

First 1,000 Days: Exploring Models That Prepare Children for Success in Health & Development

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Main Points for Discussion

1. The First 1000 Days are critical times in which exposures to a complex array of factors can influence lifelong health and development;
2. Inequalities in child health & development begin in the first 1000 days and are exacerbated by poverty;

Main Points for Discussion

3. Achieving equity in early child health & development will require:
 - ❑ Alignment of individuals and organizations from multiple sectors;
 - ❑ Leveraging emerging science to drive approaches to systems change.



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Main Points for Discussion

The First 1000 Days are critical times in which exposures to a complex array of factors can influence lifelong health and development.

The First 1000 Days: Conception to Age 2

- Growing body of evidence shows that the first 1000 days are critical times in the developing fetus, infant, or young child that influence:
 - Child development, effective learning, adaptive behaviors, lifelong health and well-being;
 - Overweight, obesity, type II diabetes, and cardiovascular health.

Emerging Neuroscience in First 1000 Days



- Early experiences affect the development of brain architecture:
 - Strengthen: Responsive relationships & environments rich in serve and return experiences
 - Weakens: Toxic stress leading to lifelong problems in learning, behavior, physical & mental health

Pregnancy

Postpartum Period

Later Life

Mother

Pre-pregnancy overweight /obesity

Excess weight gain

Excess weight retention

obesity

Later obesity and adverse cardio-metabolic health

Fetus

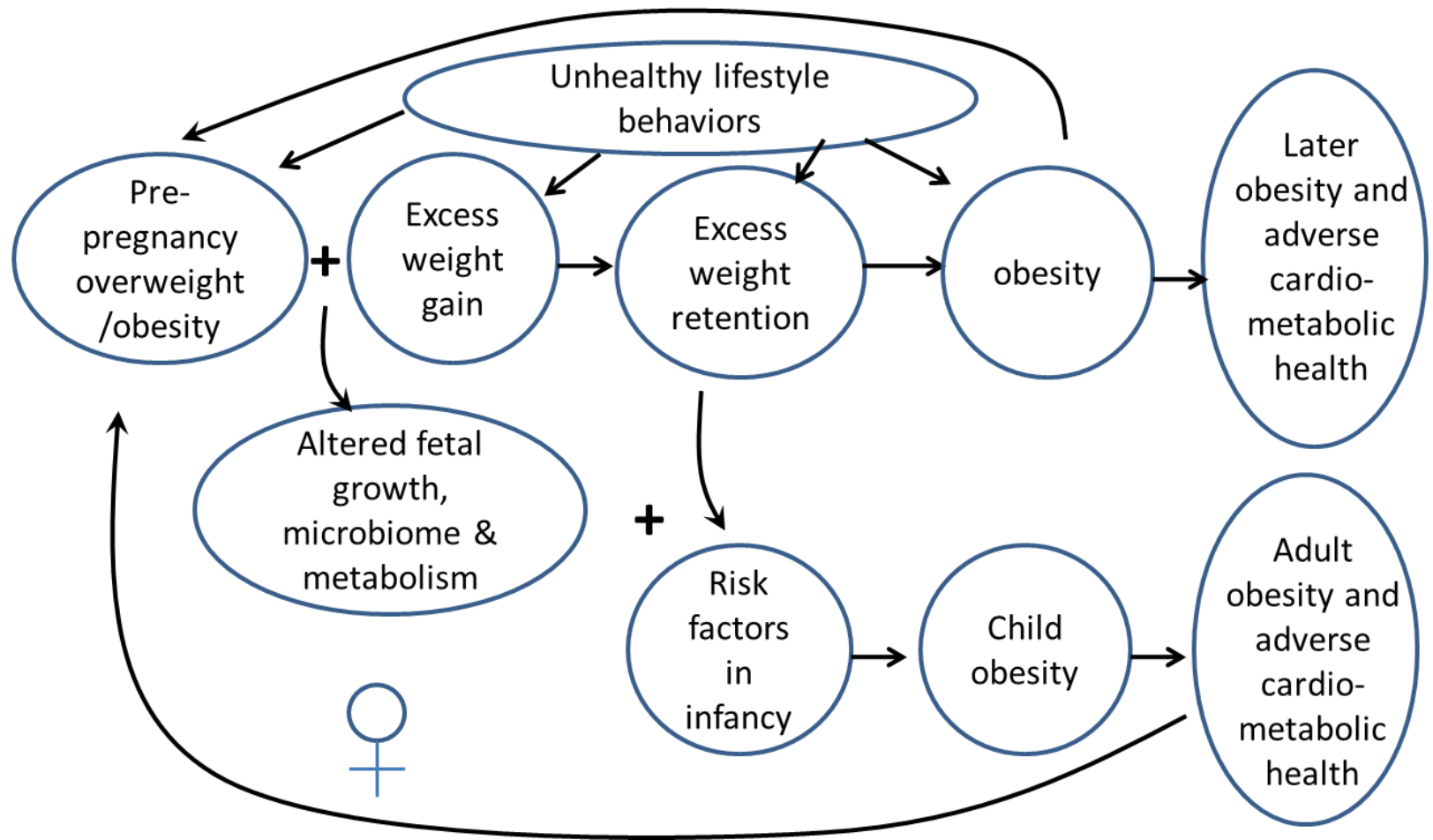
Altered fetal growth, microbiome & metabolism

