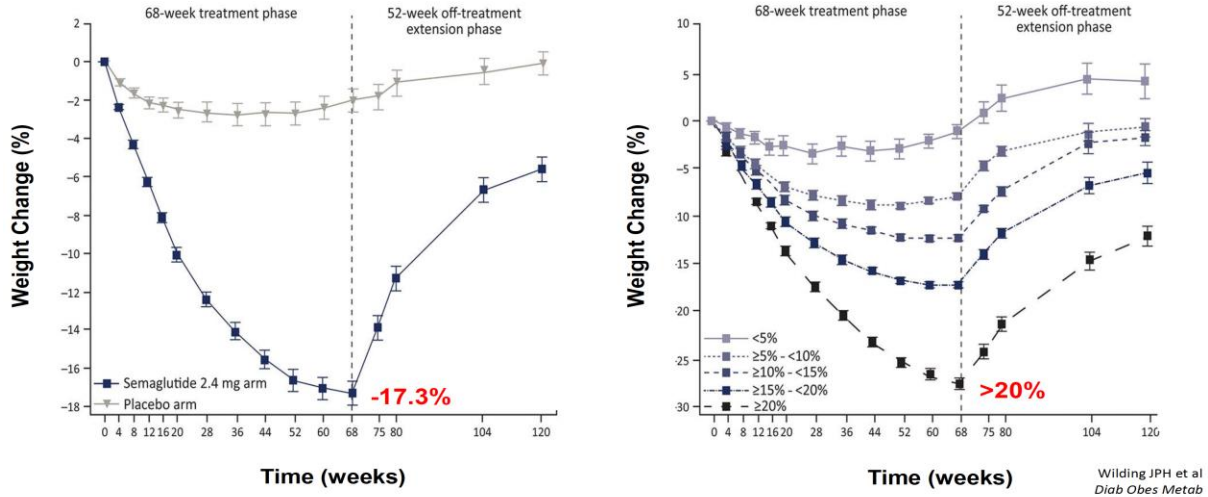
Stoping OMMs --> recurrent weight gain

SURMOUNT 4 RCT



Aronne LJ et al.
JAMA 33:38 (2024)

STEP 1 Extension Trial (Semaglutide)



Wilding JPH et al
Diab Obes Metab 24:1553 (2022)

2. Statements on Use of OMMs after MBS:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
Future research is needed to identify predictors of which patients are likely to derive substantial benefit from combined pharmaco-surgical therapy for obesity and its complications	A+	100	3	35

COULD be: Patients with progressed obesity disease
Obesity Class >5
Progressed CVD/kidney/Liver disease
Progressed Diabetes…

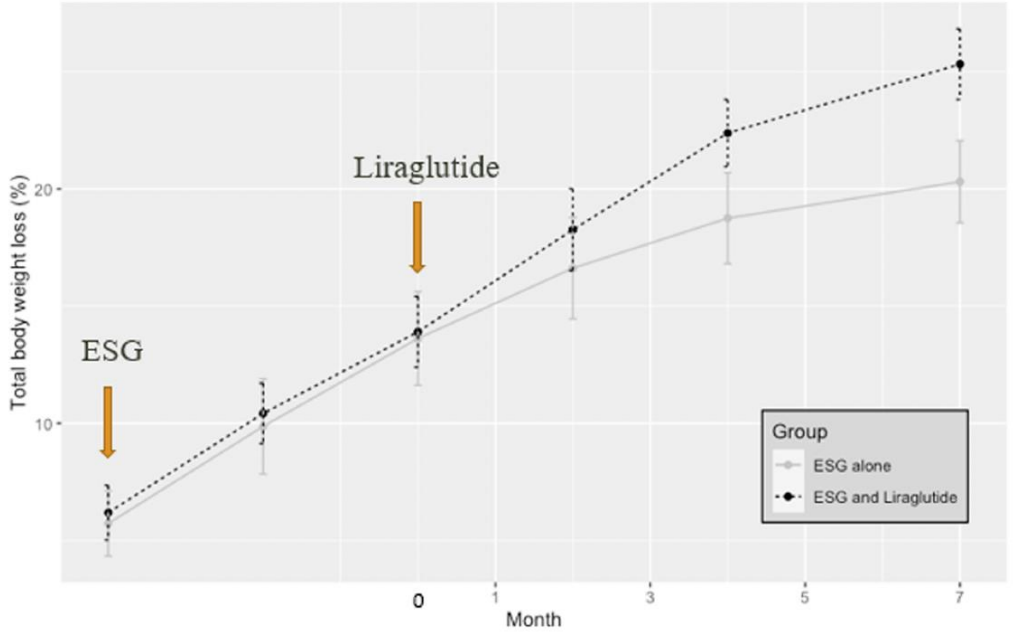
2. Statements on Use of OMMs after MBS:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
The benefit of endoscopic therapies for obesity can be enhanced by combination with OMMs	C	74	2	35

Endoscopic sleeve gastroplasty plus liraglutide versus endoscopic sleeve gastroplasty alone for weight loss CME 2020

Dilhana Badurdeen, MD,[1] Anna Carolina Hoff, MD,[2] Abdellah Hedjoudje, MD, MSc,[1] Atif Adam, PhD, MD,[1] Mohamad I. Itani, MD,[1] Jad Farha, MD,[1] Shahem Abbarh, MBBS,[1] Anthony N. Kalloo, MD,[1] Mouen A. Khashab, MD,[1] Vikesh K. Singh, MD, MSc,[1] Andrea Oberbach, MD, PhD, MPH,[1] Manoel Galvao Neto, MD,[3] Sergio Barrichello, MD,[4] Vivek Kumbhari, MD, PhD[1]

Baltimore, Maryland, USA; São José dos Campos, São Paulo, Brazil



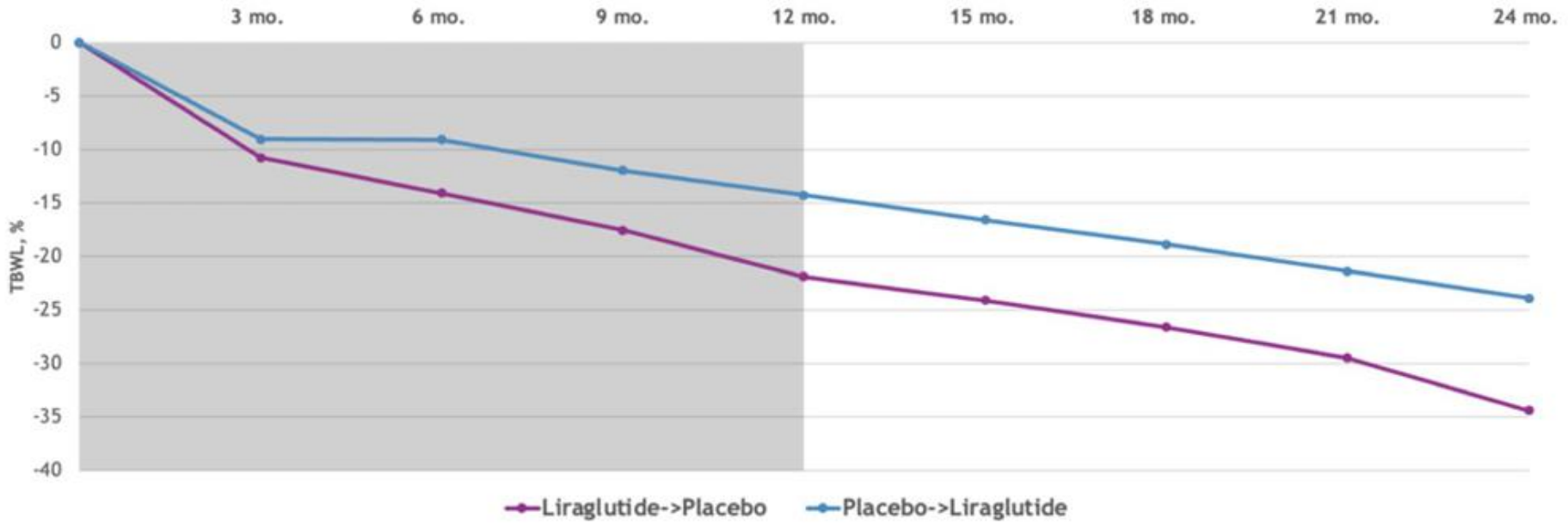
Badurdeen D et al. Gastrointest Endosc. 2021 Jun; 93(6): 1316-1324

Obesity Surgery (2025) 35:775–783
https://doi.org/10.1007/s11695-025-07671-5

RESEARCH

A Randomized, Double-Blind, Two-Way Cross-over Study to Evaluate the Efficacy of Liraglutide Treatment in Patients Undergoing Transoral Outlet Reduction Endoscopy for Weight Regain Post Roux-en-Y Gastric Bypass

Ali Lahooti[1] · Anna C. Hoff[3] · Brian Critelli[1] · Amier Hassan[1] · Donevan Westerveld[1] · Kaveh Hajifathalian[2] · Enad Dawod[1] · Cynthia O. Akagbosu[1] · Waleed Aljohani[1] · Kamal Hassan[1] · Gabriel Cairo Nunes[3] · Sergio Barrichello[3] · Manoel Galvao Neto[3] · Jimi Scarparo[3] · Carolyn Newberry[1] · Sonal Kumar[1] · Reem Z. Sharaiha[1]



Conclusion Immediate post-procedure administration of liraglutide appears to be more effective than placebo in reversing weight regain in patients undergoing TORe. Results indicate that the timing of post-TORe liraglutide initiation may enhance the therapeutic benefits of the procedure.

