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Texas Collaborative for
Healthy Mothers & Babies

2023 TCHMB Summit
February 16-17

What are Social Determinants?

Thursday, February 16

10:45 - 12:00 PM

MODERATOR: Charleta Guillory, M.D., MPH, FAAP, Vice Chair TCHMB, Professor of Pediatrics in the Section of Neonatology at Baylor College of Medicine and Director of the Texas Children›s Hospital Neonatal-Perinatal Public Health Program

LYNN M. YEE, M.D., MPH

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What are Social Determinants?
Social determinants of health & how they impact maternal and neonatal outcomes

Lynn M Yee, MD, MPH

Associate Professor with Tenure

Thomas J. Watkins Memorial Professor of Obstetrics and Gynecology

Associate Chief of MFM for Research

Department of Obstetrics and Gynecology

Northwestern University Feinberg School of Medicine

No conflicts of interest

Language and positionality

- Inclusive language and the limits thereof
- Focus on individual- and community-level social determinants and needs, less on policy
- Positionality: cis-gender, heterosexual, mother, MFM, urban academic institution, researcher, multiracial Asian, Chicago

Learning objectives

1. Understand the concept of "social determinants of health" and the root causes of imbalances that affect social determinants

2. Consider how social and structural determinants influence the health of birthing people and their offspring

3. Reflect on how clinicians, health systems leaders, and researchers can generate equity-promoting solutions by addressing social determinants of health

Outline

- Rationale for understanding social determinants of health (SDoH)

- Definitions and types of SDoH

- Social ecological model: a framework to understand SDoH in the maternal-child health context

- Intervening on social needs in maternity care

Setting the stage:
Why should we think about SDoH?

MORTALITY GAP FOR U.S. MOMS

In the U.S., black women who are expecting or who are new mothers die at rates similar to those of the same women in lower-income countries, while the maternal mortality rate for white U.S. mothers more closely resembles rates in more affluent nations.

Roeder, HSPH magazine 2019

Sources: U.S. ratios (2011-2013): CDC Pregnancy Mortality Surveillance System; Global ratios (2015): UNICEF

NON-HISPANIC BLACK WOMEN

40
United States

Comparison: Women of all races

44
Brazil

40
Malaysia

38
Mexico

36
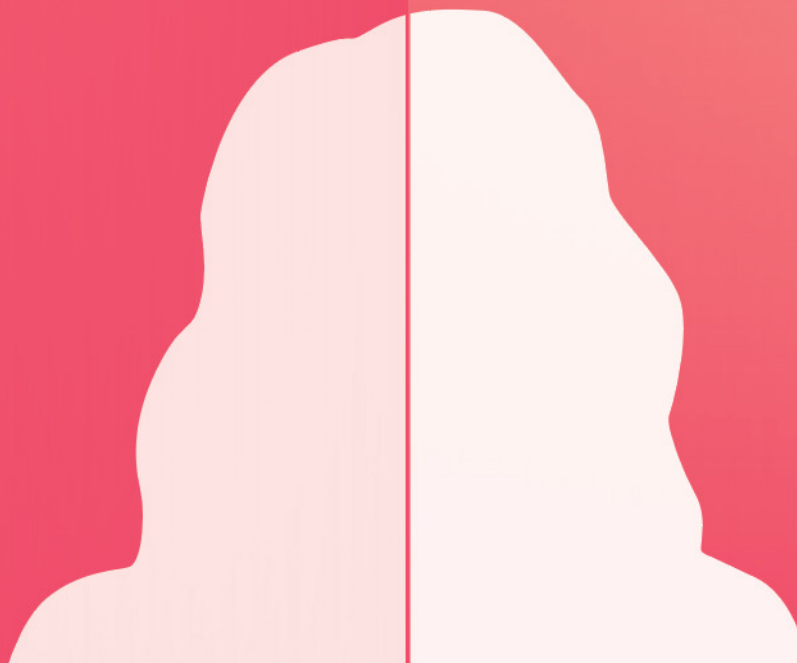Uzbekistan

Maternal deaths per 100,000

NON-HISPANIC WHITE WOMEN

12.4
United States
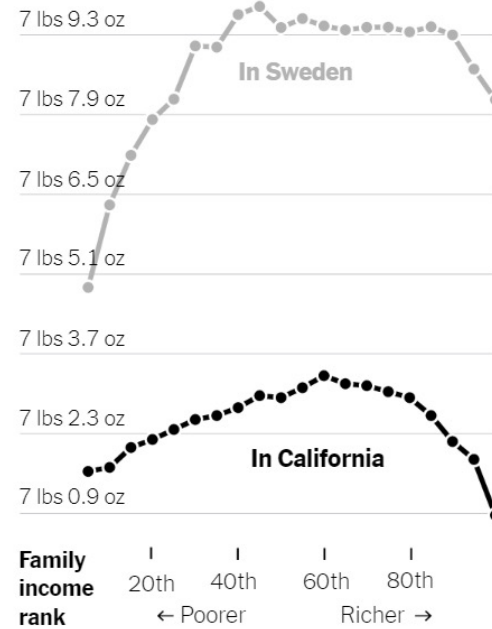
11
New Zealand

9
United Kingdom

8
France

5
Japan

Swedish women have **heavier babies** at every income level …

Birth weight

In Sweden

In California

Family income rank ← Poorer / Richer →

… and far lower instances of **preterm birth**.

Preterm births per 100,000

In California

In Sweden

Family income rank ← Poorer / Richer →

https://www.nytimes.com/interactive/2023/02/12/upshot/child-maternal-mortality-rich-poor.html

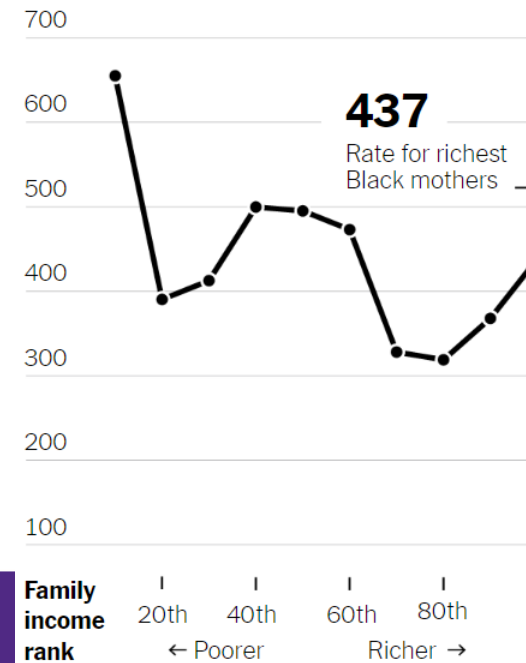# Money Protects White Mothers and Babies. It Doesn't Protect Black Ones.
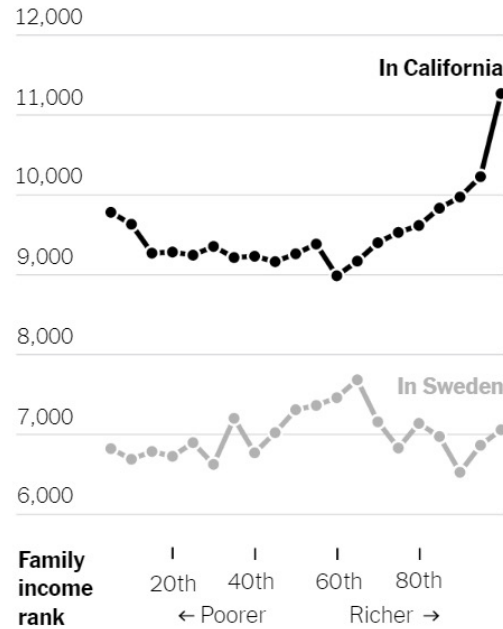
The researchers found that maternal mortality rates were just as high among the highest-income Black women as among low-income white women. Infant mortality rates between the two groups were also similar.
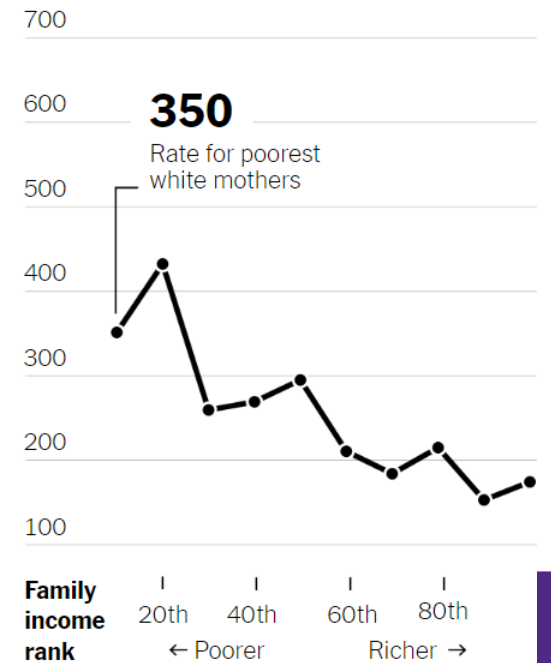
The richest Black women have **infant mortality rates** at about the same level as the poorest white women.

Infant deaths per 100,000 for mothers who are …

Black

437 Rate for richest Black mothers

Family income rank ← Poorer / Richer →

White

350 Rate for poorest white mothers

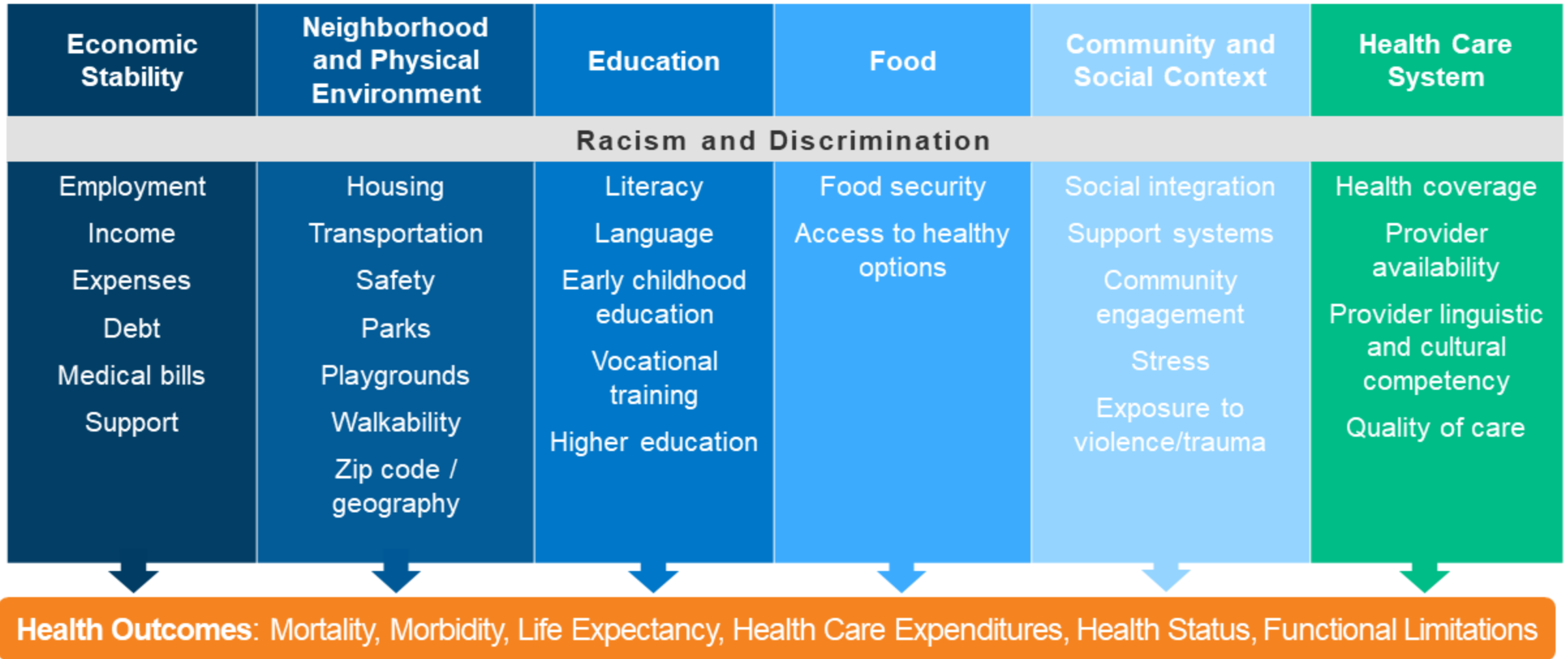Family income rank ← Poorer / Richer →

Figure 5

Social and Economic Factors Drive Health Outcomes

Economic Stability	Neighborhood and Physical Environment	Education	Food	Community and Social Context	Health Care System
Racism and Discrimination					
Employment	Housing	Literacy	Food security	Social integration	Health coverage
Income	Transportation	Language	Access to healthy options	Support systems	Provider availability
Expenses	Safety	Early childhood education		Community engagement	Provider linguistic and cultural competency
Debt	Parks	Vocational training		Stress	Quality of care
Medical bills	Playgrounds	Higher education		Exposure to violence/trauma	
Support	Walkability				
	Zip code / geography				

