



Bariatric Surgery in Children & Adolescents (Who to Refer, When to Refer & What to Expect)

Eleanor R. Mackey, PhD

Evan P. Nadler, MD

Children's National Health System

Agenda

1. Bariatric surgery as a treatment for severe obesity
2. Barriers for referral
3. Myths and reality
4. Who do you refer and when do you refer them?
5. What can you expect?



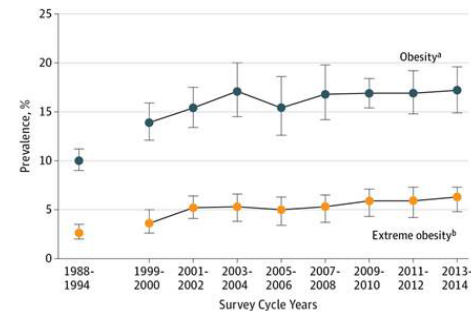
Background

- Severe obesity (BMI% $\geq 120\%$ of the 95th%) affects almost 9 million adolescents in the US.
- Children and adolescents with severe obesity face a lifetime of associated morbidity, mortality, and reduced quality of life.
- Obesity is one of the driving forces behind health inequity in the US.

diabetes
9 million
burden anxiety
quality of life
lifetime
obesity
health inequity
depression
hypertension

From: Trends in Obesity Prevalence Among Children and Adolescents in the United States, 1988-1994 Through 2013-2014

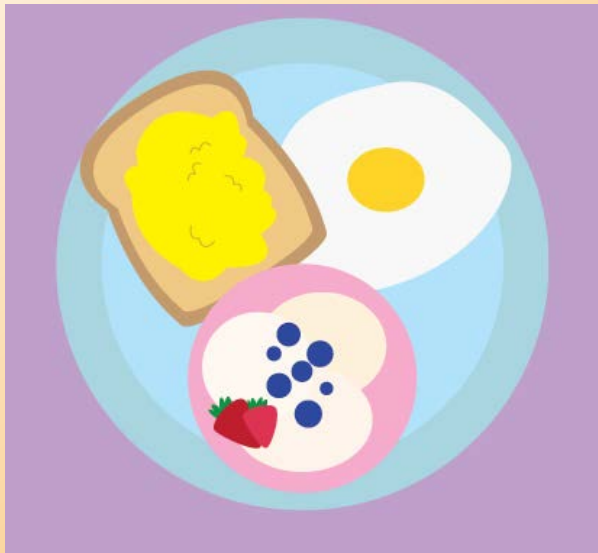
JAMA. 2016;315(21):2292-2299. doi:10.1001/jama.2016.6361



- Ogden CL, et al. Trends in Obesity Prevalence Among Children and Adolescents in the United States, 1988-1994 Through 2013-2014. JAMA. 2016;315(21):2292-2299.
- The NS, et al.. Association of adolescent obesity with risk of severe obesity in adulthood. JAMA. 2010;304(18):2042-2047.
- Kelly A, et al. Severe obesity in children and adolescents: identification, associated health risks, and treatment approaches: a scientific statement from the American Heart Association. Circulation. 2013;128(15):1689-1712.

Treatments for Pediatric Obesity

- Intensive lifestyle management
 - Very limited effectiveness for youth with severe obesity
 - Moderate weight loss
 - Often weight regain
 - Less effective for minority youth



Bariatric Surgery in Adolescents

- Mean reduction of 26% of BMI
- Significant improvement in hypertension, dyslipidemia, and type 2 diabetes
- Improved neural functioning
- Increased functional mobility/reduced pain
- Some improvement in psychosocial outcomes



Inge TH, Courcoulas AP, Jenkins TM, et al. Weight Loss and Health Status 3 Years after Bariatric Surgery in Adolescents. *N Engl J Med.* 2016;374(2):113-123.

Pearce AL, Mackey E, Cherry JBC, et al. Effect of Adolescent Bariatric Surgery on the Brain and Cognition: A Pilot Study. *Obesity (Silver Spring).* 2017;25(11):1852-1860.