2. Statements on Use of OMMs after MBS:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
When used after MBS, there appears to be no increased incidence of side effects of OMMs compared to non-surgical cohorts	A	97	3	34

Side Effects Reported with Liraglutide post-MBS in BARI-OPTIMISE compared with SCALE

Adverse Events (AE)[a] in the BARI-OPTIMISE Study Population

Event	Participants who experienced an AE, No. (%)		
	Placebo (n = 35)	Liraglutide (n = 35)	Total (N = 70)
Total	20 (57)	28 (80)	48 (67)
Total AEs, No.[b]	75	37	112
Gastrointestinal events			
Nausea	7 (20)	18 (51)	25 (36)
Diarrhea	2 (6)	2 (6)	4 (6)
Constipation	2 (6)	9 (26)	11 (16)
Vomiting	1 (3)	1 (3)	2 (3)
Abdominal pain	1 (3)	2 (6)	3 (4)
Abdominal bloating	0	1 (3)	1 (1)
Dyspepsia	0	1 (3)	1 (1)

Table 3. Adverse Events and Serious Adverse Events.*

Event	Liraglutide (N = 2481)			Placebo (N = 1242)		
	No. of Patients (%)	No. of Events	Event Rate per 100 Exposure-Years	No. of Patients (%)	No. of Events	Event Rate per 100 Exposure-Years
Adverse events in ≥5% of patients	1992 (80.3)	7191	321.8	786 (63.3)	2068	193.7
Nausea	997 (40.2)	1429	63.9	183 (14.7)	223	20.9
Diarrhea	518 (20.9)	754	33.7	115 (9.3)	142	13.3
Constipation	495 (20.0)	593	26.5	108 (8.7)	121	11.3
Vomiting	404 (16.3)	597	26.7	51 (4.1)	62	5.8
Dyspepsia	236 (9.5)	282	12.6	39 (3.1)	44	4.1
Upper abdominal pain	141 (5.7)	171	7.7	43 (3.5)	49	4.6
Abdominal pain	130 (5.2)	163	7.3	43 (3.5)	53	5.0
Nasopharyngitis	427 (17.2)	586	26.2	234 (18.8)	302	28.3
Upper respiratory tract infection	213 (8.6)	247	11.1	122 (9.8)	149	14.0
Sinusitis	128 (5.2)	141	6.3	73 (5.9)	95	8.9
Influenza	144 (5.8)	170	7.6	66 (5.3)	84	7.9
Headache	327 (13.2)	441	19.7	154 (12.4)	220	20.6
Dizziness	167 (6.7)	203	9.1	60 (4.8)	65	6.1
Decreased appetite	267 (10.8)	283	12.7	38 (3.1)	39	3.7
Back pain	171 (6.9)	210	9.4	105 (8.5)	121	11.3
Arthralgia	125 (5.0)	133	6.0	71 (5.7)	80	7.5
Fatigue	185 (7.5)	203	9.1	65 (5.2)	72	6.7
Injection-site hematoma	142 (5.7)	154	6.9	93 (7.5)	101	9.5

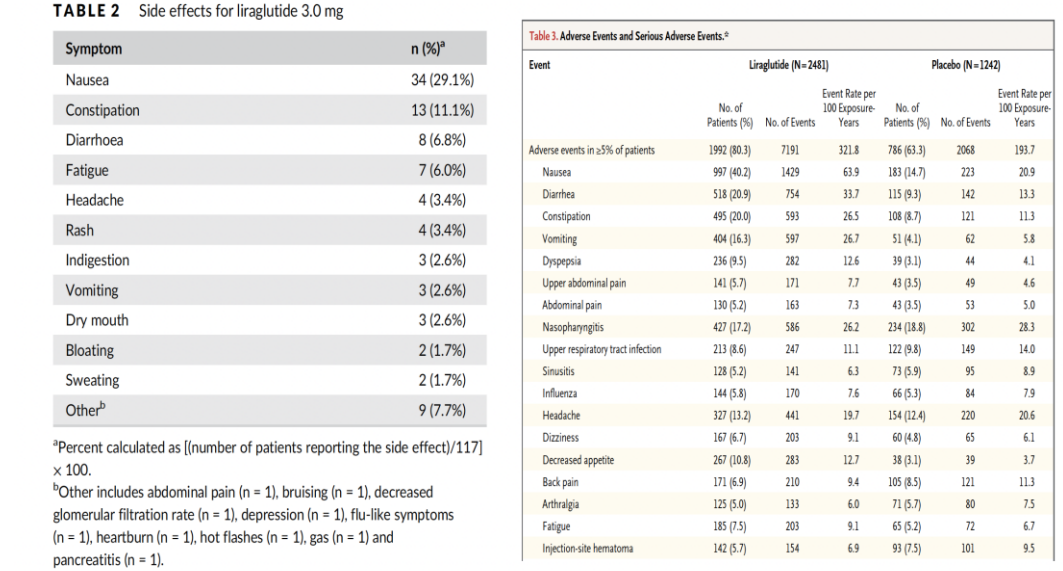
Mok et al, JAMA Surg 2023 (BARI-OPTIMSE); SCALE. Pi-Sunyer NEJM 2015

Side Effects Reported with Liraglutide post-MBS: Retrospective study of 117 patients compared to SCALE

TABLE 2 Side effects for liraglutide 3.0 mg

Symptom	n (%)[a]
Nausea	34 (29.1%)
Constipation	13 (11.1%)
Diarrhoea	8 (6.8%)
Fatigue	7 (6.0%)
Headache	4 (3.4%)
Rash	4 (3.4%)
Indigestion	3 (2.6%)
Vomiting	3 (2.6%)
Dry mouth	3 (2.6%)
Bloating	2 (1.7%)
Sweating	2 (1.7%)
Other[b]	9 (7.7%)

[a]Percent calculated as [(number of patients reporting the side effect)/117] × 100.
[b]Other includes abdominal pain (n = 1), bruising (n = 1), decreased glomerular filtration rate (n = 1), depression (n = 1), flu-like symptoms (n = 1), heartburn (n = 1), hot flashes (n = 1), gas (n = 1) and pancreatitis (n = 1).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Dizziness	167 (6.7)	203	9.1	60 (4.8)	65	6.1
Decreased appetite	267 (10.8)	283	12.7	38 (3.1)	39	3.7
Back pain	171 (6.9)	210	9.4	105 (8.5)	121	11.3
Arthralgia	125 (5.0)	133	6.0	71 (5.7)	80	7.5
Fatigue	185 (7.5)	203	9.1	65 (5.2)	72	6.7
Injection-site hematoma	142 (5.7)	154	6.9	93 (7.5)	101	9.5

Wharton S, et. al. Clinical Obesity. 2019;9:e12323; SCALE. Pi-Sunyer NEJM 2015

3. Future Perspectives:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
As the long-term efficacy and safety of OMMs after MBS is unknown, studies are needed to understand the value and limitations of such combination therapy	A+	100	3	34

Most studies using OMMs have a follow up of 1-2 years

3. Future Perspectives:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
For patients with recurrent weight gain, treatment with available OMMs should be considered prior to revisional surgery.	A	92	1	38

No long term Data on efficiacy of revisional MBS

Revisional MBS = higher morbidity

Excellent safety profile for OMMs

(With Liraglutide and Semaglutide 50-75% of regained weight lost)

3. Future Perspectives:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
People living with obesity need access to all evidence-based treatments, including MBS and OMMs, as part of standard healthcare services	A	95	1	38

Policy makers:

Access to treatment
Costs
Availability
Willingness to pay

Annals of Internal Medicine

REVIEW

Cost-Effectiveness of Newer Pharmacologic Treatments in Adults With Type 2 Diabetes: A Systematic Review of Cost-Effectiveness Studies for the American College of Physicians

John T. Schousboe, MD, PhD; Adrienne Landsteiner, PhD, MPH; Tyler Drake, MD; Shahnaz Sultan, MD, MHSc; Lisa Langsetmo, PhD; Anjum Kaka, MD; Maylen Anthony, MPH; Charles J. Billington, MD; Caleb Kalinowski, MS; Kristen Ullman, MPH; and Timothy J. Wilt, MD, MPH

April 19,2024

1st line GLP1 RA, oral or injectable, *had an incremental cost-effectiveness ratio of $1 089 000 per QALY*

WTP threshold

To fit in the WTP of worldwide health systems, we need a decrease in 70% (oral) to 90% (injectables) of GLP1RA cost

OXFORD
Collaborative Research

BJS, 2024, znae283
https://doi.org/10.1093/bjs/znae283
Collaborative Research Proceedings

International consensus position statement on the role of obesity management medications in the context of metabolic bariatric surgery: expert guideline by the International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO)

Ricardo V. Cohen[1,*], Luca Busetto[2], Randy Levinson[3], Carel W. Le Roux[4], Paulina Salminen[5,6] and Gerhard Prager[7] on behalf of the experts of the International Consensus on the Role of Obesity Management Medications in the Context of Metabolic Bariatric Surgery

[1]The Centre for Obesity and Diabetes, Hospital Alemao Oswaldo Cruz, São Paulo, Brazil
[2]Department of Medicine, University of Padua, Padua, Italy
[3]Lai Wen Di Consulting, LLC, New York, USA
[4]Diabetes Complications Research Centre, University College Dublin, Dublin, Ireland
[5]Division of Digestive Surgery and Urology, Turku University Hospital, Turku, Finland
[6]Department of Surgery, University of Turku, Turku, Finland
[7]Division of Visceral Surgery, Department of General Surgery, Vienna Medical University, Vienna, Austria

*Correspondence to: Ricardo V. Cohen, The Centre for Obesity and Diabetes, Hospital Alemao Oswaldo Cruz, Rua Treze de Maio, 1.815, Torre D, 1° Andar, Bela Vista, São Paulo, CEP: 01327-001, Brazil (e-mail: ricardo.cohen@haoc.com.br)

Members of the International Consensus on the Role of Obesity Management Medications in the Context of Metabolic Bariatric Surgery are co-authors of this study and are listed under the heading Collaborators.

