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Obesity Medicine

Overview and pharmacotherapy

Minneapolis Heart Institute

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(now “Geriatrics, Palliative and Primary Care”)

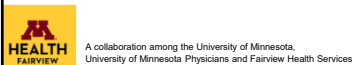


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Goals

- At the completion of this activity, the participants should better be able to:
 1. Identify all anti-obesity pharmacotherapy options.
 2. Discuss prescribing considerations and options.
 - Comfort prescribing the GLP-1 receptor agonists
 3. Identify referral options.



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Disclosures

- No personal financial disclosures
- K23 from NIDDK
- Will be discussing off-label use of medications



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Overview

- Physiologic basis of obesity
- Prevalence
- Stigma
- Physiologic response to weight loss
- Pillars of obesity treatment
 - Sleep
 - medications that cause weight gain
 - Behavior change
 - Food intake
 - Stress
 - medications that treat obesity



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Obesity

- Dysregulation of the energy regulatory system
 - Complex
 - Multi-factorial, individual
- Defined as a disease in 2013
 - Important to gain coverage for services
 - Important to distinguish it from a behavior or fault
- Try to use patient-centered language
 - “Patients with obesity” rather than “Obese patients” (like diabetes, cancer)



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Definition

- Overweight = BMI of $\geq 25 \text{ kg/m}^2$ and $< 30 \text{ kg/m}^2$
 - Asian Decent: $\geq 23 \text{ kg/m}^2$
- Class I Obesity = BMI $\geq 30 \text{ kg/m}^2$ and $< 35 \text{ kg/m}^2$
 - Asian Decent: $\geq 27.5 - < 32.4 \text{ kg/m}^2$
- Class II Obesity = BMI $\geq 35 \text{ kg/m}^2$ and $< 40 \text{ kg/m}^2$
 - Asian Decent: $\geq 32.5 - < 37.4 \text{ kg/m}^2$
- Class III Obesity = BMI $\geq 40 \text{ kg/m}^2$
 - Asian Decent: $\geq 37.5 \text{ kg/m}^2$
- Waist ≥ 35 inches in women (31.5 Asian), ≥ 40 inches men (35 Asian)
 - indicates central adiposity and increased risk for cardiometabolic disease.



1. Garvey WT, Mechanick JL, Brett EM, et al. AMERICAN ASSOCIATION OF CLINICAL ENDOCRINOLOGISTS AND AMERICAN COLLEGE OF ENDOCRINOLOGY COMPREHENSIVE CLINICAL PRACTICE GUIDELINES FOR MEDICAL CARE OF PATIENTS WITH OBESITY. *Endocrine practice : official journal of the American College of Endocrinology and the American Association of Clinical Endocrinologists*. 2016;22 Suppl 3:1-203.

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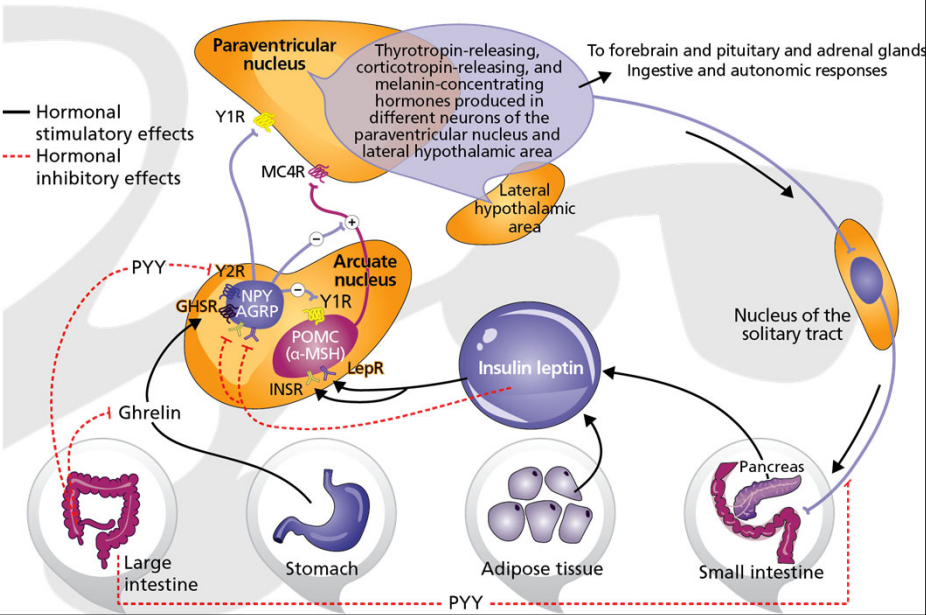
The Gut Brain Connection is influential

Hypothalamic Injury Diminishes Signaling to Cortex and NTS, Leading to Greater Weight Gain

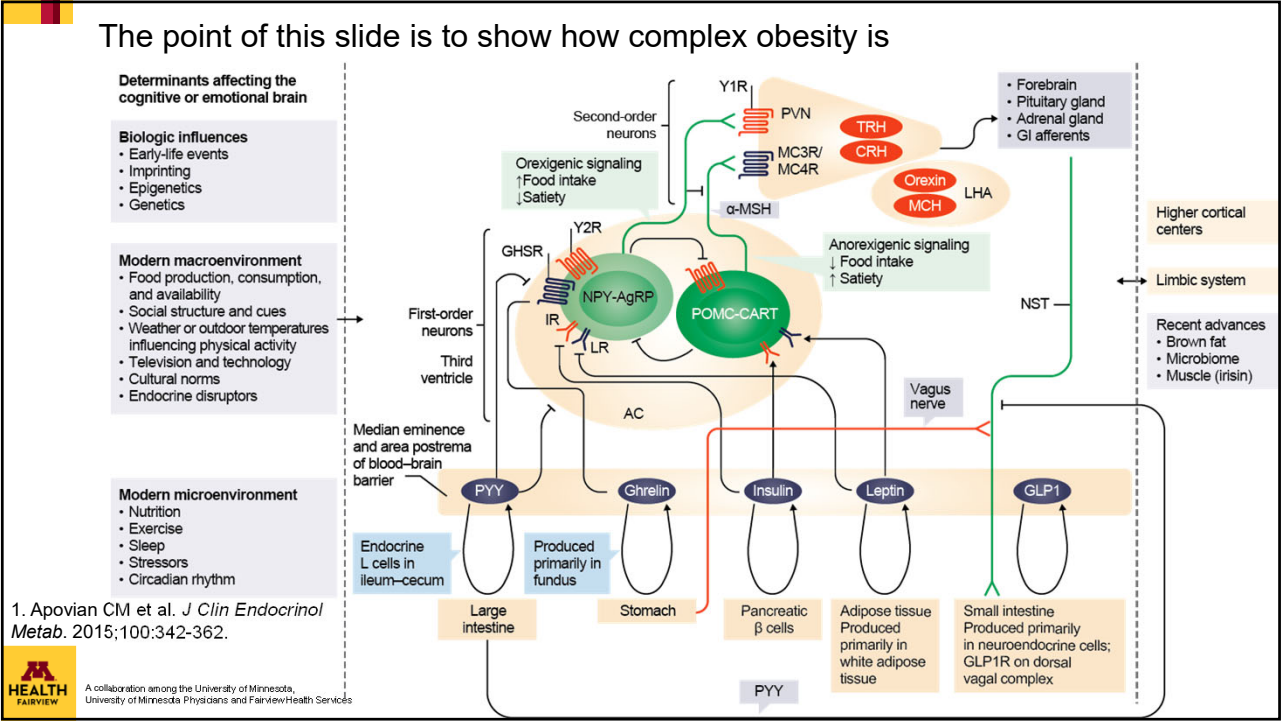
1. Apovian CM et al. *J Clin Endocrinol Metab*. 2015;100:342-362. (Slide Aronne)



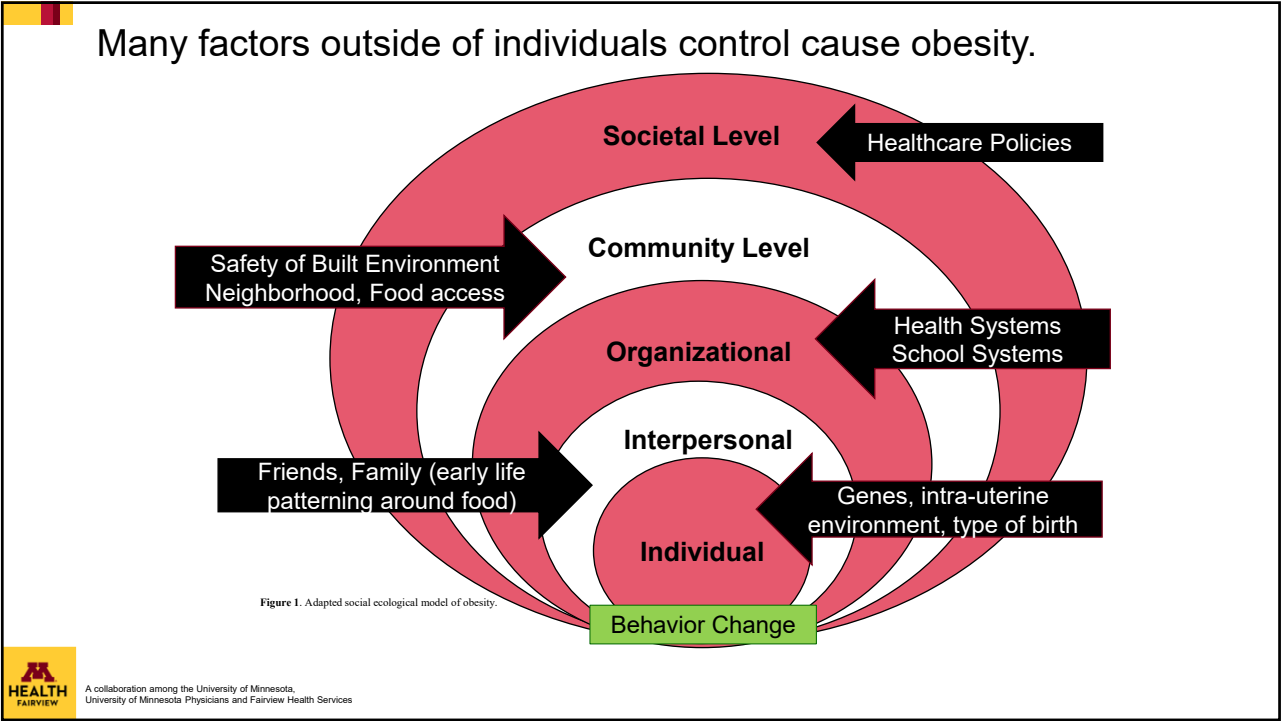
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The Obesities – A Plethora of Discrete Disorders

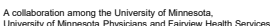
- Leptin deficiency
- LepR deficiency
- POMC deficiency
- MC4R deficiency
- □ MSH deficiency
- Sim-1 deficiency
- PC-1 deficiency
- KSR2 deficiency
- MRAP2 deficiency
- SH2B1 deficiency
- BDNF deficiency
- trkB deficiency
- Carpenter syndrome
- Cohen syndrome
- Ayazi syndrome
- MOMO syndrome
- Rubenstein-Taybi syndrome
- Fragile X syndrome
- Albright osteodystrophy
- Bardet-Biedl syndrome
- Alström syndrome
- BFL syndrome
- Hypothalamic
- Hyperphagic
- Thermogenesis deficient
- Prader- Willi syndrome
- Circadian-disrupted
- Stress-induced
- Viral
- Central
- Peripheral
- Diffuse
- Neonatal
- Early childhood
- Peripubertal
- Gestational
- Menopausal
- “Healthy”
- Metabolic
- Diet-dependent
- Inflammatory
- Exercise-sensitive
- Sleep-sensitive
- Insulin-induced
- Steroid-induced
- Progesterone-induced
- Psychotropic-induced
- Antibiotic-induced
- Endocrine disruptor
- Phentermine-responsive
- Lorcaserin-responsive
- Topiramate-responsive
- Metformin-responsive
- Bupropion-responsive
- GLP-1 responsive
- Bypass-responsive
- Bypass-resistant
- Gastric band-responsive



