

# Health Equity by Design: Re-engineering Primary Health Care Delivery to Reduce Obesity Disparities

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# I have nothing to disclose

Note: I am a member of the USPSTF and the content of this talk does not reflect the views of the USPSTF

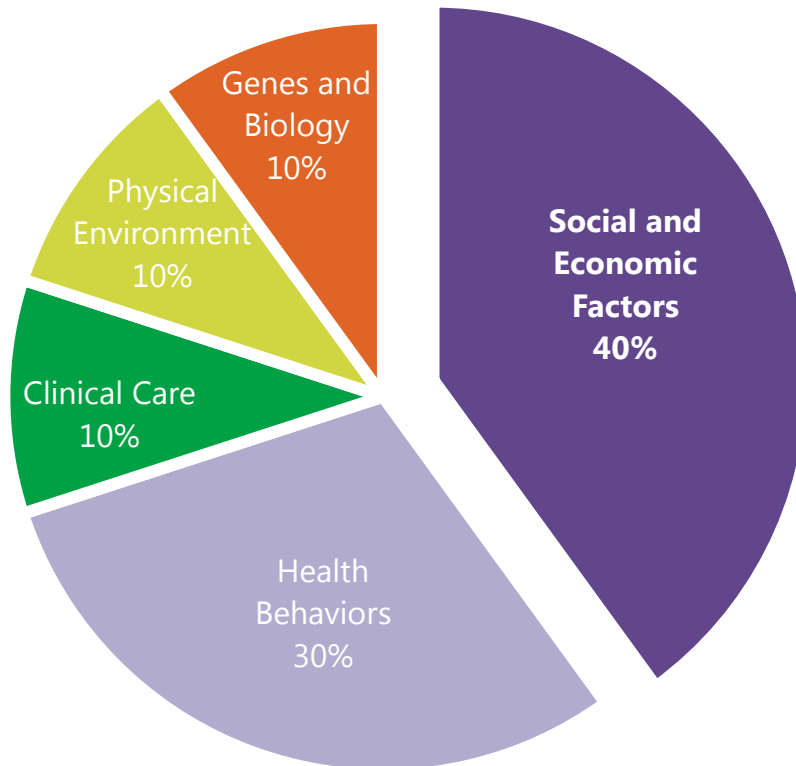
# Architecture 101

- Form, Content, Context
- Basic design elements
  - Color
  - Shape
  - Texture
  - Space
  - Form
  - Unity/Harmony
  - Balance
  - Hierarchy
  - Scale/Proportion
  - Dominance/Emphasis
  - Similarity/Contrast
- Design Process- methodical and iterative process of steps used in creating functional products and processes- optimize interactions, improve functionality...
- Instructional Design- the practice of creating instructional experiences that make the acquisition of knowledge and skill more efficient, effective and appealing



# Determinants of Health

## What Creates Health?



## • Necessary conditions for health (WHO)

- ☼ Peace
- ☼ Shelter
- ☼ Education
- ☼ Food
- ☼ Income
- ☼ Stable eco-system
- ☼ Sustainable resources
- ☼ Health Care
- ☼ Social justice and equity



**Equality**

doesn't mean

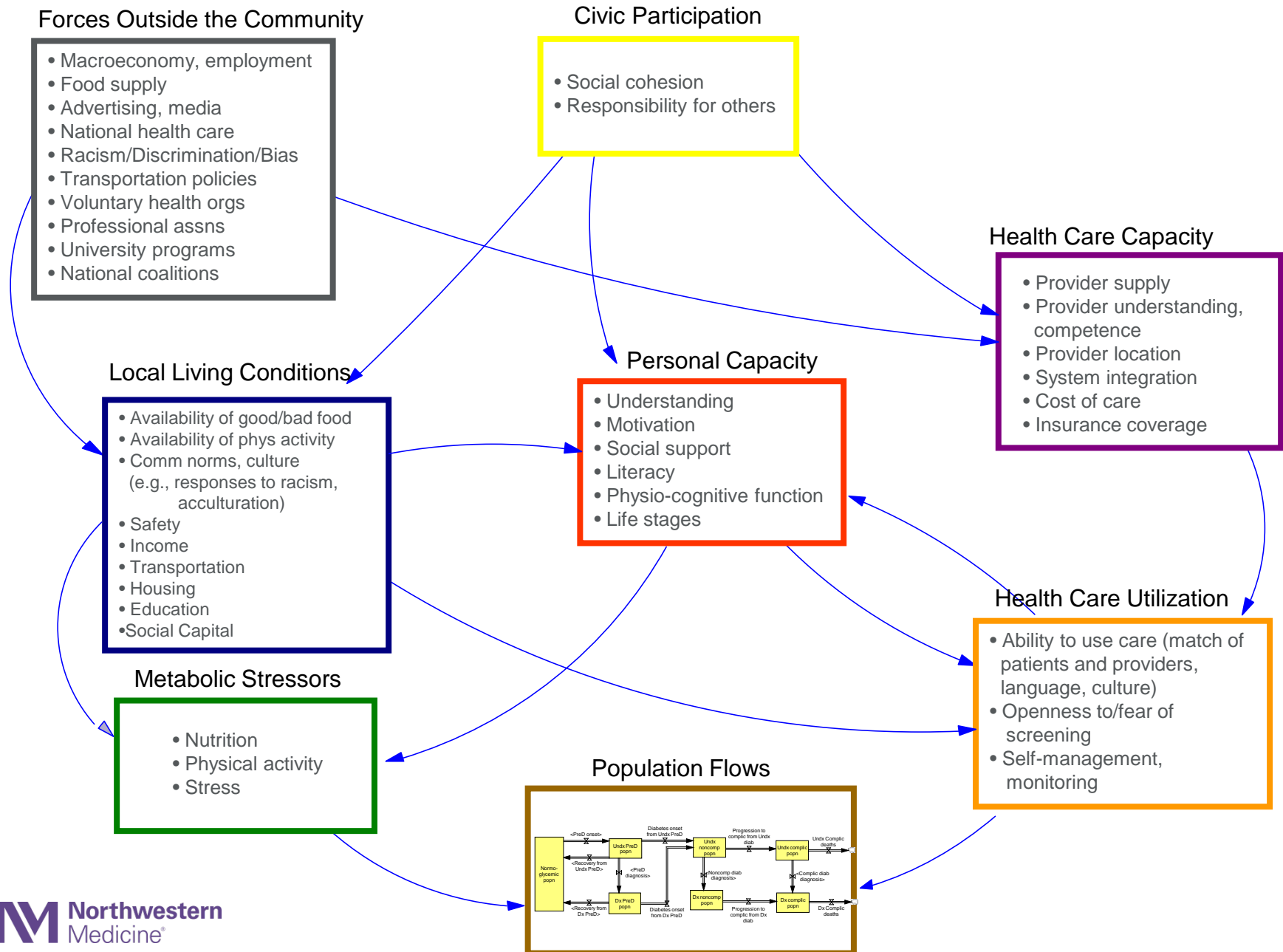
**Equity**



What forces have driven up obesity?

