

GLP-1 Agonists and Their Role in Aesthetics

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Tennessee Clinical Research Center
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Academic Appointments

01. Assistant Clinical Professor

- Department of Medicine, Division of Dermatology, Nashville, TN USA
- Vanderbilt University School of Medicine: 2006-2014
- Vanderbilt University School of Nursing: 2006-2020

02. Adjunct Assistant Professor

- Meharry Medical College: 2013 – Present
- School of Medicine, Nashville, TN

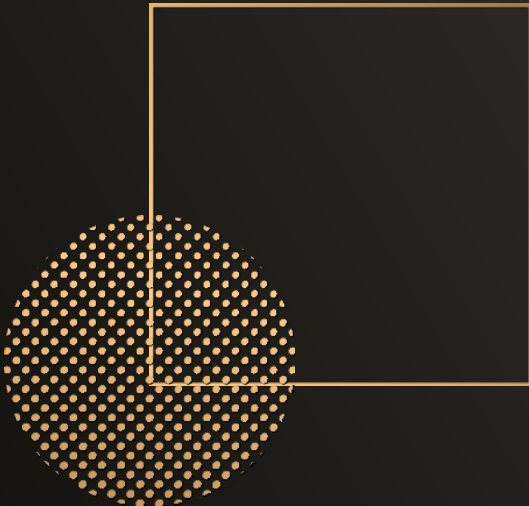
03. Visiting Professor of Dermatology

- Huashan Hospital, Fudan University (Shanghai Medical University), Shanghai, China
- The First Hospital of China Medical University, Shenyang, China:
- Guangdong Provincial People's Hospital, Guangzhou, Zhejiang

04. Visiting Professor of Plastic Surgery

- First People's Hospital of Foshan University, Guangdong, China
- The First Affiliated Hospital of Zhejiang University, Hangzhou, Zhejiang
- Rongjun Hospital, Jiaxing, China
- The People's Hospital of Hunan Province, Changsha, China

- ## 05.
- Editor-in-Chief – Journal of Cosmetic Dermatology – Wiley: 2016-Present
 - Editor-in-Chief- Dermatological Reviews – Wiley: 2019 - Present



Conflict of Interest

- 01.** Consultant to many pharmaceutical, cosmeceutical, laser and energy-based device companies
- 02.** Consultant, performs research and speaks on behalf of numerous pharmaceutical and medical device companies
- 03.** For the benefit of this presentation Dr. Gold has no conflicts of interest



GLP-1 Agonists in Aesthetics

Drug List for GLP-1s for Diabetes and Weight Loss

Active Ingredient	Injectible Incretin Mimetics		Launch Date	FDA Indication	Avg. Price per Month (Before Rebates)
Semaglutide	GLP-1		2017	Diabetes	\$1,000
Semaglutide	GLP-1		2021	Obesity	\$1,300
Tirzepatide	GLP-1 + GIP		2022	Diabetes	\$1,000
Tirzepatide	GLP-1 + GIP		2023	Obesity	\$1,000
Liraglutide	GLP-1		2010	Diabetes	\$800
Liraglutide	GLP-1		2014	Obesity	\$1,300
Dulaglutide	GLP-1		2014	Diabetes	\$950

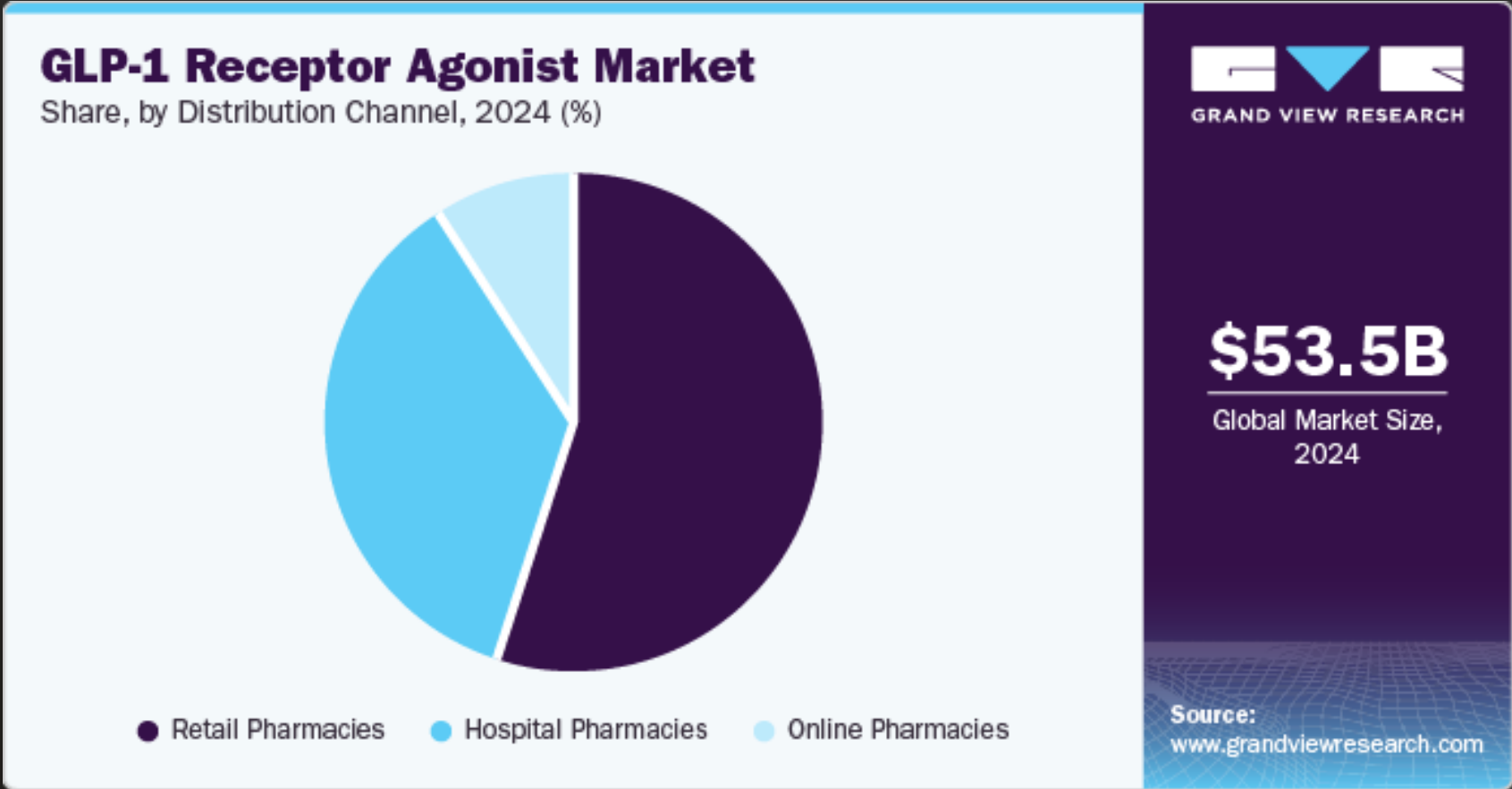
GLP-1: Glucagon-like Peptide Receptor Agonists
 GIP: Glucose dependent Insulinotropic Polypeptide
 * Daily Dose