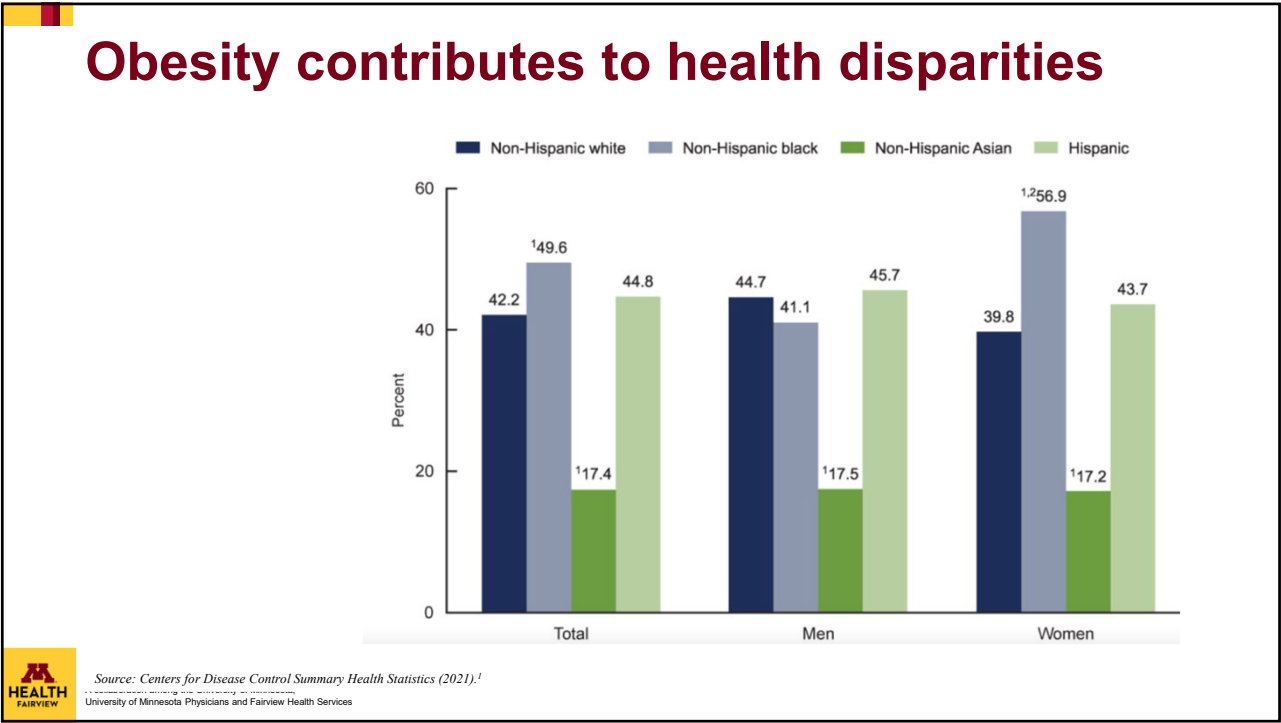
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Overview

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Obesity Stigma

- 66% of primary care clinicians reported frustration when dealing with patients with obesity
- 82% reported challenges in examining patients with obesity.
- Among women who delay recommended preventive healthcare, 82% do so because of their weight.
- 46% of patients with obesity delay care because of inadequate equipment, including exam tables and gowns
- MRI and CT scanners
- Beds
- Bedside Commodes
- Office furniture

Puhl RM, Andreyeva T, Fau - BroFerrante JM, Piasecki AK, Fau - Ohman-Strickland PA, Ohman-Strickland PA, Fau - Crabtree BF, Crabtree BF. Family physicians' practices and attitudes regarding care of extremely obese patients. (1930-7381 (Print)).

Wells KD, Brownell KD. Perceptions of weight discrimination: prevalence and comparison to race and gender discrimination in America. (1476-5497 (Electronic)).

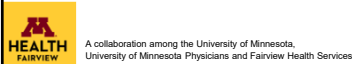
Phelan SM, Dovidio JF, Fau - Puhl RM, Puhl RM, Fau - Burgess DJ, et al. Implicit and explicit weight bias in a national sample of 4,732 medical students: the medical student CHANGES study. (1930-739X (Electronic)).

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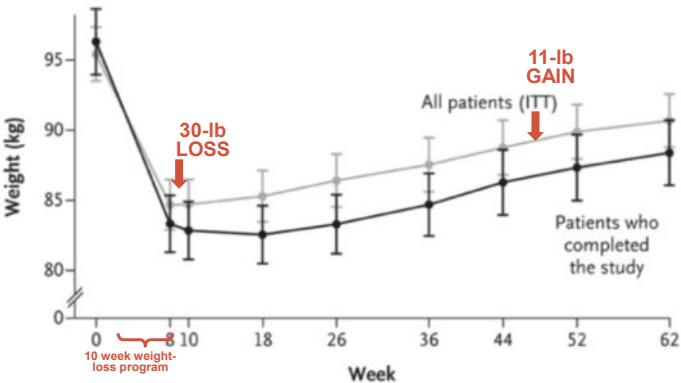


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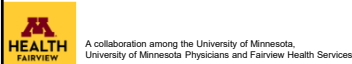
Weight loss and maintenance is complicated and challenging

The body evolved to protect its fat mass.

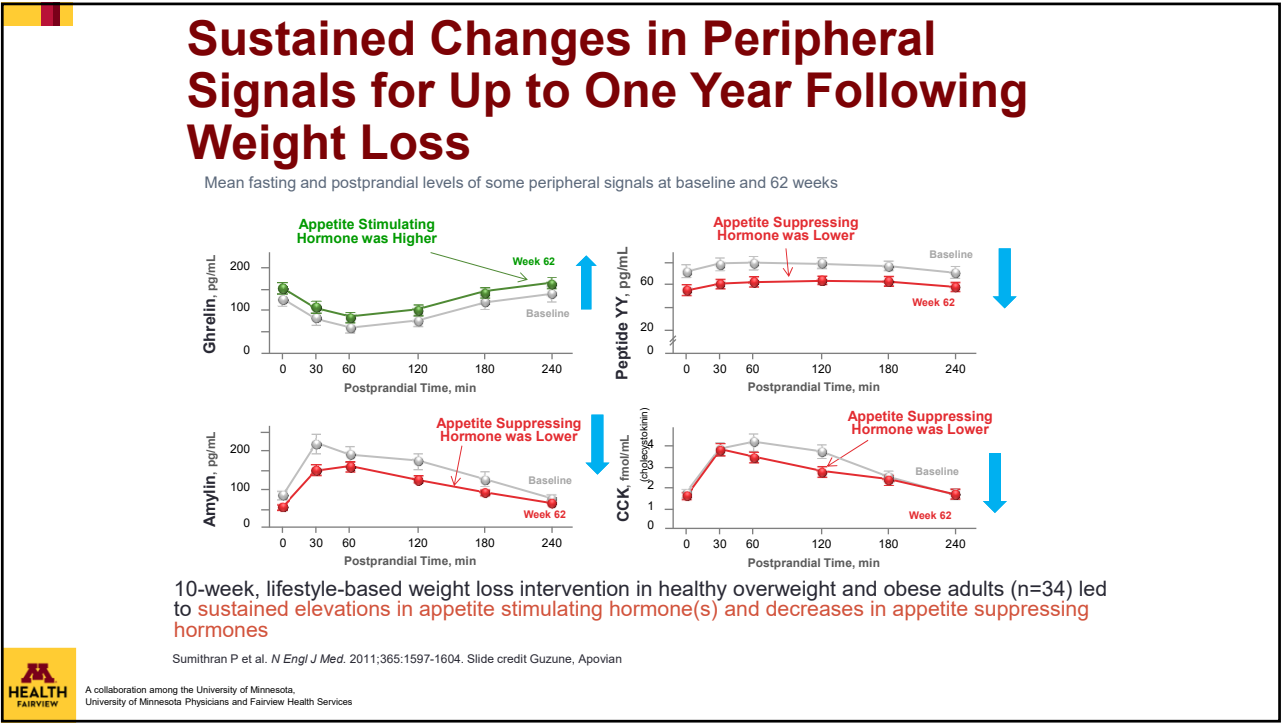
- 2009, 50 obese men and women
 - Men 233 lbs/average; women 200 lbs/average
- Extreme low-calorie diet
 - Optifast shakes + 2 cups of low-starch vegetables
- Total 500-550 kcal/d for eight weeks
- Reported feeling more hungry and preoccupied with food than before the weight loss



Sumithran P et al. *N Engl J Med.* 2011;365:1597-1604.



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Obesity Guidelines

- Guidelines recommendations for all adults with BMI > 25kg/m²
- Behavioral therapy: On-site high-intensity treatment by trained interventionist in group or individual sessions: ≥ 14 sessions in 6 months
 - Includes tailored feedback
 - Medicare will pay for 20 visits in 12 months
 - Self-monitoring of food intake, physical activity and weight
- **Reduced** calorie diet
- Increased physical activity:
 - ≥ 150 min/wk (equal to ≥ 30 min/d)
 - 200-300 min/wk to maintain weight loss
- Sleep
- Stress reduction
 - 1. Mood Management
- Medication management: reduce weight-gain promoting and start weight-loss meds

Rate of weight loss should not exceed 2lb/week

1. <https://www.aace.com/files/guidelines/ObesityAlgorithm.pdf>. 2. Jensen et al 2013.



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Obesity treatment pyramid

Increasing health risks
Increasing adiposity

Treatment Intensity

BMI > 40
BMI > 35 with comorbidity

BMI > 30
BMI > 27 with comorbidity

Surgery
20-40% goal wt loss


Endoscopic Procedures
10-20% goal wt loss

Pharmacotherapy
5-20% goal wt loss


Prescriptive Nutritional Intervention
(e.g. meal replacements, intermittent fasting, specific diet)
5-10% goal wt loss

Multicomponent/Intensive Behavioral Intervention
2-5% goal wt loss

Angela Fitch
Tucker et al.



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Sleep


- Inadequate sleep quality or quantity leads to elevated cortisol, ghrelin, and decreased leptin
 - Screen for OSA, for use of CPAP
- In-depth history for sleep timing, sleep hygiene
 - TV in the room?
 - Get in bed and on phone for 2 hours?
 - On phone in the middle of the night?
 - Fall asleep on couch then move to bed later in the night?
- Promote sleep hygiene
 - White noise, ear plugs, etc