Where are the opportunities in primary care settings for response?

# There are Many Interacting Factors



# Some Sources of Dynamic Complexity for Obesity- and Integration into primary health care delivery

## Multiple Goals

- Improve diet
- Increase physical activity
- Decrease physical inactivity
- Assure healthful conditions in diverse behavioral settings (i.e., home, school, work, community)
- Harness synergies with other social values (i.e., school performance, economic productivity, environmental protection)

## Simultaneous Program Strategies

- Deliver healthcare services
- Enhance media messages
- Enhance health care provider training
- Expand options in behavioral settings
- Modify trends in the wider environment (i.e., economy, technology, laws)
- Address other health conditions that impede healthy diet and activity (e.g., asthma, oral health, etc.)

## Barriers

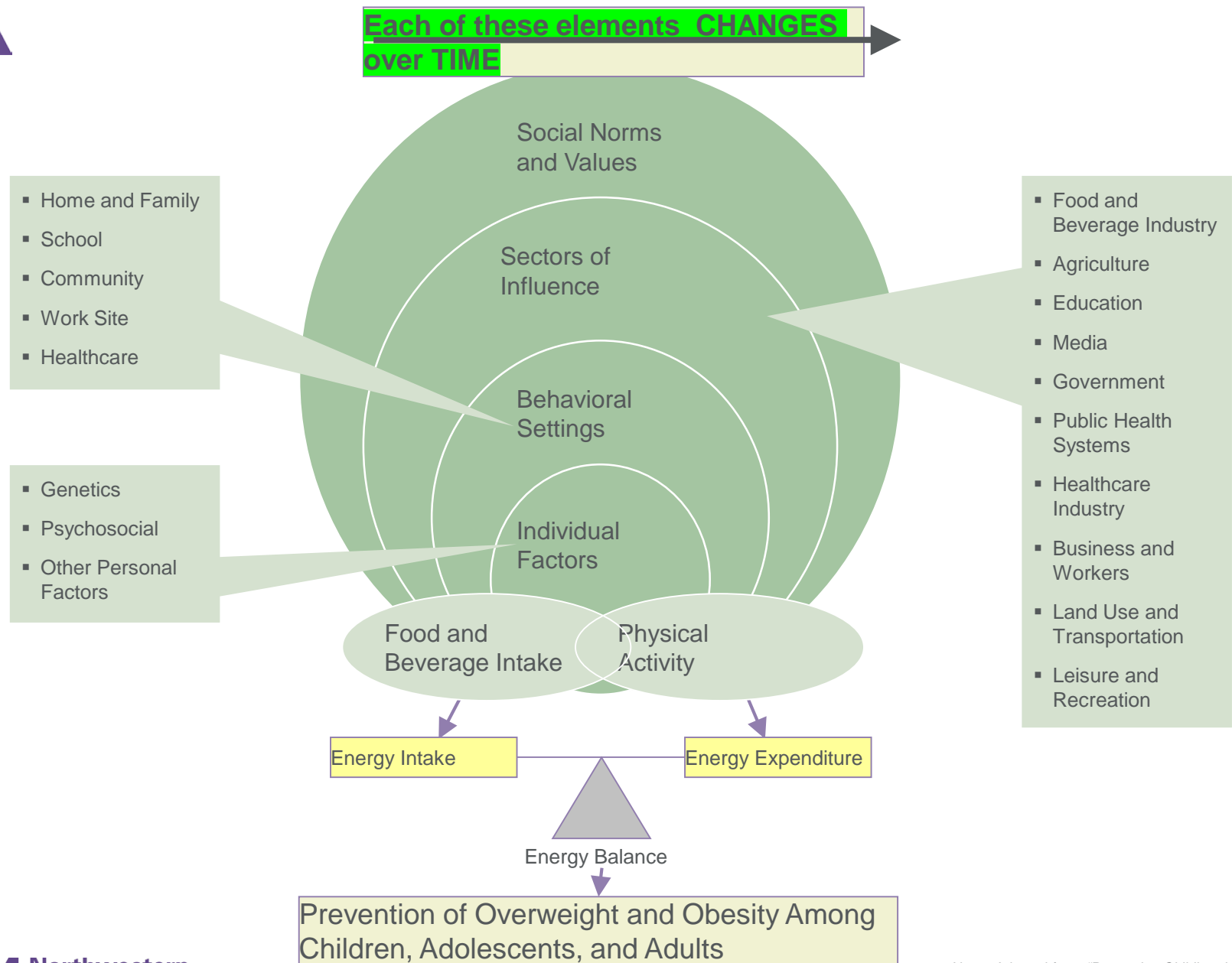
- Cost of caring for weight-related diseases
- Cost of health protection efforts
- Spiral of unhealthy habits leading to poor health leading to even less healthy habits
- Social reinforcement of diet and activity based on observing parents', peers', others' behaviors
- Demand for unhealthy food and inactive habits stimulates supply
- Inadequate training
- Bias
- Known interventions have yielded little long-term benefit and it is not clear how to combine multiple interventions effectively into a comprehensive strategy

## Time Delays

- 1-2 year lag for metabolism to stabilize after change in net caloric intake
- Several years for programs to mature and for policies to be fully enacted/enforced
- At least several years to see policy impacts, and even longer to affect the wider environment



# Framework for Organizing Influences on Obesity



# USPSTF Guidelines

- The USPSTF recommends that clinicians screen for obesity in children and adolescents age 6 years and older and offer or refer them to comprehensive, intensive behavioral interventions to promote improvements in weight status. (**B recommendation**)
- The USPSTF recommends that clinicians offer or refer adults with a BMI of 30 or higher to intensive multicomponent behavioral interventions. (**B recommendation**)



# Evidence in Adults

- The USPSTF concludes
  - moderate certainty that screening for obesity in adults has a moderate net benefit
  - benefit to offering or referring adults with obesity to intensive behavioral interventions to improve weight status and other risk factors for important health outcomes
- The USPSTF found
  - adequate evidence that intensive, multicomponent behavioral interventions for adults with obesity can lead to an average weight loss of 4 to 7 kg (8.8 to 15.4 lb). These interventions also improve glucose tolerance and other physiologic risk factors for cardiovascular disease
  - inadequate direct evidence about the effectiveness of these interventions on long-term health outcomes (for example, death, cardiovascular disease, and hospitalizations)

# Evidence in Adults...

- Behavior based weight loss interventions with or without weight loss medications were associated with more weight loss and a lower risk of developing diabetes than control conditions.
- Weight loss medications but not behavior based interventions were associated with higher rates of harms.
- Long term weight and health outcomes data – especially on minority populations were limited.