OXFORD
CUTTING EDGE

BJS, 2024, znae284
https://doi.org/10.1093/bjs/znae284
Cutting Edge Review

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

Ricardo V. Cohen[1,*], Ji Yeon Park[2,3], Gerhard Prager[4], Marco Bueter[5], Carel W. le Roux[6], Chetan Parmar[7], Mohammad Kermansaravi[8], Paulina Salminen[9,10] and Alexander D. Miras[11]

[1]The Center for Obesity and Diabetes, Hospital Alemao Oswaldo Cruz, Sao Paulo, Brazil
[2]Department of Surgery, School of Medicine, Kyungpook National University, Daegu, Korea
[3]Department of Surgery, Kyungpook National University Chilgok Hospital, Daegu, Korea
[4]Division of Visceral Surgery, Department of General Surgery, Vienna Medical University, Vienna, Austria
[5]Department of Surgery and Transplantation, University Hospital Zurich, University of Zurich, Zurich, Switzerland
[6]Diabetes Complications Research Centre, University College Dublin, Dublin, Ireland
[7]Bariatric and Emergency Surgery, Whittington Hospital, University College London, London, UK
[8]Minimally Invasive and Bariatric Surgery, Hazrate Rasool Akram Hospital at Iran University of Medical Sciences, Tehran, Iran
[9]Department of Surgery, University of Turku, Turku, Finland
[10]Division of Digestive Surgery and Urology, Turku University Hospital, Turku, Finland
[11]School of Medicine, Ulster University, Derry, UK

*Correspondence to: Ricardo V. Cohen, The Center for Obesity and Diabetes, Hospital Alemao Oswaldo Cruz, Rua Treze de Maio, 1.815—Torre D—1° Andar—Bela Vista—CEP, São Paulo, 01327-001, Brazil (e-mail: ricardo.cohen@haoc.com.br)

Glucagon like peptide-1 receptor agonists (GLP1RAs) in post-bariatric surgery patients: A systematic review and meta-analysis

METHOD

- Databases searched for studies using GLP1RA in intervention-arm post-bariatric surgery for weight loss.
- Primary outcome was weight-loss post >3-months therapy. Secondary outcomes were evaluation of body-composition parameters and adverse events.

RESULTS

- 8 studies analysed (n=557)
- Compared to placebo, patients receiving liraglutide had significantly greater weight-loss after 6-months [mean difference (MD): -6.0kg]
- Compared to liraglutide, semaglutide had significantly greater percent-reduction in body-weight after 6-months [MD: -2.57%]
- Decrease in lean-mass & whole-body bone-mineral density noted with liraglutide.

CONCLUSION

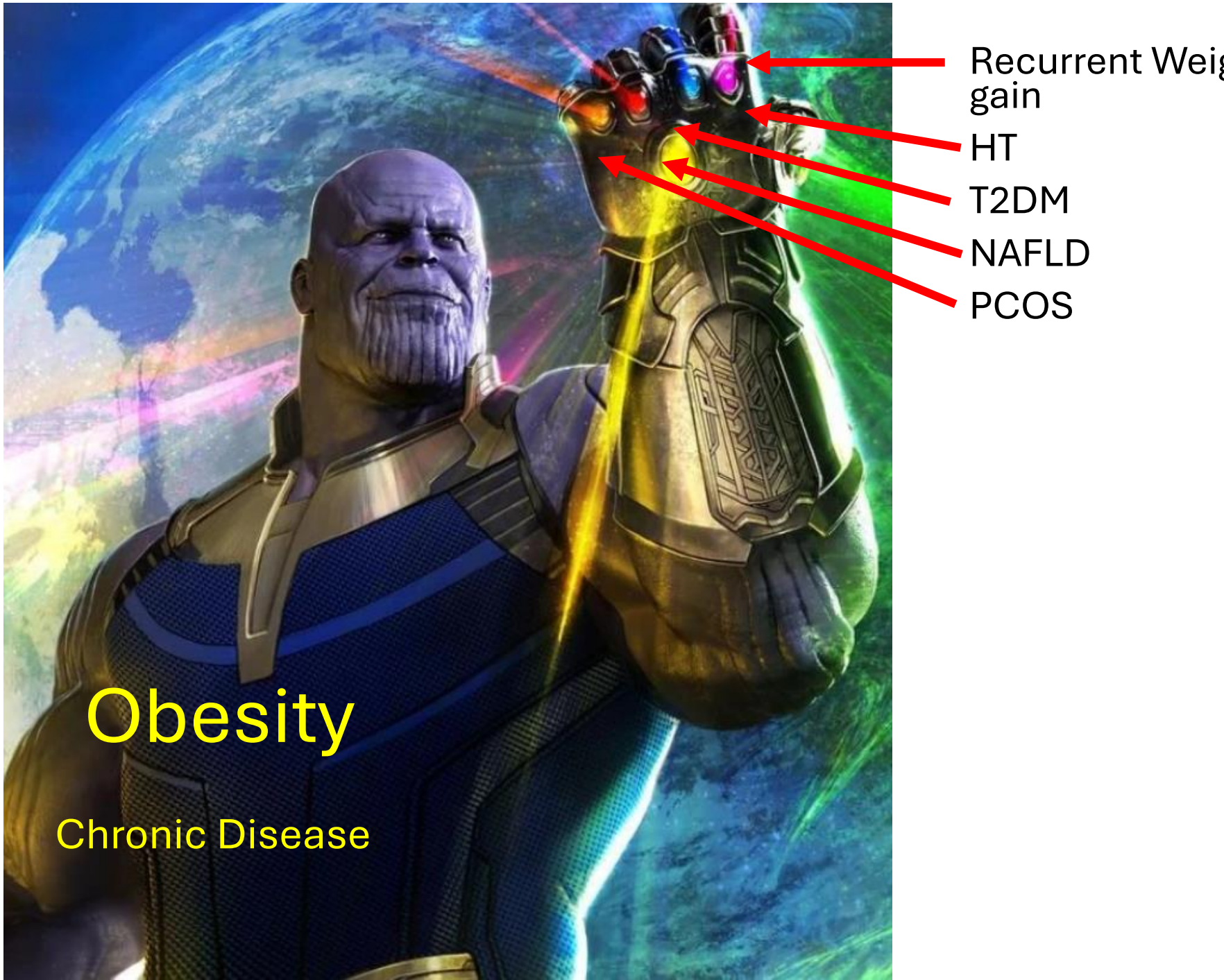
- Current data is encouraging regarding use of GLP1RAs for managing weight regain or inadequate weight loss post-bariatric surgery.
- Deterioration of bone health & muscle mass remains a concern needing further evaluation.

IFSO

Deep Dutta, Lakshmi Nagendra, Ameya Joshi, Suryashri Krishnasamy, Meha Sharma, Naresh Parajuli

OBESITY SURGERY
The Journal of Metabolic Surgery and Allied Care

Conclusions



Conclusions

- OMM safe and effective

- **Surgical interventions** have demonstrated long-term durable success

- However, SoCR can occur in some patients

- Postoperative: Some available evidence. Safe and Effective. Needs more research

- Used along with endoscopic procedures (balloon, ESG, ToRE)

- OMM before considering revisional surgery?

‘’Team’’ - Multimodal

Thank you

@drcdparmar

Ann Intern Med. 2022 October ; 175(10): 1392–1400. doi:10.7326/M21-2941.

