

Updated Weight Loss Strategies

New APP Updates in Treatment of Obesity and Bariatric Surgery

James Healy, MD & Jessica Williams MD

Use of GLP-1 Agents

Fadi Al Khayer, MD

Diets Don't Work – A Lifestyle Medicine Approach

Kathleen Mueller, MD



Bariatric Surgery in Adolescents – Approaches and Outcomes

**Division of Obesity & Weight
Management
Connecticut Children's**

James Healy, MD, MHS, FACS

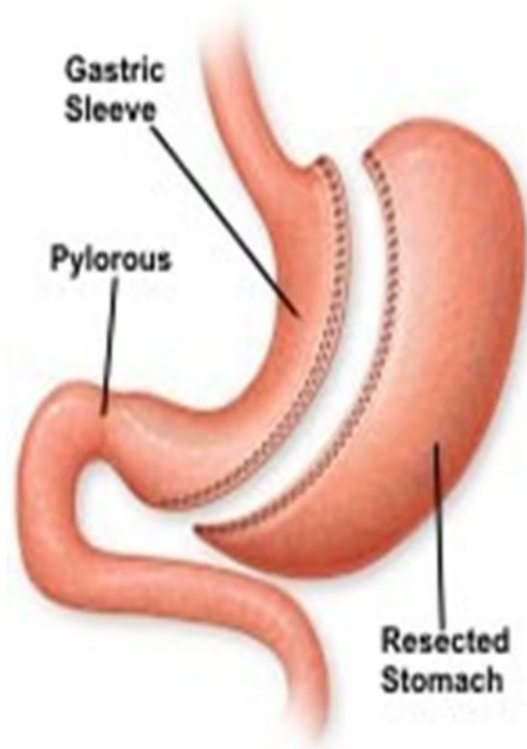


Disclosures



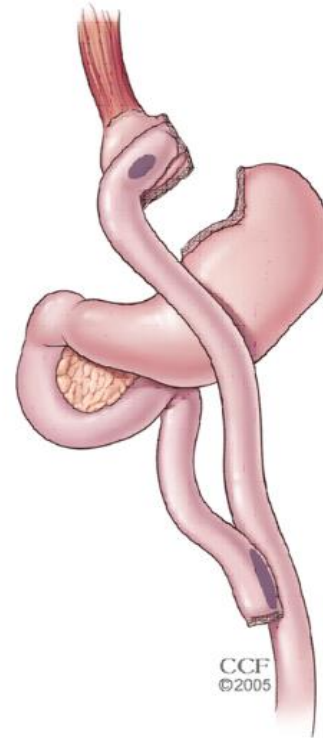
- I have no relevant financial disclosures or conflicts of interest to disclose.

Bariatric Surgery Options



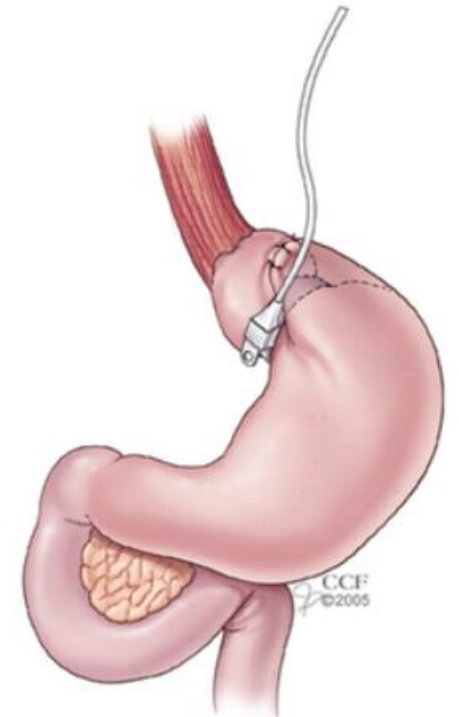
Sleeve gastrectomy

- Smaller stomach – restrictive
- Changes in gut hormones



Roux-en-Y gastric bypass

- Small pouch – restrictive
- Malabsorptive
- Changes in gut hormones



Adjustable Gastric Band

- Restrictive only
- > 40% re-operation rate

AAP Policy Statement: December 2019



- Watchful waiting may lead to *higher BMI and comorbidities*
- Better outcomes if surgery **before BMI 50**
- Timely referrals to high-quality multidisciplinary center: American Society for Metabolic and Bariatric Surgery (ASMBS) has an accreditation program, and a specific adolescent designation

TABLE 1 Indications and Contraindications for Adolescent Metabolic and Bariatric Surgery

| Wt Criteria | Comorbid Conditions |
|---|--|
| Class 2 obesity, BMI ≥ 35 , or 120% of the 95th percentile for age and sex, whichever is lower | Clinically significant disease, including obstructive sleep apnea (AHI >5), T2DM, IIH, NASH, Blount disease, SCFE, GERD, and hypertension |
| Class 3 obesity, BMI ≥ 40 , or 140% of the 95th percentile for age and sex, whichever is lower | Not required but commonly present |

AHI, Apnea-Hypopnea Index; GERD, gastroesophageal reflux disease; IIH, idiopathic intracranial hypertension; NASH, non-alcoholic steatohepatitis; SCFE, slipped capital femoral epiphysis; T2DM, type 2 diabetes mellitus.



What are the risks of surgery?



We review all the possible risks with patients before surgery:

- An individualized risk assessment will always depend on individual comorbidities
- Infection 1:200
- Bleeding requiring transfusion or re-operation 1:200
- **Transient** nausea, reflux, difficulty swallowing 95%
- Injury to nearby organs (liver, spleen, intestine, diaphragm, pancreas): 1:3000
- Leak from staple line: rare
- DVT/PE: rare
- Death: exceptionally rare
- Eventual weight re-gain: approximately 10% over a 5-year period
- Request referral to plastic surgery for redundant skin: approximately 15%

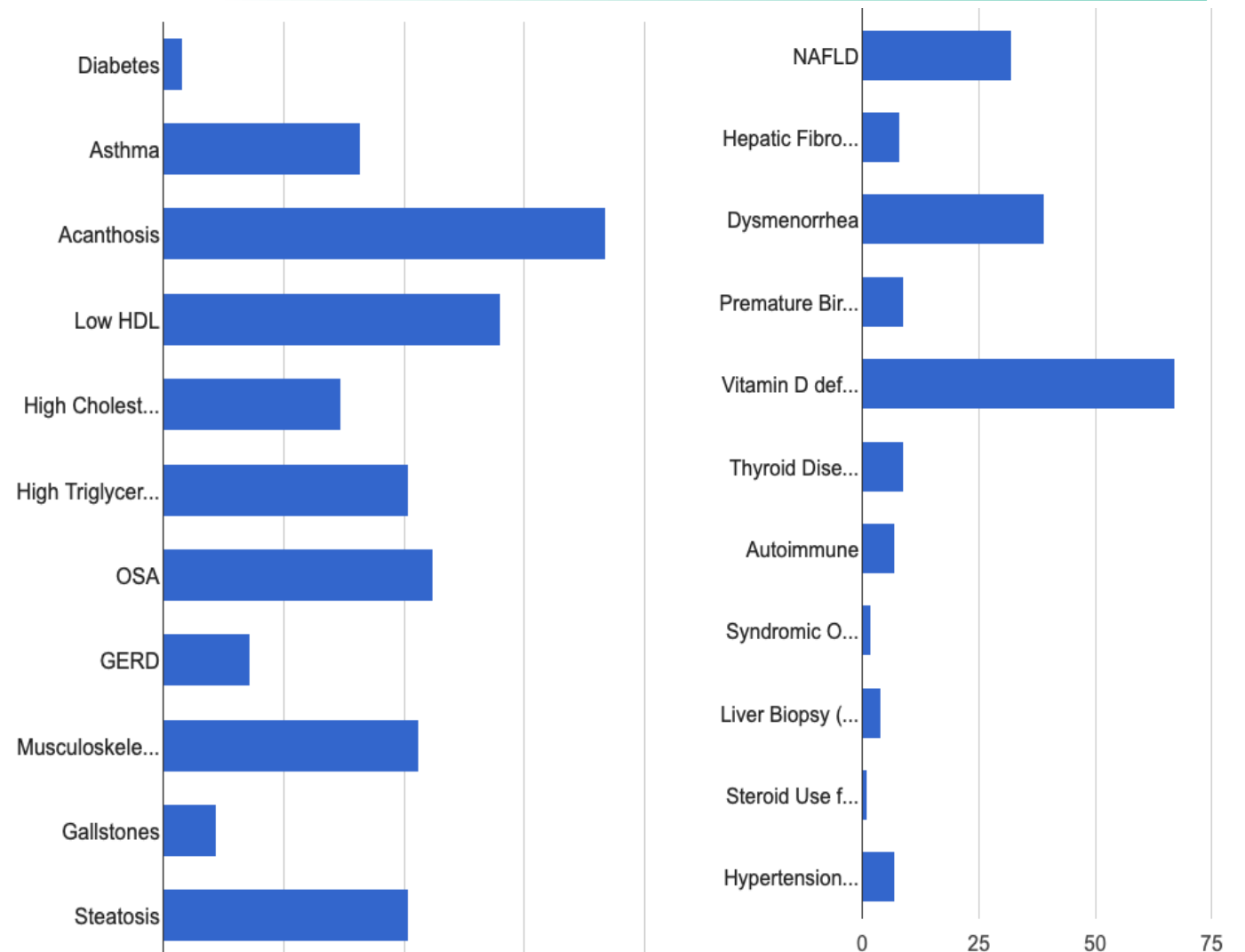
What needs to be done prior to the operating room?

