Welcome to the 2024 Obesity Summit

September 20, 2024







### **Welcome & Overview**

#### **Dina H. Griauzde, MD, MSc, Dipl. ABOM** Assistant Professor, Internal Medicine Director of Research and Quality, Weight Navigation Program University of Michigan

Co-Director, Weight Management and Metabolic Health Program VA Ann Arbor Health System

# Welcome

### **Over 500 attendees!**

- Primary care clinicians and team members
- Bariatric surgeons
- Endocrinologist
- MBSC PO participants
- Blue Cross Blue Shield of Michigan leadership
- Partnering CQIs
- MBSC Allied Health
- Guest speakers

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Thank you to BCBSM/BCN

# Today's format

- Agenda included in the program booklet
  - 4 sessions with 3-4 speakers
  - Please hold your questions until the end of each session
- Breaks
  - Visit the CQI Fair
  - Share your experience on social media: **#ObesitySummit24**
- Clinician surveys (optional)
  - Use QR codes at your table
- WiFi: Username: ObesitySummit Password: ObesitySummit
- Meeting will be recorded
- Any questions: <u>mbsc.help@umich.edu</u>

# Unprecedented time in obesity medicine



#### New highly effective treatments

Use complicated by:

- Prevalence of obesity
- High cost
- Shortages
- Limited insurance coverage

### No one-size-fits-all treatment

**Patients have** varied needs and preferences

# Multiple weight loss treatment options



Nutrition and lifestyle counseling Oral weightloss medications

Injectable weight-loss medications Endoscopic bariatric therapy

Bariatric surgery

# Today's goals

- To understand the prevalence and impact of obesity.
- To learn about the full range of weight management treatment options.
- To appreciate opportunities to improve obesity care delivery.

# Session I: Raising Awareness





# Epidemiology and Pathophysiology of Obesity

Kim Pfotenhauer, DO, FACOFP, DABOM Assistant Professor Assistant Dean for Clerkship Education Michigan State University College of Osteopathic Medicine East Lansing, MI

## Disclosures

• I serve as a consultant for Novo Nordisk.

# Objectives

- Describe the epidemiology of overweight and obesity
- Describe the pathophysiology and factors contributing to energy balance
- Define overweight and obesity

# Pause for a breath....

#### World Health Organization (WHO)

"Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health."

#### **Obesity Medicine Association**

"Obesity is defined as a chronic, progressive, relapsing, and treatable multi-factorial, neurobehavioral disease, wherein an increase in body fat promotes adipose tissue dysfunction and abnormal fat mass physical forces, resulting in adverse metabolic, biomechanical, and psychosocial health consequences."

# Obesity is a chronic disease



#### Prevalence<sup>¶</sup> of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2011

<sup>1</sup> Prevalence estimates reflect BRFSS methodological changes started in 2011. These estimates should not be compared to prevalence estimates before 2011.





\*Sample size <50, the relative standard error (dividing the standard error by the prevalence)  $\geq$ 30%, or no data in a specific year.

#### **Prevalence<sup>1</sup> of** Obesity Based on Self-Reported Weight and Height Among US Adults by State and Territory, BRFSS, 2023

<sup>¶</sup> Prevalence estimates reflect BRFSS methodological changes started in 2011. These estimates should not be compared to prevalence estimates before 2011.



Centers for Disease Control and Prevention. Addit Obesity <u>Prevalence Maps</u>. U.S. Dept of Health and Human Services; 2023. Accessed Sept 2024 **\*Sample siz** 

\*Sample size <50, the relative standard error (dividing the standard error by the prevalence)  $\geq$ 30%, or no data in a specific year.



Prevalence of Obesity Based on Self-Reported Weight and Height Among Non-Hispanic White Adults, by State and Territory, BRFSS, 2021–2023



Centers for Disease Control and Prevention. Adult Obesity <u>Prevalence Maps</u>. U.S. Dept of Health and Human Services; 2023. Accessed Sept 2024 **\*Sample s** 

\*Sample size <50, the relative standard error (dividing the standard error by the prevalence) ≥30%, or no data in a specific year.



Prevalence of Obesity Based on Self-Reported Weight and Height Among Non-Hispanic Black Adults, by State and Territory, BRFSS, 2021–2023



Centers for Disease Control and Prevention.<u>Adult Obesity</u> <u>Prevalence Maps</u>. U.S. Dept of Health and Human Services; 2023. Accessed Sept 2024 **\*Sample s** 

\*Sample size <50, the relative standard error (dividing the standard error by the prevalence) ≥30%, or no data in a specific year.



Prevalence of Obesity Based on Self-Reported Weight and Height Among Hispanic Adults, by State and Territory, BRFSS, 2021–2023



Centers for Disease Control and Prevention. Adult Obesity 2023. Accessed Sept 2024

Prevalence Maps. U.S. Dept of Health and Human Services: Sample' size <50, the relative standard error (dividing the standard error by the prevalence) ≥30%, or no data in a specific year.



Prevalence of Obesity Based on Self-Reported Weight and Height Among Non-Hispanic Asian Adults, by State and Territory, BRFSS, 2021–2023



Centers for Disease Control and Prevention. Adult Obesity

2023. Accessed Sept 2024

Prevalence Maps. U.S. Dept of Health and Human Services: Sample size <50, the relative standard error (dividing the standard error by the prevalence) ≥30%, or no data in a specific year.



**Prevalence of Obesity Based on Self-Reported Weight and Height Among Non-Hispanic American** Indian or Alaska Native Adults, by State and Territory, BRFSS, 2021–2023



Centers for Disease Control and Prevention. Adult Obesity

2023. Accessed Sept 2024

Prevalence Maps. U.S. Dept of Health and Human Services: Sample size <50, the relative standard error (dividing the standard error by the prevalence) ≥30%, or no data in a specific year.



Percentage of high school students who had obesity in 2003

https://www.cdc.gov/healthysc hools/obesity/obesityyouth.htm



Percentage of high school students who had obesity 2019

https://www.cdc.gov/hea lthyschools/obesity/obesi ty-youth.htm



#### Data Source

#### Youth Risk Behavior Surveillance System (YRBSS)

Centers for Disease Control and Prevention.National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition, Physical Activity, and Obesity.Data, Trend and Maps [online]. [accessed Sep 12, 2024]. URL: <a href="https://www.cdc.gov/nccdphp/dnpao/data-trends-maps/index.html">https://www.cdc.gov/nccdphp/dnpao/data-trends-maps/index.html</a>. Accessed Sep 12, 2024].

#### How Is Obesity Defined in Adults?

Weight status category	BMI (kg/m²)
Underweight	<18.5
Normal weight	18.5–24.9
Overweight	25.0–29.9
Class 1 obesity	30.0–34.9
Class 2 obesity	35.0–39.9
Class 3 obesity	≥40

BMI = body mass index (weight in kilograms divided by height in meters squared,  $kg/m^2$ ).

# Classification of Overweight and Obesity by BMI, Waist Circumference, and Associated Disease Risk

Weight	t BMI Obesity		Disease risk* (relative to normal weight and waist circumference)	
categories	(kg/m²)	class	Waist circumference	
			Men: ≤40 inches (≤102 cm) Women: ≤35 inches (≤88 cm)	Men: >40 in (>102 cm) Women: >35 in (>88 cm)
Underweight	<18.5		_	_
Normal <sup>+</sup>	18.5–24.9		_	_
Overweight	25.0–29.9		Increased	High
Obesity	30.0–34.9 35.0–39.9	1 2	High Very high	Very high Very high
Severe obesity	≥40	3	Extremely high	Extremely high

Purnell JQ. Enditext [Internet], 2023 (www.ncbi.nlm.nih.gov/books/NBK279167/.

# How do we define overweight/obesity in children?



## BMI Categories in Children Ages 2 to 20 Years

Underweight	<5 <sup>th</sup> percentile
Healthy weight	5-84 <sup>th</sup> percentile
Overweight	85-94 <sup>th</sup> percentile
Obesity	95-99 <sup>th</sup> percentile or BMI >30
Severe obesity	BMI ≥120% of the 95 <sup>th</sup> percentile or BMI ≥35

Not all patients with BMI 85% or above have excess adiposity, and many children and adolescents with BMI <5% are healthy and do not need treatment.

Cuda S, Censani M, O'Hara V, Conroy R, Kharofa R, Paisley J, Browne A, Browne NT. Pediatric Obesity Algorithm, presented by the Obesity Medicine Association. www.obesitymedicine.org/childhood-obesity.2024. https://obesitymedicine.org/resources/obesity-algorithm/ pediatric-obesity-algorithm/. (Accessed 05/01/24)



Published by the Centers for Disease Control and Prevention, November 1, 2009 SOURCE: WHO Child Growth Standards (http://www.who.int/childgrowth/en)





Published by the Centers for Disease Control and Prevention, November 1, 2009 SOURCE: WHO Child Growth Standards (http://www.who.int/childgrowth/en)







December 15, 2022 Data source: National Health Examination Survey and National Health and Nutrition Examination Survey. Developed by: National Center for Health Statistics in collaboration with National Center for Chronic Disease Prevention and Health Promotion, 2022.





# **Calories in Calories out**



#### Potential\* Contributors to Obesity: Inside the Person



#### **Potential\* Contributors to Obesity: Outside the Person**




Adapted from Hopkins M, Blundell JE. Energy balance, body composition, sedentariness and appetite regulation: pathways to obesity. Clin Sci (Lond). 2016 Sep 1;130(18):1615-28. doi: 10.1042/CS20160006. PMID: 27503946.

#### A critical update on the leptin-melanocortin system



#### Peripheral Messengers Regulating Food Intake

Substance	Production site	Effect (relevant for feeding)
Ghrelin Growth hormone	Stomach Neurons in hypothalamus	Appetite (orexigenic)
Anandamide Endocannabinoid Ananda: bliss, delight + amide	Small intestine	Appetite (orexigenic)
Insulin Insula Island or islet	Pancreas (β-cells in islets of Langerhans)	Satiety (anorexigenic) Glycogen and lipid storage
Leptin Leptos, thin	Adipocytes—long term Stomach—short term	Satiety (anorexigenic)
Cholecystokinin (CCK) "Move the bile-sac"	Small intestine	Early satiety (anorexigenic) Release of digestive enzymes
Glucagon-like peptide 1 (GLP-1)	lleum Colon	Satiety (anorexigenic) Slowed gastric emptying
Peptide tyrosine tyrosine (PYY)	lleum Colon	Satiety (anorexigenic)

#### Biology of Obesity and Weight Regain: Implications for Clinical Practice



AMPK = adenosine monophosphate kinase; α-MSH = alpha-melanocyte stimulating hormone; NPY = neuropeptide Y; SNS = sympathetic nervous system; T3 = tri-iodothyronine.

#### **Obesity Is Associated With 236 Other Disease States**





#### Questions?

## Thank you!

pfotenha@msu.edu

# From Stigma to Support: Supporting Equitable Outcomes and Patient Well-Being in Obesity Care

Cassie D. Turner, LMSW PhD Candidate September 20, 2024



# Obesity is a prevalent condition with persistent disparities

#### In Michigan, 34% of adults and 17% of children aged 10-17 have obesity

#### State of Michigan Obesity Prevalence by Characteristic



Source: BRFSS 2020; Kaiser Family Foundation 2022



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## Weight bias and stigma play a role

- Study done is late 50s in which 10-11 year olds were shown six images and asked to rank in order of which child they "liked best"
- Regardless of race, gender, handicap status, socioeconomic status, rural, or urban, the child with obesity was ranked last



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Source: Richardson SA, Goodman N, Hastorf AH, Dornbusch SM. Cultural uniformity in reaction to physical disabilities. Am Sociol Rev. 1961;26(2):241–7.



## Weight Bias and Stigma

Over the past decades, slim as the ideal and stigmatizing those in larger bodies has increased in the US and globally



Source: Andreyeva T, Puhl RM, Brownell KD. Changes in perceived weight discrimination among Americans, 1995-1996 through 2004-2006. Obesity. 2008;16(5):1129–34 Brewis AA, Wutich A, Falletta-Cowden A, Rodriguez-Soto I. Body norms and fat stigma in global perspective. Curr Anthropol. 2011;52(2):269–76.; Tomiyama et al. How and why weight stigma drives the obesity 'epidemic' and harms health. BMC Medicine (2018) 16:123



# Weight bias and weight stigma can be internalized

Internalized bias/stigma is defined as being:



Source: Pearl, R. L., & Puhl, R. M. (2018). Weight Bias Internalization and Health: A Systematic Review. Obesity Reviews : An Official Journal of the International Association for the Study of Obesity, 19(8), 1141–1163. https://doi.org/10.1111/obr.12701