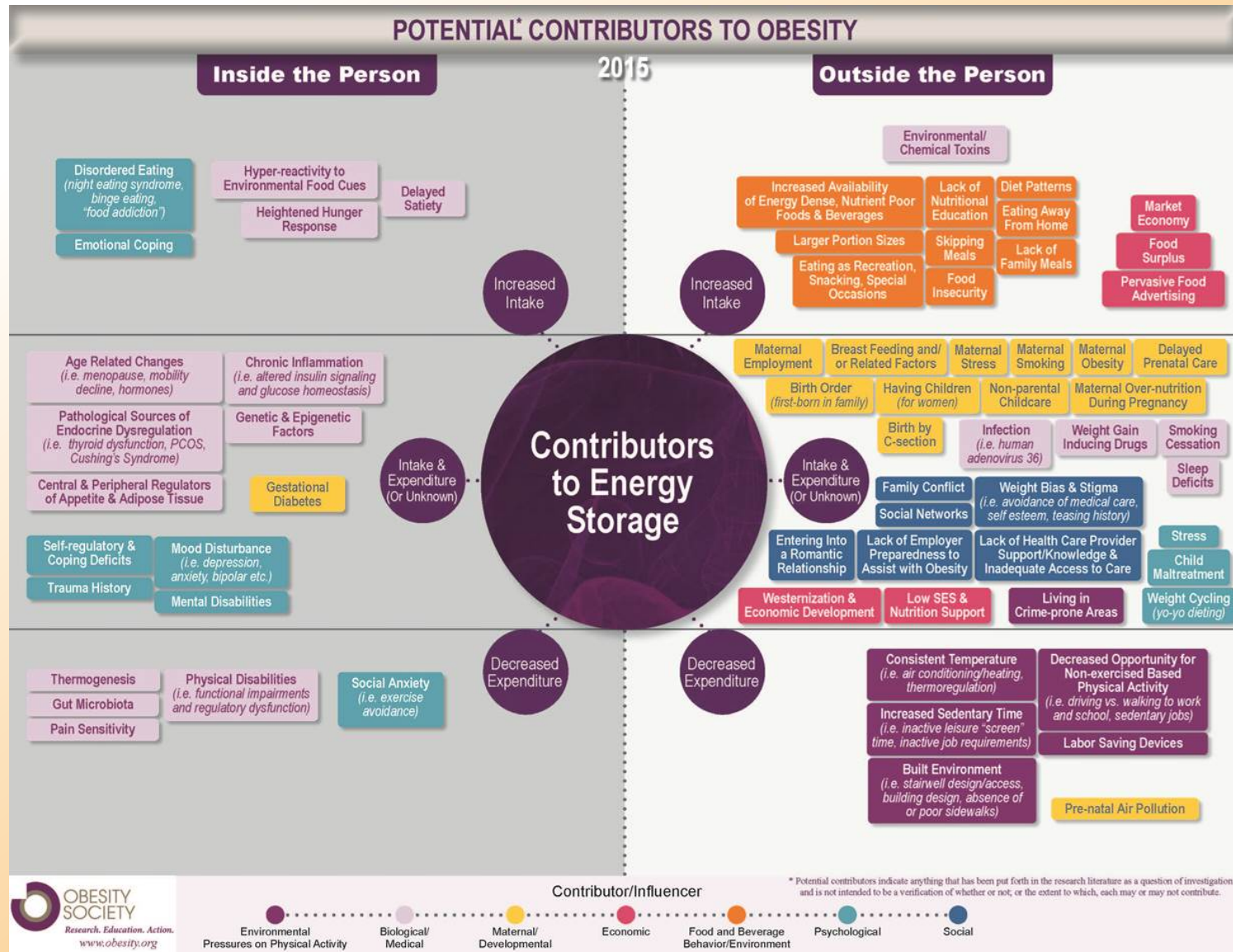
June 12, 2018

Barriers to Referral: Provider Perspectives

One of the most important underlying perspectives that drives acceptance of surgery as a treatment for obesity is:

Is obesity a disease/medical condition or a psychological condition?

