

# Understanding and Treating Obesity

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# Format

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- Presentation
- Q&A



# Questions

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- On the left side of your screen, click the message box, “Chat with Presenter.”
- Type your question.
- Click ‘Send.’
- These questions will be addressed after the presentation.



# Presenter

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# Obesity

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- Very common
- Growing
- Complex physiology
- Clinically heterogeneous
- Resistant to treatment
- Frustrating
- Global health priority
- Associated with cancer



# Obesity by the Numbers

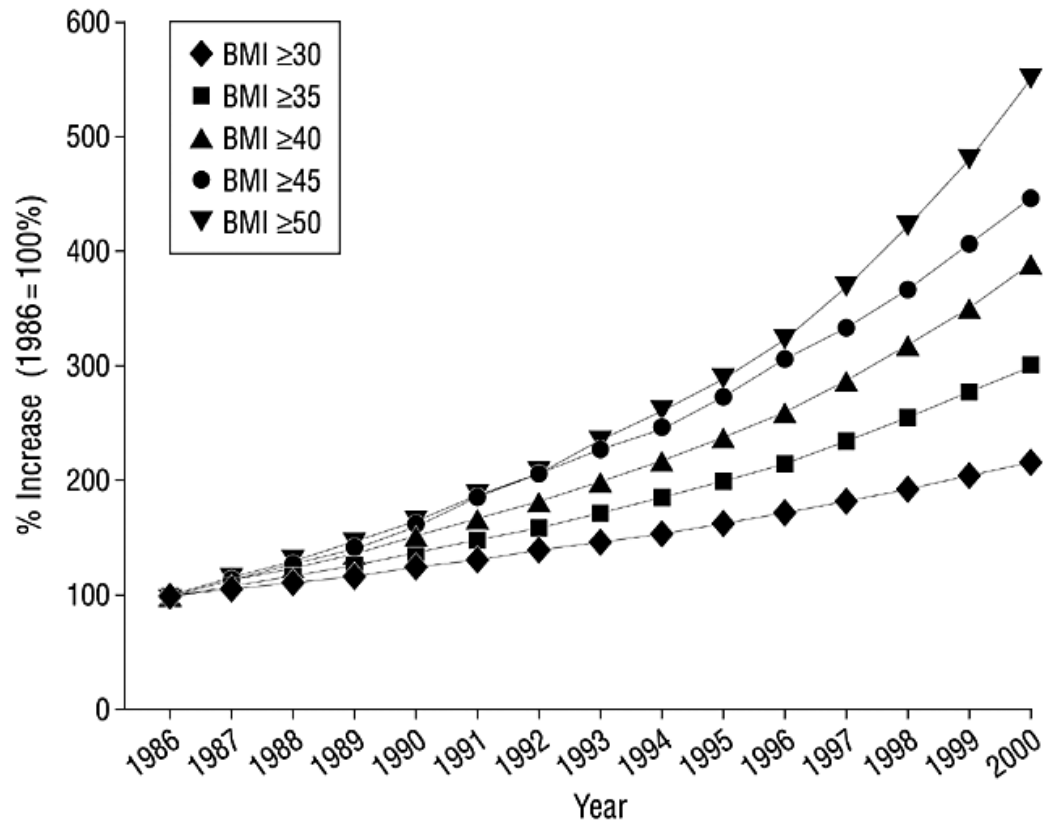
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Overweight U.S. adults:	67%
U.S. adults with obesity:	33%
U.S. children with obesity:	17%
Annual U.S. health care expenditures for obesity:	\$ 147 billion
U.S. consumer expenditures for weight loss products:	\$ 50 billion
Weekly deaths from obesity complications	> 6,000



# Disproportional Increase in Severe Obesity

More than 1,000,000 U.S. adults now have a BMI >50



Sturm R. *Health Aff*, 2004



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# Complications of Obesity

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Metabolic

Structural

Degenerative

Neoplastic

Psychological

Socioeconomic

60





# Obesity Shortens Life Expectancy

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Average years of life lost from obesity at age 30

	<u>BMI = 30</u>	<u>BMI = 40</u>	<u>BMI &gt; 45</u>
White men	1	5	11
White women	1	4	8
Black men	0	5	14
Black women	0	1	5



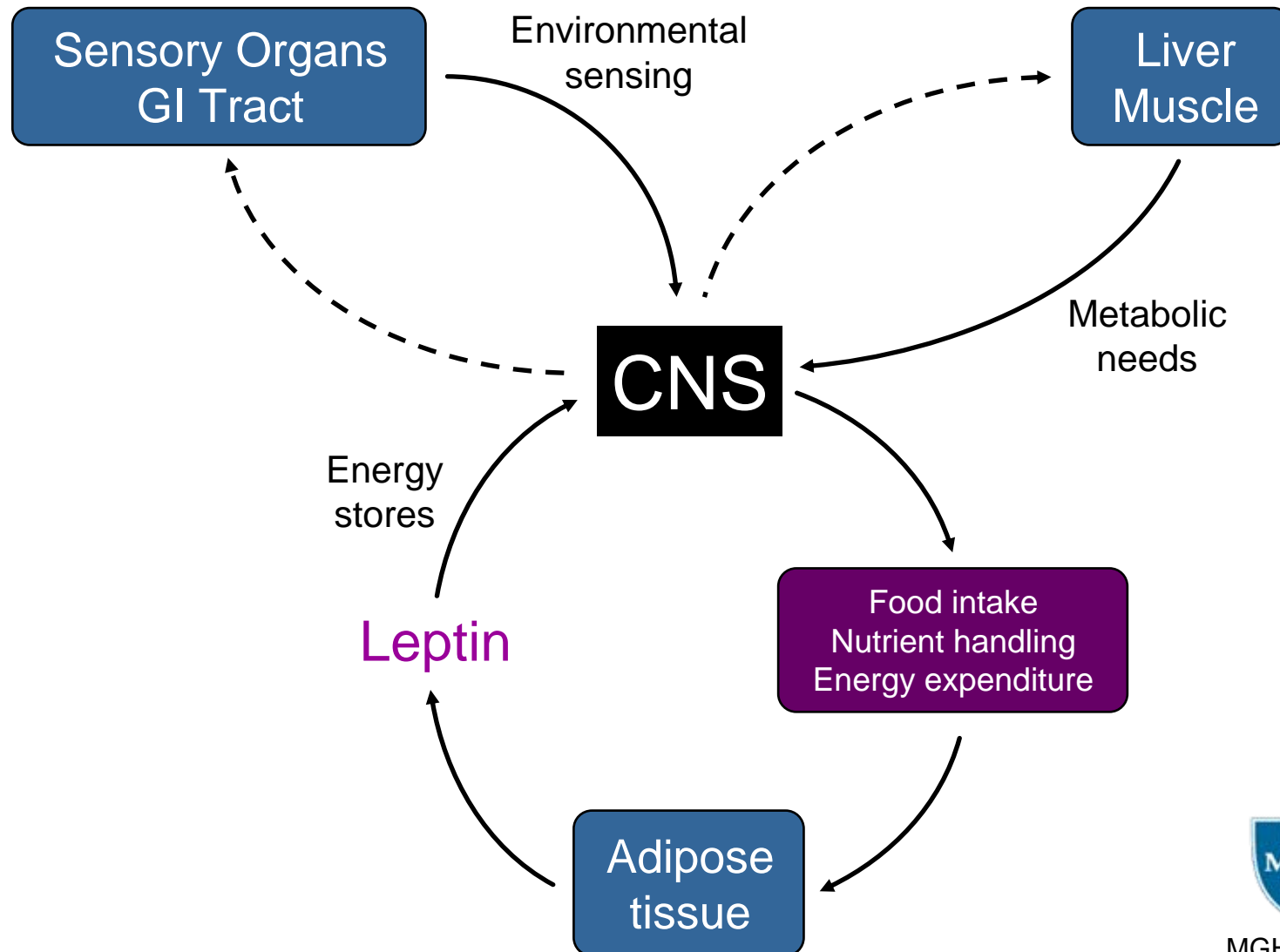
# Most Common *Undertreated* Complications