# Weight stigma is pervasive and happens in many areas of life

Estimates of prevalence range from 19% to 42%



Workplace

Lower salaries Less likely to be hired



Education Worse academic outcomes



Media Stereotypical depictions



```
Social
Exclusion
Shaming
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Healthcare

Provider and health system bias

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Source: Puhl RM, Heuer CA. The stigma of obesity: a review and update. Obesity. 2009;17(5):941-64



# Weight Bias and Stigma

There is also evidence of differences in experience by various identities and intersections of identities

#### Higher scores for:

- Latinx (vs. non-Latinx) adults
- Sexual minority (vs. heterosexual) adults
- Younger (vs. older) adults
- Adults with higher (vs. lower) levels of education
- Adults with higher (vs. lower) BMI

# AND for some intersectional identities

- Non-Black women
- Black men
- Adults who identified as Black and Latinx
- Non-Black sexual minority adults.

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Source: Gerend, M. A., Wilkinson, L. J., Sutin, A. R., Rosado, J. I., Ehrlich, K. B., Smith, D. W., & Maner, J. K. (2024). Sociodemographic predictors of perceived weight discrimination. International Journal of Obesity, 48(9), 1231–1237. https://doi.org/10.1038/s41366-024-01535-1



# Within healthcare, evidence suggests bias is present for many different types of providers...

## PCPs, endocrinologists, cardiologists, nurses, and dietitians

endorse that people with obesity are...

Lazy, lack self-control and willpower, personally to blame for their weight, noncompliant

Source: Lawrence, B. J., Kerr, D., Pollard, C. M., Theophilus, M., Alexander, E., Haywood, D., & O'Connor, M. (2021). Weight bias among health care professionals: A systematic review and metaanalysis. Obesity, 29(11), 1802–1812. https://doi.org/10.1002/oby.23266 Phelan, S. M. et al. Impact of weight bias and stigma on quality of care and outcomes for patients with obesity. Obes. Rev. 16, 319–326 (2015). 18. Sabin, J. A., Marini, M. & Nosek, B. A. Implicit and explicit anti-fat bias among a large sample of medical doctors by BMI, race/ethnicity and gender. PLoS One 7, e48448 (2012)



# This stigma impacts patient engagement in care

Extensive quantitative and qualitative body of research show that stigma experiences in patient-provider interactions impact patient engagement. Stigma results in:

- Delay of care
- Avoidance of follow up
- Decreased Trust
- Lower adherence to treatment

Source: Puhl RM, Heuer CA. The Stigma of Obesity: A Review and Update. Obesity. 2009;17(5):941-964. doi:10.1038/oby.2008.636 Wong M, Gudzune KA, Bleich SN. Provider communication quality: influence of patients' weight and race. Patient Educ Couns. 2015;98(4):492-498. doi:10.1016/j.pec.2014.12.007 Phelan, S. M., Burgess, D. J., Yeazel, M. W., Hellerstedt, W. L., Griffin, J. M., & van Ryn, M. (2015). Impact of weight bias and stigma on quality of care and outcomes for patients with obesity. Obesity Reviews, 16(4), 319–326. https://doi.org/10.1111/obr.12266



# Weight stigma is associated with various physiological risks

- Predictive of obesity in youth and adults
- Weight stigma is associated with increased:
  - Mortality (by 60%)
  - Cortisol levels
  - Oxidative stress
  - C-reactive protein level
  - HbA1c
  - Waist to hip ratio

#### Blood pressure

Source: Wu, Y.-K., & Berry, D. C. (2018). Impact of weight stigma on physiological and psychological health outcomes for overweight and obese adults: A systematic review. Himmelstein, M. S., Incollingo Belsky, A. C., & Tomiyama, A. J. (2015). The weight of stigma: Cortisol reactivity to manipulated weight stigma. Pearl, R. L., Wadden, T. A., Hopkins, C. M., Shaw, J. A., Hayes, M. R., Bakizada, Z. M., Alfaris, N., Chao, A. M., Pinkasavage, E., Berkowitz, R. I., & Alamuddin, N. (2017). Association Between Weight Bias Internalization and Metabolic Syndrome Among Treatment-Seeking Individuals with Obesity. Schvey, N. A., et al (2019). Weight-based teasing is associated with gain in BMI and fat mass among children and adolescents at-risk for obesity: A longitudinal study. Sutin, A. R., Stephan, Y., & Terracciano, A. (2015). Weight Discrimination and Risk of Mortality.



# Weight stigma also negatively impacts mental health

Greater perceived weight stigma is associated with worse mental health status

#### Weight stigma is associated with:

- Suicidal ideation, plans, and attempt
- Depression
- Anxiety
- Lower Self-Esteem
- Poor Body Image

Source: Emmer, C., Bosnjak, M., & Mata, J. (2020). The association between weight stigma and mental health: A meta-analysis. Obesity Reviews, 21(1), e12935. https://doi.org/10.1111/obr.12935 Emmer, C., Bosnjak, M., & Mata, J. (2020). The association between weight stigma and mental health: A meta-analysis. Obesity Reviews, 21(1), e12935. https://doi.org/10.1111/obr.12935



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# Weight stigma also leads to unhealthy eating behaviors and decreased physical activity

#### Unhealthy eating behaviors include:

- Binge eating/Disordered eating
- Emotional eating
- Increased caloric consumption

#### Some differences by race and gender

- Black women were less likely to identifying disordered eating as a coping strategy
- Hispanic women were more likely to identify disordered eating as a strategy
- Black men were more likely than white men to cope with eating

Source: Himmelstein, M. S., Puhl, R. M., & Quinn, D. M. (2017). Intersectionality: An Understudied Framework for Addressing Weight Stigma. American Journal of Preventive Medicine, 53(4), 421–431. https://doi.org/10.1016/j.amepre.2017.04.003

Pearl, R. L., Wadden, T. A., & Jakicic, J. M. (2021). Is Weight Stigma Associated with Physical Activity? A Systematic Review. Obesity (Silver Spring, Md.), 29(12), 1994–2012. https://doi.org/10.1002/oby.23274



# Internalized weight stigma can also negatively impact weight management efforts

- 52% of those with obesity had internalized weight bias, compared to 20% of the general population
- In a 2017-2018 study of 18,769 US WW members, internalized weight bias (but NOT experienced weight bias) was associated with reduced weight loss, increased weight gain, decreased engagement in weight management behaviors in the past year
- In as 2020 multinational study that included 6 western countries, internalized weight bias was associated with weight gain in the past year (a 1-point increase on the validated measure corresponded to 1% weight gain)

Source: Pearl, R. L., Puhl, R. M., Himmelstein, M. S., Pinto, A. M., & Foster, G. D. (2020). Weight Stigma and Weight-Related Health: Associations of Self-Report Measures Among Adults in Weight Management.

Pearl, R. L., Puhl, R. M., Lessard, L. M., Himmelstein, M. S., & Foster, G. D. (2021). Prevalence and correlates of weight bias internalization in weight management: A multinational study. Puhl, R. M., Himmelstein, M. S., & Quinn, D. M. (2018). Internalizing Weight Stigma: Prevalence and Sociodemographic Considerations in US Adults.



# Weight stigma has adverse impacts on health

- In summary, weight stigma has significant negative impact on many health domains
- It is both a contributor to and result of weight gain



Source: Puhl, R. M., Phelan, S. M., Nadglowski, J., & Kyle, T. K. (2016). Overcoming Weight Bias in the Management of Patients With Diabetes and Obesity. Clinical Diabetes : A Publication of the American Diabetes Association, 34(1), 44–50. https://doi.org/10.2337/diaclin.34.1.44



## **Clinical Practice Recommendations**

• There is increased guidance in this area from professional organizations, but we are still learning

FROM THE AMERICAN ACADEMY OF PEDIATRICS | CLINICAL PRACTICE GUIDELINE | JANUARY 09 2023

#### Clinical Practice Guideline for the Evaluation and Treatment of Children and Adolescents With Obesity **FREE**

Sarah E. Hampl, MD, FAAP S; Sandra G. Hassink, MD, FAAP; Asheley C. Skinner, PhD;
Sarah C. Armstrong, MD, FAAP; Sarah E. Barlow, MD, MPH, FAAP; Christopher F. Bolling, MD, FAAP;
Kimberly C. Avila Edwards, MD, FAAP; Ihuoma Eneli, MD, MS, FAAP; Robin Hamre, MPH;
Madeline M. Joseph, MD, FAAP; Doug Lunsford, MEd; Eneida Mendonca, MD, PhD, FAAP;
Marc P. Michalsky, MD, MBA, FAAP; Nazrat Mirza, MD, ScD, FAAP; Eduardo R. Ochoa, Jr, MD, FAAP;
Mona Sharifi, MD, MPH, FAAP; Amanda E. Staiano, PhD, MPP; Ashley E. Weedn, MD, MPH, FAAP; Susan K. Flinn, MA;
Jeanne Lindros, MPH; Kymika Okechukwu, MPA

American Association of Clinical Endocrinology Consensus Statement: Addressing Stigma and Bias in the Diagnosis and Management of Patients with Obesity/Adiposity-Based Chronic Disease and Assessing Bias and Stigmatization as Determinants of Disease Severity

Karl Nadolsky, DO, FACE <sup>1</sup>, Brandi Addison, DO, FACE <sup>2</sup>, Monica Agarwal, MD, MEHP, FACE <sup>3</sup>, Jaime P. Almandoz, MD, MBA, FTOS <sup>4</sup>, Melanie D. Bird, PhD, MSAM <sup>5</sup>, Michelle DeGeeter Chaplin, PharmD, BCACP, CDCES <sup>6</sup>, W. Timothy Garvey, MD, MACE <sup>3</sup>, Theodore K. Kyle, RPh, MBA <sup>7</sup>





## **Clinical Practice Recommendations: Highlights**

- Increase awareness of the complex etiology of obesity
- Examine our own weight bias and attitudes about weight
  - To examine implicit bias, can complete Harvard's online Implicit Association Test (IAT) for weight (<u>http://www.implicit.harvard.edu</u>)
- Assess the clinical care environment for inclusivity
  - Ensure adequate sizing of equipment, review materials to ensure non-stigmatizing language, etc.
- Be mindful of language and word choice
  - Language used during interactions can make the difference between a supportive, empathic interaction and a stigmatizing one



## **Clinical Practice Recommendations: Highlights**

Remember that medical appointments can be very uncomfortable for patients. For many, being weighed and getting undressed causes a lot of anxiety

Language/tips for weighing

- "The doctor asks me to weigh their patients. Is ok for me to weigh you today?"
- "Would you prefer if I weighed you facing away from the scale?"
- Given the level of anxiety that weighing creates for some patients, consider whether a weight is required or not

"Oh, I just find [medical appointments] kind of nerve-wrecking in general. They're, like, you know, invasive and you're talking to people you don't know very well and an environment that, like, where you're, where there's, like, a power disparity and it's just an uncomfortable experience. It often involves getting naked. They weight you. Like, it's just uncomfortable, in general.."

Source: Turner, C.D, Unpublished data



# Clinical Practice Recommendations: More about language

Asking for permission and preferences for discussing weight-related concerns, along with providing a concrete, health-based rationale helps create supportive interactions

Sample Provider Language "Your blood sugar levels have increased since our last visit. Is it ok if we talk about some strategies for improving this?"

"Sometimes it's helpful to discuss weight and weight management for improving [x]. Is that ok to do today? What words would you feel most comfortable with as we talk about your weight?"

"Please let me know if I use any language that makes you uncomfortable so that I can adjust based on your preferences. "I've definitely gone to [a clinic] and they want to talk about my weight. I'm, like, I'm literally here because I have strep. This is not the time or the place or the environment to talk about this, and you'll never see me again. It's, like, really angering because it's clearly not the point. But at, like, an appointment where I am there to talk about my general health or where there's time to talk about, like, overall, long term care type questions, and that makes sense. And, like, avoiding it doesn't help anybody."



# Clinical Practice Recommendations: More about language



Source: Gallagher, C., Corl, A., & Dietz, W. H. (2021). Weight Can't Wait: A Guide to Discussing Obesity and Organizing Treatment in the Primary Care Setting. Obesity, 29(5), 821-824



# Clinical Practice Recommendations: More about language

Autonomy supportive communication increases patient engagement in treatment

#### **Tips/Consideration**

- Provide a menu of options and ask which, if any, of the options would the patient be interested in exploring
- Remember that patient autonomy also means they have the right NOT to pursue health and as providers we should not judge when they exercise that right
- Communicate openness to beginning or continuing health conversations

"It was very nice for me to be able to say to somebody that I don't make goals and for them to accept that. And it was nice for me to see, the fact of my not wanting to set goals, and that another person was not judgmental about it or resistant to that idea, how it encouraged me to want to do more. And I liked that."

""He didn't push too hard, which I would have withdrew more. He came on at the right setting; he wasn't too pushy or not pushy enough."

Source: Turner, C. D., Thomas, T. W., Sedgwick, T., Yassin, M., Stoll, S. C., Lindsay, R., Heisler, M., & Schmittdiel, J. A. (2024). Dyadic concordance and other considerations for matching pairs for peer support diabetes prevention interventions: A mixed methods assessment.

Turner, C. D., Lindsay, R., & Heisler, M. (2021). Peer Coaching to Improve Diabetes Self-Management Among Low-Income Black Veteran Men: A Mixed Methods Assessment of Enrollment and Engagement.



# In closing

*"I think my questions [are] about what kind of long- term changes to make, aside from the very basic, eat less, move more, … I've been overweight since I started, since I went through puberty. And so, for me, it's been, like, a long, ongoing conversation…but I haven't really received any response to those questions"* 

- People are interested in receiving more knowledge and support about how to effectively manage their weight (or for those with weight neutral preferences, how to promote overall health and well-being)
- Yet, weight stigma is pervasive in all areas of life (including health care) and contributes to worsening health outcomes
- Fortunately, there are strategies that health care providers and systems can utilize to decrease stigma



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# Questions?

# Taking a Weight-Focused Approach to Chronic Disease Prevention and Management

Jonathan Gabison, MD

Michigan Medicine



## Clinical Insights: The Hospitalized Medical Patient with Obesity

David Paje, MD, MPH Hospitalist at Michigan Medicine, PICC/Midline Physician Lead Elizabeth McLaughlin, RN, MS Program Manager



### HMS is one of ~20 Collaborative Quality Initiative (CQIs)









#### CQIs have resulted in **cost savings**: \$413 M for BCBSM and \$1.4B statewide

#### Collaborative Quality Initiatives

Anesthesia Anticoagulation Back pain Bariatric Surgery Cardiovascular Procedure Diabetes Cardiothoracic Surgery Care transitions Emergency Medicine General Surgery Health Behavior Health Disparities **Hospital medicine** Knee + hip replacement Obstetrics Oncology Radiation Oncology Spine surgery Trauma Urology Michigan value collaborative (episode-based payments)

www.valuepartnerships.com/programs/collaborative-quality-initiatives/

## Operational model for most CQIs





**BCBSM** funds coordinating center & participating hospitals

**Coordinating center** serves as data warehouse, generates feedback reports, sets performance targets, and convenes meetings

Hospitals submit their data, receive performance reports, implement local QI, share challenges and successes at collaborative-wide meetings

## Hospital Medicine Safety Consortium





69 diverse hospitals

**Goal**: to improve the quality of care for hospitalized medical patients



HMS Coordinating Center Team

#### Blood Clot Prevention

Vascular Access Device Use

Antimicrobial Use

COVID-19

Sepsis

# How is obesity associated with care and outcomes for hospitalized medical patients?



Vascular Access Devices – PICCs & Midlines Community Acquired Sepsis







- Vascular access is a common challenge in patients with obesity, often leading to the placement of PICCs/Midlines
- Little is known about the role of obesity in the risk of PICC/Midline complications






## Population: 56,379 patients with PICCs & Midlines

Body Mass Index Categories	%
Underweight (<18.5)	6.3
Normal (18.5 – 24.9)	34.1
Overweight (25 – 29.9)	34.2
Obese ( <u>&gt;</u> 30)	25.3

- Period: January 2013 November 2023
- Statistical analysis
  - Multivariable logistic regression



### Outcomes



## Major Complications

- Central line-associated bloodstream infection (CLABSI)
- Catheter-related venous thromboembolism (CR-VTE)

### Minor Complications

- Catheter dislodgement
- Occlusion
- Tip migration
- Superficial thrombosis
- Exit site problems
- Device failure premature device removal due to any complication

Vascular Access Devices – PICCs & Midlines