Contributors to Obesity



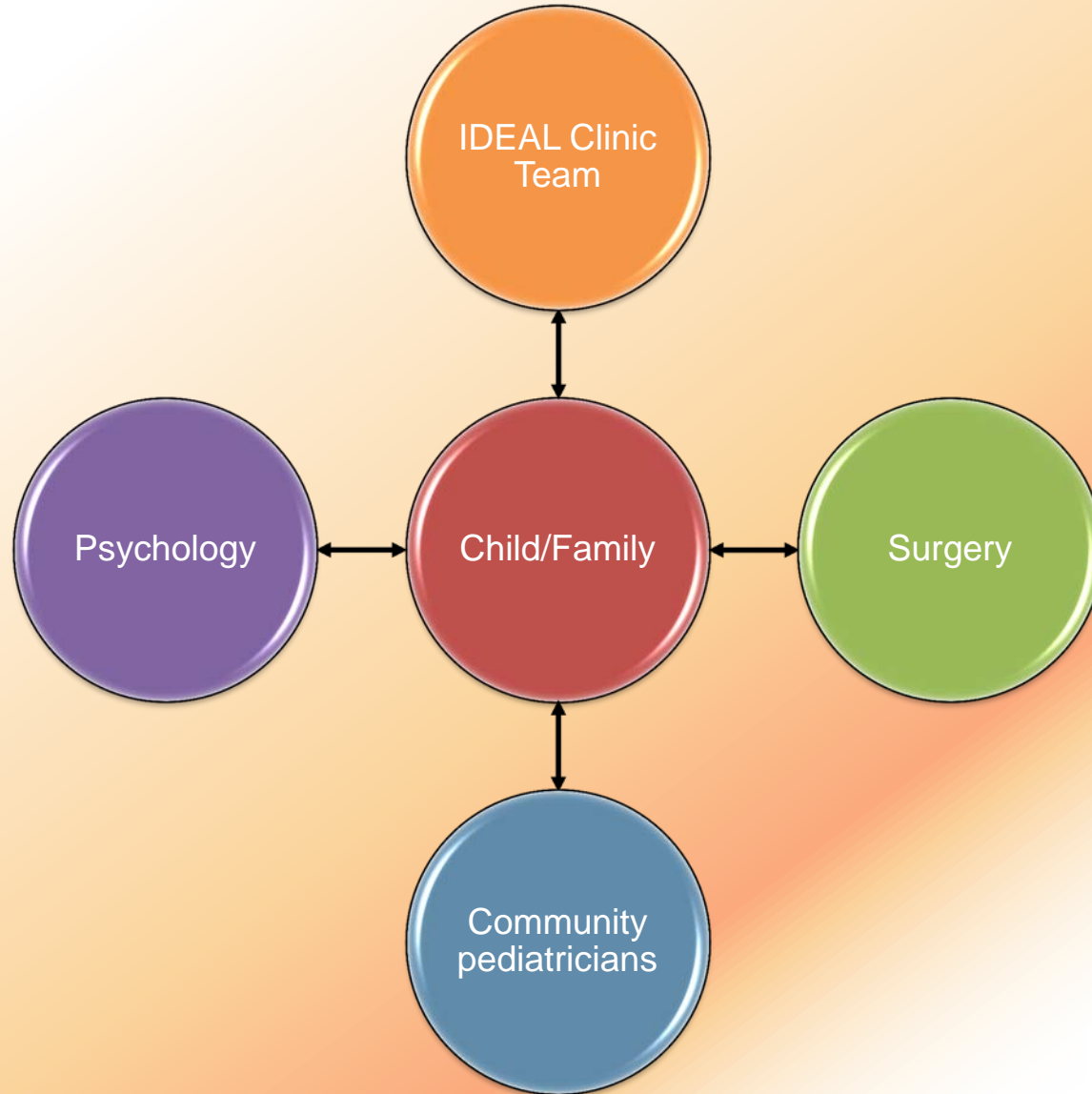
Providers

- Only 48% of family physicians would refer an adolescent for surgery and 1% actually referred
 - Fear of complications and limited follow-up data
 - Obesity a psychological issue with only 64% of physicians agreeing obesity is a disease
 - Lack of knowledge about surgery as treatment
 - Should try lifestyle changes first, highly motivated, capacity to consent

