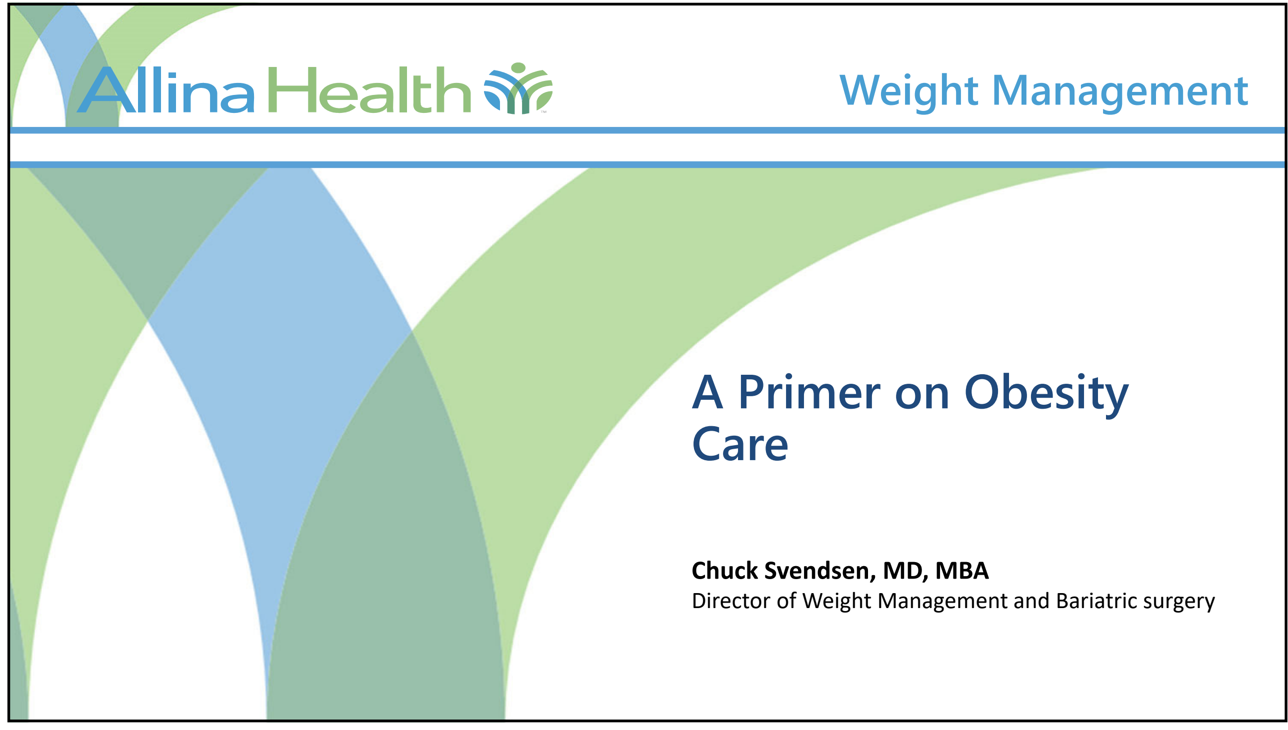
1



2

Disclosures

- I work as a paid consultant for Intuitive Surgical.
- I own ISRG stock directly
- I work as a paid consultant for Boehringer Labs.
- I work as an advisor to Washburn Technology.

Weight Management | Allina Health

3

3

Thank you to an amazing team

- Deb Vanderhall, RN, BNC
- Program manager for Weight Management
- Worked for Allina for 36 years and knows everyone!
- Work together for continuous program improvements
- Really understands the bariatric patient

Weight Management | Allina Health

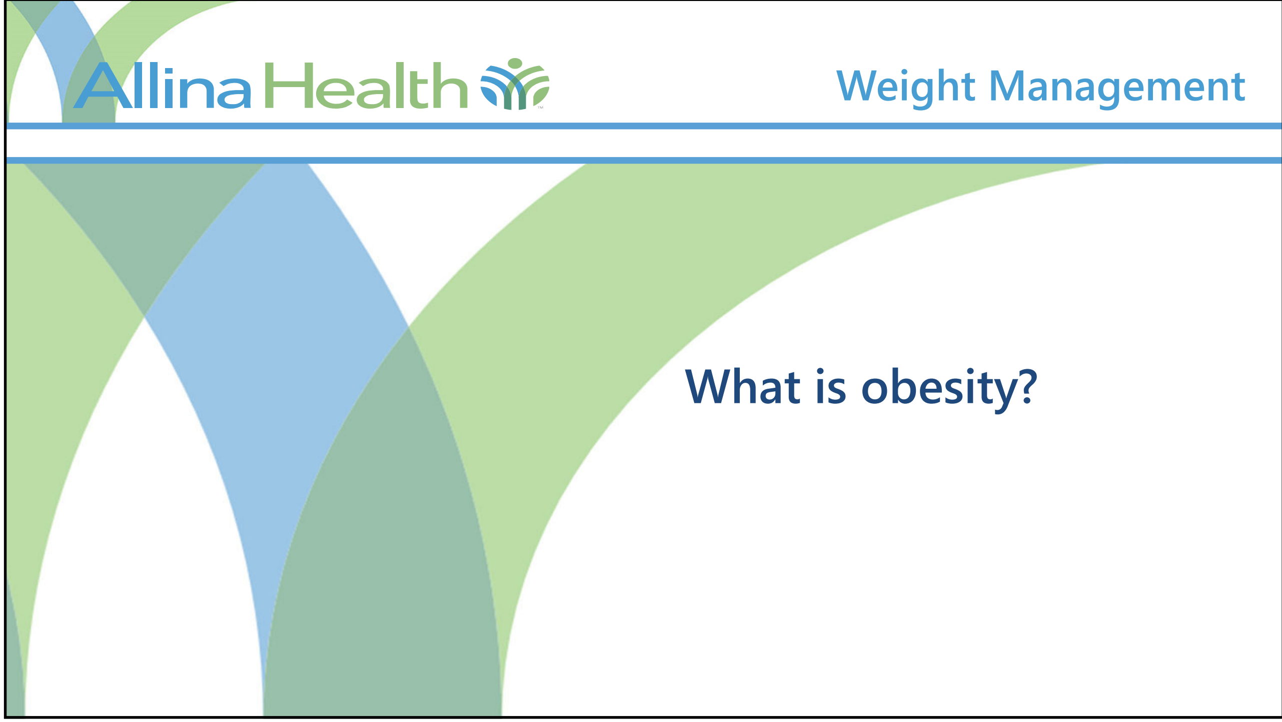
4

Overview

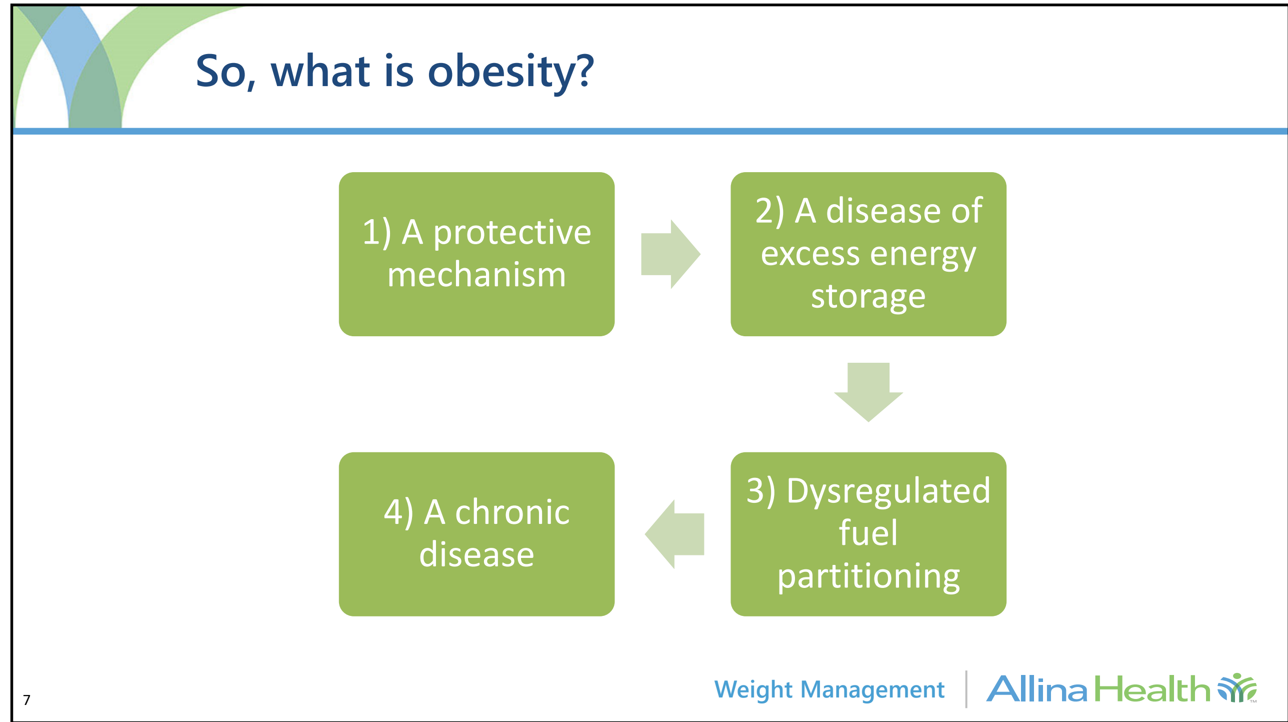
- What is obesity?
- Why should we care?
- Medical Management.
- Surgical Management.
- Where are we headed?

5 Weight Management | Allina Health

5



6



7

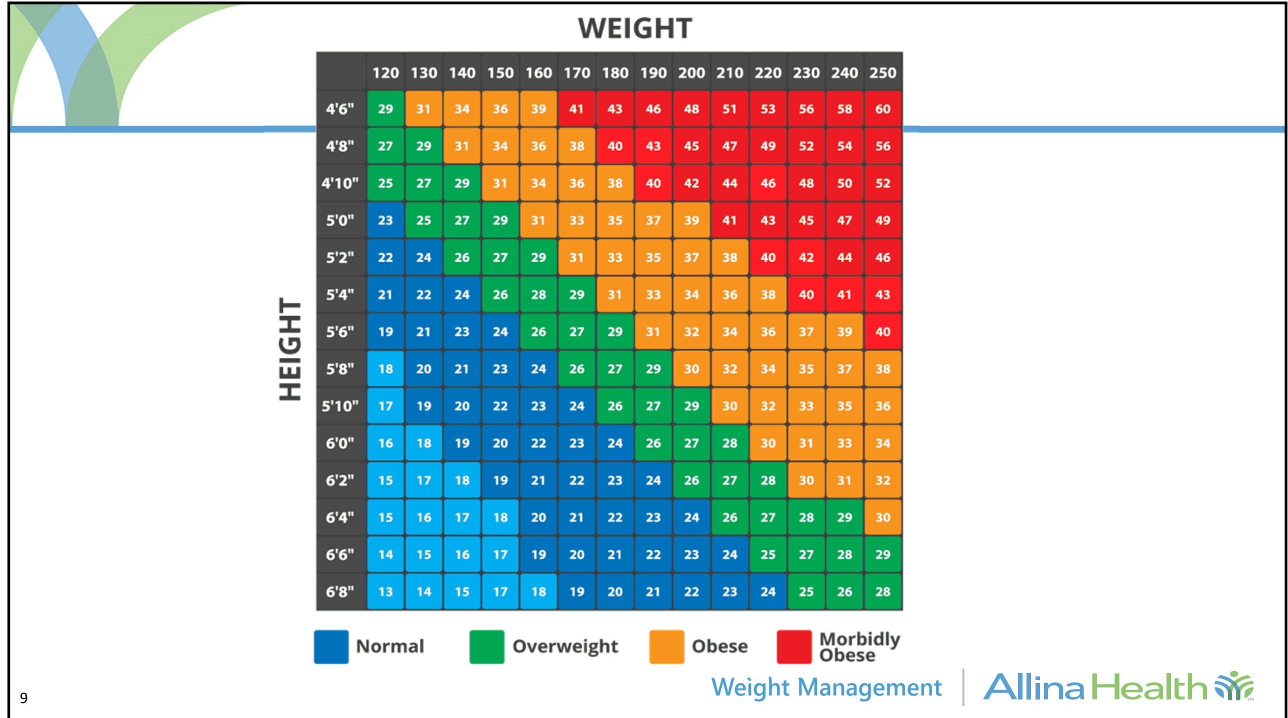
The Protective Role of Obesity

- Survival advantage
  - Efficient energy storage
  - Metabolic flexibility
- Subcutaneous fat acts as a metabolic buffer
- Acts as an overflow tank for when our glucose levels are too high

8

Weight Management | Allina Health

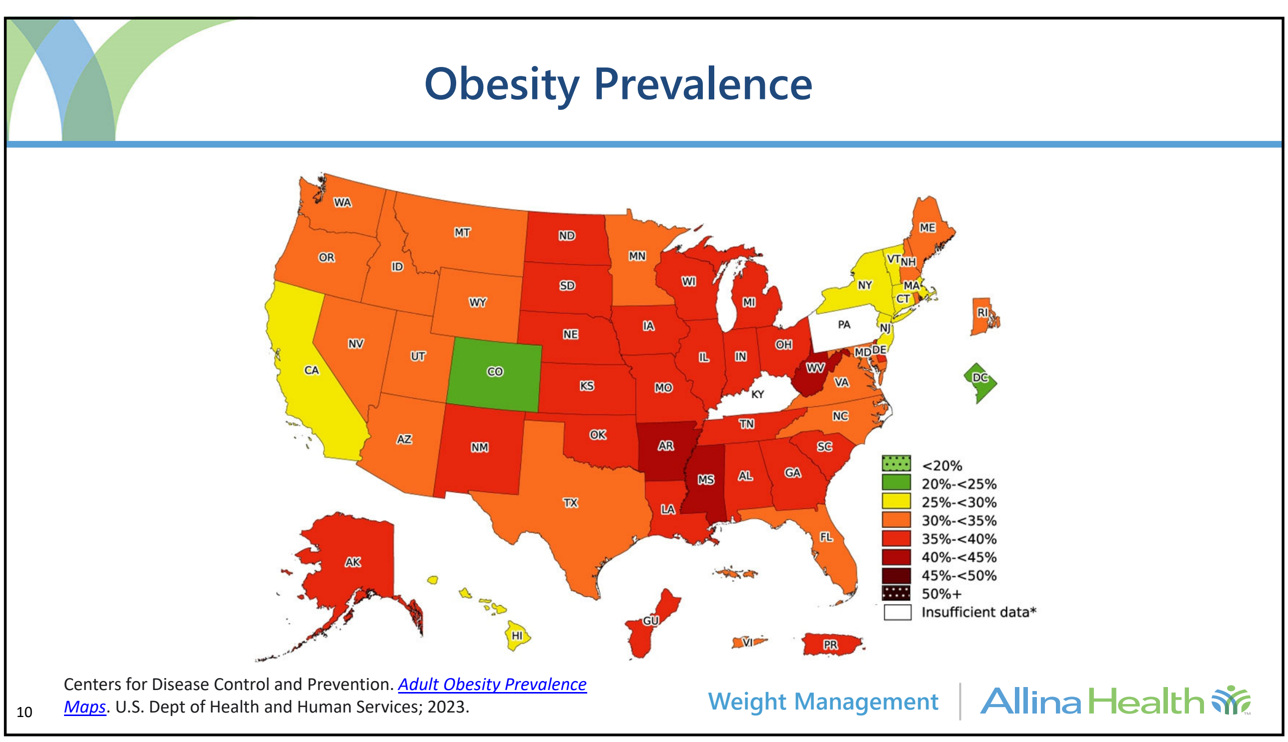
8



WEIGHT

HEIGHT	120	130	140	150	160	170	180	190	200	210	220	230	240	250
4'6"	29	31	34	36	39	41	43	46	48	51	53	56	58	60
4'8"	27	29	31	34	36	38	40	43	45	47	49	52	54	56
4'10"	25	27	29	31	34	36	38	40	42	44	46	48	50	52
5'0"	23	25	27	29	31	33	35	37	39	41	43	45	47	49
5'2"	22	24	26	27	29	31	33	35	37	38	40	42	44	46
5'4"	21	22	24	26	28	29	31	33	34	36	38	40	41	43
5'6"	19	21	23	24	26	27	29	31	32	34	36	37	39	40
5'8"	18	20	21	23	24	26	27	29	30	32	34	35	37	38
5'10"	17	19	20	22	23	24	26	27	29	30	32	33	35	36
6'0"	16	18	19	20	22	23	24	26	27	28	30	31	33	34
6'2"	15	17	18	19	21	22	23	24	26	27	28	30	31	32
6'4"	15	16	17	18	20	21	22	23	24	26	27	28	29	30
6'6"	14	15	16	17	19	20	21	22	23	24	25	27	28	29
6'8"	13	14	15	17	18	19	20	21	22	23	24	25	26	28

9



10

When obesity becomes pathologic

- Subcutaneous tissues fill up first then…
  - Visceral fat (VAT on a Dexa)
  - Liver (NAFLD -> NASH -> Cirrhosis)
  - Muscle (Mitochondrial dysfunction)
  - Pancreas (Type 2 diabetes)

11 Weight Management | Allina Health

11

Theories as to what happens

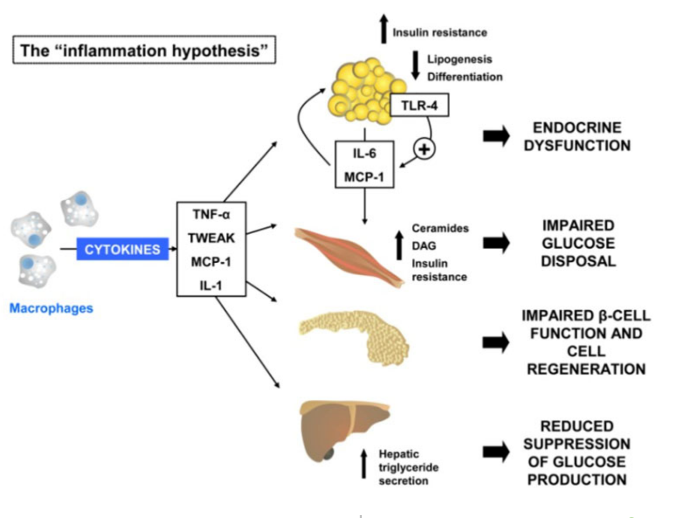
- Inflammation Hypothesis
- Lipid overflow hypothesis
- Adipokine hypothesis

12 Weight Management | Allina Health

12

Inflammation Hypothesis

Obesity represents a state of chronic inflammation where inflammatory molecules produced by infiltrating macrophages in adipose tissue exert pathological changes in insulin-sensitive tissues and β-cells.