Results – Baseline Characteristics

HMS MICHIGAN HOSPITAL MEDICINE SAFETY CONSORTIUM

Patients with obesity have....

• More comorbidities than normal weight patients

Higher use of vascular devices for antibiotics

Longer intravascular device dwell times



### Results – Outcomes



### Patients with obesity have....

- PICC & Midline
  - No difference in major complications compared to normal weight patients



Higher likelihood of catheter occlusion
& tip migration





Higher likelihood of exit site infections



- Midline Only
  - Higher likelihood of device failure



## Background



- Sepsis contributes to approximately 1.7 million adult hospitalizations and more than a third of all hospital deaths
- Obesity has been associated with improved mortality following ICU admission
- Limited information on the relationship between obesity and sepsis care practices & outcomes



Community Acquired Sepsis





 Population: 35,499 adult hospitalized patients with community acquired sepsis

Body Mass Index Categories	%
Underweight (<18.5)	6.3
Normal (18.5 – 24.9)	29.3
Overweight (25 – 29.9)	25.3
Obese (>30)	39.1

- Period: November 2020– May 2023
- Statistical analysis
  - Multivariable logistic regression



Community Acquired Sepsis

## Study Goal & Design



### • Goal

 Assess association between obesity and quality of care and clinical outcomes

## • Quality of Care (Process Measures)

- Early Identification & Treatment (i.e., SEP-1)
- ICU/Floor Transition of Care Practices
- Additional Sepsis Care Practices (i.e., use of balanced fluids, adjunctive steroids for shock patients, etc.)
- Recovery- Focused Practices

## Clinical Outcomes

- Mortality (in hospital, 30-day, 90-day)
- Rehospitalization (90-day)



Community Acquired Sepsis

## Results – Baseline Characteristics

Sepsis patients with obesity.....

• Younger than normal weight sepsis patients

• Lower frequency of **dementia** 

Higher frequency of skin/soft tissue infections

Lower frequency of cancer

Lower predicted\* mortality











## Results – Process Measures & Outcomes

Sepsis patients with obesity.....

 Have better clinical outcomes, largely driven by baseline characteristics





- Receive similar treatment practices, except for less frequent use of lung-protective ventilation strategies
- Fewer goals of care assessments and conversations than normal weight sepsis patients







- Higher proportion of patients with obesity in the sepsis cohort compared to vascular access cohort – suggesting sepsis is more common with obesity
- Patients with obesity are more likely to experience minor vascular device complications
  - Share with your home care colleagues!
- Patients with obesity are more likely to experience sepsis at a younger age





### • Visit us at the HMS booth outside!

### Website – <u>https://www.mi-hms.org</u>



## **Session I: Panel Discussion**



#### **Moderator**



Arthur Carlin, MD

#### Panelists





Kim Pfotenhauer, DO Cassie Turner, LMSW



David Paje, MD



Elizabeth McLaughlin, RN



Frankie Bacarella, Patient Advisor Session II: Lifestyle and Dietary Interventions for Weight Management





Lifestyle Interventions to Treat Obesity Among Adults

Karen Scherr, MD, PhD

MBSC Obesity Management Summit

September 20, 2024

# Outline

- Overview of lifestyle interventions
- Behavioral therapy and counseling
- Nutritional therapy
- Physical activity
- Other targets for lifestyle intervention
- Lifestyle interventions in the context of second-generation anti-obesity medications

# Overview of lifestyle interventions

Lifestyle modification provides behavioral and cognitive strategies to help individuals consciously regulate their energy intake (i.e., food) and expenditure (i.e., physical activity).

# General components of lifestyle interventions





Cognitive techniques and strategies

Facilitate satiation Cope with hunger/cravings Recover from lapses

## Evidence

- Several large-scale studies support the efficacy of lifestyle intervention:
  - Diabetes Prevention Program (DPP) (n=3200)
  - Look AHEAD (Action for Health in Diabetes) (n=5145)
  - The National Weight Control Registry (n=10,000)
- Typically result in 5-10% reduction in baseline weight (vs. 1-2% in controls)



Lifestyle Modification

# **The Diabetes Prevention Program**



Source: Centers for Disease Control and Prevention: National Diabetes Statistics Report, 2020 Ali, Echouffo-Tcheugui, and Williamson 2012; Nihm et al. 2019; Vojta et al. 2013

# EHR-based referral improves utilization of the DPP



Scherr K.A., Turner C.D., Wolf S., Barden A.,...&Griauzde D.H. (manuscript under review).,

# Limitations of lifestyle interventions



Do not address the physiology of obesity

-Does not help with counterregulatory physiologic changes that occur with weight loss -May blame individuals for "lack of compliance"



Individually focused interventions do not address systems-level drivers

-Equitable environmental changes are needed to address social determinants of health



"Research to practice" gap

-Less effective in "real world" settings

-Health system not designed to support highintensity lifestyle interventions

# Behavioral Therapy and Counseling

For optimal success, behavior therapy should focus on encouraging actions that are doable, efficacious, measurable, and which engage selfownership.

# Approaches



# Stages of Change

Stage	Process of Change
Precontemplation – Not ready to change or unaware of the problem	Consciousness raising
Contemplation – Thinking of change in the next 6 months but not yet ready to change	Self-reevaluation Resolution of ambivalence
Preparation – Ready to change and making a plan to change now	Problem-solving Social support
Action – Implementation of change to achieve goal	Reinforcement Self-efficacy support
Maintenance – Continuation of favorable behavior	Stimulus control Continued reinforcement Relapse prevention
Relapse – Restart unfavorable behavior	Reengagement Development of coping skills

## The 5 A's Framework

Ask/Assess	Advise	Agree	Assist	Arrange
Obtain permission, explore readiness, conduct medical assessment	Discuss health risks of obesity, benefits to weight loss, treatment options	Identify target behavior and set short-term, realistic goals	Identify barriers/solutions, provide resources	Schedule follow up in 1-3 months

# Motivational Interviewing (MI)

Collaboration



# MI: Four core skills (OARS)



**Open-ended questions** invites the patient to tell their story and affords the provider some context while actively listening.

"How can I help you today?" "Help me to understand more about...."

**Affirmations** refer to statements made by the provider that highlight the patient's strengths and past successes, building on the confidence needed to make changes.

*"I appreciate that you are willing to meet and discuss these topics with me today"* 

"I'm really impressed with how you handled that situation."



**Reflective listening** refers to the provider paraphrasing what they think they have heard the patient or caregiver say, allowing them time to clarify or correct the provider and thereby preventing miscommunication.

"What I heard you say was..."



**Summarizing** can be used throughout the encounter, but is particularly helpful during the conclusion of a visit to ensure there is a shared understanding and plan between the patient and the provider.

"To recap, today you identified [behavior] as an area you'd like to work on and you committed to doing [goal] before next visit."

## **MI** conversation roadmap



#### Engaging ("hi")

Establish rapport

#### Focusing ("what")

Identify target for behavior change

#### Evoking ("why")

Elicit patient's own reasons for change



#### Planning ("how")

Set goals (SMART) and develop a plan. Avoid giving advice or information until the planning stage.

# Cognitive behavioral therapy



# Nutritional Therapy

Health outcomes show the greatest improvement when nutrition therapy is guided by evidencebased, measurable, and qualitative dietary strategies that encourage patient participation and adherence.

## General principles of healthful nutrition

Read labels rather than marketing claims to:

#### -Healthful proteins and fats

(e.g., seafood and dairy products)

-Vegetables, whole fruits, nuts, & legumes

-Complex carbohydrates & low glycemic index foods

-High-fiber foods

Increase consumption

### -Energy-dense foods & beverages

(e.g., sugar-sweetened beverages, juice, cream)

-Ultra-processed foods

(e.g., refined grains, "sweets," chips, and ultra-processed meats)

-Trans fats

-Excessive sodium

Minimize consumption

# Nutritional therapy approaches



# Physical Activity

Regular physical activity provides numerous health benefits for both adiposopathy and non-adipose parameters.

## Activity intensity



# Physical activity goals

Increase energy expenditure & decrease physical inactivity



# Expected weight loss by activity type

Exercise Type	Expected Weight Loss
Aerobic exercise only	0-2 kg
Resistance training only	No weight loss
Aerobic exercise and resistance training	0-2 kg
Calorie restriction and aerobic exercise	9-13 kg
# Benefits of physical activity

#### Adiposopathy (Sick Fat Disease)

- Assist with weight maintenance
- Assist with weight loss
- Improve body composition
- Improve adiposopathic physiologic disturbances
- Improve adipocyte function ("train" fat cells)
  - Improve insulin sensitivity
  - Increase mitochondrial biogenesis
  - Increase browning ("beigeing") of fat cells

#### **Non-adipose Parameters**

- Improve metabolic health
- Improve musculoskeletal health
- Improve cardiovascular health
- Improve pulmonary health
- Improve neurological health
- Improve mental health (e.g., improve mood, promote happiness and sense of well-being, reduce stress)
- Improve sexual health
- Improve cognitive heath
- Reduce risk of cancer, and improve response to cancer treatments

## Physical activity prescription: FITTE



## FITTE case example

48-year-old man with class III obesity, metabolic syndrome and knee degenerative joint disease. **He was an athlete** throughout high school and college. Currently, he works as a sales manager and **travels frequently** for his job. During his spare time, he **enjoys watching TV and walking his dog**. Although he **has exercise equipment** in his basement, he is not able to do any strenuous exercise due to **chronic knee pain**. In addition, he **feels tired** at the end of the day and is not ready to start a structured exercise program.

FITTE Element	Initial Visit Prescription
Frequency (number of days per week)	2 times per week
Intensity (low, moderate, vigorous)	As tolerated
Time (time of day, duration)	20 minutes per day
Type (walking, biking, etc.)	Walking
Enjoyment (ways to make it fun by involving partner, music, pets, nature, etc.)	Walking the dog

# Other targets for lifestyle intervention

Sleep, stress, and mental health are also important to address when treating obesity.

# Sleep



\*A diurnal rhythm is an endogenous or exogenous response synchronized to day/night 24-hour day. A circadian rhythm (sleep/wake cycle) is endogenously generated response synchronized to a 24-hour day.

# Stress



# Mental health



# Lifestyle intervention in the context of secondgeneration AOMs

As medications help reduce energy intake, focus of lifestyle interventions will likely change to focus on dietary quality (vs quantity) and body composition.

# Nutritional therapy with AOMs



Consume an appropriate dietary pattern (including lean proteins, fruits, and vegetables) to promote cardiometabolic health



Consume adequate amounts of protein to help preserve lean body mass (≥0.8 g protein/day per kg body weight)



Maintain adequate hydration (2.2-3 L/day)



Limit problem foods to mitigate potential gastrointestinal (GI) side effects related to AOMs

# Physical activity with AOMs



Progression to at least 5 days/week of 30 minutes of moderate-intensity aerobic physical activity.



At least 2 days per week of muscle strengthening activities to improve muscle quality and decrease risk of sarcopenia.



Focus on benefits beyond weight loss.

# Questions?

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### Lifestyle Interventions to Treat Obesity in Children and Adolescents

Sarah Hampl, MD, FAAP, DABOM Center for Children's Healthy Lifestyles & Nutrition Children's Mercy Kansas City Professor of Pediatrics University of Missouri-Kansas City School of Medicine

MBSC 2024 Obesity Summit, Sept 20, 2024







## **Objectives**

 Describe intensive health behavior and lifestyle treatment (IHBLT) recommendations from the AAP Child and Adolescent Obesity Clinical Practice Guideline.
 Explore primary care, clinic-community and other examples of IHBLT.

3. Review resources to support PCPs and clinics.





## **Disclosures**

• I have nothing to disclose





# 14.4

Million children and adolescents in the United States are affected by obesity

https://www.cdc.gov/obesity/php/data-research/childhood-obesity-facts.html?CDC\_AAref\_Val=https://www.cdc.gov/obesity/data/childhood.html

# Obesity affects the immediate and long-term health of children

### **Consequences of Childhood Obesity**



Poorer health in childhood, including hypertension and metabolic disorders



Lower self-esteem





Poorer school attendance levels and poorer school achievements



Poorer health in adulthood, including a higher risk of obesity and cardiovascular disease



WHO. 2018. Taking Action on Childhood Obesity



#### **Comprehensive Process**



## **CPG By the Numbers**



## **CPG in a nutshell**

**CPG** Evaluation & Treatment of Pediatric Obesity

- •13 Key Action Statements
- •11 Consensus Recommendations
- •Key Topics:
  - ✓Assessment & evaluation
  - ✓ Comorbidities
  - Multiple evidence-based treatment options

## Key Takeaways

Obesity is a complex chronic disease



There are effective evidence-based strategies for treatment



Comprehensive whole child evaluations are important

Treating obesity also means treating comorbidities





Children with overweight or obesity should be offered treatment upon diagnosis

### Comprehensive Obesity Treatment Key Action Statement

KAS 9. Pediatricians and other PHCPs <u>should treat overweight</u> (BMI ≥85th percentile to <95th percentile) and obesity (BMI ≥95th percentile) in children and adolescents, following the principles of the <u>medical home</u> and the <u>chronic care model</u>, using a <u>family-centered</u> and <u>nonstigmatizing</u> approach that acknowledges obesity's biologic, social, and structural drivers. Longitudinal comprehensive patient-centered obesity treatment coordinated in the medical home



# Provide the most intensive longitudinal treatment in the medical home....

Provide or ensure ongoing medical evaluation & monitoring What is happening with this patient and family physically, emotionally, and socially?

Develop & implement an individualized comprehensive treatment plan, using evidence-based strategies What can help the patients & family develop & reach treatment foals and treat comorbidities?

Tailor treatment as needed What else is needed to support the patient & family's immediate needs & longitudinal treatment progress?

Serve as medical home What care coordination and/or advocacy does this patient/family need?

#### PCP & PHCP Evidence-Based Toolbox



Motivational Interviewing



Pharmacotherapy



Surgery

### Treatment TakeAways: "As soon as possible, as intensive as available"



### Intensive Health Behavior and Lifestyle Treatment KAS

KAS 11. Pediatricians and other PHCPs <u>should provide or refer</u> children <u>6 y and older</u> (Grade B) and <u>may provide or refer children 2 through 5</u> <u>y of age</u> (Grade C) <u>with overweight</u> (BMI ≥85th percentile to <95th percentile) and <u>obesity</u> (BMI ≥95th percentile) to <u>intensive health</u> <u>behavior and lifestyle treatment</u>. Health behavior and lifestyle treatment is more effective with greater contact hours; the most effective treatment includes 26 or more hours of face-to-face, familybased, multicomponent treatment over a 3- to 12-month period.



Intensive Health Behavior & Lifestyle Treatment: Provide or refer children ages 6 years and older and may provide or refer children ages 2-5 years with overweight or obesity to intensive health behavior and lifestyle treatment.

IHBLT is the foundational approach to achieve body mass reduction in children. It is rooted in strong evidence. The table below describes key components of evidence-based IHBLT. To learn more about existing evidence-based IHBLT programs, visit www.aap.org/obesitycpg.

Who	Patient and family in partnership with a multidisciplinary treatment team (e.g., 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)		
When	Promptly for child or adolescent with overweight or obesity		
What	<ul> <li>Health education and skill building on multiple topics (i.e., both nutrition &amp; physical activity; also, mental health, parenting skills, stigma &amp; bias, sleep, and reducing sedentary screen time)</li> <li>Behavior modification and counseling</li> </ul>		