Some Myths of Bariatric Surgery

1. The procedure is risky
2. Only high functioning adolescents and parents can elect to have surgery
3. As with other treatments, behavior is still the key determinant of outcomes
 - E.g., eating, exercise, behavioral health, motivation

Bariatric Surgery Team at Children's National



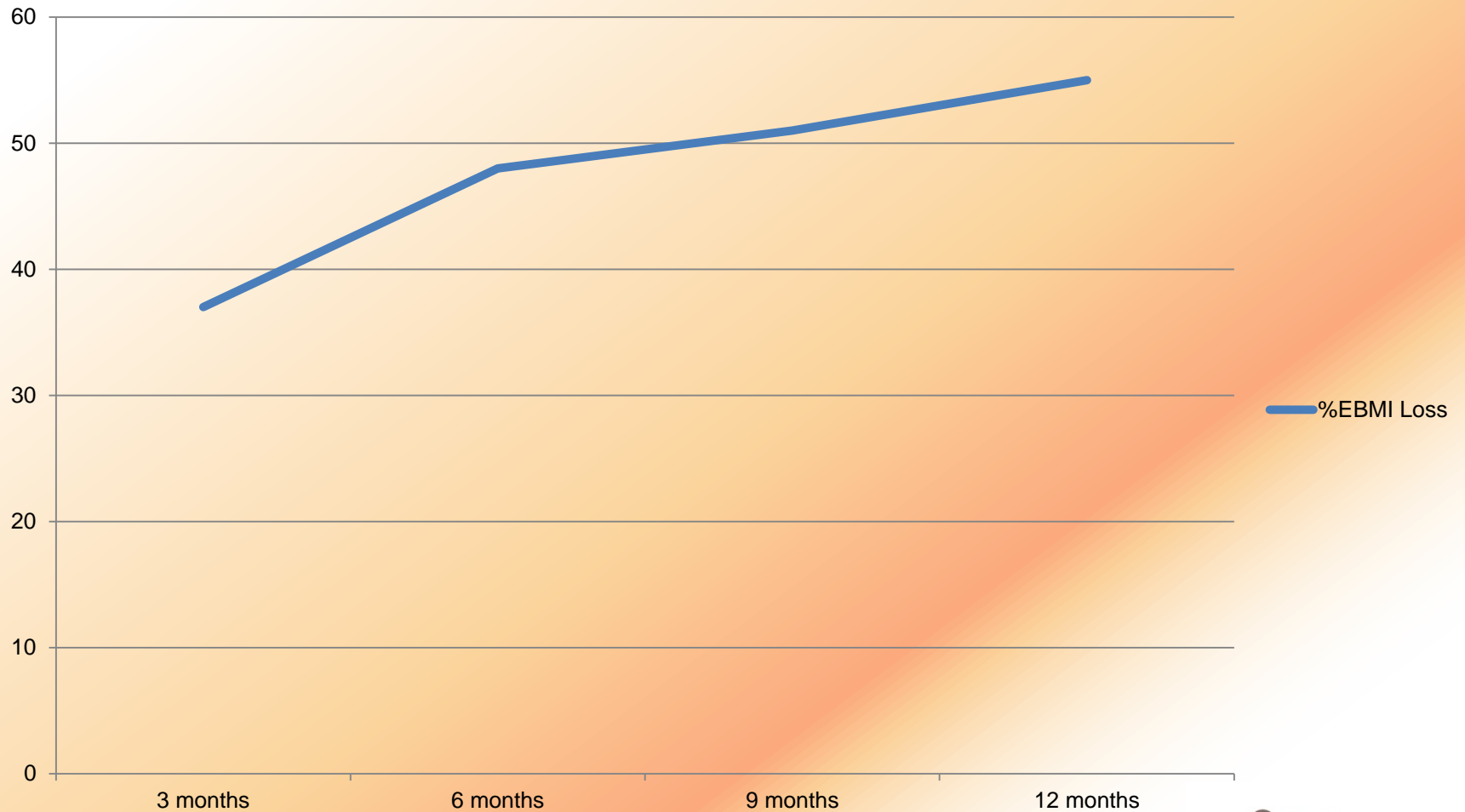
Surgery Population 2010-2017

Characteristic	Mean (N=222)
Age (years)	16.4 (SD = 2.1)
Female (%)	71%
Pre-op BMI	50.1 (SD = 8.7)
Race/Ethnicity (%)	
African American	59%
Hispanic	18%
White	18%
Other	5%
Medicaid (%)	50%
Anxiety (%)	26%
Depression (%)	41%
ADHD (%)	21%
Eating Disorder (%)	8%
Number of Psychiatric Diagnoses	1.3 (SD = 1.1)