First-Line Therapy for Type 2 Diabetes With Sodium–Glucose Cotransporter-2 Inhibitors and Glucagon-Like Peptide-1 Receptor Agonists:

A Cost-Effectiveness Study

ICER= $327 000 per QALY

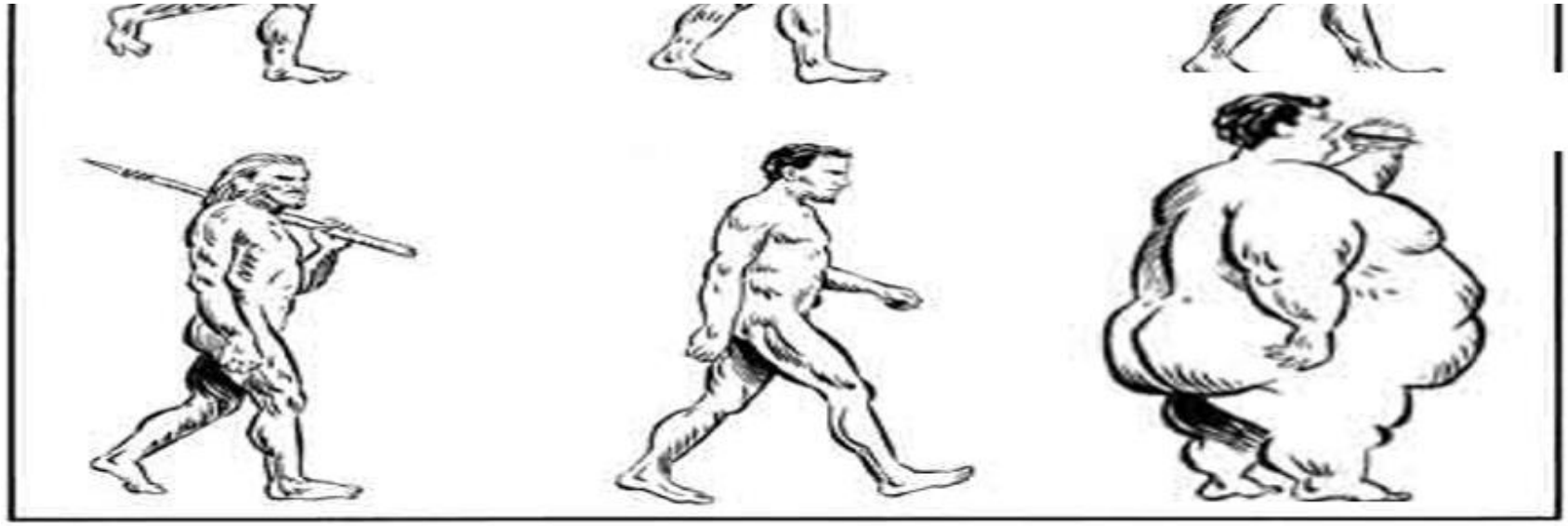
ICER= $823 000 per QALY.

Above the WTP threshold

To be cost-effective, GLP1 RA should cost under $6 per day

Why are we having this talk?

50% adults overweight or obese by 2050: Global study



Scientific Evidence for the Updated Guidelines on Indications for Metabolic and Bariatric Surgery (IFSO/ASMBS) - unpublished

BMI CRITERIA FOR MBS

•MBS for BMI 30 - 34.9 kg/m^2 (7-35)

PRISMA Appendix 1 [PubMed, Cochrane, Embase]

Systematic Review Table 1

•MBS is recommended for patients with T2DM and a BMI of 30-34.9 kg/m^2.

•MBS is recommended for patients with a BMI of 30-34.9 kg/m^2 and one obesity-associated medical problem.

•MBS should be considered in patients with a BMI of 30-34.9 kg/m^2 who do not achieve substantial or durable weight loss or co-morbidity improvement using nonsurgical methods.

Level of Evidence 2a

Grade of recommendation B

Obes Surgery 2024/SOARD 2024

Conclusion

- Obesity as a **chronic relapsing disease** requires different interventions (surgical, endoscopic, pharmaceutical, etc.)
- **Surgical interventions** have demonstrated long-term durable success
- Importance of **evidence based** treatment in bariatric/metabolic patients
- Several **new therapy options** available
  (Indications: Weight regain? Low BMI patients? etc.)

1. Statements on Use of OMMs before MBS:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
Clinical obesity is a disease that requires treatment	A+	100	2	39
Patients should be informed of the risks and benefits of evidence-based treatment options for obesity	A+	100	1	37

1. Statements on Use of OMMs before MBS:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
A minimum of 5% weight loss has shown metabolic improvements; however, greater weight loss is associated with broader clinical benefits, including a reduction in mortality	A	97	3	39

Core Group:

Gerhard Prager
Luca Busetto
Ricardo Cohen
Randy Levinson (Delphi Expert)

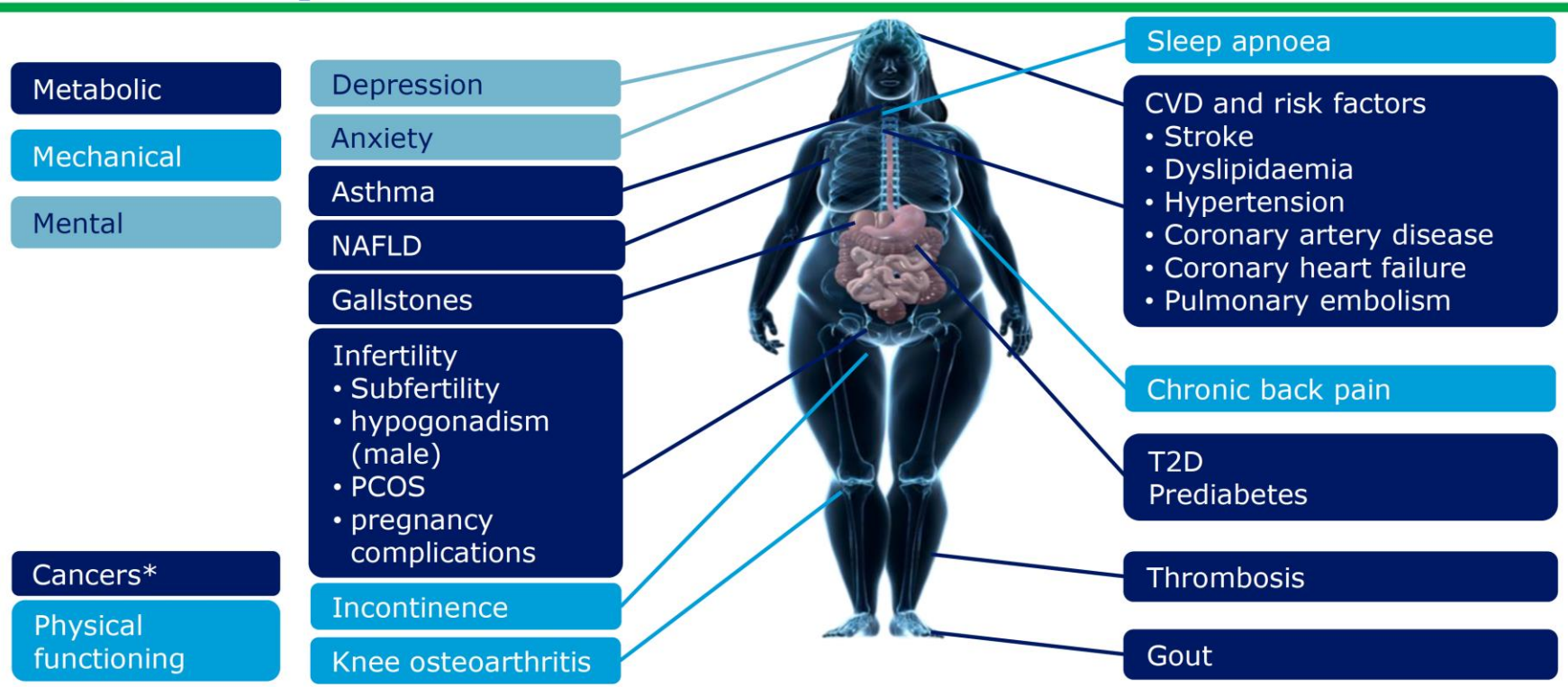
Mohammad Kermansaravi
Chetan Parmar

Systematic Review

1. Systematic Review
2. Evidence Paper sent to all experts
3. Each Expert 3-4 Delphi statements
4. Delphi process:
    a. 3 Delphi rounds BEFORE meeting
    (for B or less including feedback for each round)
    b. Delphi process at the meeting

Consensus (%)	Level
100%	A+
90-99.9%	A
80-89.9%	B
70-79.9%	C
60-69.9	D
<60%	failure

Obesity is associated with multiple comorbidities and complications



CVD, cardiovascular disease; NAFLD, non-alcoholic fatty liver disease
*Including breast, colorectal, endometrial, oesophageal, kidney, ovarian, pancreatic and prostate; T2D, type 2 diabetes

Adapted from Sharma AM. *Obes Rev*. 2010;11:808-9; Guh *et al. BMC Public Health* 2009;9:88; Luppino *et al. Arch Gen Psychiatry* 2010;67:220–9; Simon *et al. Arch Gen Psychiatry* 2006;63:824–30; Church *et al. Gastroenterology* 2006;130:2023–30; Li *et al. Prev Med* 2010;51:18–23; Hosler. *Prev Chronic Dis* 2009;6:A48