Where	Healthcare setting     Community-based setting with linkage to medical home		
Dosage	Longitudinal treatment across 3-12 months with ideally ≥26 contact hours		
Format	Group, individual, or both		
Channel	Face-to-face (strongest evidence), virtual (growing evidence)		
Vidence-based Behavioral Strategies to Explore with MI & IHBLTConsiderations for Evaluation of IHBLT Programs• Reduction in sugar-sweetened beverages• Consistent with evidence-based standards• Nutrition education and counseling• Non-stigmatizing, empathetic, family-centered• 60 minutes of moderate to vigorous physical activity daily• Developmentally appropriate• Reduction in sedentary time• Consistent with chronic care model• Age-appropriate amount of sleep• Values partnership with the medical home		Considerations for Evaluation of IHBLT Programs <ul> <li>Consistent with evidence-based standards</li> <li>Non-stigmatizing, empathetic, family-centered</li> <li>Developmentally appropriate</li> <li>Consistent with chronic care model</li> <li>Values partnership with the medical home</li> </ul>	

Source: AAP Clinical Flow Treatment - <u>https://www.aap.org/en/patient-care/institute-for-healthy-childhood-</u> weight/clinical-practice-guideline-for-the-evaluation-and-treatment-of-pediatric-obesity/supporting-the-implementationof-the-cpg-recommendations/

#### Facilitators for Successful Health Behavior Lifestyle Treatment



#### **FIGURE 4**

Facilitators for successful health behavior lifestyle treatment (this figure highlights some of the factors that are associated with successful health behavior and lifestyle treatment).

### **Evidence-Based Behavioral Strategies**



#### WHAT IS INTENSIVE HEALTH **BEHAVIOR AND LIFESTYLE TREATMENT (IHBLT)?**

Intensive health behavior and lifestyle treatment (IHBLT) is a safe and proven approach for adolescents with overweight and obesity.

IHBLT recognizes that each child has unique needs. It aims to address those needs for the child as well as their family in a holistic way. IHBLT also provides supports to navigate common barriers to healthy active living in a way that respects a family's cultural heritage and values.

Other names for IHBLT include intensive behavioral intervention or family healthy weight programs.

Many IHBLT programs involve:

focus on health, not weight.

· Non-judgmental and inclusive activities that

boost your child or teen's self-esteem and that

#### What is the goal of IHBLT?

While IHLBT works toward lowering medical risks, the primary goals are good health, a good quality of life, good self-esteem and respect for bodies of all shapes.

What to expect during program? It can be hard to lead h world, but studies show

programs engage with to-face opportunities to And IHLBT programs co behavior in ways that a family Programs may in

#### TREATMENT FOR **OBESITY IN CHILDREN** They go beyond handou & TEENS

A rising number of kids carry excess weight, which can put their current and long-term health at risk in many ways. Fortunately, there are a variety of proven treatments for overweight and obesity in children and teens. Here's what families should know.

#### **Childhood obesity** treatment: not one-sizefits-all solution

After several decades of research, we now have several good options to help children and teens with obesity. Which option is right for any individual child is based on a number of factors. These include the family's values and health goals, the child's age and health status, and the severity of the obesity. Deciding on the right treatment for a child

#### **Obesity treatment options for kids &** teens

#### Behavioral and lifestyle treatment

Weight treatment always includes behavioral and lifestyle treatment. Your doctor will talk to you about behavioral treatment options that support healthy habits. These may involve healthcare specialists, a community program or frequent visits with your doctor. However, some patients may benefit from additional treatment to reach a weight that protects them from long-term health problems

### **Resources for Families About IHBLT** and **Treatment**

Setting clear expectations about treatment and IHBLT are important.

#### What Is Intensive Health Behavior and Lifestyle Treatment (IHBLT)?

By: Sarah Barlow, MD, FAAP & Sarah Armstrong, MD, FAAP

Intensive health behavior and lifestyle treatment (IHBLT) is a safe and proven approach for adolescents with overweight and obesity.



IHBLT recognizes that each child has unique needs. It aims to address those needs for the child as well as their family in a holistic way. IHBLT also provides supports to navigate common barriers to healthy active living in a way that respects a family's cultural heritage and values.

Other names for IHBLT include intensive behavioral intervention or family healthy weight programs.

#### What is the goal of IHLBT?

While IHLBT works toward lowering medical risks, the primary goals are overall good health, quality of life and self-esteem. It also promotes respect for bodies of all shapes.





### Creating/identifying IHBLT is a process



Deliver the best available intensive treatment to all children with overweight and obesity.



Build collaborations with other specialists and programs in PCPs' communities.

## Building Capacity in Primary Care



Assess Capacity
 How to Intensify Care
 Key Content - Behavioral Foci
 Support Tools and Resources
 Key Principles to Remember

#### **Capacity Considerations for Obesity Evaluation and Treatment**

This tool was designed to help you and your care team reflect on your current practice capacity related to obesity treatment that is consistent with the AAP CPG on Evaluation and Treatment of Pediatric Obesity and identify areas to continually assess and work on as a team. The information is based on the CPG, implementation science and characteristics of sustainable programs and clinics.

Your care team has had staff training on:	Your office environment/physical space has:
The clinical recommendations in the CPG	Respectful and private opportunities for height and
Weight bias and stigma, including the use of non-	weight measurements
stigmatizing language	Appropriately sized equipment, furniture, gowns, etc.
□ Motivational interviewing	Non-stigmatizing imagery in the practice/clinic
Appropriate billing and coding recommendations for	environment and on family education materials
obesity-related visits	

Define roles & responsibilities	Consider EHR documentation & capacity
Your staff team has clearly defined roles and	Your electronic health record has designated, readily
responsibilities for the key functions/components of	available space for documentation for key components
obesity assessment & evaluation (see back side) and	obesity assessment & evaluation (see back side) and
obesity treatment (see back side).	obesity treatment (see back side).

Your practice/clinic has current list of available resources for obesity evaluation and treatment, including:	Your practice/clinic infrastructure has systems with capacity to:
Community resources to support SDOH needs and/or	Identify patients eligible for treatment
behavioral goals	Routinely, appropriately bill and code for obesity
Local/regional subspecialists to support treatment of	treatment visits
comorbid conditions	Easily schedule obesity treatment visits (appt length,
Intensive health behavior and lifestyle treatment	day of week, non-stigmatizing visit name, etc.)
(IHBLT) programs (if available)	Remind patients of upcoming obesity treatment visits
Multidisciplinary pediatric obesity treatment centers (if	Identify patients on treatment and track participation
available)	by patients engaged in obesity treatment
Multidisciplinary providers willing to partner in care	(attendance/attrition)
(e.g., RD/Dietitian, Physical Therapist, Health Educator,	Coordinate care with external healthcare
Behavioral Health Specialist, etc.)	providers/organizations participating in treatment
	Coordinate care with community organizations
	participating in treatment

#### Your obesity care staff team has regular meetings to:

Coordinate patient care in real time

□ Reflect on obesity treatment approach (program goals, metrics, feedback, improvements, etc.)

#### Your practice has systems/processes in place to sustain programs and maintain quality/continue improving obesity care:

Ensure that new staff are trained (see first category above)

- Assess patient and family experiences in obesity treatment (e.g., satisfaction, patient-centeredness)
- Assess retention and attrition rates overall, including identifying common facilitators and barriers
- Assess equitable access to and experiences during treatment within your patient population
- Ascertain financial costs and payment associated with your obesity treatment
- Regularly update list of key external partners in treatment

Regularly communicate with key external partners in treatment

Regularly communicate/share treatment successes with leadership and other providers within your organization

### Use this resource to help assess where you are & where you might need to build capacity in your systems or skills.

Your practice/clinic has current list of available resources for obesity evaluation and treatment, including:	Your practice/clinic infrastructure has systems with capacity to:
<ul> <li>Community resources to support SDOH needs and/or behavioral goals</li> <li>Local/regional subspecialists to support treatment of comorbid conditions</li> <li>Intensive health behavior and lifestyle treatment (IHBLT) programs (if available)</li> <li>Multidisciplinary pediatric obesity treatment centers (if available)</li> <li>Multidisciplinary providers willing to partner in care (e.g., RD/Dietitian, Physical Therapist, Health Educator, Behavioral Health Specialist, etc.)</li> </ul>	<ul> <li>Identify patients eligible for treatment</li> <li>Routinely, appropriately bill and code for obesity treatment visits</li> <li>Easily schedule obesity treatment visits (appt length, day of week, non-stigmatizing visit name, etc.)</li> <li>Remind patients of upcoming obesity treatment visits</li> <li>Identify patients on treatment and track participation by patients engaged in obesity treatment (attendance/attrition)</li> <li>Coordinate care with external healthcare providers/organizations participating in treatment</li> <li>Coordinate care with community organizations participating in treatment</li> </ul>

#### Source: AAP Capacity Checklist: www.aap.org/obesitycpg

#### (under implementation resources)

### Strategies to Intensify Care

Frequency and Dosage
 Community-Clinic Connections
 Multiple Formats
 Multi-Disciplinary Approach

patients with existing community resources

contacts



Behavioral Health Specialist, etc.)

#### Strategies to Intensify Care (when no pediatric weight management specialty program or IHBLT is available) Frequency & Dosage# Community-clinic Connections# Multiple Formats + Multi-disciplinary Approach# Increase number of Partner with community or other Integrate additional Explore: touchpoints healthcare entities to adopt evidenceproviders (Dietitian, Physical Group visits Decrease time between based IHBLT programs, or connect Telehealth Therapist, Health Educator,

Virtual touchpoints

Source: AAP Clinical Flow Treatment- <u>https://www.aap.org/en/patient-care/institute-for-healthy-childhood-weight/clinical-practice-guideline-for-the-evaluation-and-treatment-of-pediatric-obesity/supporting-the-implementation-of-the-cpg-recommendations/</u>

### Frequency and Dosage and Multiple Formats



### **Strategies**:

- Create room in your scheduling block for treatment visits
- Build systems and processes to schedule follow-up visits quickly
- Explore telephone and virtual touchpoints
- Pilot group visits
- Utilize your patient portal, text, or other system to stay connected with patients/families
## **Tools to Support Behavioral Counseling in Primary Care**



### Themed Visits:

- Understanding Health
- Portion Sizes
- Screen Time and Sleep
- Meal Patterns and Snacks
- Bullying and Teasing

#### Tema: Comprensión del significado de los alimentos saludables (Paciente)

naturaleza o en una granja

· Frutas y verduras · Cereales integrales

Y menos de lo siguiente

· Alimentos procesados · Bebidas azucaradas · Golosinas y dulces · Alimentos fritos



## Tools to Support Behavioral Counseling in Primary Care

My G	oal Sheet
NAME	TODAY'S DATE
MY GOAL	IDEAS TO HELP ME ACHIVE MY GOAL
COMMONITY OR ONLINE RESOURCES	
PROGRESS TRACKER	OTHER NOTES:
NEYT	
APPOINTMENT	American Academy of Pedatrics Institute for Healthy Childhood Weight

GO4	AL:	COMMUNITY RESOURCES:
as to help me ach	ieve my goal:	I AM PROUD OF:
ldea 1	$\rightarrow$ Action Steps:	
	$\bigcirc$	
	0	
ldea 2	$\rightarrow$ Action Steps:	I HAD A HARD TIME WITH:
	0	
HER NOTES:		•

## Building a Multidisciplinary Approach: Exploring Options



#### Nutrition Education & Skill Building:

- Registered Dietitian
- Diabetes Educators
- WIC Counselors
- Local Chef



#### Social & Behavioral Supports:

- WIC Counselor
- Community Health Worker
- Social Worker
- Psychologist



#### **Physical Activity:**

- Exercise Physiologists
- Physical Therapists
- Gym Teachers
- Parks & Recs
- Fitness Educator Staff
- Rec/YMCA

# Capacity-building: Community Clinic Linkages

Connect to your community to help provide patients and families with needed support. Leverage your internal team to assess local resources form connections to community resources. Example programs and resources could include:



- Extension Services
- Culinary Programs
- Cooking Matters
- Parks and Recreation
- YMCA Programming
- Prescriptions to Play/Parks



- Food Pantries
- Double Up Food Bucks
- Produce Prescription Programs
- Community Gardens

## Considerations for Referral or Evaluation of IHBLT Programs or Other Programs & Services



Consistent with evidence-based standards for IHBLT (see definition)

Non-stigmatizing, empathetic & family-centered

Developmentally appropriate

- Consistent with chronic care model
- $\checkmark$

Values some level of partnership with medical home



### Community-Clinic Connections:

### Operational & Logistical Questions to Ask Potential Community Partners/Programs

|--|

Ask Key Questions

- Where and when is your program/services offered?
- Who delivers the program/services and how are they trained?
- What ages is your program designed for?
- What is the cost of your program/service?
- How do you/Will you communicate with me as their primary care physician regarding attendance and/or completion?
- How is your program/services structured in terms of sessions and for what length of time?
- Does your program/service have rolling admissions or does it have distinct enrollment periods?
- How do my patients and their families register?
- Do you have any informational materials or website that I can show families?

## IHBLT - CPG Website

### Discover More About IHBLT Programs

IHBLT programs can be implemented into primary care or at community settings. Learn more about existing evidence-based IHBLT programs that can be brought to your clinic or community.



#### About IHBLT

Learn more about IHBLT and why it is recommended for comprehensive obesity treatment.

#### **Inclusion Criteria**

Review the requirements a program must meet in order to be included in the list of IHBLT programs.

#### Help Find the Best Program for You

Find out the best programs that may be best for you.

#### **IHBLT Programs**

See a list of all IHBLT Programs.

#### **Considerations for Primary Care**

Considerations for primary care when implementing an IHBLT program.

#### **Questions and Considerations for Evaluation**

Considerations for evaluation of IHBLT programs and questions to ask.

https://www.aap.org/en/patient-care/institute-for-healthy-childhood-weight/clinical-practice-guideline-for-the-evaluation-and-treatment-of-pediatricobesity/supporting-the-implementation-of-the-cpg-recommendations/

## 6 CDC Recognized FHWPs – Deliver IHBLT

## CDC-Recognized Family Healthy Weight Programs

Print



- Building Healthy Families
- Family Based Treatment (FBT)
- Healthy Weight and Your Child
- Healthy Weight Clinic
- Smart Moves for Kids/Bright Bodies
- Mind Exercise Nutrition... Do It (MEND)

## Family-based behavioral treatment

- FBT is a robust, evidence-based intervention for obesity and improves psychosocial function, given its focus on:
  - Changing behaviors and healthy weight outcomes in the entire family
  - Developing healthy energy-balance behaviors and routines
  - Promoting positive body image and selfesteem
  - Increasing supportive family and peer networks
  - Creating and choosing environmental and community contexts to promote overall physical and mental well-being
- Shown to impact: weight status, psychosocial health, and health related parameters (e.g., blood pressure, cholesterol, insulin sensitivity)