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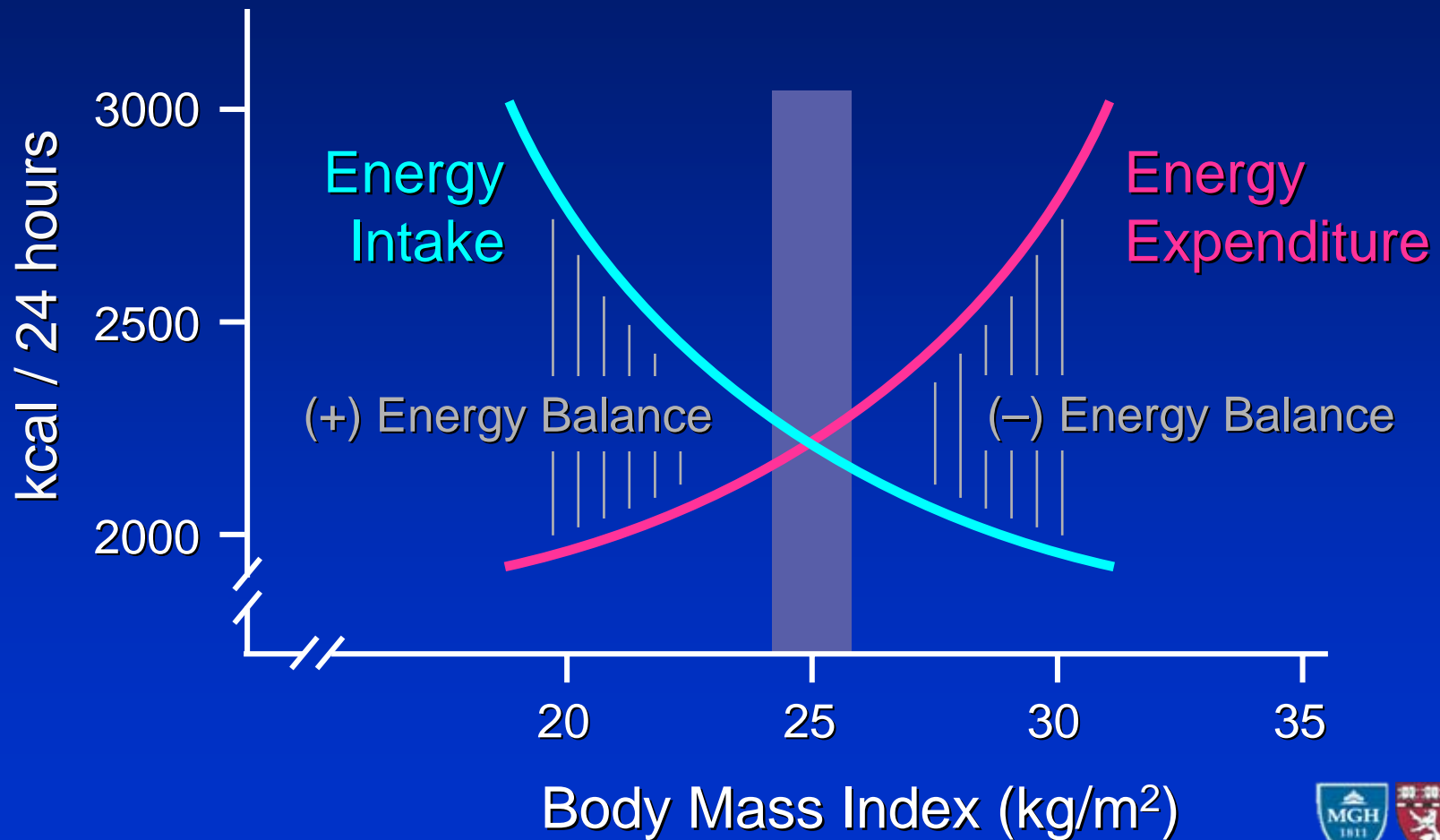
- Obstructive sleep apnea
- Fatty liver disease
- Gastroesophageal reflux disease
- Fungal skin infections
- Nutrient *deficiencies*
  - from recurrent dieting and inadequate nutrition during rebound weight gain