Risk factors in infancy

Child obesity

Adult obesity and adverse cardio-metabolic health

Child



Selected Determinants of Childhood Obesity

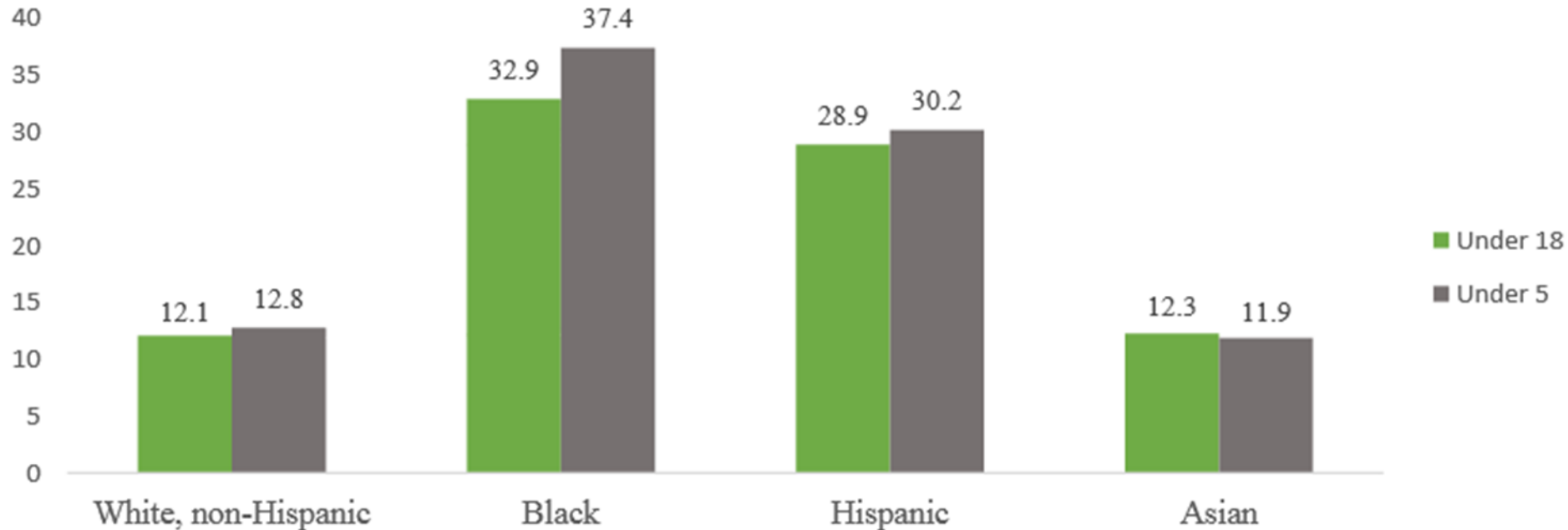
- Gestational weight gain & GDM
- Maternal smoking during pregnancy
- Microbiome alterations
- Gene-environment interactions
- Rapid infant weight gain
- Breastfeeding
- Sleep duration and quality
- Television viewing & TV in bedrooms
- Responsiveness to infant hunger and satiety cues
- Parental feeding practices, eating in the absence of hunger
- Portion sizes
- Fast food intake
- Sugar-sweetened beverages
- Physical inactivity
- Socio-cultural, recreation, & transport environments
- Food & marketing environments

Main Points for Discussion

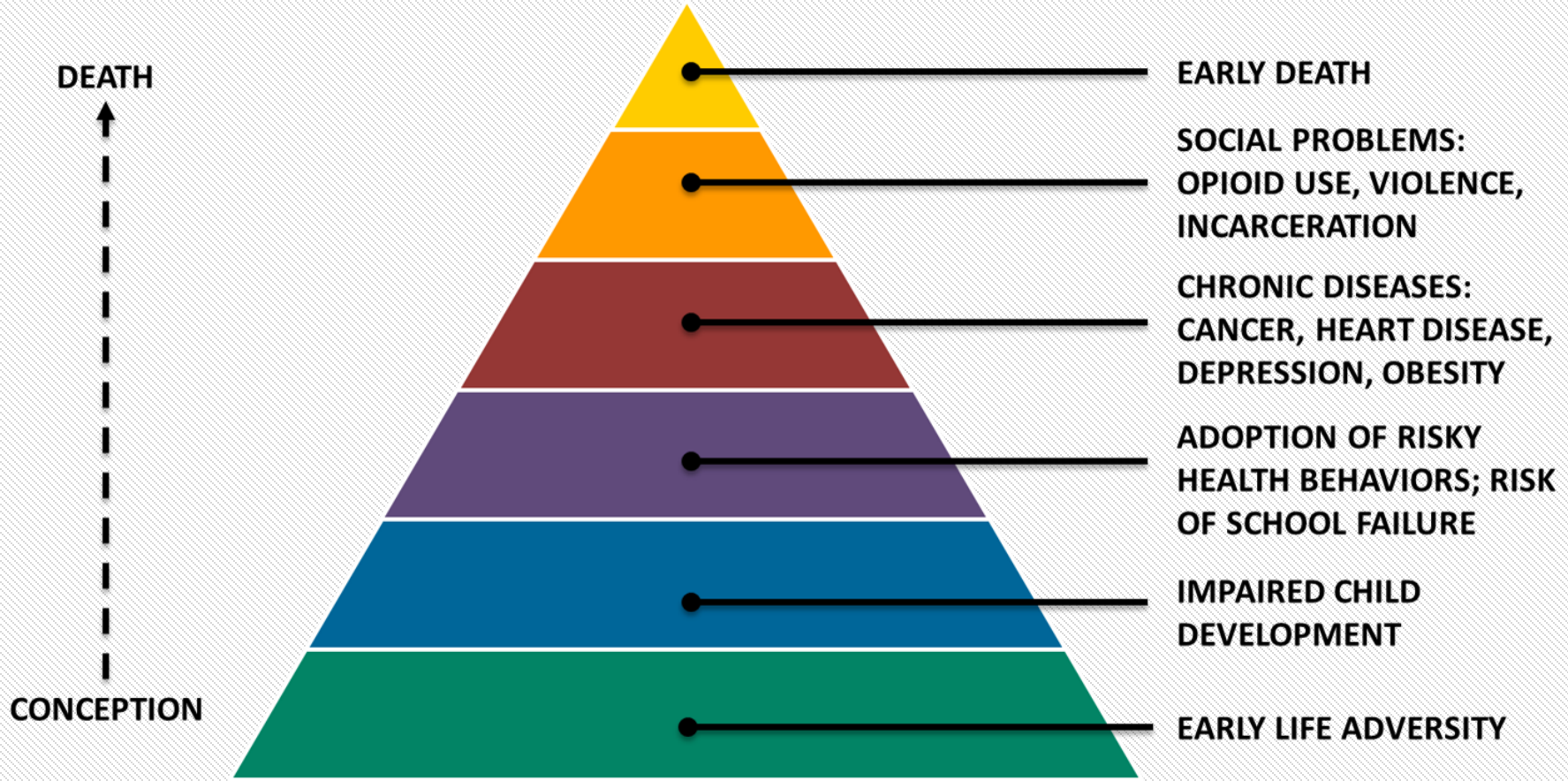
Inequalities in child health & development begin in the first 1000 days and are exacerbated by poverty.