Weight Loss

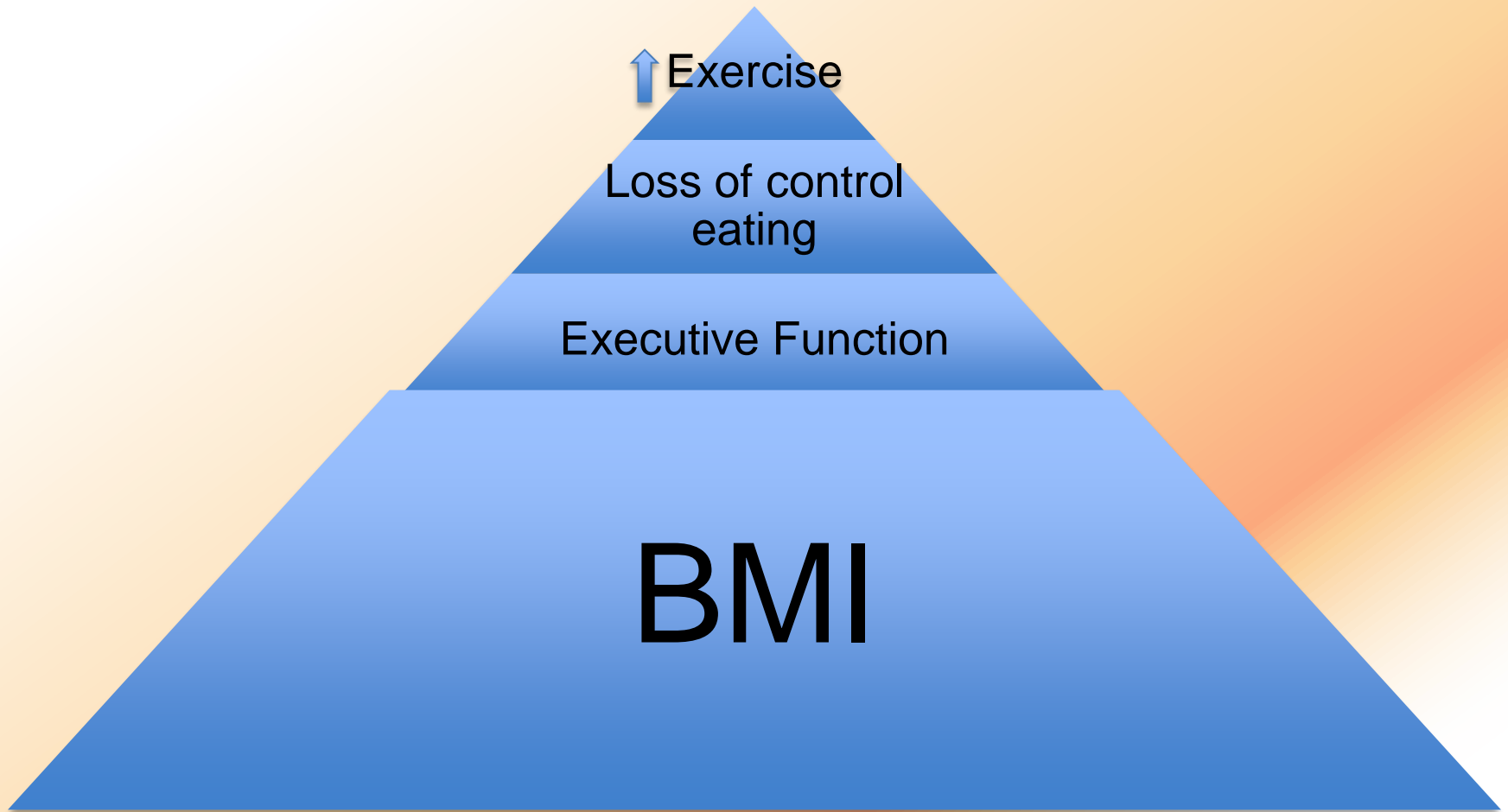
%Excess BMI Loss



Complications

- No deaths
- 6 patients (2.4%) experienced major complications
 - 4 required reoperation (gastric leak, epigastric bleed, hemorrhage from a splenic parenchymal laceration)
 - 1 underwent anticoagulation for deep venous thrombosis (DVT) and pulmonary embolus (PE)
 - 1 experienced encephalopathy
- 4 patients (1.6%) experienced minor complications
 - 3 patients with decreased oral intake secondary to edema which required readmission for intravenous fluid hydration and steroids
 - 1 submucosal hematoma requiring 2 weeks of total parenteral nutrition

What Pre-operatively Predicts Outcomes?



- Mackey ER, Jacobs M, Nadler E, et al. Cognitive performance as predictor and outcome of adolescent bariatric surgery: A nonrandomized pilot study. *J Ped Psych*. In press.
- Inge TH, Jenkins TM, Zeller M, et al. Baseline BMI is a strong predictor of nadir BMI after adolescent gastric bypass. *J Pediatr*. 2010;156(1):103-108 e101.
- Mackey ER, Olson A, Merwin S, Wang J, Nadler EP. Perceived Social Support for Exercise and Weight Loss in Adolescents Undergoing Sleeve Gastrectomy. *Obesity surgery*. 2017.

What doesn't predict outcomes?

- Age
- Gender
- Race/Ethnicity
- Mental Health Diagnoses
 - Anxiety
 - Depression
 - Eating Disorder
 - ADHD
- IQ
- Presence of Intellectual Disability



Revisiting Myths of Bariatric Surgery

1. The procedure is risky
2. Only high functioning adolescents and parents can elect to have surgery