Health Outcomes: Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations

KFF

Figure 5

Social and Economic Factors Drive Health Outcomes

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Medical bills	Playgrounds			Exposure to violence/trauma	
Support	Walkability				

Perinatal health outcomes:
- Maternal outcomes – HDP, CS, PPH, death
- Neonatal outcomes – PTB, SGA, LGA, NICU, death
- Patient-Reported outcomes – experience with care, self-reported health, health-related quality of life
- Cost

KFF

Pregnancy as a window of opportunity

ACCESS

ACCEPTABILITY & MOTIVATION

POSITIVE SPREAD

LIFE COURSE BENEFIT
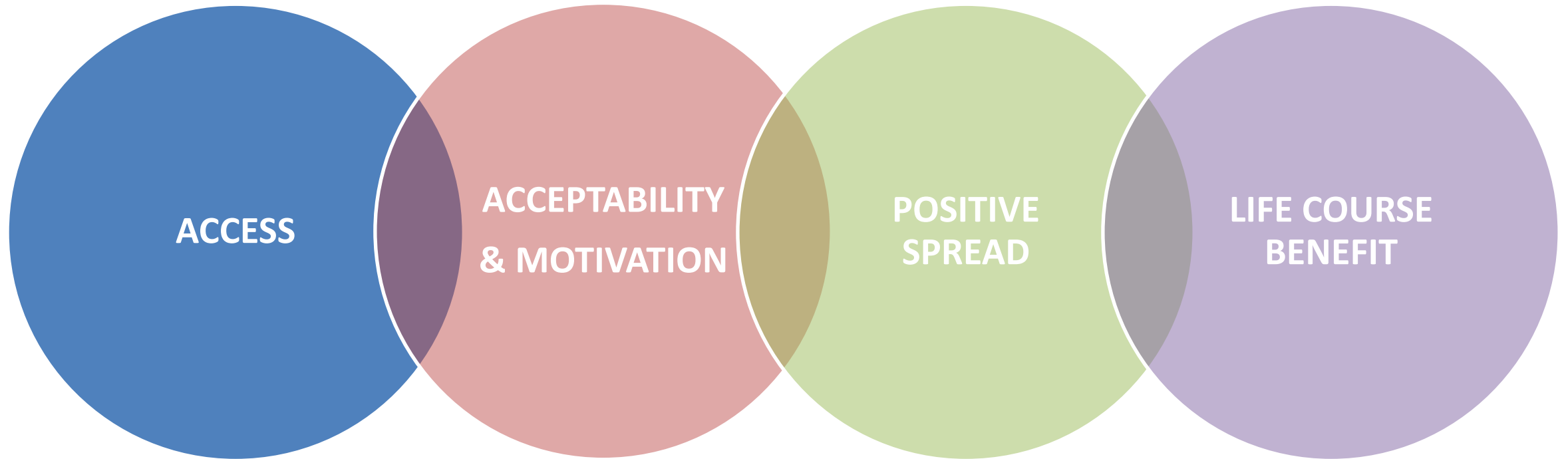
Social justice rationale

"The goal of social justice is full and equal participation of all groups in a society that is <u>mutually shaped to meet their needs</u>.

Social justice includes a vision of society in which the <u>distribution of resources is equitable</u> and all members are psychologically and physically safe and secure."

-Bell, 2013

Health Equity

- Attainment of the highest level of health for all people

- Requires valuing everyone equally with focused <u>and</u> ongoing societal efforts to address avoidable inequalities, historical and contemporary injustices, and social determinants of health – and to eliminate disparities in health and health care

Healthy People 2030

It's not about race…

- Stigma
- Structural policies, oppression
- Implicit bias
- Institutionalized racism
- Social instability
- Stress
- Language
- Access
- Family and community support
- Physical and built environment
- Self-efficacy and empowerment
- Knowledge and education

Healthy People definition:

"SDoH are the conditions in the environments where people are born, live, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks"

National Academy of Medicine:
Social context & environment >>> individual behaviors
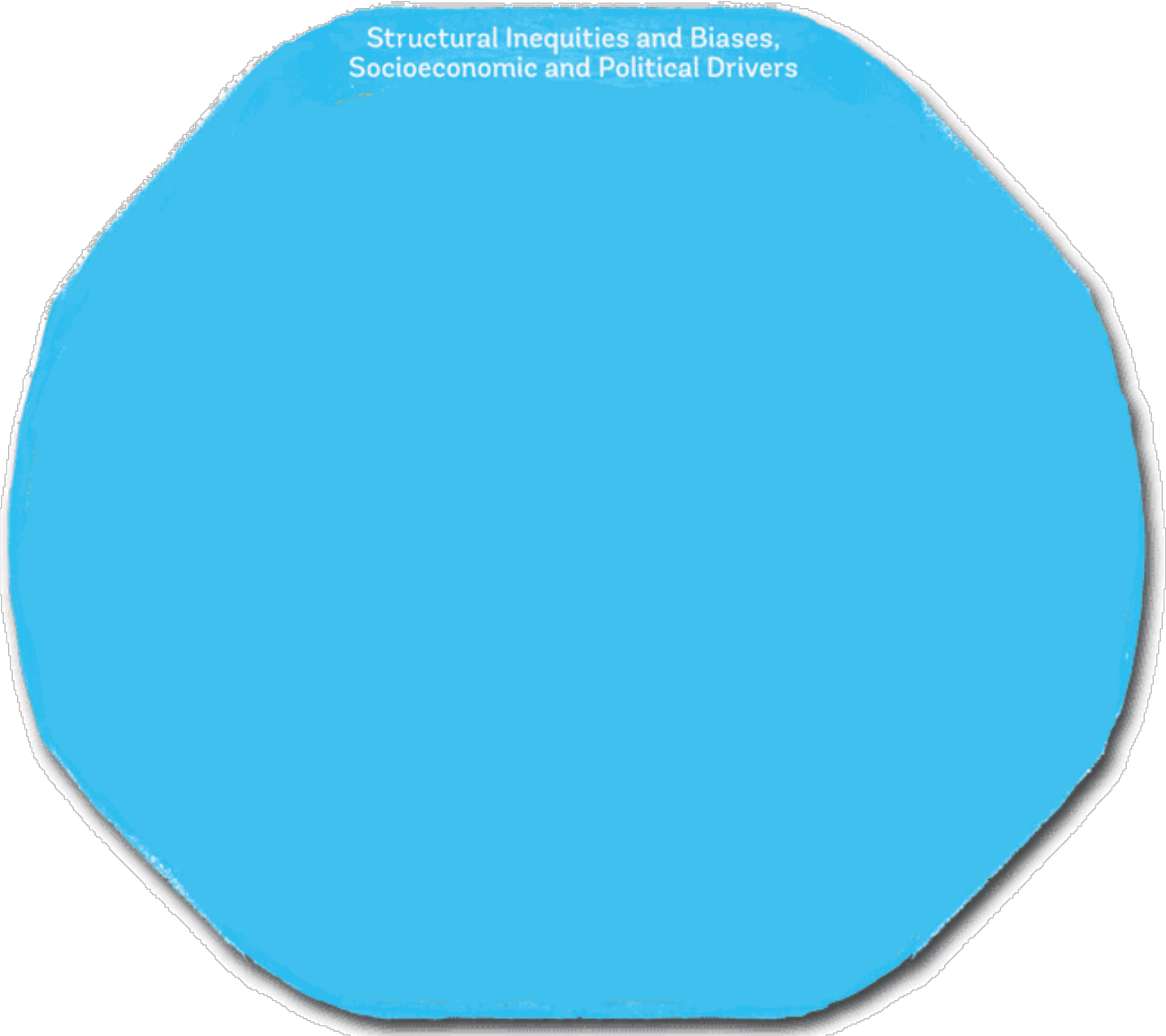
Structural Inequities and Biases,
Socioeconomic and Political Drivers

https://nap.nationalacademies.org/resource/24624/RootCausesofHealthInequity/

World Health Organization

SDoH...are shaped by the distribution of money, power and resources at global, national and local levels.

The social determinants of health are mostly responsible for health inequities - the unfair and avoidable differences in health status seen within and between countries.

Centers for Disease Control and Prevention: SDoH Framework

https://www.cdc.gov/about/sdoh/cdc-doing-sdoh.html

SDoH Domains

- Economic stability

- Education access and quality

- Health care access and quality

- Neighborhood and built environment

- Social and community context

Domain 1: Economic stability

- GOAL: Help people earn steady incomes that allow them to meet their health needs

- RATIONALE:

  – 1 in 10 people in the US live in poverty

  – Low income prevents people from being healthy and affording the things they need to stay healthy

Domain 2: Education

- GOAL: Increase educational opportunities and help children and adolescents do well in school

- RATIONALE:

  – People with higher education are more likely to be healthier and live longer

  – Stress of poverty and low education has long-term health impacts

Domain 3: Health care

- GOAL: Increase access to comprehensive, high-quality health care services

- RATIONALE:

  - 1 in 10 people in the US don't have health insurance

  - Many barriers exist to receipt of timely, comprehensive health care

Domain 4: Neighborhood

- GOAL: Create neighborhoods and environments that promote health and safety

- RATIONALE:

  – Many people live in neighborhoods with high rates of violence, unsafe air and/or water, or other health and safety risks

  – Minoritized and low-income people are more likely to have unsafe environments

Domain 5: Social context

- GOAL: Increase social and community support

- RATIONALE:

  – Relationships with friends, family, and community can have a major impact on health and well-being

  – Interventions to improve social and community support are critical throughout the lifespan
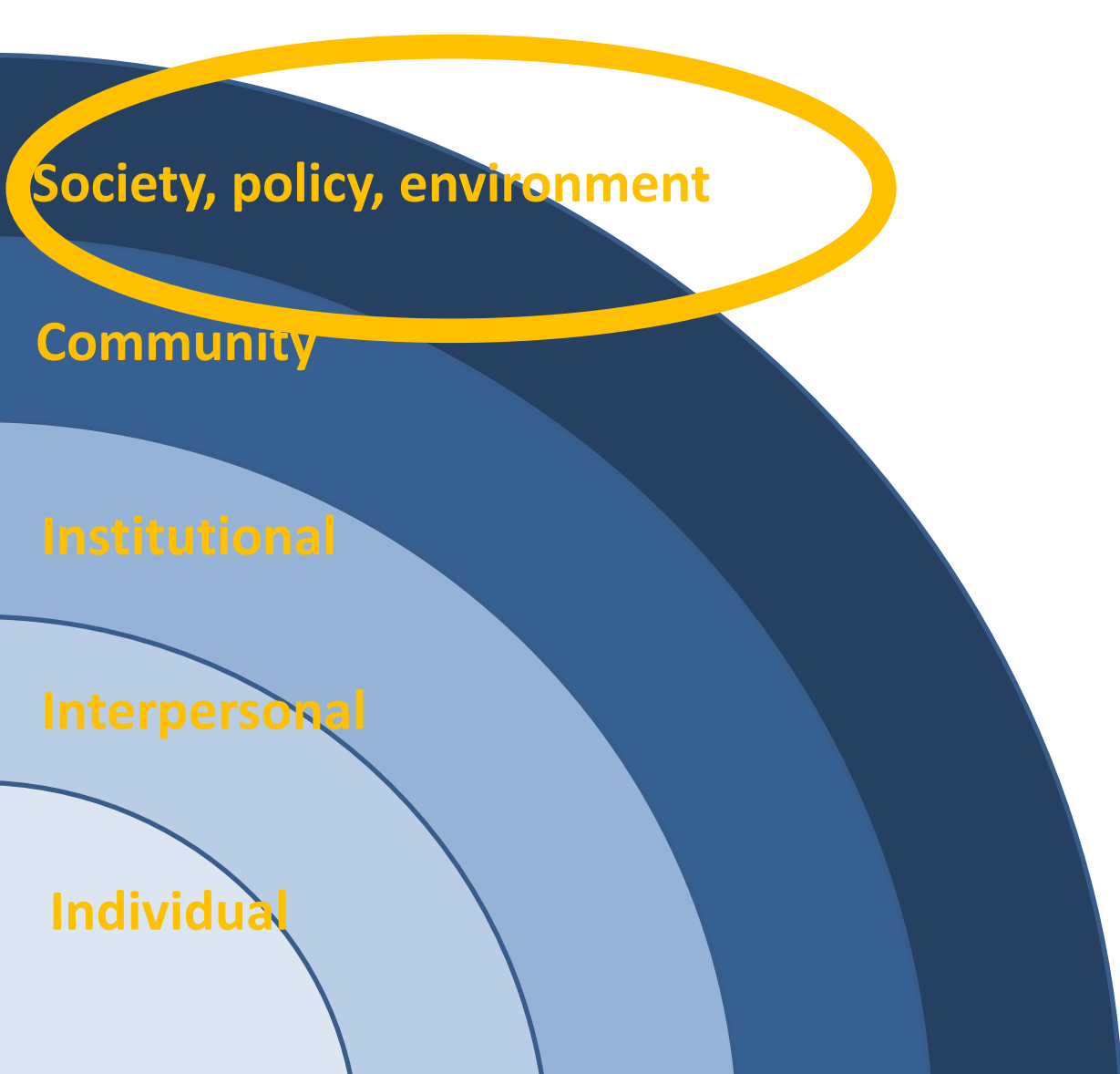
Root causes of disparities in SDoH