Percentage of Children who are Poor or Low-Income, by Race and Hispanic Origin, 2015

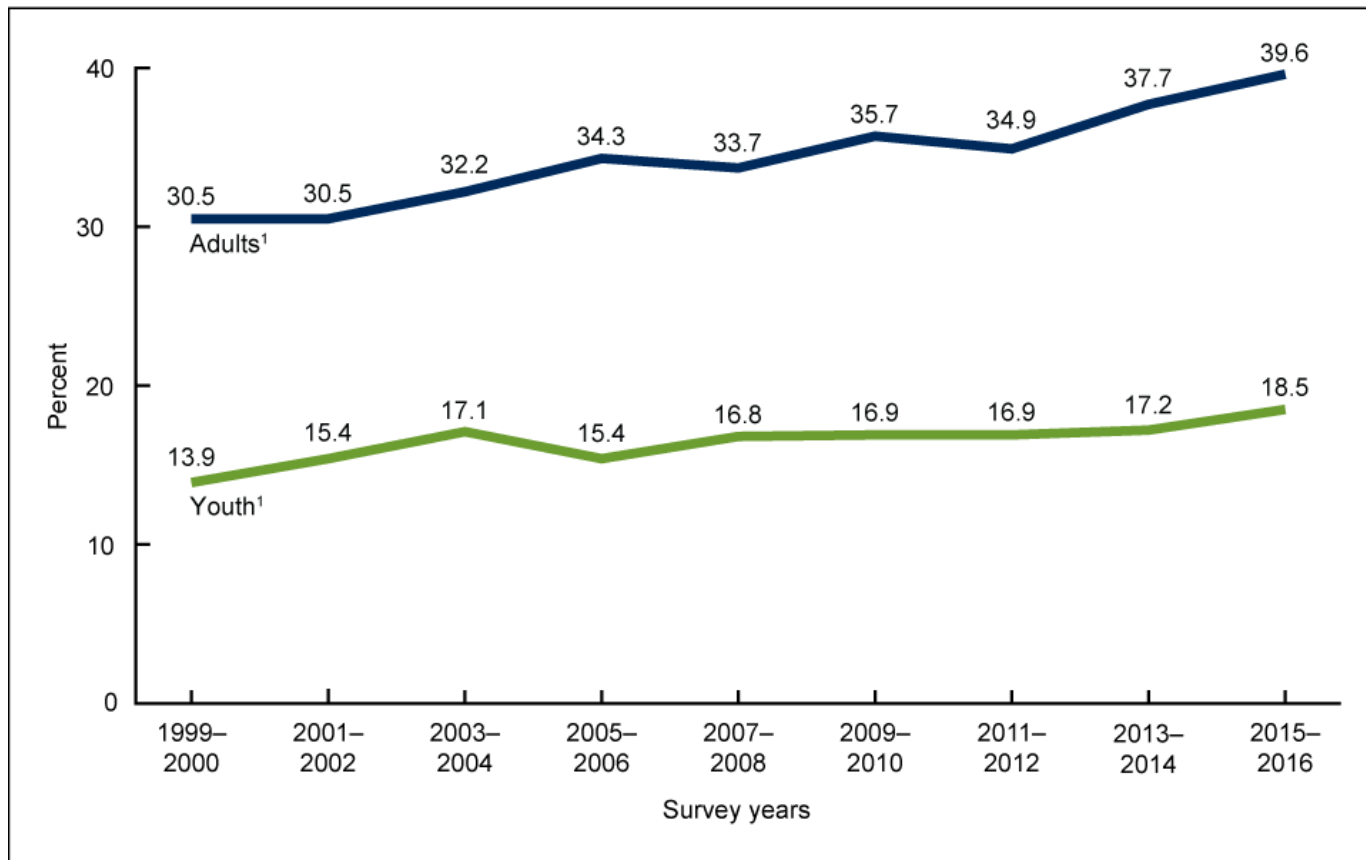
Percent of Children Living in Poverty, by Age and Race, 2015