3. As with other treatments, behavior is still the key determinant of outcomes
 - E.g., eating, exercise, behavioral health, motivation

Who to Refer

- Child or adolescent
 - 10-21
 - BMI \geq 35 with comorbidity
 - BMI \geq 40
 - Continuing to trend upwards in BMI despite efforts
- Refer even if
 - Presence of mental health concerns
 - Cognitive disability
 - “Not trying hard enough”

When to Refer

- As soon as BMI crosses into eligibility range
- As soon as it becomes clear that lifestyle management is not working
- If there are comorbidities
 - Type 2 diabetes
 - Obstructive sleep apnea
 - Pain/reduced mobility
 - Significant reduction in quality of life

What to Expect

- Consultations with surgery team
- Ongoing relationship and monthly visits with IDEAL clinic team
- Consultation with psychologist
- Consultation with other specialties
 - Pulmonary
 - Cardiology
 - Anesthesiology

Conclusions

- Bariatric surgery is the treatment with the most success for child and adolescent severe obesity.
- Surgery is not an “easy way out” but a valuable treatment for a serious illness.
- Lower BMI pre-operatively is the biggest predictor of outcomes.
- Referral to the surgery team should occur not as a “last resort” but as part of ongoing treatment considerations.
- Regardless of mental health or cognitive comorbidities, all children and adolescents with severe obesity can be considered for surgery.



Questions?



Eleanor Mackey, PhD
emackey@childrensnational.org

Evan P. Nadler, M.D.
enadler@childrensnational.org