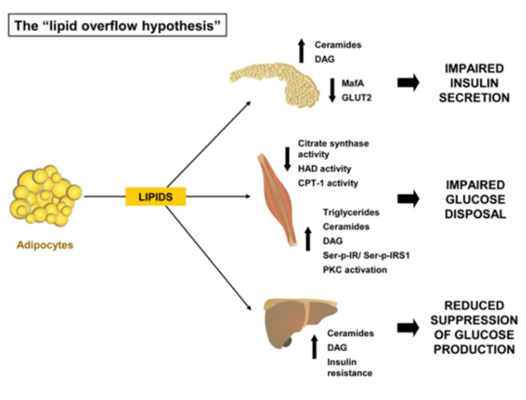


Chadt A, Scherneck S, Joost HG, et al. Molecular links between Obesity and Diabetes: "Diabesity". [Updated 2018 Jan 23]. In: Feingold KR, Anawalt B, Blackman MR, et al., editors. Endotext [Internet]. South Dartmouth (MA): MDText.com, Inc.; 2000-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK279051/

13

13

Overflow Hypothesis

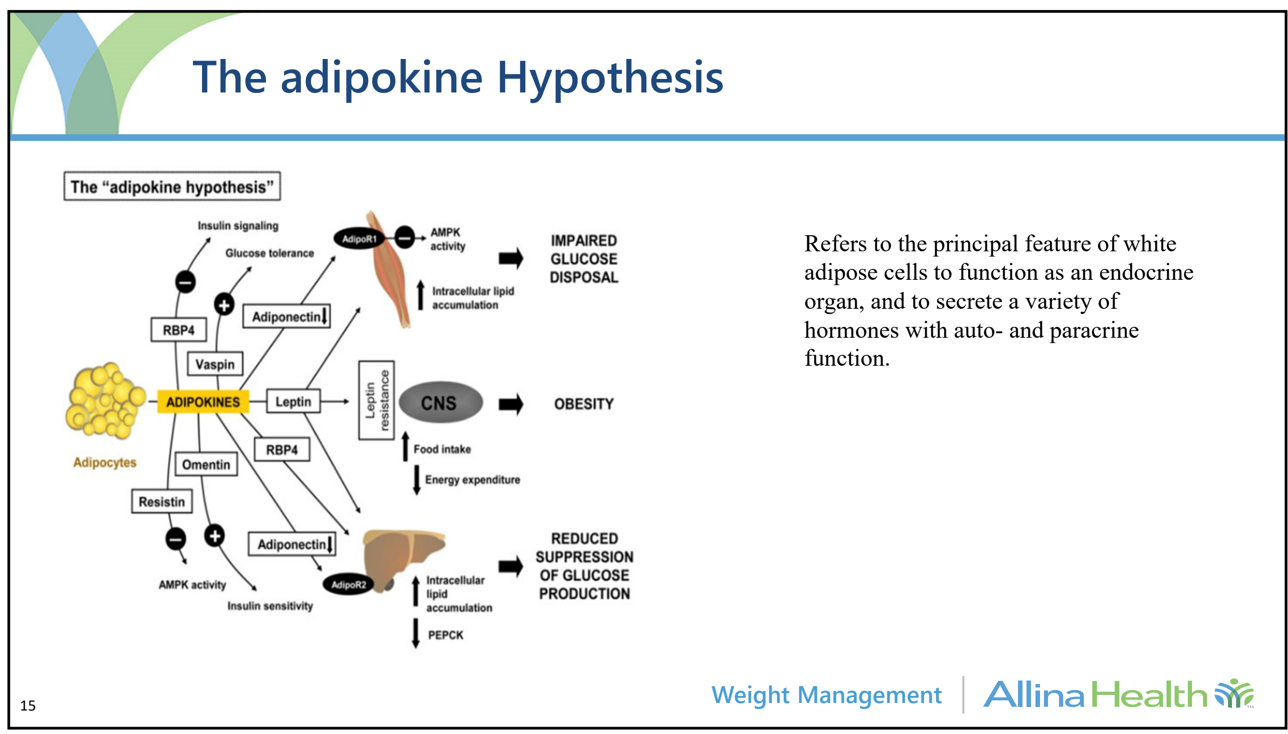


- Obesity may result in increased 'ectopic' lipid stores (lipid that accumulates outside the normal depots, such as in the organ tissue of the liver, muscle, and pancreas) due to the limited capacity of adipose tissue to properly store fat in obese subjects.

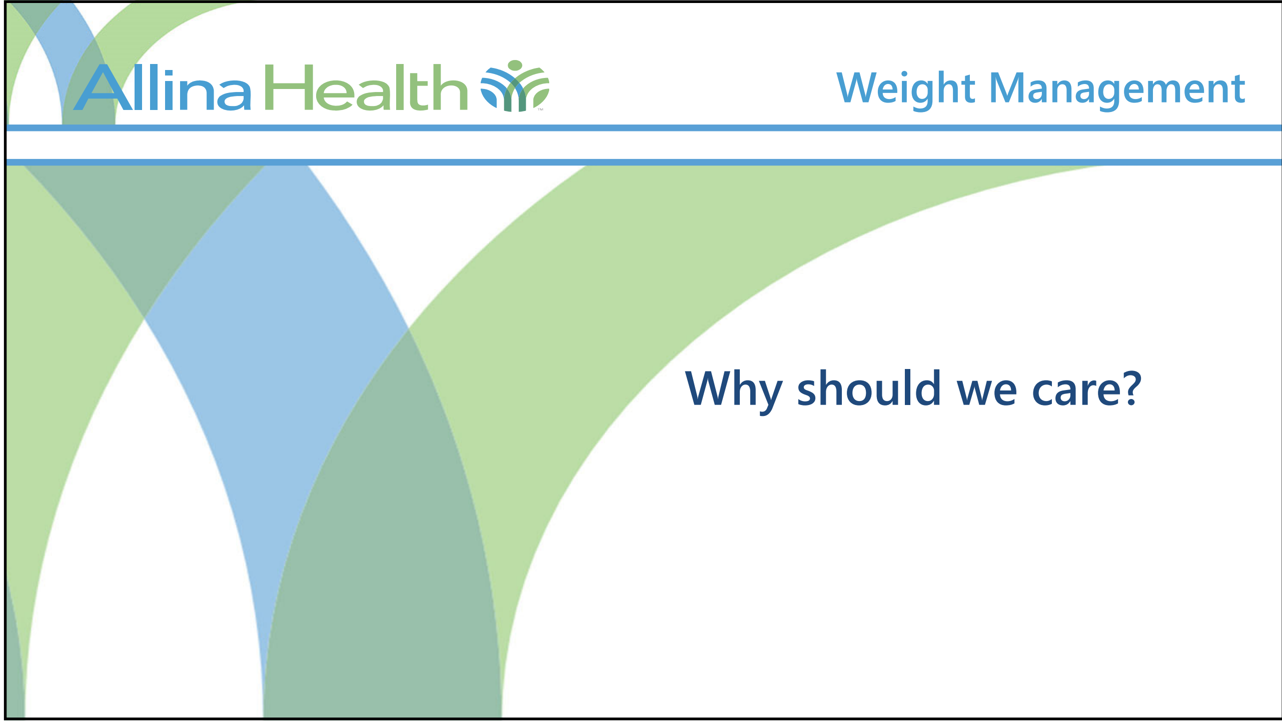
14

Weight Management | Allina Health

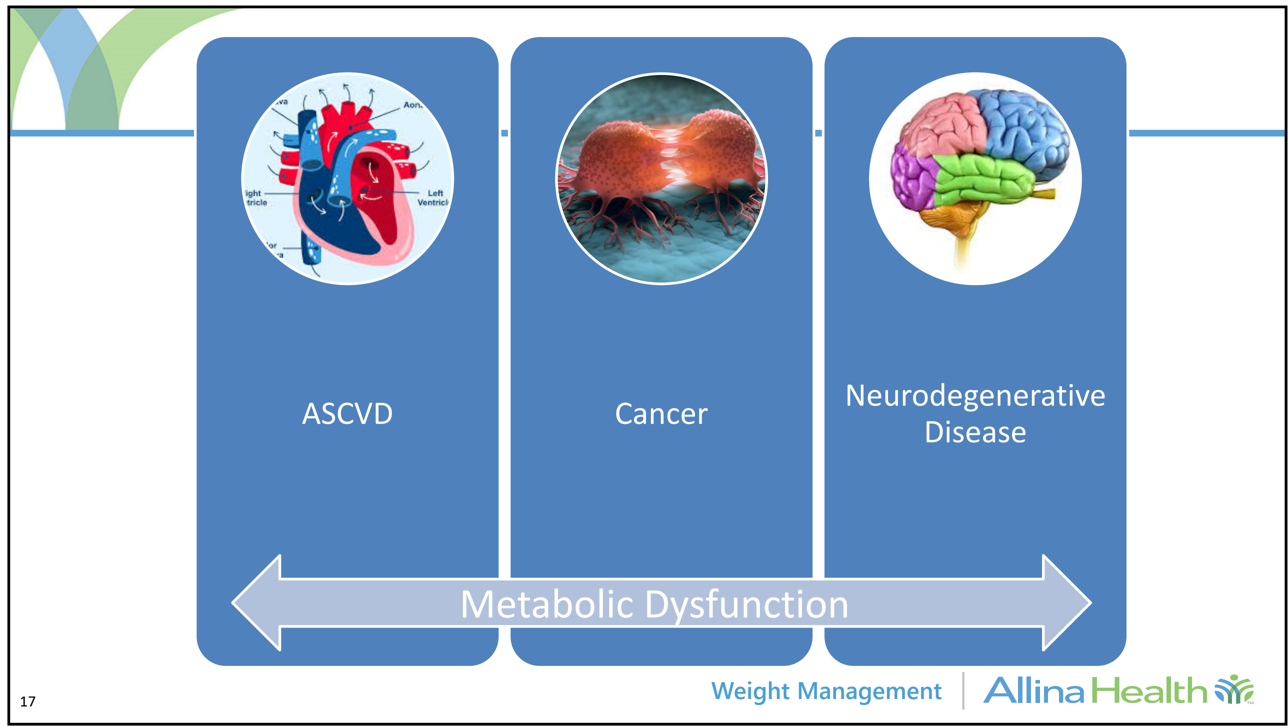
14



15



16



17

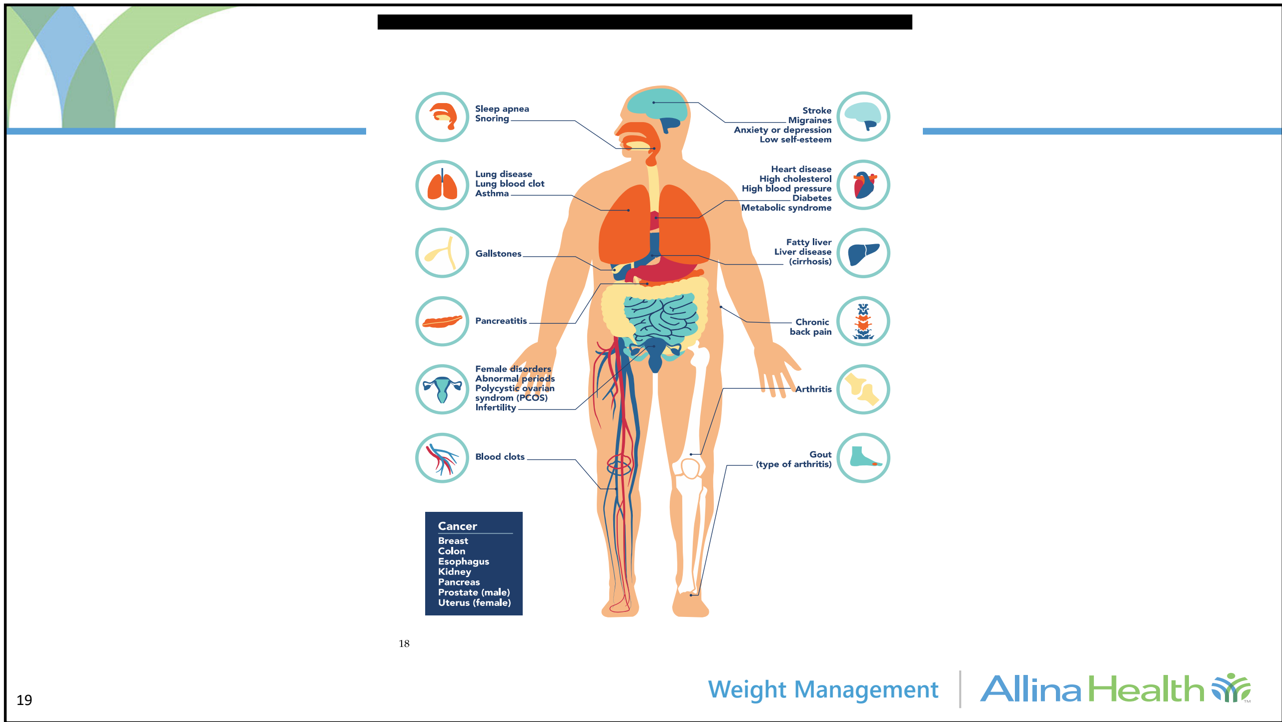
Top 10 Causes of death in the US. 2023

Cause of Death	Deaths (2023)	Preventable	Chronic Disease
Heart Disease	702880	Yes	Yes
Cancer (Malignant Neoplasms)	608371	Yes	Yes
Unintentional Injuries (Accidents)	227039	Yes	No
COVID-19	186552	Partially	No
Stroke (Cerebrovascular Diseases)	165393	Yes	Yes
Chronic Lower Respiratory Diseases	147382	Yes	Yes
Alzheimer's Disease	120122	No	Yes
Diabetes Mellitus	101209	Yes	Yes
Nephritis, Nephrotic Syndrome, and Nephrosis (Kidney Diseases)	57937	Yes	Yes
Chronic Liver Disease and Cirrhosis	54803	Yes	Yes