- All patients go through an extensive multidisciplinary evaluation and workup over at least a 6 month period.
- Specific preop requirements are aimed at reduction of risk:
 - 6 months of nutritional education (reduces risk of weight regain)
 - Physical therapy
 - Support group meeting(s)
 - Standard full lab panel including lipids, HbA1c, thyroid labs, LFTs
 - Sleep study and CPAP if indicated (reduces risk of cardiac and respiratory complications postop)
 - Upper GI swallow study (to evaluate for previously unknown malrotation or hiatal hernia)
 - Right upper quadrant US (to evaluate for evidence of hepatic steatosis and presence of gallstones)
 - If workup suggestive of NAFLD or NASH, we can consider an MRI with elastography instead of UGI and RUQ US to estimate degree of fibrosis and evaluate liver size and stiffness to help reduce risk.

Who are our patients?

Baseline Demographics:

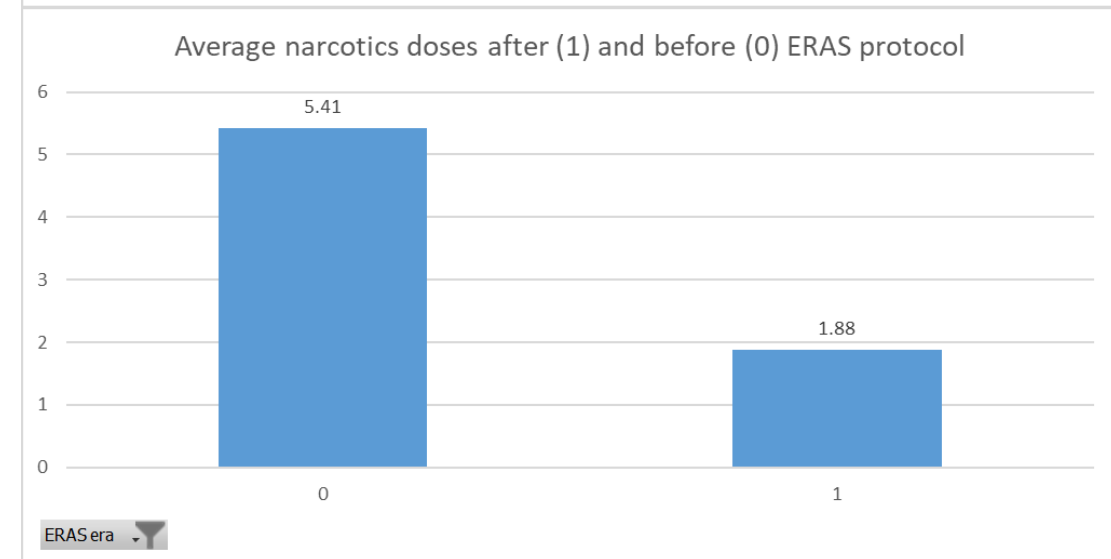
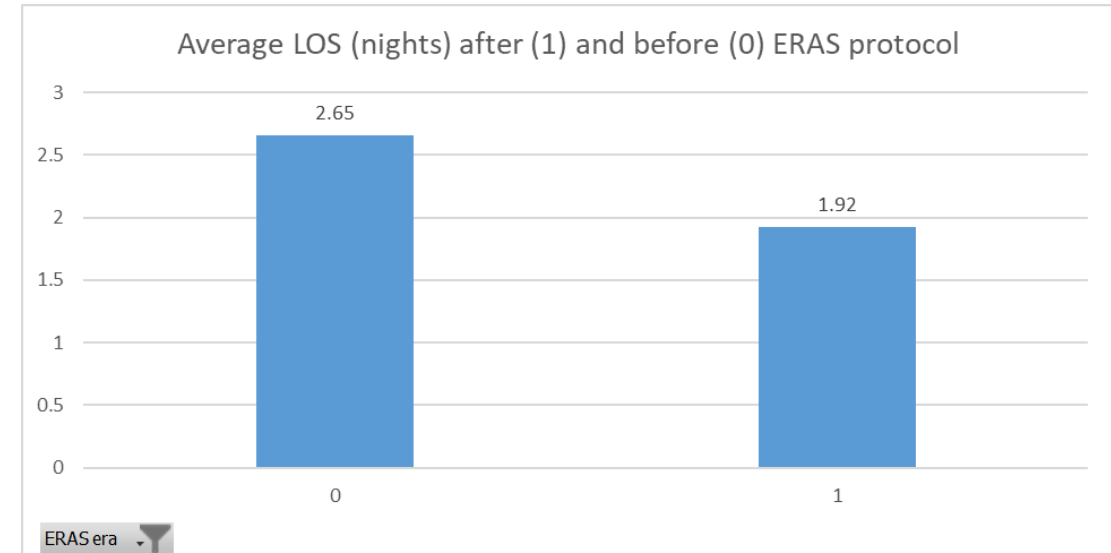
- Age: average 17 (range 12-24)
- Gender: 75% Female
 - 37.8% White or Caucasian
 - 28.3% Black or African American
 - 49.2% Hispanic
- Public insurance 65.6%
- BMI: average 47.6 (range: 35 – 71.6)
- HbA1c on enrollment: average 5.5 (min 4.6, max 11.9)
- Hepatic steatosis present in 50%



What is the recovery and operation like?

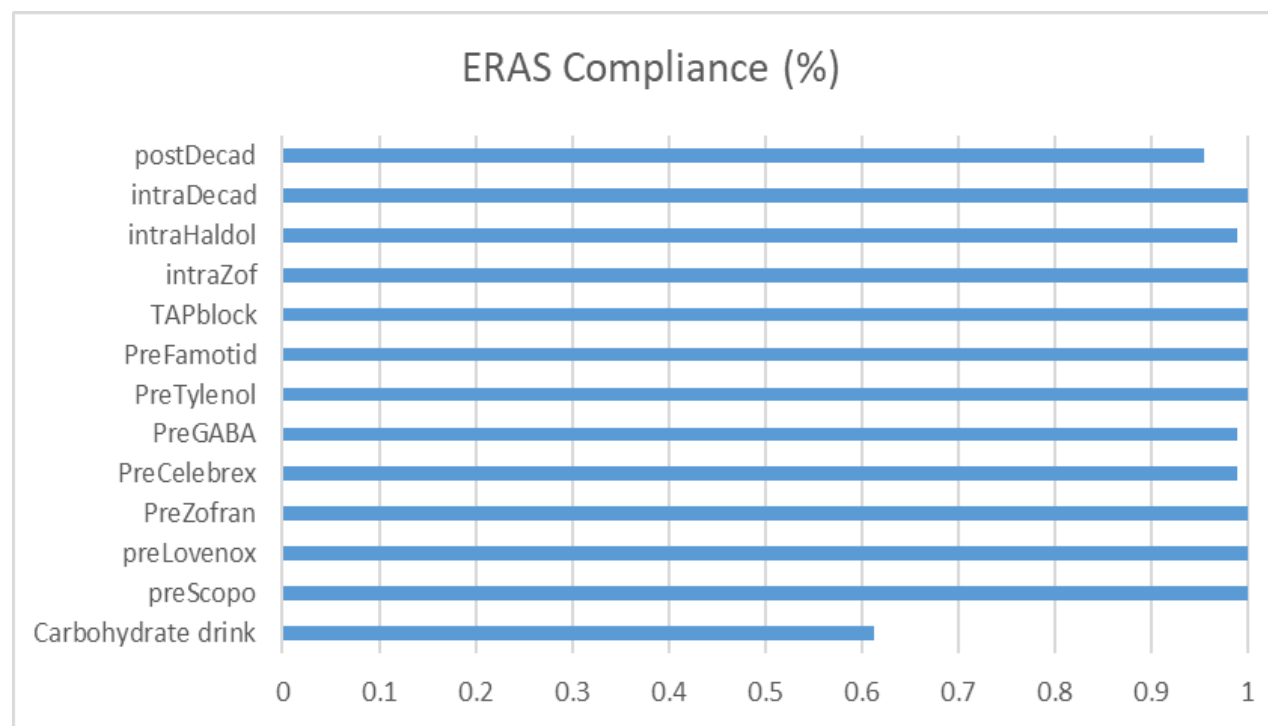
Operative Details

- 2-surgeon approach in 100% of cases currently (Drs. Finck and Healy)
 - Median operative time: (78 min)
 - Laparoscopic 88.1% Robotic 11.9%
 - Selective liver biopsy 35%
 - Cholecystectomy 10%
-
- Number of postop narcotics doses: median 2 doses
 - Length of stay: median 2 nights
 - Time to walking: patients walk the day of surgery
 - Swimming/soaking: avoid for 10 days
 - Heavy lifting/sports: avoid for 14 days