Source:
 Drug Resource: Facts and Comparisons

GLP-1 Agonists in Aesthetics



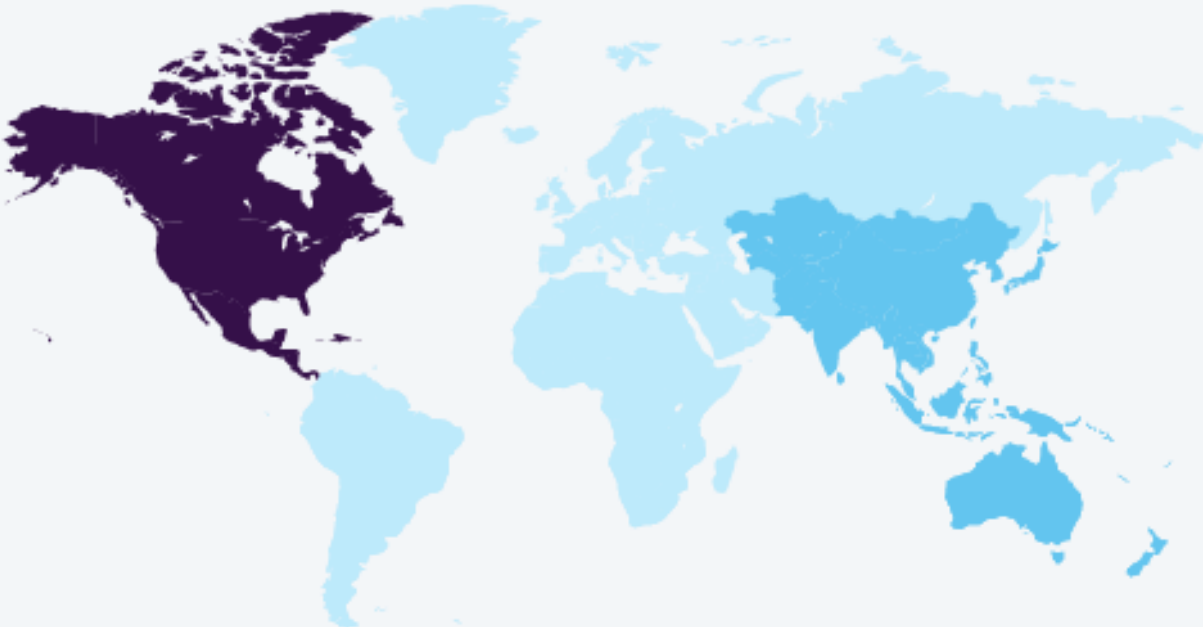
GLP-1 Agonists in Aesthetics



GLP-1 Agonists in Aesthetics

GLP-1 Receptor Agonist Market

Trends, by Region, 2025 - 2030



77.7%

North America Market
Revenue Share, 2024

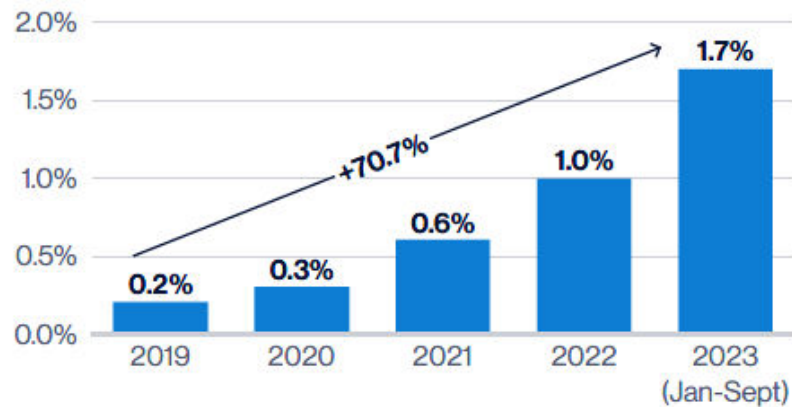
Source:
www.grandviewresearch.com

GLP-1 Agonists in Aesthetics

Figure 1: Semaglutide Prescription Rates in the U.S. (2019 – 2023)

Approximately 1.7% of people in the U.S. who attended a health care visit were prescribed a semaglutide medication in 2023...

% of people in the U.S. with a health care visit who were prescribed semaglutide



Source(s): CNN, Epic Research

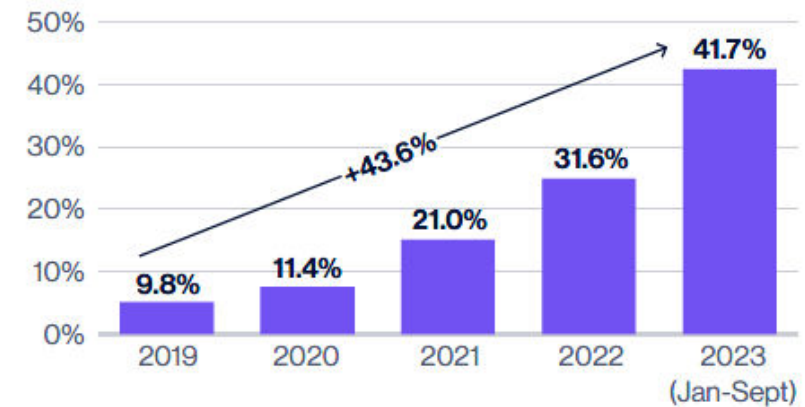
Note(s): Figure 1: Includes Ozempic and Rybelsus approved for T2DM and Wegovy approved for chronic weight management

Figure 2: 2023 data as of September 21, 2023

Figure 2: Proportion of Semaglutide Prescription for Non-T2DM Indication (2019 – 2023)

... with an increasing proportion of prescriptions going to patients without T2DM – principally to support with weight loss management.

% of patients in the U.S. prescribed semaglutide who do not have a diagnosis of T2DM



GLP-1 Agonists in Aesthetics

- GLP-1 Receptor Agonists = Glucagon-Like Peptide 1 Receptor Agonists
- These medications are transforming the landscape of metabolic treatment for diabetes and obesity (1)
- Through their incretin effects (hormones that are released into the gut after eating to help regulate blood sugars), GLP-1 agonists regulate blood glucose levels and promote satiety, leading to significant weight loss (2)
- All positive

1. Haykal D, Hersant B, Cartier H, Meningaud JP. The Role of GLP-1 Agonists in Aesthetic Medicine: Exploring the Impact of Semaglutide on Body Contouring and Skin Health. *J Cosmet Dermatol* Dec 2024; <https://doi.org/10.1111/jocd.16716>

2. Ard J, Fitch A, Fruh S, Herman L. Weight Loss and Maintenance Related to the Mechanism of Action of Glucagon-Like Peptide 1 Receptor Agonists. *Adv Ther.* 2021;38(6):2821-2839. doi:10.1007/s12325-021-01710-0

GLP-1 Agonists in Aesthetics

- Recent observations have identified a new aesthetic challenge with the use of these drugs
- The rapid and sometime extreme weight reduction often leaves patients with excess skin, reduced facial volume, and an overall appearance of premature skin aging (3,4)
- Gives increase complexity to the patient experience – expected outcome is a more “healthier lifestyle”
- Fueled on by Social Media