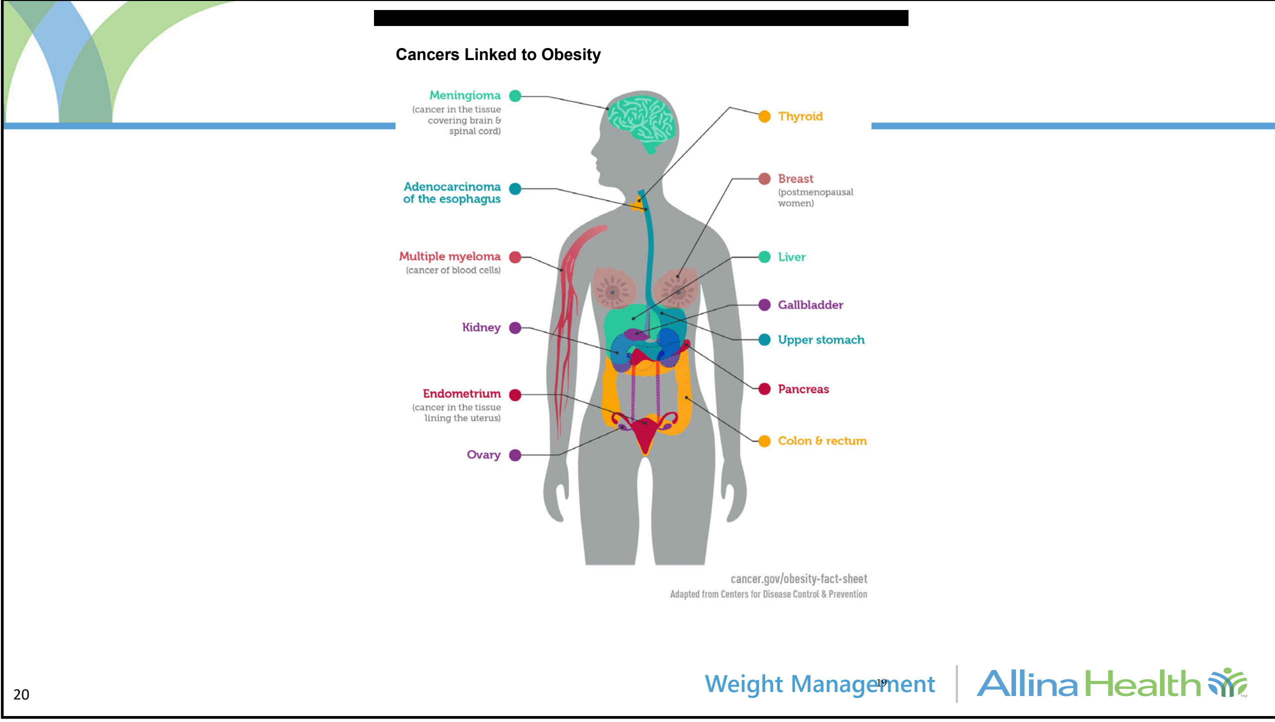
18 CDC.Gov 2023

Weight Management | Allina Health

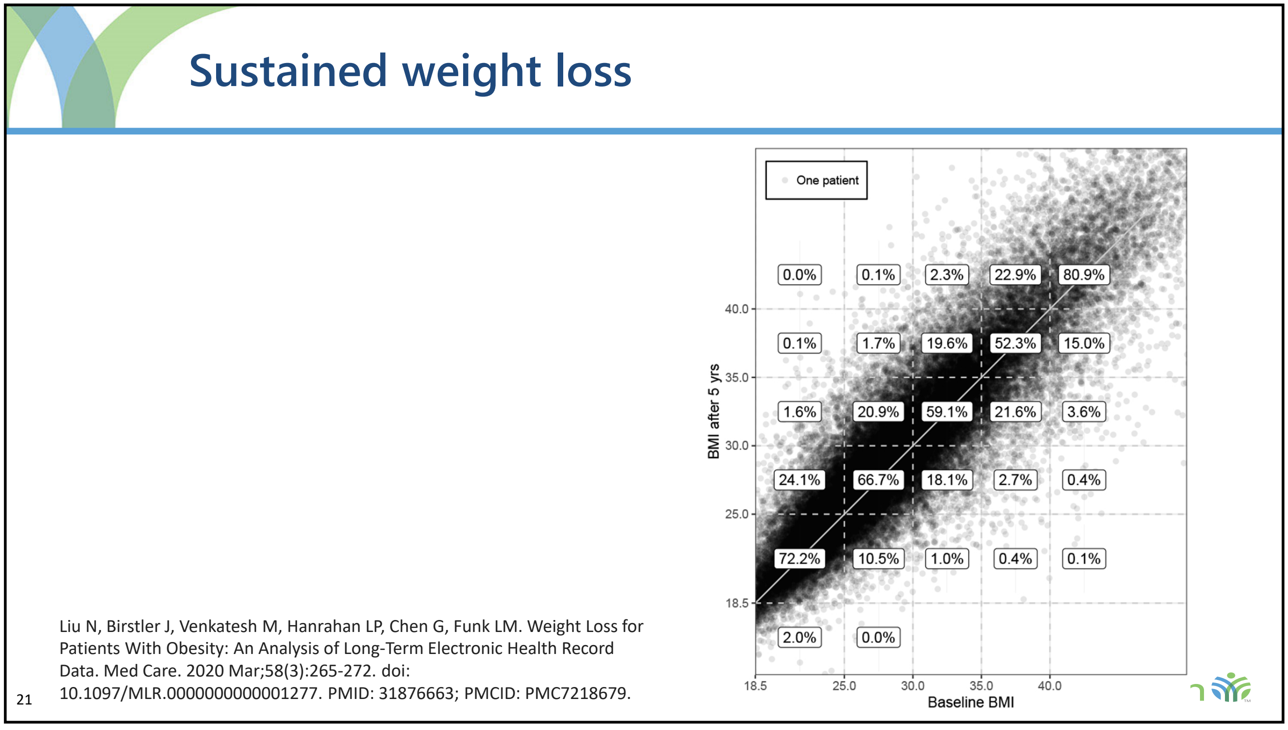
18



19



20



21

22

Our Medical Program – By the numbers

- 10 Locations
- 2 MWL MDs
- 17 MWL APPs
- 18 RDs

- Incoming referrals – 11,465
- Arrived consults 4972
- MWL Clinic visits – 60,326
- Virtual Care >90%

Weight Management | Allina Health

23

23

The cause of obesity is multifactorial

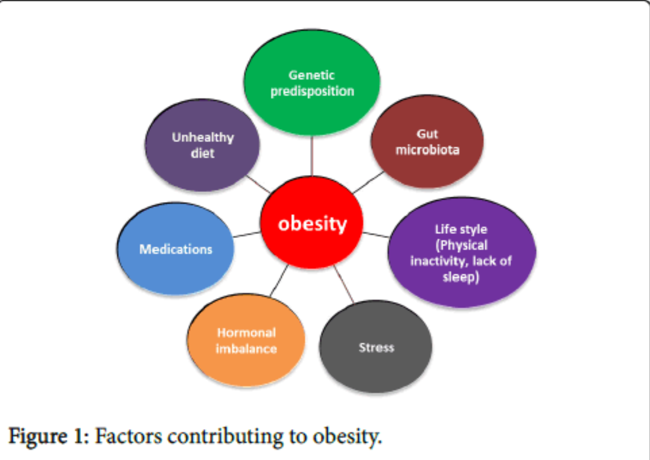


Figure 1: Factors contributing to obesity.

Weight Management | Allina Health

24

24

Patient Evaluation

- Fill out our intake form
  - Patient can choose medical or surgical
- Meet with MD or APP
  - Discuss program (Optifast, medications, surgery)
  - Medication options
  - Labs (ECG)
- RD
- PT

Weight Management | Allina Health

25

25

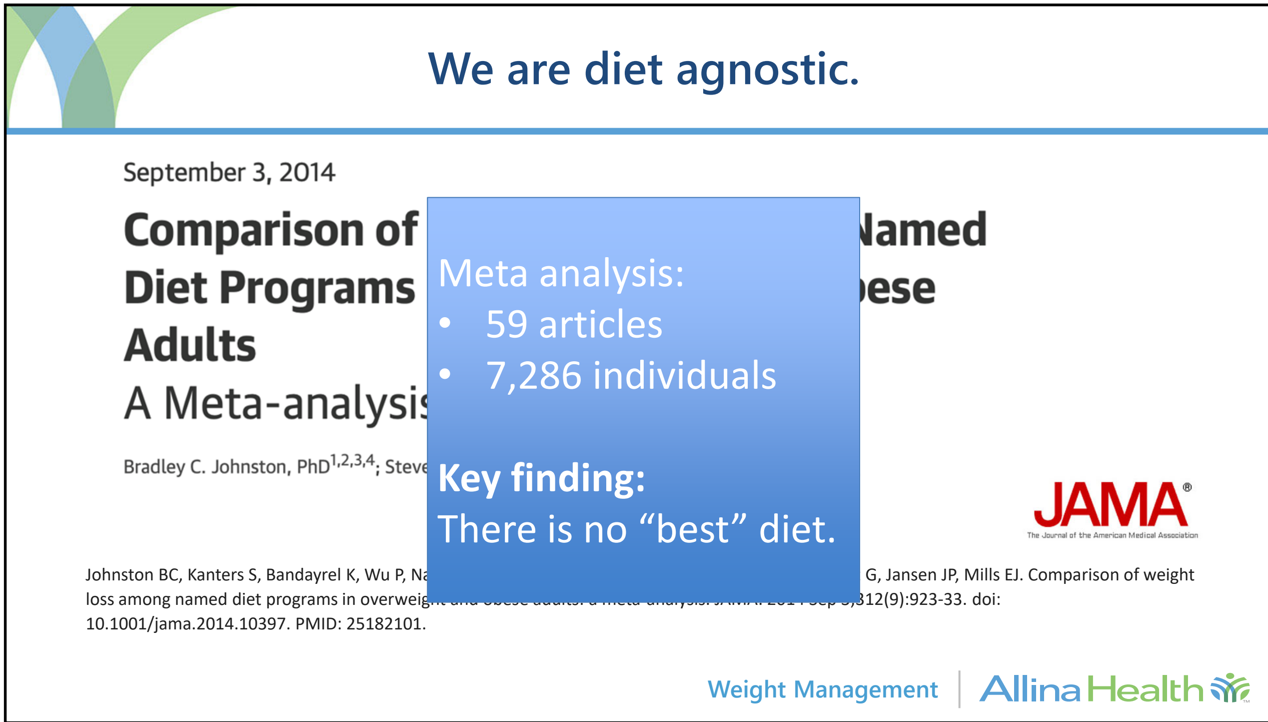
Diet – Three Levers

- How much you eat.
  - (Caloric restriction)
- What you eat.
  - (Low Carb, low fat, vegan, carnivore, paleo)
- When you eat.
  - (Intermittent Fasting and Time Restricted eating)

Weight Management | Allina Health

26

26



27

However...we do push protein. Why?

- RDA for protein
  - 0.8 gm/kg recommended
  - Based on nitrogen balance studies
  - Based on healthy, lean individuals
  - Minimum need to avoid deficiency
  - 0.66 gm/kg for balance

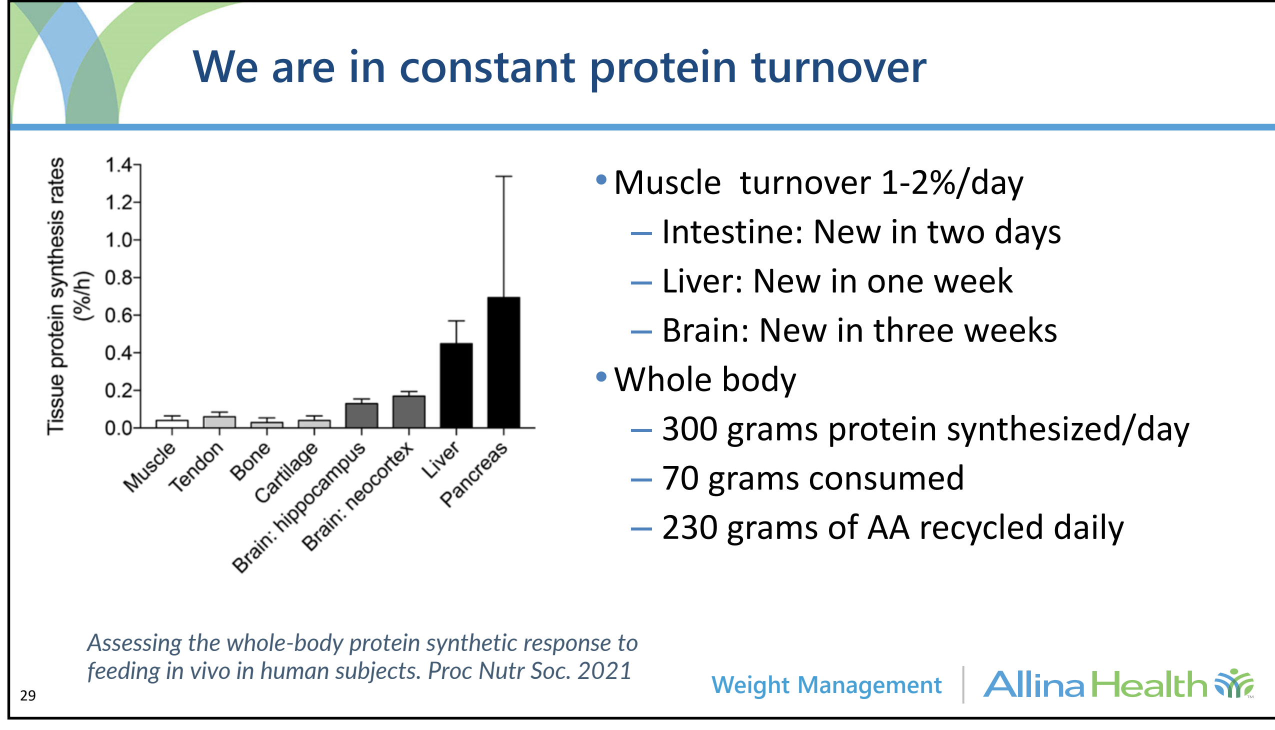
William M Rand, Peter L Pellett, Vernon R Young,Meta-analysis of nitrogen balance studies for estimating protein requirements in healthy adults123, The American Journal of Clinical Nutrition, Volume 77, Issue 1, 2003, Pages 109-127, ISSN 0002-9165, https://doi.org/10.1093/ajcn/77.1.109.

28

Weight Management

28

We are in constant protein turnover



- Muscle turnover 1-2%/day
  - Intestine: New in two days
  - Liver: New in one week
  - Brain: New in three weeks
- Whole body
  - 300 grams protein synthesized/day
  - 70 grams consumed
  - 230 grams of AA recycled daily

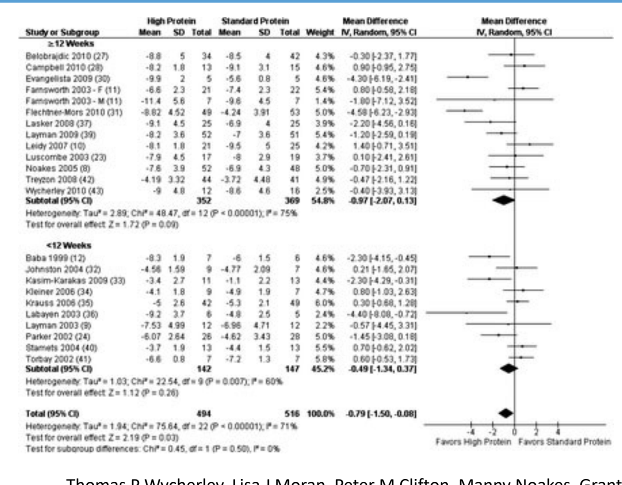
Assessing the whole-body protein synthetic response to feeding in vivo in human subjects. Proc Nutr Soc. 2021