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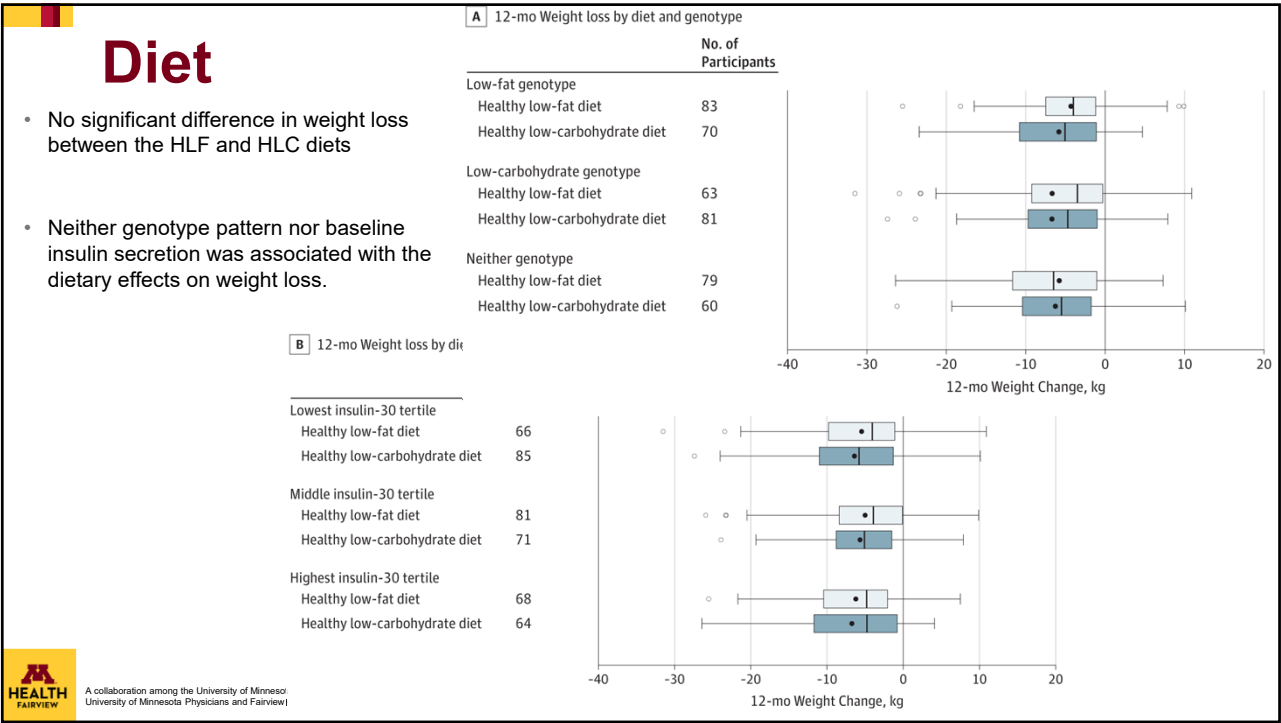
Table 2. Association Between Exposure to ALAN While Sleeping and Measures of Prevalent Obesity						
Obesity Variable	ALAN Exposure				P Value for Trend	Any ALAN Exposure (n = 35 915)
	No ALAN Exposure (n = 7807)	Small Nightlight in Room (n = 17 320)	Light Outside Room (n = 13 471)	Light/Television in Room (n = 5124)		
BMI≥30.0						
Cases, %	25.4	25.8	30.0	40.0	NA	29.4
Age-adjusted PR (95% CI)	1 [Reference]	1.00 (0.99-1.01)	1.04 (1.03-1.05)	1.12 (1.10-1.13)	<.001	1.03 (1.02-1.04)
Multivariable-adjusted PR (95% CI) ^a	1 [Reference]	1.01 (1.00-1.02)	1.03 (1.02-1.04)	1.06 (1.05-1.08)	<.001	1.03 (1.02-1.03)
BMI≥25.0						
Cases, %	56.7	58.0	62.4	71.6	NA	61.6
Age-adjusted PR (95% CI)	1 [Reference]	1.01 (1.00-1.02)	1.04 (1.03-1.05)	1.10 (1.09-1.11)	<.001	1.03 (1.02-1.04)
Multivariable-adjusted PR (95% CI) ^a	1 [Reference]	1.01 (1.01-1.02)	1.03 (1.03-1.04)	1.05 (1.04-1.06)	<.001	1.03 (1.02-1.04)
<p>Abbreviations: ALAN, artificial light at night; BMI, body mass index (calculated as weight in kilograms divided by height in meters squared); NA, not applicable; PR, prevalence ratio.</p> <p>^a Adjusted for age at baseline; race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, or other); residential location (urban, suburban or small town, or rural); educational attainment (high school degree or less, some college, or college degree or higher); household income (<\$49 999, \$50 000-</p>			<p>\$99 999, ≥\$100 000, or missing); number of family members younger than 18 years living in household (none, 1, 2, ≥3, or missing); number of family members 65 years or older living in household (none, 1, ≥2, or missing); marital status (never married, married, or other); smoking status (never, current, or past); alcohol consumption (never, former, current ≤1 drink per day, or current >1 drink per day); caffeine consumption (quintiles); menopausal status; depression; and perceived stress (quartile).</p>			
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Table 3. Association Between ALAN Exposure While Sleeping, Subsequent Weight Gain, and Incident Obesity						
Outcome	ALAN Exposure				P Value for Trend	Any ALAN Exposure
	No ALAN Exposure	Small Nightlight in Room	Light Outside Room	Light/Television in Room		
Weight Gain of ≥5 kg						
No. of events	1080	2509	2040	893	NA	5442
Cumulative incidence	15.6	15.9	16.7	21.5	NA	16.9
Age-adjusted RR (95% CI) ^a	1 [Reference]	1.00 (0.94-1.07)	1.05 (0.98-1.13)	1.29 (1.19-1.40)	<.001	1.06 (1.00-1.12)
Multivariable-adjusted RR (95% CI) ^b	1 [Reference]	1.01 (0.94-1.07)	1.03 (0.96-1.10)	1.17 (1.08-1.27)	<.001	1.04 (0.98-1.10)
BMI Increase of ≥10%						
No. of events	754	1796	1439	591	NA	3826
Cumulative incidence	10.9	11.4	11.9	14.3	NA	11.9
Age-adjusted RR (95% CI) ^a	1 [Reference]	1.02 (0.94-1.10)	1.06 (0.97-1.15)	1.23 (1.11-1.36)	<.001	1.06 (0.99-1.14)
Multivariable-adjusted RR (95% CI) ^b	1 [Reference]	1.04 (0.96-1.12)	1.04 (0.96-1.13)	1.13 (1.02-1.26)	.04	1.05 (0.98-1.13)
Abbreviations: ALAN, artificial light at night; BMI, body mass index (calculated as weight in kilograms divided by height in meters squared; NA, not applicable; RR, relative risk.						
^a Adjusted for logarithm of follow-up time.						
^b Adjusted for age at baseline; logarithm of follow-up time; race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, or other); residential location (urban, suburban or small town, or rural); educational attainment (high school degree or less, some college, or college degree or higher); household income (<\$49 999, \$50 000-\$99 999, ≥\$100 000, or missing);						
number of family members younger than 18 years living in household (none, 1, 2, ≥3, or missing); number of family members 65 years or older living in household (none, 1, ≥2, or missing); marital status (never married, married, or other); smoking status (never, current, or past); alcohol consumption (never, former, current ≤1 drink per day, or current >1 drink per day); caffeine consumption (quintiles); menopausal status; depression; and perceived stress (quartile).						
^c Among women with a BMI of less than 25.0 at baseline (n = 17 179).						
^d Among women with a BMI of less than 30.0 at baseline (n = 31 188).						



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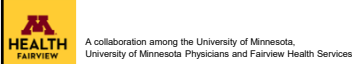


Physical activity

- Least important *initial* intervention
- Becomes more important for maintenance of weight loss
- Eventual goal is:
 - > 150min/week of moderate-vigorous cardio + resistance 2x/week
 - 10,000 steps/day
 - Short bouts of activity are OK

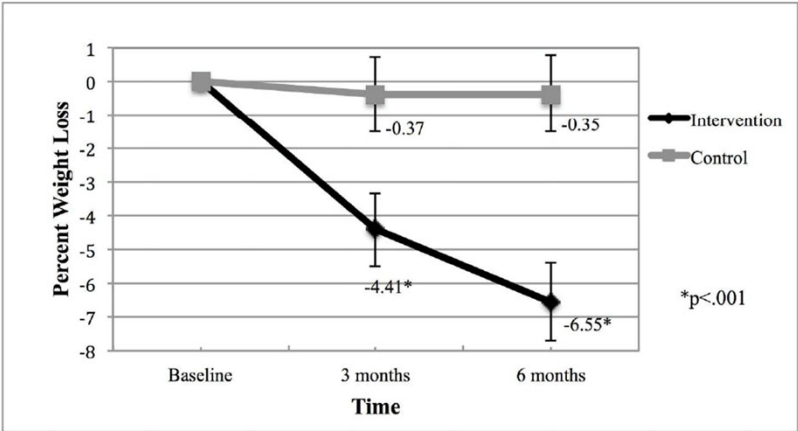
In general, it's important to make step-wise approaches (everything at once is overwhelming to patients)

- Generally start with sleep and one or two dietary goals
- Physical activity comes in later

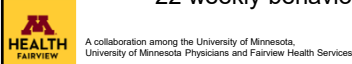


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Behavior: Self-monitoring, self-weighing



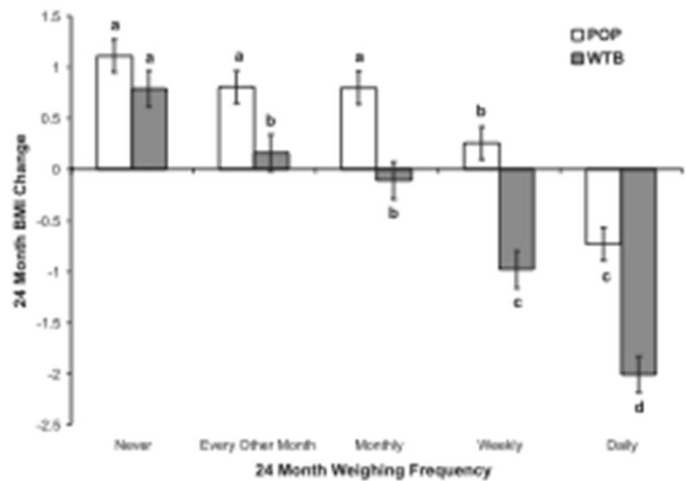
- Cellular-connected smart scale for **daily weighing**
- Web-based graph of weight loss; expected loss of 0.5 lb/wk.
- Weekly tailored feedback by e-mail on self-weighing and progress
- 22 weekly behavioral weight control lessons via e-mail



Steinberg et al, *Obesity* 2015

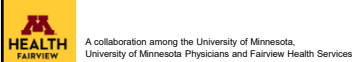
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More frequent weighing is better



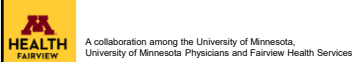
Linde et al


FIGURE 2 Twelve- and 24-month mean changes in body mass index (BMI; kg/m²) by weighing frequency category (\pm SE). POP= Pound of Prevention weight gain prevention sample; WTB = Weigh-to-Be weight loss intervention sample. Within each group, means with different labels are significantly different ($p < .05$).



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- Prevalence
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- Pillars of obesity treatment: step-wise approach with follow-up
 - Sleep
 - medications that cause weight gain
 - Behavior change
 - Food intake
 - Stress
 - medications that treat obesity
- Efficient approach to management by subspecialists





Medications

- 6 FDA-approved medications for long-term use
 1. Orlistat (Xenical/Alli)
 2. Phentermine/topiramate ER (Qsymia)
 3. Naltrexone/Bupropion SR (Contrave)
 4. Liraglutide 3.0 mg (Saxenda)
 5. Semaglutide 2.4mg (Wegovy)
 6. Tirzepatide (Mounjuro) – not yet FDA approved, but fast-tracked
- Phentermine (Lomaira/Adipex) approved for short-term use (3 months, longer with meaningful pauses)
- Other:
 - Diethylpropion
 - Fiber supplements
 - Metformin



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Avoid weight-gain promoting medications*:	
Weight-gain promoting medications	Weight-neutral or weight-loss-promoting alternatives
<u>Antihistamines</u> , sedating or first generation, i.e. diphenhydramine	Leukotriene inhibitors; localized symptom management (i.e. fluticasone nasal spray and ketotifen eye drops)
<u>Beta-blockers</u> , beta-1 adrenergic receptor antagonists	ACE inhibitors, ARBs, CCBs, beta-blockers with vasodilating components (i.e. carvedilol, nebivolol)
<u>Corticosteroids</u>	Alternatives will be disease specific
<u>Anti-depressants</u> : ^c SSRIs (especially paroxetine); ^c SNRIs; TCA's	fluoxetine and sertraline are considered the least weight gain promoting; bupropion; trazodone
<u>Atypical anti-psychotics</u> , olanzapine; quetiapine; risperidone; clozapine.	Aripiprazole, ziprasidone. (Metformin is used off-label to counter the weight-gain effects of atypical anti-psychotics)
<u>AEDs</u> : valproic acid; gabapentin; divalproex; carbamazepine	Felbamate; topiramate; zonisamide; lamotrigine; levetiracetam; phenytoin
<u>Diabetes medications</u> , insulin, sulfonylureas; thiazolidinediones	Metformin; DPP4i; GLP-1 receptor agonists; SGLT-2 inhibitors; acarbose; pramlintide; miglitol
<u>Contraception</u> , depo-medroxyprogesterone	Combined oral contraceptive medications; intra-uterine devices; barrier methods; etc.
*If unavoidable, arrange close follow-up to monitor weight and offer anti-obesity medications (expert opinion)	

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Medications that treat obesity

- In approximate order of effect on weight:
 1. Tirzepatide
 2. Semaglutide
 3. Liraglutide
 4. Phentermine/topiramate
 5. Bupropion/naltrexone
 6. Metformin
 7. Orlistat

Minnesota Medicaid Covers them for Adults and Children!!!!
- Advocacy from UMN Faculty (Center for Pediatric Obesity Medicine)

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	Composite CV Outcomes	CV Death	Nonfatal MI	Nonfatal Stroke	SBP	DBP	HR	HDL	LDL	TG	HF
Diabetes Medications											
Liraglutide ^a	↓	↓	↓	↓	↓	↑	↑	—	—	—	↓
Semaglutide	↓	—	↓	↓	↓	—	↑	↑	↓	↓	↑
Exenatide	—	↓	—	↓	↓	↑	↑	NR	↓	↓	↓
Dulaglutide	↓	↓	↓	↓	↓	—	↑	↓	NR	NR	↓
Lixisenatide	↑	↓	↑	↑	↓	NR	↑	NR	NR	NR	↓
Metformin	↓	↓	↓	↓	NR	NR	NR	NR	↓	↓	NR
DPP-4 Inhibitors	↓	↓	↓	↓	—	—	NR	—*	—*	NR	↑*
SGLT2 Inhibitors	—	↓	↓	↓	↓	↓	—	—	—	—	—