Compliance with aspects of the ERAS protocol

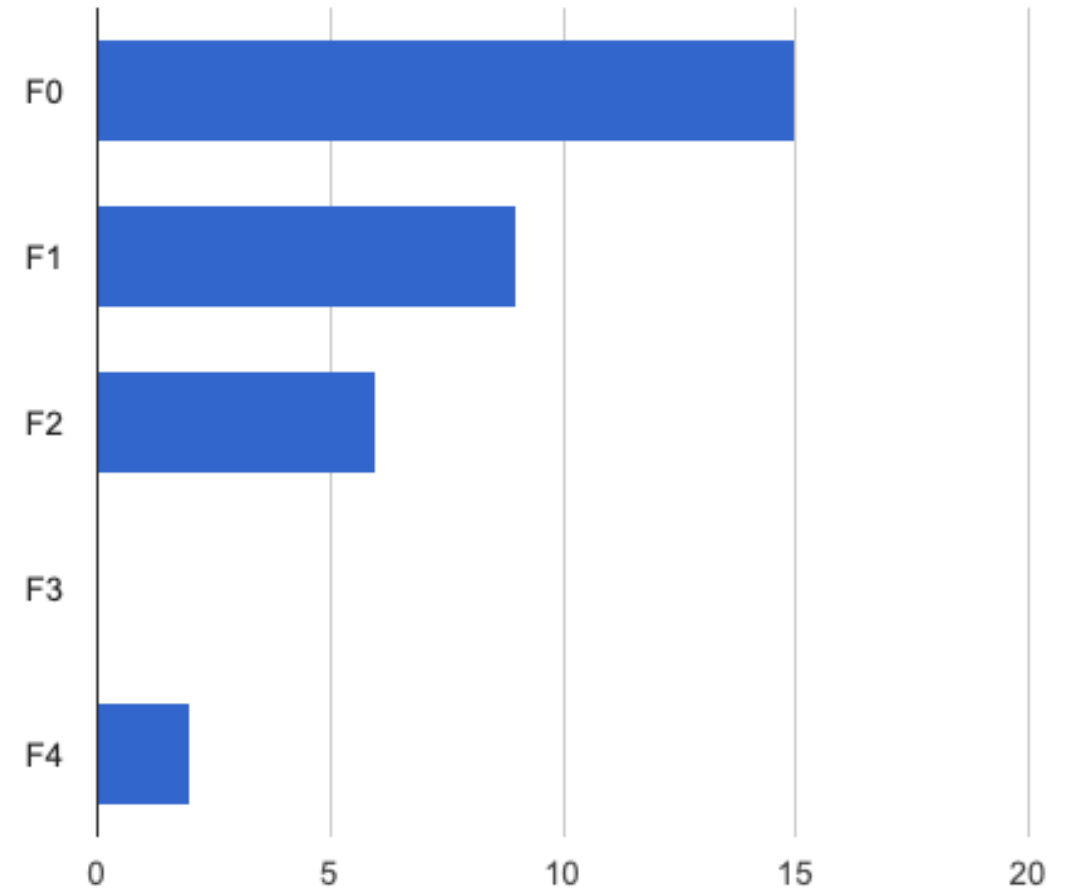
- Preop carbohydrate drink (evening before surgery and morning of surgery): **61%**
- Scopolamine patch placed in preop: **100%**
- Lovenox preop: **100%**
- Preop meds:
 - Zofran **100%**
 - Gabapentin **98.9%**
 - Celebrex **98.9%**
 - Acetaminophen **100%**
 - Famotidine **100%**
- TAP block intraop **100%**
- Intraop meds:
 - Zofran 4mg **100%**
 - decadron 10mg **100%**
 - Haldol 0.5mg **98.9%**
- Postop meds: decadron 10mg 8 hrs postop x1 **95.5%**



Selective biopsy results

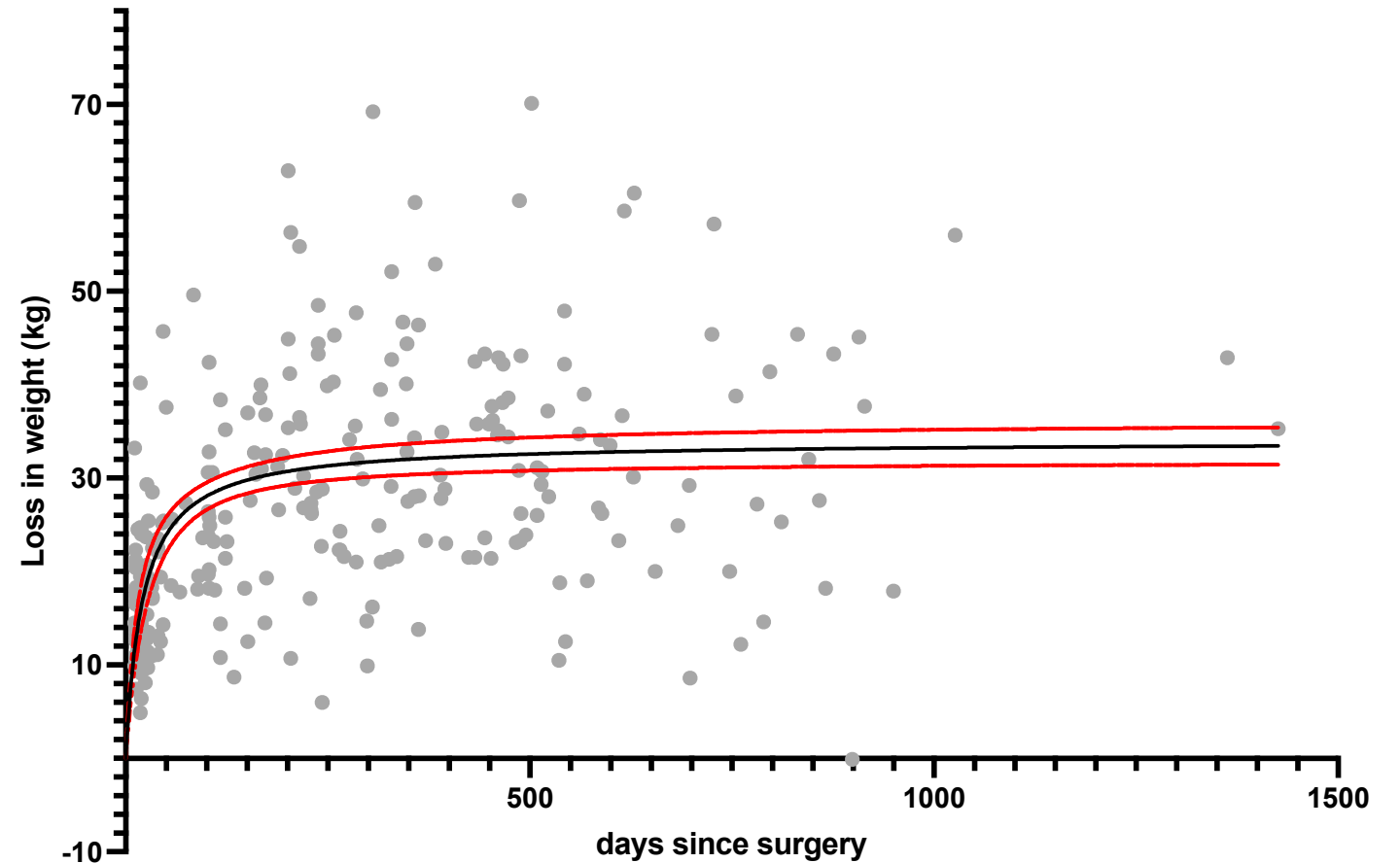
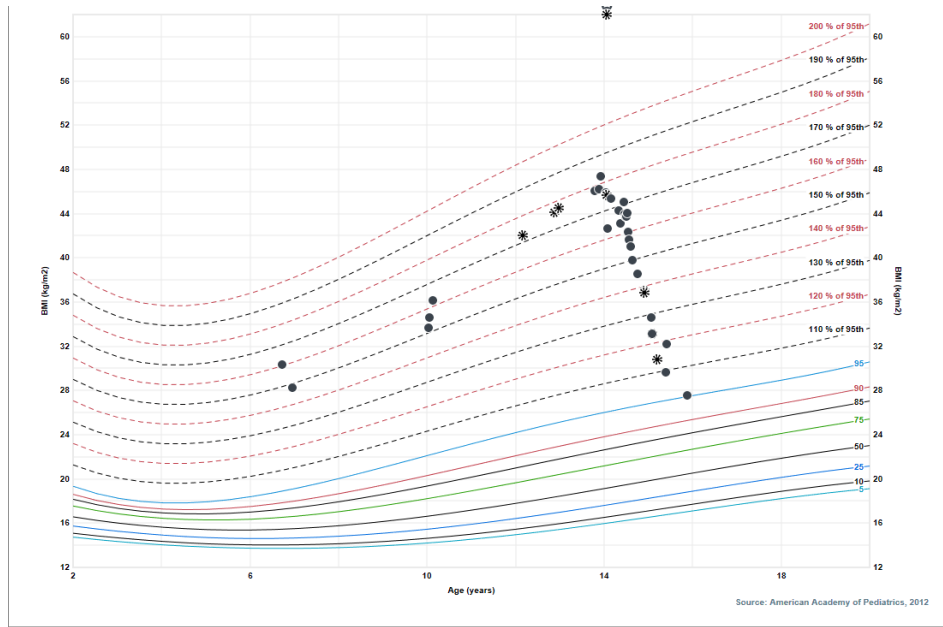
- Liver biopsy indicated in 35% of patients
- >50% of patients undergoing biopsy already have evidence of hepatic fibrosis
- 6.3% identified with stage IV fibrosis
- Need to identify patients at risk for later advanced liver disease and refer to hepatology for counseling and treatment

Counts/frequency: **F0** (15, 46.9%), **F1** (9, 28.1%), **F2** (6, 18.8%), **F3** (0, 0.0%), **F4** (2, 6.3%)