3. Tay JQ. Ozempic face: A new challenge for facial plastic surgeons. *J Plast Reconstr Aesthetic Surg JPRAS*. 2023;81:97-98. doi:10.1016/j.bjps.2023.04.057

4. Mansour MR, Hannawa OM, Yaldo MM, Nageeb EM, Chaiyasate K. The rise of “Ozempic Face”: Analyzing trends and treatment challenges associated with rapid facial weight loss induced by GLP-1 agonists. *J Plast Reconstr Aesthetic Surg JPRAS*. 2024;96:225-227. doi:10.1016/j.bjps.2024.07.051

GLP-1 Agonists in Aesthetics

- The role of SM has further amplified the popularity and visibility of GLP-1 agonists like Semiglutide
- Platforms such as Instagram, TikTok, and X (formerly known as Twitter) filled with testimonials, weight loss transformations, and discussions about the Semiglutide “face” (5)
- The viral nature of this content has raised public awareness but also has made it a trending topic in both the medical and now the aesthetic space

GLP-1 Agonists in Aesthetics

- While many users celebrate the dramatic weight loss results, the widespread attention has also brought to light the aesthetic consequences of rapid weight loss
- This leads to an increasing demand for solutions to counteract these effects (6)

GLP-1 Agonists in Aesthetics

- Semiglutide, one of the more popular GLP-1 agonist medications, enhances glucose-dependent insulin secretion, suppresses glucagon secretion, and delays gastric emptying
- These mechanisms make it an effective tool for controlling blood sugar levels in patients with diabetes
- It also significantly impacts body weight by promoting satiety and reducing food intake, leading to dramatic weight loss in patients with obesity (7-9)

7. Suran M. As Ozempic's Popularity Soars, Here's What to Know About Semaglutide and Weight Loss. *JAMA*. 2023;329(19):1627-1629 doi:10.1001/jama.2023.2438.

8. Yao H, Zhang A, Li D, et al. Comparative effectiveness of GLP-1 receptor agonists on glycaemic control, body weight, and lipid profile for type 2 diabetes: systematic review and network meta-analysis. *BMJ*. 2024;384:e076410. doi:10.1136/bmj-2023-076410.

9. Chao AM, Tronieri JS, Amaro A, Wadden TA. Semaglutide for the treatment of obesity. *Trends Cardiovasc Med*. 2023;33(3):159-166. doi:10.1016/j.tcm.2021.12.008

- Very common with rapidly increasing prevalence
- One of leading causes of cardiovascular disease, blindness, ESRD, amputations, hospitalizations
- Common in Populations with HIV
- Diabetes can be controlled, but management is complicated and requires individualization

Key Concepts in Diabetes Management

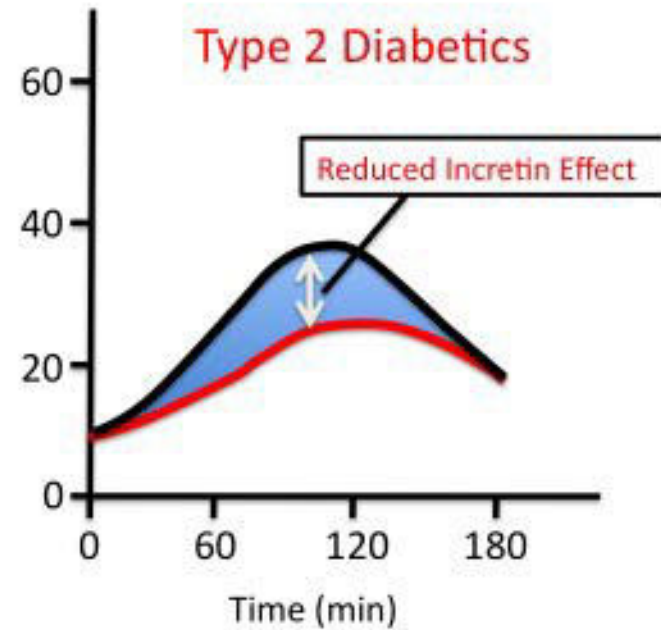
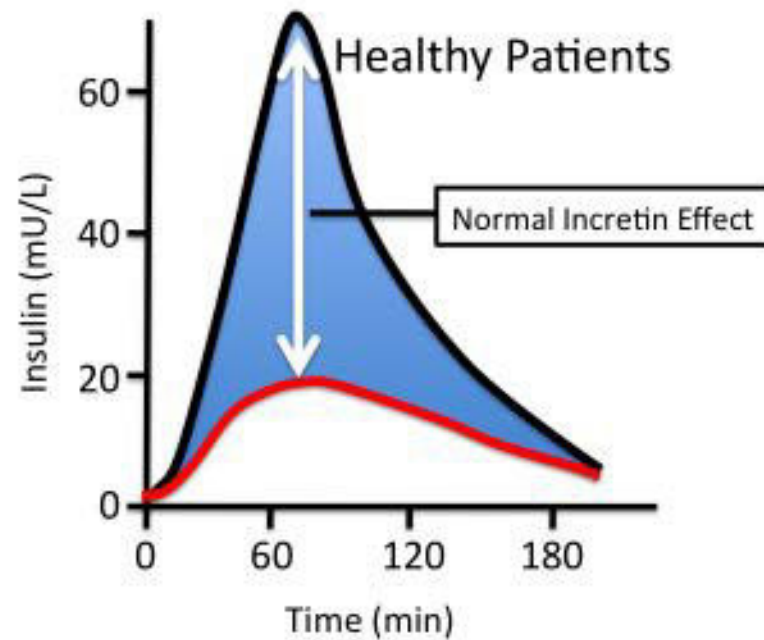
- What should be the glycemic target?

What should be the glycemic target?