Key: Black ↓ indicate statistical significance; gray ↓ indicate a non-statistically significant change; — indicates no change.
*Reported for linagliptin only. **Increased for saxagliptin, increased for alogliptin but not significant; not increased for sitagliptin or linagliptin. Abbreviations: CV=cardiovascular; MI=myocardial infarction; SBP=systolic blood pressure; DBP=diastolic blood pressure; HR=heart rate; HDL=high density lipoprotein; LDL=low density lipoprotein; HF=heart failure; TG=triglycerides

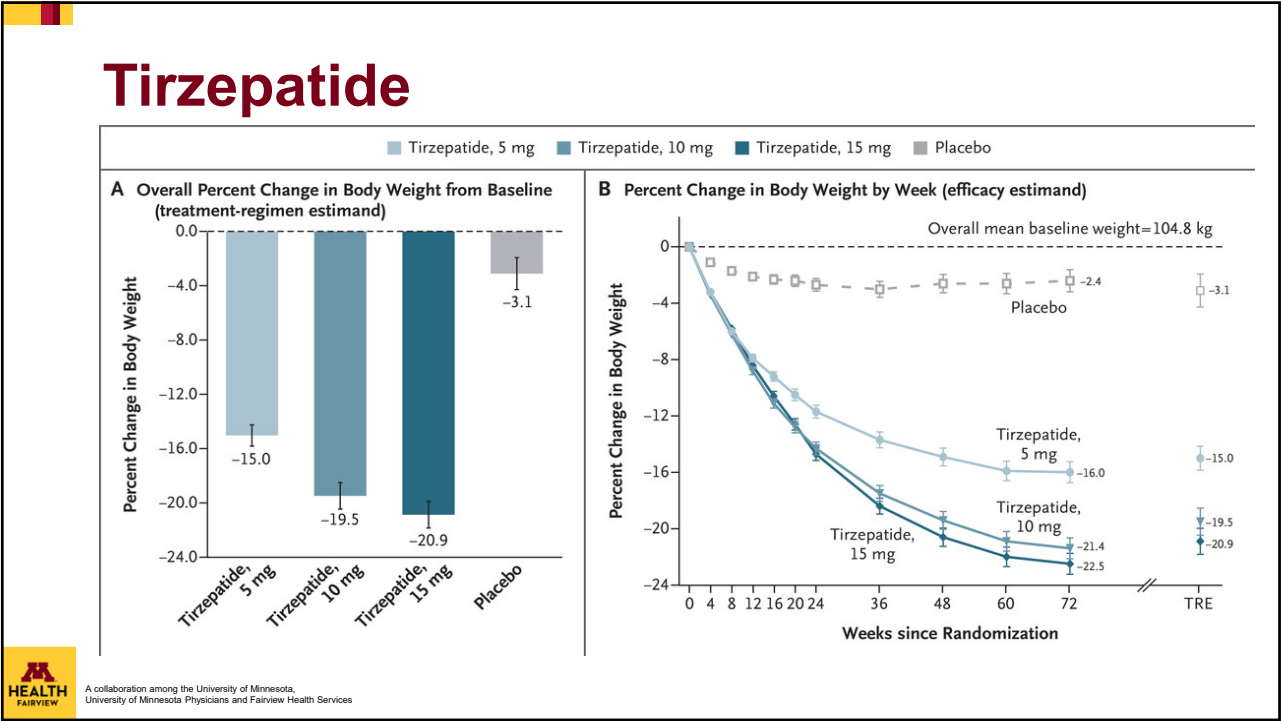
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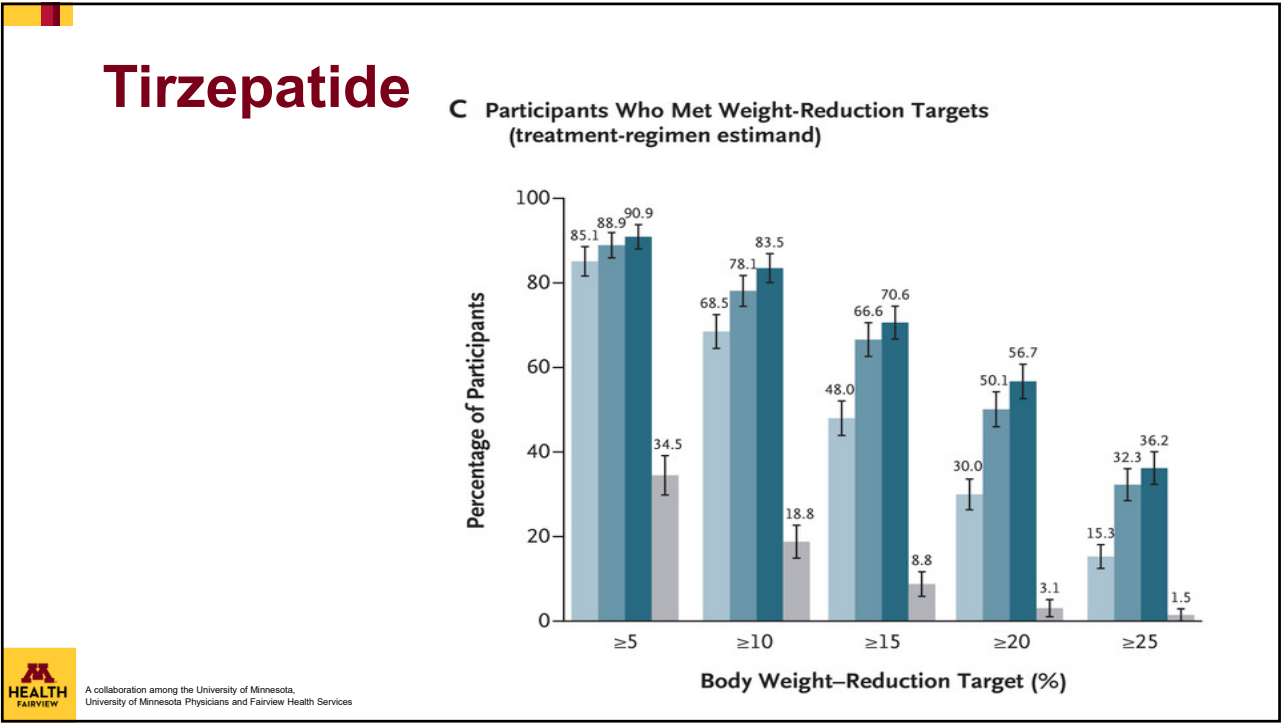
HEALTH FAIRVIEW

	Composite CV Outcomes	CV Death	Nonfatal MI	Nonfatal Stroke	SBP	DBP	HR	HDL	LDL	TG	HF
Stimulant Medications											
Phentermine/Topiramate	—	—	—	—	↓	↓	↑	↑	↓	↓	—
Phentermine	NR	NR	NR	NR	↓	↓	—	↑	↓	↓	NR
Diethylpropion	NR	NR	NR	NR	↓	—	—	↑	↓	↓	NR
Lisdexamfetamine	—	—	—	—	↑	—	↑	↑	↓	↓	—
Lorcaserin	—	—	—	—	↓	↓	↓	↑	↓	↓	NR
Topiramate	—	—	—	—	↓	↓	—	↑	↓	↓	—
Zonisamide	NR	NR	NR	NR	↓	↓	—	—	—	—	NR
Orlistat	NR	NR	NR	NR	↓	↓	NR	↑	—	—	NR
Naltrexone/Bupropion*	—	—	—	—	↑	—	↑	↑	↓	↓	—
Bupropion	NR	NR	NR	NR	—	—	↑	↑	↓	↓	NR

Key: Black ↓ indicate statistical significance; gray ↓ indicate a non-statistically significant change; — indicates no change.
*Study reporting major CV outcomes discontinued due to non-blinding. Abbreviations: CV=cardiovascular; MI=myocardial infarction; SBP=systolic blood pressure; DBP=diastolic blood pressure; HR=heart rate; HDL=high density lipoprotein; LDL=low density lipoprotein; HF=heart failure; TG=triglycerides

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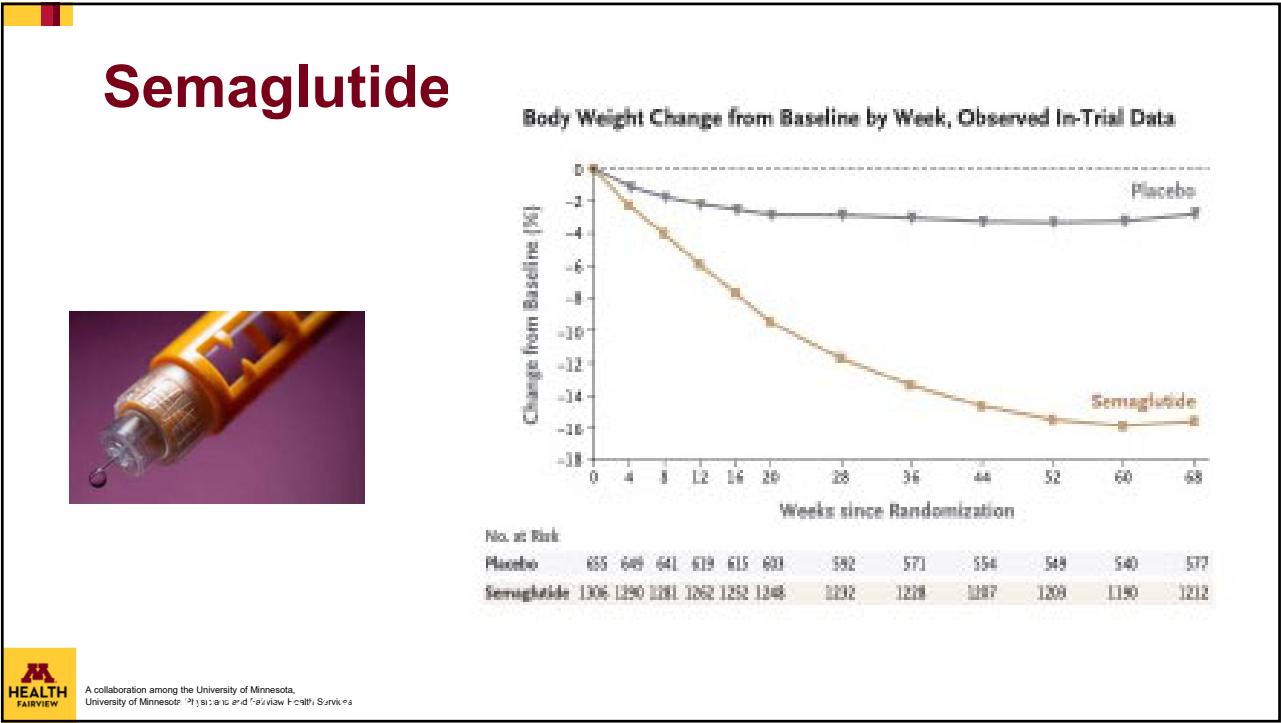
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Tirzepatide

Mechanism	GLP-1 receptor agonist + GIP (glucose-dependent insulinotropic polypeptide)
Side effects	Nausea, diarrhea, and constipation, usually avoidable with slow dose increases Cholecystitis and pancreatitis
Contraindications	Personal or family history of medullary thyroid cancer or multiple endocrine neoplasia type 2, or chronic pancreatitis
Dosing - Titrate to effect	2.5 mg weekly for 4 weeks 5.0 mg for 4 weeks 7.5 mg for 4 weeks 10 mg for 4 weeks 12.5 mg for 4 weeks 15mg
Monitoring	None unless on insulin Patients currently on insulin and being started on a this GLP-1 agonist should be monitored for hypoglycemia and must be given clear and direct guidelines on how to titrate their insulin down accordingly.