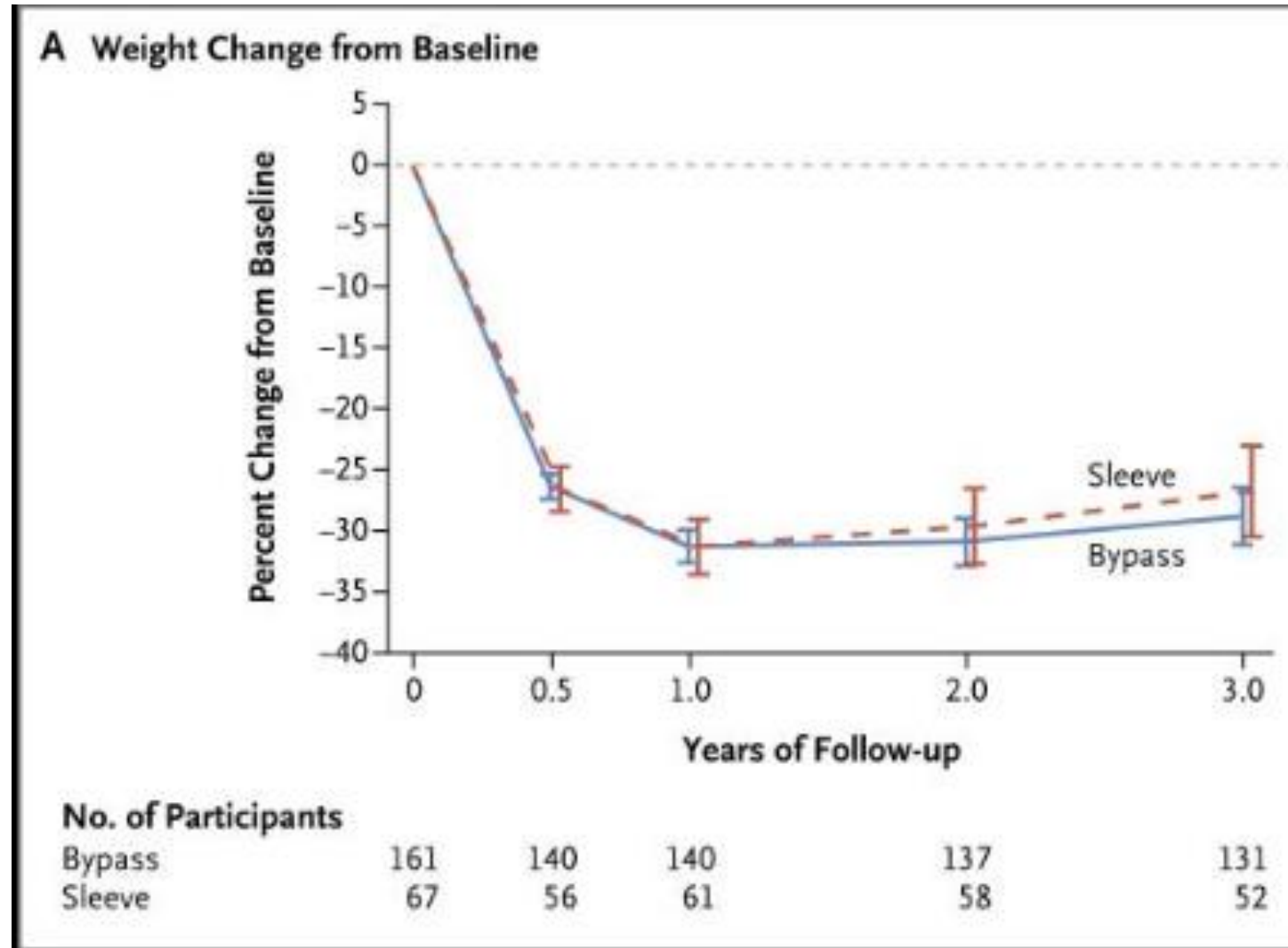


Weight Loss Outcomes

Weight lost from maximum preop weight by days following bariatric surgery



Outcomes in Teens: Teen LAB data

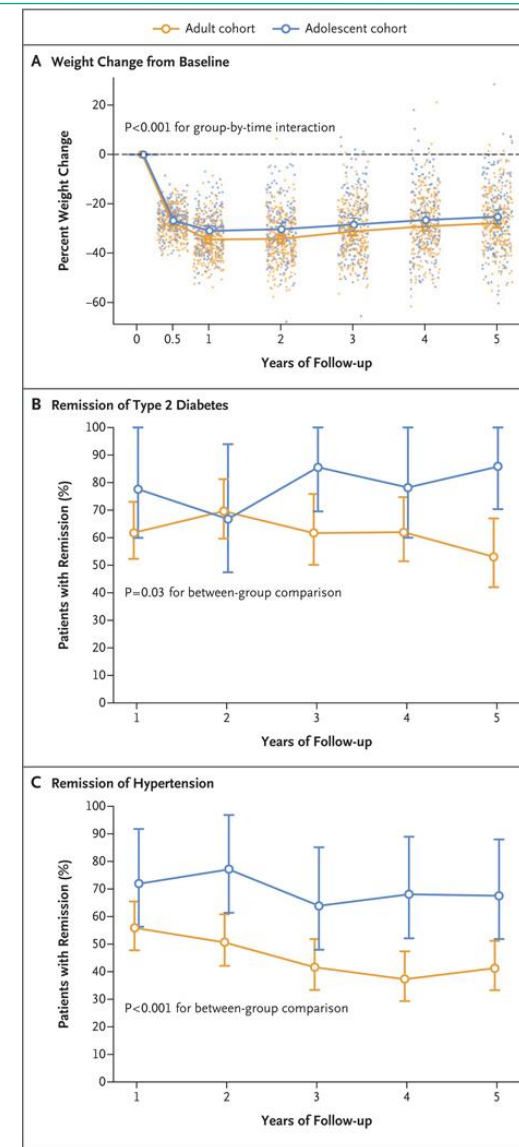


Surgical Outcomes - Comorbidities

Sleeve Gastrectomy and RYGB

Comorbidity resolution:

- Diabetes: **86%** (53% adult) at 5 yrs
 - Teens: 88% used meds before surgery, none after
 - Adults: 79% meds before surgery, 26% after
- HTN: **68%** (41% adult) at 5 yrs
 - Teens: 57% used meds before surgery, 11% after
 - Adults: 68% before surgery, 33% after
- Dyslipidemia: **66%**
- Fatty liver



Wrap Up/Questions

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Obesity Treatment in Children and Adolescents – What's New?

Division of Obesity & Weight Management Connecticut Children's

Jessica Williams, MD, F-AAP, D-ABOM



Learning Objectives



- Discuss updated American Academy of Pediatrics clinical practice guidelines for evaluation and treatment of pediatric obesity treatment:
 - how they have or have not affected a tertiary care pediatric obesity practice
 - success rates
- Partnering on referrals between primary care providers and our team

New Guidelines



- Emphasis on CHRONIC nature of obesity
- Emphasis on multimodal causes of obesity and multimodal solutions
- No more “watchful waiting”
- Streamlined/clarified evaluation of obesity co-morbidities
- When to refer...

Risk Factors

TABLE 1 Selected Examples of Multilevel Influencers and Contributors to Obesity

| Example | Description |
|--|---|
| A. Policy factors | <ul style="list-style-type: none"> ● Marketing of unhealthy foods ● Underresourced communities ● Food insecurity |
| B. Neighborhood and community factors | <ol style="list-style-type: none"> 1. School environment 2. Lack of fresh food access 3. Fast food proximity 4. Access to safe physical activity 5. Environmental health |
| C. Family and home environment factors | <ol style="list-style-type: none"> 1. Parenting feeding style 2. Sugar-sweetened beverages 3. Portion sizes 4. Snacking behavior 5. Dining out and family meals 6. Screen time 7. Sedentary behavior 8. Sleep duration 9. Environmental smoke exposure 10. Psychosocial stress 11. Adverse childhood experiences |

D. Individual factors

- D.1. Genetic factors
 - a. Monogenetic syndromes and polygenetic effects
 - b. Epigenetic effects
- D.2. Prenatal risk
 - a. Parental obesity
 - b. Maternal weight gain
 - c. Gestational diabetes
 - d. Maternal smoking
- D.3. Postnatal risk
 - a. Birth weight
 - b. Early breastfeeding cessation and formula feeding
 - c. Rapid weight gain during infancy and early childhood
 - d. Early use of antibiotics
- D.4. Childhood risk
 - a. Endocrine disorders
 - b. Children and youth with special health care needs
 1. Children with autism spectrum disorder
 2. Children with developmental and physical disabilities
 3. Children with myelomeningocele
 - c. Attention-deficit/hyperactivity disorder
 - d. Weight-promoting appetitive traits
 - e. Medication use (weight-promoting medications)
 - f. Depression

40% to 70% genetic contribution to an individual's obesity risk

Overweight and Obesity in Early Childhood Tracks Into Later Life: No More Watchful Waiting



Rapid increases in weight for length in the first 6 months increases risk of overweight at 3 years¹

Children with BMI>85% at ages 2-5 years are 5 times more likely to be overweight at age 12²

Severely obese (BMI>98%ile) 2-year-olds have an 80% chance of being obese by age 35, and 5-year-olds have a 90% chance³

Simulated growth trajectories predict 57% of today's children will be obese at age 35³

Among adolescents with obesity, the most rapid weight gain occurred between 2-6 years of age⁴