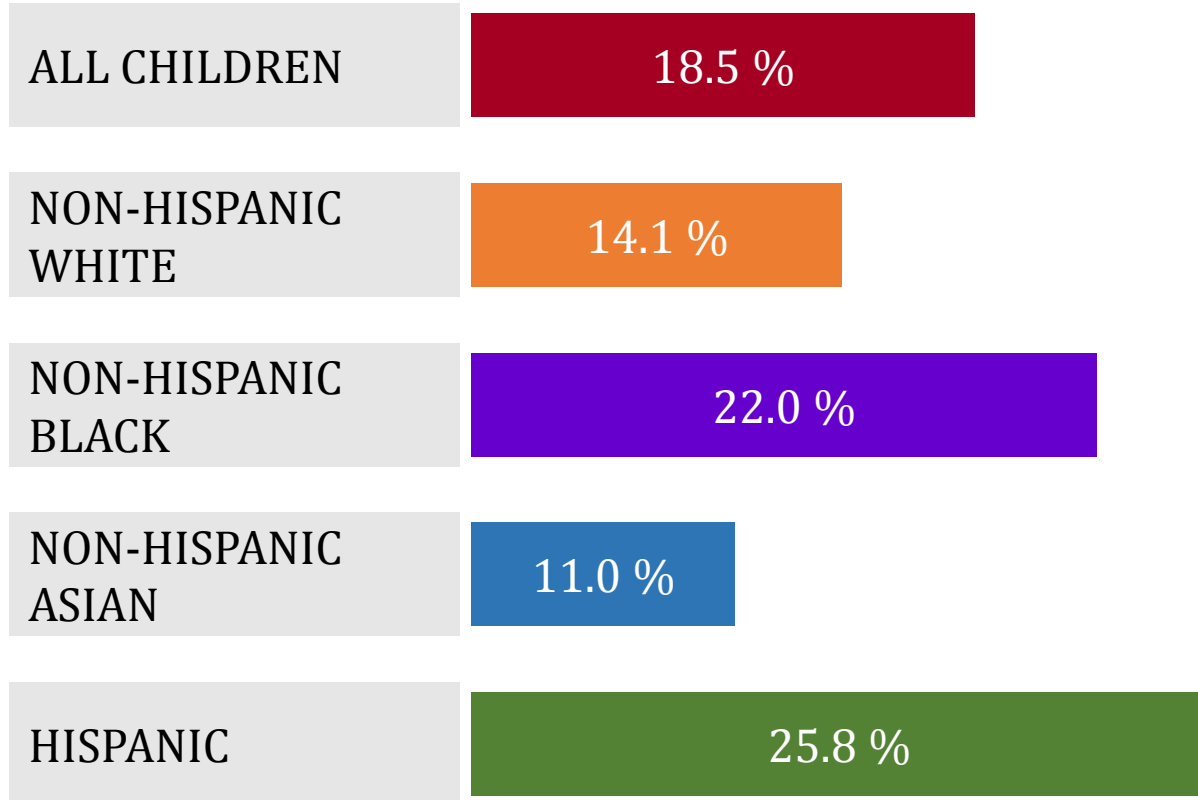
Early Life Adversity Influences Health Throughout Life