Wilfley et al., 2007, JAMA; Goldschmidt et al., 2011, Pediatrics; Wilfley et al., 2017, JAMA Pediatr; Jelalian et al., 2010, J Pediatrics; Kalarchian et al., 2009, Pediatrics; Epstein et al., Childhood Obesity, 2014; McGovern et al., 2008, J Clin Endocrinol Metab; Altman et al., 2014, JCCAP; Ho et al., 2013, Pediatrics.

## Family-based behavioral treatment

### **Services**

- Youth: Family Based Behavioral Therapy (FBT)-26 hours
- Adults: Intensive Behavioral Therapy (IBT)-12 hours
- Medical Nutrition Therapy (MNT): All participants-1 hour and 45 minutes
- · Delivered through mix of individual, family (child), and group sessions
- 6 month intervention period with continuation criteria



### **Participant Criteria**

- · Medical provider diagnosis of obesity and referral for FBT/IBT & MNT
- Youth, ages 0 through 20, with age- and gender-specific BMI ≥95th%
- Adults, 21 years and older with BMI ≥30



### **Providers**

 FBT & IBT: Individual and group sessions: psychiatrist, clinical social worker, psychologist, professional counselor, marriage and family therapist, and psychiatric advanced practice registered nurse. Group sessions only: registered dietitian/nutritionist

R

- MNT: Registered dietitian/nutritionist
- All providers must be licensed and have specialist certificate or meet experience & training criteria

# Corewell Health / Helen DeVos Children's Hospital Health Optimization Services

MICHIGAN STATE UNIVERSITY Corewell Health Helen DeVos Children's Hospital

- Pediatric obesity medicine specialty referral clinic
- Multidisciplinary Intensive Health Behavior and Lifestyle Treatment program
- Grand Rapids, Michigan
- Pediatric clinicians, dietitian, exercise physiologist, social workers, psychology
- Statewide reach through virtual visits



- Individualized and intensive health behavior and lifestyle interventions with Pediatric Psychology and Nutrition.
- Adolescent bariatric surgery
- Virtual and In-Person Clinic Appointment Options
  - C.S. Mott Children's Hospital
  - Michigan Medicine Northville Health Center

CHIGAN

Bethany Gaffka, PhD



# AAP CPG Website Resources



# **Types of AAP Implementation Supports Website**



Self-Paced CME Modules

**FHIR Resource** 

Quality Improvement Opportunities



Clinical Decision Support Tools



Multimedia Assets Family Resources



Coding Reference Card

# AAP Resources & Website





# Thank you!



# Corewell Health / Helen DeVos Children's Hospital Health Optimization Services

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- Pediatric obesity medicine specialty referral clinic
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- Individualized and intensive health behavior and lifestyle interventions with Pediatric Psychology and Nutrition.
- Adolescent bariatric surgery
- Virtual and In-Person Clinic Appointment Options
  - C.S. Mott Children's Hospital
  - Michigan Medicine Northville Health Center

CHIGAN

Bethany Gaffka, PhD



# AAP CPG Website Resources



# **Types of AAP Implementation Supports Website**



Self-Paced CME Modules

**FHIR Resource** 

Quality Improvement Opportunities



Clinical Decision Support Tools



Multimedia Assets Family Resources



Coding Reference Card

# AAP Resources & Website





# Thank you!



# Lifestyle Behaviors and Weight Loss: Four Behavior Topic Dives with Clinical Suggestions

Marily Oppezzo, PhD, MS, RDN, DipACLM

Instructor of Medicine and Clinician Scientist Fellow

Stanford Prevention Research Center and Wu Tsai Human Performance Alliance

Stanford School of Medicine

moppezzo@stanford.edu

No disclosures





Stanford Prevention Research Center

# Evidence-based lifestyle behaviors for weight loss

- Behavior Change Strategies (Michie et al., 2013)
  - SMART, small, progressive goal setting (Bailey, 2017; Oettingen & Gollwitzer, 2010, 2013))
  - Action Planning and Problem Solving (Wadden et al., 2020; Hennessey et al., 2019)
  - Self-Efficacy Building / Social Cognitive theory (Bandura, 1991; Bandura 1961)
  - Self-Monitoring (Patel et al., 2021)
  - Stages of Change (Prochaska et al., 1983)
  - Environmental restructuring (Gorin et al., 2013; Phelan et al., 2009)
  - Cognitive Behavioral Therapy (Jacob et al., 2018)
- Weight Loss Behaviors
  - Have more fruits and vegetables (Dreher and Ford, 2020; Volumetrics, Rolls 2012)
  - Minimize processed foods (Yao et al., 2024; Hall et al., 2019)
  - Eat less (by 500 / day) and move more (Varady, 2011; <u>CDC guidelines</u>; <u>NIDDK weight</u> <u>management</u>)
- Integrated Programs
  - Diabetes Prevention Program (Ma et al., 2013)
  - DASH (Blumenthal et al., 2010)
  - Maintenance First (Kiernan, 2013)





Carbs vs Fats



Protein



Strength Training



Fig. 1: Types of intermittent fasting.

**Intermittent Fasting** 



#### Fig. 1: Types of intermittent fasting.





#### Fig. 1: Types of intermittent fasting.





#### Fig. 1: Types of intermittent fasting.





### Fig. 1: Types of intermittent fasting.





#### Fig. 1: Types of intermittent fasting.





### Fig. 1: Types of intermittent fasting.







# Considerations for weight loss

# Clock not calories

- Culturally difficult
- Evidence showing weight loss
  - May naturally decrease calories by 10-30%
    - Jamshed et al., 2022; Kelsey et al., 2018; Gabel, 2018; Tinsey et al., 2017
  - May decrease body weight if in combo with other strategies or eating window is in the morning
    - Liu et al., 2023; Domaszewski et al., 2023
- Evidence showing no effects
  - May have no calorie decrease due to compensation
    - Lowe et al., 2020, Chen et al, 2023

# Considerations for cardiometabolic effects

# Evidence showing benefits

- Inflammatory markers (IL 6, IL 1 $\beta$ , and tumor necrosis factor  $\alpha$ )
  - Morning eating window only Liu et al., 2023; Moro et al., 2021; Wilkinson et al., 2020
- Insulin sensitivity (fasting glucose, insulin, and HOMA-IR)
  - Morning eating window only Liu et al., 2023; Moro et al., 2021; Wilkinson et al., 2020
- Lipid profile (cholesterol, HDL, and LDL)
  - Morning eating window only Liu et al., 2023; Moro et al., 2021; Wilkinson et al., 2020
- 3-11% for both systolic and diastolic blood pressure
  - Sundfor et al., 2018; Kelsey et al., 2018, Sutton et al., 2018

# Evidence showing no effects

- No cardiometabolic benefits
  - Lowe et al, 2020; <u>Pavlou et al., 2023</u>
- No blood pressure benefits
  - Cienfuegos et al., 2020; Lowe et al., 2020



- Sample study looking at effects on muscle loss
  Long term (12 mo) loss of lean body mass even with added resistance training
  - <u>Moro et al. 2021</u>


#### **Time Restricted Eating**



- Sample study looking at effects on muscle loss
  Long term (12 mo) loss of lean body mass even with added resistance training
  - <u>Moro et al. 2021</u>

 $(-(\nu))/O$ thers find no extra loss compared to other calorie restrictions(~25%)





### **Time Restricted Eating**



## **Clinical Suggestions**

#### Box 1 | Indications and contraindications

#### Who should not do intermittent fasting?

- Children under the age of 12 years
- Adolescents who are normal weight
- Women who are pregnant or lactating
- Individuals with a history of an eating disorder
- Individuals with a BMI below 18.5 kg/m<sup>2</sup>
- Individuals over the age of 70 years

#### Who can do intermittent fasting?

- Adolescents with severe obesity (>95th BMI percentile)
- Adults with normal weight, overweight or obesity
- Adults with hypertension and/or dyslipidaemia
- Patients with insulin resistance or prediabetes
- Patients with type 1 diabetes mellitus or type 2 diabetes mellitus \* Monitor meds and glucose

Varady et al., 2022

- Plan a check-in
- Maintain adequate protein
- Monitor lean body mass (DEXA)

### Carbs vs Fats





## Considerations for weight loss

- Both lead to effective weight loss
  - Low carb wins
    - A-Z, Gardner et al, 2007; Chawla et al., 2020
  - Low fat wins
    - DE-PLAN, Gilis-Januszewska et al., 2018
  - It's a tie
    - Systematic Review and Meta-analysis of 11 RCTs directly comparing the two
      - <u>Yang et al, 2022</u>
    - DIETFITS found no difference in weight loss over 1 year
      - <u>Gardner, 2018</u>



## VS VS VS

304 Participants on HLC diet 305 participants on HLF diet



VS



Stanton et al, Contemp Clin Trails Gardner et al., JAMA, 2018



eFigure 1. Waterfall plot of weight loss by diet group Gardner et al., 2018















A big predictor of those who kept losing weight was their baseline microbiome (not calories, genetics, epigenetics)





## **Clinical Suggestions**

#### Carbs vs Fats

- Support patient choice.
- Adherence matters most!
- Prioritize high quality carbs (e.g. intact, whole grains) and high quality fats (e.g. olive oil, nuts)
  - Check out Dr. Michelle Hauser of American College of Lifestyle Medicine's soon to be freely available Culinary Medicine Curriculum cooking classes
- Microbiome
  - Stay tuned (we're not at precision nutrition yet)
  - No magic probiotic pill recommendations.
  - Have fermented foods and fiber in the meantime.

## Protein



## Background

- Daily need for 9 amino acids and nitrogen
- Caloric deprivation can decrease protein intake
- Daily RDA of 0.8 g/kg bw/day is challenged as too low
  - Soenen et al., 2013; Phillips et al., 2020, Morton et al., 2018
- Bariatric surgery and weight loss are set higher (1.6 g/kg bw/day)
  - Verreijen et al., 2015, Soenen et al., 2013; Phillips, 2014
- No evidence high protein is bad for bone -actually it is good!
  - Kędzia et al., 2023, Groenendijk et al., 2019, <u>Shams-White et al., 2017</u>; Hannan et al., 2000
- No evidence it is bad for kidneys \*in those with normal kidney function
  - <u>ISSN, 20</u>17; Antonio et al;, 2016; Devries et al., 2018, Schwingshackl et al., 2014, <u>Phillips, 2014</u>



## Considerations for weight loss

## Protein increases satiety

- Increases satiety hormones (GLP-1, CCK, PYY)
  - Belza et al., 2013; Diepvens et al., 2008
- Decreases ghrelin, hunger hormone
  - Halton et al., 2004; van der Klaauw et al., 2013
- Increases amino acid in the serum, hepatic gluconeogenesis and ketogenesis which increase satiety
  - McCarty, 1994; Azzout-Marniche et al., 2007; Veldhorst, 2012

## Increases energy output

- Thermic effect of food increases with more calories and protein
  - Fat: 0%–3% of total energy intake
  - Carbs: 5%–10%
  - Protein: 20%-30%
    - Tappy, 1996



## Considerations for weight loss



## • Muscle Mass

### Higher protein helps maintain muscle mass

- Ogilive et al., 2022, Wycherley et al. meta-analysis, 2012, Leidy et al., 2012
- Higher protein alone does not help maintain muscle mass
  - Backx et al., 2019

# Higher protein maintains muscle mass during weight loss when combined with strength training

• Morton et al., 2020; Verreijen et al., 2015, Cermak, 2012

### Protein

- 60 adults with obesity avg age 63 (5.6)
- All did 13 weeks of resistance training with 600 kcal deficit



### Protein

## **Clinical Suggestions**

- Contraindicated in people with impaired kidney function
- Check it and track it (actionable goal!)
- Identify gaps and meal opportunities
- Identify high protein substitutes for foods already enjoying
  - Cottage cheese melts!
  - Mix Greek yogurt in with hummus
  - Use milk and Greek yogurt for overnight oats instead of water
  - Try lentil cookies (at least twice)
- If amount is adequate, source doesn't matter (animal vs plant)



Add Protein	
Quick Add	
Name	
Protein Amount(g)	
⊕ A	dd
Q Search Food Datab	pase
Favorites \$ Sort By: Nar	me 🕀
Lentils 26g	Add
Tuna Steak 30.8g	Add
Groups	€
/ Breakfast	Post Workout
18g	42g
(+) Add	Add (

## Strength Training



## Considerations for weight loss

- Strength Training
- Diet-induced weight loss = loss of fat, muscle, and bone
  - Muscle can comprise between 10% and up to 35 % of the weight lost
    - <u>Batsis and Villareal, 2018</u>, Armamento-Villareal et al., 2012; Villareal et al., 2011; Weiss et al., 2007
- Strength training can mitigate muscle loss and even promote gain.
  - Villareal et al., 2017; Weiss et al., 2007
- Has cardiometabolic benefits (Paluch et al., AHA 2023)
  - Improved blood pressure (Correia et al., 2023)
  - Improved lipid profiles (Costa et al., 2019)
  - Improved insulin sensitivity and GLUT 4 translocation (Strasser & Pesta, 2013)















#### Villareal et al., 2017









### What counts as strength training?

- Proximity to "exhaustion" matters more than weight load
  - Plotkin et al., 2022; Fyfe et al., 2022; Lopez et al., 2020
- Regular volume matters
  - Nuzzo et al., 2024
- Strength snacks may be more motivationally palatable and equally effective compared to strength sessions
  - Nuzzo et al., 2024
  - Currently studying this stay tuned!

### Strength Training



## **Clinical Suggestions**

- Everyone can train to their ability and get stronger
  - Including cancer patients and survivors (Koeppel, 2021), patients with renal disease (Cheema et al, 2014), patients with Parkinson's disease (Brienesse & Emmerson, 2013), patients with osteoporosis (LIFTMOR, Watson et al., 2018); patients over 85 (Marzuca-Nassr et al., 2024)
- Make it easy
  - Can do it at home
    - resistance bands, backpacks with gallons of water
  - Just start
    - Work up to 3-4 sets of each muscle group to 8/10 perceived effort (or 2-3 repetitions in reserve), 2-3 x week
- Learn and practice moves first for  $\geq 2$  weeks
  - PT, online videos, basic moves



The Stu Phillips Cupcake



**Time Restricted Eating** 



Carbs vs Fats



Protein



Strength Training

## Session II: Panel Discussion



#### **Moderator**



Oliver Varban, MD

#### **Panelists**



Karen Scherr, MD



Sarah Hampl, MD



Marily Oppezzo, PhD

# Food for Thought : Lunch Discussion Questions

- 1. What successes have you and/or your practice had in helping your patients manage their weight?
- 2. What challenges have you and/or your practice had in helping your patients manage their weight?





\*\* Remember to complete the brief survey using the QR code on your table before 12pm!\*\*

# Session III: Medical and Surgical Weight Management




## Objectives

Review obesity etiology and pathophysiology Prescribe anti-obesity medication as part of comprehensive obesity care

Discuss the future of obesity medicine

### We are products of both nature and nurture



## Genetics determine where you sit on the curve



## Environment determines where the bell-curve sits on the axis



## Same genetics, new environment $\rightarrow$ Higher risk of obesity



# Obesity pathophysiology is abnormal energy regulation



Nature Reviews | Disease Primers

González-Muniesa, P. et al. 2017 Obesity. Nat. Rev. Dis. Primers doi:10.1038/nrdp.2017.34. Vincent et al. Mechanisms of disease: the role of gastrointestinal hormones in appetite and obesity. Natura Clinical Practice Gastroenterology and Hepatology, 2008. Schneeberger et al. Hypothalamic and brainstem neuronal circuits controlling homeostatic energy balance. Journal of Endocrinology, 2014.

# Obesity pathophysiology is neurohormonal dysregulation that manifests in an elevated "lipostat"



"Food addiction"

[C-11] racio

Nature Reviews | Disease Primers

Leptin resistance

González-Muniesa, P. *et al.* 2017 Obesity. *Nat. Rev. Dis. Primers* doi:10.1038/nrdp.2017.34. Vincent et al. Mechanisms of disease: the role of gastrointestinal hormones in appetite and obesity. Natura Clinical Practice Gastroenterology and Hepatology, 2008. Schneeberger et al. Hypothalamic and brainstem neuronal circuits controlling homeostatic energy balance. Journal of Endocrinology, 2014.

# Anti-obesity medications address the pathophysiology of obesity



Nature Reviews | Disease Primers

## Obesity pharmacotherapy is on its 3<sup>rd</sup> generation





### SHORT-TERM

"Sympathomimetics" "Anorectic agents"

phentermine phendimetrazine diethylpropion

## LONG-TERM and SAFETY

Orlistat (Xenical, Alli) is the first anti-obesity medication available over-the-counter and by prescription

### CLINICAL EFFICACY

Qsymia, Contrave, Saxenda achieve long-term clinically significant weight loss of ≥5% to improve co-morbidities

### DISEASE RESOLUTION

Wegovy and Zepbound are incretin-based therapies that achieve ≥15% long-term weight loss, a level associated with comorbidity resolution

### Comprehensive obesity care is multi-modal



\* with a weight-related comorbidity

# 6 anti-obesity medications are FDA-approved for the long-term management of obesity

orlistat (Alli, Xenical)	phentermine/topiramate (Qsymia)	naltrexone/bupropion (Contrave)
liraglutide 3.0 mg (Saxenda)	semaglutide 2.4 mg (Wegovy)	tirzepatide (Zepbound)

# Several others are used off-label for long-term weight management

phentermine	phendimetrazine	diethylpropion	topiramate	bupropion
naltrexone	metformin	liraglutide 1.8 mg	semaglutide 2.0 mg	tirzepatide
dulaglutide	SGLT2is	pramlintide	lisdexamfetamine	zonisamide

### Build a medication regimen on the 4 C's



## Do no harm



e.g.) liraglutide, semaglutide, tirzepatide:

X Chronic pancreatitis