1 Taveras, et al. *Pediatrics*. (2009);123(4):1177-1183

2 Nader, et al. . *Pediatrics*. (2006); 118(3)e594-e601

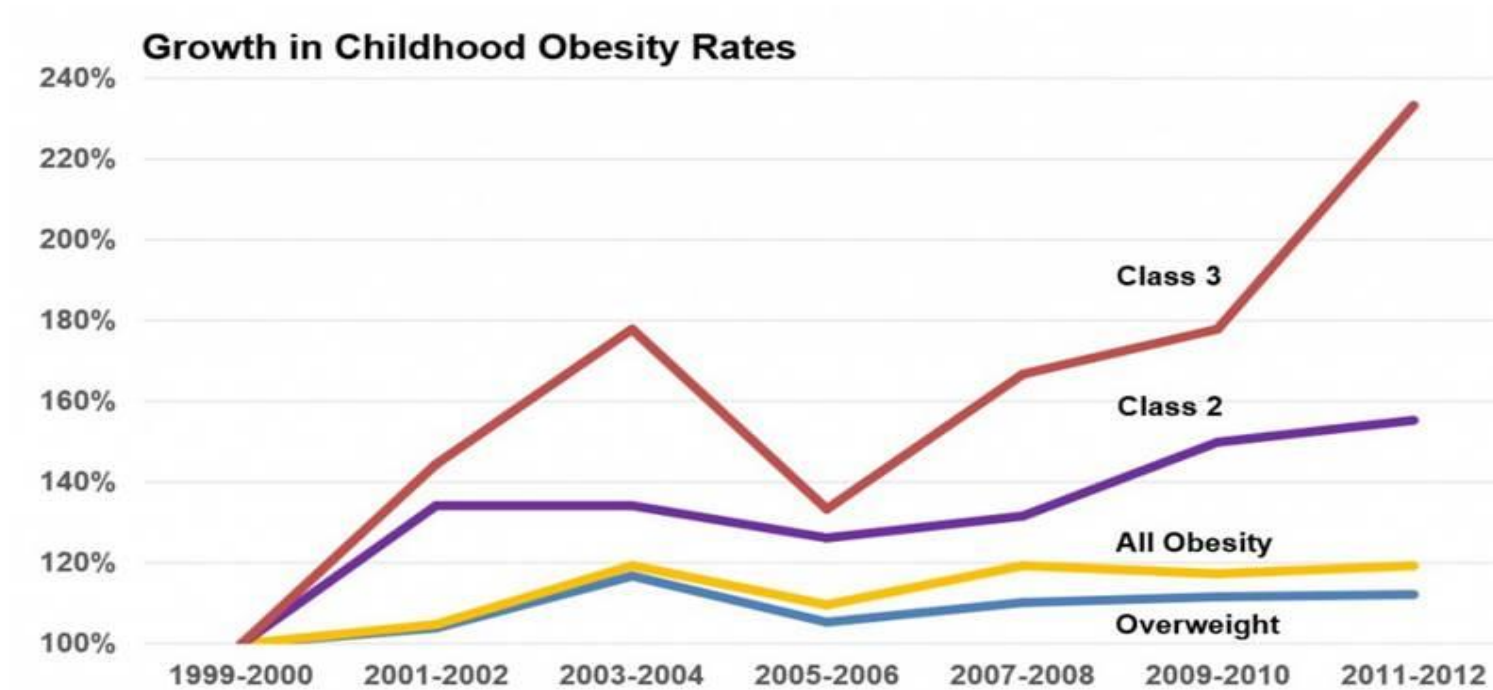
3 Ward, et al. *NEJM*. (2017); 377:2145-53 Ward, et al. *NEJM*. (2017); 377:2145-53

4 Geserick, et al. *NEJM*. (2018); 379(14): 1303-1312

Severity of Pediatric Obesity

For pediatric patients with severe obesity

- Severe obesity is $> 120\%$ of the 95th percentile (Class 2 or greater)



Evaluation for Comorbidities








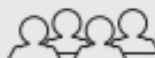






- **Lipids** – fasting specimen
 - 2-9yo obesity; 10yo and up for overweight or obesity
- **Glucose testing** – fasting glucose, A1c or 2h glucose (**NOT insulin!**). OGTT is usually a conformational test – not first line
 - Test with symptoms, **risk factors (incl AN!)**, screen all obesity 10y and greater
 - Type II DM has faster progression in children than adults
- **Fatty liver screening** – ALT (not a CMP), 10yo and up, and younger with more severe obesity
 - Up to 34% of children with obesity have NAFLD
- **HTN** – BP screening in the office every visit 3yrs old and up for overweight or obesity
- **OSA** – refer to sleep study for 1 or more symptoms
- **PCOS** – look for menstrual irregularities and signs of hyperandrogenism
- **Depression** – monitor with self reported tools 12 and up
- **Ortho** – SCFE and Blount
- **Pseudotumor** – high index of suspicion for new/progressive ha, especially in female patients

Treatment of Obesity

- Look at the whole picture – environmental, familial, social, educational, social determinants of health
- Chronic treatment emphasized – continuous coordinated care
- Emphasis on Motivational Interviewing
- Foundational: **Intensive Health Behavior and Lifestyle Treatment** 26h over 3-12mo to achieve BMI reduction or attenuation of weight gain

Intensive Health Behavior and Lifestyle Treatment (IHBLT)

| WHO: | WHEN: | WHAT: | WHERE: | DOSAGE: | FORMAT: | CHANNEL: |
|---|--|--|---|---|--|---|
|  Patient and family in partnership with a multidisciplinary treatment team* |  Promptly for child or adolescent with overweight or obesity |  Health education and skill building on multiple topics  Behavior modification and counseling |  Healthcare setting  Community-based setting with linkage to medical home |  Longitudinal treatment across 3-12 months with ideally ≥ 26 contact hours |  Group,  Individual, or  Both |  Face-to-face (strongest evidence)  Virtual (growing evidence) |

* PCPs and/or PHCPs with training in obesity as well as other professionals trained in behavior and lifestyle fields such as dietitians, exercise specialists and behavioral health practitioners

Intensive Behavioral and Lifestyle Treatment



- Family based, 26hrs over 3-12 mo
- Can be in an academic center
- PCP home with partnerships: YMCA, parks and rec, other community groups, on-site RD
- Topics: Nutritional, physical activity, sleep, screen time, address stigma/bias, mental health, parenting skills
- The more hours, the better the outcome
- “Deliver the best available intensive treatment to all children with overweight and obesity”

- **Always in conjunction with intensive lifestyle interventions**
- Consider as young as 8y in severe cases, 12y for routine prescribing
- Choose medication based on mechanism of action and balancing side effect profile, especially against co-morbidities
 - Insurance/cost
- Prescribe for 3 months then evaluate effect
- If < 3-5% weight loss achieved (*or a slowing of previous weight gain pattern, esp for younger children*), then increase dose or STOP and try another class
- Duration of use – not brief. These are more likely to be chronic, like treating hypertension

Medication Options –

FDA approved

- GLP1s:
 - Semaglutide high dose: 12yo
 - Liraglutide high dose: 12 yo
- Phentermine/Topiramate: 12yo
- Phentermine: > 16 yo for “short term”
- Metformin: 6yo
- Orlistat: 12 yo
- Bupropion/Naltrexone: 18yo
- Setmelanotide: 6y, MC4R abnl and BBS

Off Label

- Topiramate monotherapy
- Lisdexamfetamine – approved for BED (18y) and ADHD (6y)

Partnering on Referrals

Sending Referrals:

- All growth curves please
- Labs (if you have them)
- Office note – last check up
- Expectations with family:
 - Intensive program – LOTS of help and support
 - No meds on day 1
 - Full co-morbidity assessments and coordinated management

During and After Program

- Obesity is a chronic condition
- Expect relapses, set backs, and episodic changes
- Utilize multi-modal care on an ongoing basis
- Medications usually continue to be managed by tertiary care center – at least at this time....

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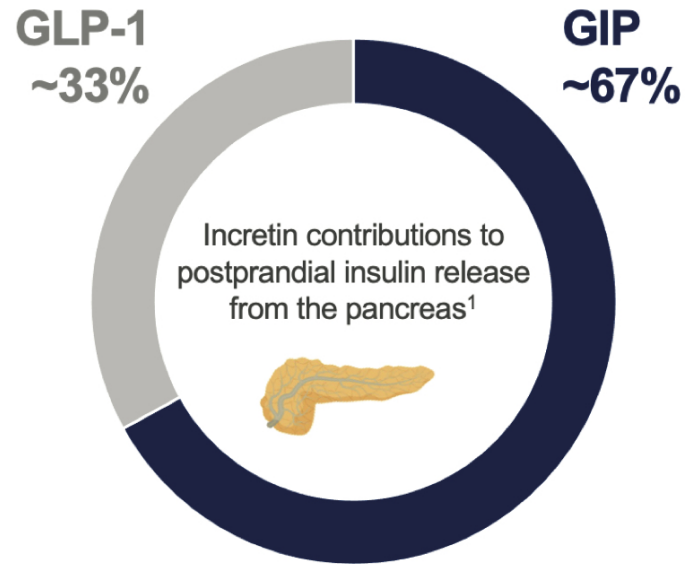
Injectables for weight loss

Fadi Al-Khayer, MD, FACE

HHC Endocrinology

Is GIP as important as GLP 1?