Trends in obesity prevalence among adults and youth: 1999–2016



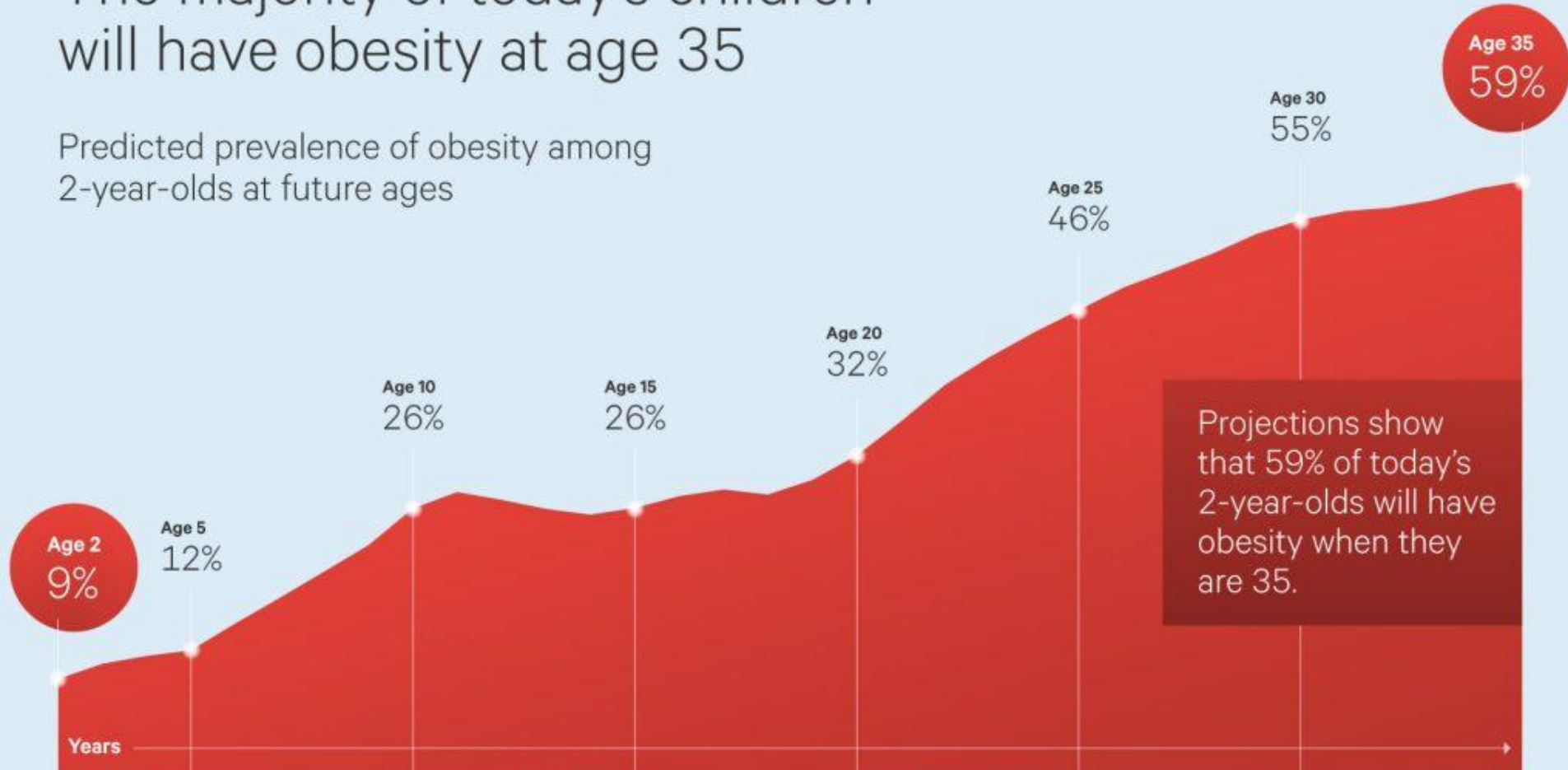
Weighted Prevalence of Obesity in US Children Aged 2 to 19 Years by Race Origin, 2015-2016



Racial and ethnic disparities in obesity are already present by the age of two and persist into adulthood

The majority of today's children will have obesity at age 35

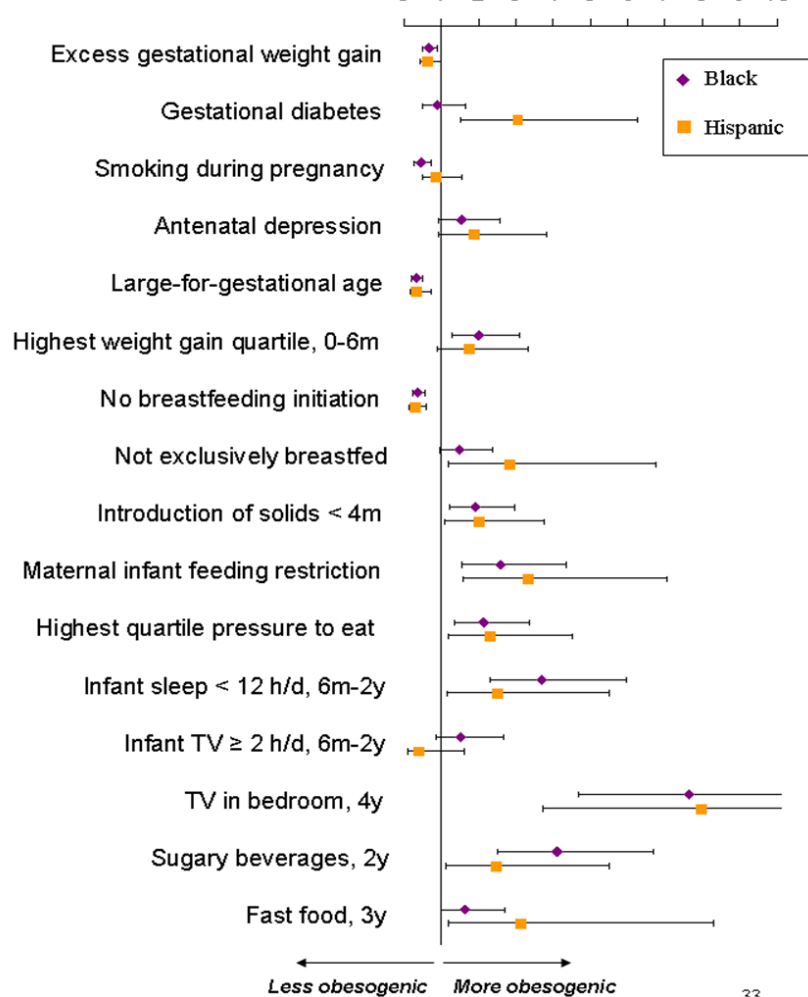
Predicted prevalence of obesity among 2-year-olds at future ages



Projections show that 59% of today's 2-year-olds will have obesity when they are 35.