Weight Management | Allina Health

29

29

High protein diet helps maintain FFM during weight loss



Study or Subgroup	High Protein Mean	SD	Total	Standard Protein Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
≥12 Weeks								
Belobrajdic 2010 (27)	-8.8	5	34	-8.5	4	42	4.3%	-0.30 [-2.37, 1.77]
Campbell 2010 (28)	-8.2	1.8	13	-9.1	3.1	15	4.6%	0.90 [-0.95, 2.75]
Evangelista 2009 (30)	-9.9	2	5	-5.6	0.8	5	4.6%	-4.30 [-6.19, -2.41]
Farnsworth 2003 - F (11)	-6.6	2.3	21	-7.4	2.3	22	5.4%	0.80 [-0.58, 2.18]
Farnsworth 2003 - M (11)	-11.4	5.6	7	-9.6	4.5	7	1.4%	-1.80 [-7.12, 3.52]
Flechtner-Mors 2010 (31)	-8.82	4.52	49	-4.24	3.91	53	5.0%	-4.58 [-6.23, -2.93]
Lasker 2008 (37)	-9.1	4.5	25	-6.9	4	25	3.9%	-2.20 [-4.56, 0.16]
Layman 2009 (39)	-8.2	3.6	52	-7	3.6	51	5.4%	-1.20 [-2.59, 0.19]
Leidy 2007 (10)	-8.1	1.8	21	-9.5	5	25	4.2%	1.40 [-0.71, 3.51]
Luscombe 2003 (23)	-7.9	4.5	17	-8	2.9	19	3.7%	0.10 [-2.41, 2.61]
Noakes 2005 (8)	-7.6	3.9	52	-6.9	4.3	48	5.0%	-0.70 [-2.31, 0.91]
Treyzon 2008 (42)	-4.19	3.32	44	-3.72	4.48	41	4.9%	-0.47 [-2.16, 1.22]
Wycherley 2010 (43)	-9	4.8	12	-8.6	4.6	16	2.5%	-0.40 [-3.93, 3.13]
Subtotal (95% CI)			**352**			**369**	**54.8%**	**-0.97 [-2.07, 0.13]**
Heterogeneity: Tau^2 = 2.89; Chi^2 = 48.47, df = 12 (P < 0.00001); I^2 = 75%								
Test for overall effect: Z = 1.72 (P = 0.09)								
<12 Weeks								
Baba 1999 (12)	-8.3	1.9	7	-6	1.5	6	4.6%	-2.30 [-4.15, -0.45]
Johnston 2004 (32)	-4.56	1.59	9	-4.77	2.09	7	4.6%	0.21 [-1.65, 2.07]
Kasim-Karakas 2009 (33)	-3.4	2.7	11	-1.1	2.2	13	4.4%	-2.30 [-4.29, -0.31]
Kleiner 2006 (34)	-4.1	1.8	9	-4.9	1.9	7	4.7%	0.80 [-1.03, 2.63]
Krauss 2006 (35)	-5	2.6	42	-5.3	2.1	49	6.0%	0.30 [-0.68, 1.28]
Labayen 2003 (36)	-9.2	3.7	6	-4.8	2.5	5	2.4%	-4.40 [-8.08, -0.72]
Layman 2003 (9)	-7.53	4.99	12	-6.96	4.71	12	2.2%	-0.57 [-4.45, 3.31]
Parker 2002 (24)	-6.07	2.64	26	-4.62	3.43	28	5.0%	-1.45 [-3.08, 0.18]
Stamets 2004 (40)	-3.7	1.9	13	-4.4	1.5	13	5.5%	0.70 [-0.62, 2.02]
Torbay 2002 (41)	-6.6	0.8	7	-7.2	1.3	7	5.8%	0.60 [-0.53, 1.73]
Subtotal (95% CI)			**142**			**147**	**45.2%**	**-0.49 [-1.34, 0.37]**
Heterogeneity: Tau^2 = 1.03; Chi^2 = 22.54, df = 9 (P = 0.007); I^2 = 60%								
Test for overall effect: Z = 1.12 (P = 0.26)								
Total (95% CI)			**494**			**516**	**100.0%**	**-0.79 [-1.50, -0.08]**
Heterogeneity: Tau^2 = 1.94; Chi^2 = 75.64, df = 22 (P < 0.00001); I^2 = 71%								
Test for overall effect: Z = 2.19 (P = 0.03)								
Test for subgroup differences: Chi^2 = 0.45, df = 1 (P = 0.50), I^2 = 0%								

- About 75–80% of weight loss comes from fat mass and the remaining 20–25% will be lean mass
- The loss of muscle mass during diet-induced weight loss is mitigated when protein intake is either maintained or increased

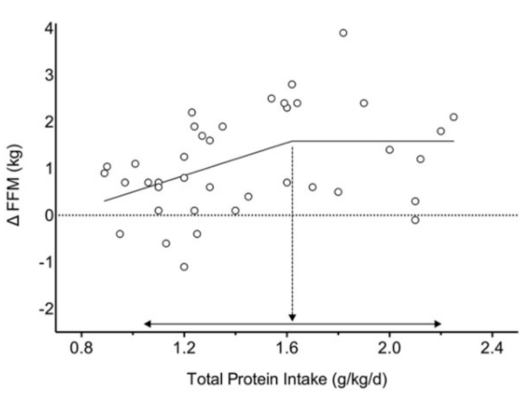
Thomas P Wycherley, Lisa J Moran, Peter M Clifton, Manny Noakes, Grant D Brinkworth, Effects of energy-restricted high-protein, low-fat compared with standard-protein, low-fat diets: a meta-analysis of randomized controlled trials123, The American Journal of Clinical Nutrition, Volume 96, Issue 6, 2012, Pages 1281-1298, ISSN 0002-9165, https://doi.org/10.3945/ajcn.112.044321.

Weight Management | Allina Health

30

30

So how much protein do I need?



- Protein intake during resistance training
  - Increased strength
  - Increased FFM
  - Increased muscle fiber cross-sectional area
- Maximized at 1.6 gm/kg

A systematic review, meta-analysis and meta-regression of the effect of protein supplementation on resistance training-induced gains in muscle mass and strength in healthy adults. Br J Sports Med. 2018

31

Weight Management | Allina Health

31

Is that enough?

- Morton et al. (2018, *British Journal of Sports Medicine*)
  - A meta-analysis of **49 studies** concluded that **1.6 g/kg of total body weight per day** maximizes muscle protein synthesis in resistance-trained individuals.
  - Higher intakes (up to **2.2 g/kg**) showed additional benefits in specific populations.
- Phillips & Van Loon (2011, *Sports Medicine*)
  - **older adults and those in a calorie deficit** need higher protein intake (~2.2–2.5 g/kg LBM) to prevent muscle loss.

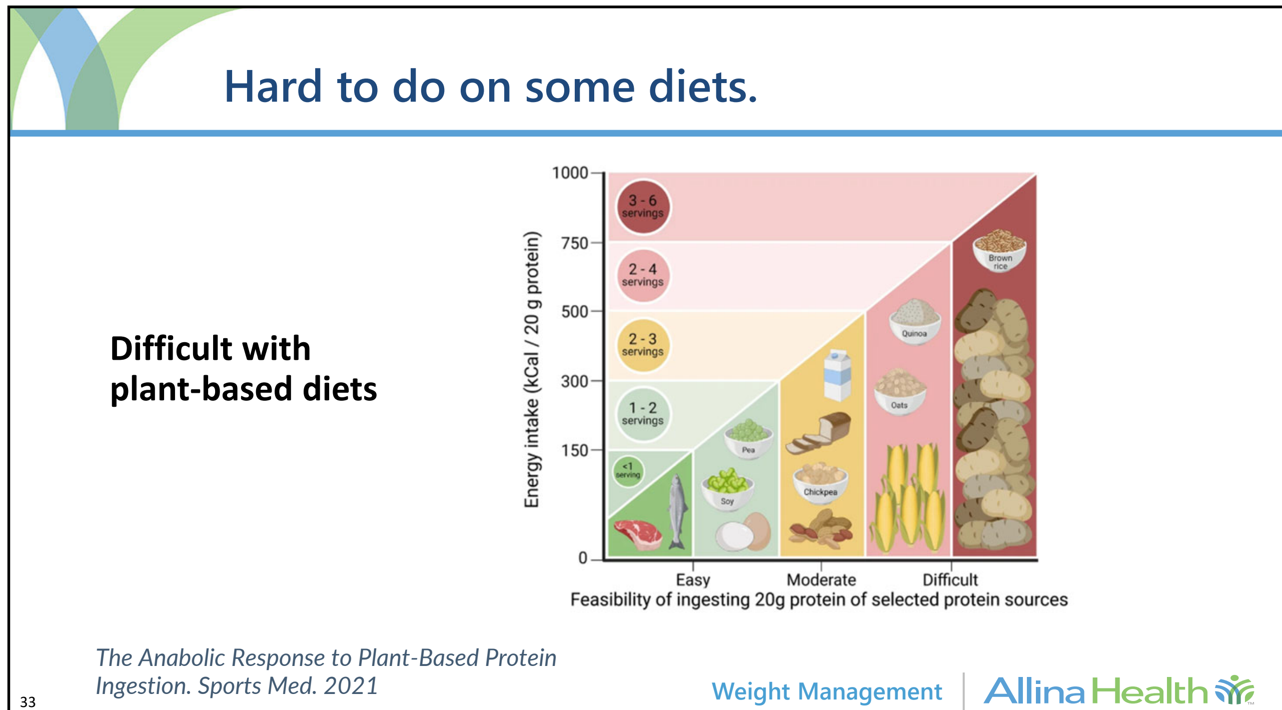
Current thinking….

- **Activity Based;**
  - **Moderate activity**: 2.0 g/kg LBM
  - **High activity/muscle building**: 2.3–3.1 g/kg LBM
  - **Longevity/fat loss focus**: 1.8–2.2 g/kg LBM
- Use LBM for obese patients
- Use Total weight for;
  - <20% BF men
  - <30% BF for women
- This all translates to about **1 gm/lb**

32

Weight Management | Allina Health

32



33

FDA Approved medications

Drug	Brand Name	Mechanism of Action	Notes
Phentermine	Stimulant	**Sympathomimetic** – stimulates norepinephrine, suppresses appetite	Most commonly prescribed weight loss drug
Orlistat	Xenical (Rx), Alli (OTC)	**Lipase inhibitor** – reduces fat absorption in intestines	Only weight loss drug available over-the-counter (OTC)
Phentermine-Topiramate ER	Qsymia	**Sympathomimetic + GABA modulator** – appetite suppression	Effective, but potential side effects include insomnia and cognitive issues
Naltrexone-Bupropion	Contrave	**Opioid antagonist + dopamine/norepinephrine reuptake inhibitor** – affects reward centers in the brain	Avoid in patients taking opioids
Liraglutide (daily injection)	Saxenda	**GLP-1 receptor agonist** – slows gastric emptying, promotes satiety	Higher dose of Victoza (T2DM)
Semaglutide (weekly injection)	Wegovy	**GLP-1 receptor agonist** – more potent than liraglutide	Also used for T2DM as Ozempic
Tirzepatide (weekly injection)	Zepbound	GLP-1 and GIP – dual agonist	Highest efficacy

34

Weight Management | Allina Health

34

Other useful medications

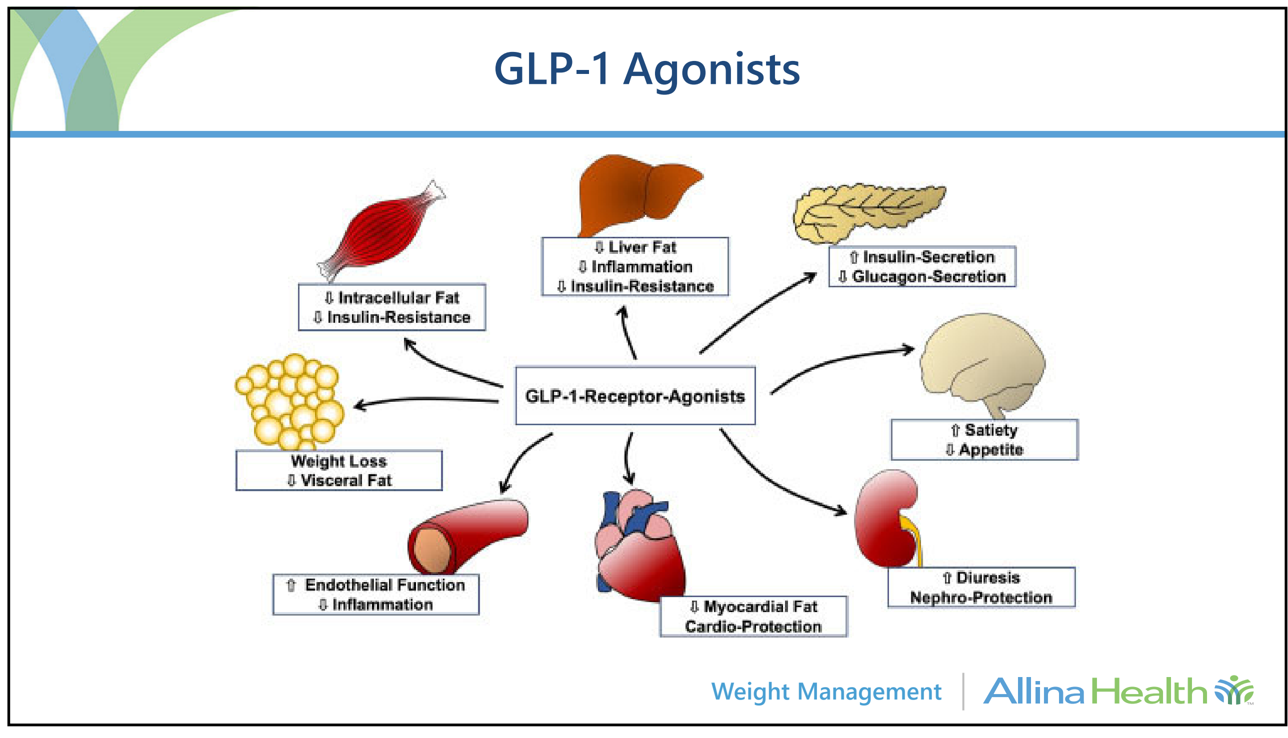
Drug	Class	Mechanism of Action	Notes
Phentermine	Stimulant	**Sympathomimetic** – stimulates norepinephrine, suppresses appetite	Most commonly prescribed weight loss drug
Metformin	Biguanide (T2DM)	Reduces hepatic glucose production, improves insulin sensitivity	Used in obesity, PCOS, and metabolic syndrome
Bupropion	Antidepressant (NDRI)	Dopamine & norepinephrine reuptake inhibition	Used alone or in **Contrave (bupropion + naltrexone)**
Naltrexone	Opioid antagonist	Blocks opioid receptors, reduces food cravings	Used alone or in **Contrave**
Topiramate	Anticonvulsant	Enhances GABA activity, reduces appetite	Used alone or in **Qsymia (phentermine + topiramate)**
Empagliflozin (Jardiance)	SGLT2 inhibitors	Block glucose reabsorption	Risk necrotizing fasciitis

35

Weight Management | Allina Health

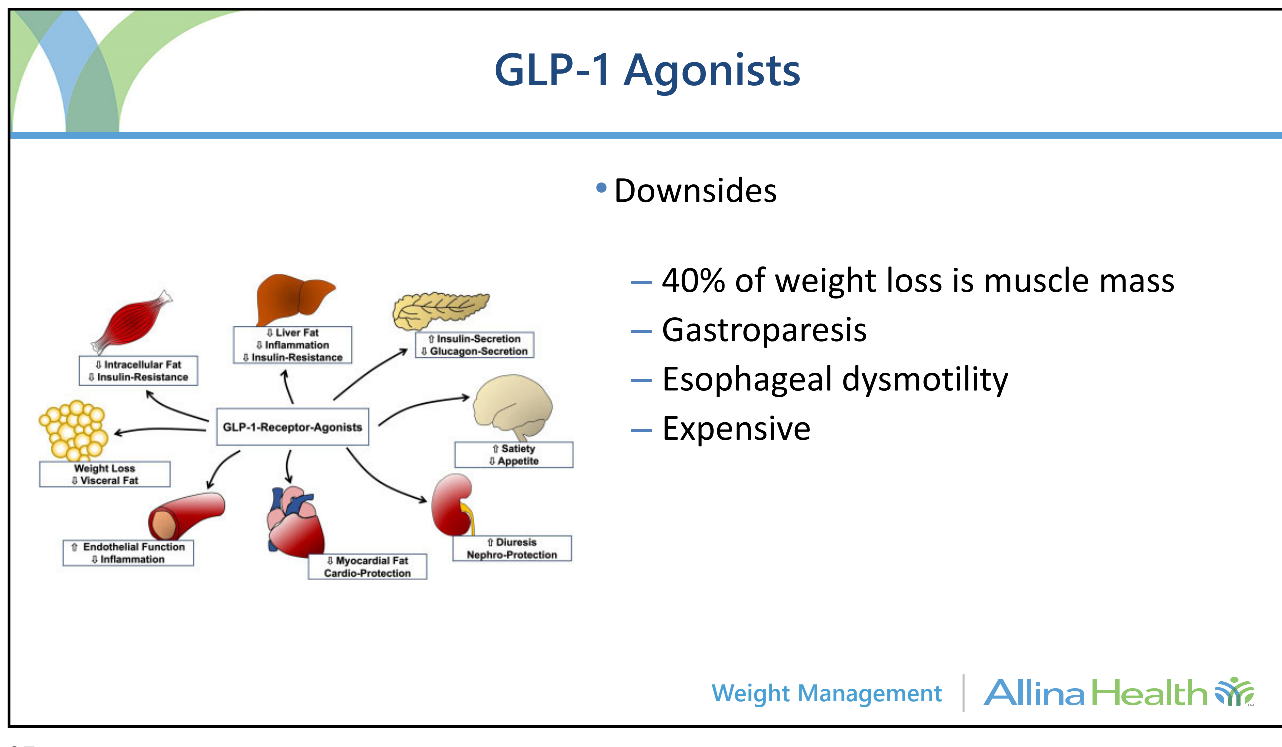
35

GLP-1 Agonists



Weight Management | Allina Health

36



37

Current GLP-1 medications

Generic Name	Trade Name(s)	Mechanism of Action	Status
Exenatide	Byetta®, Bydureon®	GLP-1 receptor agonist	Approved
Liraglutide	Victoza®, Saxenda®	GLP-1 receptor agonist	Approved
Lixisenatide	Adlyxin®	GLP-1 receptor agonist	Approved
Dulaglutide	Trulicity®	GLP-1 receptor agonist	Approved
Semaglutide	Ozempic®, Rybelsus®, Wegovy®	GLP-1 receptor agonist	Approved
Tirzepatide	Mounjaro®	Dual GIP and GLP-1 receptor agonist	Approved