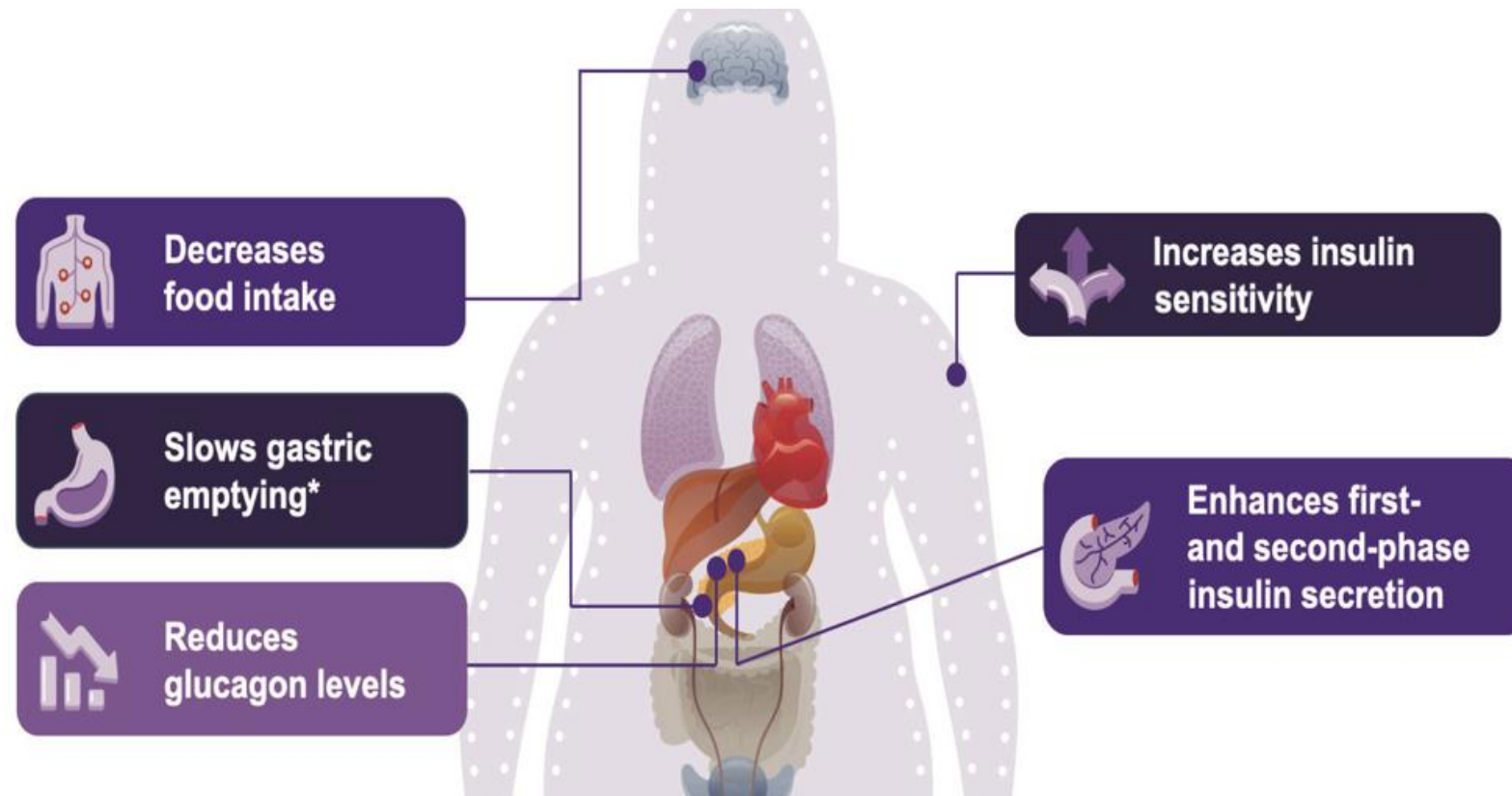
GIP and GLP-1 Are Incretin Hormones Released From the Gut in Response to Food Intake^{1,2}



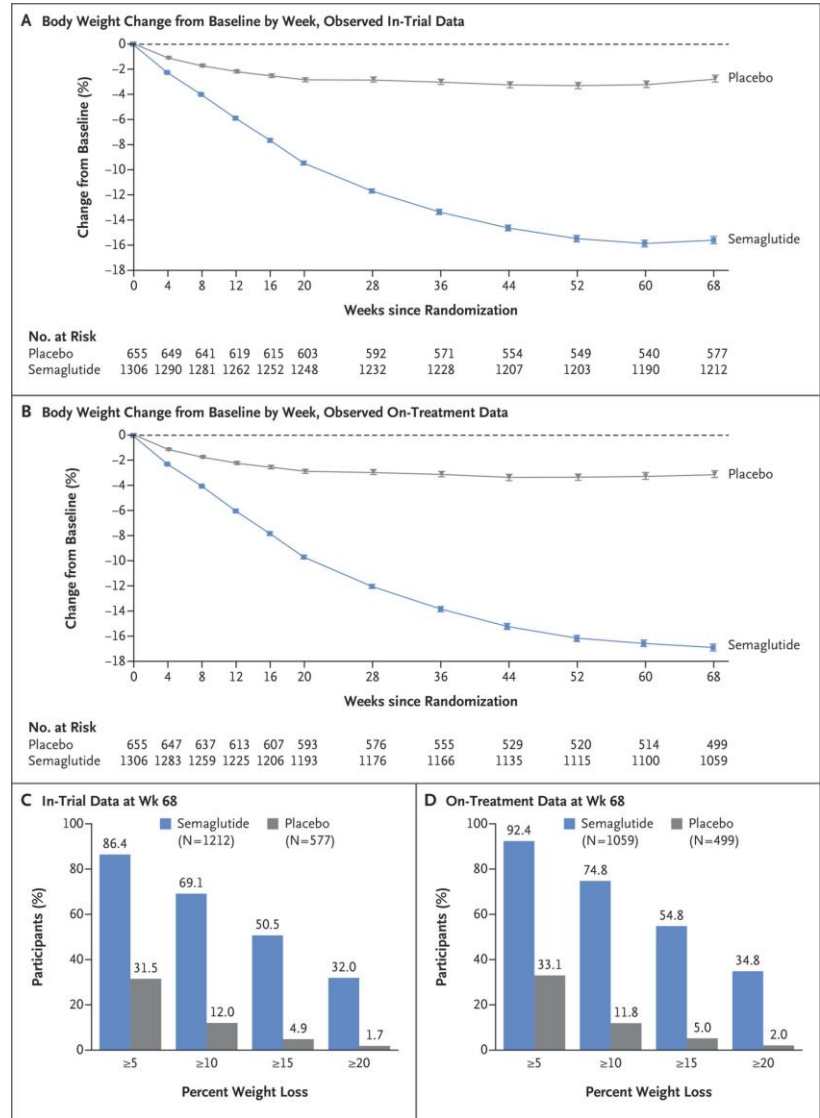
- ▶ **GIP** is responsible for **two-thirds** of the incretin effect in healthy people, generating a more significant impact on insulin secretion than GLP-1¹
- ▶ The incretin effect of GIP and GLP-1 is diminished in people with T2D³

1. Nauck MA, et al. *Diabetes*. 2019;68(5):897-900.
2. Holst JJ. *Metabolism*. 2019;96:46-55.
3. Nauck MA, et al. *Diabetes Obes Metab*. 2018;20(suppl 1):5-21.

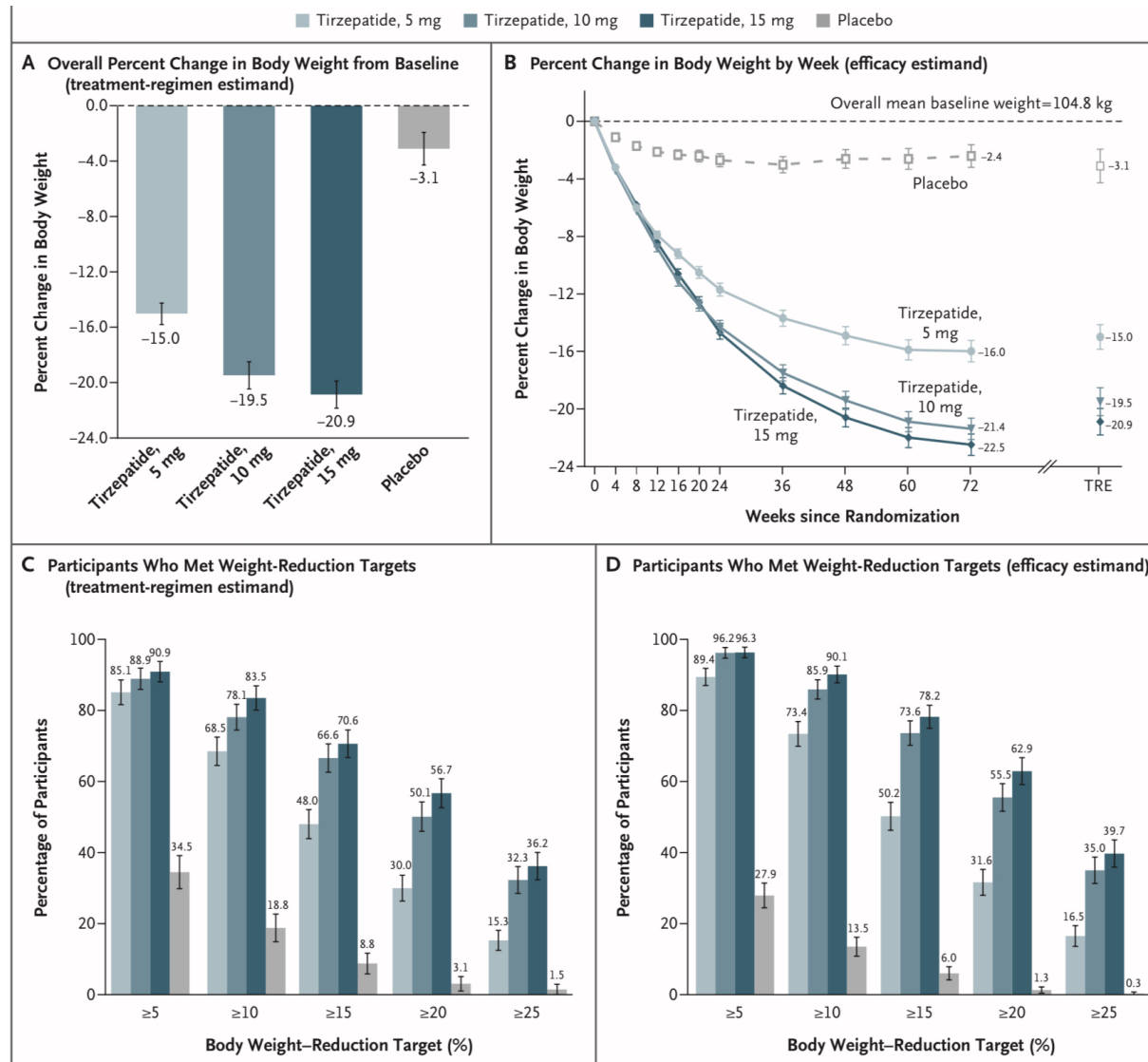
Pharmacologic effects of GLP 1 and GIP analogues