# Feedback Regulation of Energy Metabolism

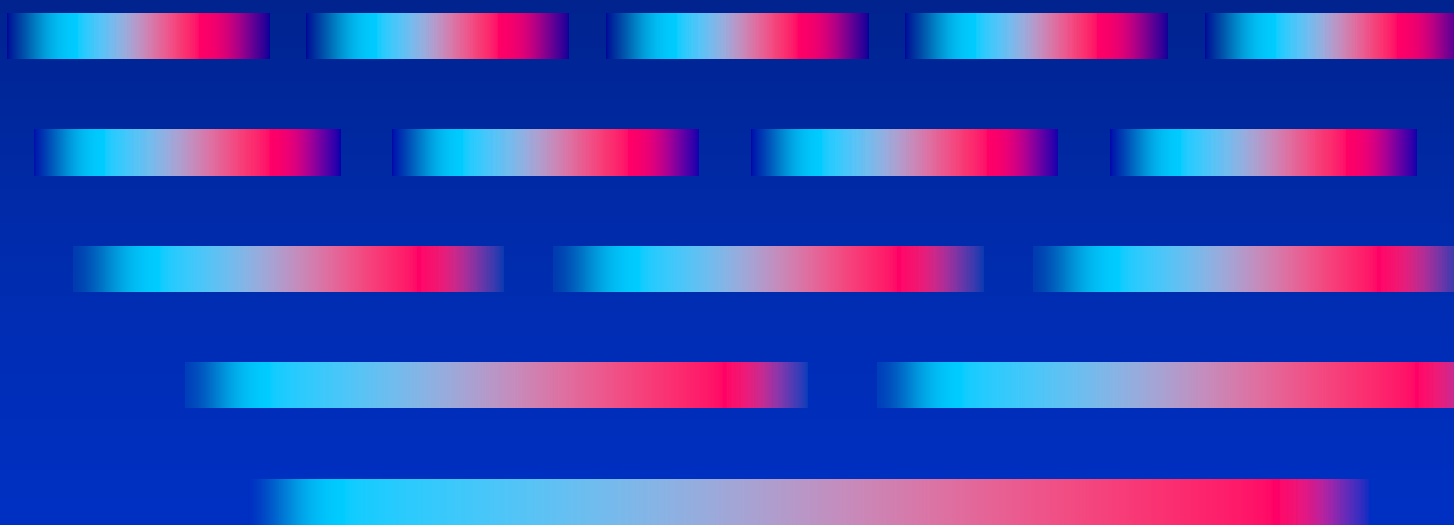


# Defending a Body Energy "Set Point"

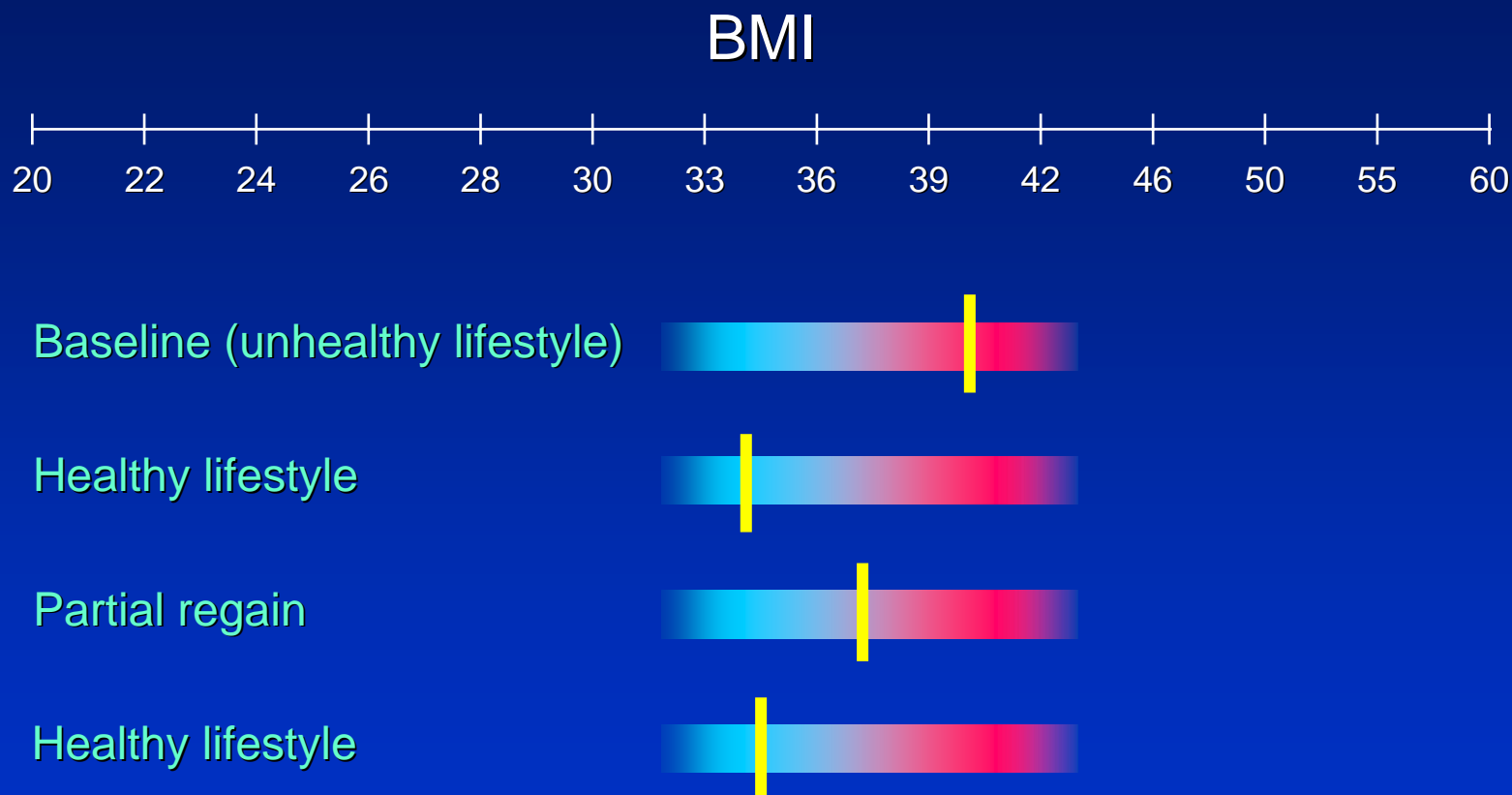


# Natural Variation and Zones of Opportunity

BMI



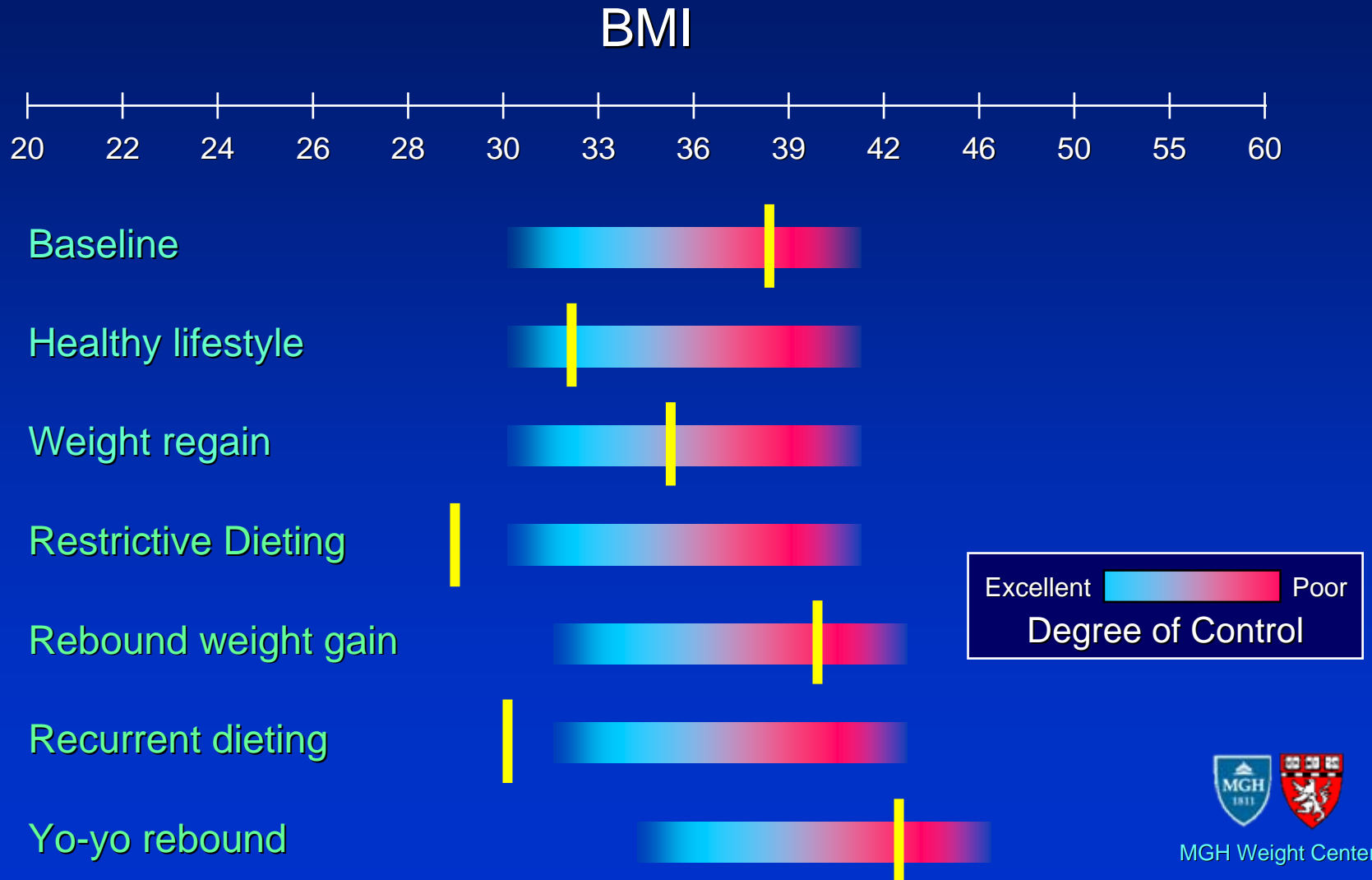
# Working Within the Zone of Opportunity



Excellent  Poor  
Degree of Control



# A Biological Basis for Yo-yo Dieting



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# Treatment of the Patient with Obesity





# Approach to the Patient with Obesity

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- **Respect the patient**
  - Avoid pejorative language
    - “Morbid,” “obese,” “recidivism”
  - Understand the challenges faced by the patient
  - The blame game is nonproductive (no one *wants* this problem)
  - Optimize your office environment
    - Physical facilities – chairs, scales, exam tables, gowns, etc.
    - Staff approach and attitudes
- **Work to develop a therapeutic partnership**
  - There is no quick or reliably effective therapy
  - Success often comes after a “trial-and-error” testing of different approaches
  - Start with lifestyle but communicate that there are other approaches to be considered as needed



# Approach to the Patient with Obesity

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- **Demonstrate understanding of the problem**
  - Obesity is devastating in ways that go far beyond the medical implications
  - Durable weight loss is extremely difficult (or impossible)
  - Improved lifestyle is achievable but may not lead to weight loss
  - Different people respond to different interventions very differently
  - Take aim at the causes of obesity
    - Food quality (even more than quantity)
    - Physical activity and muscle function
    - Mental health (stress and distress)
  - Focus on important non-weight loss outcomes
    - Quality of life
    - Health risks (cardiovascular, diabetes, cancer)



# Approach to the Patient with Obesity

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## Identify and treat obesity complications

- Medical
- Psychological
- Socioeconomic

## Reduce obesity-based disparities in care

- Ensure appropriate screening
- Recognize challenges to diagnosis (physical and technical limitations)
- Consider effects of obesity on treatment paradigms

## Treat the obesity itself



# Treatment of Obesity Itself

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## Treat underlying disorders