Odds Ratio

0 1 2 3 4 5 6 7 8 9 10



- Racial/ethnic differences exist in many early life risk factors for childhood obesity (Taveras, et al. *Pediatrics*; 2010)

White House Task Force Report on Childhood Obesity, May 2010

SOLVING THE PROBLEM
OF CHILDHOOD OBESITY
WITHIN A GENERATION

White House Task Force on Childhood Obesity
Report to the President

MAY 2010



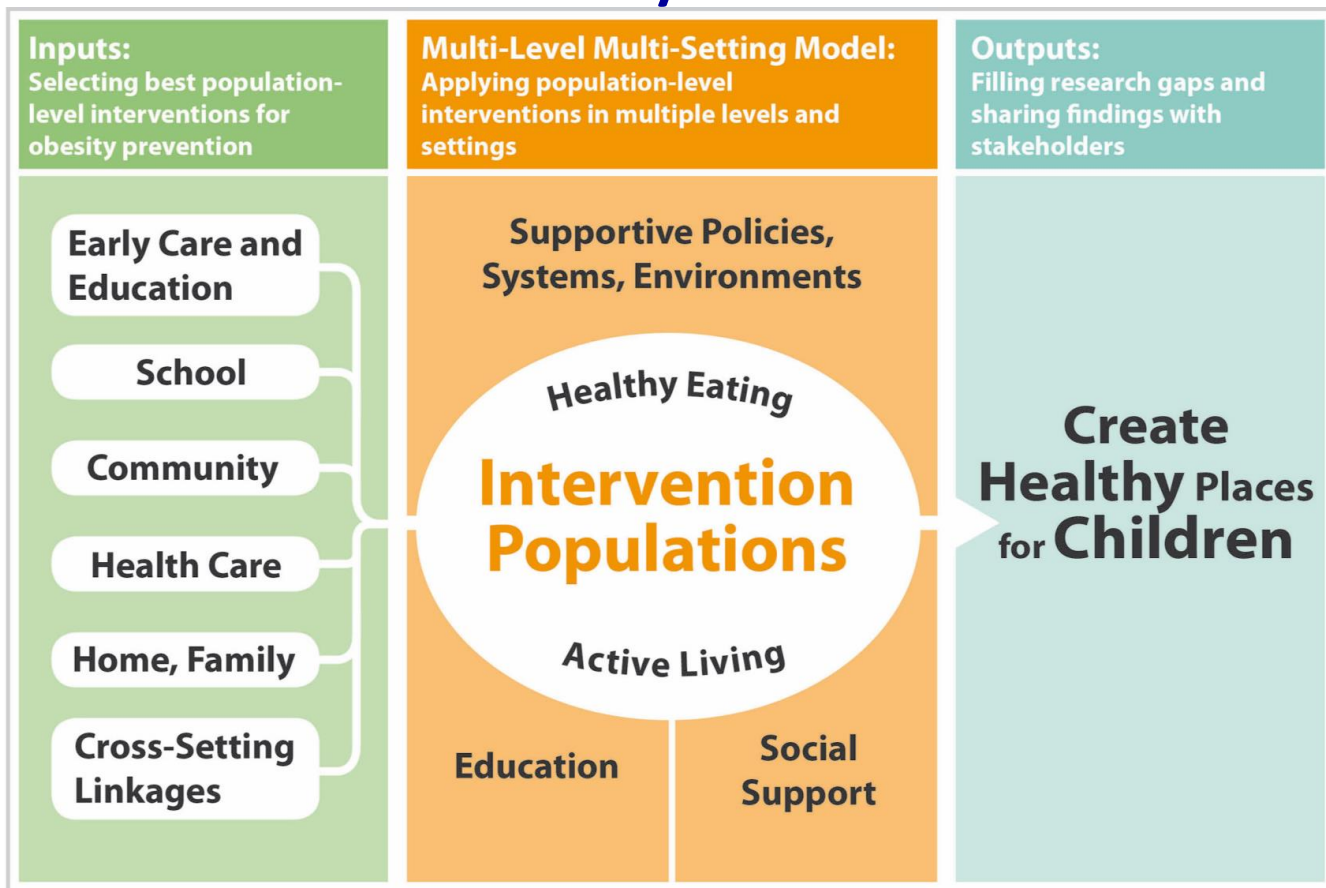
“Racial and ethnic differences in obesity may be partly explained by differences in risk factors during the prenatal period and early life.”

Main Points for Discussion

Achieving equity in early child health & development will require:

- ❑ Alignment of individuals and organizations from multiple sectors;
- ❑ Leveraging emerging science to drive approaches to systems change.

Effectively enhance, leverage, and link early life systems



Reducing the Health Consequences of Early Life Adversity

Interrupt the Cycle in Early Childhood



Coach & Support Caregivers of
Young Children;
Strengthen Community Capacity to
Support Families Living in Poverty