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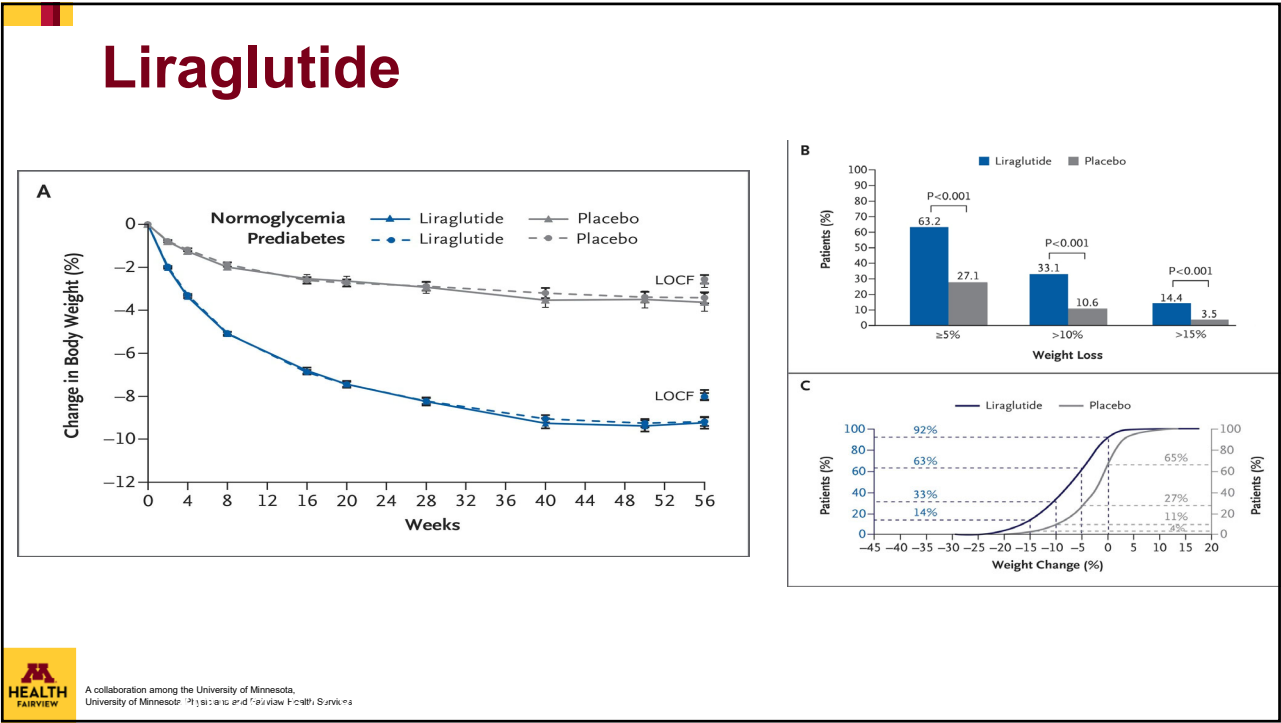
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Semaglutide

Mechanism	GLP-1 receptor agonist
Side effects	Nausea, diarrhea, and constipation, usually avoidable with slow dose increases Cholecystitis and pancreatitis
Contraindications	Personal or family history of medullary thyroid cancer or multiple endocrine neoplasia type 2, or chronic pancreatitis
Dosing - Titrate to effect	0.25 mg weekly for 4 weeks 0.5mg for 4 weeks 1.0mg for 4 weeks 1.7mg for 4 weeks 2.4mg
Monitoring	None unless on insulin Patients currently on insulin and being started on a this GLP-1 agonist should be monitored for hypoglycemia and must be given clear and direct guidelines on how to titrate their insulin down accordingly.





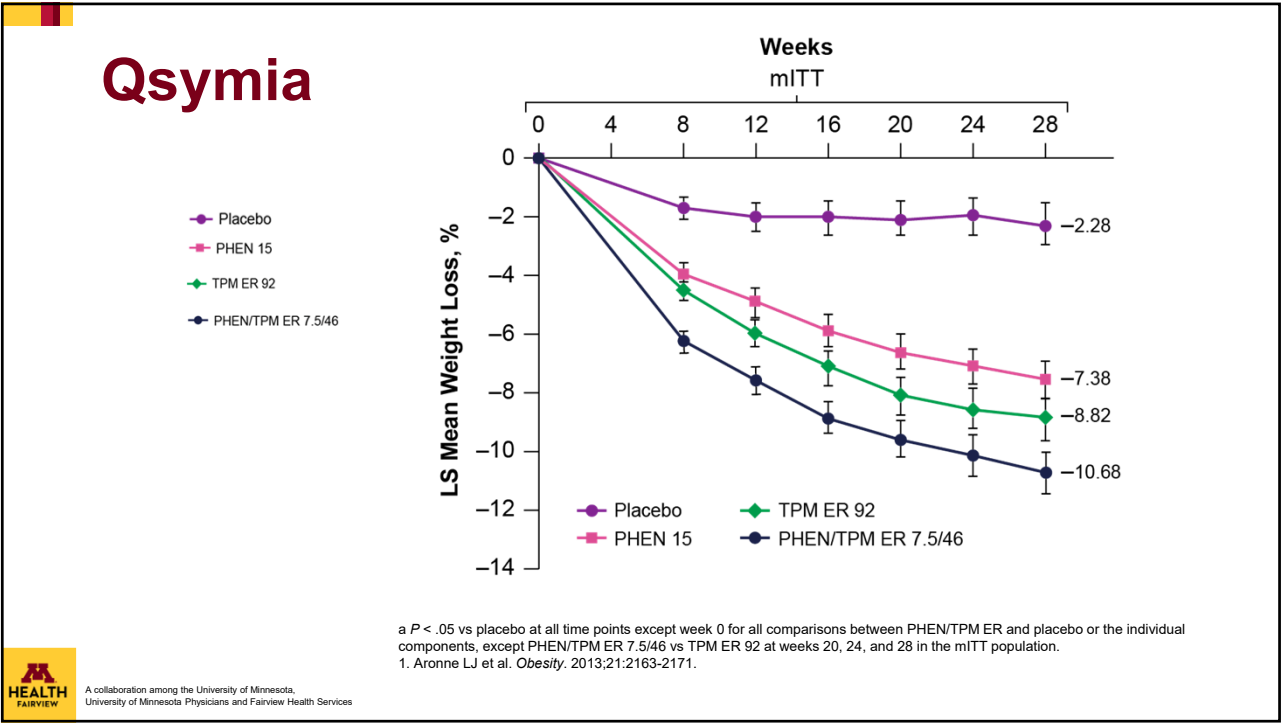
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Liraglutide

Mechanism	GLP-1 receptor agonist
Side effects	Nausea, diarrhea, and constipation, usually avoidable with slow dose increases. Cholecystitis and pancreatitis
Contraindications	Personal or family history of medullary thyroid cancer or multiple endocrine neoplasia type 2, or chronic pancreatitis
Dosing - Titrate to effect	0.6 mg daily at least 1 week --> increase by 0.6 mg at 1- to >= 2-week intervals to 3mg daily. Efficacy has not been established for <3 mg/day but consider using highest tolerated dose.
Monitoring	None unless on insulin. Patients currently on insulin and being started on a this GLP-1 agonist should be monitored for hypoglycemia and must be given clear and direct guidelines on how to titrate their insulin down accordingly.

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Topiramate


Mechanism	Carbonic anhydrase inhibitor.
Side effects	SEs: paresthesias, dysgeusia, cognitive dysfunction (poor concentration, psychomotor slowing), suicidal ideation, kidney stones, and hypokalemia.
Contraindications	Women of child-bearing age (must be on contraception), glaucoma, MAOI use, and hyperthyroidism
Dosing - Titrate to effect	25mg to 400mg BID
Monitoring	Use with caution in women of child-bearing age, as topiramate is teratogenic. Ensure they are on contraception.

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Phentermine

Mechanism	Norepinephrine reuptake inhibitor
Side effects	SEs: elevated BP, tachycardia, insomnia, dry mouth, serotonin syndrome
Contraindications	Uncontrolled hypertension, cardiovascular disease, congestive heart failure, seizures glaucoma, MAOI use.
Dosing - Titrate to effect	4mg to 37.5mg 37.5mg BID
Monitoring	Check BP and HR monthly for 3 months, then every 3 months after patient loses 5% of body weight.

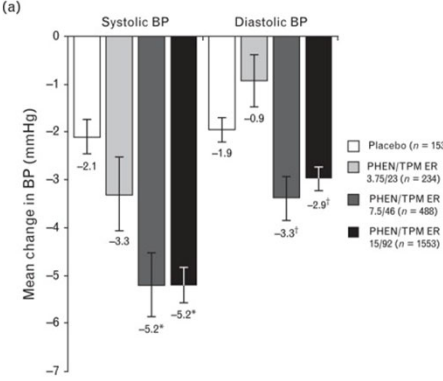


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(a)

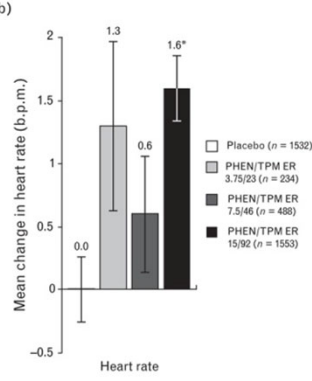
Systolic BP Diastolic BP



Mean change in BP (mmHg)

Legend: Placebo (n = 1532), PHEN/TPM ER 3.75/23 (n = 234), PHEN/TPM ER 7.5/46 (n = 488), PHEN/TPM ER 15/92 (n = 1553)

(b)

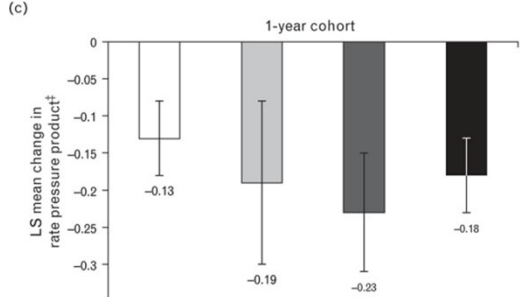


Mean change in heart rate (b.p.m.)

Legend: Placebo (n = 1532), PHEN/TPM ER 3.75/23 (n = 234), PHEN/TPM ER 7.5/46 (n = 488), PHEN/TPM ER 15/92 (n = 1553)

(c)

1-year cohort




LS mean change in rate pressure product†

Legend: Placebo (n = 1531), PHEN/TPM ER 3.75/23 (n = 234), PHEN/TPM ER 7.5/46 (n = 488), PHEN/TPM ER 15/92 (n = 1551)

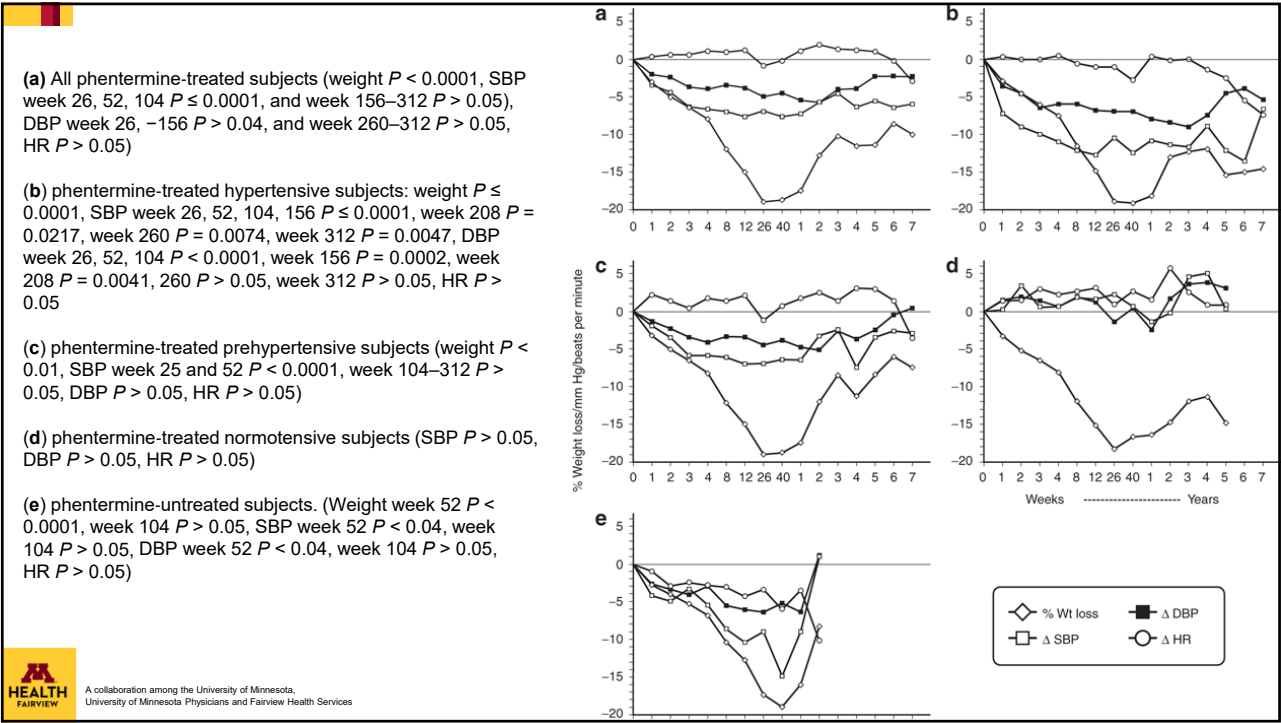
Jordan et al, Cardiovascular effects of phentermine and topiramate: a new drug combination for the treatment of obesity