Central role of systemic racism

- Systemic racism is a root cause of power and wealth imbalances that affect SDoH

- Exposure to systemic racism is associated with chronic stress leading to morbidity, epigenetic changes

- Role of allostatic load – increased weathering caused by effort required to cope with acute and chronic life stressors

Understanding SDoH and maternal-child health through the Social Ecological Model
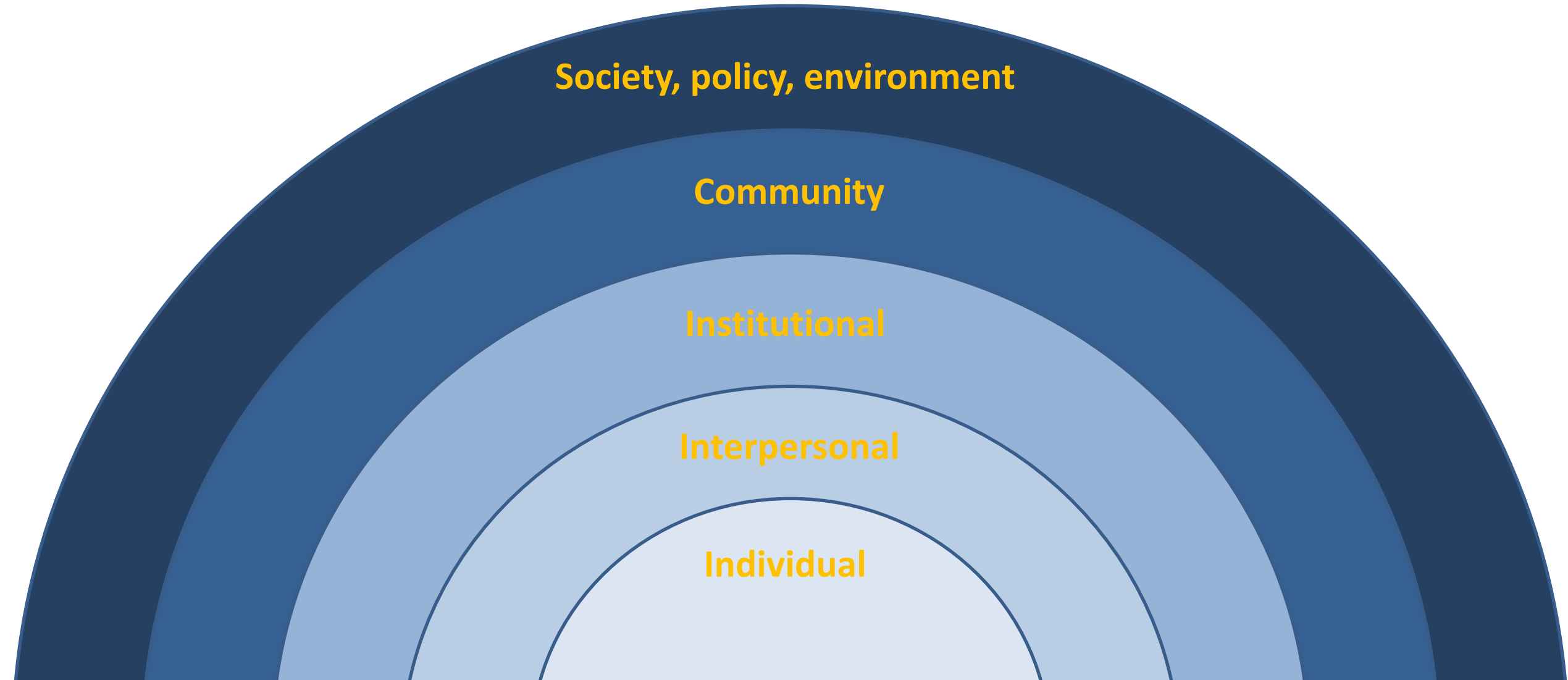
Social Ecological Model:
Multilevel influence and domains for intervention

Society, policy, environment

Community

Institutional

Interpersonal

Individual

Society, policy, & environment

Environmental exposures

Abstract

IMPORTANCE Knowledge of whether serious adverse pregnancy outcomes are associated with
increasingly widespread effects of climate change in the US would be crucial for the obstetrical
medical community and for women and families across the country.

OBJECTIVE To investigate prenatal exposure to fine particulate matter (PM2.5), ozone, and heat,
and the association of these factors with preterm birth, low birth weight, and stillbirth.

EVIDENCE REVIEW This systematic review involved a comprehensive search for primary literature
in Cochrane Library, Cochrane Collaboration Registry of Controlled Trials, PubMed, ClinicalTrials.gov
website, and MEDLINE. Qualifying primary research studies included human participants in US
populations that were published in English between January 1, 2007, and April 30, 2019. Included
articles analyzed the associations between air pollutants or heat and obstetrical outcomes.
Comparative observational cohort studies and cross-sectional studies with comparators were
included, without minimum sample size. Additional articles found through reference review were
also considered. Articles analyzing other obstetrical outcomes, non-US populations, and reviews

Key Points

Question Are increases in air pollutant
or heat exposure related to climate
change associated with adverse
pregnancy outcomes, such as preterm
birth, low birth weight, and stillbirth, in
the US?

Findings In this systematic review of 57
of 68 studies including a total of
32 798 152 births, there was a
statistically significant association
between heat, ozone, or fine particulate
matter and adverse pregnancy
outcomes. Heterogeneous studies from
across the US revealed positive findings
in each analysis of exposure

Table. Summary of Evidence Key Questions 1 Through 6

Exposure and outcome	Studies finding an association, No./total No.	Births/study, mean (SD)	Total births in millions	Increased risk, median (range), %[a]	Studies finding racial disparity, No./total No.	Notable findings[b]
Air pollution						
Preterm birth	19/24	318 960 (393 272)	7.3	11.5 (2.0-19.0)[c]	10/19	Preterm birth risk increased 52% for asthmatic mothers
Low birth weight	25/29	661 205 (878 074)	18.5	10.8 (2.0-36.0)[c]	13/25	Low birth weight risk increased 3% for each 5-km proximity to a solid waste plant
Stillbirth	4/5	1 020 975 (1 176 174)	5.1	14.5 (6.0-23.0)[c]	1/4	Stillbirth risk increased 42% with high third-trimester exposure
Heat						
Preterm birth	4/5	192 625 (207 995)	0.8	15.8 (9.0-22.0)[d]	2/4	Preterm birth risk increased 11.6% per 5.6 °C increase
Low birth weight	3/3	902 277 (985 803)	2.7	31.0 (13.0-49.0)[d]	1/3	Term birth weight decreased 16 g per IQR temperature increase
Stillbirth	2/2	115 943 (115 933)	0.2	NA[e]	2/2	Stillbirth risk increased 6% per 1 °C increase the week before delivery during the warm season

Abbreviations: IQR, interquartile range; NA, not applicable.

[a] Risk presented as range from significant studies. The median is calculated from the range; a pooled analysis was not performed. For consistency, the whole pregnancy exposure was presented where possible.
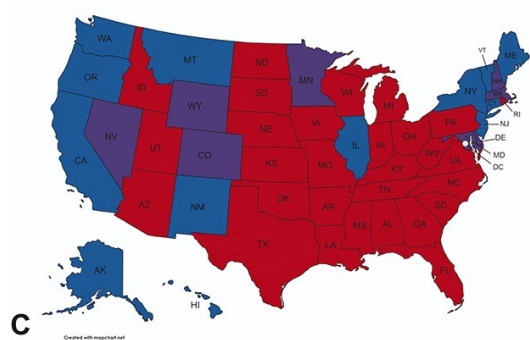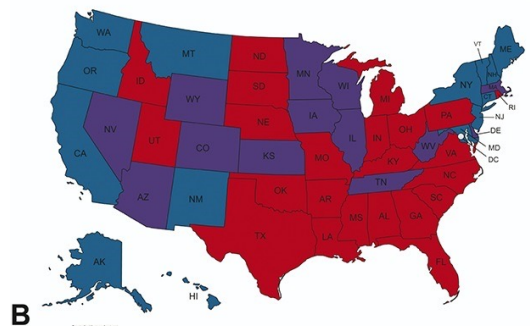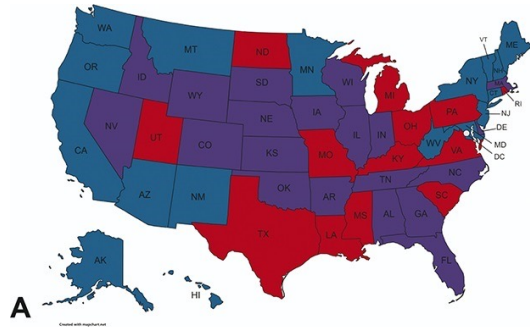
[b] Single study unless specified.

[c] For whole pregnancy PM2.5 exposure.

[d] For whole pregnancy heat exposure.

[e] The only 2 studies on heat and stillbirth did not provide comparable outcomes that could be combined into a range with a median.

Maternal mortality & abortion legislation

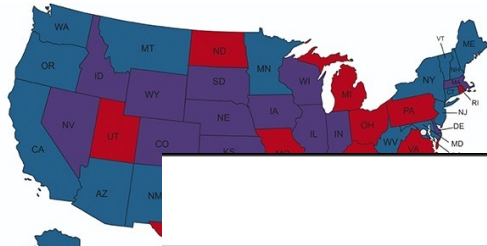|	Estimate	95% CI	P[†]
Primary outcome			
All-cause mortality rate in reproductive-aged females (per 100,000)			
Supportive states	−6.70	−15.65 to 2.24	.256
Moderate states	0.59	−6.31 to 7.50	
Secondary outcomes			
Maternal mortality rate (per 100,000 live births)			
Supportive states	−2.51	−6.75 to 1.72	.021[‡]
Moderate states	−5.79	−9.88 to −1.70	
Infant mortality rate (per 1,000 live births)			
Supportive states	−1.10	−1.56 to −0.64	<.001[‡]
Moderate states	−0.56	−1.09 to −0.04	
Fetal mortality rate (per 1,000 births)			
Supportive states	−0.64	−1.41 to 0.13	.019[‡]
Moderate states	−0.69	−1.18 to −0.20	

* Restrictive states is the reference group.
[†] The *P*-value presented is a type 3 *P*-value, which tests the null hypothesis that all levels of a categorical predictor have the same effect on the outcome as the reference category, conditional on the other covariates in the model, that is, year and percentage of the population in poor health.
[‡] Remained significant after Benjamini-Hochberg correction to control false discovery rate at q=0.05.