# Results from Non-pharmacologic Programs

- Patients overwhelmingly regain the weight if there is no long-term plan
- Behavior therapy and exercise key to weight loss maintenance
- High intensity interventions most effective

# Commercial Programs

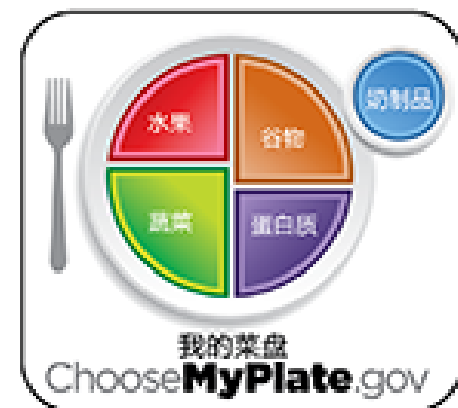
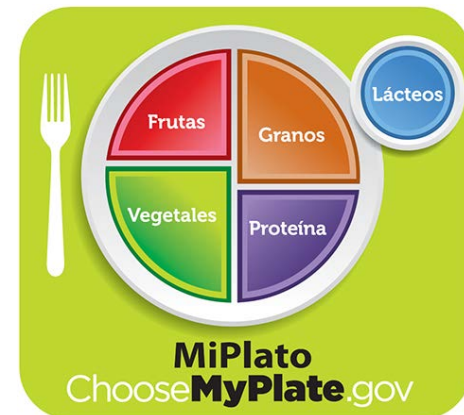
## Limited studies show:

- They can work, are often expensive, none proven superior.
- More improvements in lipid profile and fasting sugar results known in low carbohydrate diets, the new Weight Watchers, and Mediterranean diets
- Racial / ethnic minorities have less access to such programs

1. Rock CL, Flatt SW, Sherwood NE, Karanja N, Pakiz B, Thomson CA. Effect of a free prepared meal and incentivized weight loss program on weight loss and weight loss maintenance in obese and overweight women: a randomized controlled trial. JAMA 2010;304(16):1803-1810
2. Jolly K, Daley A, Adab P et al. A randomised controlled trial to compare a range of commercial or primary care led weight reduction programmes with a minimal intervention control for weight loss in obesity: the Lighten Up trial. BMC Public Health 2010;10:439.
3. Cobiac L, Vos T, Veerman L. Cost-effectiveness of Weight Watchers and the Lighten Up to a Healthy Lifestyle program. Aust N Z J Public Health 2010;34(3):240-247.
4. Brown T, Avenell A, Edmunds LD et al. Systematic review of long-term lifestyle interventions to prevent weight gain and morbidity in adults. Obes Rev 2009;10(6):627-638.
5. Morgan LM, Griffin BA, Millward DJ et al. Comparison of the effects of four commercially available weight-loss programmes on lipid-based cardiovascular risk factors. Public Health Nutr 2009;12(6):799-807.

# Diet Recommendations

- Low-calorie diet better than very-low calorie diet for maintaining weight loss
- Meal replacements (e.g. South Beach, Atkins, Keto..) often helpful in improving success with dietary caloric adherence – best if >12g-14g protein, >5gm fiber, <7grams sugar
- Portion-controlled servings also useful for weight loss adherence
- Can be achieved with plans – do not need to count-few people can count accurately
- Planning, routinizing, and tracking support success
- Encourage use of low or no-cost supports for both ideas and tracking like: myfitnesspal.com and sparkpeople.com
- Culturally tailored plates
  - choosemyplate.gov



# Prescribe Exercise

- Research shows
    - effective counseling can be done in about 5 minutes
    - patients who are counseled to exercise by physicians have higher activity levels in the year following the counseling
    - appointments 1-2 times a month for at least 16 weeks are most effective in establishing behavior changes. Long-term frequent follow-up needed for maintenance.
    - Follow-up can be in person, group visit, on-line or by phone
    - Drs. Monica Peek and Marshall Chin – Improving Diabetes Care and Outcomes on the South Side of Chicago project/ Food Rx
- 

Calfas, K. J.; Long, B. J. et al. A controlled trial of physician counseling to promote the adoption of physical activity. *Prev Med.* 1996 May-1996 Jun 30; 25(3):225-33.

Long, B. J.; Calfas, K. J., et al. A multisite field test of the acceptability of physical activity counseling in primary care: project PACE. *Am J Prev Med.* 1996 Mar-1996 Apr 30; 12(2):73-81.

Lewis, B. S. and Lynch, W. D. The effect of physician advice on exercise behavior. *Prev Med.* 1993 Jan; 22(1):110-21.

Goddu AP, Toberson TS, Raffel KE, Chin MH, Peek ME. Food Rx: A community-university partnership to prescribe healthy eating on the south side of Chicago. *J Prev Interv Community* 2015;43(2):148-62.



# Clinical Support Tools

- Solution-focused brief therapy
- Motivational interviewing
- Personal improvement (systems approach)
- Diet and activity prescriptions

Make the approach:

- Non-judgmental—bias and stigma are significant drivers of obesity inequity
- Patient-centered
- Focused
- Documentation friendly

# Key knowledge about obesity that change treatment approach

- Obesity is not fair
- Other diseases promote obesity and impede its treatment
- How much and how well we sleep matters
- It really is unfair for women – pregnancy, motherhood, and menopause provide additional challenges and opportunities
- Obesity is not always reversible, and its control with treatment is variable
- Average activity levels currently lead to decreased lean mass quantity and quality. This decrease has implications for obesity and chronic disease prevention and treatment
- The goal is to teach people basic concepts to assess, adjust and adapt as change is relentless
- The environment matters
- Integration of SDoH into EMR- how will this impact obesity inequities?
- Payor/Reimbursement models to incentivize...
- Healthcare providers have more impact when they are engaged, in making healthy lifestyle choices–AND manage their implicit attitudes of obesity/other bias

# BIAS/Discrimination

- Primary care prevention and management/treatment is significantly undermined when there is bias and stigma present.
- Many healthcare providers strong negative attitudes and stereotypes about people with obesity
- There is considerable evidence that such attitudes influence-
  - Person-perceptions
  - Judgment
  - Interpersonal behavior
  - Decision making
- Experiences of or expectations for poor treatment may cause
  - stress and avoidance of care
  - Mistrust
  - Poor adherence/non-attendance

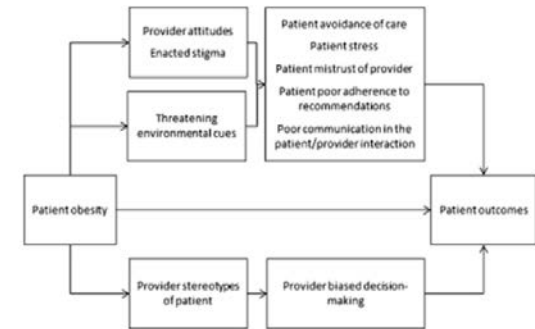


Figure 1

A conceptual model of hypothesized pathways whereby the associations between obesity and health outcomes are partially mediated by healthcare providers' attitudes and behaviours about obese patients, and patients' response to feeling stigmatized.