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4011567/>

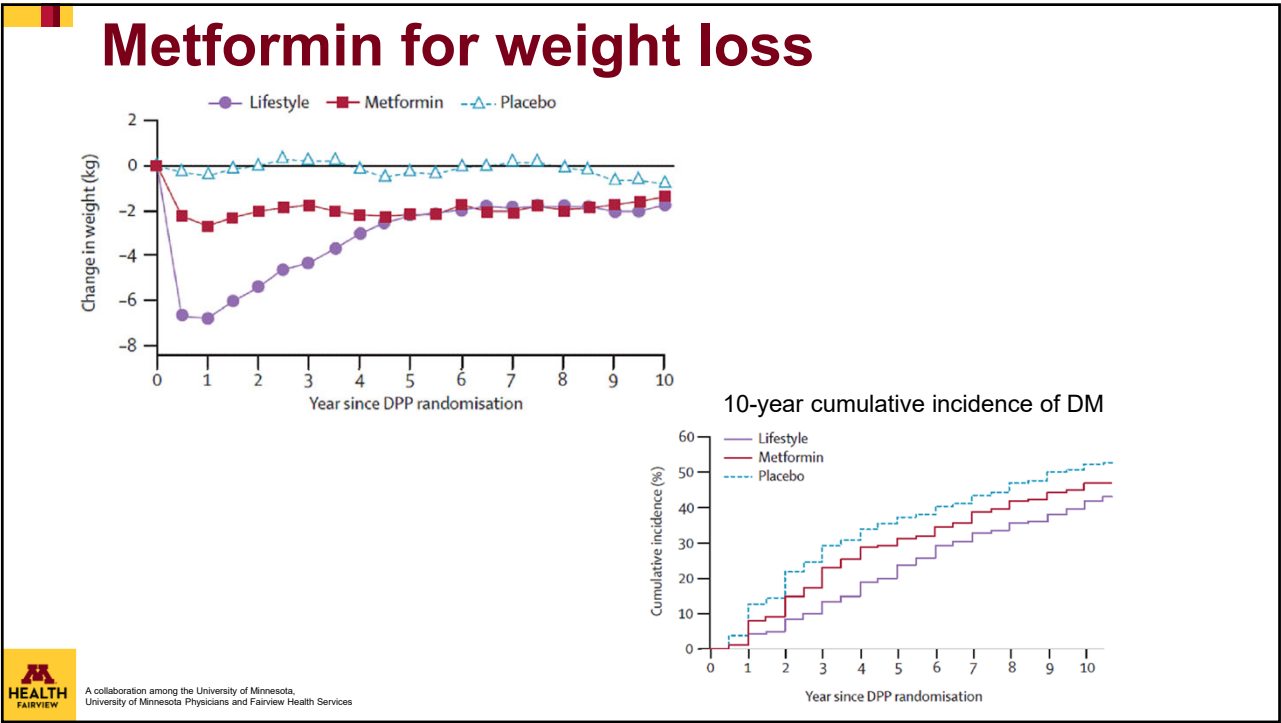


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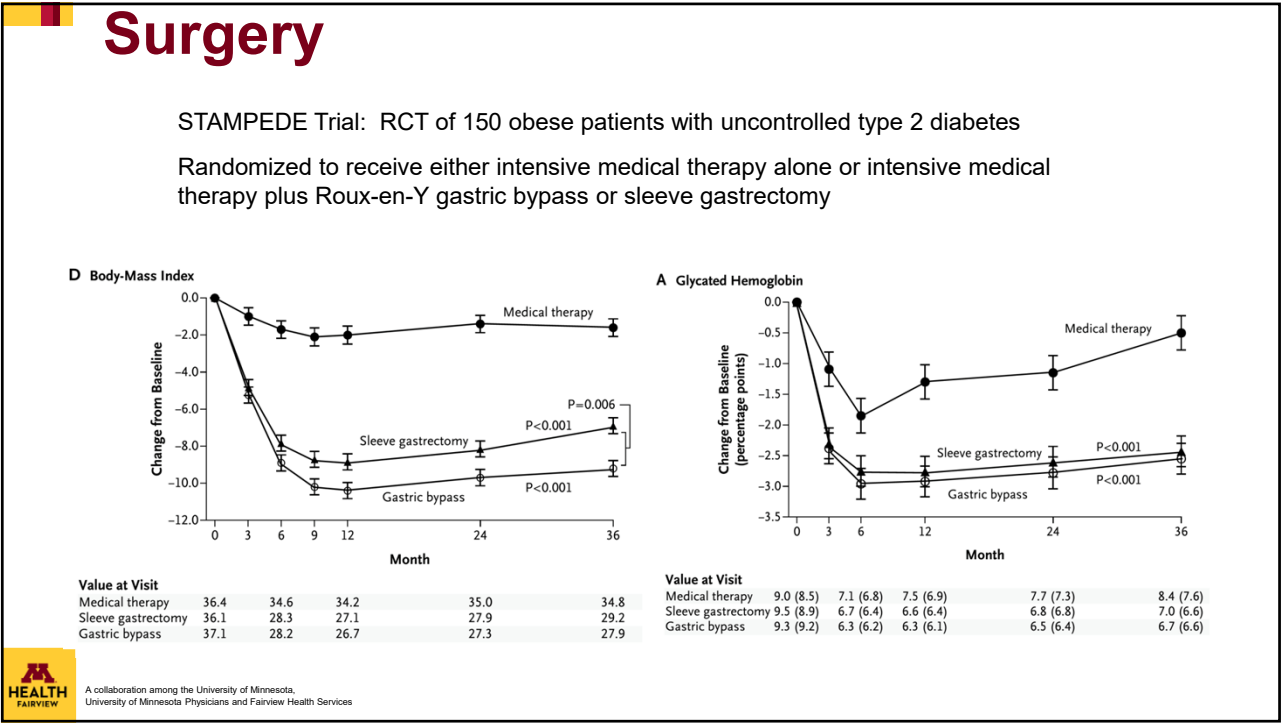
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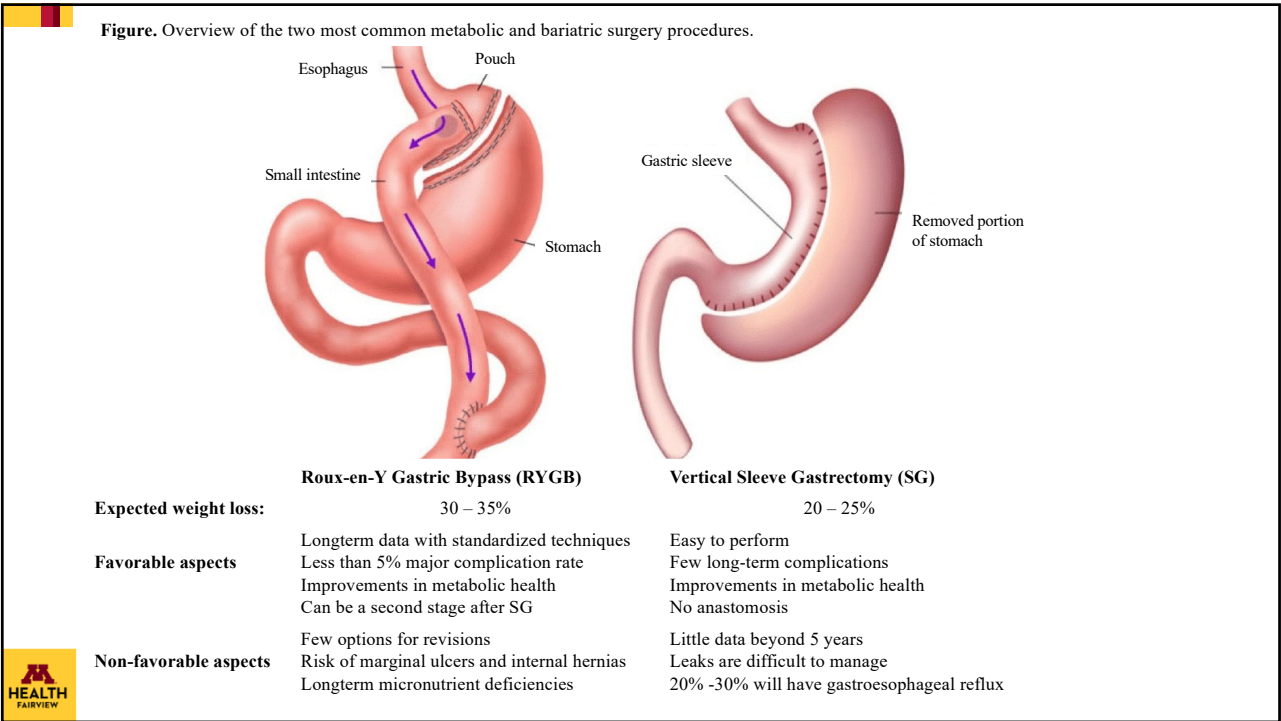
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Endoscopic Options

- Balloon
 - Placed or swallowed
- Transpyloric shuttle
- Sleeve Gastrectomy
- Duodenojejunal bypass liner
- *Aspire*
- Capsules
- Botulinum injections






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Prevention

- Peri-partum weight gain
 - For patient starting with a normal BMI
 - IOM recommends _____ pounds of weight gain in the 1st trimester
 - IOM recommends _____ pounds of weight gain total
 - Overweight BMI
 - IOM recommends _____ pounds of weight gain
 - Obese BMI
 - IOM recommends _____ pounds of weight gain
- Adolescent weight gain
 - Recommend self-weighing*
- Weight-neutral medications



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Longitudinal process

In general, it's important to make step-wise approaches

- everything at once is overwhelming to patients
 - Generally start with sleep and one or two dietary goals
 - Physical activity comes in later



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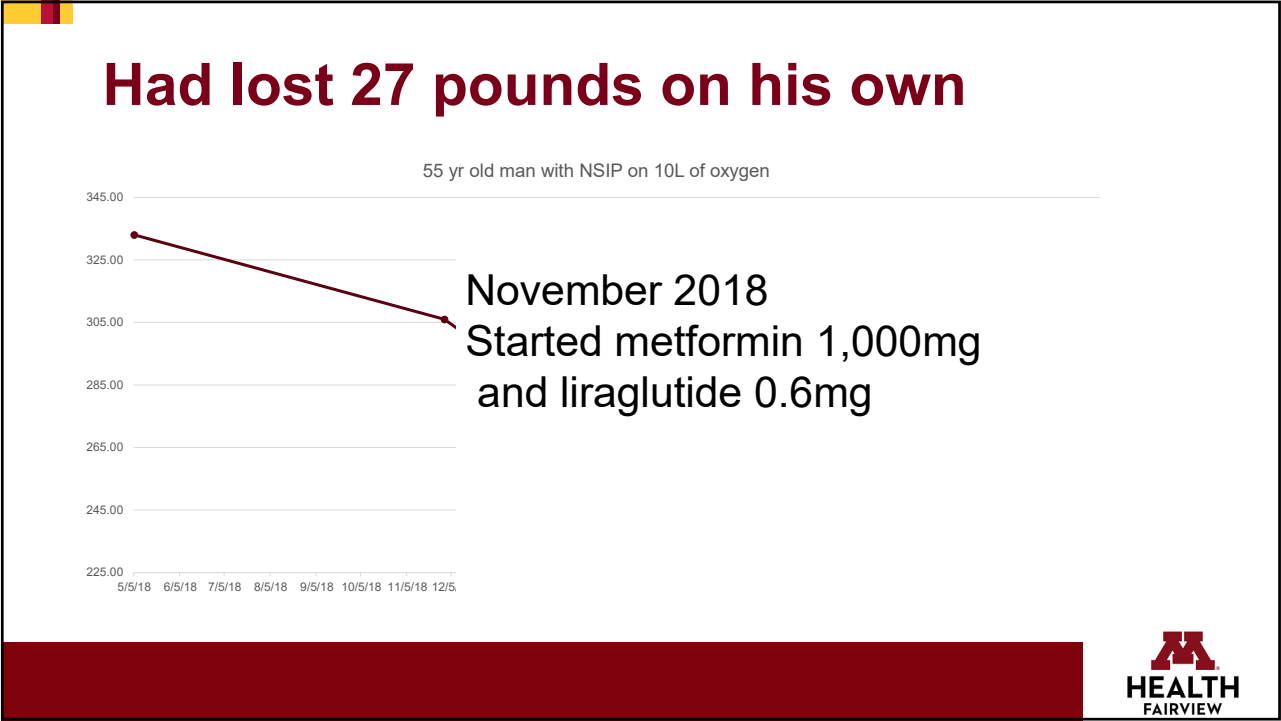
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Patient Examples