Acute gallstone pancreatitis, now status post cholecystectomy

# Side effects are dose-dependent and occur during up-titration



Strategies to improve tolerability:

Slow down the dose-escalation





Gadde 2012 CONQUER. Apovian 2011 COR-I. Wilding 2021 STEP1. Jastreboff 2023 SURMOUNT-1.

### Solve two problems at once





- - Depression
  - Alcohol use disorder



Target weight loss according to goals of primary prevention, disease improvement, or disease resolution



Target weight loss according to goals of primary prevention, disease improvement, or disease resolution





### Prediabetes, wants to avoid T2D

 Metformin is associated with 2-7% weight loss and 
risk of incident T2D by 30%

### OSA, would never use CPAP

- ≥15% weight loss
- Tirzepatide (SURMOUNT-OSA)

## Poor insurance coverage and supply shortages remain barriers





### Mail-order Pharmacies

 ~\$100/mo for phentermine/topiramate or naltrexone/bupropion



Off-label prescribing of oral generics and combinations

# Patient-centered decision-making improves adherence and outcomes



# Summary: To build an anti-obesity medication regimen...



### Build a medication regimen on the 4 C's



## Build a system that includes the medical management of obesity



### What is the goal of treatment?



## Who decides that goal?





## When is a guardrail a barrier?



### Who decides access?



AOM, anti-obesity medication



### Where there is light, there is shadow

### Call to action: Share your expertise





Advocate Support the Treat and Reduce Obesity Act (TROA) Advise Connect with stakeholders on social media

www.beverlytchangmd.com | X @BevTchangMD

### Bariatric Surgery: Current Role and Future Directions

Oliver Varban, MD FACS FASMBS Bariatric Surgery and Weight Management Henry Ford Hospital, Detroit

### HENRY FORD HEALTH

## Disclosures:

"I receive an honorarium from Blue Cross Blue Shield of Michigan for leadership and participation in the Michigan Bariatric Surgery Collaborative."

### HENRY FORD HEALTH




40 Programs 80 Surgeons

Bariatric Specific Data Registry

#### Tri-Annual Meetings Collaborative Quality Improvement

# > 130,000 cases (2006-present)

# Treating Metabolic Disease and Obesity





### **Bariatric Surgery Referral**



**Evaluation** 



# **Personalized Outcomes with Surgery**

# Shared:

- Goals
- Expectations
- Decision-making





### **MBSC Outcomes Calculator**

#### Outcomes Calculator

Procedure *   Lap Band   Sleeve Gastrectomy   RYGB - Open   RYGB - Lap   BDP/DS   Permographics   Weight (pounds) *   Height (feet) *   Feet   Inches   Age *   Age   Age   No   Inches only one   Sumber of Days After Surgery				
Lap Band Sleeve Gastrectomy RYGB - Open RYGB - Lap BDP/DS     Weight (pounds)* Height (feet)*   Weight (inches)* Feet   Inches No   Age * Gender *   Age Choose only one	Procedure *			
Weight (pounds)* Height (feet)*   Feet    Height (inches)* Private Insurance   Inches No   Age * Gender *   Age Choose only one   Number of Days After Surgery	Lap Band Sleeve Gast	rectomy RYGB -Ope	n RYGB - Lap	BDP/DS
Weight (pounds)* Height (feet)* Feet Feet Feet Feet Feet Feet Feet Fee				
Weight (pounds)* Height (feet)*   Feet •   Height (inches)* Private Insurance   Inches •   Age * Gender *   Age Choose only one   Number of Days After Surgery	emographics			
Weight (pounds)* Height (feet) *   Feet    Height (inches)* Private Insurance   Inches No   Age * Gender *   Age Choose only one				
Feet   Height (inches)*   Inches   No   Age *   Age   Age   Choose only one   Number of Days After Surgery	Weight (pounds) *		Height (feet) *	
Height (inches)*   Inches   No   Age *   Age   Age   Choose only one   Number of Days After Surgery			Cont	
Height (inches)* Private Insurance   Inches No   Age *   Age Gender *   Age Choose only one			reet	*
Inches  No Age  Gender  Gender	Height (inches) *		Private Insurance	
Inches No     Age *   Age     Age     Choose only one     Number of Days After Surgery				
Age *     Gender *       Age     Choose only one •	Inches		No	*
Age Choose only one	Aco *		Gondor *	
Age Choose only one	UA6		Gender	
Number of Days After Surgery	Age		Choose only one	*
Number of Days After Surgery				
	Number of Days After Surgery			









#### My Weight Loss Journey 17+

The University of Michigan

Designed for iPad

Free









#### Screenshots iPhone iPad

#### FAQ Who developed My Weight Loss Journey? This project was developed by the University of Michigan, with funding from the Patient Centered Outcomes Research Institute. How was the information developed? The contents of this program were developed in collaboration with: · Former weight loss treatment patients - they helped us decide what to talk about and how · Physicians who practice each of the treatments featured in the program Data from a database with more than 90,000 patients who have been through weight loss treatment What is included in My Weight Loss Journey? After completing an initial questionnaire, you will receive: · Personalized information about the benefits, risks and potential weight loss related to your weight loss surgery. Information about how manage life after surgery. · Access to video testimonials from former patients - on their lives both before and after surgery.

- · Email messages encouraging you to return to My Weight Loss Journey at various times throughout the study. These messages will highlight important topics to help you manage potential concerns about your weight loss treatment.
- + A follow-up survey 3 months after your surgery. This survey includes questions to see how you are doing and to give you a chance to provide feedback on My Weight Loss Journey.

#### HENRY FORD HEALTH







#### During gastric bypass surgery, there are two main steps,

# **Bariatric Surgery Evaluation**

#### **Routine:**

Seminar/Video Education

Medical Evaluation Dietary Evaluation Psychological Evaluation

Exercise Class Endoscopy Labs/Drug screen Sleep apnea screening Smoking cessation

HENRY FORD HEALTH



<u>Selective:</u> Sleep Study Imaging

Evaluations: Cardiology Pulmonology Nephrology Hepatology Hematology **General Anesthesia** 

Laparoscopic/Robotic 1-3 hours



1-2 Days in the hospital2-4 weeks return to work1, 3, 6, 9-month and annual follow up



# **Opioid Use after Surgery**





HENRY FORD HEALTH.

264

#### **Postoperative Diet Progression**



#### **Guidelines:**

64 fl oz each day 60-80 gm of protein each day 1,000-1,200 cal each day

# Vitamin Supplementation

Calcium citrate	<ul> <li>1200 to 1500 mg split into 2 to 3 doses</li> <li>Your body can only absorb 500-600 mg at one time</li> </ul>
Multivitamin	<ul> <li>1 to 4 doses each day depending on brand</li> <li>With at least 18 mg of iron</li> </ul>
Vitamin B12	500 mcg each day if not included in your multivitamin
Ferrous sulfate (iron)	325 mg with 65 mg iron each day if not included in your multivitamin
Vitamin D	50,000 IU once a week (if needed)



#### **Multidisciplinary Team**

**Intake Specialists Program Coordinator** Surgeons Dietitians **Psychologists** Nurses **APP/NPs Exercise Physiologists** Weight Management **Obesity Medicine Bariatric Endoscopy** 

#### **Bariatric Procedures**



### **Evolution of Bariatric Procedures**



### **Evolution of Bariatric Procedures**



#### **Annual Rate of Bariatric Procedures**

SURGE



# **Outcomes with Surgery**







**Sleeve Gastrectomy** 

#### **Gastric Bypass**

Weight Loss Comorbidity Improvement/Remission 30-day Complications Long Term Considerations

### Weight Loss at 1 year







**Sleeve Gastrectomy** 

Median 29% TBWL

Range (23% - 35%) Gastric Bypass Median 34% TBWL

> Range (28% - 40%)

### **Mean 30-Day Complication Rate**







	Sleeve Gastrectomy		
Overall	5%		
Severe	2%		
Mortality	0.05%		

Gastric	Bypass
12	2%
Z	4%
0.16	5%



### **Long-Term Considerations**



# **Gallstones**

#### 3% of all readmissions in the first year after surgery

Ursodiol given in the first 6 months after surgery for prevention



**Gastric Bypass** 

**Sleeve Gastrectomy** 

# **Dumping Syndrome**

#### Early: (10-30min)

Bloating, abdominal cramps, flushing, diarrhea, dizziness, fast heart rate

Why? Rapid movement of hyperosmolar chyme

Tx: Avoid simple sugars, dairy, eat small portions, drink 30 min after meals, increase fiber





**Gastric Bypass** 

**Sleeve Gastrectomy** 

# **Dumping Syndrome**

#### Late: (1-2 Hours)

Palpitations, tremor, confusion, weakness, syncope

Why? Rapid absorption of glucose, increased increasing release, exaggerated insulin release and response

Tx: Avoid simple sugars, smaller meals, acarabose, diazoxide, octreotide

HENRY FORD HEALTH



**Gastric Bypass** 

**Sleeve Gastrectomy** 

### **Gastroesophageal Reflux**



**Sleeve Gastrectomy** 

Up to 21% new onset

Surveillance EGD (3-5 years) to evaluate for Barrett's esophagus

Hiatal hernias are repaired at the time of surgery





#### **Ulcer Disease**

#### Incidence <5%

Painful Stricture Bleed Perforate

Causes: Tobacco use NSAIDS H. Pylori



# **Weight Regain**

JAMA Surgery | Original Investigation

HENRY FORD HEALTH

Effect of Laparoscopic Sleeve Gastrectomy vs Roux-en-Y Gastric Bypass on Weight Loss, Comorbidities, and Reflux at 10 Years in Adult Patients With Obesity The SLEEVEPASS Randomized Clinical Trial

Paulina Salminen, MD, PhD; Sofia Grönroos, MD; Mika Helmiö, MD, PhD; Saija Hurme, MSc; Anne Juuti, MD, PhD; Risto Juusela, MD; Pipsa Peromaa-Haavisto, MD, PhD; Marja Leivonen, MD, PhD; Pirjo Nuutila, MD, PhD; Jari Ovaska, MD, PhD

#### %TWL after LSG and LRYGB from baseline to 10 y



LSG

LRYGB



JAMA Surgery August 2022 Volume 157, Number 8

 Observational Study
 > Diabetes Care. 2016 Aug;39(8):1400-7. doi: 10.2337/dc16-0194.

 Epub 2016 Jun 6.

#### Long-term Microvascular Disease Outcomes in Patients With Type 2 Diabetes After Bariatric Surgery: Evidence for the Legacy Effect of Surgery

Karen J Coleman <sup>1</sup>, Sebastien Haneuse <sup>2</sup>, Eric Johnson <sup>3</sup>, Andy Bogart <sup>4</sup>, David Fisher <sup>5</sup>, Patrick J O'Connor <sup>6</sup>, Nancy E Sherwood <sup>6</sup>, Steve Sidney <sup>5</sup>, Mary Kay Theis <sup>3</sup>, Jane Anau <sup>3</sup>, Emily B Schroeder <sup>7</sup>, Rebecca O'Brien <sup>5</sup>, David Arterburn <sup>3</sup>



Legacy Effect



Bariatric surgery 4,683 patients type 2 DM Microvascular disease • retinopathy • neuropathy • nephropathy

Every year in remission prior to relapse = 19% risk reduction microvascular disease





#### Association of metabolic-bariatric surgery with long-term survival in adults with and without diabetes: a one-stage meta-analysis of matched cohort and prospective controlled studies with 174772 participants

Nicholas L Syn\*, David E Cummings\*, Louis Z Wang\*, Daryl J Lin\*, Joseph J Zhao, Marie Loh, Zong Jie Koh, Claire Alexandra Chew, Ying Ern Loo, Bee Choo Tai, Guowei Kim, Jimmy Bok-Yan So, Lee M Kaplan, John B Dixon, Asim Shabbir



### **Bariatric Surgery**



#### Not just for weight loss anymore!



# Metabolic Surgery



# **Updated Guidelines for Surgical Referral**



#### BMI > 40 no comorbidities BMI 35-40 with comorbidities

BMI >35 no comorbidities BMI 30-35 with metabolic disease BMI >27.5 Asian populations




### **Multimodal Therapy**



HENRY FORD HEALTH

### Acknowledgements

#### **MBSC Project Coordinators**

- · Amanda Stricklen, RN MS
- Rachel Ross, RN MS



#### **MBSC Participating Hospitals**

- 🥑 Beaumont Hospital, Dearborn
- Beaumont Hospital, Grosse Pointe
- 🥑 Beaumont Hospital, Royal Oak
- Beaumont Hospital, Troy
- Beaumont Hospital, Wayne
- Borgess Medical Center
- Bronson Methodist Hospital
- Chippewa County War Memorial Hospital
- Covenant Healthcare
- Forest Health Medical Center
- Mid Michigan Medical Center Gratiot
- Harper University Hospital
- Henry Ford Hospital
- Henry Ford West Bloomfield
- Henry Ford Wyandotte Hospital
- Hurley Medical Center
- Huron Valley-Sinai Hospital
- Lakeland Community Hospital
- Marquette General Hospital UP Health System Marquette
- McLaren Macomb Hospital

- McLaren Regional Medical Center
- Mercy Health Partners
- Mid Michigan Medical Center Midland
- Munson Medical Center (Grand Traverse Surgery)
- North Ottawa Community Health System
- Oakland Regional Hospital
- Port Huron Hospital McLaren Port Huron
- Providence Park Hospital
- Sparrow Health System
- Spectrum Health System
- Spectrum Health Zeeland
- St. John Hospital and Medical Center
- St. John Oakland
- St. Joseph Mercy Livingston
- St. Joseph Mercy Oakland
- St. Joseph Mercy Port Huron Lake Huron Medical Center
- St. Mary's Health Care Grand Rapids
- St. Mary's of Michigan (Saginaw)
- St. Mary Mercy Hospital (Livonia)
- University of Michigan

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Oliver Varban, MD FACS FASMBS <u>ovarban1@hfhs.org</u>

HENRY FORD HEALTH.

# Allison Schulman

### Medical and Surgical Obesity Treatment for Children and Adolescents

Bill Stratbucker, MD, MS william.stratbucker@helendevoschildrens.org September 20, 2024



Corewell Health<sup>®</sup> Helen DeVos Children's Hospital



I have nothing to disclose

### **Objectives**

- State of societal influences on obesity treatment in children
- Recommendations and considerations for pediatric clinicians
- Availability and accessibility of advanced obesity treatments
- Phenotypic variation and personalized approaches

# Narrowing the scope: What I won't talk about

- Endocrinologic obesity Cushing syndrome, short stature, hypothyroidism
- Treatment of associated conditions Type 2 diabetes, dyslipidemia, MASH, idiopathic intracranial hypertension, PCOS, etc.
- Psychological/trauma treatment/therapy, disordered eating, eating disorders, parenting strategies, or IHBLT/goal setting and motivational interviewing
- Experimental diets, exercise plans or physical therapy interventions
- Goals of obesity treatment in terms of endpoint BMI, this is patient-informed and recognizing not all patients with obesity desire a change in weight status or to seek a certain BMI



### Focus

- Medical aspects of pediatric obesity medicine
- Yes, anti-obesity medications
- Yes, we are prescribing GLP-1s in kids

But, there is more to this story...

Understanding biogenetic mechanisms vs. Bias



# Treat with words and actions

- Patient-first language, "patient with obesity"
- Be sensitive, non confrontational
- Strengths-based, Build on positives
- Avoid certain terms: "obese", "overweight", "severe", "morbid"
- Make medical office setting welcoming:
  - Visit type (avoid "weight check")
  - BP cuff sizes
  - Furniture
- Provide time for discussion
- Match urgency
- Hope



# Before we get to AOMs/surgery

- Other health concerns (anemia, asthma, JIA, EE, cancer)
- Sleep concerns (onset, duration, timing, quality – OSA, restlessness)
- Mental health concerns (depression, anxiety)
- Obesogenic medication side effects
- Neurodevelopmental and physical ability diversity (ADHD, autism, orthopedic, neuromotor)
- Genetic syndromes (Down syndrome, Prader Willi syndrome, Bardet-Biedl syndrome)



CLINICAL PRACTICE GUIDELINE Guidance for the Clinician in Rendering Pediatric Care

American Academy of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN\*

### Clinical Practice Guideline for the Evaluation and Treatment of Children and Adolescents With Obesity

Sarah E. Hampl, MD, FAAP,<sup>a</sup> Sandra G. Hassink, MD, FAAP,<sup>b</sup> Asheley C. Skinner, PhD,<sup>c</sup> Sarah C. Armstrong, MD, FAAP,<sup>d</sup> Sarah E. Barlow, MD, MPH, FAAP,<sup>e</sup> Christopher F. Bolling, MD, FAAP,<sup>f</sup> Kimberly C. Avila Edwards, MD, FAAP,<sup>g</sup> Ihuoma Eneli, MD, MS, FAAP,<sup>h</sup> Robin Hamre, MPH,<sup>i</sup> Madeline M. Joseph, MD, FAAP,<sup>j</sup> Doug Lunsford, MEd,<sup>k</sup> Eneida Mendonca, MD, PhD, FAAP,<sup>I</sup> Marc P. Michalsky, MD, MBA, FAAP,<sup>m</sup> Nazrat Mirza, MD, ScD, FAAP,<sup>n</sup> Eduardo R. Ochoa, Jr, MD, FAAP,<sup>o</sup> Mona Sharifi, MD, MPH, FAAP,<sup>p</sup> Amanda E. Staiano, PhD, MPP,<sup>q</sup> Ashley E. Weedn, MD, MPH, FAAP,<sup>r</sup> Susan K. Flinn, MA,<sup>s</sup> Jeanne Lindros, MPH,<sup>t</sup> Kymika Okechukwu, MPA<sup>u</sup>

- Published Feb 2023
- Updated 2007 guideline



### **Medicine's response**

- Estimate risk of obesity and benefit of treatment
- Define terms
- Build evidence base for etiology and treatment
- Develop best practices for communication with patients/families
- Advocate for change in influencing factors
- Evaluate and test assessment and treatment options
- Synthesize into guidelines



# **Recommendations for clinicians**

- Offer treatment early and immediately (no benefit to watchful waiting)
- Understand the range of severity of elevated weight status
- Be on the lookout for phenotypic variability and the possibility of treatment specificity







**Clinical Tracking of Severly Obese Children: A New Growth Chart**, Gulati, Kaplan, Daniels, *Pediatrics*, Vol. 130, Num 6, Dec. 2012.

### Accelerated Weight Gain Velocity

Phenotype of weight gain = Differential diagnosis

Etiology = Targeted and specific treatments