Phelan SM. Impact of weight bias and stigma on quality of care and outcomes for patients with obesity. 2015;16(4):319-326.

Tomiyama A.J, Carr D, Granberg EM, Major B, Robinson E, Brewis A. How and why weight stigma drives the obesity 'epidemic' and harms health. BMC Medicine 2018;16:123.

Schwartz MB, Chambliss HO, Brownell KD, Blair SN, Billington C. Weight bias among health professionals specializing in obesity. Obesity Research 2003;11:1033-39.

# Addressing Bias in Primary Care

- Increase provider empathy through perspective taking exercises
- Alter perceived norms regarding negative attitudes and stereotypes about people with obesity
- Encourage provider instruction and practice in emotion regulation techniques that foster positive affect
- Assessment of Implicit Attitudes (Implicit Association Test)
- Educate providers on genetic, environmental, biological, psychological and social contributors to weight gain and loss
- Integrate strategies for providing a welcoming and less threatening health care environment –
  - reduce focus on bodyweight- focus on screening for conditions for which obesity is a risk factor and encourage feasible behaviors to improve health and well-being- (maybe weighing patients less frequently)
  - Adopt patient centered communication strategies- like MI
  - Clinic environment should be welcoming (correct size chairs/ patient tables/instruments)
  - Knowing good referral sources

# Evidence in Pediatric Care Settings

- Four domains of effective primary care interventions (short term effectiveness)
  - Family based programs— focus on dietary changes, physical activity and parenting support
  - Motivational interviewing- often are in primary care setting with a primary care provider setting the goals and works with a nurse or other support person such as a dietician
  - Office based practice tools- including EHR prompts/reminders- provision of self-management support, linked patient education, prompts for community/ program referrals- gap still remains in communication tools for low health literacy and those with Limited English Language proficiency
  - Policy interventions- support healthy local vending practices, sugar sweetened beverages- more closely examine conflicts of interest
- Sugar sweetened beverages —strong evidence as contributors to childhood obesity- there is some evidence around messaging in schools around SSB consumption but not enough intervention work around best practices to reduce consumption in primary care settings.
- Further implementation, dissemination and sustainment research are needed (oral care settings and others to impact the consistent messaging around nutrition, SSB consumption, physical activity/exercise)

## Pediatrics...

- Community Preventive Services Task Force recommends behavioral interventions to reduce sedentary screen time among children age 13 years and younger. Insufficient evidence to recommend school-based obesity programs to prevent or reduce overweight and obesity among children and adolescents ([www.thecommunityguide.org/topic/obesity](http://www.thecommunityguide.org/topic/obesity)).
- CDC recommends 26 separate community strategies to prevent obesity (breastfeeding, promoting access to affordable healthy food and beverages, promoting healthy food and beverage choices, and fostering physical activity)
- USPSTF identified several areas in need of further research.
  - Trials evaluating the direct benefit and harms of screening for obesity in children and adolescents are needed.
  - Reproducing existing effective interventions and conducting full trials of small feasibility studies are necessary next steps.
  - determine the specific effective components of behavioral interventions are needed.
  - Long-term follow-up of participants after completion of treatment is needed to confirm maintenance of weight loss and to assess long-term harms.
  - More studies needed addressing behavioral interventions in diverse populations

# BIAS/Discrimination

- Primary care prevention and management/treatment is significantly undermined when there is bias and stigma present.
- Neither shame nor stigma motivates people of any age or background to lose weight
  - This stigma contributes to behaviors as binge eating, social isolation, avoidance of health care services, decreased physical activity and increased weight gain, and decreased quality of life—especially for youth- which worsen obesity and then create additional barriers to healthy behavior change
- Best practices for nonbiased behaviors and language- words matter
- Using empathic and empowering (motivational interview) counseling techniques
- Addressing weight stigma and bullying in the clinical visit
- Training, training , training!

Bromfeld PV. Childhood obesity: psychosocial outcomes and the role of weight bias and stigma. Educational Psychology in Practice 2009;3:193-209.

# Evidence in Obstetrics Care

- Gestational Weight Gain:
  - >50% of all women exceed recommendations
  - Up to 60% of women with obesity exceed recommendations



# Gestational Weight Gain Guidelines - 1990



TABLE 1-1 Recommended Total Weight Gain Ranges for Pregnant Women,<sup>a</sup> by Prepregnancy Body Mass Index (BMI)<sup>b</sup>

| Weight-for-Height Category             | Recommended Total Gain |       |
|--|------------------------|-------|
|  | kg                     | lb    |
| Low (BMI < 19.8)                       | 12.5–18                | 28–40 |
| Normal (BMI of 19.8 to 26.0)           | 11.5–16                | 25–35 |
| High <sup>c</sup> (BMI > 26.0 to 29.0) | 7–11.5                 | 15–25 |

<sup>a</sup> Young adolescent and black women should strive for gains at the upper end of the recommended range. Short women (<157 cm, or 62 in.) should strive for gains at the lower end of the range.

<sup>b</sup> BMI is calculated using metric units.