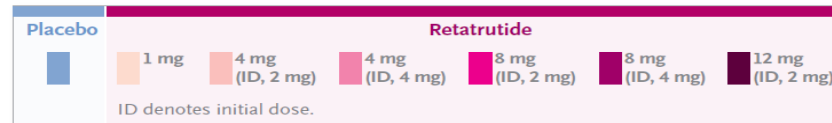
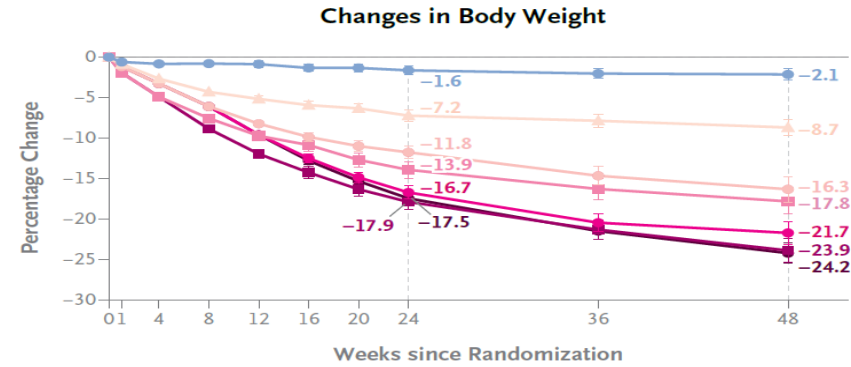
Semaglutide (Wegovy, Ozempic) efficacy for weight loss in people with no type 2 diabetes (NEJM)



Tirzepatide (Mounjaro) efficacy for weight loss in people with no type 2 diabetes (NEJM)



Triple G (Retatrutide) efficacy for weight loss in people with no type 2 diabetes (NEJM) and ADA meeting June 2023



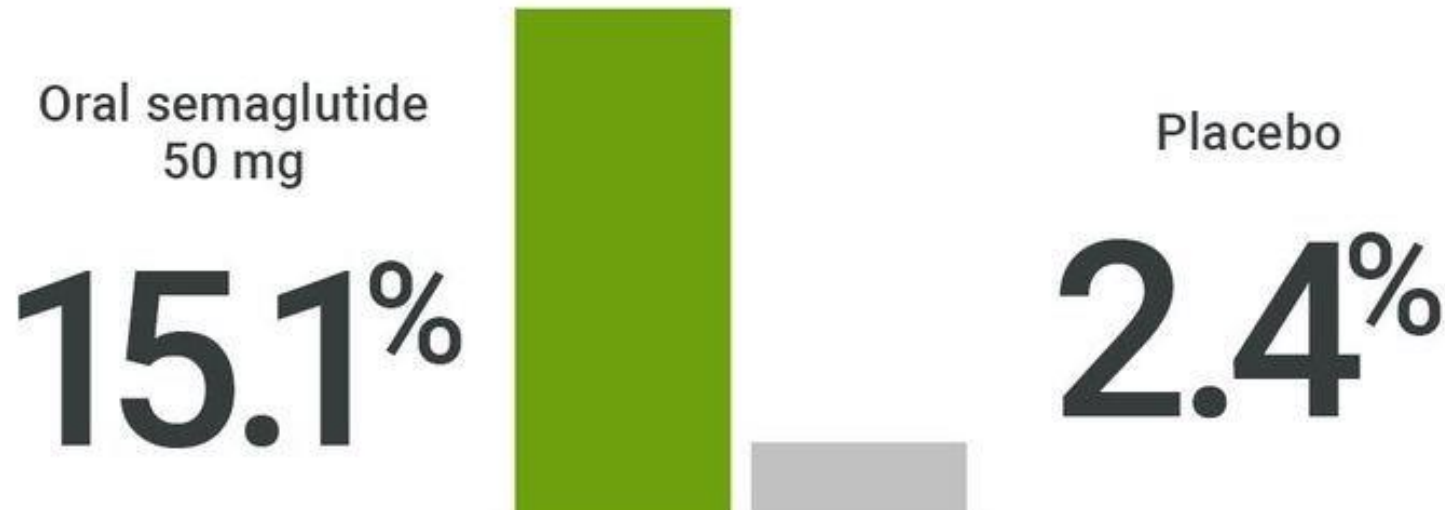
Adverse Events

| Events | Assigned Maintenance | | | | | | |
|--------------------------------------|----------------------|----------------|----------------------------|----------------------------|----------------------------|----------------------------|-----------------------------|
| | Placebo (N=70) | 1 mg (N=69) | 4 mg ID, 2 mg (N=33) | 4 mg ID, 4 mg (N=33) | 8 mg ID, 2 mg (N=35) | 8 mg ID, 4 mg (N=35) | 12 mg ID, 2 mg (N=62) |
| Nausea | 8 (11) | 10 (14) | 6 (18) | 12 (36) | 6 (17) | 21 (60) | 28 (45) |
| Diarrhea | 8 (11) | 6 (9) | 4 (12) | 4 (12) | 7 (20) | 7 (20) | 9 (15) |
| Vomiting | 1 (1) | 2 (3) | 4 (12) | 4 (12) | 2 (6) | 9 (26) | 12 (19) |
| Constipation | 2 (3) | 5 (7) | 5 (15) | 2 (6) | 4 (11) | 4 (11) | 10 (16) |
| Antidrug antibodies during treatment | 1 (1) | 3 (4) | 4 (12) | 5 (16) | 5 (16) | 2 (6) | 11 (18) |

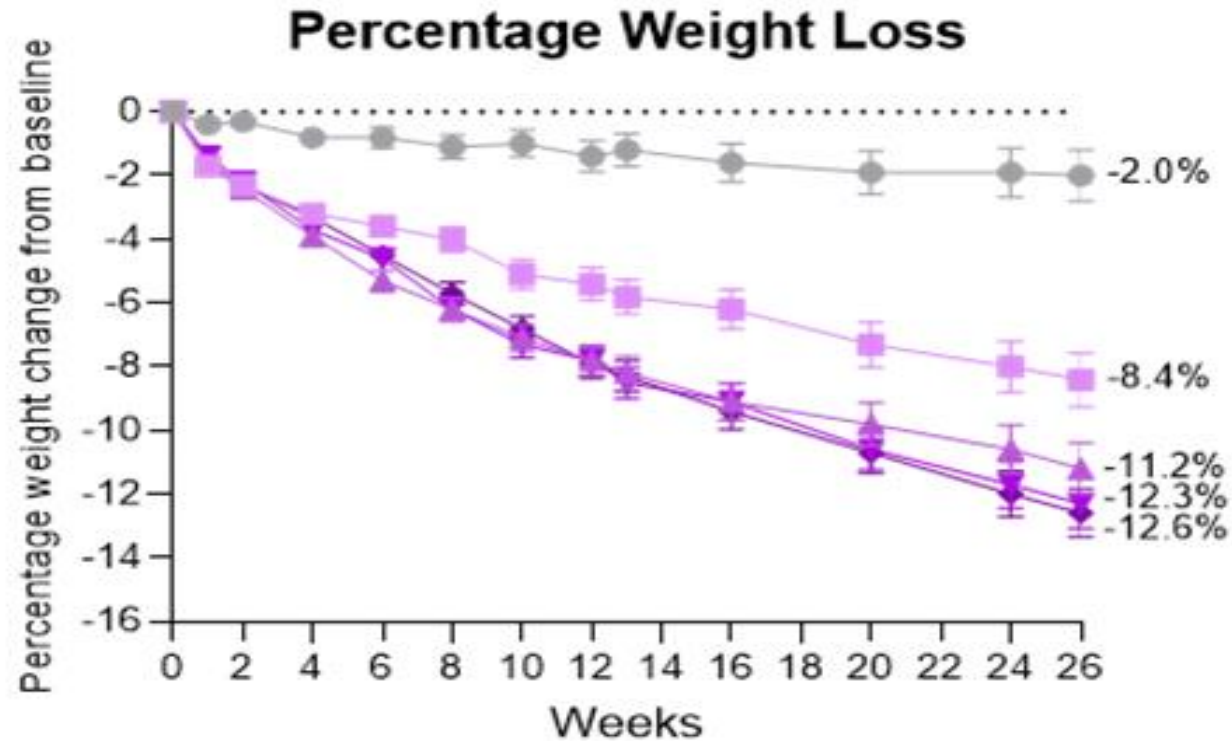
Data are number of participants (percent). Data on antidrug antibodies were missing for 10 patients.