OBSTETRICS & GYNECOLOGY

Supportive ■ Moderate ■ Restrictive

Maternal mortality & abortion legislation

	Estimate	95% CI	P	P†
No. of laws	1.09	0.36–1.82	.003*	.256
Trigger law (bans abortion on overturn of *Roe v Wade*)	5.69	2.38–9.01	.001*	
Prohibition of abortion after a certain gestational age	3.13	0.22–6.04	.04	
Laws that require certain types of counseling	4.52	0.55–8.50	.026*	
Laws requiring in-person counseling or consent or both	3.88	0.47–7.29	.026*	.021‡
Laws that require an ultrasonogram before abortion procedure	1.80	−3.13 to 6.74	.47	
Laws that prohibit insurance coverage of abortion	2.50	−0.72 to 5.73	.128	.001‡
Laws that prohibit Medicaid coverage of abortion	1.13	−2.55 to 4.81	.546	
Laws that limit access to medication abortion	5.29	1.01–9.57	.015*	
Laws that require parental consent for abortions in those younger than 18 y	−0.12	−3.73 to 3.50	.950	.019‡
TRAP laws	5.09	1.76–8.43	.003*	

TRAP, Targeted Regulation of Abortion Providers.
* Remained significant after Benjamini-Hochberg correction to control false discovery rate at q=0.05. OBSTETRICS & GYNECOLOGY
   poor health.
‡ Remained significant after Benjamini-Hochberg correction to control false discovery rate at q=0.05. OBSTETRICS & GYNECOLOGY

Supportive Moderate Restrictive

Community segregation

- Among NHB birthing individuals in Chicago, high levels of racial segregation were associated with higher odds of spontaneous preterm birth

- Role of potential environmental factors – environmental toxins, access, chronic stress prior to and during pregnancy as a potential mechanism

Original Research — ajog.org

OBSTETRICS

**Associations of neighborhood-level racial residential segregation with adverse pregnancy outcomes**

Arturo D. Salow, BS; Lindsay R. Pool, PhD; William A. Grobman, MD; Kiarri N. Kershaw, PhD

Access to grocery stores and fast food

FIGURE 1
Geographical distribution of gestational diabetes mellitus (GDM) prevalence and fast food restaurant density within Harris County, Texas
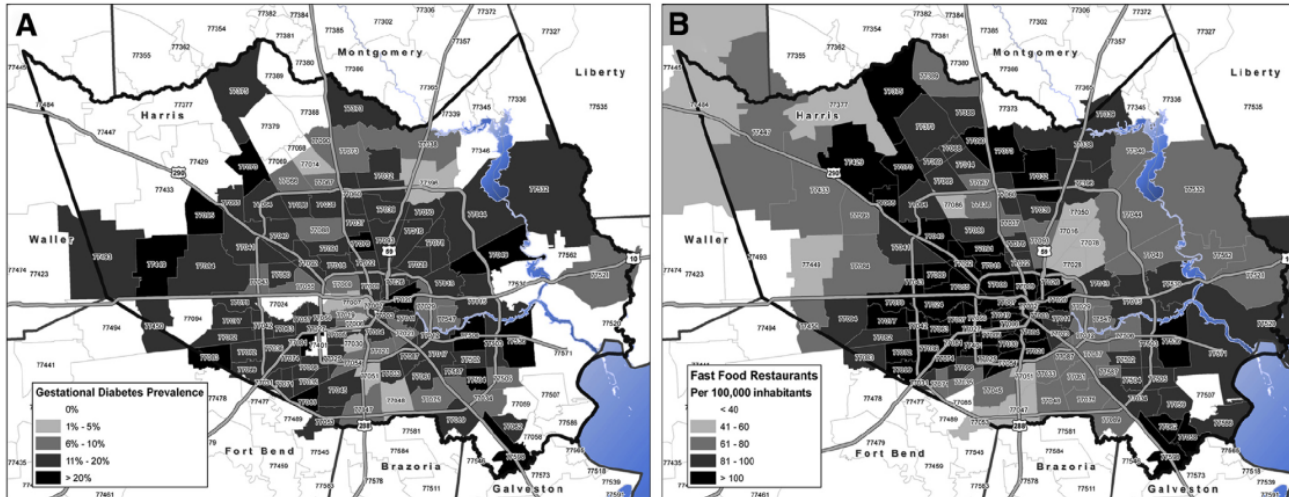
A, GDM prevalence and B, fast food restaurant density (per 100,000 inhabitants) in different ZIP code areas of Harris County, Texas, assembled by ArcGIS 10.3 Desktop Advanced (Esri, Redlands, CA).

Kahr et al. Food environment is associated with gestational diabetes. Am J Obstet Gynecol 2016.

OBSTETRICS

Geospatial analysis of food environment demonstrates associations with gestational diabetes

Maike K. Kahr, MD; Melissa A. Suter, PhD; Jerasimos Ballas, MD, MPH; Susan M. Ramin, MD; Manju Monga, MD; Wesley Lee, MD; Min Hu, MD; Cindy D. Shope, MS; Arina Chesnokova, MPH; Laura Krannich, BSc; Emily N. Griffin, BSc; Joan Mastrobattista, MD; Gary A. Dildy, MD; Stacy L. Strehlow, MD; Ryan Ramphul, MSCRP; Winifred J. Hamilton, PhD, SM; Kjersti M. Aagaard, MD, PhD

- Neighborhood characteristics are influential

- Residence in high fast-food density neighborhoods was associated with increased odds of GDM in the greater Houston area

Society, policy, environment

Community

Institutional

Interpersonal

Individual

Community

Community-level food insecurity & T1D/T2D control

- Columbus, Ohio – retrospective cohort study of pregnant individuals with T1D or T2D

- Compared individuals living in food-secure vs. food-insecure communities

- Food-insecure = low access AND low income per USDA

Association between community level food insecurity and glycemic control among pregnant individuals with pregestational diabetes.

	Community level food insecurity			
	Yes n (%) or mean (SD)	No n (%) or mean (SD)	Unadjusted analysis[a]	Adjusted analysis[a,b]
			Risk ratio (95 % CI)	Adjusted risk ratio (95 % CI)
Cross-sectional analysis:				
Early pregnancy A1c < 6.0 %[c]	12/75 (16.0)	100/343 (29.2)	0.55 (0.32–0.95)	0.55 (0.33–0.92)
Late pregnancy A1c < 6.0 %[d]	28/71 (39.4)	145/305 (47.5)	0.83 (0.61–1.13)	0.90 (0.67–1.20)
Longitudinal analysis:				
Decrease in A1c of ≥ 2 %[d]	25/71 (35.2)	65/305 (21.3)	1.65 (1.13–2.42)	1.55 (1.06–2.28)
			Beta coefficient (95 % CI)	Adjusted beta coefficient (95 % CI)
Mean change in A1c[d]	1.46 (1.65)	1.00 (1.51)	0.46 (0.06–0.86)	0.47 (0.06–0.87)

Multidimensionality of food access

- Cost of healthy food

- Temporality of food access

- Sharing or giving up food for others (children)

- Quality of nutrient sources

"I love vegetables…and yet again looking at the budget and what we have, either I get that stalk of celery or I could get those four boxes of pasta that I could have dinner for a couple more days, instead of that one snack."

Inaccessibility of community resources

- Limited accessibility of community resources for healthy pregnancy support

- Culturally mismatched resources

- Unwelcoming community environments

- Desire for faith-based resources

"We have farmers markets offered through the health department but they're only offered during certain seasons and they only have it like one day. So if you're not able to go that one day you're just screwed."

"I mean those groups, they would ideally help women to get resources but, but the group of people that go there is a very intimidating group and turns a lot of people off."

Society, policy, environment

Community

Institutional

Interpersonal

Individual
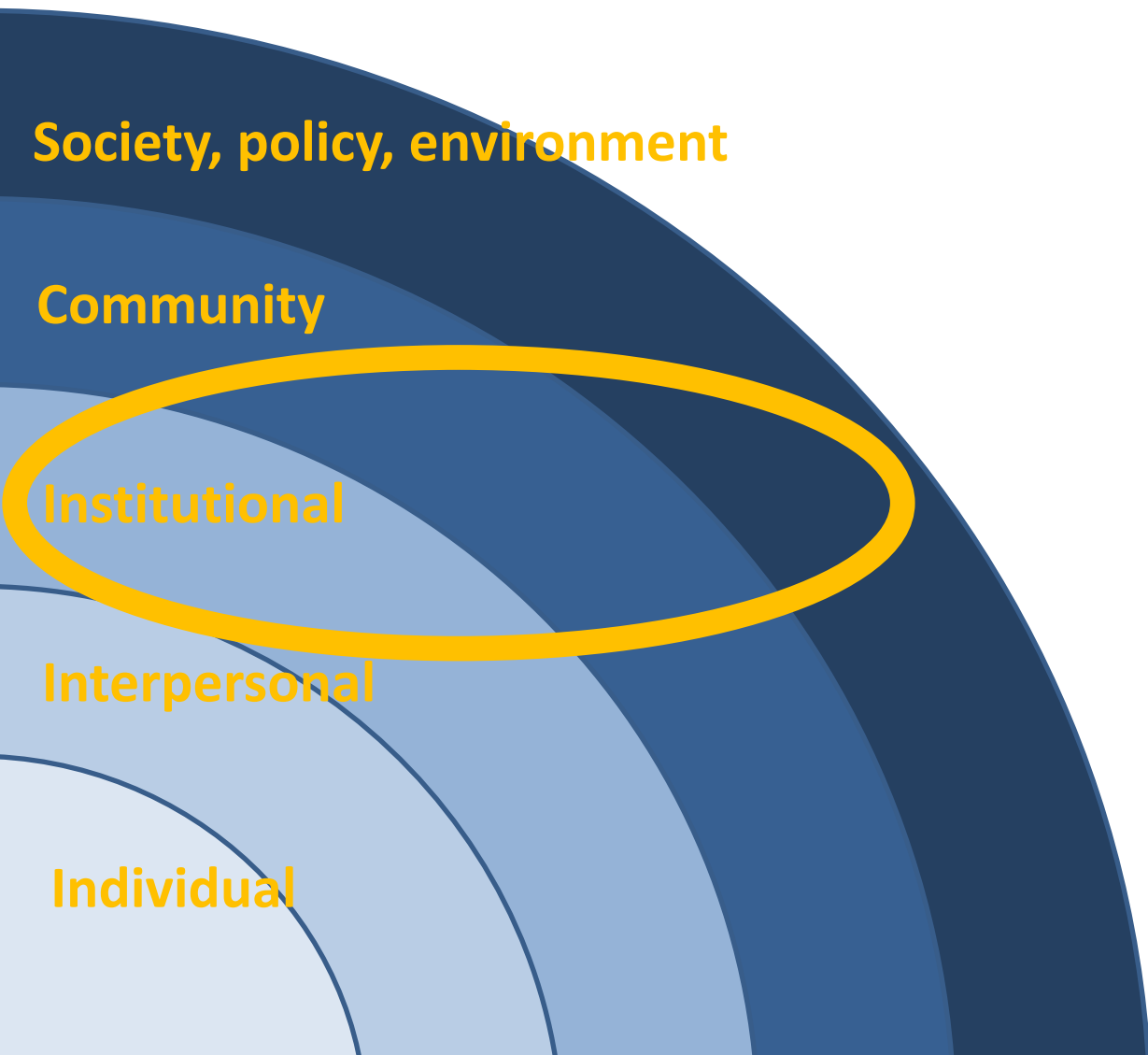
Institutional

Institutional quality

- Themes distinguishing high- vs. low-performing hospitals:
  - Senior leadership involvement in quality activities
  - Strong focus on standards and standardized care
  - Strong nurse-physician communication and teamwork
  - Adequate physician and nurse staffing and supervision
  - Sharing of performance data
  - Explicit awareness that racial and ethnic disparities exist and that racism can lead to differential treatment