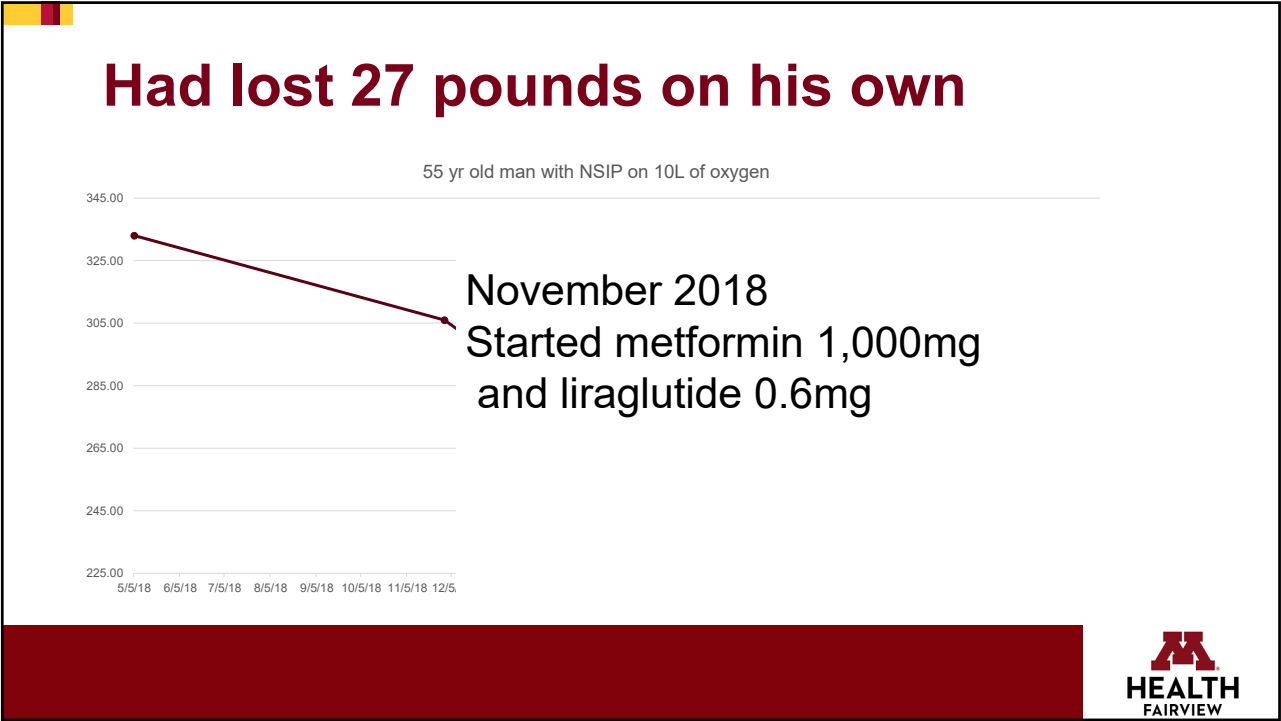
- 55 yr old man with NSIP on 10L oxygen
- BMI of 39, pre-diabetes, HTN
- Needs BMI < 30 for lung transplant
- Single father of 3 teenagers
- Still working