**Mitigate Effects of Adversity and
Social Determinants through
S.M.A.R.T. Programs**

High Risk Adolescents

Opioid Use Disorder

Intimate Partner Violence

Cancer Screening & Care

Obesity Prevention & Treatment



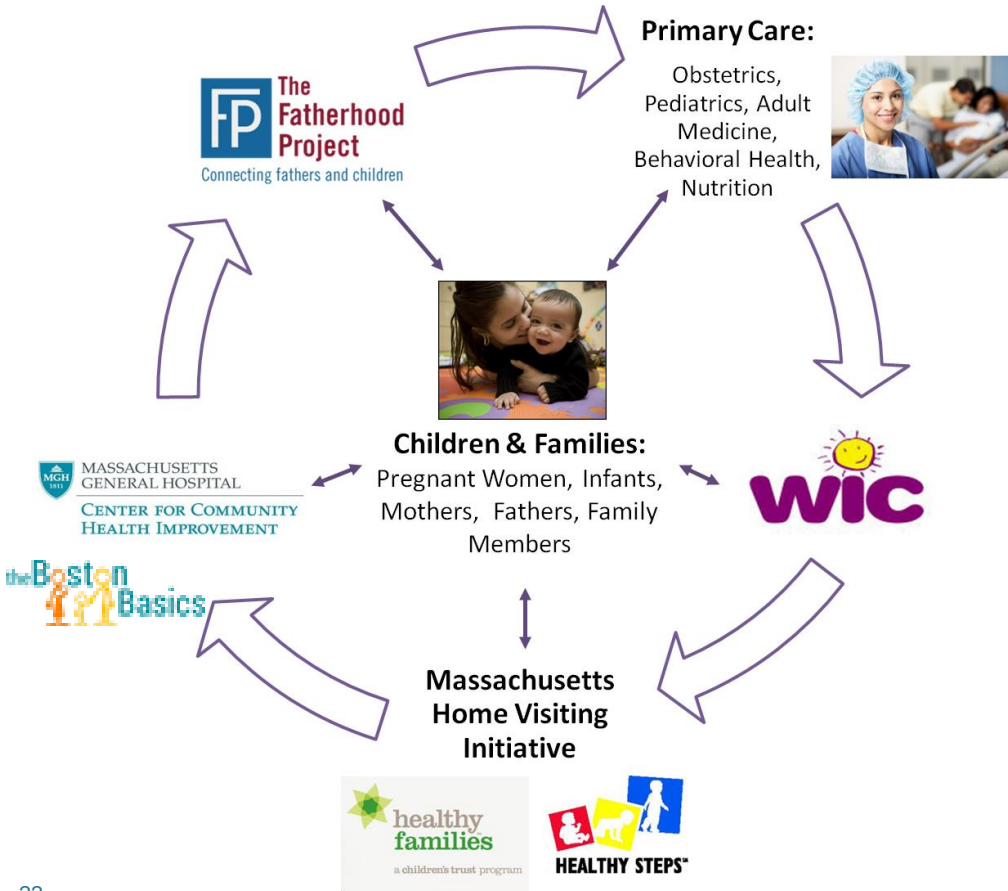
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The First 1000 Days Program Model

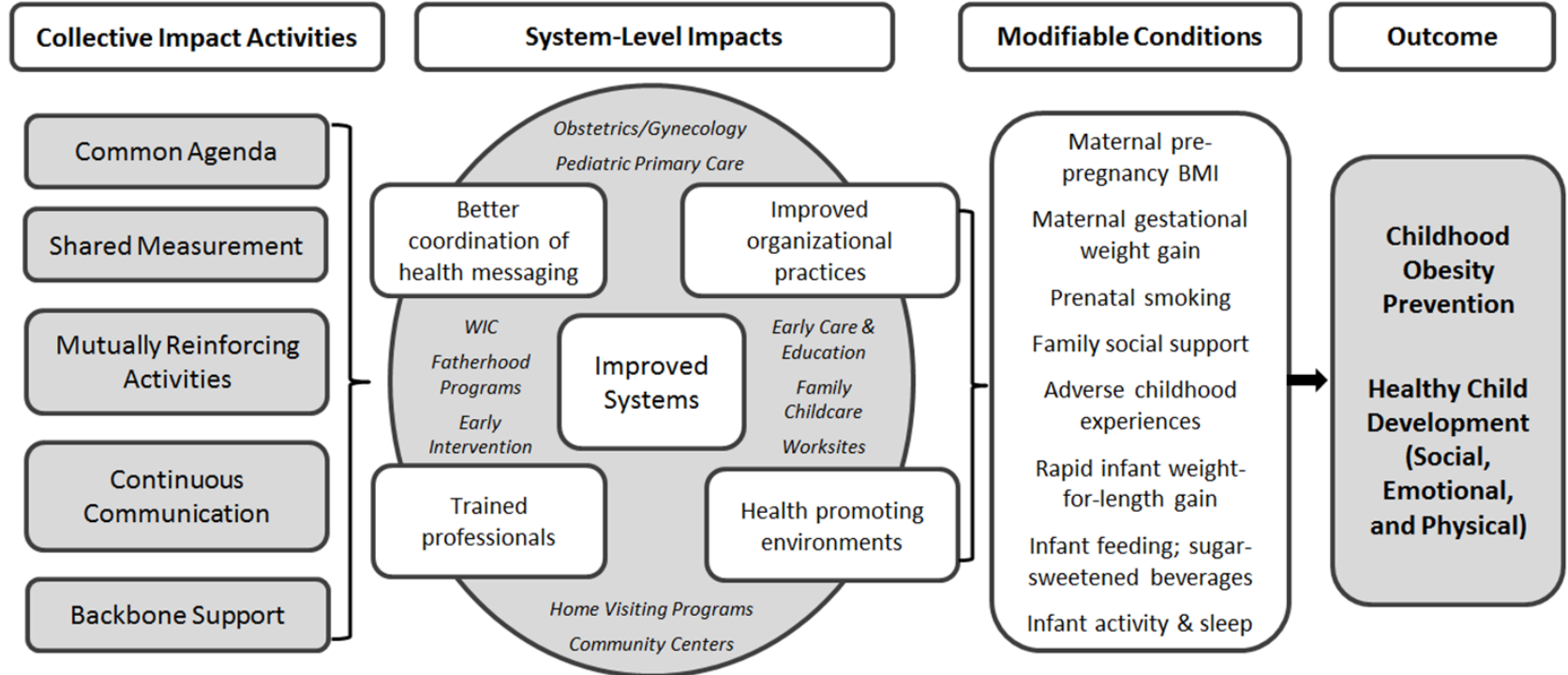


- Cross-sector partnership to prevent obesity and address disparities in early life;
- Collective impact approach engages multiple stakeholders invested in early life/ early childhood;
- Alignment of obesity prevention with promotion of healthy development.