Challenges to postpartum healthcare
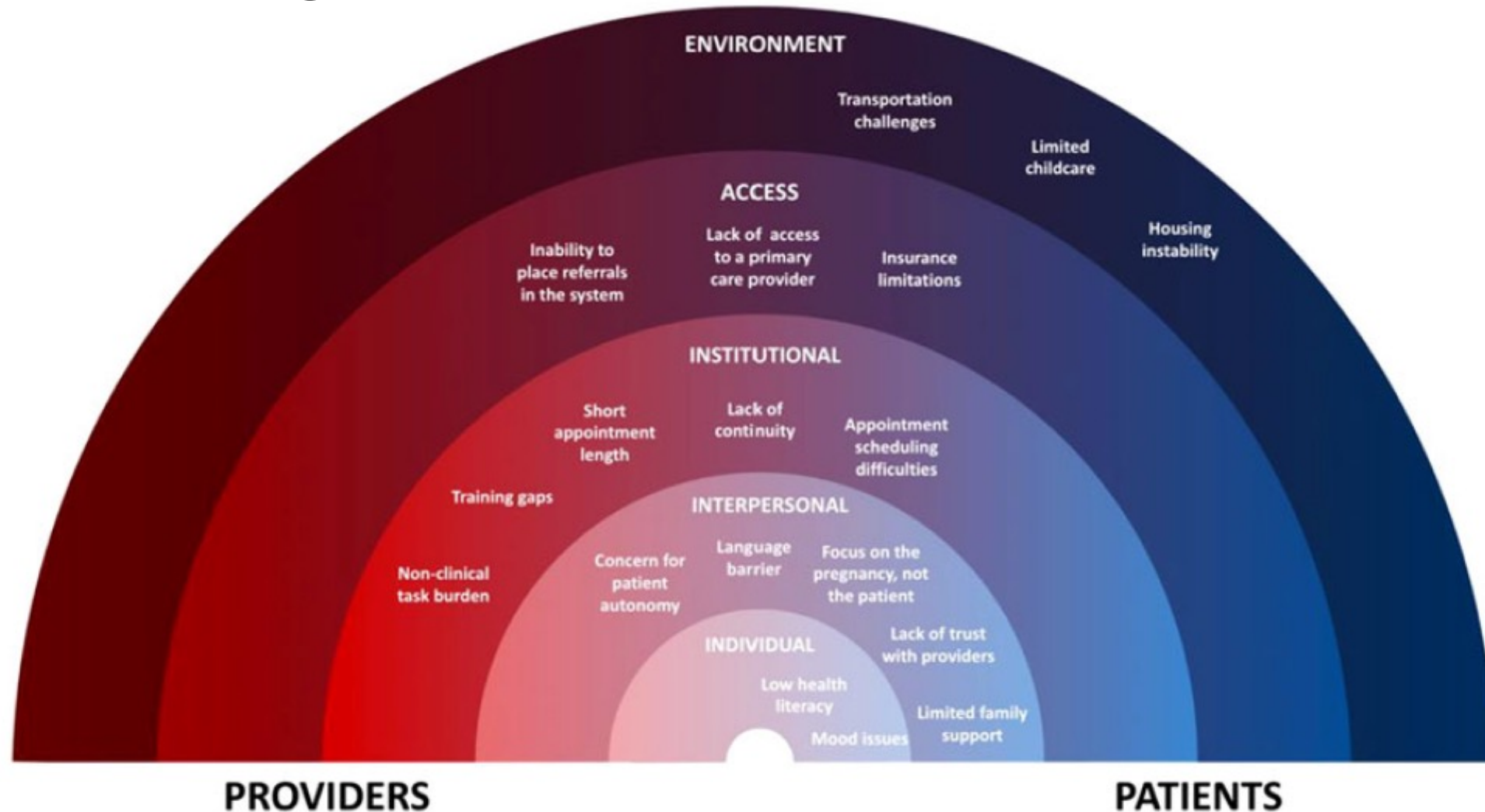
Challenges to postpartum healthcare
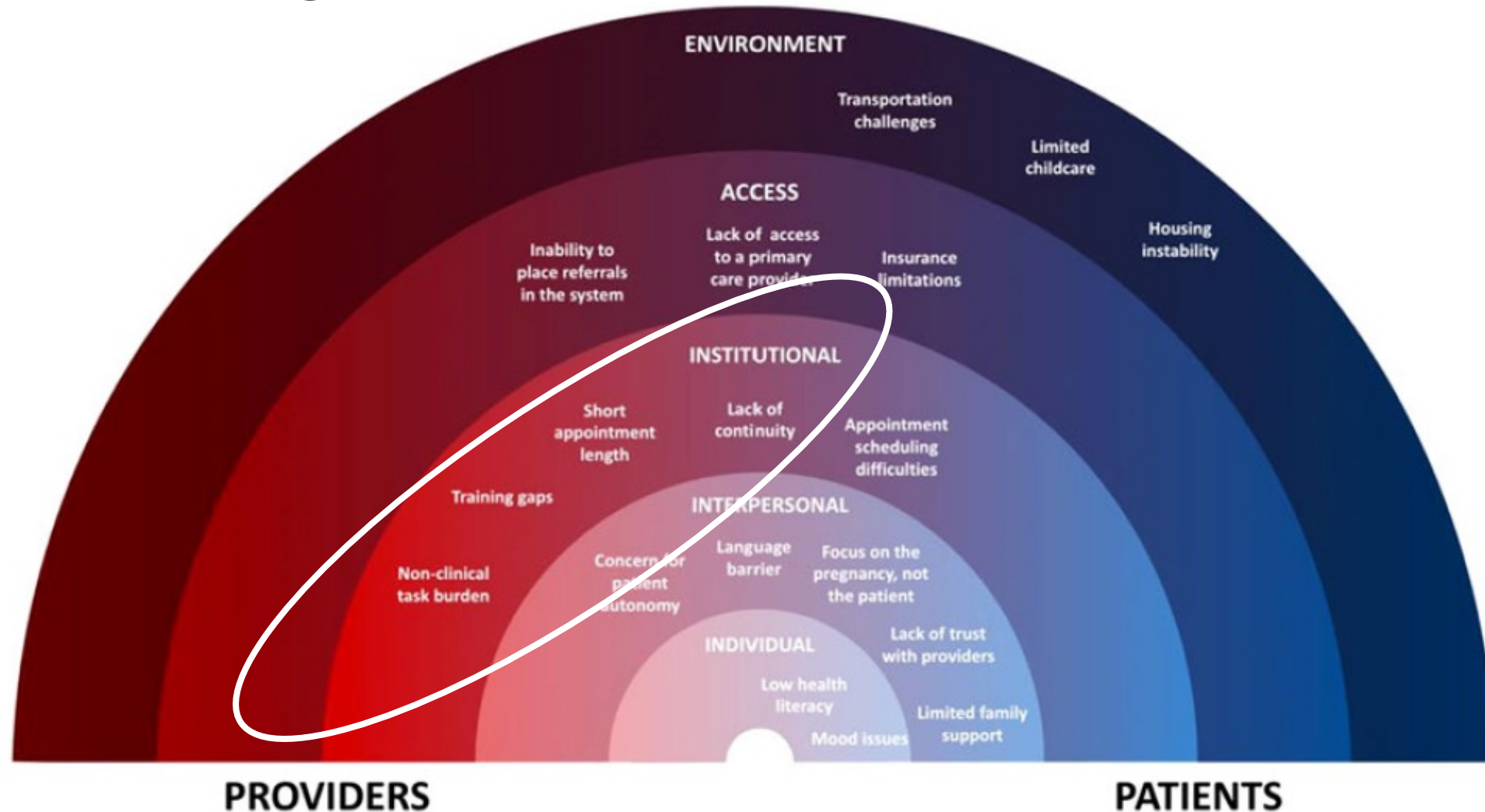
Barriers to postpartum OGTT and primary care

Patient

Public insurance
Less education
Exposure to racism
Lower health literacy
Greater anxiety about T2DM
Attendance at postpartum visit

Clinician

Limited knowledge about T2DM
Remote from training
Failure to order OGTT
Failure to follow-up results

System

Inadequate Medicaid coverage
Copay costs for OGTT visits
Appointment complexity
Inadequate parental leave
Fragmented healthcare systems
Disconnected EMR

Social instability

"The only thing that's helping me is getting a [Food Stamp Program] card, but sometimes that doesn't even help since I'm living [with family] and I don't really have money for myself. 'Cause I'm helping get food for everybody else…I have my WIC, I'm not eating anything out of it…I have nothing for myself."

"I live in a rough neighborhood…the whole anxiety, it's kind of like it's even more…like there's shootings all the time…"

- Social chaos
- Lack of social support
- Unpartnered status
- Violence – neighborhood and interpersonal
- Financial instability
- Late or fragmented care
- Inconsistent schedule

Northwestern

Discrimination & implicit bias

- Attitudes or stereotypes that affect our understanding, actions, and decisions in an unconscious manner and cause us to have attitudes about other people based on personal characteristics

- Pervasive, subconscious, & activated involuntarily

- Particularly important in environments prone to cognitive overload or high stress – like L&D – where reliance on automatic processes are more frequently used
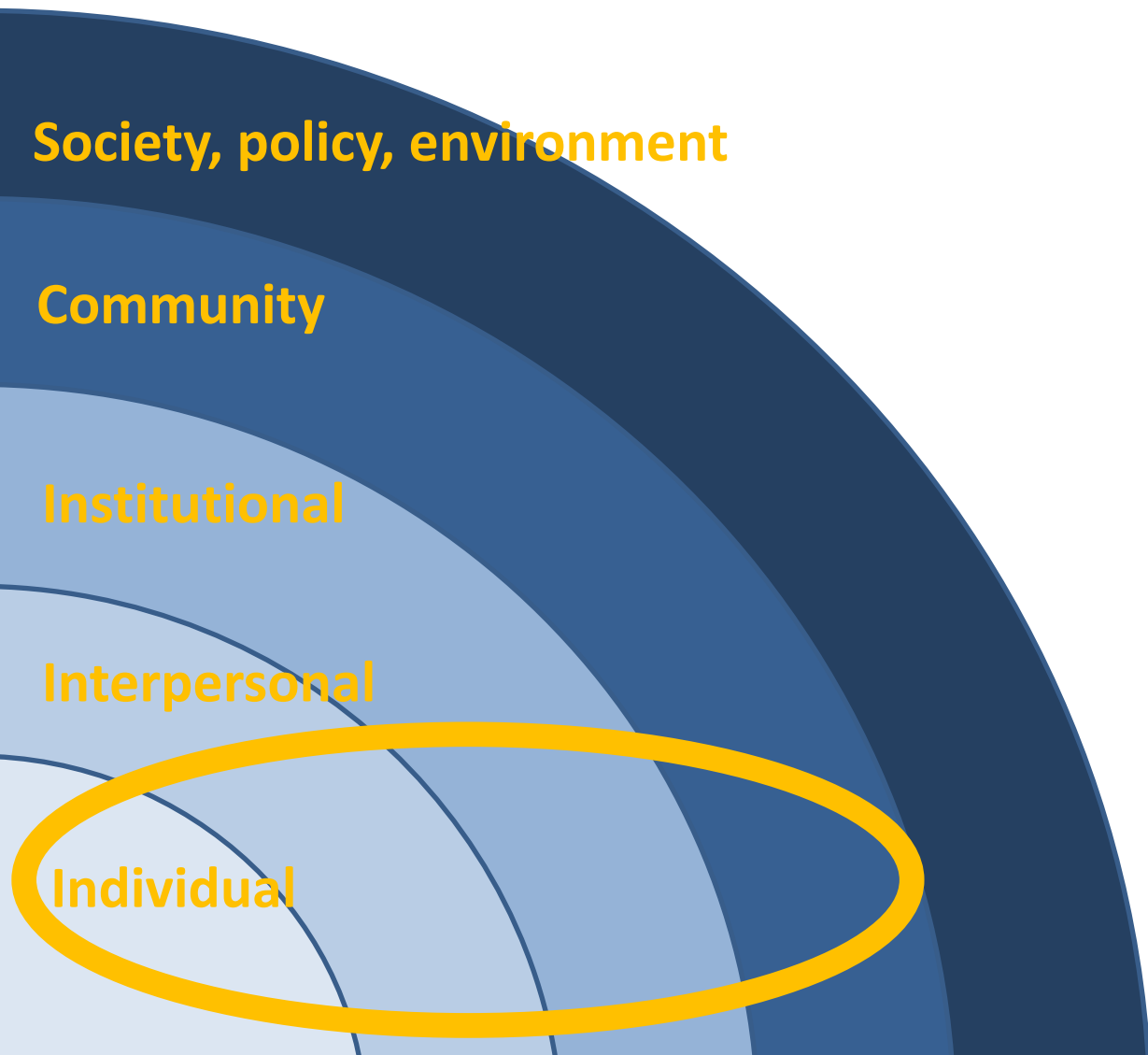
Health literacy