HbA1c < 7%

The Incretin Effect

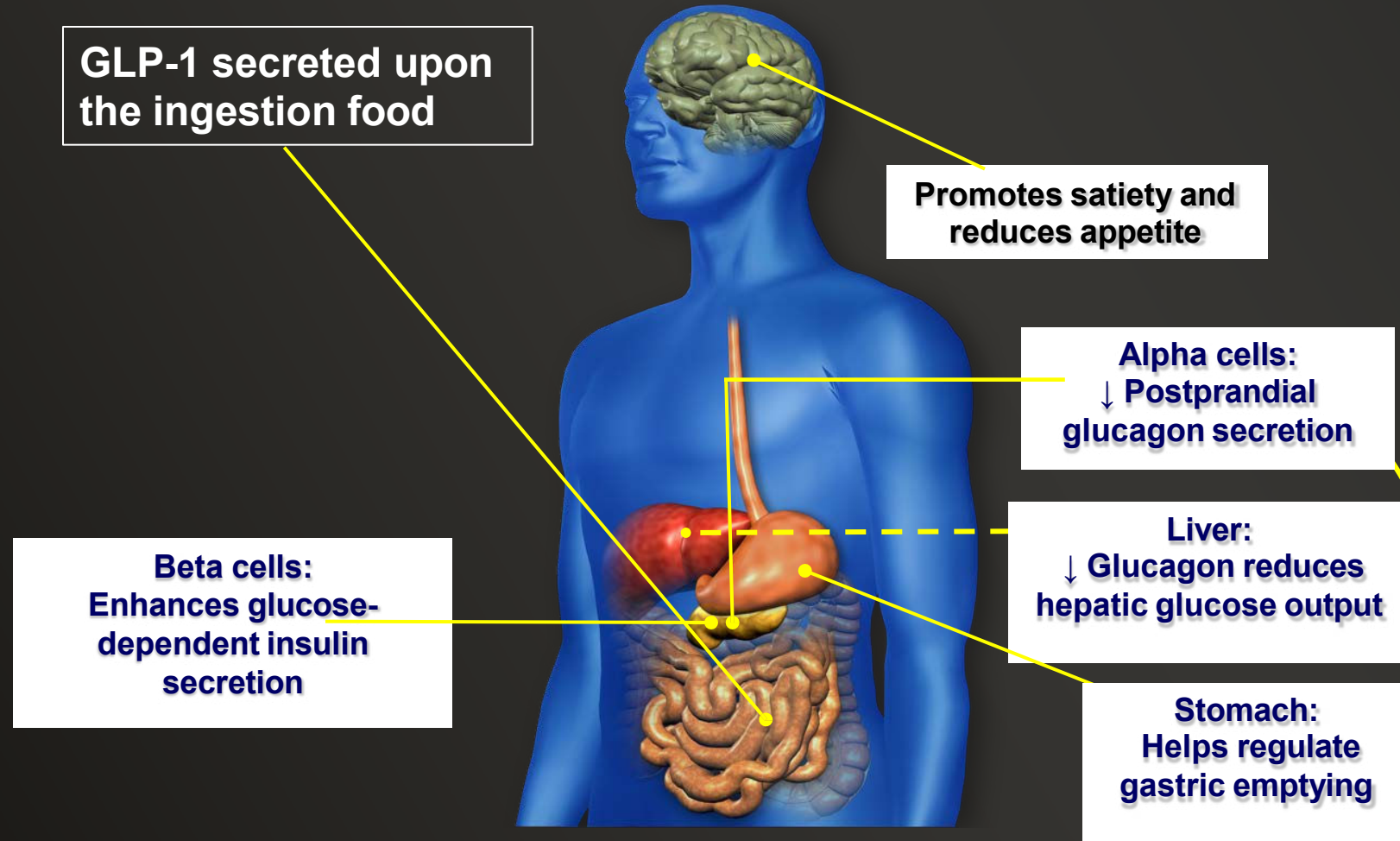
Diabetes & The “Incretin Effect”



— Oral Glucose (50 g/400 ml)
— Isoglycemic IV Glucose Infusion

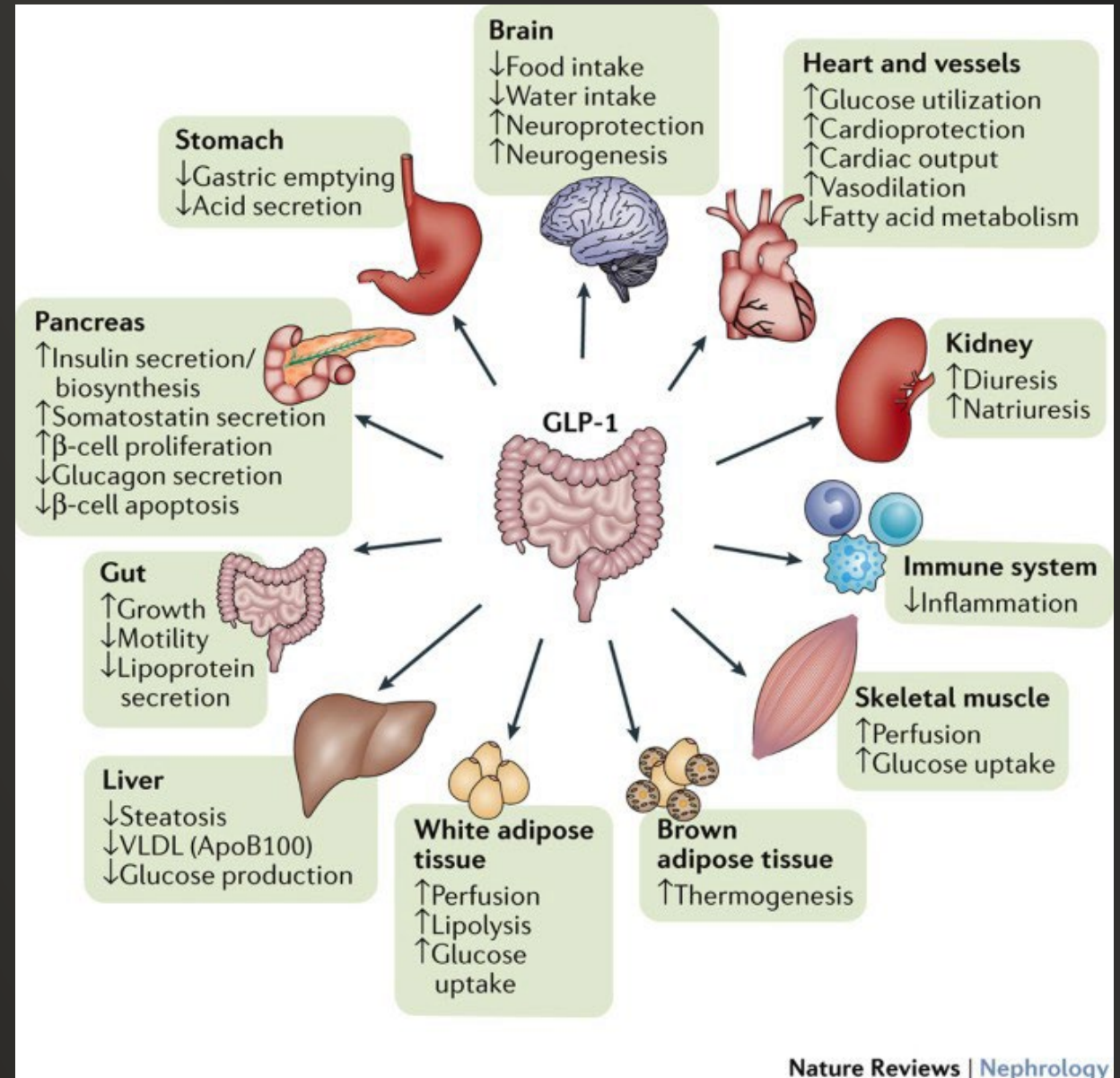
Nauck M et al.
Diabetologia (1986) 29:46-52

GLP-1 Effects in Humans: Understanding the Glucoregulatory Role of Incretins



Adapted from Flint A, et al. *J Clin Invest.* 1998;101:515-520.; Adapted from Larsson H, et al. *Acta Physiol Scand.* 1997;160:413-422.; Adapted from Nauck MA, et al. *Diabetologia.* 1996;39:1546-1553.; Adapted from Drucker DJ. *Diabetes.* 1998;47:159-169.