- Drugs are common
- Endocrine causes are rare

## Stepwise care plan

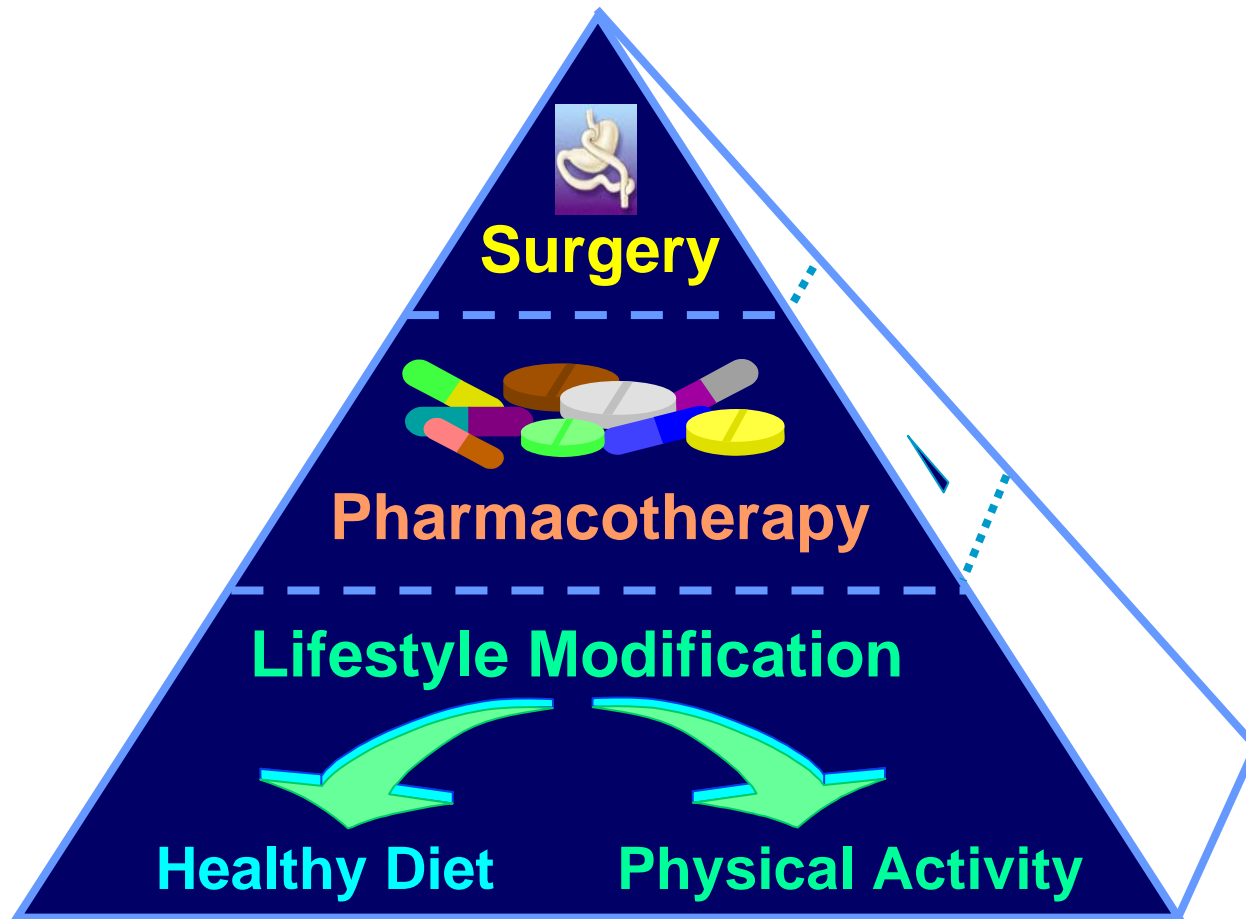
- Lifestyle modification
  - Healthy diet
  - Regular physical activity
- Medications
- Surgery

## Anticipate slow progress



# Obesity Treatment Pyramid

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# Behavioral Therapies

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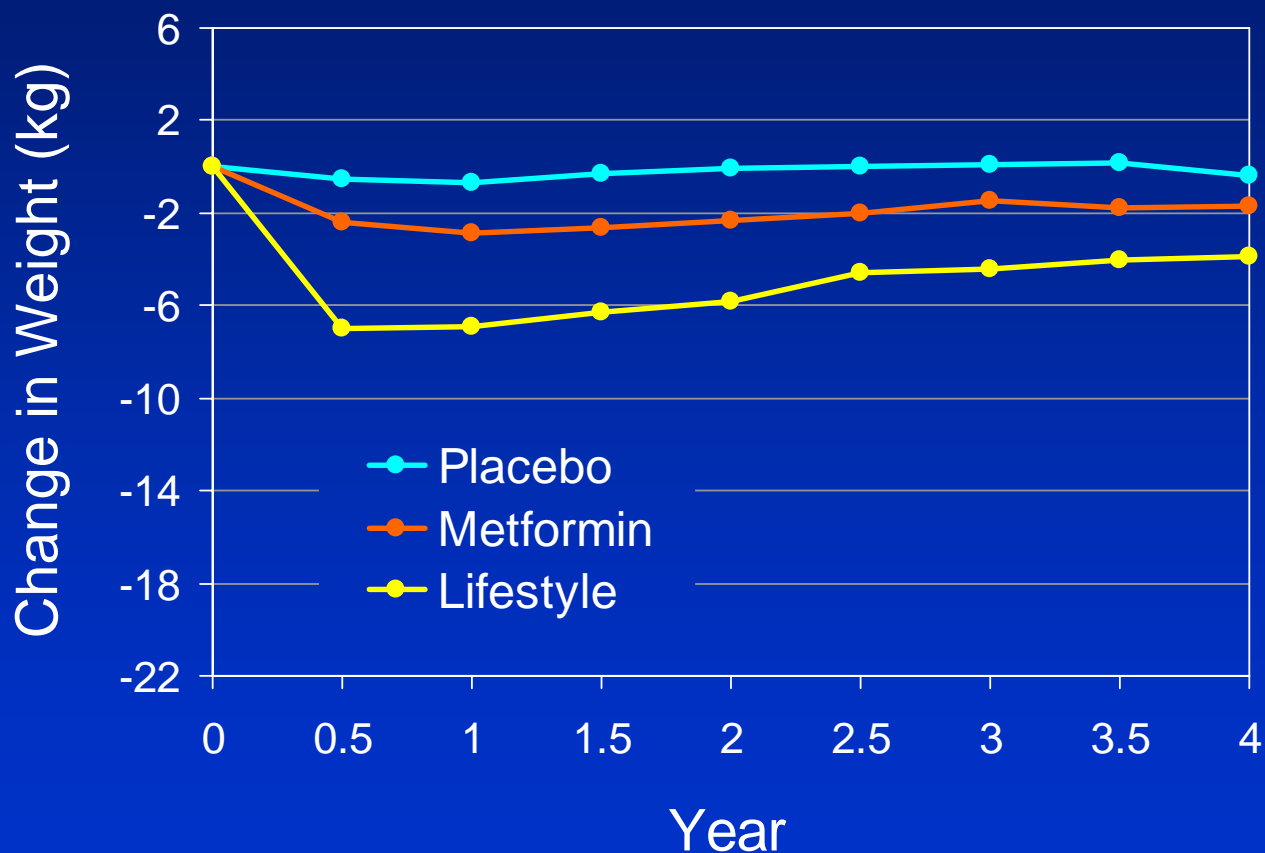
## Predictors of Weight Maintenance

- Physical activity
- Problem solving
- Self-monitoring
- Stress management
- Continued contact