Oral GLP 1 analogues Rybelsus 25 and 50 mg for weight loss in people with no type 2 diabetes ADA meeting June 2023

Weight loss in OASIS 1 at 68 weeks for adults with obesity receiving oral semaglutide vs. placebo



Oral GLP 1 analogues orforglipron and weight loss in people with type 2 diabetes ADA meeting June 2023



■ + Placebo (N=49) ■ + OFG 12 mg (N=45) ■ + OFG 24 mg (N=51) ■ + OFG 36 mg (N=56) ■ + OFG 45 mg (N=57)

Data are LSM (SE). Analyses included patients with non-missing baseline values and at least one non-missing post-baseline measurement. N = total number of patients in each dose group.

Abbreviations: BMI = body mass index; LSM = least squares mean; OFG = orforglipron; SE = standard error.

CagriSema (coadministered semaglutide and cagrilintide an amylin analogue) and weight loss in people with type 2 diabetes ADA meeting June 2023

- Patients receiving CagriSema lost a mean of **15.6% of body weight** versus 5.1% with semaglutide and 8.1% with cagrilintide at week 32 ($P < 0.0001$ for both)

Diet's Don't Work: A Lifestyle Medicine Approach



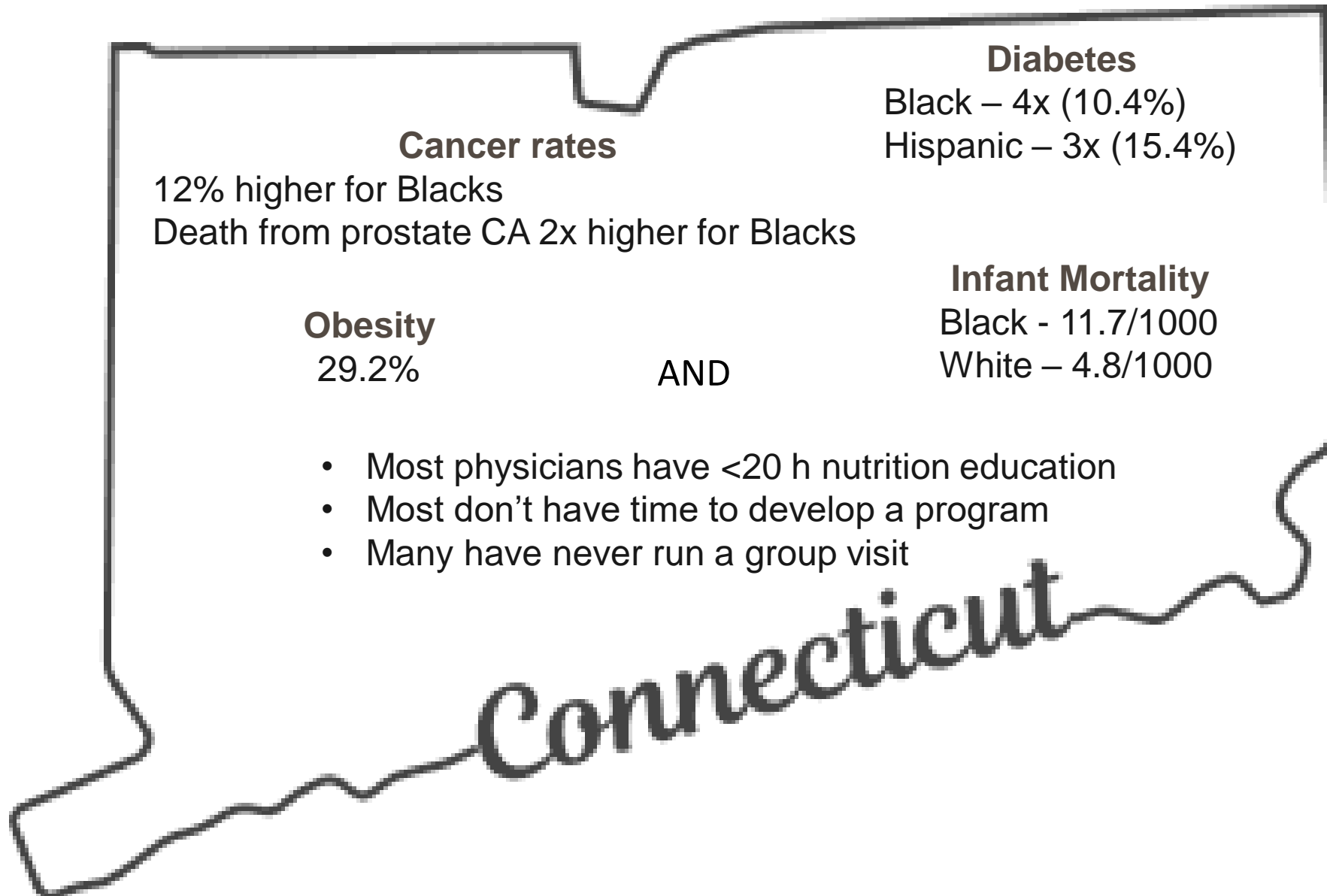
CONNECTICUT ACADEMY OF
FAMILY PHYSICIANS
CARING FOR CONNECTICUT'S FAMILIES



AMERICAN ACADEMY OF
FAMILY PHYSICIANS
STRONG MEDICINE FOR AMERICA

 **Ardmore
Institute of Health**
Home of Full Plate Living

Why do we think this is important?

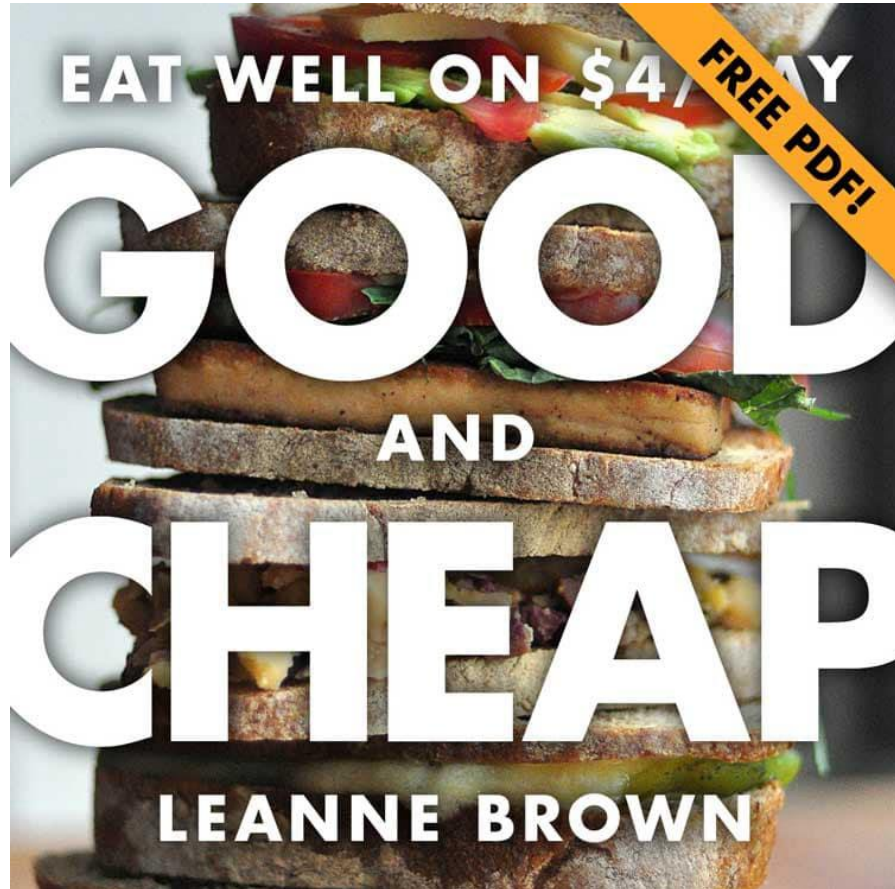


What is the program all about?

- Curriculum-based education program for family physicians to run group visits based on healthy eating
- 3 group visits over 6 weeks
- Billed to insurance; billing and coding information included
- 3 Bonus sessions for the possibility of expansion

What are our goals?

- To provide the tools needed for family physicians to lead a nutrition education program in their offices
- To help patients learn more about small nutritional changes that can make a big difference in health
- To provide information that is sensitive to socioeconomic factors
- To create small communities of patients focused on healthy eating



Week 0 – 1st Group Visit
Start from where you are.

Week 2 – 2nd Group Visit
Food is Medicine.

Week 6 – 3rd Group Visit
Food prep for long-term success.

Each visit will have a snack,
an educational component, a
recipe of the week and some
homework.

What will we measure?

- Physician baseline self-assessment of nutrition knowledge
- Physician satisfaction with the program

- Patient baseline nutrition and knowledge, lipids, blood pressure, blood sugar, weight, BMI and waist circumference
- Follow up labs, measurements at 12 weeks
- Patient satisfaction with the program



Interested?

Contact:

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A photograph of a forest path covered in fallen autumn leaves. The path is the central focus, leading into the distance. The surrounding trees and undergrowth are in full autumn color, with shades of yellow, orange, and red. The lighting is soft, suggesting a slightly overcast day. The overall mood is peaceful and serene.

Questions?