38

Weight Management | Allina Health

38

Aspect	Advantages	Disadvantages
Blood Sugar Control	Effective HbA1c reduction, glucose-dependent insulin release	May not be sufficient as monotherapy for all patients
Weight Management	Promotes significant weight loss	Weight loss may plateau; some patients may not tolerate the side effects
Cardiovascular Health	Proven reductions in MACE for some agents	Benefits may vary between different GLP-1 agonists
Side Effects	Generally manageable and often decrease over time	Common gastrointestinal issues, risk of pancreatitis and thyroid concerns
Administration	Once-weekly injections available, oral options for some (e.g., semaglutide)	Injectable forms may be inconvenient for some; injection site reactions
Cost and Access	Available with insurance; some generic options emerging	High costs without insurance; accessibility issues in certain regions
Long-Term Safety	Beneficial effects on beta-cell function and potential neuroprotective benefits	Concerns about pancreatitis, thyroid tumors, and possible pancreatic cancer (ongoing research)
Patient Population	Ideal for T2DM patients needing weight loss and cardiovascular risk reduction	Not suitable for T1DM; requires careful patient selection based on medical history and risk factors

Weight Management

39

39

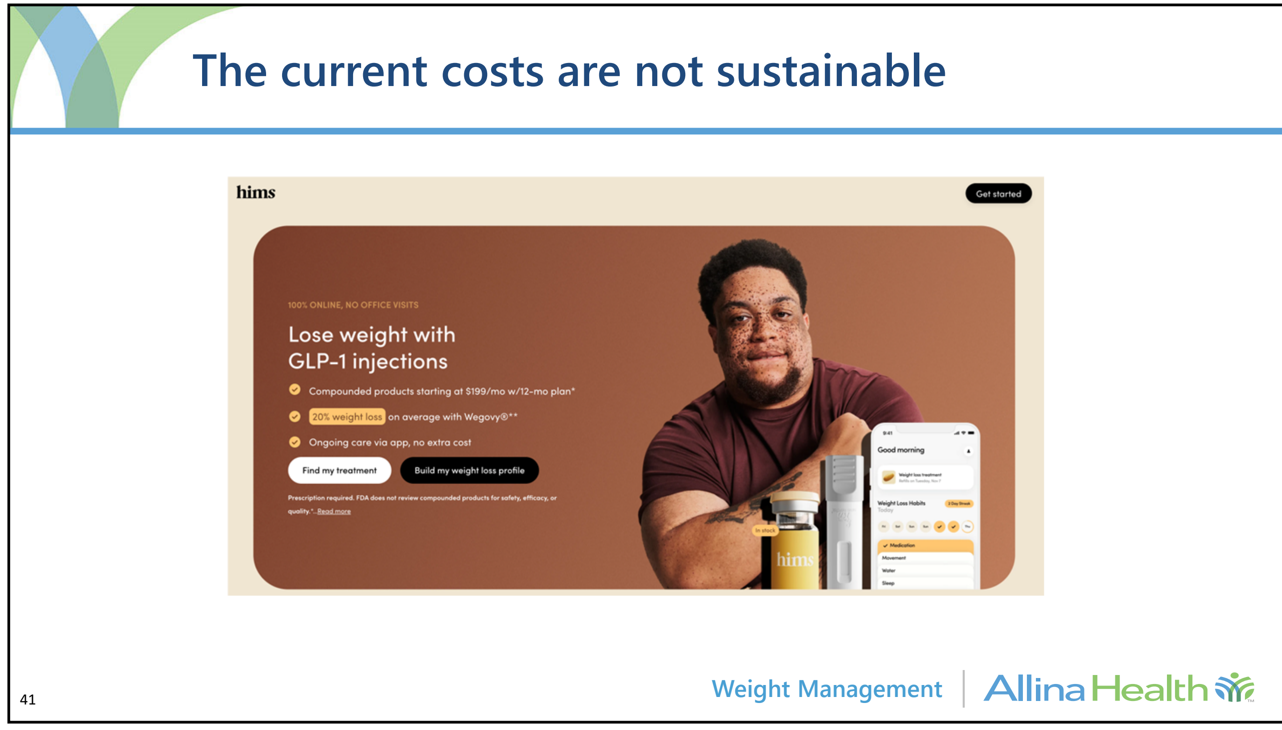
Lots of evidence for effectiveness of GLP1 medicaitons

- SELECT trial – semaglutide obesity without type 2 and MACE
- SUSTAIN-6 – Semaglutide, Type 2 and cardiovascular
- LEADER - liraglutide
- PIONEER 6 – oral semaglutide
- SURPASS – Tirzepatide vs Semaglutide
- SURMOUNT (1-4) – obesity, +type 2, lifestyle, durability, (OSA)

Weight Management | Allina Health

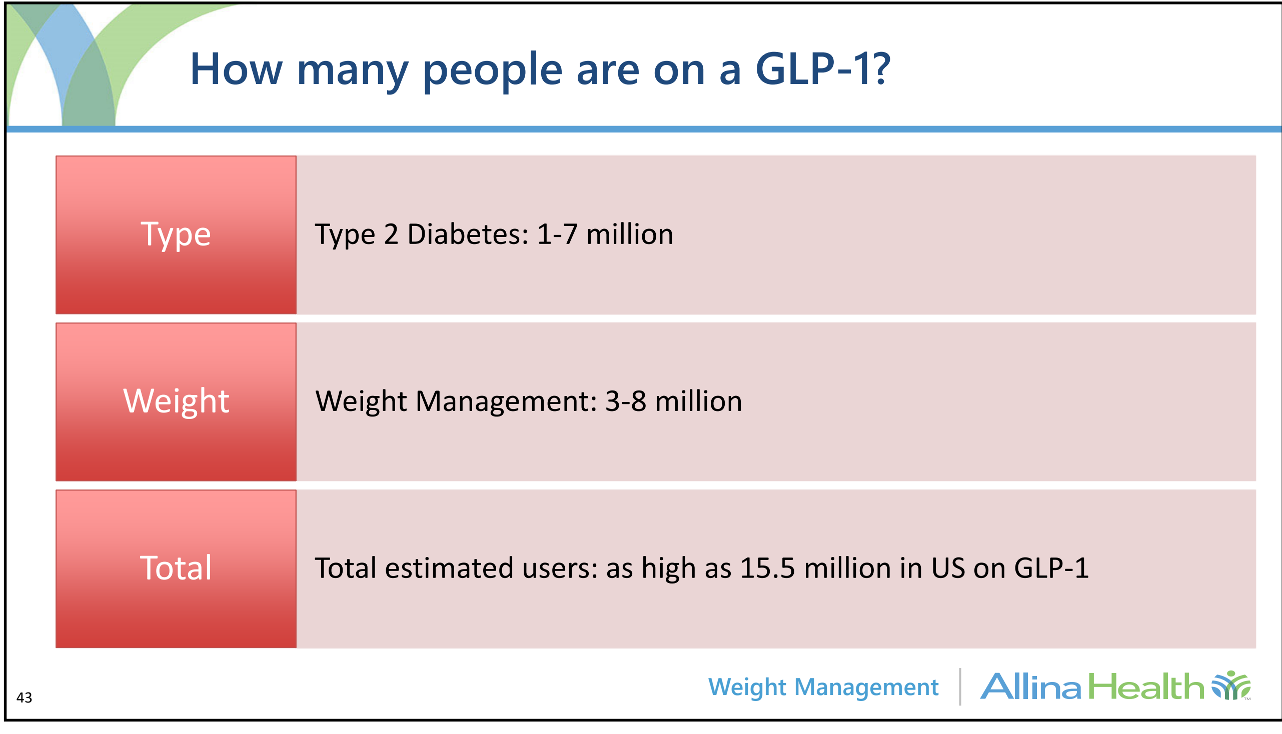
40

40



41

42



43

How many people are on a GLP-1?

The use of GLP-1 medications is projected to grow substantially, with estimates suggesting that by **2030**, up to **30 million people** in the U.S. could be on GLP-1 drugs, driven by both diabetes and obesity treatments.

44

Weight Management | Allina Health

44

So, is this a good thing?

- Increased awareness of the obesity epidemic

45

Weight Management

45

So why is this good for Bariatric Surgery?

- Increased awareness of the obesity epidemic
- Increase in the pool of potential patients

46

Weight Management

46

Adherence

- The long-term adherence to GLP-1 medications, such as semaglutide and liraglutide, is relatively low, with many patients discontinuing use within the first year.
- 45-50% of patients stop taking these medications within 12 months of starting treatment
- By two years, only about 25-29% of patients remain on GLP-1 medications, indicating significant challenges in maintaining long-term adherence to these therapies.

Do D, Lee T, Peasah SK, Good CB, Inneh A, Patel U. GLP-1 Receptor Agonist Discontinuation Among Patients With Obesity and/or Type 2 Diabetes. *JAMA Netw Open.* 2024;7(5):e2413172. doi:10.1001/jamanetworkopen.2024.13172

47

Weight Management |

47

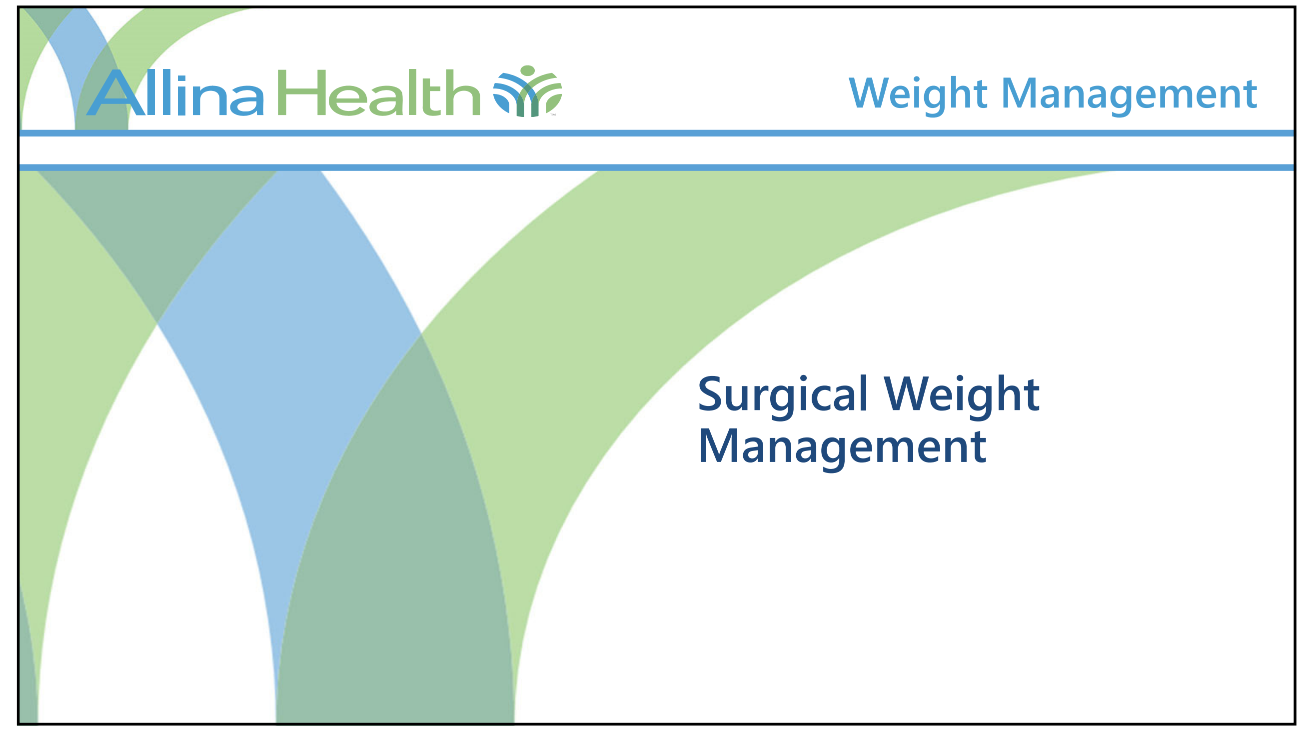
Projection for GLP-1 meds

- 5-30 million GLP-1 users in the next several years
- By two years 75-80% of users have stopped
- 3.75 – 22.5 million people who have failed a medication

48

Weight Management |

48



49

Our Surgical Program – By the numbers

- 3 Locations
- 4 Surgeons
- 4 Surgical PAs
- 18 RDs

- Arrived transfers – 182
- MWL to SWL - 186
- SWL to MWL - 135
- Procedures - 497
- Virtual Care >90%

50

Weight Management | Allina Health

50

Patient Evaluation

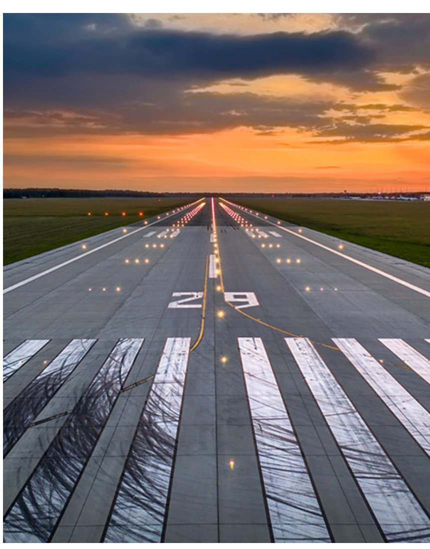
- Fill out our intake form
  - Patient can choose medical or surgical
- Meet with MD or APP
  - Discuss program (Optifast, medications, surgery)
  - Medication options
  - Labs (ECG)
- Meet with the psychologist
- RD (3-6 months of regular visits)
- PT

Weight Management | Allina Health

51

51

Surgical patients have a very long runway.



- 4-5 months quick
- 8-9 months typical
  - MD initial visit
  - 3-6 months of RD visits
  - Psychologist 1-2 visits
  - Physical Therapist
  - MD final clearance
  - Get on the OR schedule
- For some patients it can take years

Weight Management | Allina Health

52

52

Surgical Indications

- **BMI-Based Criteria**
- **BMI ≥ 40 kg/m²**, regardless of comorbidities.
- **BMI ≥ 35 kg/m²** with at least **one significant obesity-related comorbidity**, such as:
  - Type 2 Diabetes Mellitus (T2DM)
  - Hypertension
  - Obstructive Sleep Apnea (OSA)
  - Non-alcoholic Fatty Liver Disease (NAFLD)/Steatohepatitis (NASH)
  - Osteoarthritis
  - Cardiovascular disease
  - Gastroesophageal reflux disease (GERD)
- **BMI ≥ 30 kg/m²** (Class I Obesity) with **poorly controlled Type 2 Diabetes Mellitus** (endorsed by ADA and IFSO)

Weight Management | Allina Health

53

53

Surgical Indications

- **Asian and Ethnic-Specific Guidelines**
- **Lower BMI thresholds** for some populations due to increased metabolic risk at lower BMI:
  - **BMI ≥ 37.5 kg/m²** (no comorbidities)
  - **BMI ≥ 32.5 kg/m²** (with comorbidities)
- **Adolescent Indications**
  - **BMI ≥ 35 kg/m²** with significant comorbidities.
  - **BMI ≥ 40 kg/m²**, even without comorbidities.
  - Recommended for adolescents who have **reached skeletal maturity** and have **persistent severe obesity despite lifestyle and medical management**.

Weight Management | Allina Health

54

54

New Classification – WHO and CDC

Obesity Class	BMI (kg/m²) Range	Description
Normal weight	18.5 – 24.9	Healthy range
Overweight (Pre-Obesity)	25.0 – 29.9	Increased risk of metabolic disease
Obesity Class I	30.0 – 34.9	Moderate obesity
Obesity Class II	35.0 – 39.9	Severe obesity
Obesity Class III	≥ 40.0	Morbid or extreme obesity

Weight Management | Allina Health

55

55

Who are we talking about?