The degree to which individuals can obtain, process, and understand the basic health information and services they need to make appropriate health decisions
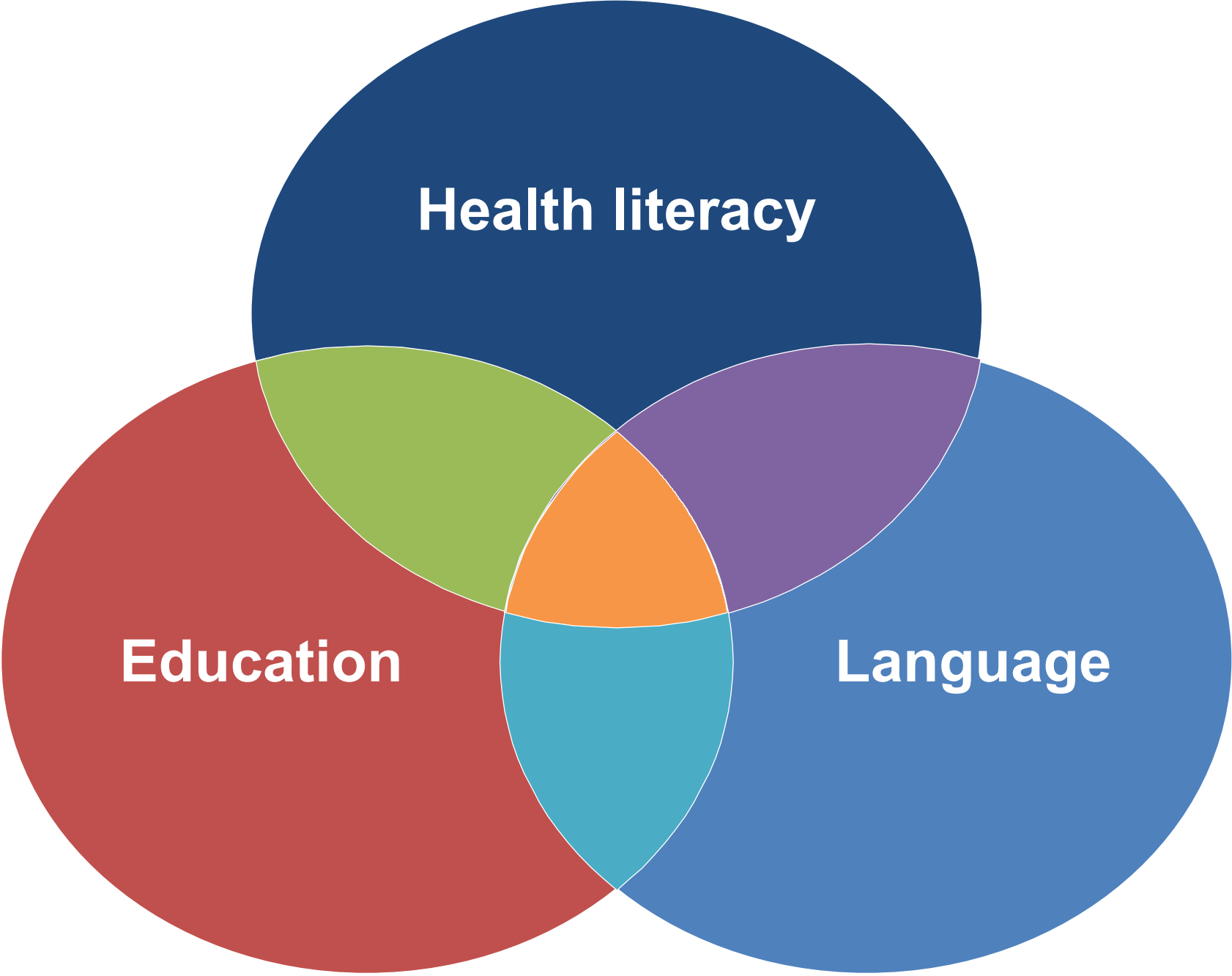
Inadequate health literacy is linked to…
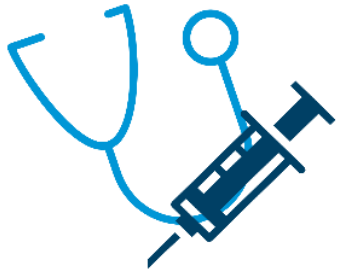
Lower use of PREVENTIVE CARE

Less adherence to TREATMENT

More HOSPITAL STAYS

Higher MORTALITY RATES

Pregnancy care requires high health literacy

- Low HL is associated with differences in:
  - Cesarean delivery
  - Major perineal laceration
  - Small-for-gestational-age status
  - Low birthweight
  - 5-minute Apgar score <4
- Differences in literacy contribute to perinatal health disparities

"It's [reading labels] difficult for me….'cause I'm not good at math. And then I just be like, oh my god this is so complicated…I just ignore it."

JAMA Network | **Open**

Original Investigation | Obstetrics and Gynecology

Association of Health Literacy Among Nulliparous Individuals and Maternal and Neonatal Outcomes

Lynn M. Yee, MD, MPH; Robert Silver, MD; David M. Haas, MD; Samuel Parry, MD; Brian M. Mercer, MD; Deborah A. Wing, MD, MBA; Uma Reddy, MD, MPH; George R. Saade, MD; Hyagriv Simhan, MD; William A. Grobman, MD, MBA

Abstract

IMPORTANCE Health literacy is considered an important social determinant of health that may underlie many health disparities, but it is unclear whether inadequate health literacy among pregnant individuals is associated with adverse maternal and neonatal outcomes.

OBJECTIVE To assess the association between maternal health literacy and maternal and neonatal outcomes among nulliparous individuals.

DESIGN, SETTING, AND PARTICIPANTS This was a secondary analysis of a large, multicenter cohort study of 10 038 nulliparous individuals in the US (2010-2013). Participants underwent 3 antenatal study visits and had detailed maternal and neonatal data abstracted. Data analysis was performed from July to December 2019.

Key Points

Question Is maternal health literacy associated with maternal and neonatal health outcomes?

Findings In this cohort study of 10 038 nulliparous individuals, those with inadequate health literacy had greater odds of cesarean delivery, major perineal lacerations, and neonates with small for gestational age status, low birth weight, and low 5-minute Apgar score, although absolute differences were generally small.

Northwestern

Opportunities for intervention on SDoH

Multi-sectoral collaborations to improve perinatal health:
It's more than just about health care

Society, policy, environment

Community

Institutional

Interpersonal

Individual
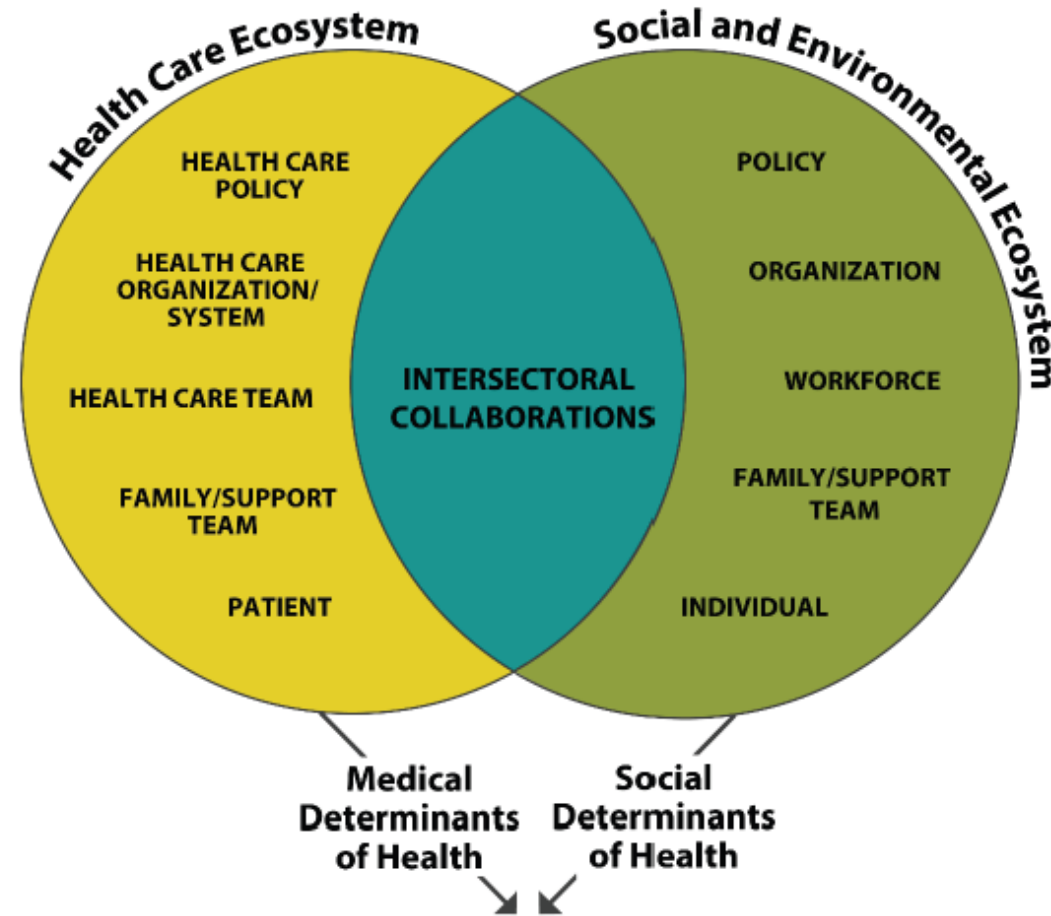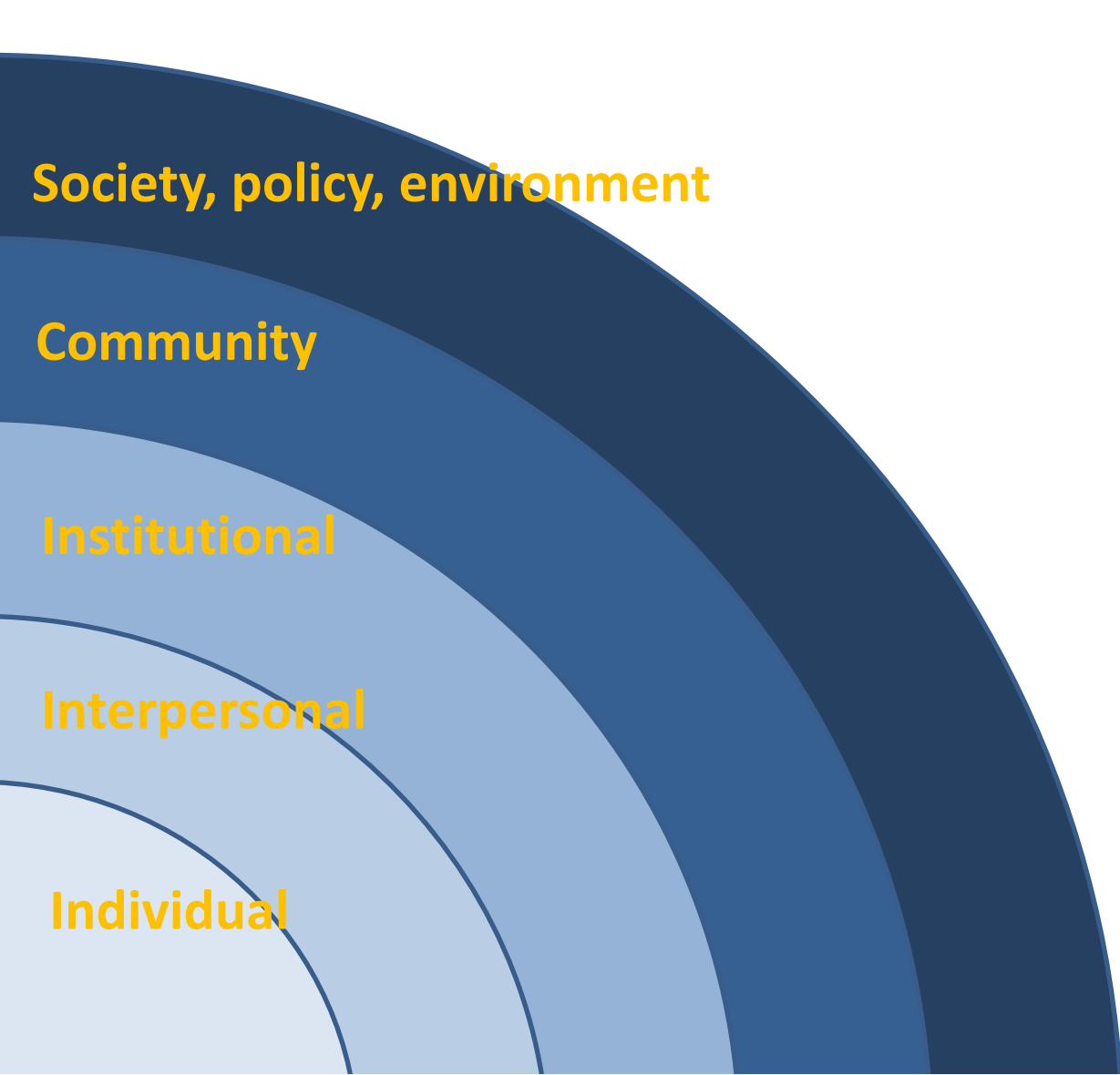
MACRO