<sup>c</sup> The recommended target weight gain for obese women (BMI > 29.0) is at least 6.8 kg (15 lb)

# Gestational Weight Gain Guidelines 2009

## WEIGHT GAIN DURING PREGNANCY

REEXAMINING THE GUIDELINES

**TABLE S-1** New Recommendations for Total and Rate of Weight Gain During Pregnancy, by Prepregnancy BMI

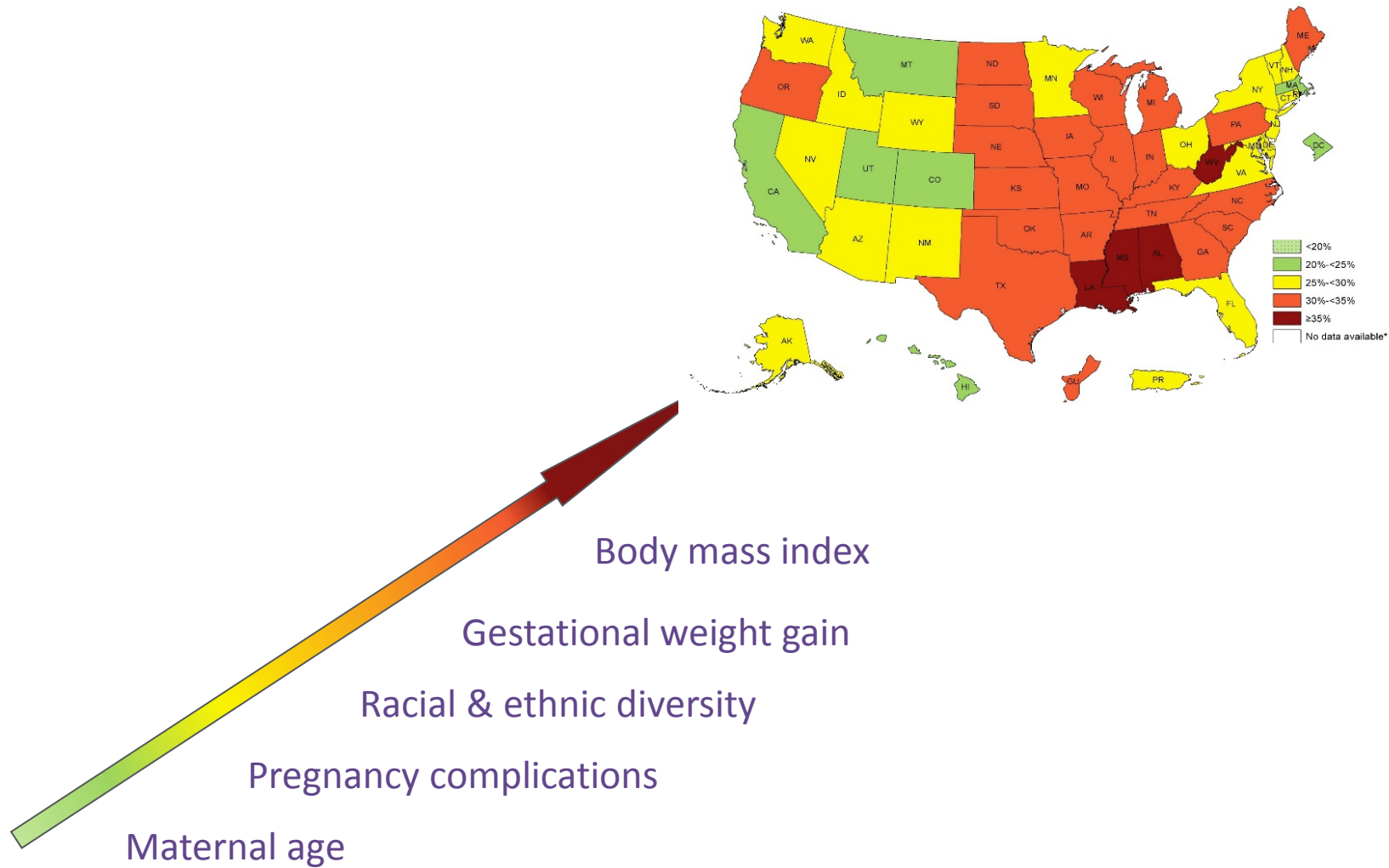
| Pregpregnancy BMI                            | Total Weight Gain |                 | Rates of Weight Gain*<br>2nd and 3rd Trimester |                             |
|--|-------------------|-----------------|--|-----------------------------|
|  | Range<br>in kg    | Range<br>in lbs | Mean (range)<br>in kg/week                     | Mean (range)<br>in lbs/week |
| Underweight (< 18.5 kg/m <sup>2</sup> )      | 12.5-18           | 28-40           | 0.51 (0.44-0.58)                               | 1 (1-1.3)                   |
| Normal weight (18.5-24.9 kg/m <sup>2</sup> ) | 11.5-16           | 25-35           | 0.42 (0.35-0.50)                               | 1 (0.8-1)                   |
| Overweight (25.0-29.9 kg/m <sup>2</sup> )    | 7-11.5            | 15-25           | 0.28 (0.23-0.33)                               | 0.6 (0.5-0.7)               |
| Obese (≥ 30.0 kg/m <sup>2</sup> )            | 5-9               | 11-20           | 0.22 (0.17-0.27)                               | 0.5 (0.4-0.6)               |

\* Calculations assume a 0.5-2 kg (1.1-4.4 lbs) weight gain in the first trimester (based on Siega-Riz et al., 1994; Abrams et al., 1995; Carmichael et al., 1997).

NOTE: Guidelines the same **regardless** of:

- Age
- Race-ethnicity
- Obesity classes
- Height

# What Changed in 20 Years?



# Review of National Guidelines

| Guidelines                        | Weight gain  | Supplements                    | DM screening           | Thromboprophylaxis  |
|-----------------------------------|--|--------------------------------|------------------------|---|
| <b>US</b>                         | 5-9kg<br>(note that GWG is not a Healthy People 2020 goal) | Standard PNV                   | Early                  | SCDs for CD   |
| <b>UK</b>                         | Do not weigh routinely; no goals                           | 5mg folic acid<br>10µg vit D   | 24-28 wks              | LMWH pregnancy & up to 6 weeks PP depending on risk factors |
| <b>Canada</b>                     | “at least 15lbs”   | Standard PNV                   | “as early as possible” | Individualize management                                    |
| <b>Ireland</b>                    | Consider weighing; no goals                                | 5mg folic acid<br>10µg vit D   | 24-28 wks              | Individualize management                                    |
| <b>Australia/<br/>New Zealand</b> | 5-9kg per IOM  | 5mg folic acid<br>150µg iodine | “as early as possible” | Individualize management                                    |