Multiple Sites of Action of GLP-1 RA



GLP1 RAs in Diabetes: Effects on Glucose

Drug	Duration	Glucose Effect
Exenatide	24 weeks	-0.9%
Liraglutide	52 weeks	-1.1 %
Lixisenatide	24 weeks	-0.72%
Dulaglutide	36 weeks	-1.8%
Semaglutide	40 weeks	-2.1%

GLP1 RAs in Diabetes: Effects on Glucose and Weight

Drug	Duration	Glucose Effect	Weight Effect
Exenatide	24 weeks	-0.9%	-2.9 kg
Liraglutide	52 weeks	-1.1 %	-2.5 Kg
Lixisenatide	24 weeks	-0.72%	-2.7 kg
Dulaglutide	36 weeks	-1.8%	-4.6 kg
Semaglutide	40 weeks	-2.1%	-6.4 kg

GLP1 RAs in Diabetes: Effects on Cardiovascular Events

Drug	Duration	Glucose Effect	Weight Effect	Reduction in MACE
Exenatide	24 weeks	-0.9%	-2.9 kg	NO
Liraglutide	52 weeks	-1.1 %	-2.5 Kg	↓ 14%
Lixisenatide	24 weeks	-0.72%	-2.7 kg	NO
Dulaglutide	36 weeks	-1.8%	-4.6 kg	↓ 12%
Semaglutide	40 weeks	-2.1%	-6.4 kg	↓ 26%

GLP1 Receptor Agonists: Pros and Cons

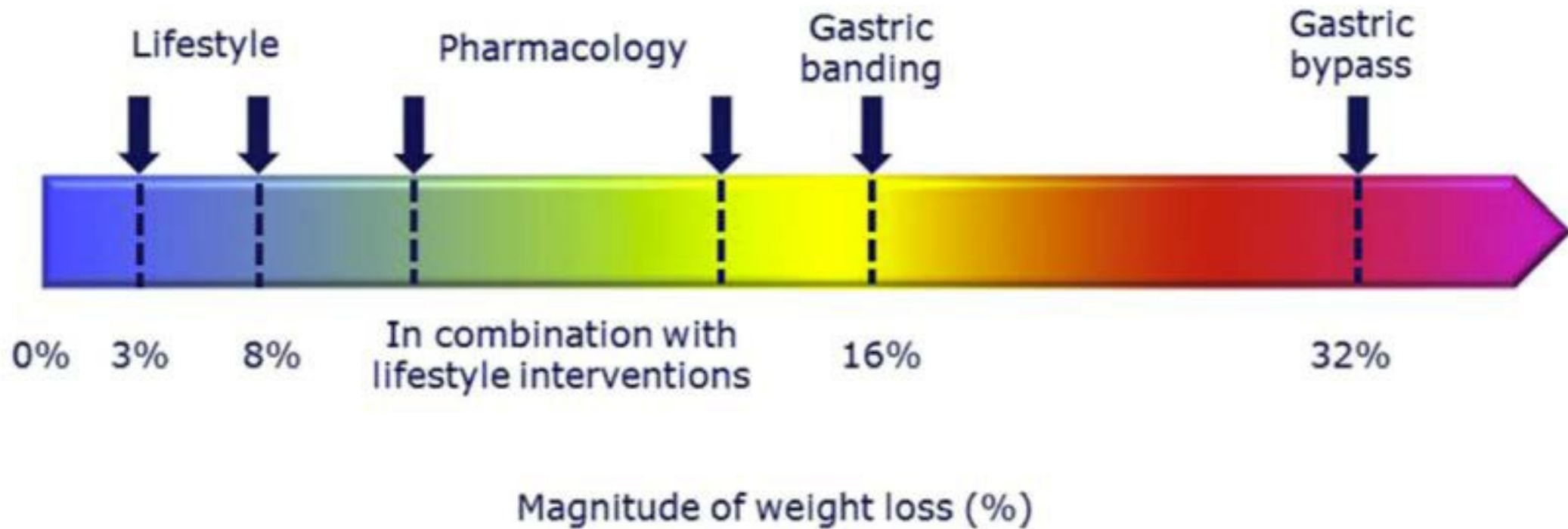
• Pros

- ↓ A1c ~1.5%
- No Hypoglycemia
- CVD benefit
- Weight Loss
- ↓ Liver Fat
- Weekly Administration

• Cons

- Nausea
- ? Pancreatitis
- Cost (NADAC
\$~770/month)

Weight loss for different treatment interventions



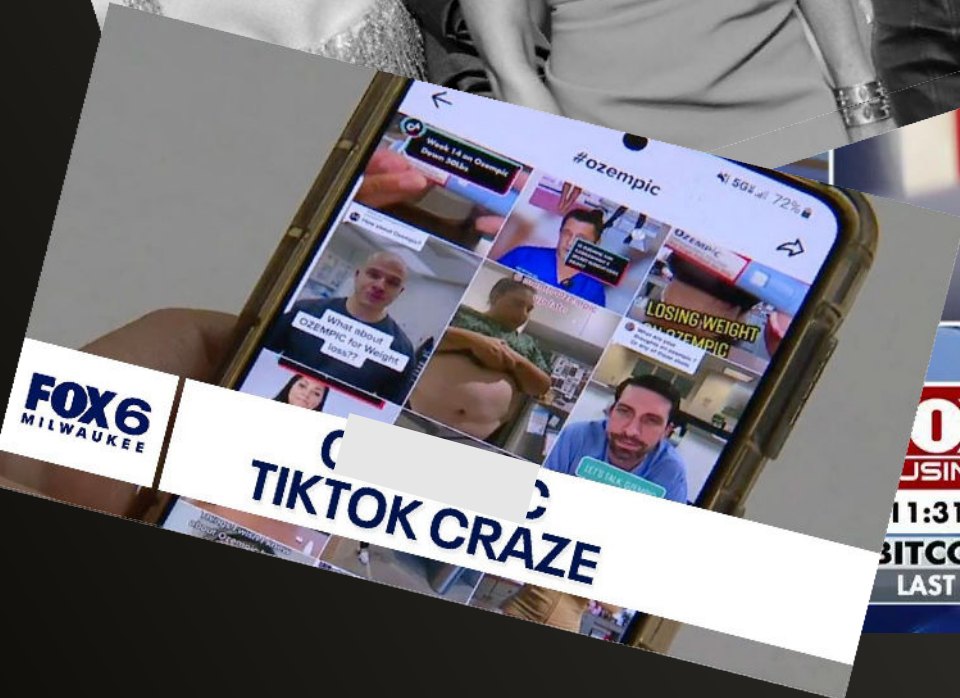
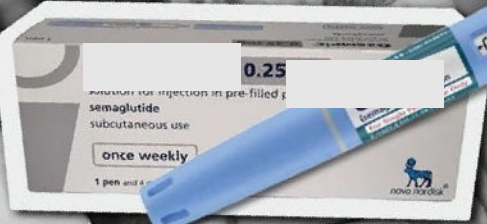
Next Generation Pharmacologic Treatment for Obesity: GLP-1 RA