Collective Impact Framework

1. System-wide changes to achieve improved outcomes do not occur as a result of good will alone.
2. Large scale problems such as obesity and health disparities require a highly structured, collaborative effort to achieve substantial “Collective Impact.”
3. Collective Impact has been loosely defined as *“the commitment of a group of important actors from different sectors to a common agenda for solving a specific social problem.”*

Systems-Level Approach to Early Childhood Health & Development



Program Overview

- Maternal-Family Health Promotion;
- Health & Social Determinants Screening, Referrals & Support;
- Health Coaching & Patient Navigation;
- Systems-Level Improvement
- Boston Basics

Healthy Weight Gain in Pregnancy

Your weight at the start of pregnancy was _____ pounds.
Your weight gain in pregnancy should be about _____ pounds.
At _____ weeks of pregnancy, you have gained _____ pounds.

If you gain too much or too little weight, there are more health risks for you and your baby. Plan to gain weight slowly:

- 1 to 4 pounds total during the first 3 months
- 2 to 4 pounds each month for months 4 - 9

To help you gain weight slowly, focus on these 5 goals:

- 1 Eat a healthy diet.**
Choose fruits & vegetables, eat foods that are high in fiber, include protein in most meals, and avoid fast foods. 
- 2 Drink mainly water.**
Your body is healthier without the sugar and artificial sweeteners that are in many other drinks. 
- 3 Be physically active most days.**
Get at least 30 minutes per day of moderate-intensity activity, like fast walking. 
- 4 Get plenty of sleep.**
Your body needs at least 8 hours of sleep each night. 
- 5 Know who you can ask for help.**
Ask your doctor, nurse, partner, friends, or family for help when you need it. 

El cuidado del bebé: del nacimiento hasta el primer mes

- 1** Trate de darle solamente leche materna durante los primeros seis meses. 
- 2** Si le da leche artificial, siga siempre las instrucciones de preparación y use solo la cantidad que diga en la lata. 
- 3** Aprenda las señales que indican que tiene hambre o que está lleno. Dale de comer solo cuando vea señales de hambre y no le de más cuando muestre señales de estar lleno. 
- 4** Aprenda maneras de calmarlo sin darle de comer. 
- 5** Los recién nacidos necesitan 16 o 17 horas de sueño al día. Este tiempo es importante para el desarrollo del cerebro y el crecimiento saludable. 

Program Progress



	N	%
Women Enrolled	855	
Receiving Patient Coaching in OB	818	92%
Delivered	465	52%
1 month old	256	29%
Receiving Coaching in Pediatrics	199	22%
Fathers/Partners Enrolled	131	
Receiving Coaching	116	89%

First 1,000 Days Baseline Demographics

N = 855

	MGH Chelsea n= 399	MGH Revere n= 364	DotHouse Health n= 92
Race and Ethnicity	N (%)	N (%)	N (%)
Hispanic or Latino	289 (76)	103 (30)	22 (26)
Black or African American	26 (7)	29 (8)	24 (29)
White	52 (14)	164 (47)	9 (11)
Asian or Other	12 (3)	50 (14)	29 (35)
Annual Income			
<\$10,000	73 (22)	31 (9)	18 (22)
\$10,000- 20,000	77 (23)	74 (22)	23 (28)
\$20,001-50,000	122 (36)	140 (42)	30 (37)
>\$50,000	66 (20)	86 (26)	10 (12)

Baseline Demographics Cont'd

	MGH Chelsea n= 399	MGH Revere n= 364	DotHouse Health n= 92
Maternal Age, mean (SD)	28.9 (6.5)	30.4 (5.7)	-
Gestational age at enrollment (wks), mean (SD)	10.6 (6.5)	11.3 (6.6)	9.5 (6.7)
Pre-gravid BMI, n (%)			
BMI < 18.5	10 (3)	10 (3)	-
BMI 18.5- 24.9	122 (31)	128 (35)	-
BMI 25-29.9	130 (33)	129 (36)	-
BMI ≥ 30	131 (33)	95 (26)	-

Preliminary Baseline

Social Determinants of Health

	Chelsea n= 399	Revere n= 364	DotHouse n= 92
	N %	N %	N %
Housing Insecurity	127 (34.4)	47 (13.3)	15 (18.1)
Food Insecurity	95 (24.7)	51 (14.2)	26 (30.2)
Enrolled in SNAP	87 (22.7)	54 (14.9)	18 (20.5)
Enrolled in WIC	119 (31.1)	111 (30.9)	24 (27.6)

Summary

1. Exposures in the First 1000 Days influence lifelong health and development;
2. Achieving equity in child health & development will require multi-sector partnership, leveraging emerging science, and systems change.
3. Preliminary results from the First 1000 Days program suggest improvements in behavioral risk factors and access to support services, reduced pregnancy anxiety, and no adverse effects on birth outcomes.

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