Horizon of Phenotypic Elucidation



### **Obesity Trajectory A**

- Early adiposity rebound
- Chronic excessive weight gain velocity
- Modified by puberty (accelerates or decelerates)



### **Obesity Trajectory B**

- "Healthy weight" established early in life
- Normal adiposity nadir and rebound
- Distinct onset of weight gain velocity acceleration
- Differential Diagnosis?



### **Obesity Trajectory C**

- "Obesity" at 2 years old
- Normal timing of adiposity nadir and rebound
- Weight gain trajectory is reassuring
- Other health indicators are reassuring





#### **Obesity Trajectory A**

#### **Obesity Trajectory B**

### **Obesity Trajectory C**

#### Early Onset

If severe under 3, consider genetic evaluation

#### Familial

#### Late Onset

Consider mental health, social change, trauma, medication exposure, other life/health events At risk for acceleration of weight gain velocity

Consider other metrics to estimate health status

# **Treatment of Obesity**

- Established weight gain phenotype
- Considered etiologies
- Looked for associated conditions
- Considered urgency/prioritized action steps and recommendations
- Know and utilize resources
- Assessed for family/patient readiness
- Set appropriate and realistic expectations
- Discuss available options for advanced therapies
- Use shared decision making to arrive at next steps
- Prioritize and negotiate goals and follow-up



POWER registry outcomes are modest

Table III. Change in weight status from baseline, stratified			
	%BMIp95, median (IQR)		
Age groups (y)	4-6 mo	7-9 mo	10-12 mo
2-5	−0.6	−1.7	—1.9
	(−5 to 4)	(−6 to 4)	(—8 to 3)
	n = 113	n = 69	n — 45
6-11	$-1.8^*$	$-2.0^{*}$	$-2.2^{*}$
	(-6 to 1)	(-7 to 2)	(-7 to 2)
	n = 1035	n = 635	n = 403
12-14	$-2.0^{*}$	$-2.9^{*}$	$-3.7^{*}$
	(-6 to 1)	(-8 to 1)	(-11 to 1)
	n = 534	n = 319	n = 207
15-18	-2.1*	$-3.4^{*}$	-3.7*
	(-7 to 1)	(-9 to 1)	(-11 to 2)
	n = 451	n = 230	n = 127
<i>P</i> value: age group comparisons (6-18 years only)	NS	Ť	ţ

N/A not applicable because absolute BMI does not reflect the physiological variability within these

#### **Potential Outcomes**

- No trajectory change
  - Rapid BMI increase
  - BMI centile and z-score increases
- Maintain BMI centile
  - Change trajectory
  - Decrease BMI z-score
- Maintain BMI
  - Level off trajectory
  - Reduce BMI centile, z-score
- Reduce BMI
  - Downward trajectory



SAFER · HEALTHIER · PEOP

he National Center for Chronic Disease Prevention and Health Promotion

# **Definition of Success**

- Patient outcomes
  - Slow weight gain velocity, stop, lose
  - Improved fitness, body fat %, Resp. function, QOL
  - Improved labs
  - Associated conditions
  - Improved mental health
  - Improved family health
  - Improved school performance



### Pharmacotherapy

**KAS 12.** Pediatricians and other PHCPs <u>should</u> <u>offer adolescents 12 y and older with obesity</u> (BMI ≥95th percentile) wt loss <u>pharmacotherapy</u>, according to medication indications, risks, and benefits, as an <u>adjunct to health behavior and</u> <u>lifestyle treatment (Grade B)</u>

- More immediate and life-threatening comorbitities, older, more severe obesity
- Insufficient evidence for children less than 12 years

# Use of AOMs

- Clinicians who prescribe should have knowledge of the patient selection criteria, medication efficacy, adverse effects, and follow-up monitoring guidelines
- Discuss off-label use
- Insurance coverage/cost, prior authorization process
- Availability/shortage
- Contraindications
- Expectations for communication and follow up during treatment
- Possible weight regain, long-term use
- Teach injectable medication use

# Setmelanotide

- 2020
- Age 6+
- MC4R agonist
- 12-25% weight loss over 1 year
- injectable
- POMC, LEPR, BBS



# Metformin

- biguanide
- immediate or extended release
- reduces glucose production in liver, decreases intestinal absorption, increases insulin sensitivity
- off-label for obesity, 10+ Type 2 DM
- 23/27 randomized studies and 7/8 observational studies included metformin
- majority showed modest benefit
- swallow pill
- GI side effects
- inexpensive



# **Topiramate and Phentermine**

- Topiramate
  - Carbonic anhydrase inhibitor, central appetite suppression
  - Oral pill
  - Off-label for obesity
  - Epilepsy 2+, Headaches 12+
  - One study no difference over placebo
  - Contraindicated with pregnancy, clouding of cognition
- Phentermine
  - 1959, neurotransmitter reuptake inhibitor
  - Stimulant, potential for use disorder, controlled substance
  - Oral pill, SE
- Qsymia (topiramate/phentermine)
  - FDA approved 16+
  - Step-wise dosing
  - 10.44% BMI change 56 weeks



### Lisdexamfetamine

- Stimulant
- Oral pill
- FDA approved 6+ for ADHD, 18+ binge eating disorder
- Off-label use for obesity under 18
- No studies



### **GLP-1** agonists

- Liraglutide, Mar 2020 age 12+, daily injectable, 5% BMI reduction over 52 weeks 43% vs 19% placebo
- Semaglutide, Dec 2022 age 12+, weekly injectable, mean 16% BMI reduction over 68 weeks vs +0.6% placebo, 5% BMI reduction in 73% vs 18% placebo
- Prior authorization typically required
- Variable insurance coverage
- \$650/mon reduced cost through manufacturer
- Contraindicated with pregnancy, FH MEN2/thyroid ca



### Liraglutide in adolescents



The NEW ENGLAND JOURNAL of MEDICINE

SPECIALTIES V TOPICS V MULTIMEDIA V CURRENT ISSUE V LEARNING/CME V AUTHOR CENTER PUBLICATIONS V Q

**ORIGINAL ARTICLE** 

f X in ⊠

### A Randomized, Controlled Trial of Liraglutide for Adolescents with Obesity

Authors: Aaron S. Kelly, Ph.D., Pernille Auerbach, M.D., Ph.D., Margarita Barrientos-Perez, M.D., Inge Gies, M.D., Ph.D., Paula M. Hale, M.D., Claude Marcus, M.D., Ph.D., Lucy D. Mastrandrea, M.D., Ph.D., Nandana Prabhu, M.Sc., and Silva Arslanian, M.D., for the NN8022-4180 Trial Investigators<sup>\*</sup> Author Info & Affiliations

Published March 31, 2020 | N Engl J Med 2020;382:2117-2128 | DOI: 10.1056/NEJMoa1916038 | VOL. 382 NO. 22



### Semaglutide in adolescents



The NEW ENGLAND JOURNAL of MEDICINE

SPECIALTIES V TOPICS V MULTIMEDIA V CURRENT ISSUE V LEARNING/CME V AUTHOR CENTER PUBLICATIONS V Q

#### ORIGINAL ARTICLE

f in ⊠

### Once-Weekly Semaglutide in Adolescents with Obesity

Authors: Daniel Weghuber, M.D., Timothy Barrett, Ph.D., Margarita Barrientos-Pérez, M.D., Inge Gies, Ph.D., Dan Hesse, Ph.D., Ole K. Jeppesen, M.Sc., Aaron S. Kelly, Ph.D., Lucy D. Mastrandrea, M.D., Rasmus Sørrig, Ph.D., and Silva Arslanian, M.D. <sup>(1)</sup>, for the STEP TEENS Investigators<sup>\*</sup> Author Info & Affiliations

Published November 2, 2022 | N Engl J Med 2022;387:2245-2257 | DOI: 10.1056/NEJMoa2208601 VOL. 387 NO. 24



Liraglutide: Efficacy and Weight-Related End Points.

AS Kelly et al. N Engl J Med 2020;382:2117-2128.

Once-Weekly Semaglutide in Adolescents with Obesity.

Weghuber D, Barrett T, Barrientos-Pérez M, Gies I, Hesse D, Jeppesen OK, Kelly AS, Mastrandrea LD, Sørrig R, Arslanian S; STEP TEENS Investigators. N Engl J Med. 2022 Nov 2.









#### The NEW ENGLAND JOURNAL of MEDICINE

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ORIGINAL ARTICLE

f in 🖾

### Liraglutide for Children 6 to <12 Years of Age with Obesity — A Randomized Trial

Authors: Claudia K. Fox, M.D. <sup>(D)</sup>, Margarita Barrientos-Pérez, M.D., Eric M. Bomberg, M.D., John Dcruz, M.D., Inge Gies, Ph.D., Nina M. Harder-Lauridsen, Ph.D., Muhammad Yazid Jalaludin, M.D., Kushal Sahu, M.Sc., Petra Weimers, Ph.D., Thomas Zueger, M.D., and Silva Arslanian, M.D. <sup>(D)</sup>, for the SCALE Kids Trial Group<sup>\*</sup> Author Info & Affiliations

Published September 10, 2024


## Under 12

- SCALE Kids
- 82 kids, 2:1 intervention/control, 56 weeks, dose escalation
- 5.8% reduction in BMI
- Placebo 1.6% increase
- Almost half had at least 5% reduction
- Body weight increase 1.6% liraglutide vs 10% placebo
- 80% vs 56% placebo reported GI symptoms
- 6 stopped intervention, 3 serious adverse SE, 2 vomiting and 1 colitis
- Application for FDA approval submitted



### Surgical intervention

**KAS 13.** Pediatricians and other PHCPs <u>should</u> <u>offer referral for adolescents 13 y and older</u> <u>with severe obesity</u> for evaluation for metabolic and bariatric surgery to local or regional comprehensive multidisciplinary pediatric metabolic and bariatric surgery centers. GRADE C

- Evidence observational and case-control studies
- Ethical considerations, practical challenges to randomization

## Patient eligibility criteria

- Severe obesity Class 2 or BMI 35 (age 16 girls) with clinically significant disease (DM, IIH, NASH, Blount, SCFE, GERD, OSA, HTN, Hypercholesterolemia, insulin resistance, QOL impaired)
- Severe obesity Class 3 (over 140% of the 95<sup>th</sup>%ile)



### **Teen-LABS**



SPECIALTIES V TOPICS V MULTIMEDIA V CURRENT ISSUE V LEARNING/CME V AUTHOR CENTER PUBLICATIONS V

ORIGINAL ARTICLE

f in ⊠

Q

### Five-Year Outcomes of Gastric Bypass in Adolescents as Compared with Adults

Authors: Thomas H. Inge, M.D., Ph.D., Anita P. Courcoulas, M.D., Todd M. Jenkins, Ph.D., Marc P. Michalsky, M.D., Mary L. Brandt, M.D., Stavra A. Xanthakos, M.D., John B. Dixon, Ph.D., M.B., B.S., +5, for the Teen–LABS Consortium Author Info & Affiliations

Published May 16, 2019 | N Engl J Med 2019;380:2136-2145 | DOI: 10.1056/NEJMoa1813909 | VOL. 380 NO. 22



### **Teen-LABS**

- Patient outcomes
  - 5 year post gastric bypass operation
  - 161, age 13-18, 2006-2012, 5 US centers
  - 26% weight reduction, 29% adults
  - More likely to resolve DM 86% vs 53% adults
  - And HTN 68% vs 41% adults
  - Similar death rate to adults, 3/161, 1.9%, none directly related to surgical complication
  - More intraabdominal operations, cholecystectomy



## **Medication and Surgery**

- Many patients/families more comfortable with medications than surgery
- Some may not tolerate AOMs or may not respond
- Weight regain could lead to lifetime use
- Surgical intervention could lead to less use of AOM post-operatively
- Phenotypic elucidation may lead to choosing best combination of options and timing



## Thank you !

### Session III: Panel Discussion



### **Moderator**



#### **Panelists**



Beverly Tchang, MD



Oliver Varban, MD



Bill Stratbucker, MD



Allison Schulman, MD

## Session IV: Putting It All Together By Empowering Care Teams





### Morning Debrief and Thoughts From Lunch Discussions



Michigan Medicine Weight Navigation Program

> Amal Othman, MD, DABOM, FOMA 09/20/2024

### Disclosure

NONE

### Objectives

- To describe barriers to obesity treatment.
  PCP perspectives
- $\succ$  To understand opportunities to overcome barriers.
  - Evaluating existing resources
  - Training in obesity medicine
  - Restructuring care delivery
- ➤ Our model.
  - Weight-focused visits
  - > Workflow
  - ➢ Billing / coding
  - Addressing gaps
  - Outcomes (ideally updated data)
  - Population health management dashboard + remote weight monitoring
    - This is tool to direct limited resources (e.g., clinic visits) to patients that need them the most.
    - Improve access.

### Introduction

In the United States, rates of obesity (defined body mass index [BMI] 30 kg/m2) continue to rise, with estimates suggesting that approximately half of the adult population will have obesity by 2030. Individuals with obesity face an increased risk of physical and mental health conditions, including cardiovascular disease, type 2 diabetes, fatty liver disease, osteoarthritis, and Depression.

### The Weight Navigation Program (WNP) Team

### PROGRAM FACULTY

- CLINICAL DIRECTOR:
  - Amal Othman, MD

- RESEARCH DIRECTOR:
  - Dina Hafez Griauzde, M.D.

- PROGRAM DIRECTOR:
  - Andrew T Kraftson, M.D.



# **Evaluating the Status of The Health System**

~56,000 patients who are assigned to Michigan Medicine PCP and have obesity.

~4000 patients referred each year to the 12 obesity programs (7%) Most patients within our health system are not benefiting from Michigan Medicine weight management resources



### Barriers to Obesity Treatment in Primary care settings

Why is Obesity undertreated in primary care?

### Barriers to Obesity Treatment in Primary care settings

Reasons for no weight loss recommendations during a clinic visit	N (%) <sup>a</sup>
Patient has other health concerns or conditions that are more urgent	95 (88.8)
Short visit duration with insufficient time to discuss weight management	93 (86.9)
Patient does not have insurance coverage for available weight loss resources/programs	59 (55.1)
Losing weight is not a priority or goal for the patient	50 (46.7)
Available weight loss strategies are not effective	49 (45.8)
Patient already knows what he/she/they need(s) to do to manage their weight	42 (39.3)
Not believe that the patient will take the necessary steps to lose weight	37 (34.6)
Patient does not tell me he/she/they want(s) to lose weight	29 (27.1)
Not confident in my ability to make specific weight loss/control recommendations	26 (24.3)
Patient does not have any weight-related health problems	25 (23.4)
Worried about offending patients by discussing their weight	20 (18.7)
Cannot bill for conversations about weight loss	8 (7.5)
Not my role as a physician to counsel on weight loss	5 (4.7)
Helping patients to lose weight is not a priority	1 (0.9)

<sup>a</sup>Results are reported as aggregate of those responding 'agree' or 'strongly agree' to 5-point Likert scale question ranging from "strongly agree" to "strongly disagree".

# Barriers to Obesity Treatment in Primary care settings

	Reasons for no weight loss recommendations during a clinic visit	$N(\%)^{a}$	
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<sup>a</sup>Results are reported as aggregate of those responding 'agree' or 'strongly agree' to 5-point Likert scale question ranging from "strongly agree" to "strongly disagree".

Ways to more effectively support weight loss			
More training on Michigan Medicine weight loss resources and programs			
More training on effective dietary counseling	67 (62.6%)		
Increased knowledge of effective self-help resources (e.g., mobile health tools, books, websites)			
More support from clinic staff (e.g., brief lifestyle counseling by medical assistant)	53 (49.5%)		
Peer support programs	47 (43.9%)		
Increased on-site access to dietitian	58 (54.2%)		
Increased reimbursement for obesity management			
Clinical reminders (e.g., Best Practice Alerts)	19 (17.8%)		
Clinical decision support tools (e.g., order sets)	38 (35.5%)		
Other (please specify)	16 (15.05%)		
None of the above	2 (1.9%)		

Table 3. Opportunities to improve obesity treatment (N = 107).

Ways to more effectively support weight loss		N (%)	
More training on Michigan Medicine weight loss resources and programs More training on effective dietary counseling		78 (72.9%)	
		67 (62.6%)	
Increased knowledge of effective self-help resources (e.g., mobile health tools, books,	websites)	75 (70.1%)	
More support from clinic stan (e.g., brief mestyle counseling by metical assistant)	55 (45	9.370)	
Peer support programs	47 (43	3.9%)	
Increased on-site access to dietitian	58 (54	4.2%)	
Increased reimbursement for obesity management	56 (52	2.3%)	
Clinical reminders (e.g., Best Practice Alerts)	19 (17	7.8%)	
Clinical decision support tools (e.g., order sets)	38 (35	5.5%)	
Other (please specify)	16 (15	5.05%)	
None of the above	2 (1.9	%)	



BARIATRIC SURGERY	POST-BARIATRIC ENDOCRINOLOGY PROGRAM	ENDOSCOPIC BARIATRIC THERAPY	WEIGHT MANAGEMENT PROGRAM (WMP)	OBESITY & METABOLIC DISORDERS PROGRAM
METABOLIC FITNESS	METABOLISM, ENDOCRINOLOGY & DIABETES (MEND)	PEDIATRIC ENDOCRINOLOGY, DIABETES & METABOLISM	LIPODYSTROPHY/ ATYPICAL DIABETES	DIABETES PREVENTION PROGRAM
OBESITY HYPOVENTILATION CLINIC	NON-ALCOHOLIC FATTY LIVER DISEASE (NAFLD) CLINIC	LIPID MANAGEMENT PROGRAM	M-HEALTHY	NUTRITION SERVICES

## **Utilization of resources:**

> Among Michigan Medicine PCPs (n=107):

Most refer patients with obesity to a dietitian (n=89, 83%)

➤ A minority use other resources:

- Weight Management Program (n=23, 21.5%)
- ➤ Weight loss surgery (n=20, 18.7%)

Most use clinical judgement rather than obesity management clinical practice guidelines (n=99, 93%)



### With increasing obesity rates

A novel strategies were needed to overcome treatment barriers

Weight Navigation Program

### WNP Program Missions

• CLINICAL MISSION: To help individuals find a path toward effective weight management.

• **RESEARCH MISSION:** To understand the strengths, weaknesses, and opportunities for long-term weight management.



#### Weight Navigation Program: The Intervention



Griauzde et al., Primary Health Care Research & Development. 2022

Systematically monitoring and reaching out to support

### Weight Navigation Program

Number of ABOMcertified providers Number of patients who have obesity

### Team-based collaborative care



### **Team-based collaborative care**

Clinically- and costeffective approach to help primary care teams better support patients with mental health disorders.

Patient-centered, teambased, outcome-driven care