Dawn of a New Era

Ensign Lake, Boundary Waters Canoe Area, MN



GLP-1 RA Mania



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TIKTOK CRAZE

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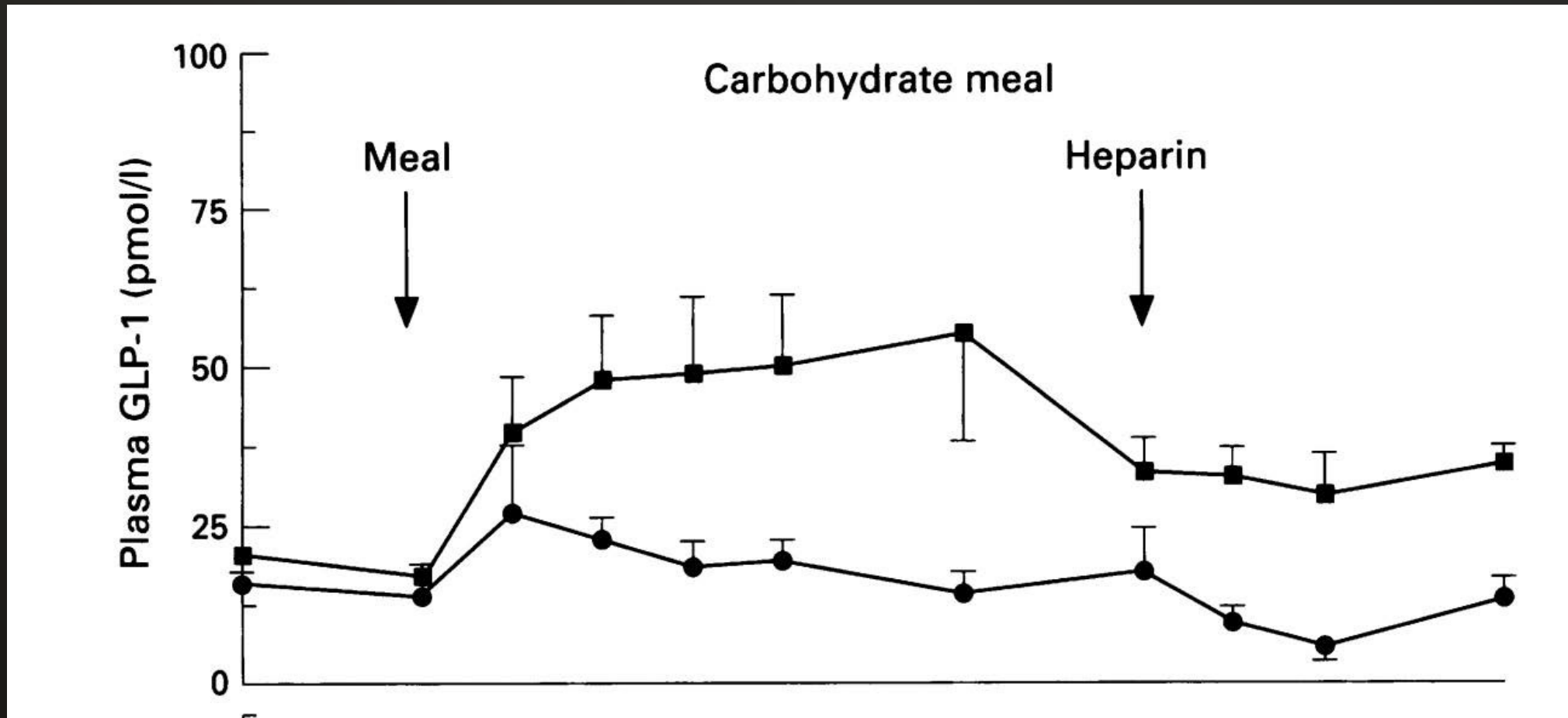
▶ DR. BOB LAHITA | ST. JOSEPH HEALTH INSTITUTE DIRECTOR

DUBBED HOLLYWOOD'S 'NEW WEIGHT LOSS DRUG'

▶ DOW
33,575.30
▼ 335.55
-0.99%

BITCOIN 20,700.00 ▼ 597.00 -2.80% | ETHEREUM 1,517.30 ▼ 60.00 -3.80%
LAST TRADES ▶ AC 33.81 ▼ 0.72 | TESLA (TSLA) 129.33 ▼ 2.16 | VERI

GLP-1 Secretion is Reduced in Obesity



GLP1 RA for Obesity

Drug	Duration	Max Dose	Weight Effect	% Non-responder*	% D/C in Treatment Arm
Liraglutide	72 w	3.0 mg	-8.4 kg/-8%	46%	9.9%
Semaglutide	68 w	2.4 mg	-18.4 kg/-16%	13%	5.9%
Tirzepatide	72 w	15 mg	-22 kg/-18.4%	12.5%	10%