# Intensive Dietary Intervention

## Diabetes Prevention Program



Nathan D et al., NEJM 2002



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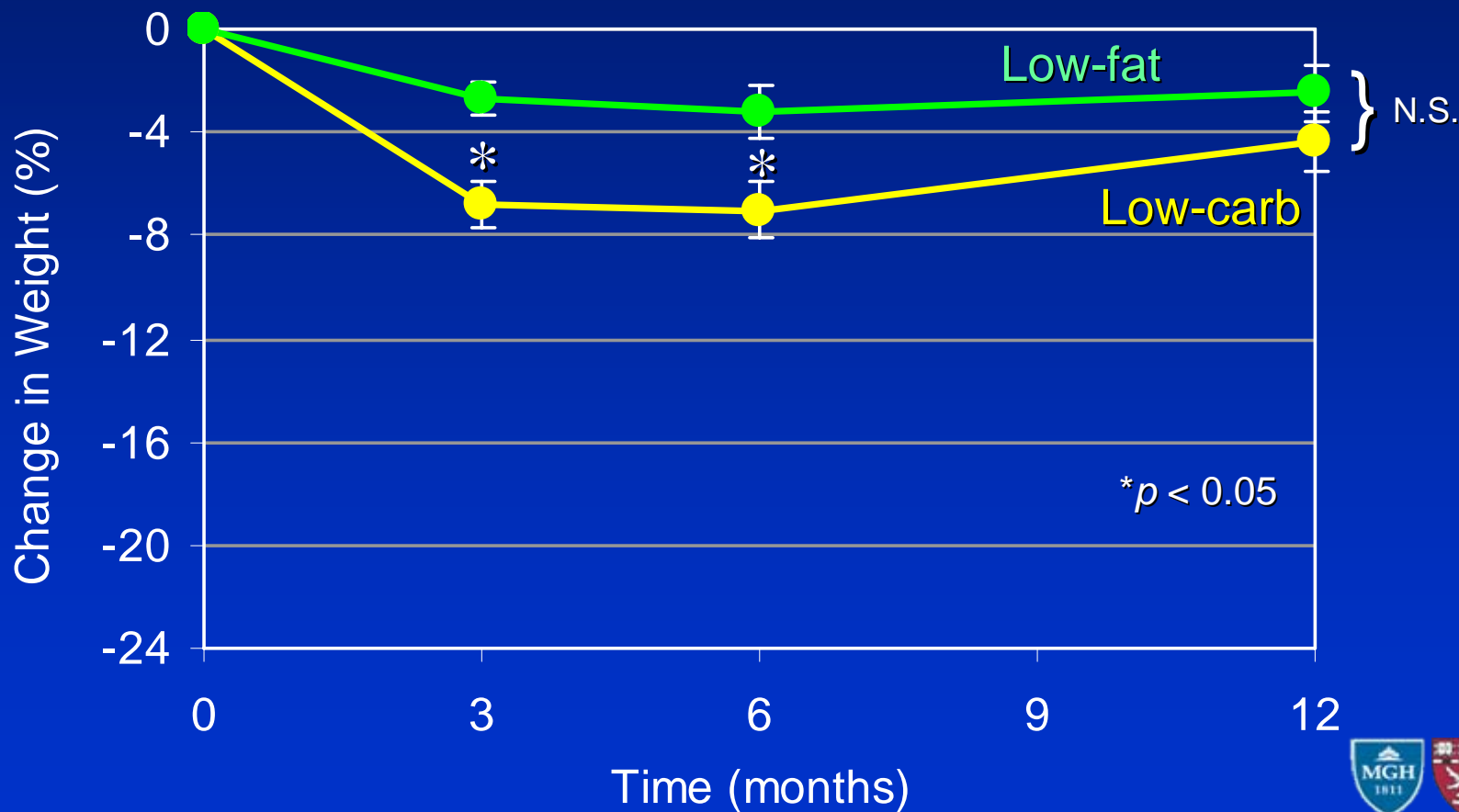
# Composition of Popular Diets





# Diet-induced Weight Loss

Baseline Values Carried Forward Analysis



Foster et al., NEJM 2003

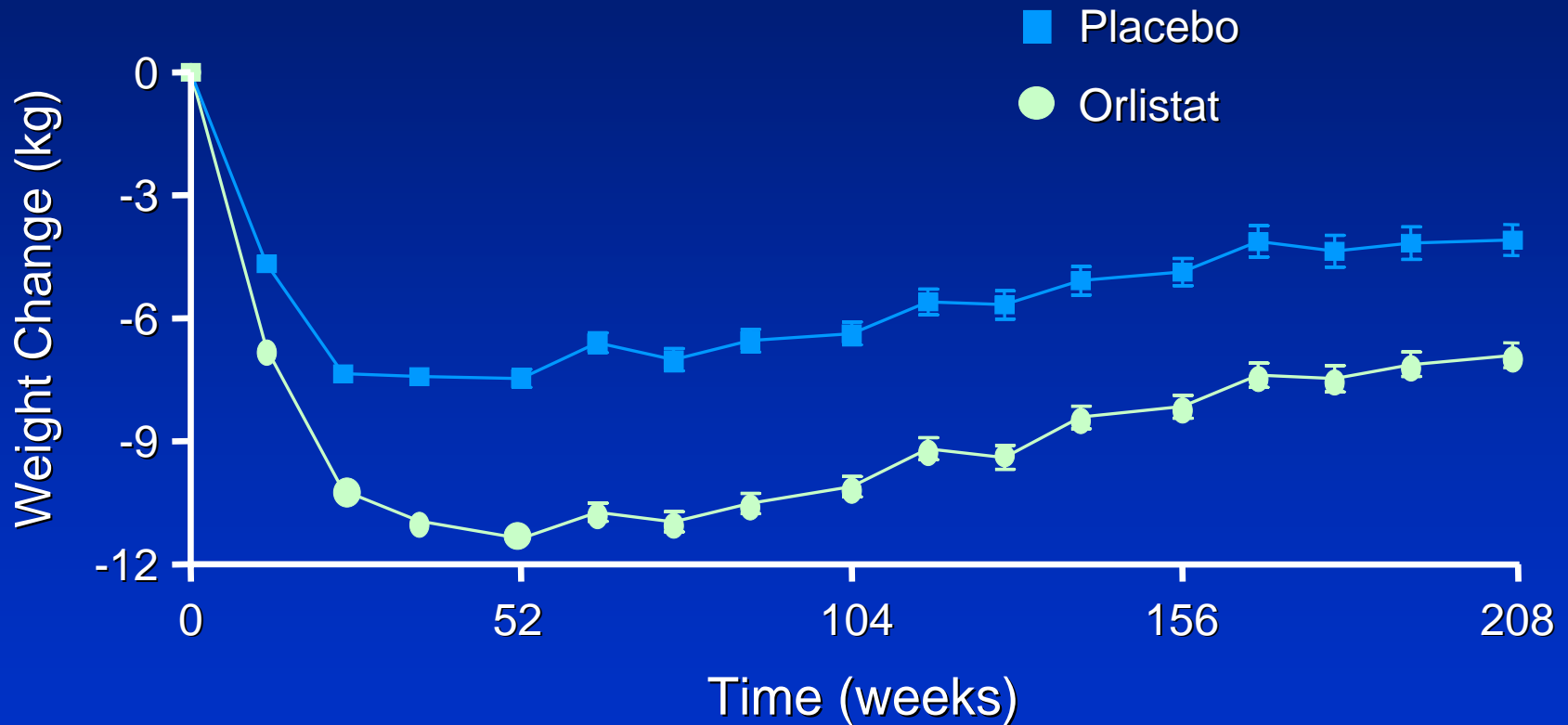


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# Medications Approved for Obesity

Medication	Mechanism of Action	Potential Side Effects
<b>Sibutramine</b> - C <sub>IV</sub> (Meridia™)	<b>Adrenergic, Serotonergic, Dopaminergic</b>	<b>Hypertension, tachycardia</b> (avoid use with SSRIs)
<b>Orlistat</b> (Xenical™)	<b>Lipase Inhibitor</b>	<b>Steatorrhea, incontinence</b>
<b>Phentermine</b> - C <sub>IV</sub> (Adipex™, Ionamin™)	<b>Adrenergic</b>	<b>Tachycardia, hypertension</b>
<b>Diethylpropion</b> - C <sub>IV</sub> (Tenuate™)	<b>Adrenergic</b>	<b>Tachycardia, HTN, anxiety</b>
<b>Benzphetamine</b> - C <sub>III</sub> (Didrex™)	<b>Adrenergic</b>	<b>Tachycardia, HTN, anxiety</b>
<b>Phendimetrazine</b> - C <sub>III</sub> (Bontril™, Prelu-2™)	<b>Adrenergic</b>	<b>Tachycardia, HTN, anxiety</b>