### **Program Eligibilities:**



### WNP Model

### **WNP** Workflow



Patient completes previsit questionnaire and laboratory testing

### **Pre-visit data**



### Questionnaires

Weight history **Depression screening STOP BANG** 



### Laboratory tests



**Comprehensive metabolic panel Complete blood count** Hemoglobin A1c **Fasting Insulin Fasting lipid panel Thyroid function tests** Vit D level

### WNP Workflow





### Development of personalized weight management plan

### **Recommendations:**

- Diet: referral to weight management program
- Medications: based on predicted benefit/ risks, and insurance coverage.
- Sleep: Assess risk for OSA and order sleep study for those at risk.
- Exercise: assess barrier, readiness, need for rehabilitation
- Behavior: assess for eating disorder, untreated mode disorders.
- Others: Assess for MASLD

# Billing and coding

- Coding:
  - Class 1, 2, or 3 Obesity with complications
  - List all complications (OSA, DMII, Pre-DM, HTN, HLP, MASLD, PCOS)
  - Depression screen

- Billing:
  - NP WNP, 60 min Consult :
    - 99215 (Time based, 40 min visit)
    - G2211 (PC- Complex)
    - G0444 (depression Screening)
    - 99417 (Prolonged Care, add. 15 min)
  - RV WNP, 20 min visit:
    - 99214 (medication management)
# On Going Development



# On going data analysis to evaluate the progress

#### JAMA Network Open. 2024;7(5):e2412192. doi:10.1001/jamanetworkopen.2024.1219

#### Figure. Study Flow Diagram



Results of the screening, selection, and analysis processes for the eligible patients at the control and pilot sites. PCP indicates primary care practitioner; WNP indicates weight navigation program. ..........

JAMA Network Open. 2024;7(5): e2412192.doi:10.1001/jamanetworkopen. 2024.1219

Table 1. Baseline characteristics				
	Control (n=132)	WNP (n=132)		
Initial weight in kg, mean (SD)	110 (25.8)	114 (25.5)		
Age, mean (SD)	48.8 (13.2)	49.8 (11.1)		
Gender (Female)	97 (73.5%)	93 (70.5%)		
Race				
Caucasian/White	82 (62.1%)	94 (71.2%)		
AA/Black	30 (22.7%)	24(18.2%)		
AAPI	16 (12.1%)	8 (6.1%)		
Other	4 (3.0%)	2 (4.5%)		
Ethnicity				
Non-Hispanic	128 (97.0%)	127 (96.6%)		
Hispanic	1 (0.8%)	2 (2.3%)		
Insurance				
Private	102 (77.3%)	99 (75.0%)		
Medicare	18 (13.6%)	15 (11.4%)		
Medicaid	8 (6.1%)	14 (10.6%)		



Table 2. Within-Group and Between-Group Weight Change Comparisons, Baseline to 12 Months						
	Estimate (95% CI)		Unadjusted difference		Average marginal	P value for difference or
Variable	WNP patients	Matched controls	or OR (95% CI)	AOR (95% CI) <sup>a</sup>	effects (95% CI)	average marginal effects
Patients, No. (%)	95 (100)	106 (100)	NA	NA	NA	NA
Mean weight change, kg <sup>b</sup>	-5.4 (-7.8 to 3.0)	-0.3 (-1.9 to 1.4)	-4.9 (-7.76 to -2.11)	NA	NA	<.001
Mean % weight change <sup>b</sup>	-4.4 (-6.4 to -2.5)	-0.1 (-1.3 to 1.4)	-4.4 (-6.77 to -2.17)	NA	NA	<.001
≥5% Weight loss, No. (%) <sup>c</sup>	39 (41.1)	19 (17.9)	2.96 (1.58 to 5.67)	2.90 (1.54 to 5.58)	21.2 (8.8 to 33.6)	<.001
≥10% Weight loss, No. (%) <sup>c</sup>	21 (22.1)	4 (3.8)	7.17 (2.60 to 25.3)	7.19 (2.55 to 25.9)	17.4 (8.7 to 26.2)	<.001

JAMA Network Open. 2024;7(5):e2412192. doi:10.1001/jamanetworkopen.2024.1219

# Population Management

Remote weight management by text messaging can be an effective strategy to support weight loss among patients with obesity.



### WNP population health dashboard with tailored outreach





#### Original Investigation | Nutrition, Obesity, and Exercise

#### A Primary Care-Based Weight Navigation Program

Dina H. Griauzde, MD, MSc; Cassie D. Turner, LMSW; Amal Othman, MD; Lauren Oshman, MD, MPH; Jonathan Gabison, MD; Patricia K. Arizaca-Dileo, MD; Eric Walford, MD; James Henderson, PhD; Deena Beckius, MPH; Joyce M. Lee, MD, MPH; Eli W. Carter, MPH; Chris Dallas, BBA; Kathyrn Herrera-Theut, MD; Caroline R. Richardson, MD; Jeffrey T. Kullgren, MD, MS, MPH; Gretchen Piatt, PhD, MPH; Michele Heisler, MD, MPA; Andrew Kraftson, MD

#### Conclusions

In this cohort study of patients referred to a pilot WNP, the program was feasible and associated with greater WMT use and weight loss than observed in matched controls. The WNP is a promising model to improve obesity treatment in primary care settings and warrants rigorous evaluation in a large-scale randomized clinical trial with longer-term assessment of outcomes and determinants of implementation.

# **WNP Expansion (2020-2024)**





#### WEIGHT NAVIGATION PROGRAM

INDIVIDUALIZED CARE. EMPOWERING CHOICES.

#### **EVOLUTION**

How it started...

2018 (planning) 2020 (START)



FAMILY MEDICINE





2024



LAUREN OSHMAN MD ANDREW KRAFTSON FAMILY MEDICINE MD METABOLISM, ENDOCRINOLOGY & DIABETES





CHRIS DALLAS

INSTITUTE



INSTITUTE

With Two additional Physicians starting FY 2025

METABOLISM, ENDOCRINOLOGY, & DIABETES





INTERNAL MEDICINE

ERIC WALFORD MD GABRIELLE INTERNAL MEDICINE KRYSTEVSKI MD INTERNAL MEDICINE

### What do our patients say about WNP?

- I absolutely loved [my WNP provider]. No body shaming. It wasn't necessarily about BMI. It was about health. It was 100% about health. It was about, we have to get you out of this pre-diabetic zone... We could potentially get you off of your blood pressure medicine. We got to get you up and moving and making better choices with food and wanting to know what my relationship was like with food and things like that...
- So I just appreciated that all the options were open, but nothing was pushed on me, you know, so I just appreciated all of that, and again, asking me what would my ideal weight be, not just saying, hey, you know what, you need to be this percentage of BMI or you need to be this way."

# **Questions?**





# **Thank You**

# A Team-Based Approach Utilizing Low-Carbohydrate Counseling To Impact Weight and Medications In Type 2 Diabetes

Lyndsay Ruff, MS, RDN, CSO, CDCES Diabetes Program Coordinator, Clinical Dietitian LTC Charles S. Kettles VAMC (Ann Arbor, MI)

Katherine Freeman, PharmD Clinical Pharmacy Specialist LTC Charles S. Kettles VAMC (Ann Arbor, MI)

September 20, 2024



U.S. Department of Veterans Affairs

#### DISCLOSURES

There are no relevant financial relationships with an ineligible company.

As defined by the Standards of Integrity and Independence in Accredited Continuing Education definition of an ineligible company. All relevant financial relationships have been mitigated prior to the CPE activity.





#### **OVERVIEW**

- 1. A weight focused approach to Type 2 Diabetes
- 2. Definitions and evidence for carbohydrate restrictions to support weight loss and glycemic control
- 3. Utilizing continuous glucose monitoring as a tool for medication optimization and nutritional counseling
- 4. Implementing an interdisciplinary practice
- 5. Case review





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#### **DIABETES AND OBESITY**

- Estimated 90% of people with diabetes are overweight or obese
- Prevalence of obesity in Veterans > general U.S. population
- Frequent medication escalation vs. optimization



VA/DoD Clinical Practice Guideline for the Management of Adult overweight and Obesity. Published online July2020 VA/DoD Clinical Practice Guideline for the management of Type 2 Diabetes Mellitus. Published online May 2023 Faulk D. VA/DoD Clinical Practice Guideline for the Management of Type 2 Diabetes Mellitus In Primary Care. Published online 2017:160 El Sayed et al. Diabetes Care 2023; 46 (supplement\_1)





#### Weight loss improves glycemic control

Thresholds of % weight loss







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#### **STANDARD OF CARE**

- Evidence suggests that there is not an ideal percentage of calories from carbohydrate, protein, and fat for people with diabetes. Therefore, macronutrient distribution should be based on an individualized assessment of current eating patterns, preferences, and metabolic goals.
- Studies examining the optimal amount of carbohydrate intake for people with diabetes are inconclusive
- Health care professionals are encouraged to engage in person-centered collaborative care with people with diabetes, an approach that is guided by shared decision-making in treatment plan selection; facilitation of obtaining medical, behavioral, psychosocial, and technology resources and support; and shared monitoring of agreed-upon diabetes care plans and behavioral goals
- Lifestyle intervention programs should be intensive and have frequent follow-up to achieve significant reductions in excess body weight and improve clinical indicators

Diabetes Care 2024; 47 (Supplement 1)







### **BENEFITS OF CARBOHYDRATE RESTRICTION**



\* Consistent reduction in TGs and increase in HDL; variable changes in LDL. Yancy et al. *Nutr Metab.*Fienman et al. *Nutrition.*McKenzie et al. *JMIR Diabetes.*Hallberg et al. *Diab Therapy.*Unwin et al. *BMJNPH.*





#### **DEFINITIONS OF CARBOHYDRATE INTAKE**

	% total energy from carb*			
Diet type	≤10%	>10% to 26%	>26% to 45%	>45%
Very low carbohydrate	20-50 grams			
Low carbohydrate		50-130 grams		
Moderate carbohydrate			130-225 grams	
High carbohydrate				>225 grams

\*Based on 2000 kcal/day diet



Sainsbury et al. *Diabetes Res.Clin,* 2018 Volek et al. *Frontiers in Nutrition,* 2024



#### **BUILDING A LOW CARBOYDRATE PLATE**

1: Pick a Protein Poultry, Fish, Shellfish, Beef, Pork, Eggs, Cheese, or Nuts

> 2.Fill half the plate with non-starchy vegetables

Salad greens, broccoli, cauliflower, string beans, peppers, tomatoes

#### 3. Add fats

Oils, sauces, full fat dairy cheese, butter, sour cream

> 4. Add complex carbohydrates Starchy vegetables, fruits, legumes/lentils



Non-Starchy Vegetables

Protein





#### SAFETY AND COUNSELING

Potential side effects	Mitigation strategies
Headache, fatigue, brain fog, irritability (i.e., <b>keto flu or induction flu</b> )	<ul> <li>Gradual carb reduction (e.g., 1 meal per wk)</li> <li>Liberalize salt and water intake</li> <li>Liberalize fat intake to minimize hunger</li> <li>Often resolves within a few days or weeks</li> </ul>
Muscle cramps	<ul><li>Liberalize salt and water intake</li><li>Consider magnesium supplement</li></ul>
Constipation	<ul> <li>Liberalize salt and water intake</li> <li>Increase intake of non-starchy vegetables</li> <li>Consider Milk of Magnesia</li> </ul>
Bad breath	<ul> <li>Liberalize salt and water intake</li> <li>Good oral hygiene</li> <li>Breath fresher</li> <li>Often resolves within 2-4 weeks</li> </ul>





### **SAFETY - MEDICATION OPTIMIZATION**

Consider current anti-hyperglycemic medications





Cucuzzella et al., Frontiers in Nutrition. 2018



U.S. Department of Veterans Affairs

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## **CONTINUOUS GLUCOSE MONITOR (CGM) BASICS**

- A wearable medical device that continuously monitors glucose
- Equipment: handheld device and sensor
  - App vs Reader/Receiver
  - Sensor is applied to back of arm
- Sensor wear: 10-14 days
- Real time glucose readings every 1-5 minutes
- Remote monitoring
  - App automatically shares when connected to practice
  - Reader/receiver requires uploading
- Alarms
- Trend arrows & graphs
  - Shows where your glucose has been, where it's going and how fast it is rising or falling









#### **ORIENTATION – SENSOR GLUCOSE VS BLOOD GLUOCSE**





Cengiz E, et al. Diabetes Technol Ther 2009:11(S1):S11-16



U.S. Department of Veterans Affairs

#### **AMBULATORY GLUCOSE**

#### **AGP** Report

Glucose Variability

Name		
MRN		

GLUCOSE STATISTICS AN	TIME IN RANGES	
26 Feb 2019–10 Mar 20 % Time CGM is Active	019 13 days 99.9%	Very Hi
<b>Glucose Ranges</b> Target Range 70–180 mg/dL . Below 70 mg/dL	<b>Targets</b> [% of Readings (Time/Day)] Greater than 70% (16h 48min) Less than 4% (58min)	250 High (181
Below 54 mg/dL Above 180 mg/dL Above 250 mg/dL	Less than 1% (14min) Less than 25% (6h) Less than 5% (1h 12min)	180 Target F
Each 5% increase in time in rang Average Glucose Glucose Management I	e (70–180 mg/dL) is clinically beneficial. 173 mg/dL ndicator (GMI) 7.6%	70 54 <b>Low</b> (54–6

49.5%

Defined as percent coefficient of variation (%CV); target ≤36%





Diabetes Care, Battelina et.al International consensus report 2019





#### **CGM PLATFORM EXAMPLE**



Microwave, popcorn, one bag. ◀

Chicken quesadilla on spinach tortillas morning meds

Push, mow the yard. Two eggs with turkey bacon and two pieces of four carb wheat toast.

Tunafish with mayonnaise, mustard and dill relish on spinach tortillas. Two of them.





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### **OPPORTUNITIES IDENTIFIED**

- Personalized and intensive nutritional instruction and coaching
- Close monitoring and timely medication adjustments
- Web-based platforms makes data available to all stakeholders
- Optimize diabetes medication regimen by reducing/stopping obesogenic medications
- Patient-centered interdisciplinary team to include a registered dietitian and a pharmacist







#### LOW CARB CGM PROGRAM

- Program duration: 24 weeks (Telephone or Video visits)
- The Interdisciplinary Clinical Team
  - > Pharmacist: provides education on CGM, adjust medication regimen as needed
  - Dietitian: nutrition assessment, personalized education and resources
  - MD oversight
- Communication:
  - Electronic health record
  - Internal electronic messaging system
  - Monthly collaborative meetings





### **ENROLLMENT AND MONITORING**







### **ENROLLMENT AND MONITORING**





	Mean Change	27 ENROLLED		Actual Change (%)
Weight (kg)	-14.7	17 COMPLETED	Stopped Short acting insulin	95% (16)
HbA1c	-1.1		Stopped Long- acting insulin	76% (13)
TG	-98.2			
LDL	-2.6		>5% weight loss	88%
HDL	3.8		>10% weight loss	65%




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### MR. L

- 65- Year –old M with a history of class III obesity and T2D
  - Weight: 334 lbs
  - BMI: 42.97
  - Hgb A1c: 7%
- T2D Medications
  - Insulin glargine U300: 180 units daily
  - Insulin aspart: 22 units with meals
  - Repaglinide 1mg PRN
  - Metformin 2g/day
  - Semaglutide 2g weekly
- Weight- related conditions
  - HTN
  - OSA
  - GERD
  - CAD
  - Chronic Pain



Baseline CGM





### MR. L - Enrolled Oct 2022-March 2023

#### Week 24 Results

- Weight 290 lbs (-50 lbs)
- HbA1c 6.4% (-0.6)
- Consuming 30-35 net CHO/day
- insulin u300: 180 units
- insulin aspart 22 units with meals
- Repaglinide 1 mg PRN
- Metformin 2 g/day
- Semaglutide 2mg weekly
- Semaglutide 1 mg weekly



Baseline CGM



Week 24 CGM





### Mr. L – July 2024

16 months after completing LC CGM Program

- Weight 260 lbs (-30 lbs from week 24)  $\rightarrow$  total of 74 lb weight loss = 22% of body weight
- HbA1c: 5.8%
- Semaglutide 2mg weekly







#### PERSPECTIVES

#### **Patients**

"I feel really good about what you've helped me do"

"My legs are stronger, and I have more stamina. I'm very happy. I'm very grateful"

"If I could've had this information as a young man, my whole life would've been different"

"I'm down 5 inches in waistline, feelings of more energy, and am very happy with results of this program."

#### Primary Care Physician

"The low carb-CGM program was very beneficial. The patients received a lot of individual attention and education from the providers (pharmacist and dietitian). It was amazing because patients were taught how to modify their diet, learned how it affected their blood sugar, and then often were able to decrease their insulin requirements. As a primary care physician, it made our life so easy and was great having the expertise of the pharmacist and dietitian."





#### **KEY TAKE AWAYS**

- Continuous glucose monitors used concurrently with modified carbohydrate diets and intensive lifestyle change are effective tools in optimizing weight and medication management in patients with diabetes
- Reduction or elimination of obesogenic mediations is commonly achieved
- Patient observation and understanding of post prandial glycemic responses often incentivize dietary compliance and/or minimize repeated dietary excursions
- Essential components for success
  - Established modality to deliver care and accommodate frequent visits
  - Patient participation (engagement) and readiness for change
  - Resources for intensive behavior therapy to achieve necessary visit frequency
  - Individualized lifestyle change
  - Collaborative approach between all parties (Patient <-> Care Team)





### Questions







## Session IV: Panel Discussion



**Moderator** 



**Panelists** 



Amal Othman, MD



Katherine Freeman, PharmD



Lyndsay Ruff, RD



Halla Jomaa-Jouney



## **Closing Remarks**

#### Dina H. Griauzde, MD, MSc, Dipl. ABOM

Assistant Professor, Internal Medicine Director of Research and Quality, Weight Navigation Program University of Michigan

Co-Director, Weight Management and Metabolic Health Program VA Ann Arbor Health System



## Additional training opportunities



## AMERICAN BOARD of OBESITY MEDICINE





# Meeting Follow-up

#### • CME

- An email will be sent this evening.
- MUST CLAIM CREDITS WITHIN 7 DAYS!
- Any questions or ideas, please email us at mbsc.help@umich.edu