Proportion of US Population Eligible for Bariatric Surgery

Eligible for Bariatric Surgery 8.8%

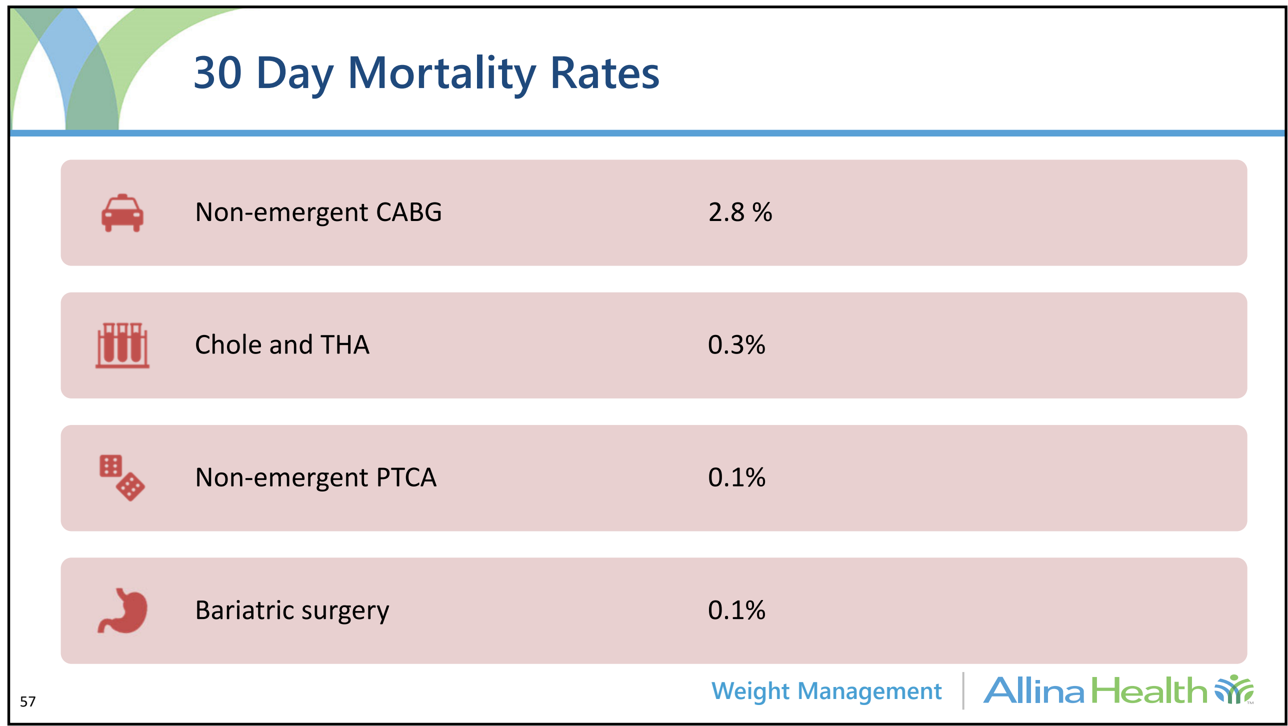
Not Eligible for Bariatric Surgery 91.2%

- ~340 million people in US
- ~30 million eligible (low end estimate)
- Liu N, Funk LM. Bariatric Surgery Trends in the U.S.: 1% is the Loneliest Number. Ann Surg. 2020 Feb;271(2):210-211

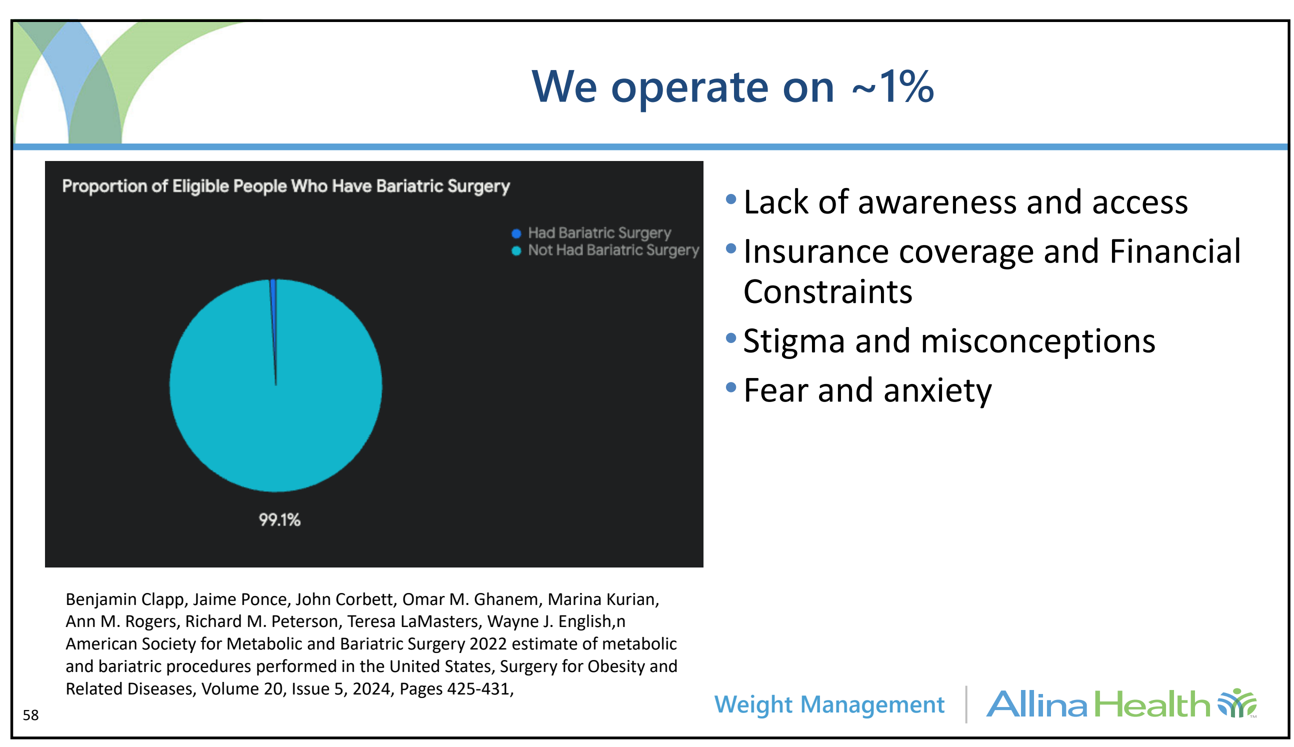
Weight Management | Allina Health

56

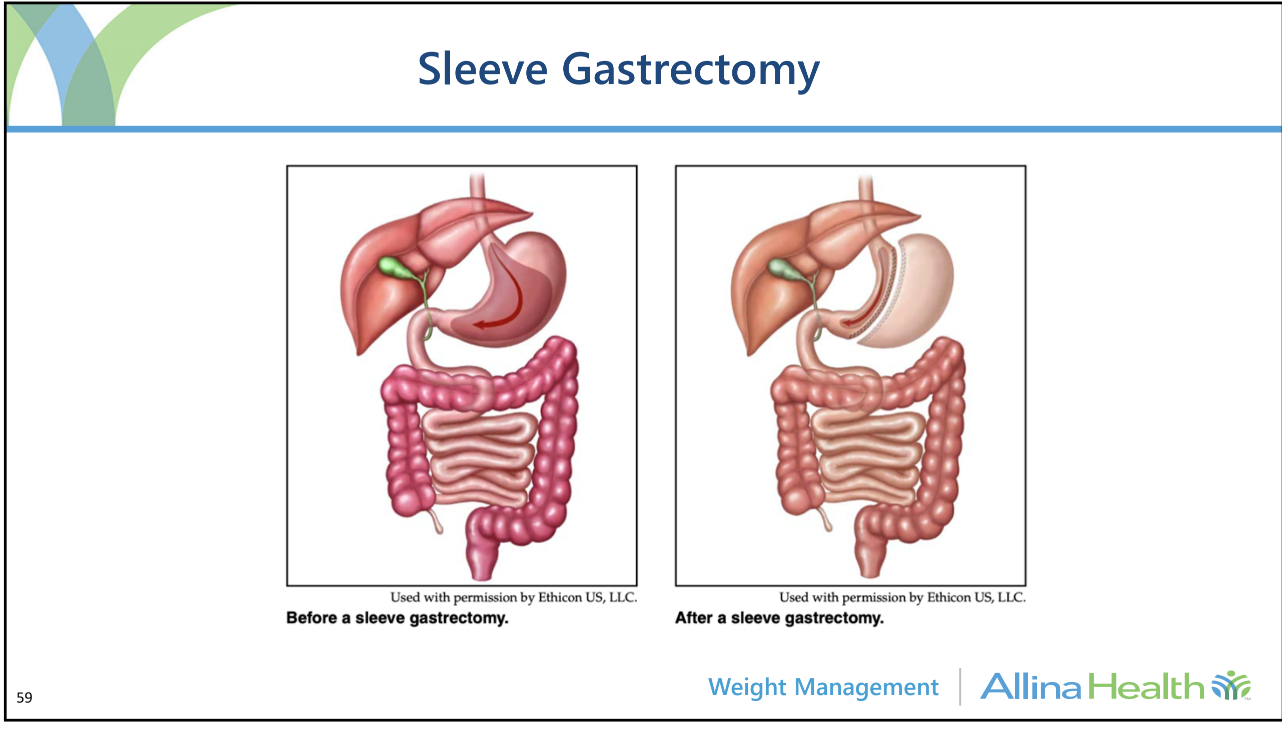
56



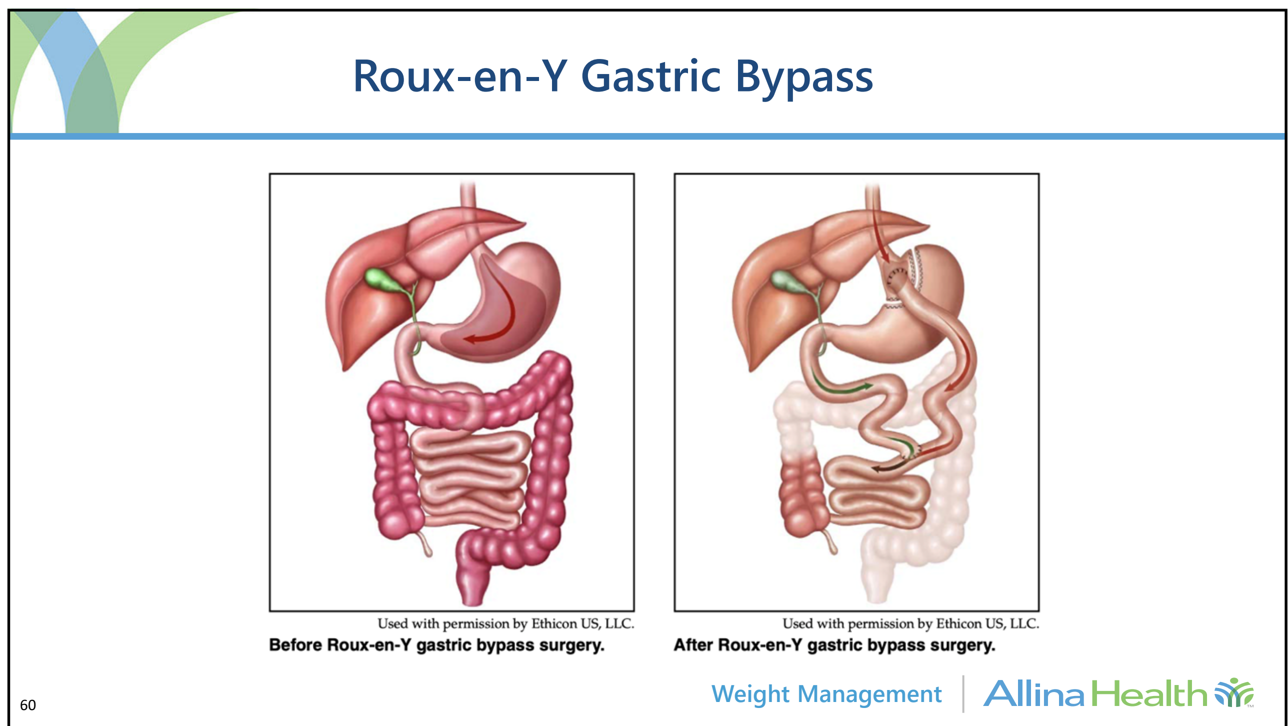
57



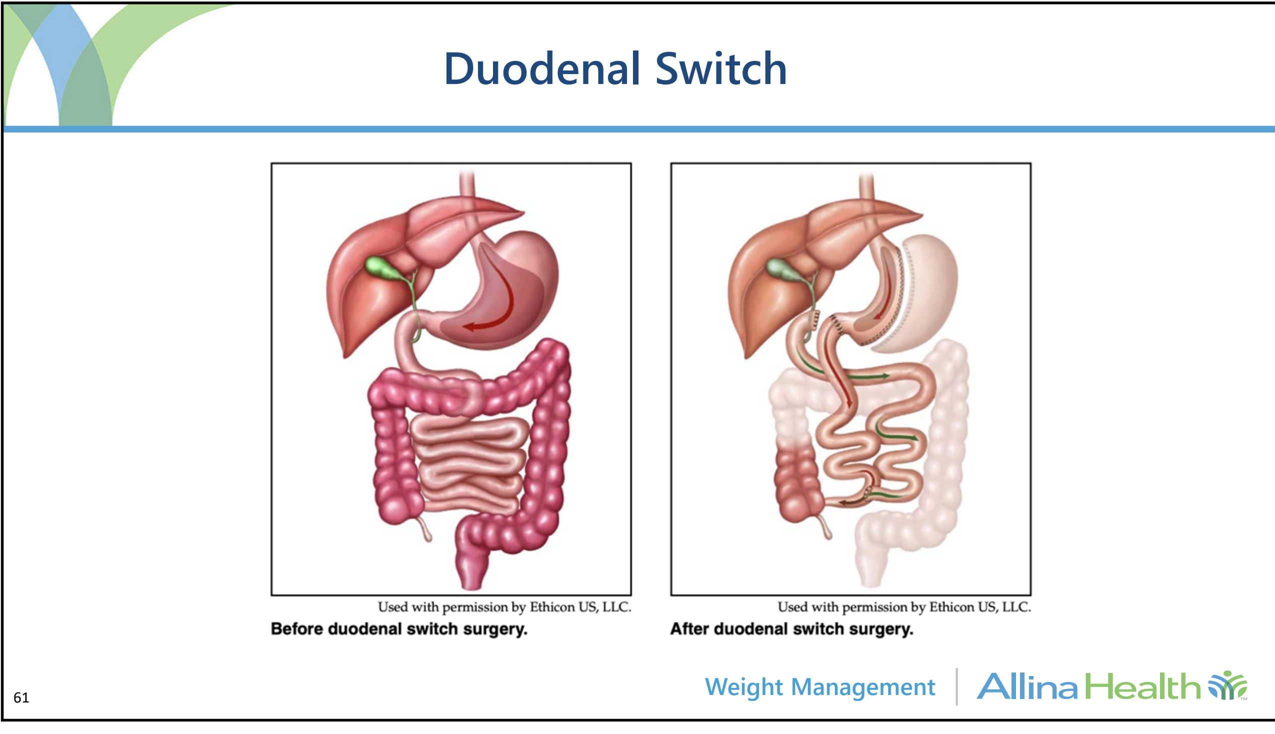
58



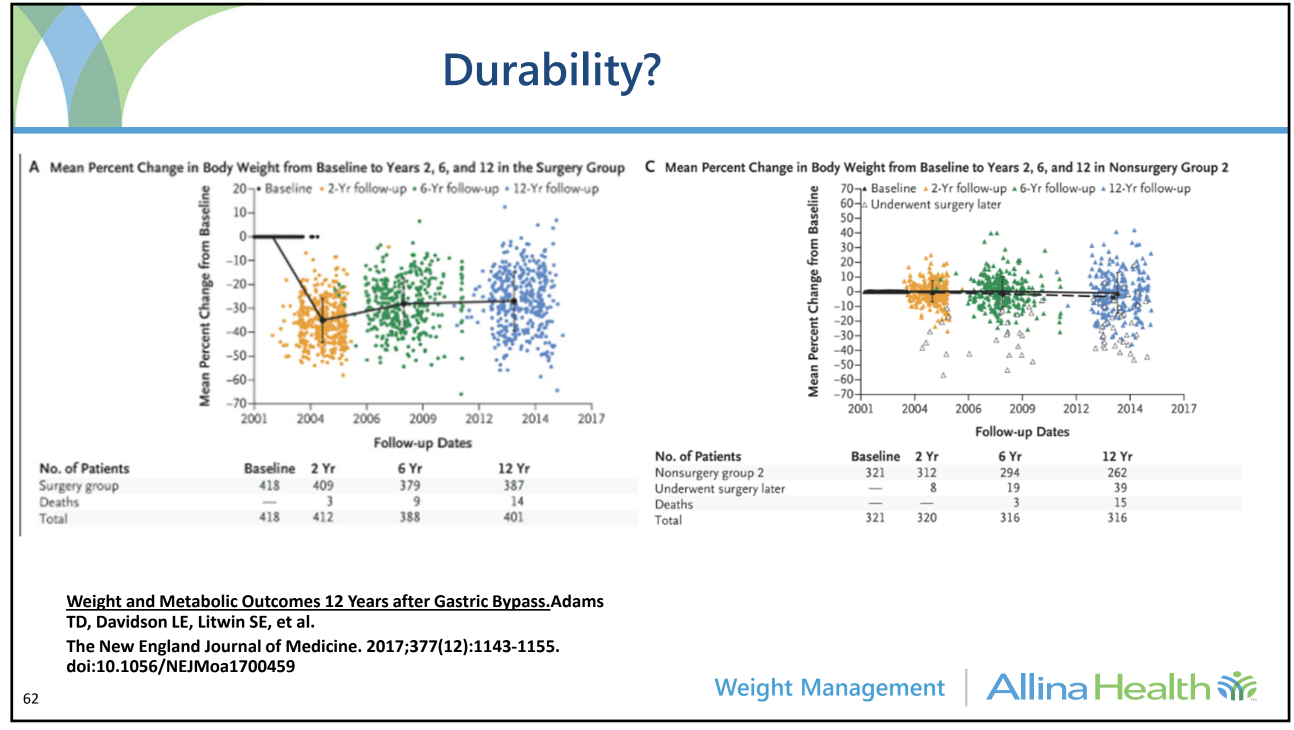
59



60



61



No. of Patients	Baseline	2 Yr	6 Yr	12 Yr
Surgery group	418	409	379	387
Deaths	—	3	9	14
Total	418	412	388	401

No. of Patients	Baseline	2 Yr	6 Yr	12 Yr
Nonsurgery group 2	321	312	294	262
Underwent surgery later	—	8	19	39
Deaths	—	—	3	15
Total	321	320	316	316

62

Does bariatric surgery work?