to

MICRO

Multilevel opportunities for intervention
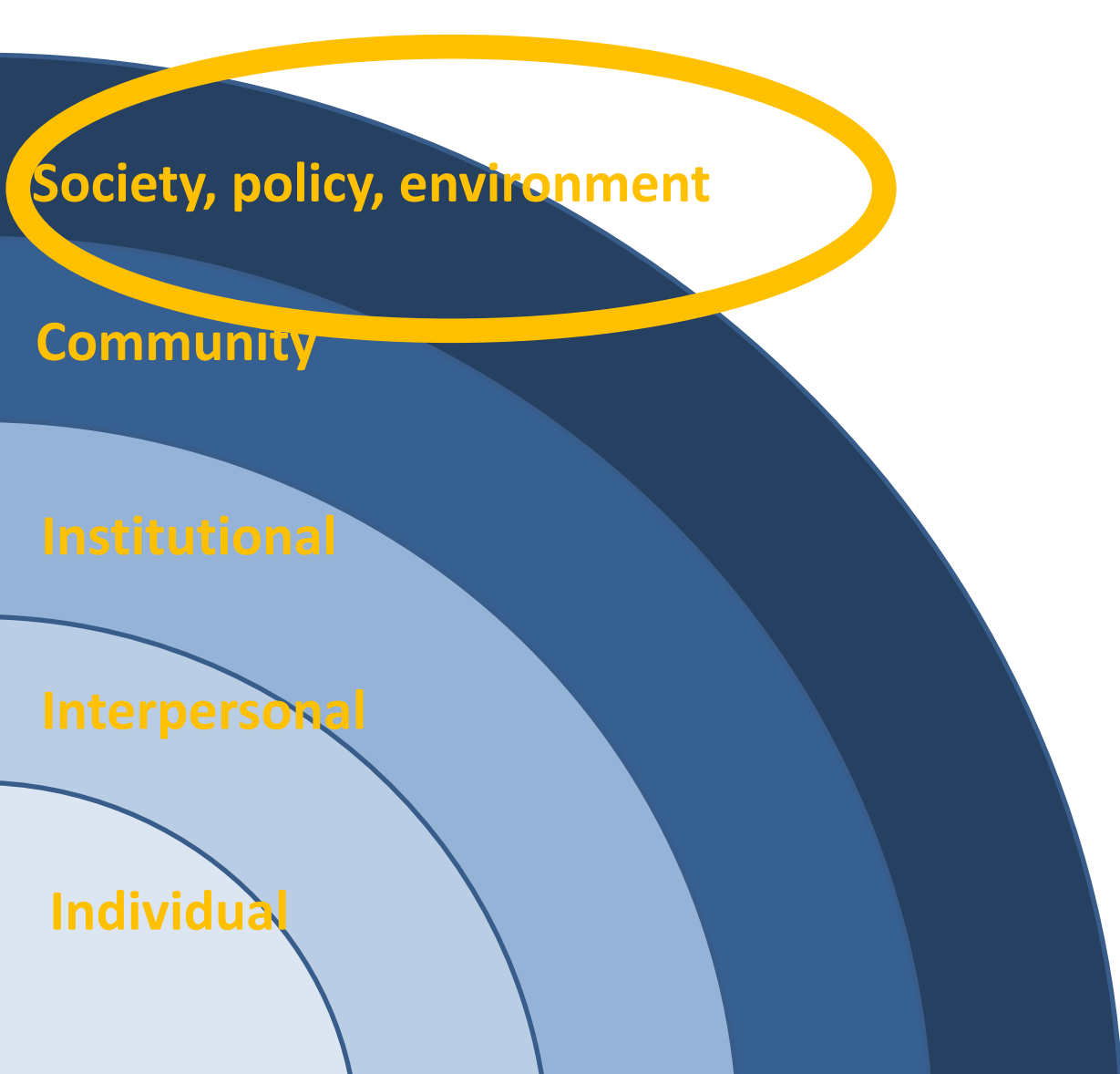
Maternal cash transfers

SOCIETY, POLICY, & ENVIRONMENT

Momnibus

Baby's First Years

The first study in the United States to assess the impact of poverty reduction on family life and infant and toddlers' cognitive, emotional, and brain development

Troller-Renfree, PNAS 2022

Baby's First Years publishes first findings:
Monthly cash support to families impacts infant brain activity

Our new study shows that an anti-poverty intervention had a direct impact on children's brain development. After one year, infants of mothers in low-income households receiving $333 in monthly cash support were more likely to show faster brain activity, in a pattern associated with learning and development at later ages. Read more here.

Baby's First Years is a pathbreaking study of the causal impact of monthly, unconditional cash gifts to low-income mothers and their children in the first four years of the child's life. The gifts are funded through charitable foundations. The study will identify whether reducing poverty can affect early childhood development and the family processes that support children's development.

Cash Aid to Poor Mothers Increases Brain Activity in Babies, Study Finds

The research could have policy implications as President Biden pushes to revive his proposal to expand the child tax credit.

The differences in brain activity were modest, and it remains to be seen if changes in brain patterns will translate to higher skills. Olga Korica/Alamy

By **Jason DeParle**

Jan. 24, 2022

WASHINGTON — A study that provided poor mothers with cash stipends for the first year of their children's lives appears to have changed the babies' brain activity in ways associated with stronger

Can giving parents cash help with babies' brain development?

A new study suggests that regular cash payments to parents can speed up brain activity in infants.

By Dylan Matthews | dylan@vox.com | Updated Jan 27, 2022, 3:52pm EST

SHARE

Black Maternal Health Momnibus Act of 2021

1. Make critical investments in **social determinants of health** that influence maternal health outcomes, like housing, transportation, and nutrition.
2. Provide funding to **community-based organizations** that are working to improve maternal health outcomes and promote equity.
3. Comprehensively study the unique maternal health risks facing **pregnant and postpartum veterans** and support VA maternity care coordination programs.
4. Grow and diversify the **perinatal workforce** to ensure that every mom in America receives culturally congruent maternity care and support.
5. Improve **data collection processes and quality measures** to better understand the causes of the maternal health crisis in the United States and inform solutions to address it.
6. Support moms with **maternal mental health** conditions and substance use disorders.
7. Improve maternal health care and support for **incarcerated moms**.
8. Invest in **digital tools** like telehealth to improve maternal health outcomes in underserved areas.
9. Promote **innovative payment models** to incentivize high-quality maternity care and non-clinical perinatal support.
10. Invest in federal programs to address the unique risks for and effects of **COVID-19 during and after pregnancy** and to advance respectful maternity care in future public health emergencies.
11. Invest in community-based initiatives to reduce levels of and exposure to **climate change-related risks for moms and babies**.
12. Promote **maternal vaccinations** to protect the health and safety of moms and babies.

Society, policy, environment

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Food programming

COMMUNITY

Community-wide initiatives

EatSF: Vouchers for Veggies

- Multi-organization partnership to enroll low-income Latinx and Black pregnant people into fruit and vegetable voucher program

- $40 each month in vouchers redeemable for fruits and vegetables, plus standard WIC package

- Pre-post analysis:
  - Improvement in food security
  - Improvement in daily intake of produce

- Goal: improve access to healthy food, improving health, and reduce preterm birth rates

Cradle Cincinnati

1A Replicate one neighborhood's success at eliminating extreme preterm birth.
Learn More

1B Address implicit bias, starting in prenatal care settings.
Learn More

1C Mitigate stress during pregnancy through social support.
Learn More

1D Increase the % of pregnancies that are expected and have healthy timing.
Learn More

1E Decrease the % of women smoking during the second and third trimester of their pregnancies.
Learn More

- Collaborative effort to reduce infant mortality in Hamilton County, OH
- Success at reducing preterm birth and neonatal mortality through community and healthcare partnerships
- Core principles:
  - Extensive partnership
  - Focus energy on equity
  - Co-creating solutions with families
  - Systems improvement
  - Constant communication
  - Growing knowledge
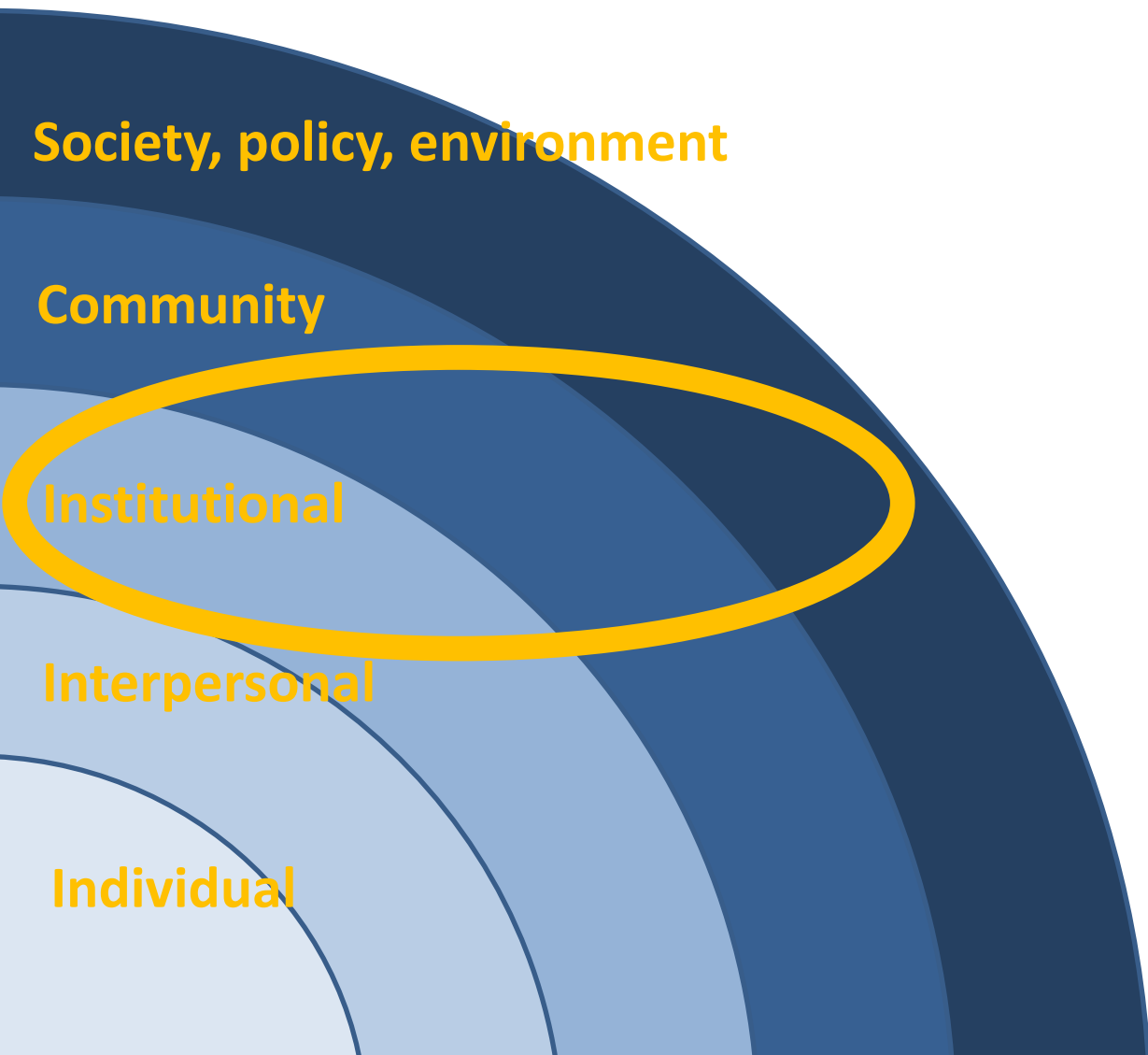
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https://dev.cradlecincinnati.org/

Patient safety bundles:
Attending to SDoH in *every patient, every time*

"…A structured way of improving the process of care and patient outcomes: A **small, straightforward set of evidence-based practices**…that, when performed collectively and reliably, have been proven to improve patient outcomes. The bundle…offers a **standardized approach** for delivering well-established, evidence-based practice to be implemented with complete consistency, for **every patient, every time** – resulting in improved patient outcomes"

-Institute for Healthcare Improvement

Postpartum Discharge Transition Bundle

To address the postpartum period, specifically focusing on key transition periods, such as hospital discharge to outpatient obstetrical care and ongoing specialist care as needed.

To address the immediate postpartum period, specifically hospital discharge to outpatient obstetrical care, ongoing specialist care, and community supports and services.

While ideally all elements of a patient safety bundle would be implemented in all relevant settings, this may be aspirational for some settings based on capacity and resources. For this reason, elements that are considered foundational to addressing morbidity and mortality in the postpartum period are **bolded** below.

Readiness — Every Unit

Develop and maintain a set of referral resources and communication pathways between obstetric providers, community-based organizations, and state and public health agencies to enhance services and supports for pregnant and postpartum families.*

Establish a multidisciplinary care team to design coordinated clinical pathways for patient discharge and a standardized discharge summary form to give to all postpartum patients prior to discharge.

Provide multidisciplinary staff education to clinicians and office staff on optimizing postpartum care, including why and how to screen for life-threatening postpartum complications.*

Develop trauma-informed protocols and trainings to address health care team member biases to enhance quality of care.

Educate outpatient care setting staff on how to use a standardized discharge summary form to review patient data and ensure that recommendations made for outpatient follow-up and community services/resources have been carried out.

Recognition & Prevention — Every Patient

Establish a system for scheduling the postpartum care visit and needed immediate specialty care visit or contact (virtual or in-person visit) prior to discharge or within 24 hours of discharge.*

Screen each patient for postpartum risk factors and provide linkage to community services/ resources prior to discharge.*

In all care environments assess and document if a patient presenting is pregnant or has been pregnant within the past year.