*weight loss < 5%

GLP1 RA: Adverse Effects & Long-Term Benefits

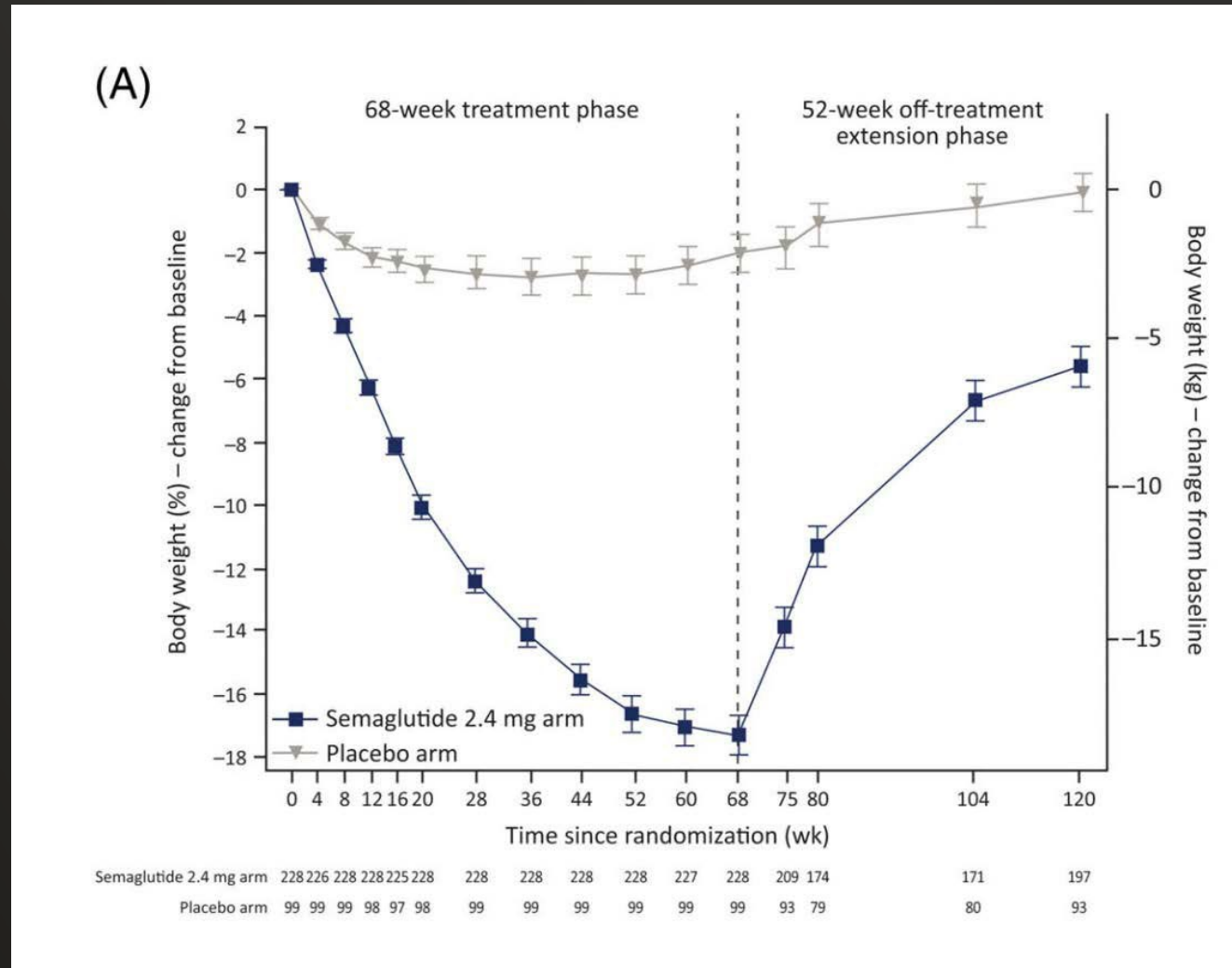
Possible Adverse Effects

- Nausea/Diarrhea
- Pancreatitis
- Gastroparesis
- Bowel Obstruction
- Decreased muscle mass
- Facial lipoatrophy (“Ozempic Face”)
- ~~Suicidal ideation~~ (Wang, Nat Med, 2024)
- ? Medullary thyroid cancer
- ? Decreased effectiveness of oral contraceptives (tirzepatide)

Possible Long-term Benefits

- Diabetes Prevention

Weight Rebound After Semaglutide Discontinuation



GLP-1 Agonists in Aesthetics

- While the effects of GLP-1 agonists in metabolic health are well-established, their aesthetic effects, particularly in the context of fat redistribution and skin integrity lack expansive research

GLP-1 Agonists in Aesthetics

- The following are examples of concerns that we may see or have seen with the use of GLP-1 agonists in aesthetics

GLP-1 Agonists in Aesthetics

- Facial Aging & Volume Loss
- Often referred to as the Semiglutide or Ozempic Face
- The face loses its natural volume leading to a hollow or gaunt appearance, especially around the midface, temples, and periorbital areas
- Fat pads also diminish which causes youthful contour support to diminish also exacerbating sagging skin, particularly in and around the mouth, leading to jowling and a less defined facial structure (4,5)

4. Mansour MR, Hannawa OM, Yaldo MM, Nageeb EM, Chaiyasate K. The rise of “Ozempic Face”: Analyzing trends and treatment challenges associated with rapid facial weight loss induced by GLP-1 agonists. *J Plast Reconstr Aesthetic Surg JPRAS*. 2024;96:225-227. doi:10.1016/j.bjps.2024.07.051
5. Carboni A, Woessner S, Martini O, Marroquin NA, Waller J. Natural Weight Loss or “Ozempic Face”: Demystifying A Social Media Phenomenon. *J Drugs Dermatol JDD*. 2024;23(1):1367-1368. doi:10.36849/JDD.7613

GLP-1 Agonists in Aesthetics

- This facial volume loss often results in patients appearing older than their biological age, creating a psychological impact that can be discerning, especially for those who have worked so hard to achieve their desired weight goals (10)
- The gaunt appearance, associated with the Semaglutide face, contrasts with the expected benefits of feeling healthier, leaving patients concerned about their facial aesthetics (11)

10. Haykal D, Cartier H. Unveiling the psychological and ethical journey of cosmetic dermatology procedures. *J Eur Acad Dermatol Venereol JEADV*. Published online September 20, 2023. doi:10.1111/jdv.19522

11. Mailhac A, Pedersen L, Pottegård A, et al. Semaglutide (Ozempic®) Use in Denmark 2018 Through 2023 ‒ User Trends and off-Label Prescribing for Weight Loss. *Clin Epidemiol*. 2024;16:307-318. doi:10.2147/CLEP.S456170

GLP-1 Agonists in Aesthetics

- How to Treat the Semiglutide Face:
- For Restoration of Volume Loss –
 - Dermal Fillers
 - HA Fillers
 - Biostimulatory Fillers, such as Calcium Hydroxylapatite (CaHA) and Poly-L- Lactic Acid (PLLA)
 - Fat Grafting or Adipose Derived Matrix
- For Tightening of Loose or Sagging Skin –
 - Energy Based Devices including lasers, MFUS (Ulthera and Ulthera Prime), and PRECISE by SofWave
 - RF Microneedling
 - Threads
 - Surgery

GLP-1 Agonists in Aesthetics

- **Skin Laxity**
- The skin's ability to retract and conform to a new body image is limited by factors such as age, genetics, and the rate of weight loss
- When weight is lost quickly, the skin does not have time to adjust, leading to sagging areas that are most noticeable in the:
 - Face
 - Neck
 - Arms
 - Abdomen
 - Thighs

GLP-1 Agonists in Aesthetics

- In the face, skin laxity manifests as drooping cheeks, deepened nasolabial folds, and neck sagging
- For the body, patients may experience skin folds that hinder mobility or cause discomfort, particularly in the arms, thighs, and abdominal region
- Can lead to functional challenges (12)

GLP-1 Agonists in Aesthetics

- Treatment Options for Skin Laxity
- Non-surgical skin tightening treatments, such as RF, HIFU or PRECISE ultrasound, or fractional lasers
 - Help stimulate collagen and elastin to improve skin firmness and elasticity
- Surgical approaches

GLP-1 Agonists in Aesthetics

- **Body Contouring**
- Body contouring has become an essential part of the post-weight loss transformation
- Non-invasive and surgical options exist

GLP-1 Agonists in Aesthetics

- Non-Invasive Options for Body Contouring
 - Cryolipolysis
 - HIFU or SUPERP
 - RF Skin Tightening
- These treatments work by breaking down fat cells or by stimulating collagen production to tighten and firm the skin or fat deposits
- Often need combination therapies for an appropriate effect
- Usually always need multiple treatment sessions

GLP-1 Agonists in Aesthetics

- Surgical Treatment Options for Body Contouring
- For patients with more severe skin laxity issues or large amounts of excess skin
 - Abdominoplasty
 - Body Lifts
 - Thigh Lifts
 - Liposuction (?)
- Often, surgical and non-surgical approaches work for many

GLP-1 Agonists in Aesthetics

- Further research is needed in all of these areas where we are utilizing aesthetic treatments to determine their long-term effectiveness for our patients

GLP-1 Agonists in Aesthetics

- **FDA's Concerns with Unapproved GLP-1 Drugs Used for Weight Loss**
- **Understanding unapproved versions of these drugs**
- FDA is aware that some patients and health care professionals may look to unapproved versions of GLP-1 (glucagon-like peptide-1 (GLP-1) receptor agonists) drugs, including semaglutide and tirzepatide, as an option for weight loss. This can be risky for patients, as unapproved versions do not undergo FDA's review for safety, effectiveness and quality before they are marketed.