# Orlistat Induces Weight Loss



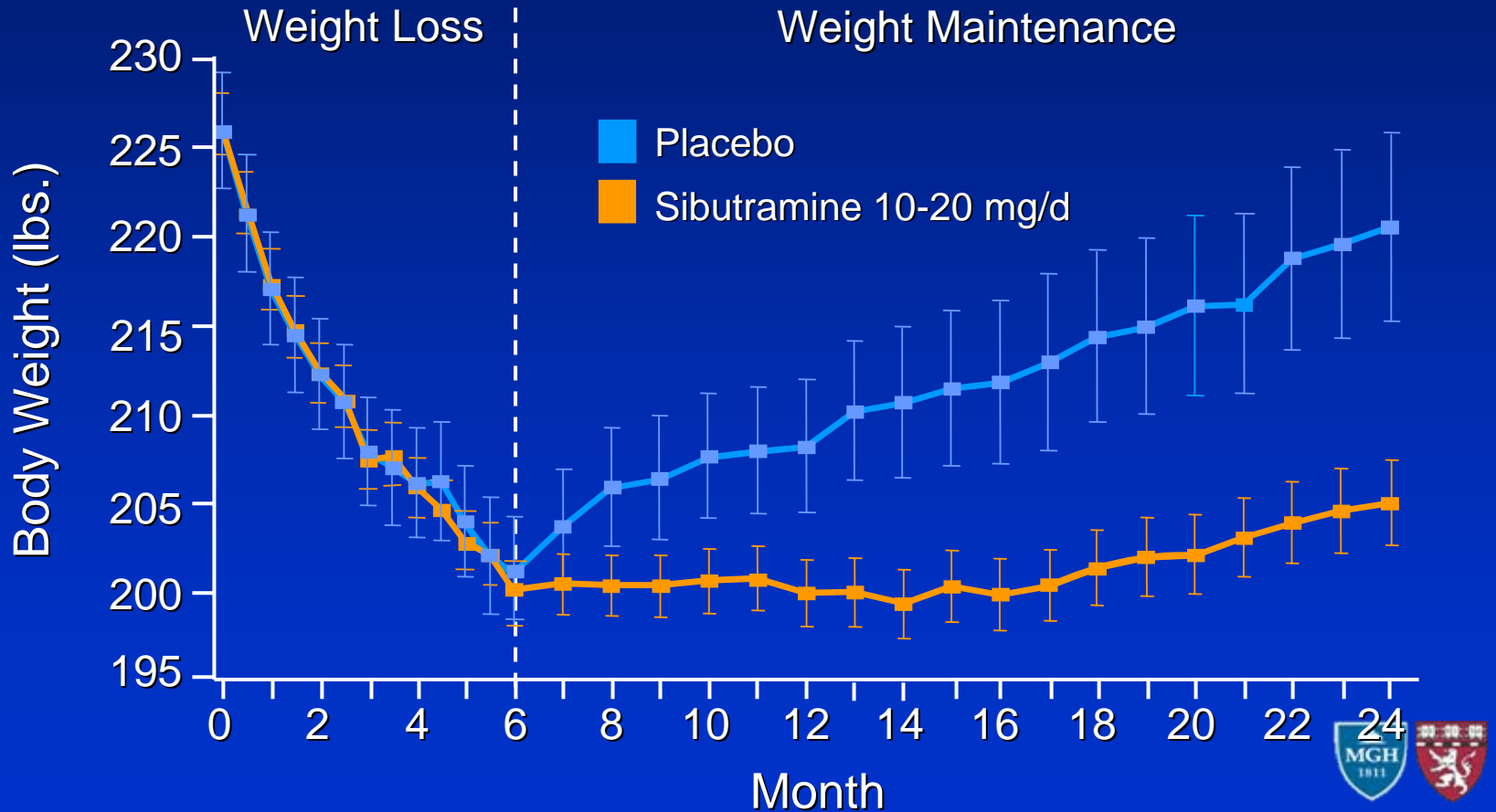
Torgenson et al., *Diabetes Care* 2004



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# Weight Maintenance on Sibutramine