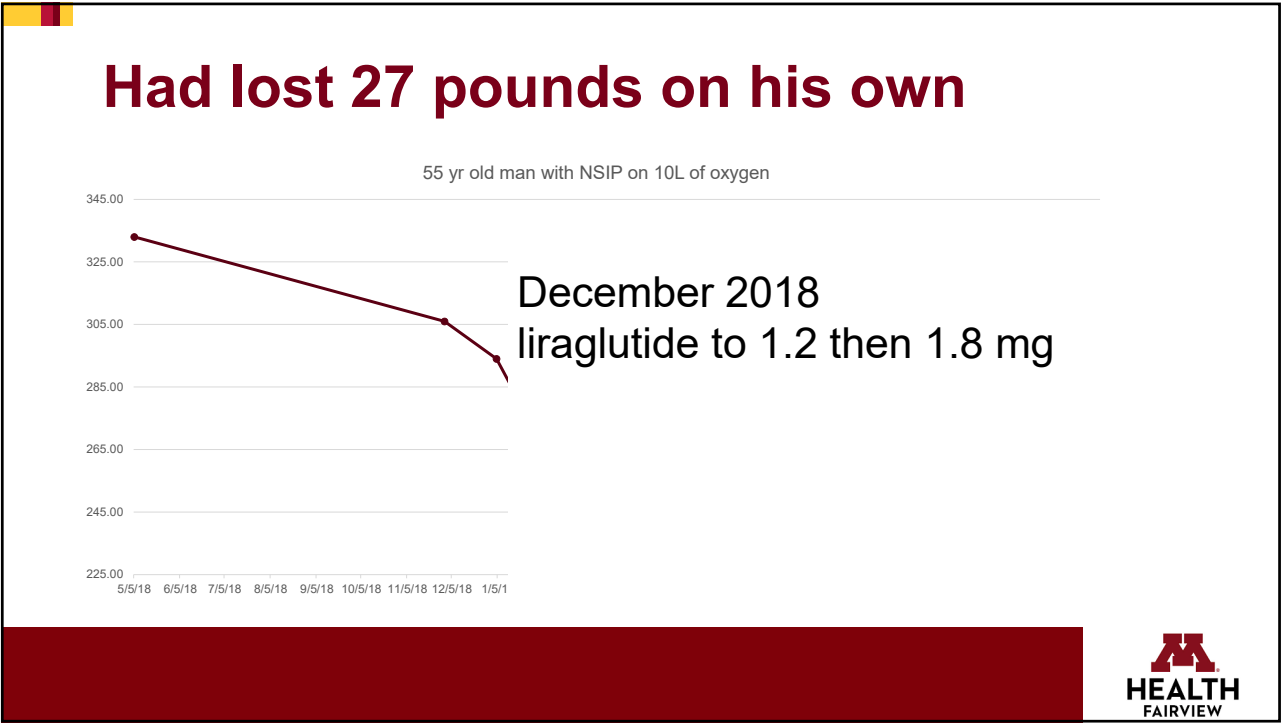
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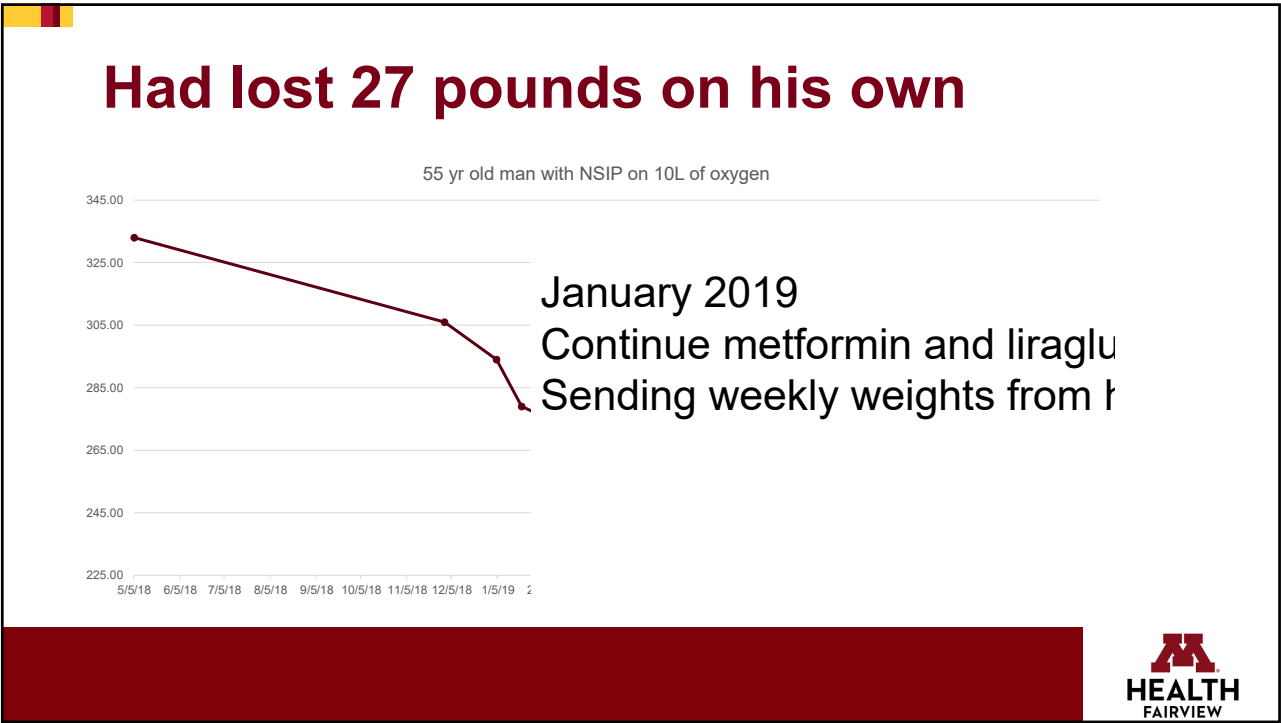
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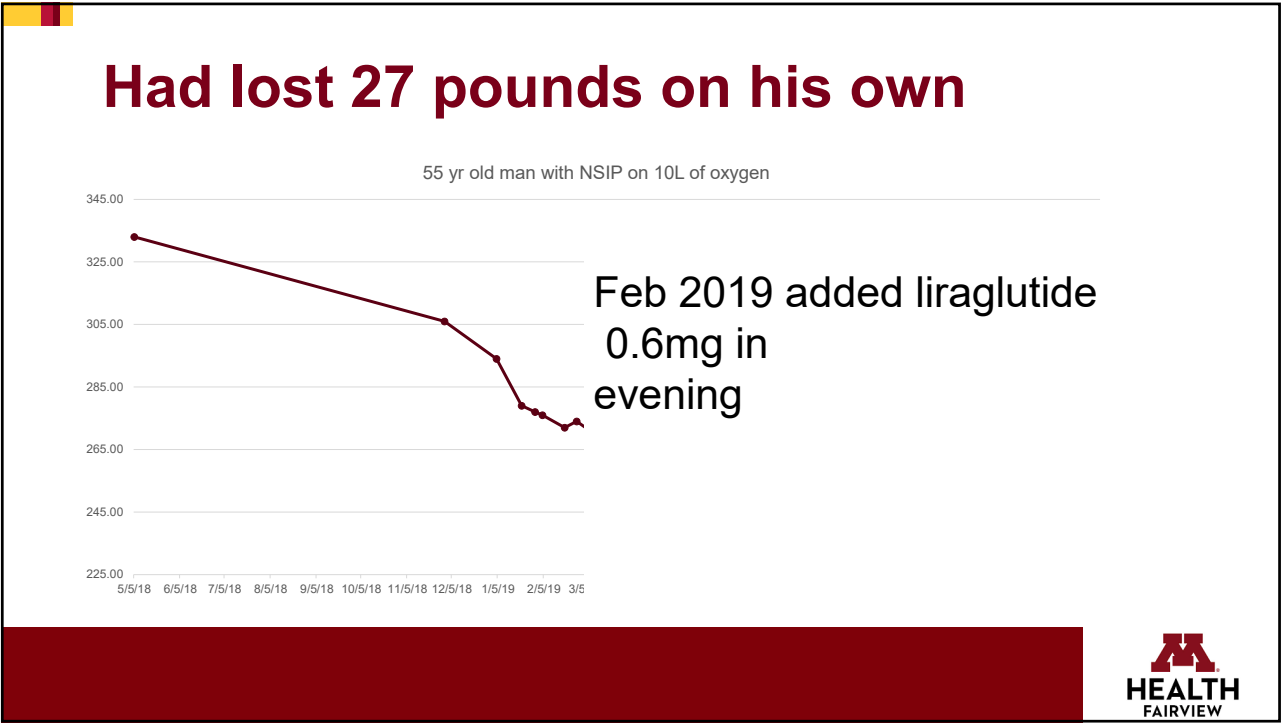
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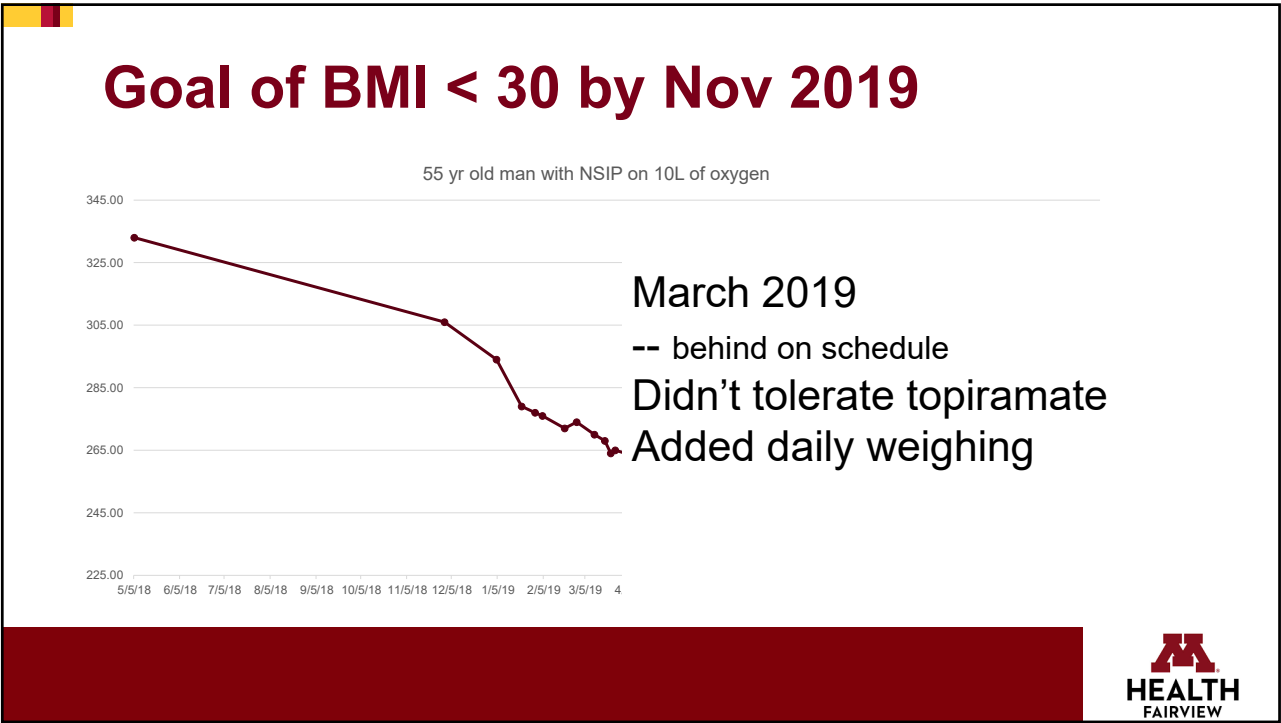
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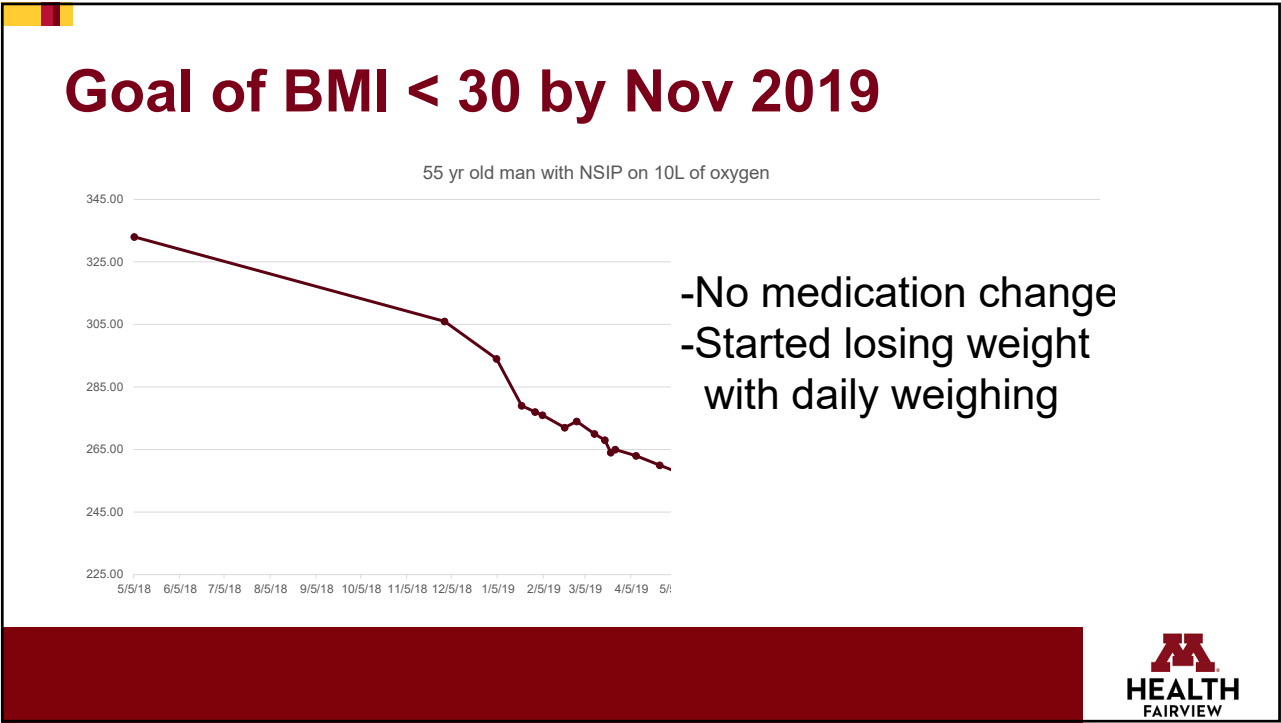
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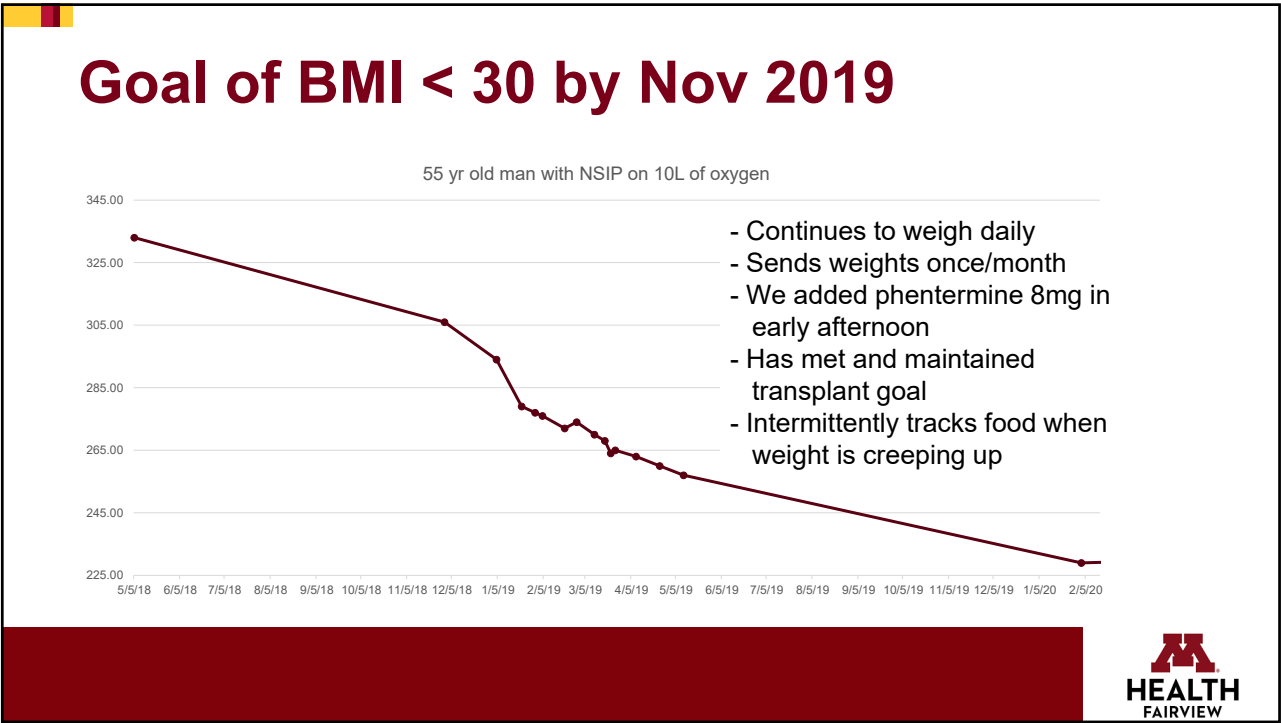
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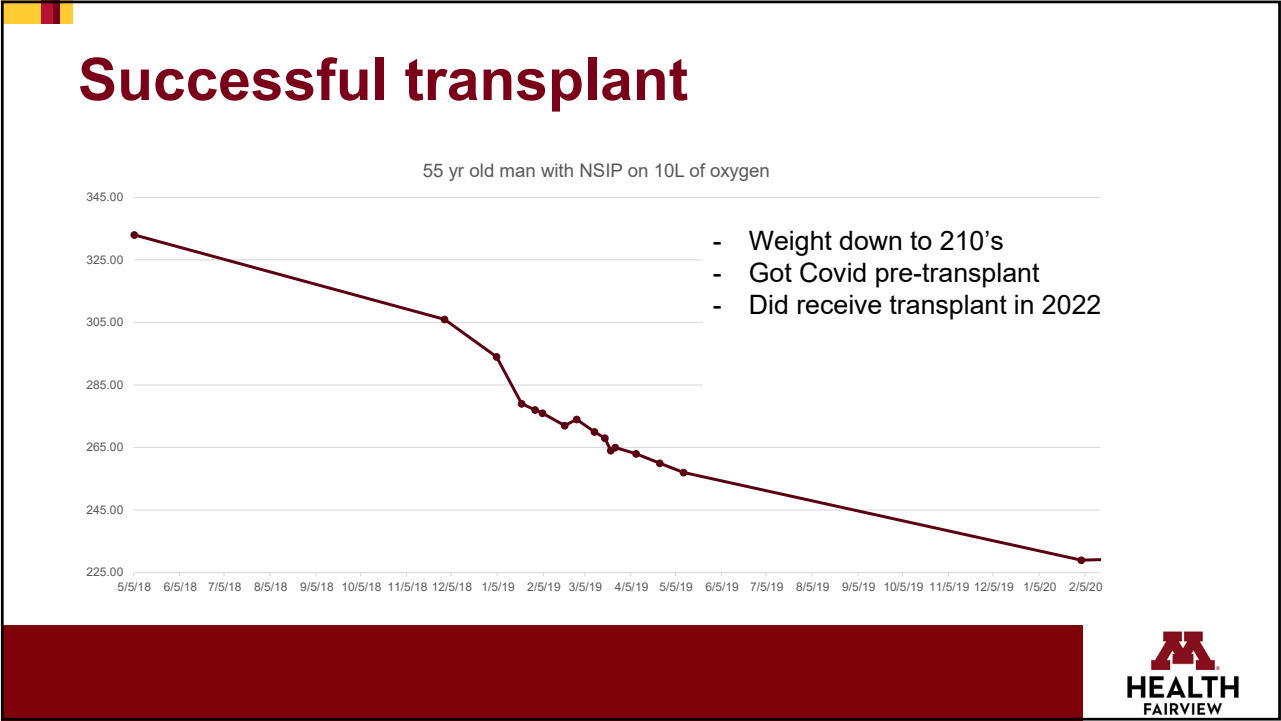
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Efficient and effective referring

Comprehensive weight management referral	MHFV, 612-336-2727
Counsel on sleep	Lay groundwork for importance Evaluate for OSA
Consider starting medication	Semaglutide 0.25mg Liraglutide 0.6mg Tirzepatide 2.5mg
Don't just diagnose without referral	Diabetes Hypertension Insight from patient advisory panel




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Thank you


Questions



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