Pregnancy =

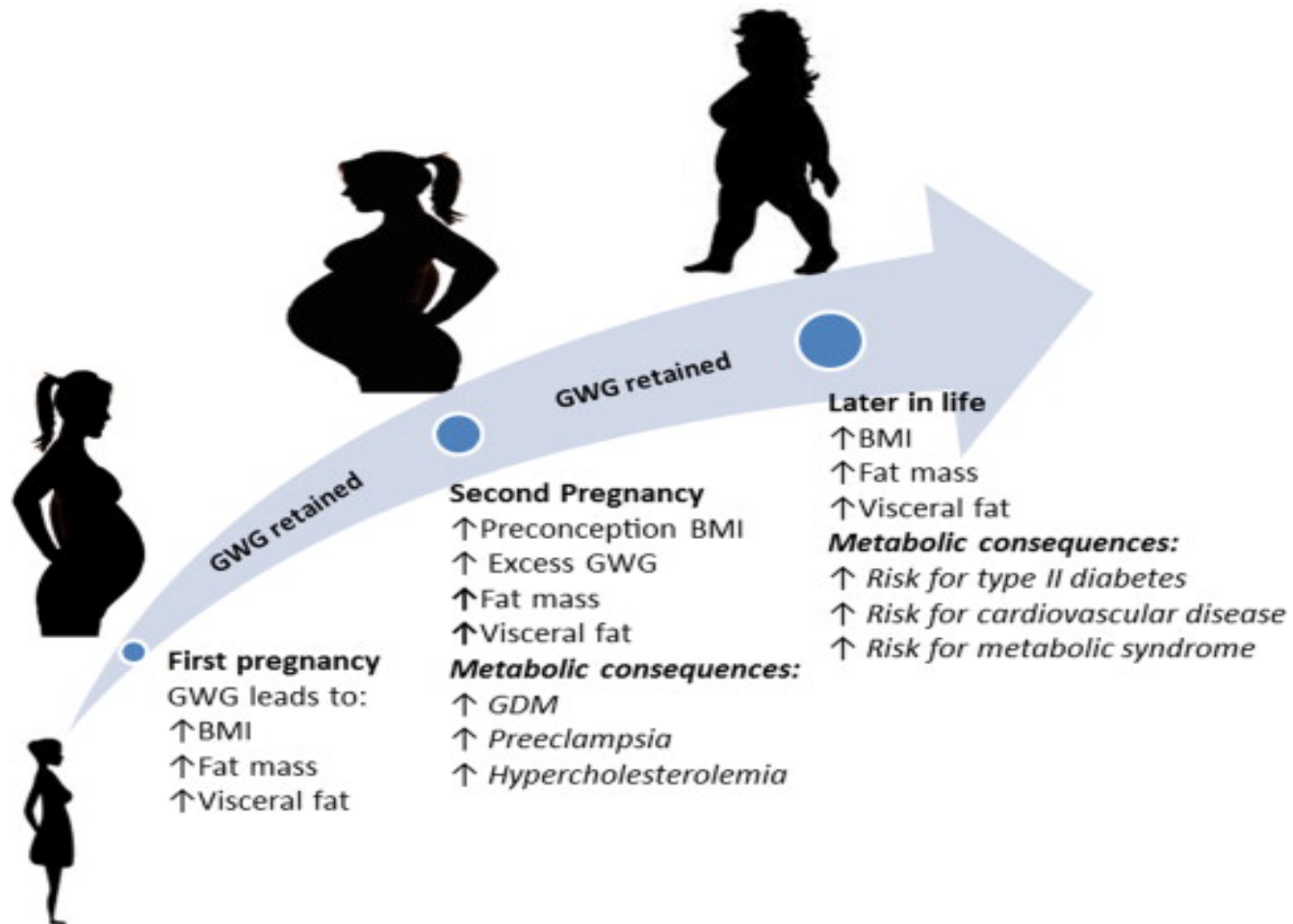
Teachable Moment or Motivational Factor =

Ideal Time to Intervene

Assumption: GWG is modifiable

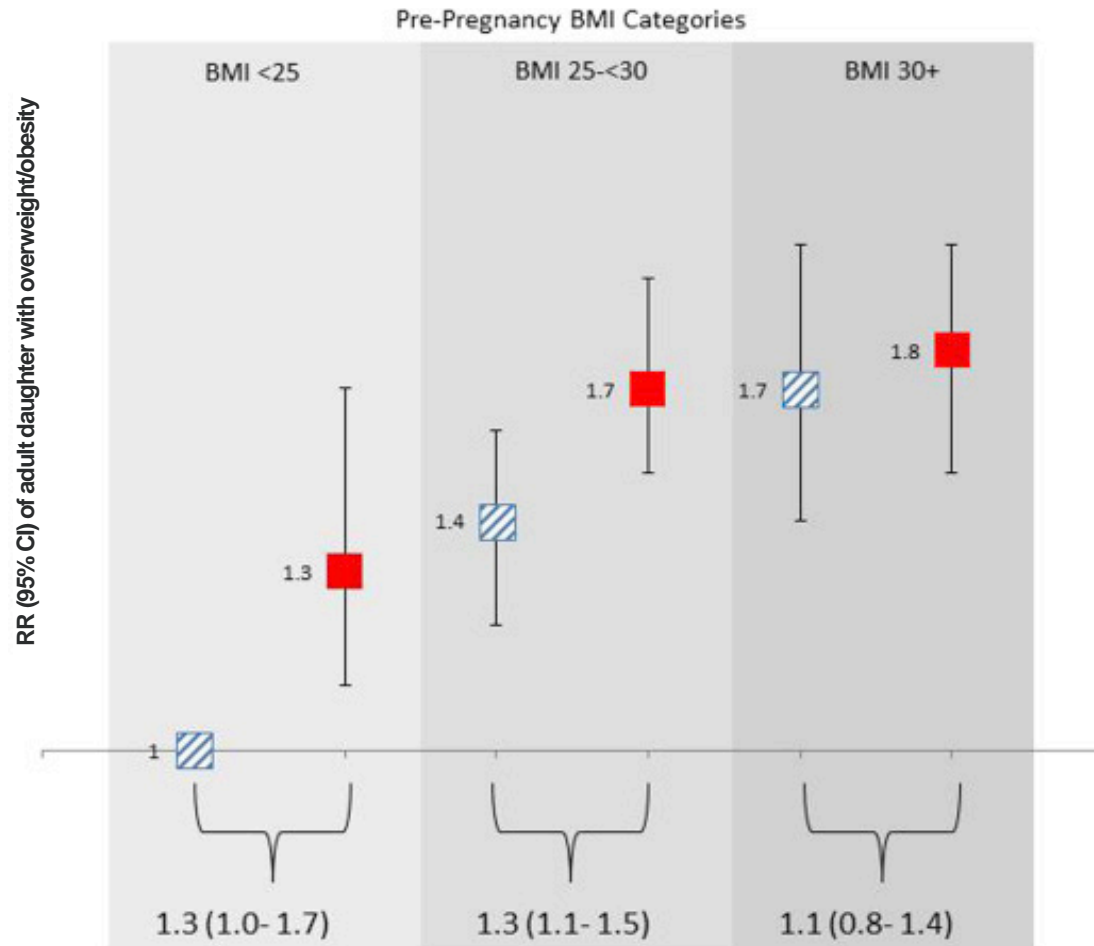
# Pregnancy as a Window to Future Health:

## Excessive GWG and Obesity



# Risk of Excessive GWG – Not Just for Women with Obesity

Maternal weight gain in excess of pregnancy guidelines is related to daughters being overweight 40 years later

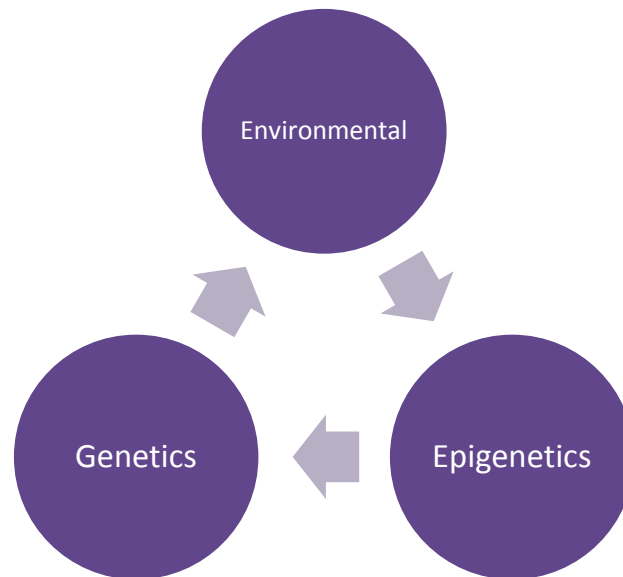


Risk of having an adult daughter with overweight/obesity by maternal pre-pregnancy BMI and gestational weight gain guidelines.

Relative risk of having an adult daughter with overweight/obesity in mothers who exceeded (solid, red) and did not exceed (striped, blue)

## It is Also Important to Address GWG Because...

- Several theories suggest that in utero nutrition may impact chronic diseases such as diabetes, hypertension, and other metabolic diseases later in life in the offspring.

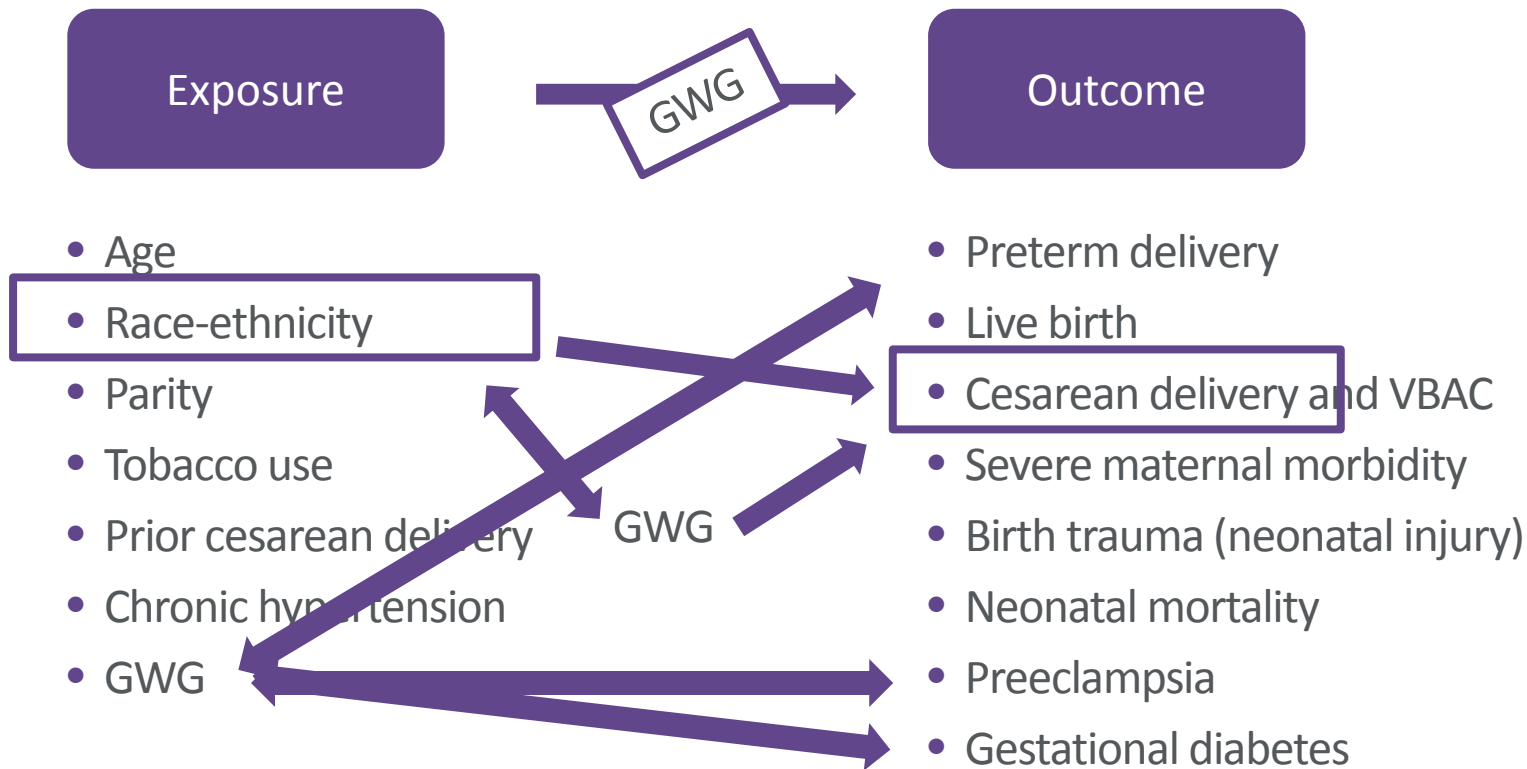




# “You Are What Your Mother Ate.”



# Challenge of Research: Gestational Weight Gain as an Exposure & Outcome?



# Preconception and Obesity

- Recommendation
  - Weight loss prior to pregnancy
- How?
  - Lifestyle interventions, etc.
- Who?
  - Obstetricians, GPs, nurse midwives
- Nutritional supplements?
  - Folic acid and iodine (RCOG, Ireland, Australia)
- Few intervention studies test this (weight loss prior to pregnancy and future perinatal outcomes)
  - Small studies of women who had bariatric surgery
    - Women with obesity who lost weight had offspring with reduced risks for obesity (Smit 2009)
  - Cochrane Systematic Review (Opray 2015)
    - “Directed preconception health programs and interventions for improving health outcomes for women with overweight or obesity”
    - N=0