Carel Le Roux

Cell Metabolism
Clinical and Translational Report

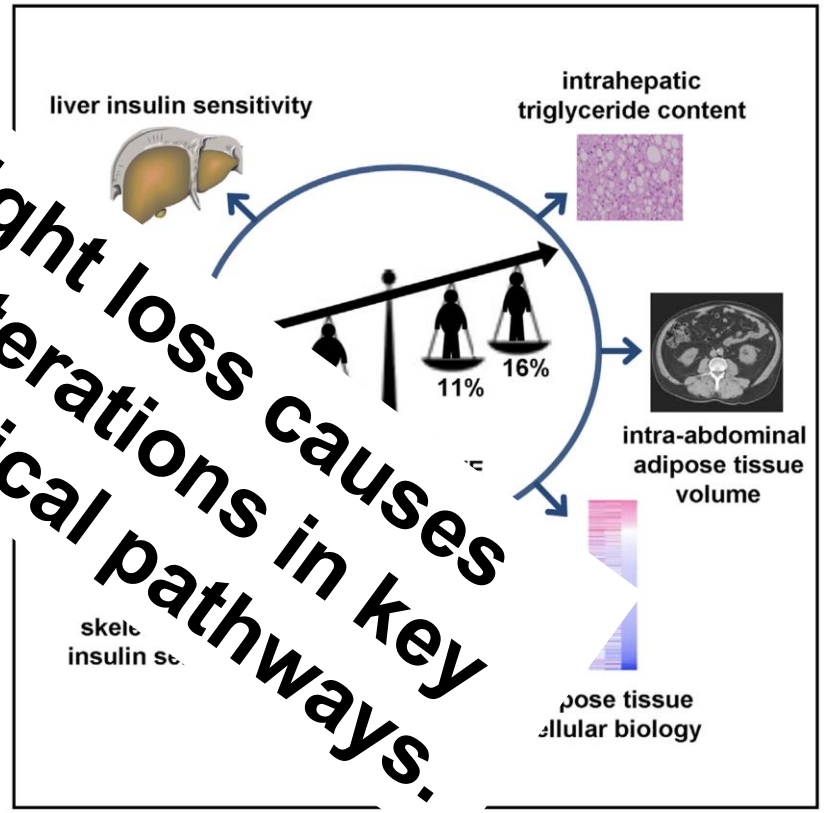
Effects of [illegible]te and Subsequent Progressive Weight L[illegible]bolic Function and Adipose Tissue [illegible]s with Obesity

Progressive weight loss causes dose-dependent alterations in key adipose tissue biological pathways.

Moderate 5% w[illegible] multi-organ insulin [illegible] beta cell function

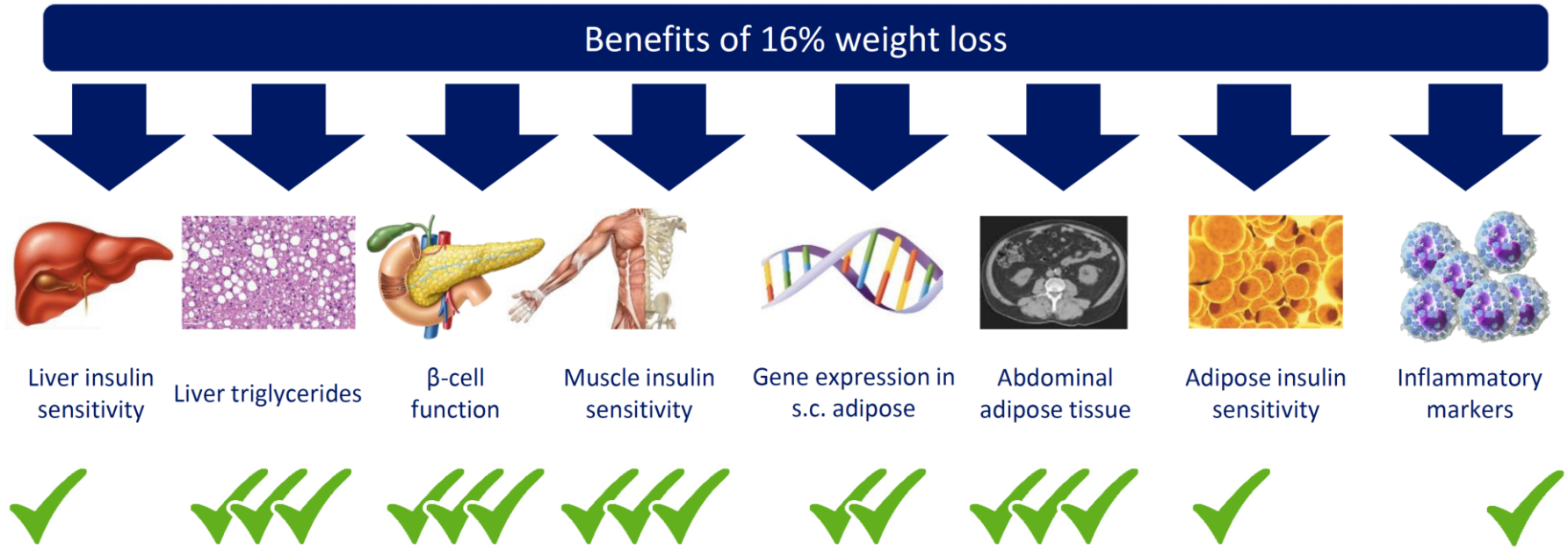
Additional weight loss of 11%- further increases insulin sensitivity muscle

Progressive weight loss causes stepwise changes in adipose tissue biology



Magkos et al., 2016, Cell Metabolism 23, 591–601

Progressive weight loss with calorie restriction has dose-dependent & tissue-dependent biological effects



Magkos et al., 2016, Cell Metabolism 23, 591–601

2. Statements on Use of OMMs **after** MBS:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
Treatments with OMMs after MBS should generally be withheld until the achievement of weight plateau unless there is a compelling clinical need for earlier initiation	A+	100	3	33

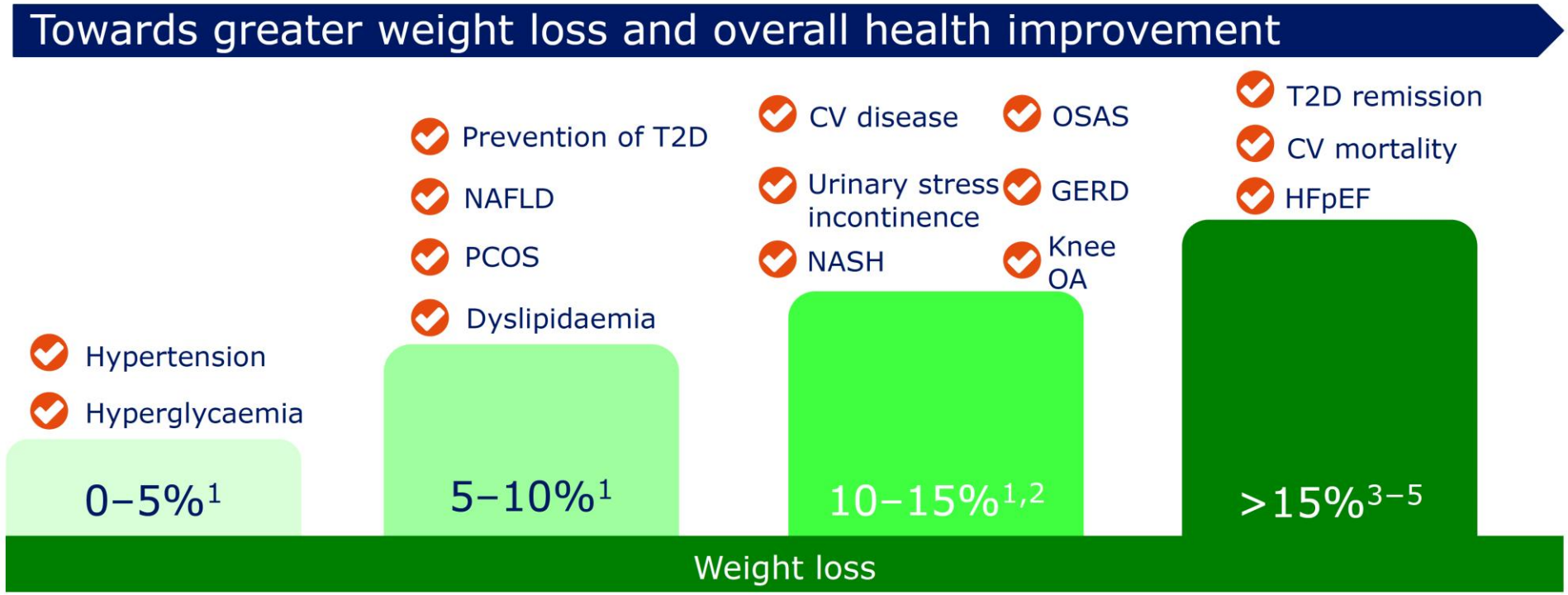
Rationale: Adopting a multimodal approach to care, including combining OMMs with MBS

Suboptimal Initial Clinical Response
Recurrent weight gain

The IFSO Consensus Conference on the Use of OMMs in the Context of MBS

Vienna 2024

Greater weight loss leads to improved health



CV, cardiovascular; GERD, gastro-oesophageal reflux disease; HFpEF, heart failure with preserved ejection fraction; NAFLD, non-alcoholic fatty liver disease; NASH, non-alcoholic steatohepatitis; OA, osteoarthritis; OSAS, obstructive sleep apnoea syndrome; PCOS, polycystic ovary syndrome; T2D, type 2 diabetes
1. Garvey WT *et al. Endocr Pract* 2016;22:1–20; 2. Look AHEAD Research Group. *Lancet Diabetes Endocrinol* 2016;4:913–21; 3. Lean ME *et al. Lancet* 2018;391:541–51; 4. Benraoune F and Litwin SE. *Curr Opin Cardiol* 2011;26:555–61; 5. Sundström J *et al. Circulation* 2017;135:1577–85