Randomization at 6 months in those with  $\geq 5\%$  initial weight loss



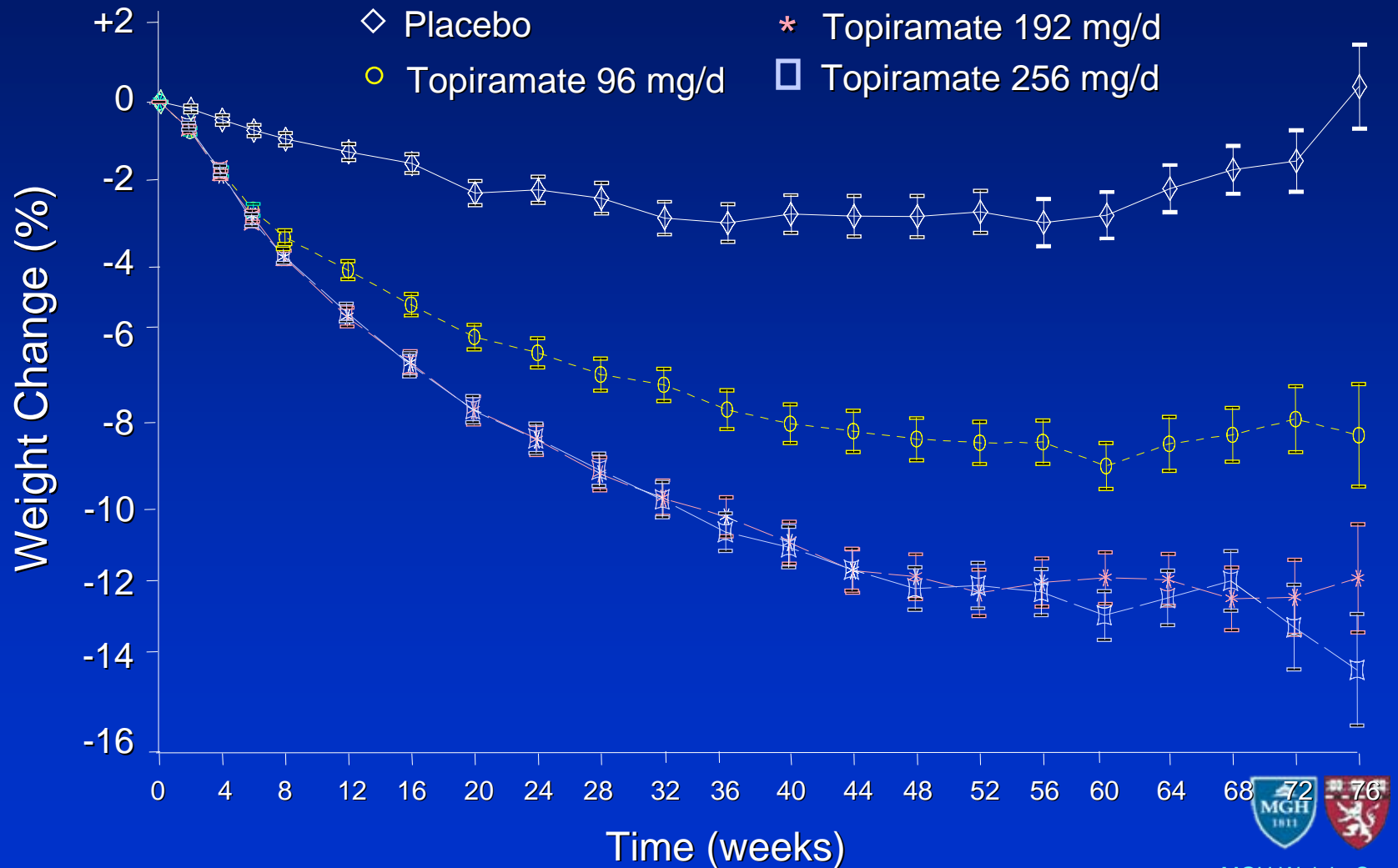
James et al., Lancet 2000

# Weight Loss from Other Medications

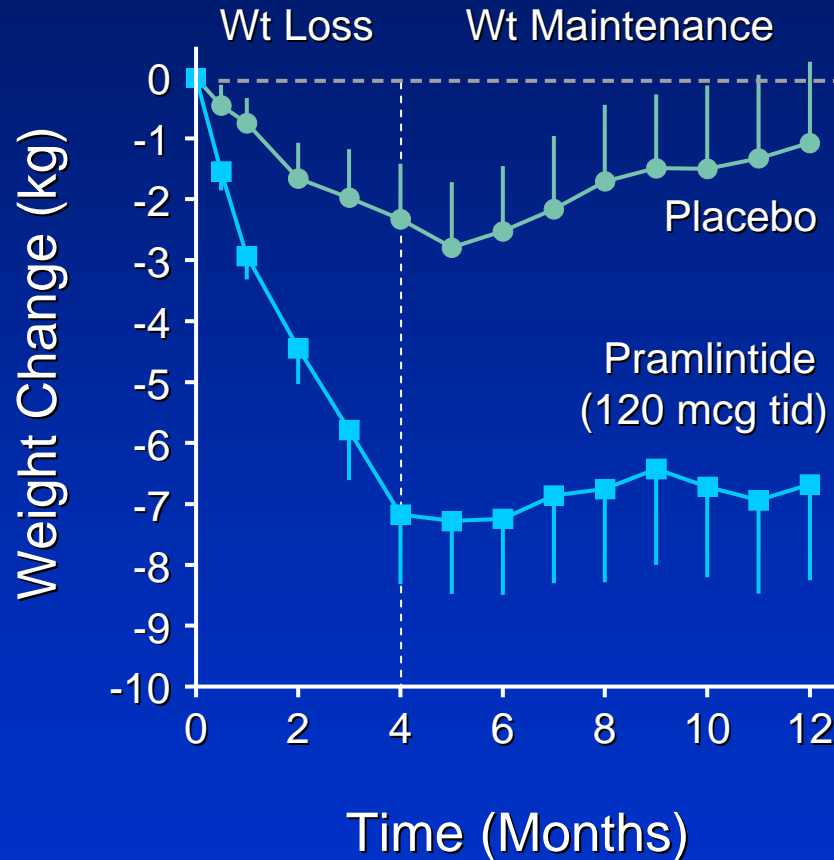
Strategy: Aim for Double Benefits when Possible

Medication	Indicated Uses	Comments
Bupropion	Depression	Avoid in bipolar disease
Topiramate	Seizures Migraines Mood disorders	May produce neurological side effects
Zonisamide	Seizures Mood disorders	Few studies
Metformin	Type 2 diabetes PCOS	Rare liver toxicity
Exenatide	Type 2 diabetes	Injectable
Pramlintide	Type 2 diabetes	Injectable

# Topiramate Induces Weight Loss



# Pramlintide Induces Weight Loss



Aronne L. *et al.*, *JCEM* 2007



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# Medication-induced Weight Gain

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Medications likely account for 5-10%  
of obesity in the U.S.



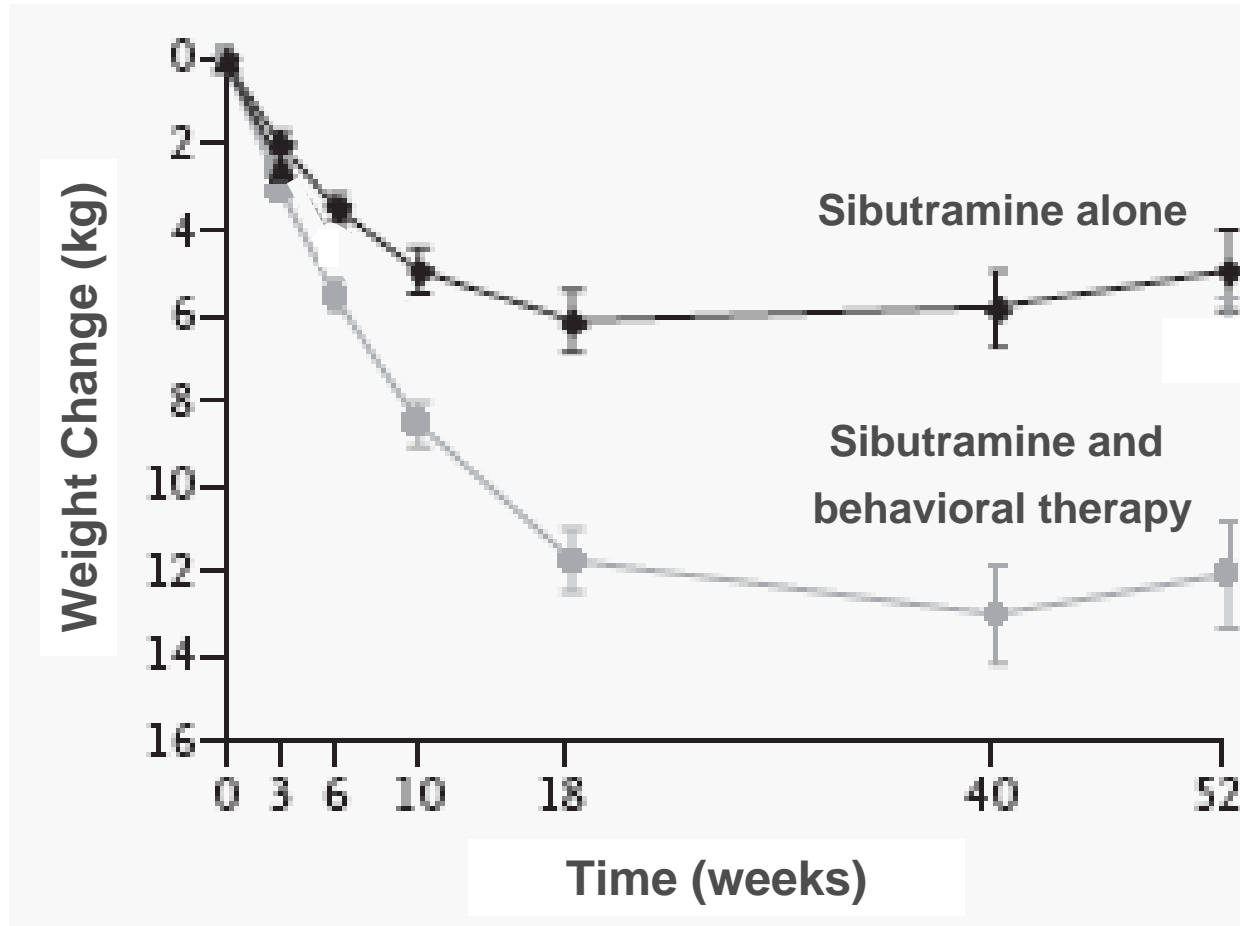


# Treatment of Medication-induced Obesity

Strategy: Replace Weight Gain Promoting Medications

Category	Common Weight Gain Promoting Medications	Potential Alternatives that Promote Less Weight Gain
SSRIs	Celexa™, Lexapro™ Paxil™	Prozac™, Zoloft™ Bupropion
Mood stabilizers	Olanzapine (Zyprexa™) Clozapine (Clozaril™) Risperidone	Topiramate, Zonisamide Geodon™
Anticonvulsants	Valproate	Phenytoin Topiramate
Insulinotropic agents	Insulin, Sulfonylureas Thiazolidinediones	Pramlintide Exenatide
Steroids	Corticosteroids	Immunosuppressants TNF $\alpha$ blockers

# Behavior Therapy Augments Sibutramine



Wadden T *et al.*, *NEJM* 2005



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# Efficacy of Current Therapies