- Meta-analysis of 40 matched cohort studies
  - Cancer mortality 54% risk reduction
  - Cardiovascular mortality 62% risk reduction
  - Diabetes mortality 75% risk reduction
  - MACE 42% risk reduction
  - A-fib 21% risk reduction
  - Heart failure 48% risk reduction
  - Stroke 25% risk reduction

Cui B, Wang G, Li P, Li W, Song Z, Sun X, Zhu L, Zhu S. Disease-specific mortality and major adverse cardiovascular events after bariatric surgery: a meta-analysis of age, sex, and BMI-matched cohort studies. Int J Surg. 2023 Mar 1;109(3):389-400

63

Weight Management

63

Long term risks

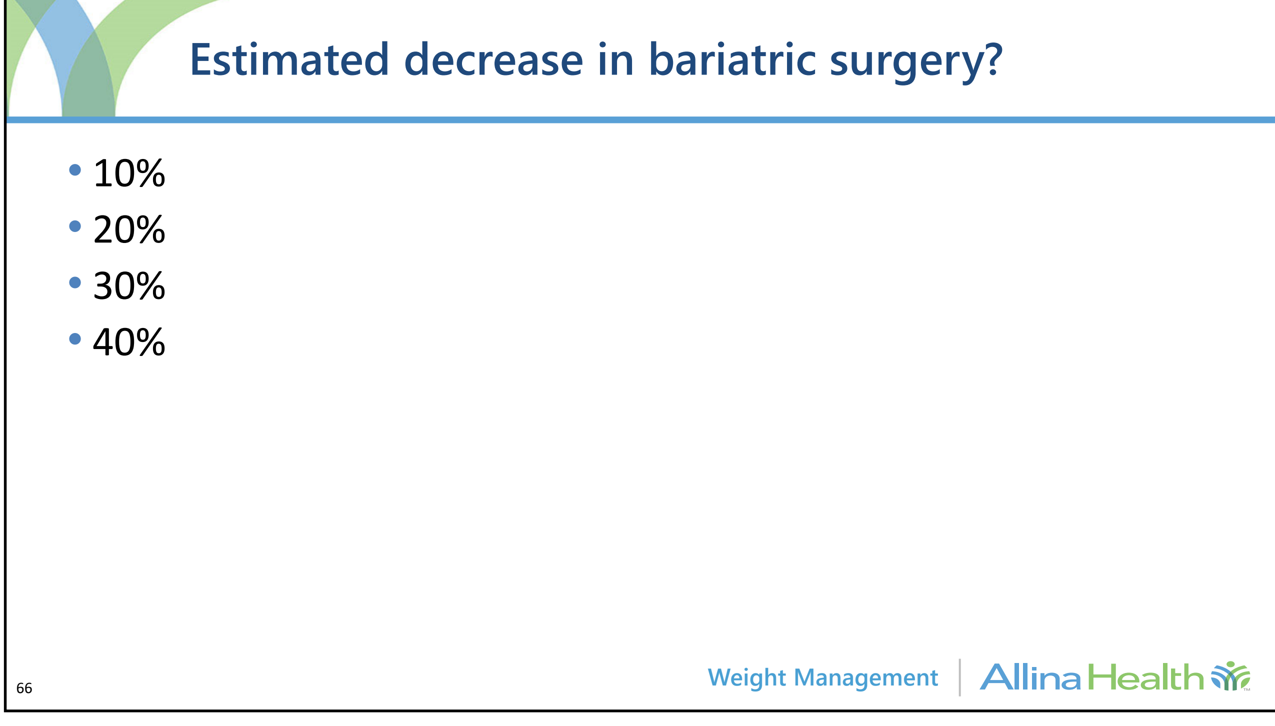
- Nutritional deficiencies – iron, B12, vit D, calcium
- Bone fracture – serial Dexa
- Late dumping - nesidioblastosis
- Addiction transfer
- Suicide
- Accidental death

64

Weight Management

64

65



66

Estimated decrease in bariatric surgery?

- ~~10%~~
- ~~20%~~
- ~~30%~~
- 40% ↓

Weight Management | Allina Health

67

67

The impact on surgery isn't all bad though.

- Potential alternative
- Pre-surgery tool
  - Help high risk patients lose weight prior to surgery
- Treatment for weight regain
- Could lead to an overall increase in awareness

Weight Management | Allina Health

68

68

Overview

Aspect	GLP-1 medications	Bariatric Surgery
Overview	Injectable or oral medications (e.g., semaglutide, liraglutide) that mimic the GLP-1 hormone to regulate appetite, enhance insulin secretion, and slow gastric emptying.	Surgical procedures (e.g., gastric bypass, sleeve gastrectomy, adjustable gastric banding) aimed at restricting food intake and/or altering digestion to achieve weight loss.
Benefits	- **Effective Weight Loss:** 10-20% of body weight - **Non-Invasive:** Avoids surgical risks - **Additional Health Benefits:** Improves type 2 diabetes, hypertension, dyslipidemia - **Flexibility:** Adjustable or discontinuable based on response - **Less Recovery Time:** Minimal disruption to daily activities	- **Significant Weight Loss:** 25-35% of body weight - **Long-Term Efficacy:** More permanent weight loss - **Improvement/Resolution of Comorbidities:** Type 2 diabetes, hypertension, sleep apnea - **Enhanced Quality of Life:** Improved mobility, self-esteem - **Reduced Medication Use:** Less need for diabetes and other obesity-related drugs

69

Weight Management | Allina Health

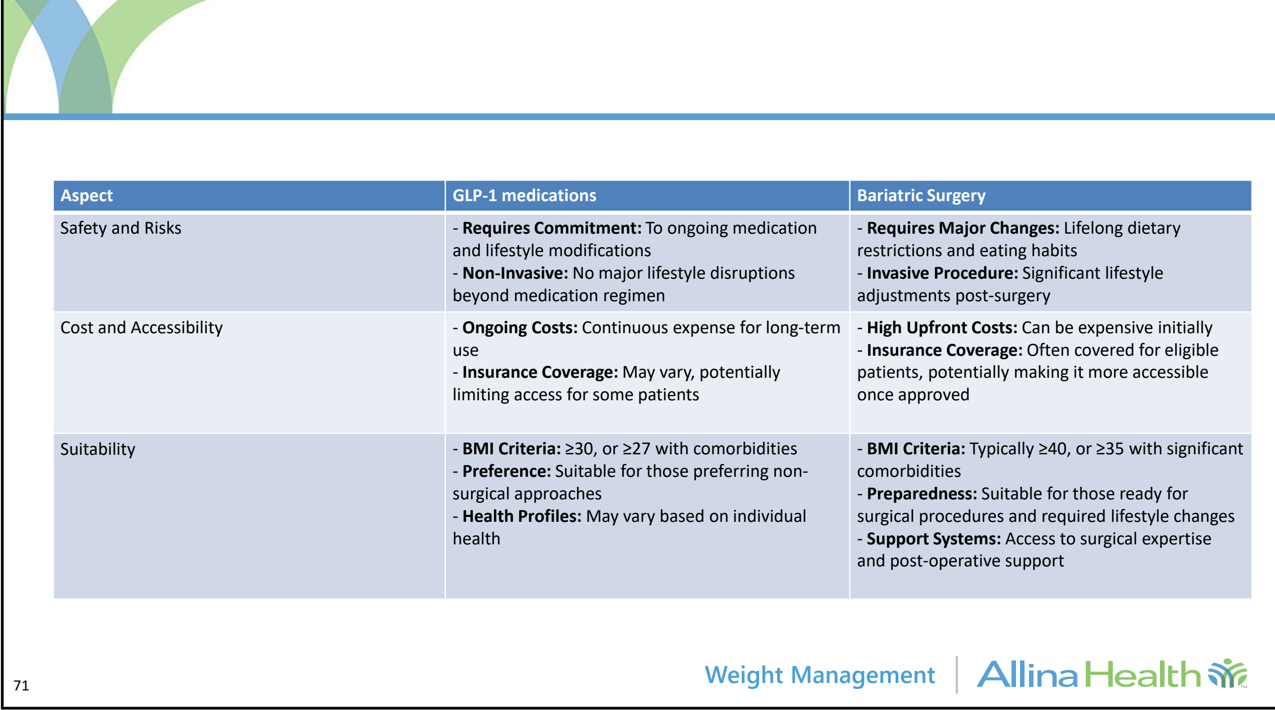
69

Aspect	GLP-1 medications	Bariatric Surgery
Drawbacks	- **Side Effects:** Nausea, vomiting, diarrhea, constipation - **Cost:** Can be expensive with variable insurance coverage - **Long-Term Commitment:** Ongoing use required to maintain weight loss - **Injection Requirement:** Some require injections - **Limited Eligibility:** Effectiveness and safety may vary based on individual health profiles	- **Surgical Risks:** Infection, bleeding, blood clots, anesthesia reactions - **Lifestyle Changes:** Significant, lifelong dietary and eating habit modifications - **Recovery Period:** Time off work and limited physical activity initially - **Cost:** High upfront costs, though insurance may cover for eligible patients - **Long-Term Complications:** Dumping syndrome, hernias, potential need for additional surgeries - **Psychological Impact:** May require support to adjust to body changes and post-surgical lifestyle
Effectiveness	- **Weight Loss:** Significant but typically less than surgery - **Best Suited For:** Those not qualifying for or preferring to avoid surgery	- **Weight Loss:** More substantial and sustained compared to medications - **Long-Term Success:** Higher likelihood of maintaining reduced weight over time

70

Weight Management | Allina Health

70



Aspect	GLP-1 medications	Bariatric Surgery
Safety and Risks	- **Requires Commitment:** To ongoing medication and lifestyle modifications - **Non-Invasive:** No major lifestyle disruptions beyond medication regimen	- **Requires Major Changes:** Lifelong dietary restrictions and eating habits - **Invasive Procedure:** Significant lifestyle adjustments post-surgery
Cost and Accessibility	- **Ongoing Costs:** Continuous expense for long-term use - **Insurance Coverage:** May vary, potentially limiting access for some patients	- **High Upfront Costs:** Can be expensive initially - **Insurance Coverage:** Often covered for eligible patients, potentially making it more accessible once approved
Suitability	- **BMI Criteria:** ≥30, or ≥27 with comorbidities - **Preference:** Suitable for those preferring non-surgical approaches - **Health Profiles:** May vary based on individual health	- **BMI Criteria:** Typically ≥40, or ≥35 with significant comorbidities - **Preparedness:** Suitable for those ready for surgical procedures and required lifestyle changes - **Support Systems:** Access to surgical expertise and post-operative support

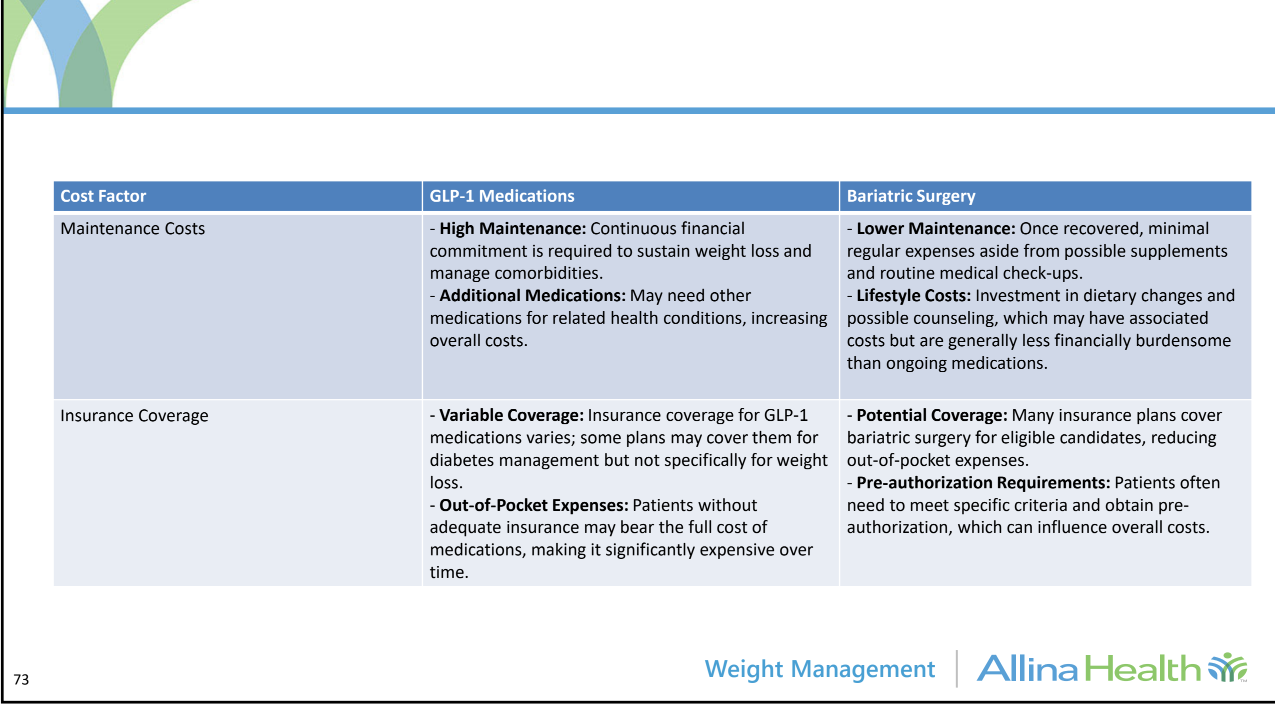
71

Cost Factor	GLP-1 Medications	Bariatric Surgery
Initial Costs	- **Lower Initial Expense:** No surgical costs. - **Medication Costs:** Typically range from **$700 to $1,200 per month** without insurance. - **Insurance Coverage:** Varies widely; some plans may cover part of the cost, while others may not cover GLP-1 medications for weight loss.	- **High Upfront Expense:** Typically ranges from **$15,000 to $25,000** in the United States. - **Insurance Coverage:** Often partially or fully covered for eligible patients (e.g., BMI ≥40 or ≥35 with comorbidities). - **Additional Costs:** Pre-surgical consultations, tests, and post-operative care may add to the total expense.
Ongoing Costs	- **Continuous Expense:** Requires ongoing purchase of medications to maintain weight loss, leading to **$8,400 to $14,400 annually** without insurance. - **Potential for Increasing Costs:** Prices may rise over time, and long-term use is typically necessary to sustain benefits.	- **Minimal Long-Term Costs:** Post-surgery follow-ups, possible vitamin or mineral supplements (generally **$100 to $500 annually**). - **Potential Additional Surgeries:** In some cases, revisional surgeries may be needed, adding to long-term expenses.

72

Weight Management | Allina Health

72



Cost Factor	GLP-1 Medications	Bariatric Surgery
Maintenance Costs	- **High Maintenance:** Continuous financial commitment is required to sustain weight loss and manage comorbidities. - **Additional Medications:** May need other medications for related health conditions, increasing overall costs.	- **Lower Maintenance:** Once recovered, minimal regular expenses aside from possible supplements and routine medical check-ups. - **Lifestyle Costs:** Investment in dietary changes and possible counseling, which may have associated costs but are generally less financially burdensome than ongoing medications.
Insurance Coverage	- **Variable Coverage:** Insurance coverage for GLP-1 medications varies; some plans may cover them for diabetes management but not specifically for weight loss. - **Out-of-Pocket Expenses:** Patients without adequate insurance may bear the full cost of medications, making it significantly expensive over time.	- **Potential Coverage:** Many insurance plans cover bariatric surgery for eligible candidates, reducing out-of-pocket expenses. - **Pre-authorization Requirements:** Patients often need to meet specific criteria and obtain pre-authorization, which can influence overall costs.

73

GLP-1 medications in development.