Finnish diabetes prevention study: More weight loss = Less Diabetes
DIRECT Study: More Weight Loss = more Diabetes Remission
Look AHEAD: Greater Weight Loss = Greater health Benefits
SELECT Trial: 9.8%TWL = 20% less nonfatal CV events

SELECT Trial

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 DECEMBER 14, 2023 VOL. 389 NO. 24

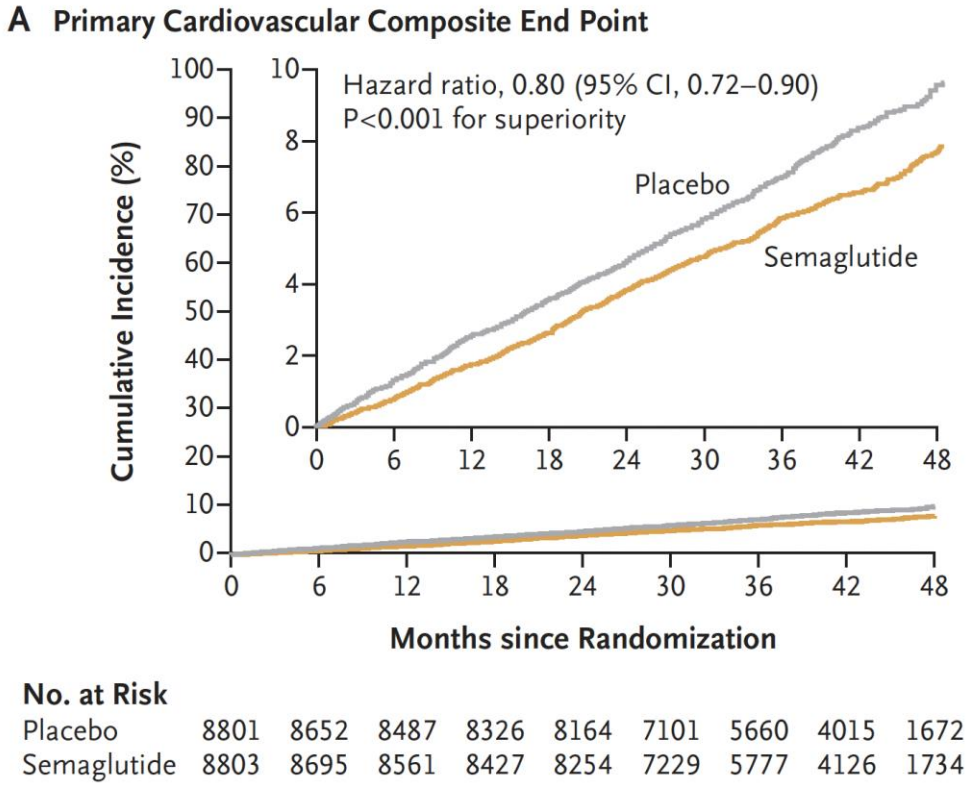
Semaglutide and Cardiovascular Outcomes in Obesity without Diabetes

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*

multicenter, double-blind RCT
Patients >45a with preexisting CVD and BMI >27 but no history of diabetes.

8803 semaglutide 2.4mg
8801 placebo

Semaglutide: 20% better in CV composite end point with 9.8% TWL



primary cardiovascular end point was a composite of death from cardiovascular causes, nonfatal myocardial infarction, or nonfatal stroke

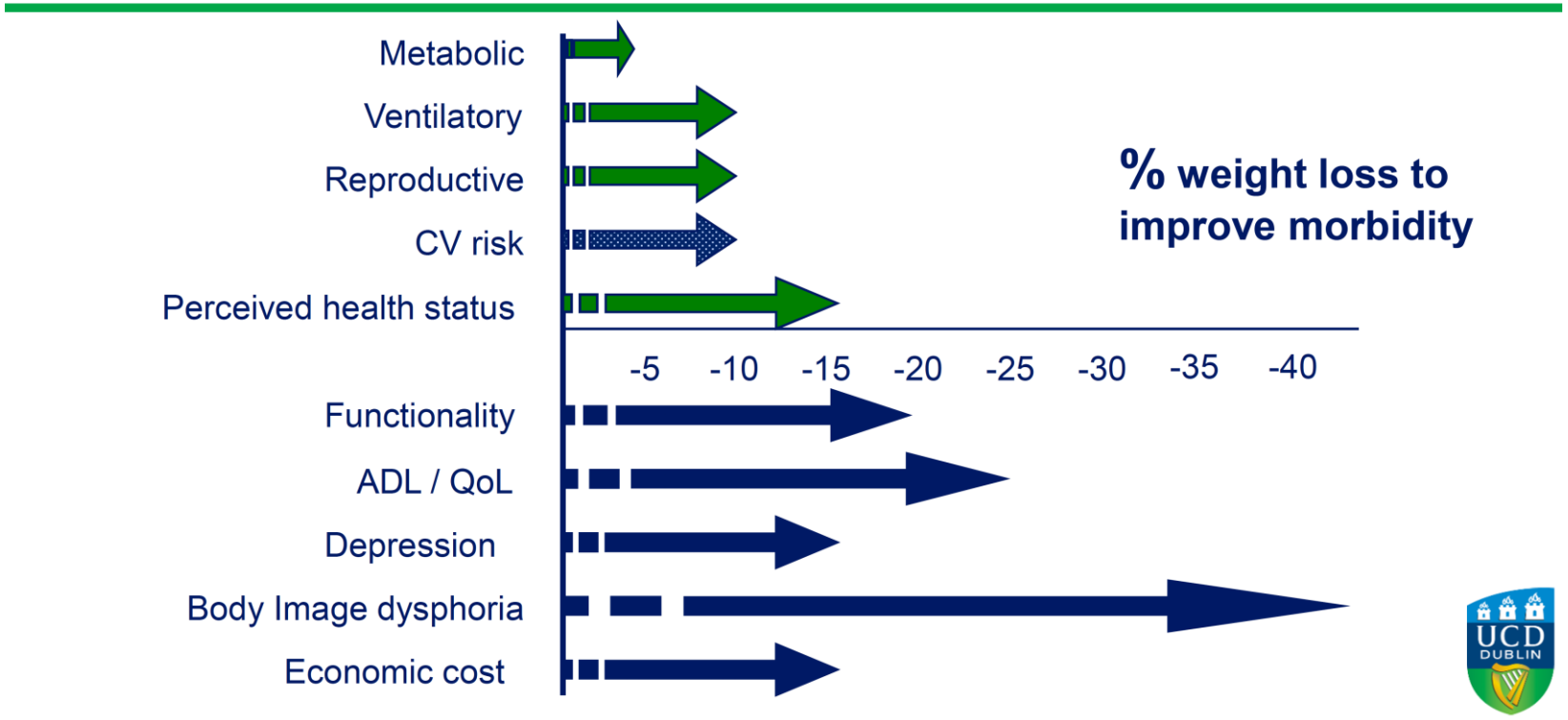
NEJM 389;24 December 14, 2023

Metabolic surgery: shifting the focus from glycaemia and weight to end-organ health

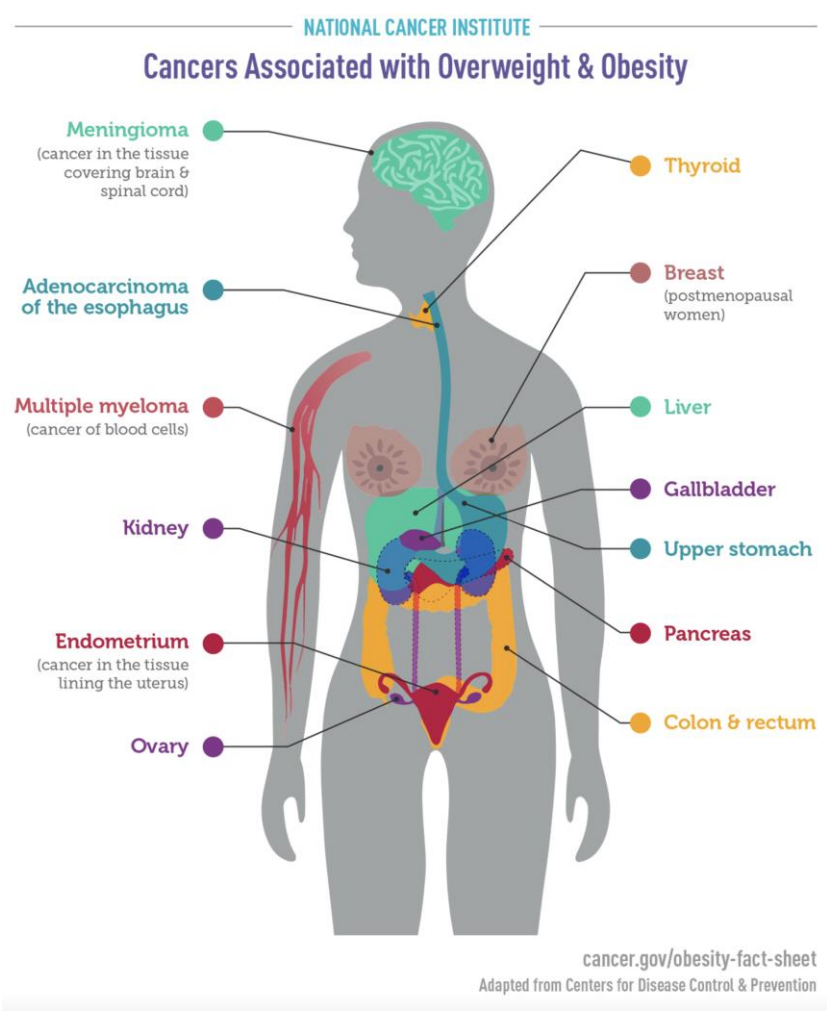
Alexander D Miras, Carel W le Roux

How much weight loss is required?