GLP-1 Agonists in Aesthetics

- **FDA recommendations for patients**
- Patients should obtain a prescription from their doctor and fill the prescription at a state-licensed pharmacy.
- Visit FDA's [BeSafeRx](#) campaign for resources to safely buy prescription medicines online.
- Talk to your doctor if you have questions about your medicines.

GLP-1 Agonists in Aesthetics

- **Concerns with compounded versions of these drugs**
- A compounded drug might be appropriate if a patient's medical need cannot be met by an FDA-approved drug, or the FDA-approved drug is not commercially available. However, compounded drugs are not FDA approved. This means the agency does not review compounded drugs for safety, effectiveness or quality before they are marketed.
- The agency has identified some areas of concern for compounded GLP-1 drugs. FDA is working with its state regulatory partners and will continue to communicate with compounders regarding these concerns.

GLP-1 Agonists in Aesthetics

• Dosing concerns with compounded semaglutide and tirzepatide

- FDA received multiple reports of adverse events, some requiring hospitalization, that may be related to dosing errors associated with compounded injectable semaglutide products. These dosing errors resulted from patients measuring and self-administering incorrect doses of the drug, and in some cases, health care professionals miscalculating doses of the drug.
- Additionally, the agency has received adverse event reports that may be related to patients prescribed compounded semaglutide or tirzepatide products in doses beyond what is in the FDA-approved drug label. This could mean using more product in a single dose, taking doses more frequently or increasing the amount more quickly (titration schedule). Some of the adverse events are serious and some patients reported seeking medical attention for their symptoms, including nausea, vomiting, diarrhea, abdominal pain and constipation.
- Health care providers should be vigilant when prescribing compounded semaglutide or tirzepatide products and determining appropriate doses and titration and dosing schedules for patients. The agency also encourages patients to talk with their health care provider or compounding pharmacist about how to measure and administer the intended dose of compounded semaglutide or tirzepatide.

GLP-1 Agonists in Aesthetics

- **Retatrutide cannot be used in compounding**
- Retatrutide cannot be used in compounding under federal law. Additionally, it is not a component of an FDA-approved drug and has not been found safe and effective for any condition.

GLP-1 Agonists in Aesthetics

- **Salt forms should not be used to compound semaglutide**
- The agency is aware that some semaglutide products sold by compounders may be the salt forms. These salt forms, including semaglutide sodium and semaglutide acetate, are different active ingredients than are used in the approved drugs. The agency does not have information on whether these salts have the same chemical and pharmacologic properties as the active ingredient in the approved drug, and we are not aware of any lawful basis for their use in compounding.

GLP-1 Agonists in Aesthetics

- **Adverse events related to compounded versions of semaglutide and tirzepatide**
- FDA has received reports of adverse events related to compounded versions of semaglutide and tirzepatide. However, federal law does not require state-licensed pharmacies that are not outsourcing facilities to submit adverse events to FDA so it is likely that adverse events from compounded versions of these drugs are underreported. Many of the adverse events reported for compounded products appear to be consistent with adverse events related to the FDA-approved versions of these products.
- As of November 30, 2024, FDA has received:
 - more than 392 reports of adverse events with compounded semaglutide.
 - more than 215 reports of adverse events with compounded tirzepatide.
- It is not always possible to determine if the adverse event directly resulted from use of the drug or if other factors may have contributed to these adverse events

GLP-1 Agonists in Aesthetics

- **Illegally marketed versions of these drugs**
- **Counterfeit semaglutide**
- FDA is aware of counterfeit semaglutide marketed in the U.S. Counterfeit drugs claim to be authentic, but could contain the wrong ingredients, contain too little, too much or no active ingredient at all or other harmful ingredients, and are illegal.
- The agency investigates reports of suspected counterfeit drugs to determine the public health risks and the appropriate regulatory response. FDA remains vigilant in protecting the U.S. drug supply from these threats.

GLP-1 Agonists in Aesthetics

- **Illegal online sales of these drugs**
- FDA monitors the internet for fraudulent or unapproved drugs and has issued warning letters to stop the distribution of illegally marketed semaglutide and tirzepatide. These illegally marketed drugs:
 - may be counterfeit
 - could contain the wrong ingredients or harmful ingredients
 - could contain too little, too much or no active ingredient at all
- The agency urges consumers to be vigilant when purchasing drugs online and only purchase from state-licensed pharmacies.

GLP-1 Agonists in Aesthetics

FDA reminds compounders of the legal restrictions on making copies of FDA-approved drugs

Compounded drugs are not approved by FDA. FDA-approved drugs go through FDA's rigorous review for safety, effectiveness, and quality as part of the premarket approval process. Compounded drugs must meet conditions to qualify for exemptions under sections 503A and 503B of the Federal Food, Drug and Cosmetic (FD&C) Act. Among the conditions are:

- Section 503A of the FD&C Act includes restrictions on compounding drugs that are essentially copies of a commercially available drug. When a drug shortage is resolved, FDA generally considers the drug to be commercially available. Certain amounts are permissible under the law as long as the compounding is not done “regularly or in inordinate amounts.”
- Section 503B of the FD&C Act restricts outsourcing facilities from making compounded drugs that are essentially a copy of one or more FDA-approved drugs. Among other things, this means the compounded drug may not be identical or nearly identical to an FDA-approved drug unless the approved drug is on FDA's drug shortage

GLP-1 Agonists in Aesthetics

A pharmaceutical company has filed lawsuits against compounding pharmacies, medical spas, and wellness centers for selling products that claim to contain tirzepatide:

- **Lawsuits:** filed lawsuits against vendors for:
 - Selling products that fraudulently claim to be FDA-approved
 - Selling products that are not their own branded product
 - Selling products that may expose patients to serious health risks
- **Settlements:** entered into settlement agreements with some vendors, including:
 - **Totality Medispa:** Totality Medispa agreed to make a monetary payment and cannot mislead consumers into believing that it sells FDA-approved products

GLP-1 Agonists in Aesthetics

A pharmaceutical company has filed lawsuits against compounding pharmacies, medical spas, and wellness centers for selling products that claim to contain tirzepatide:

- **Cease-and-desist letters:** sent cease-and-desist letters to some vendors
- **Warnings:** warned patients about counterfeit and compounded medicines

Concerns include:

- The FDA has not reviewed these products for safety, quality, or efficacy
- Some products have been found to contain bacteria, high impurity levels, different chemical structures, and different colors than their agent
- Some products are untested and unproven
- This company also sells tirzepatide under the for diabetes.

GLP-1 Agonists in Aesthetics

- GLP-1 agonists are great drugs that are gaining prominence in the medical space
- They are also in our space
- How we deal with them is something that is still an open debate
- Treat your patients – we have aesthetic options when needed
- If you dispense or want to dispense – make sure you have checked all of your boxes