Medication	Mechanism of Action	Manufacturer	Clinical Phase
Orforglipron	Oral, non-peptide GLP-1 receptor agonist	Eli Lilly	Phase 3
Efpeglenatide	Long-acting GLP-1 receptor agonist	Sanofi	Phase 3
Retatrutide	Targets GLP-1, GIP, and glucagon receptors	Eli Lilly	Early trials
Mazdutide	Dual GLP-1 and GCGR agonist	Innovent Biologics	Phase 2
Cagrilintide	Amylin analog	Novo Nordisk	Phase 2
Setmelanotide	MC4R agonist	Rhythm Pharmaceuticals	Approved for rare genetic obesity disorders, investigated for broader use

74 Weight Management | Allina Health

74

Program Growth

Measures	2019	2020*	2021	2022	2023	2024
# of incoming referrals	5,043	3,968	6,681	7,713	10,045	11465
# clinic visits	21,361	17,554	21,198	26,823	44,527	60326

Weight Management | Allina Health

75

Program Growth

Measures	2019	2020*	2021	2022	2023	2024
Surgical procedures	569	391	407	630	743	497
Surgeons	5	3	3	4	4	4
MWL APP	4	4	7	9	12	17
RD	8	9	8	12	14	18

Weight Management | Allina Health

76

Patient Transition from MWL to SWL

2016	2017	2018	2019	2020	2021	2022	2023	2024
22	36	54	53	51	?	69	94	104

Weight Management | Allina Health

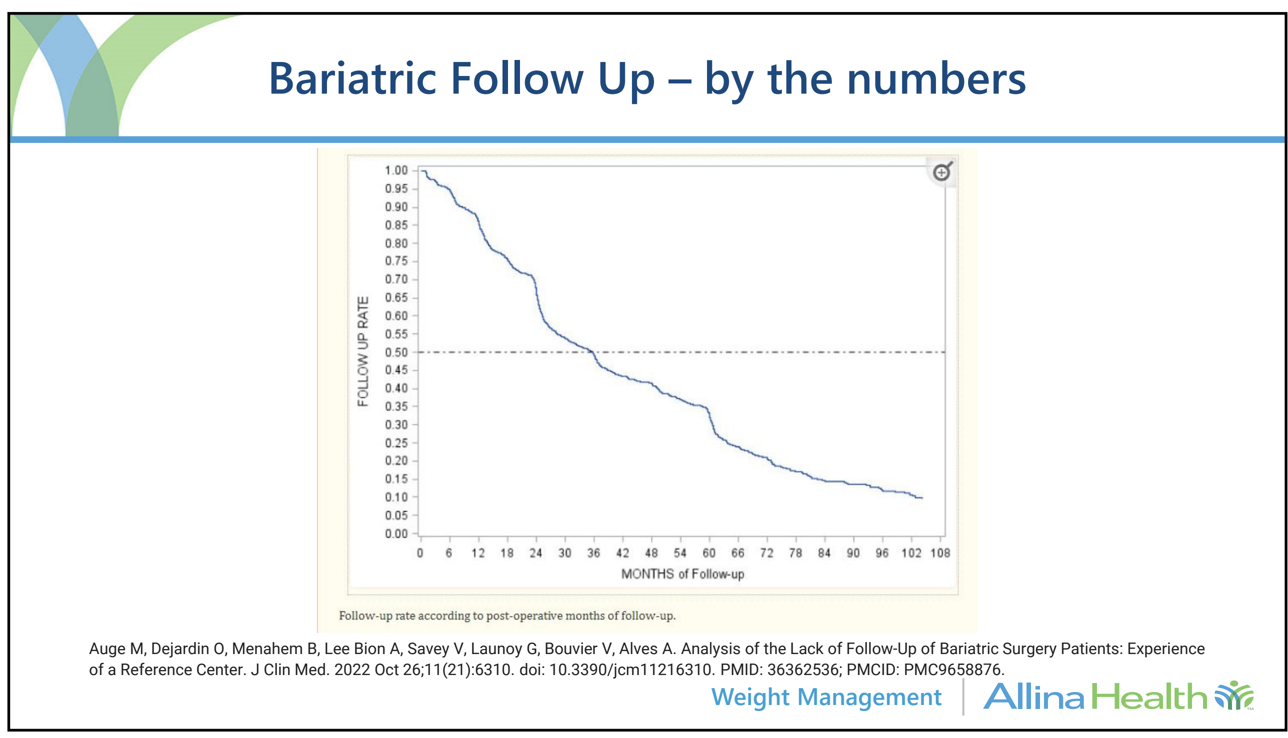
77

Medical growth outpaces surgical

Measures	2020*	2021	2022	2023	2024
MWL intakes completed	240	1261	1862	3251	4417
SWL intakes completed	177	768	805	892	555
Overall percent of intakes that are MWL	45%	58%	67%	76%	86.4%

Weight Management | Allina Health

78



79

80

Lifestyle After Care

- Diet
- Exercise
- Sleep
- Stress Reduction
- Social Connectivity

Weight Management | Allina Health

81

81

MWL is an investment in the future

2022

What year did they enter MWL

- 2014 - 1
- 2015 - 1
- 2016 - 5
- 2017 - 5
- 2018 - 10
- 2019 - 16
- 2020 - 16
- 2021 - 17
- 2022 - 6
- 2023 - NA

2023

What year did they enter MWL

- 2014 - 0
- 2015 - 4
- 2016 - 4
- 2017 - 4
- 2018 - 7
- 2019 - 15
- 2020 - 8
- 2021 - 37
- 2022 - 24
- 2023 - 6

Weight Management | Allina Health

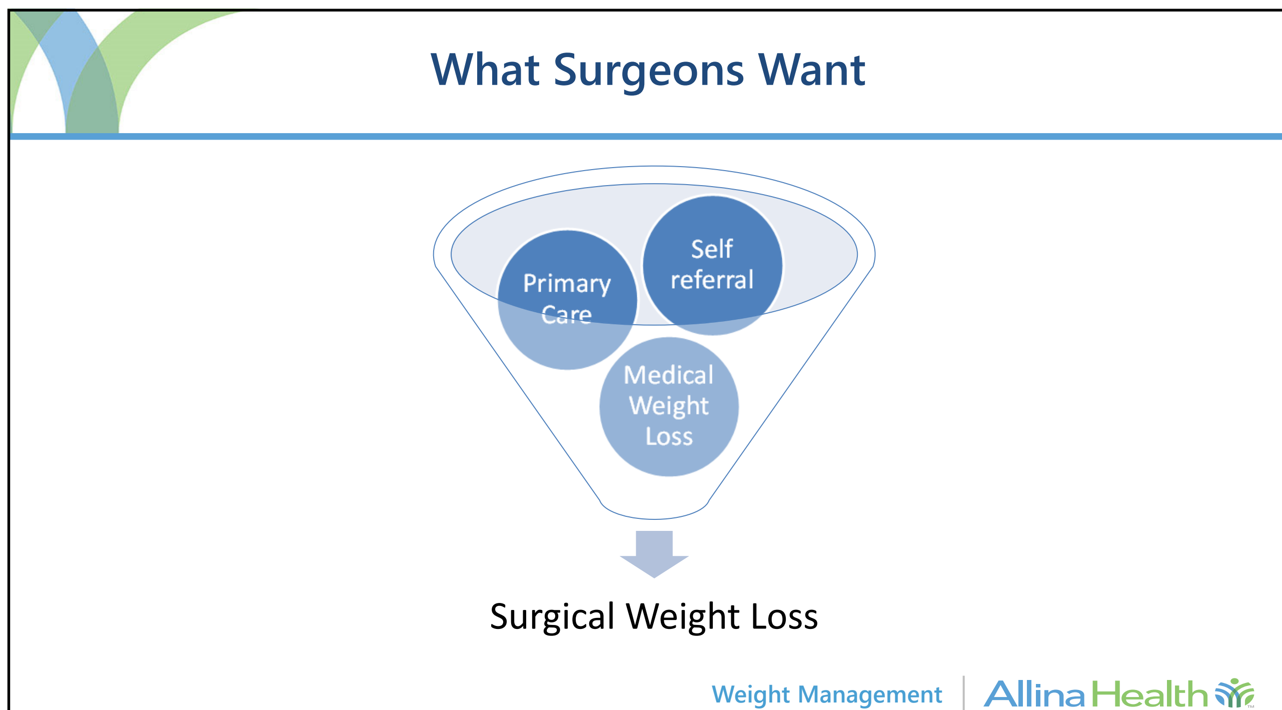
82

Key Takeaways

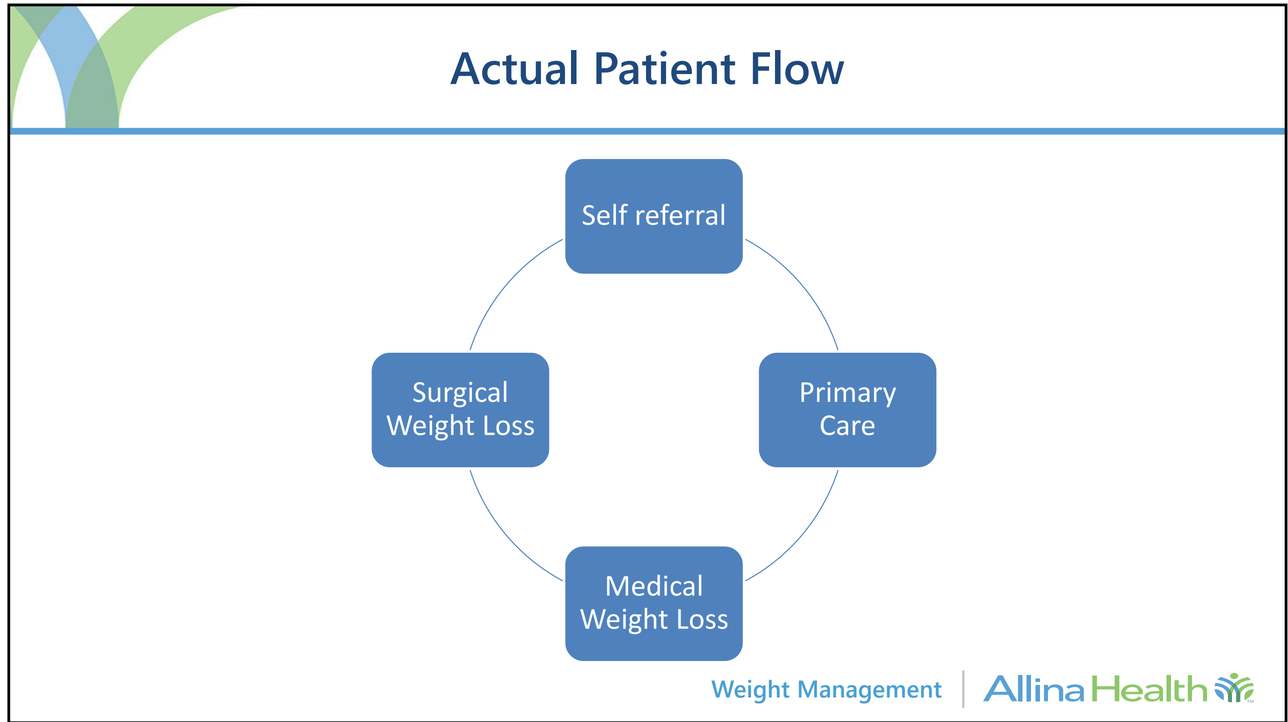
- ~15% of MWL patients eventually transition to surgery
- You have to offer patients something of value.
  - Rethink the problem. Why do patients not return for follow up?
- You can't push patients into surgery, or you will push them away.
  - Surgery is a very personal decision. It can't be rushed
- You need to eliminate barriers to entry for bariatric care.
  - Do you really need to see that patient in person?
- You need to eliminate barriers between medical and surgical.
  - Medications are great tools, but does it make sense for surgeons?

Weight Management | Allina Health

83



84



85

Tirzepatide and OSA

- Dec 20, 2024 - Food and Drug Administration (FDA) approved **Zepbound (tirzepatide)** as the first medication for treating moderate to severe OSA in adults with obesity.

Weight Management | Allina Health

86

86

DTC (direct to consumer)

- Jan 2024
- Eli Lilly introduced LillyDirect
  - Telehealth
  - Home delivery
  - Affordability – savings cards
- Feb 2025
  - 2.5 mg dose - $349 per month
  - 5 mg dose - $499 per month
  - 7.5 mg ($599) $499 per month
  - 10 mg ($699) $499 per month

87

Weight Management | Allina Health

87

Retatrutide

Drug	Mechanism	Max Weight Loss (%)	Duration for Max Loss (weeks)
Retatrutide	GLP-1/GIP/Glucagon	24.2	48
Tirzepatide (Mounjaro/Zepbound)	GLP-1/GIP	22.5	72
Semaglutide (Wegovy)	GLP-1	16	68
Liraglutide (Saxenda)	GLP-1	8	56

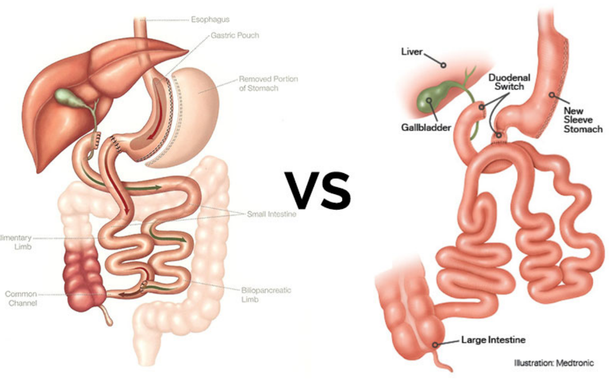
88

Weight Management | Allina Health

88

SADI-S (Single Anastomosis Duodeno-ileal bypass)

Lower risk of malabsorption and nutritional deficiencies with similar metabolic benefits



Weight Management | Allina Health

89

89

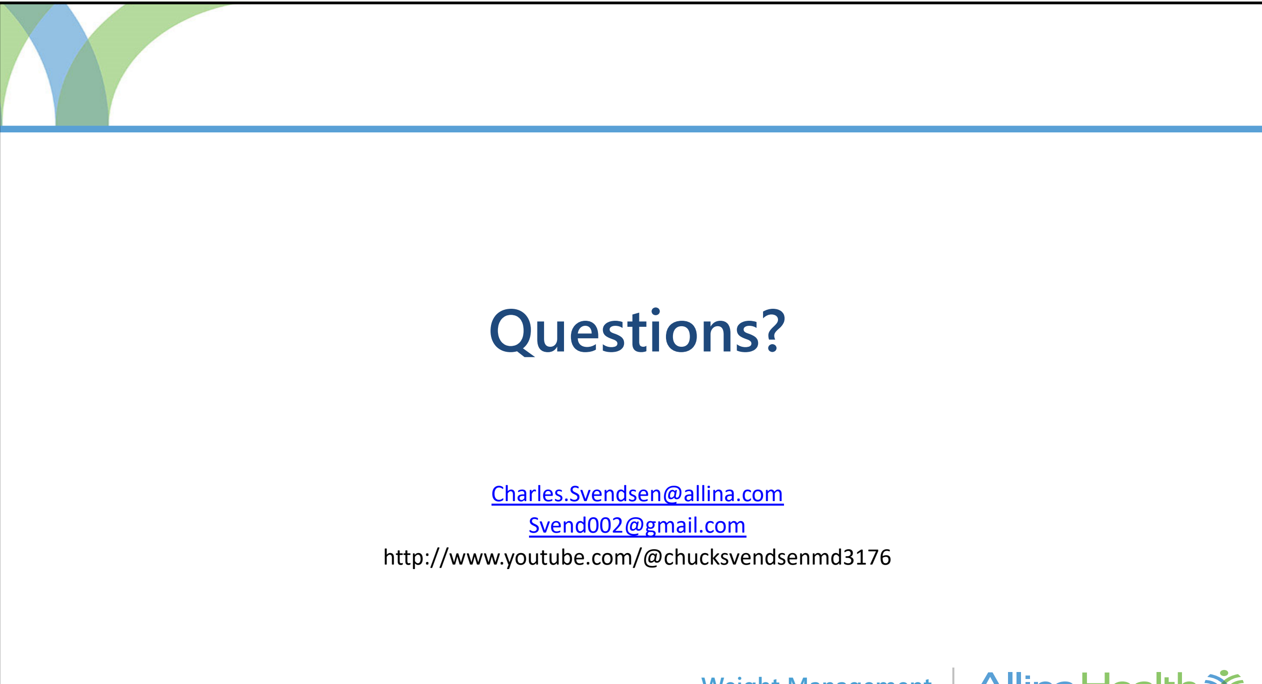
Conclusions

- Obesity is a disease of excess energy storage which predisposes patients to other chronic diseases
- Chronic disease requiring multimodal therapy
- Treatment benefits from a multidisciplinary team approach
- Popularity of GLP-1 medications is at a high
- GLP-1s are raising an awareness of obesity treatment
- There will be more meds coming

Weight Management | Allina Health

90

90



91

Thank You!

Charles.Svendsen@allina.com
Svend002@gmail.com
http://www.youtube.com/@chucksvendsenmd3176

Weight Management | Allina Health

92