Miras and le Roux. Lancet Diabetes and Endo 2014

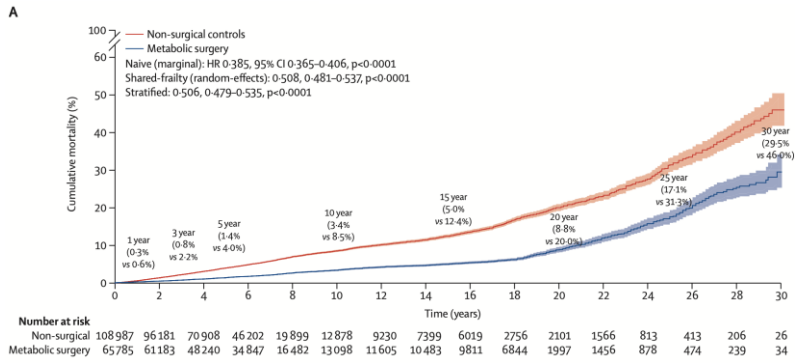


Lancet Diabetes Endocrinol 2014; 2: 141–51



More weight loss = Less Cancer

THE LANCET



MBS leads to:
Less CV events - Less cancer deaths - Less Diabetes ass. Deaths - Less Liver morbidity…

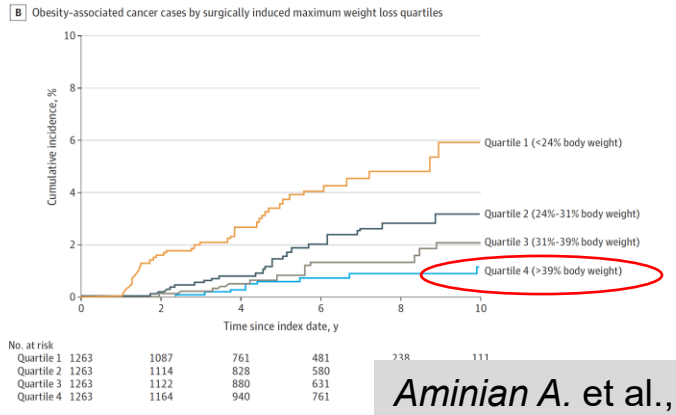
Syn NL et al., Lancet 2021

Research

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



Aminian A. et al., JAMA 2022

1. Statements on Use of OMMs before MBS:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
A minimum of 5% weight loss has shown metabolic improvements; however, greater weight loss is associated with broader clinical benefits, including a reduction in mortality	A	97	3	39

1. Statements on Use of OMMs before MBS:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
There is insufficient high-level evidence to recommend the routine use of OMMs for weight loss before MBS	A+	100	2	37

The available evidence on the use of OMMs

Author (year)	AOM used	Main outcome measurement	Study design
Hung-Chieh (2023)	Orlistat+LS vs LS	• Pre-surgical WL @ 6 w	Retrospective
Malone (2012)	Orlistat vs placebo	• Pre-surgical WL @ 3 and 6 m	Prospective not randomized
Rubio-Herrera (2023)	Lira 3.0 (in non-DM), Sema 1.0 (in T2D)	• Pre-surgical WL @ 6 and 12-m • Withdrawal of surgical wating list	Retrospective
Wilmington (2024)	Lira 3.0	• Pre-surgical WL @ 6, 12, 26, 52 w	Retrospective
Martines (2023)	Lira 3.0, IGB	• Pre-surgical WL @ 6 m	Prospective not randomized
Morton (Abstract, 2018)	Phen low dose vs placebo	• Pre-surgical WL @ 14 w	RCT (n=53)
Guisado-Macías (2016)	Fluoxetine (F) 40, Topiramate (T) 200, F-40+T-200	• Pre-surgical WL @ 6 m	Prospective-observational
Sari (2021)	Topiramate ± Metformin	• Pre-surgical WL	Case report (3 cases)
Alabduljabbar (2023)	*Review article*	----	

LS: Lifestyle; WL: weight los; lira: liraglutide; sema: semaglutide; Phen: Phentermine; RCT: randomized controlled trial

With thanks to Dr. Kermansaravi and Dr. Parmar

The available evidence on the use of OMMs

Author (year)	AOM used	Main result	Additional outcomes
Hung-Chieh (2023)	Orlistat+LS vs LS	ORL+LS no… …S @ 6 w	Operation time, LOS, 30-d complication rates not different
Malone (2012)	Orlistat vs placebo	… …m	none
Rubio-Herrera (2023)	Lira 3.0 (in non-DM), Sema 1.0 (in T2D)	… …(Lira 3.0)	None
Wilmington (2024)	Lira 3.0	…	Remission of preDM: 72% @ 12 m
Martines (2023)	Lira 3.0, IGB	… …).005)	The IGB group > WL following SG
Morton (Abstract, 2018)	Phen low dose vs …	… …ups	None
Guisado-Macías (2016)	Fluoxetine (F) 40, Topiramate (T) 200, F-40+T-200	… …8.0	None
Sari (2021)	Topiramate ± Metformin	• Pre-surgical …	Case report (3 cases)
Alabduljabbar (2023)	*Review article*	----	

WEAK WEAK WEAK

LS: Lifestyle; WL: weight los; lira: liraglutide; sema: semaglutide; Phen: Phentermine; RCT: randomized controlled trial

With thanks to Dr. Kermansaravi and Dr. Parmar

Nonetheless, evidence is lacking on the impact of the use of the new OMMs on surgical outcomes.

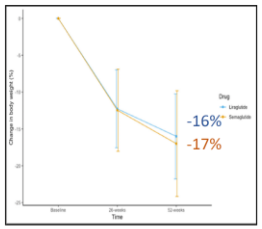
Currently, there is not enough data to tailor the choice of OMMs for patients with obesity.

The available evidence on the use of OMMs

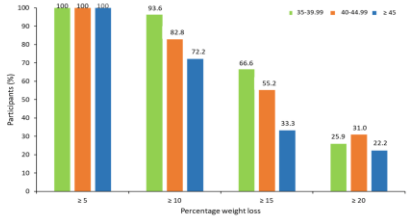
Liraglutide 3.0 (in non-T2D) or Semaglutide 1.0 (in T2D) and weight loss in subjects on a MBS waiting list

(**RETROSPECTIVE STUDY.** n=102, estimated time in waiting list >12 mo, age 53 y, female 69%, BM 43.5 kg/m²)

% Weight loss over time



% Weight loss category by BMI category



No data on the impact on glycemic control or surgical outcomes

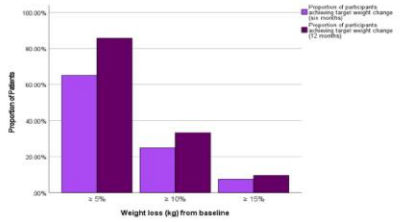
Rubio-Herrera MA et al. Biomedicines 2023

The available evidence on the use of OMMs

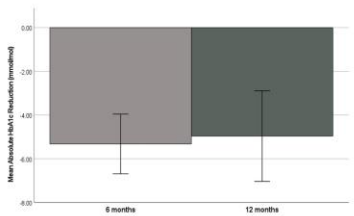
Liraglutide 3.0 and weight loss pre-MBS in subjects with pre-diabetes

(n=50, age 46 y, female 76%, BM 54.1 kg/m²)

% Weight loss category @ 6- and 12-mo



Change in HbA1c @ 6- and 12-mo



Remission of preDM → 92.3% 72.2%

No data on the impact on surgical outcomes

Wilmington R et al. Obesity Surgery 2024

Josep Vidal

1. Statements on Use of OMMs before MBS:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
The decision to use OMMs before MBS should be personalized to determine the most appropriate strategy for each patient's circumstances	A+	100	2	38

<u>Rationale for OMMs before MBS:</u>

1. Reduction of perioperative risk
2. Increased proportion of those achieving weight loss goals and comorbidity resolution after surgery

JAMA Network | Open

Original Investigation | Surgery

Association of Preoperative Body Weight and Weight Loss With Risk of Death After Bariatric Surgery

Yangbo Sun, MD, PhD; Buyun Liu, MD, PhD; Jessica K. Smith, MD; Marcelo L. G. Correia, MD, PhD; Dana L. Jones, DNP; Zhanyong Zhu, MD; Adeyinka Taiwo, MD; Lisa L. Morselli, MD, PhD; Katie Robinson, PhD; Alexander A. Hart, MPH; Linda G. Snetselaar, PhD; Wei Bao, MD, PhD

Reduction in 30 day mortality:

0%–5.0%: 24%
5.0%–9.9%: 31%
>10.0%: 42%

Preoperative weight loss is linked to improved mortality and leaks following elective bariatric surgery: an analysis of 548,597 patients from 2015–2018

Valentin Mocanu, M.D.*, Gabriel Marcil, M.D., Jerry T. Dang, M.D., Daniel W. Birch, M.D., M.Sc., Noah J. Switzer, M.D., M.P.H., Shahzeer Karmali, M.D., M.P.H.