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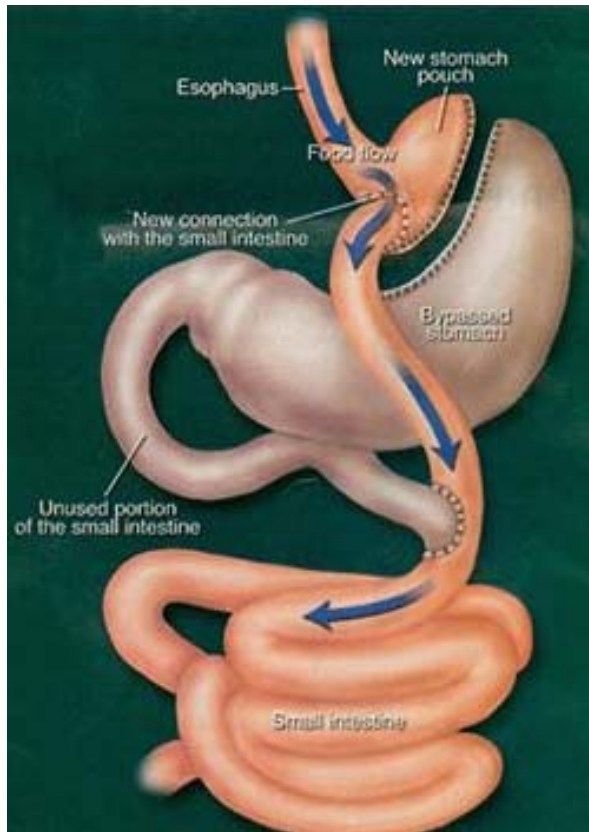
Weight Loss (% of patients):	6-month	5-year
Comprehensive, behavior-based (diet and exercise)	60-75	1-5
Medications (sibutramine, orlistat, phentermine)	70-90	1-5
Surgery (gastric bypass, gastroplasty)	80-90	50-70



# Weight Loss Surgery

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## Roux-en-Y Gastric Bypass

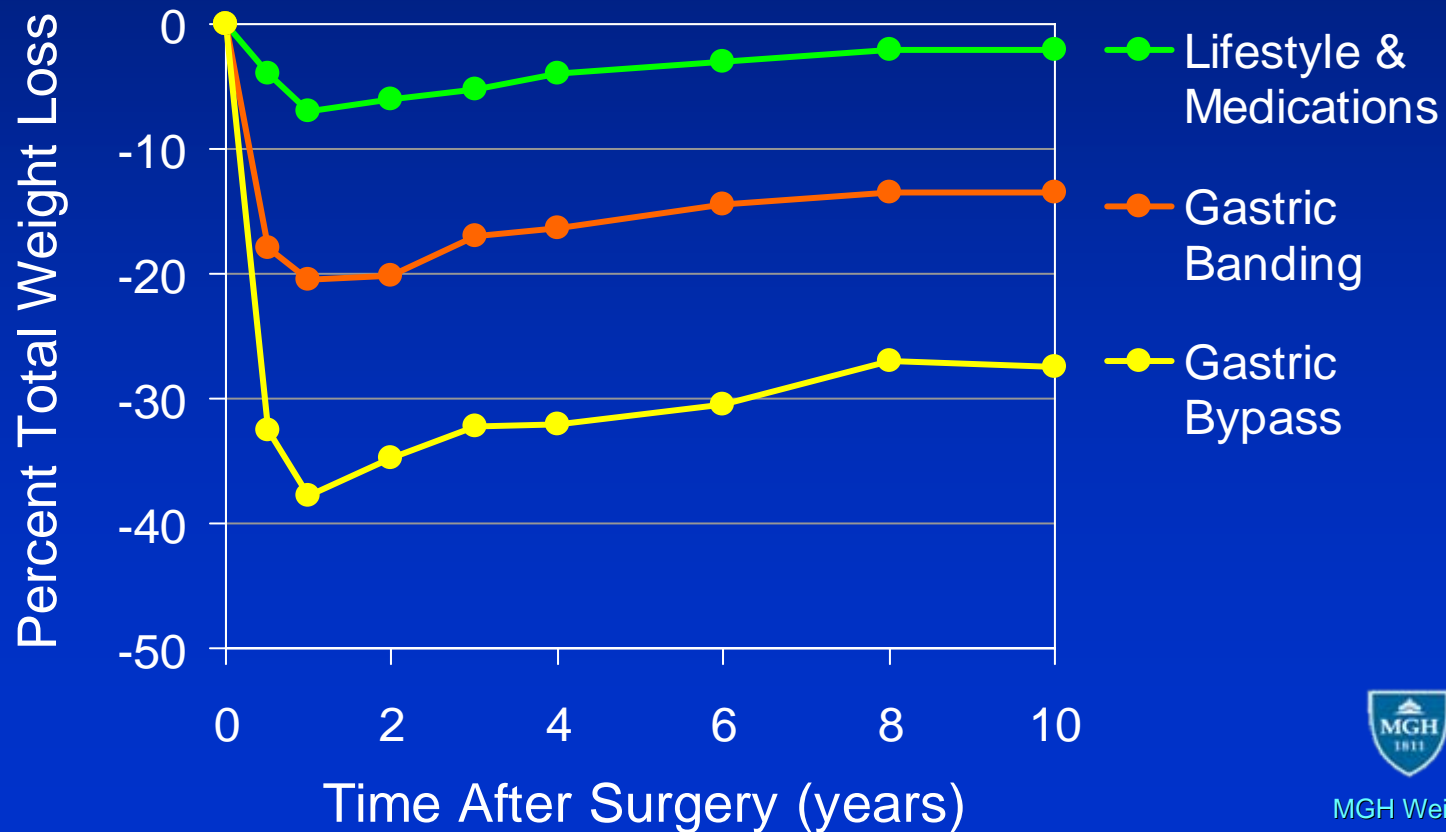


## Adjustable Gastric Banding



# Effectiveness of Obesity Treatments

## Swedish Obesity Subjects Diabetes Prevention Program



# Outcomes of Gastric Bypass

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Disorder	% Improved	% Resolved
Diabetes mellitus	100	82
Gastroesophageal reflux	96	72
Hypercholesterolemia	96	63
Peripheral edema	96	41
Obstructive sleep apnea	93	74
Hypertension	88	70
Osteoarthritis	88	41
Gout	86	72
Hypertriglyceridemia	86	57
Urinary incontinence	83	44
Asthma	82	13
Depression	55	8



# Complications of Gastric Bypass

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Need for re-operation	5 %
Major wound infections	2 %
Anastomotic ulcer/obstruction	5 %
Persistent dumping syndrome	3 %
Micronutrient deficiency	22 %
Steatohepatitis	3 %
Symptomatic gallstones	2 %
Venous thrombosis	2 %
Anastomotic leak	0.7 %
<b>Overall major morbidity</b>	<b>10 %</b>
<b>Overall mortality</b>	<b>0.3 %</b>



# Surgery Decreases Long-term Mortality

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Adams et al., NEJM 2007

- 15850 gastric bypass patients and matched controls (Utah)
- 7.1 year mean follow-up
- Gastric bypass group exhibited overall 40% reduction in mortality
- Specific-cause mortality after gastric bypass
  - 56% reduction from CAD
  - 92% reduction from type 2 diabetes
  - 60% reduction from cancer
  - 58% increase for accidents or suicide





# Indications for Weight Loss Surgery

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1. BMI > 35 in association with major medical complications of obesity

**OR**

BMI > 40

(more stringent BMI criteria for adolescents)

2. Failure of other approaches to long-term weight loss



# Contraindications to Surgery

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- End-stage lung disease
- Unstable cardiovascular disease
- Multiorgan failure
- Gastric varices
- Uncontrolled psychiatric disorder
- Ongoing substance abuse
- Age > 75 or < 15 years
- Noncompliant patient



# Practical Guidance

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- Embrace modest weight loss
  - Focus on what is achievable – and sustainable
  - Understand biological limits
  - Be clear about what treatment can and cannot do
- Understand that one size does not fit all
- Cherish non-weight outcomes
  - Recognize *all* successes of therapy
- Go slow, gain the patient's confidence, and try different approaches (“Pac-Man”)
- Focus more on what you can offer more than how the patient behaves



# Practical Guidance

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- Be realistic
- Be optimistic
- Be encouraging
- Be there



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# Upcoming Webinars, Programs, Services

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## October

- Employee Engagement
  - 10/7 at 12:15pm
- Health Literacy & Patient Education in PC
  - 10/14 at 12:15pm
- **Program and Course Information**  
[www.massgeneral.org/stoecklecenter/pec/course\\_catalog](http://www.massgeneral.org/stoecklecenter/pec/course_catalog)



# Wrap-Up

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- Today's session - available online.
- Evaluations

Thank you for your participation!