# Health Behavior Interventions for GWG

- To evaluate effectiveness and safety of diet or exercise or both interventions for preventing excessive GWG
- 49 RCTs with 11,444 women
- Diet or exercise or both reduced excessive GWG by 20%
  - RR 0.8 (0.73-0.87)
  - High-quality evidence
- Diet or exercise or both increased low GWG
  - RR 1.14 (1.02-1.27)
  - Moderate-quality evidence
  - No effect on CD, preterm birth, macrosomia, neonatal outcomes  
(shoulder dystocia, hypoglycemia, hyperbilirubinemia, birth trauma)

# Health Behavior Interventions for Overweight or Obesity

| Trial Name/Year | Outcomes                  |
|-----------------|---------------------------|
| LIP 2011        | ↓GWG ↑birthweight         |
| ROLO 2012       | ↓GWG, ↔ neonatal outcomes |
| TOP 2014        | ↓GWG, ↔ neonatal outcomes |
| PREGGIO 2014    | ↓birthweight              |
| LIMIT 2014      | ↔ GWG or LGA infants      |

Stay tuned for more data emerging from **LIFEMOMS** data- intensive behavioral lifestyle interventions focusing on diet and physical activity among women with overweight and obesity resulted in significantly lower proportion of excess GWG- modest beneficial effect- consistent across racial and ethnic and SES groups

Peaceman AM, et al Lifestyle interventions limit gestational weight gain in women with overweight or obesity: LIFEMOMS Prospective meta-analysis. Obesity 2018; 26(9): 1396-1404.

# Does Type of Prenatal Care Matter? Retrospective Cohort Study

- Objective: Compare GWG in Centering vs. traditional prenatal care
- Inclusion:
  - 1) 2011-2015
  - 2) Height, initial/final weight available
  - 3) 1<sup>st</sup> trimester PNC
  - 4) Livebirth at term
  - 5) Delivery at network hospital
- Analysis
  - Propensity score matching for age, BMI, nulliparity, marital status
  - Final sample = 409 women
- Results
  - No differences in GWG
  - Unmeasured confounders likely responsible for GWG
    - Diet/exercise
    - Counseling practices
  - May have expected more inadequate GWG

# Obstetrical Practice

(1) Know the guidelines (stay aware of when they are updated)

(2) Counsel women on the guidelines

Early

Individualize

(3) Plot GWG and compare (good visual)

(4) Motivational interviewing

Early

Frequent

(5) Problem list (more likely to address)

ICD10 codes for abnormal/low/insufficient/excessive/poor GWG

(6) Refer (don't do it alone- and refer early)

(7) It's safe to exercise- activity monitoring devices

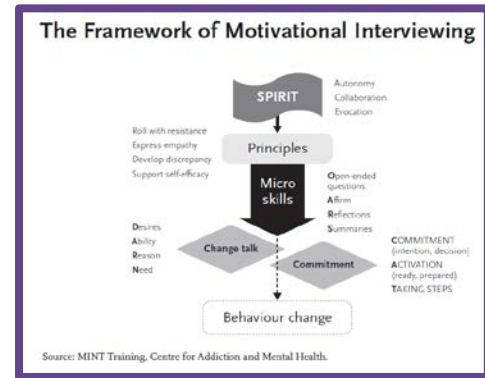
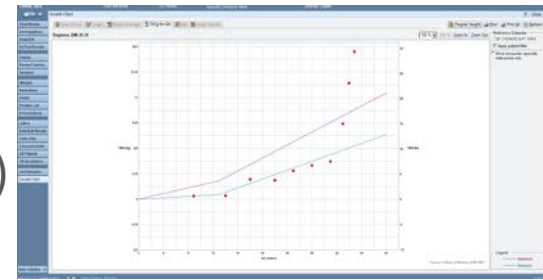
(8) Sleep!

(9) Other resources

(10) Use clinical space

Waiting and exam rooms with posters/education materials

Clinical workspace areas free of soda cans/fastfood wrappers



# BIAS/Discrimination

- Obstetric care and management of mothers with obesity is significantly undermined when there is bias and stigma present.
  - Clinicians tend to perceive women with obesity and overweight as having poorer self-management behaviors and report less positive attitudes for these pregnant women as well
- The NICHD Community Child Health Network Study data of 214 women were recently examined – after adjusting for covariates including race/ethnicity and pre-pregnancy BMI, weight related everyday discrimination was associated with greater postpartum depressive symptoms at 1 month and 1 year postpartum. And weight related everyday discrimination was also associated with greater pregnancy weight gain and greater weight gain in excess of IOM/NAM recommendations and greater weight retention at 1 year postpartum.  
(<https://www.nichd.nih.gov/research/supported/cchn>)

Mulherin K, Miller YD, Barlow FK, Diedrichs PC, Thompson R. Weight stigma in maternity care: women's experiences and care providers' attitudes. *BMC Pregnancy and Childbirth* 2011;13:19.

*Incollingo Rodriguez AC, Tomiyama aJ, Guardino CM, Dunkel Schetter C. Association of weight discrimination during pregnancy and postpartum with maternal postpartum health. Health Psychology* 2019;38(3):226-237.



**Like I said...  
It really does take a village  
and it is about modifying architecture**





- \*Health Inequities in obesity do NOT just happen

- \*Architecture and Design –Applies to many things we do in public health and medicine- to improve our training practice design and processes, care of people, and to be true champions of health and health equity. How much Health Equity Education is infused in health professionals education?

- \*Bridging Research to Practice- Need for more PRAGMATIC design and approaches. Knowledge translation not just to the bedside but to the community and then knowledge from the community back to the bench- what we learn from our various on the ground, community PARTNERED implementation experiences needs to inform “the bench”/ future implementation

- \*Resources are required and challenging.

- \*It takes a village- it is the WE not the ME– partnership and health equity approaches are fundamental to such required transformation.

- \*Potential power of SDoH integration into EMR and payor / reimbursement change

# Join Me!!!

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<http://labs.feinberg.northwestern.edu/simon/>

**Massive Open Online Course**

<https://www.coursera.org/course/healthcarejobs>

**Cancer Health Equity Collaborative**

[www.chicagohec.org](http://www.chicagohec.org)

**Center for Health Equity Transformation**

[www.feinberg.northwestern.edu/sites/chet/](http://www.feinberg.northwestern.edu/sites/chet/)

**Podcast --Skinny Trees**

[www.skinnytreespodcast.com](http://www.skinnytreespodcast.com)