Department of Surgery, University of Alberta, Edmonton, Alberta, Canada

Received 2 March 2021; accepted 29 June 2021

When compared to individuals who did not lose weight prior to surgery, **>10% TBWL preoperatively** :
-30% decreased odds of leaks
-40% decrease in odds of mortality

Mocanu V. et al. SOARD-(2021) 1–8
Sun Y,Liu B,Smith JK, et al. *JAMA NetwOpen.*2020;3(5):e204803

Preoperative Weight Loss as a Predictor of Bariatric Surgery Postoperative Weight Loss and Complications

Jamil S. Samaan[1] · Jasmine Zhao[2] · Elaine Qian[2] · Angelica Hernandez[2] · Omar Toubat[2] · Evan T. Alicuben[2] · Yousaf Malik[2] · Kulmeet Sandhu[2] · Adrian Dobrowolsky[2] · Kamran Samakar[2]

Preoperative weight loss: is waiting longer before bariatric surgery more effective?

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Longer preop wait times do not result in improved weight loss or reduced adverse events….
…delay of treatment should be minimized

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Samaan, Jamil S., et al. *Journal of Gastrointestinal Surgery*26.1 (2022): 86-93.

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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"*While there has been initial enthusiasm for weight loss prior to surgery, there are no data to support the practice of insurance-mandated preoperative weight loss; this practice is understood to be discriminatory, arbitrary, and scientifically unfounded, contributing to patient attrition, unnecessary delay of lifesaving treatment, and progression of life-threatening co-morbid conditions . A multidisciplinary team can help assess and manage the patient's modifiable risk factors with a goal of reducing risk of perioperative complications and improving outcomes; the decision for surgical readiness should be primarily determined by the surgeon.* "

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1. Statements on Use of OMMs before MBS:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
The decision to use OMMs before MBS should be personalized to determine the most appropriate strategy for each patient's circumstances	A+	100	2	38

Special Circumstances can be:

BMI > 60 kg/m^2,
Cirrhosis/Huge Livers
heart failure/progressed CVD
end-stage kidney disease

1. Statements on Use of OMMs before MBS:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
Healthy nutrition, including adequate protein consumption, as well as resistance exercise, is recommended for those treated with OMMs prior to MBS	A	97	2	36

New OMMs lead to greater weight loss:

Deficiencies
Lean Body Mass loss

1. Statements on Use of OMMs before MBS:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
In general, preoperative treatment with OMMs should be discontinued prior to MBS to minimize perioperative risk	A	94	3	35

LOE III

Impact of GLP-1 RA and other „new“ OMM on Gastric emptying Risk of Aspiration

American Society of Anesthesiologists Consensus-Based Guidance on Preoperative Management of Patients (Adults and Children) on Glucagon-Like Peptide-1 (GLP-1) Receptor Agonists

Girish P. Joshi, M.B.B.S., M.D., Basem B. Abdelmalak, M.D., Wade A. Weigel, M.D., Sulpicio G. Soriano, M.D., Monica W. Harbell, M.D., Catherine I. Kuo, M.D., Paul A. Stricker, M.D., Karen B. Domino, M.D., M.P.H., American Society of Anesthesiologists (ASA) Task Force on Preoperative Fasting

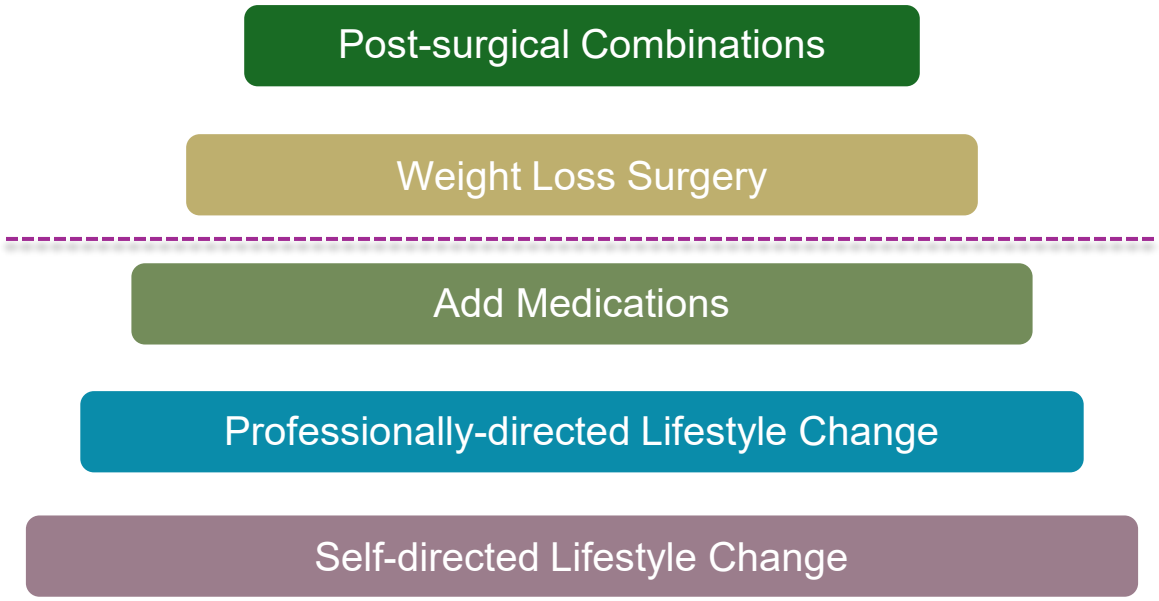
American Society of Anesthesiologists

•For patients on daily dosing consider holding GLP-1 agonists on the day of the procedure/surgery. For patients on weekly dosing consider holding GLP-1 agonists a week prior to the procedure/surgery. (June 29, 2023)

Traditional approach to the treatment of obesity

Typical Algorithm

(progress through algorithm as clinically required)



Courtesy Lee Kaplan

2. Statements on Use of OMMs after MBS:

	Grade	Consensus (%)	Nr.of rounds	Nr.of total votes
Emerging evidence indicates that the weight loss induced by OMMs is similar among people who have or have not undergone MBS	A+	100	2	36

Pharmacotherapy of obesity: an update on the available medications and drugs under investigation

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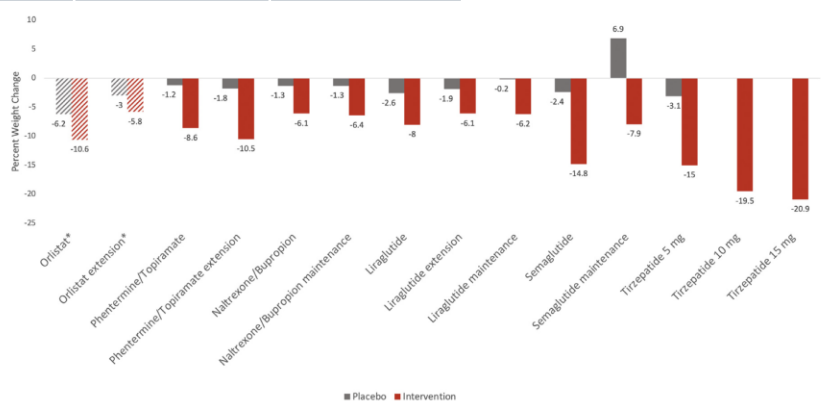

Fig. 2: **Mean percent (%) weight change reported in the main phase 3 and extension trials of the FDA approved anti-obesity medications.** Orlistat: XENDOS trial (years 1 and 4). Phentermine/topiramate: CONQUER and SEQUEL trials. Naltrexone/bupropion: COR-I and COR-II trials. Liraglutide: SCALE Obesity, SCALE Obesity and Prediabetes Extension, and SCALE maintenance trials. Semaglutide: STEP 1 and STEP 4 trial. All trials are listed in order as seen in the figure from left to right. The grey color represents placebo arms; the red color represents intervention arms. *The mean weight change in the orlistat group is in kg not in percent (stripped bar charts). [b]Under expedited consideration for FDA approval.

Summary of Weight Loss from RCTs of OMM use without MBS/with MBS

- Phentermine: 4-6kg
- Phentermine-Topiramate: 8.6-10.5%
- Naltrexone/Bupropion: 6.1-6.4%
- Liraglutide: 6.1 – 8%

4.5 – 7.65%; 6.4kg
9.8%;
additional 11kg WL
6.9-7.7%

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