Offer reproductive life planning discussions and resources, including access to a full range of contraceptive options in accordance with safe therapeutic regimens.*
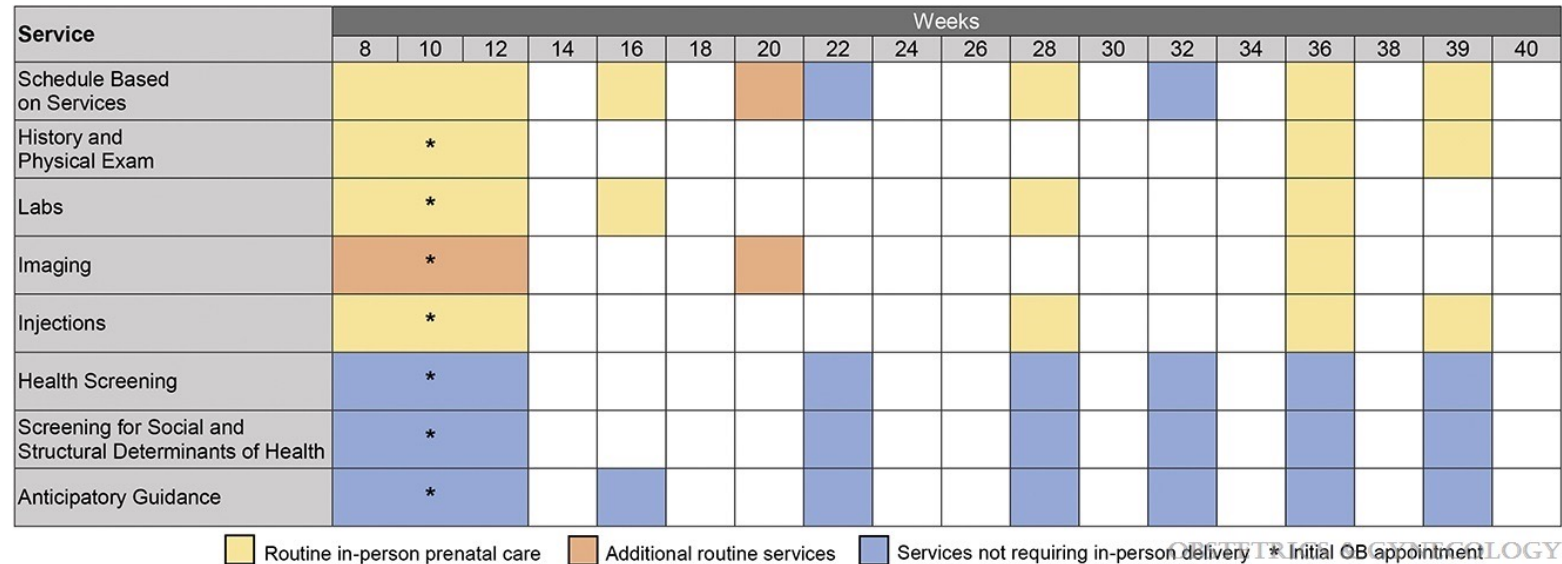
Facilitate and assure linkage to relevant services in outpatient settings for care identified for postpartum risk factors.
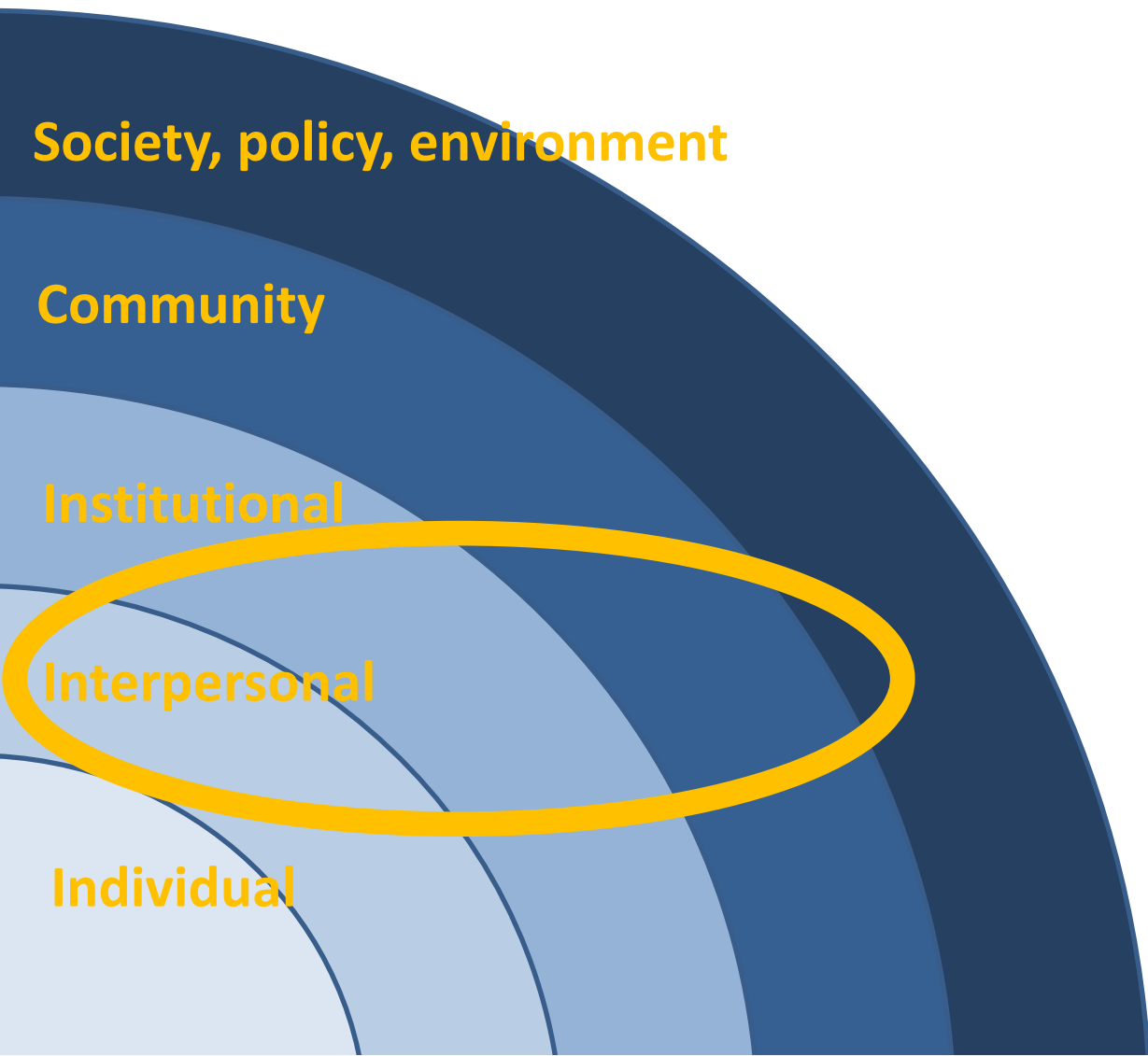
SDoH focus in bundles

- Trauma-informed protocols

- Develop referral resources and communication pathways with community-based organizations

- Screen for social needs and provide resources

- Align templates, resources and referrals with patient's literacy, language, cultural needs, geographic location, access

MiPATH: Michigan Plan for Appropriate Tailored Healthcare in pregnancy

- Tailored prenatal care care – group/individual, timing and frequency of visits

- Incorporation of telemedicine

- Standardized assessment for medical, social, and structural determinants of health in routine care delivery

- Ample medical and social resources

Service	Weeks																
	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	39	40
Schedule Based on Services																		
History and Physical Exam		*																
Labs		*																
Imaging		*																
Injections		*																
Health Screening		*																
Screening for Social and Structural Determinants of Health		*																
Anticipatory Guidance		*																

Routine in-person prenatal care   Additional routine services   Services not requiring in-person delivery   * Initial OB appointment

VON VOIGTLANDER WOMEN'S HOSPITAL
UNIVERSITY OF MICHIGAN HEALTH

Patient navigation

Patient-centered intervention that uses trained personnel to facilitate *complete* and *timely* access to health services

Goals of patient navigation

Improve timeliness of care

Offer social support & resources

Identify patient-level barriers to health care access

Provide health education

Facilitate shared decision making

IMPaCT intervention
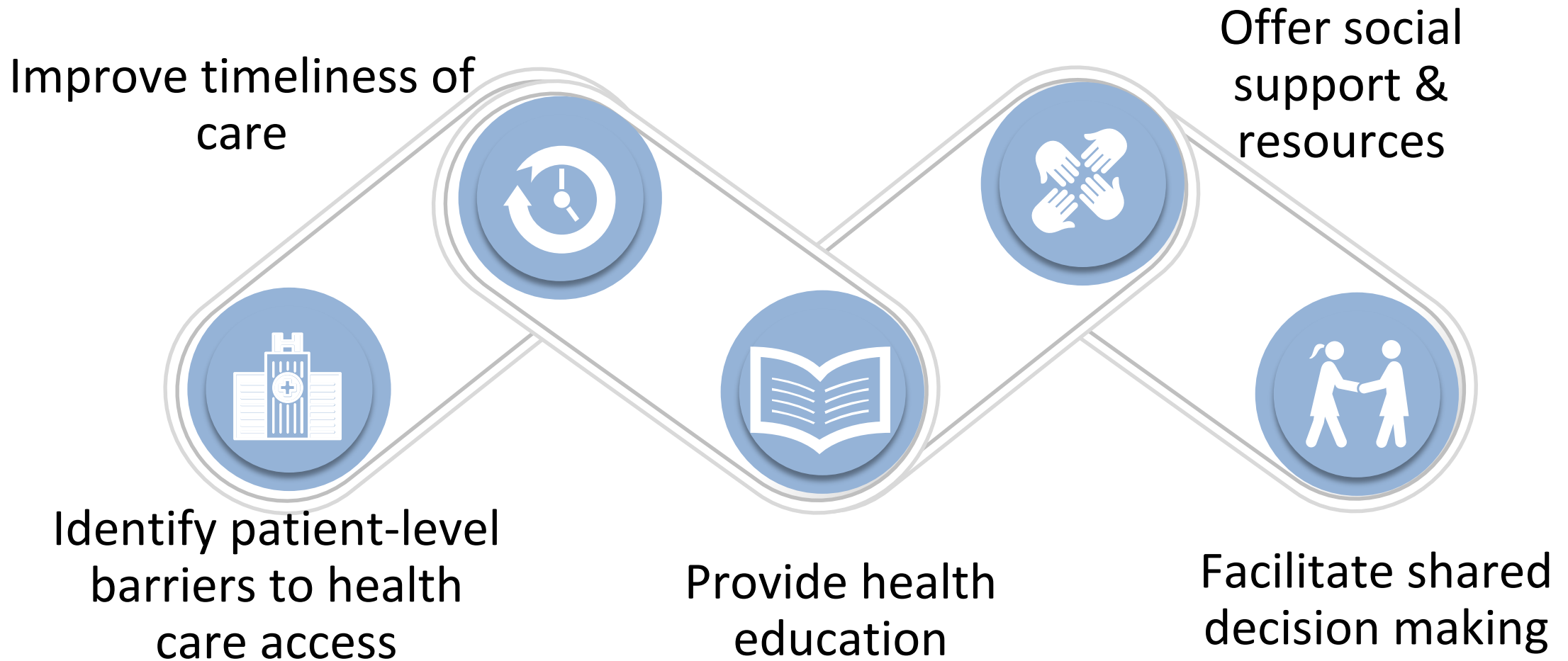
IMPaCT: A Pilot Randomized Trial of an Intervention
to Reduce Preterm Birth Among Non-Hispanic
Black Patients at High Risk

Sarahn M. Wheeler,[1,*] Kelley E.C. Massengale,[2] Thelma A. Fitzgerald,[1] Tracy Truong,[3]
Truls Østbye,[4] Amy Corneli,[5] and Geeta K. Swamy[1]

Abstract
Introduction: Preterm birth is a major cause of neonatal morbidity and mortality rate. Non-Hispanic black patients disproportionately experience preterm birth and nonadherence to evidence-based preventive measures. Interventions tailored to non-Hispanic black birthing individuals (NHBBIs) that address barriers to preterm birth preventions are urgently needed.
Methods: Together with a community-engaged multidisciplinary stakeholder group, we developed an intervention to improve adherence to preterm birth preventions among black pregnant patients with prior preterm birth. The intervention included the following: (1) preterm birth prevention education, (2) an employment navigation toolkit, and (3) encouragement text messages. We piloted the intervention by recruiting self-identified non-Hispanic black patients at or before 20 weeks of gestation with a prior preterm birth and randomizing them to the intervention or an active control. The primary outcomes were feasibility and acceptability. Our secondary outcomes were preliminary efficacy based on birth outcomes, patient experience, and pregnancy-specific anxiety (PSA). Descriptive statistics, analysis of verbatim survey responses, Wilcoxon signed rank, and Fisher's exact were used to describe and compare quantitative and qualitative data.
Results: We identified 53 individuals who met the inclusion criteria, 35 were reachable remotely and 30 were enrolled and randomized. More than 80% (n=26) were retained throughout the study, and 100% of participants identified at least one intervention component as helpful. In this small pilot, there were no detectable differences in adherence to preterm birth preventive recommendations. No difference in preterm births, other pregnancy, or patient ex
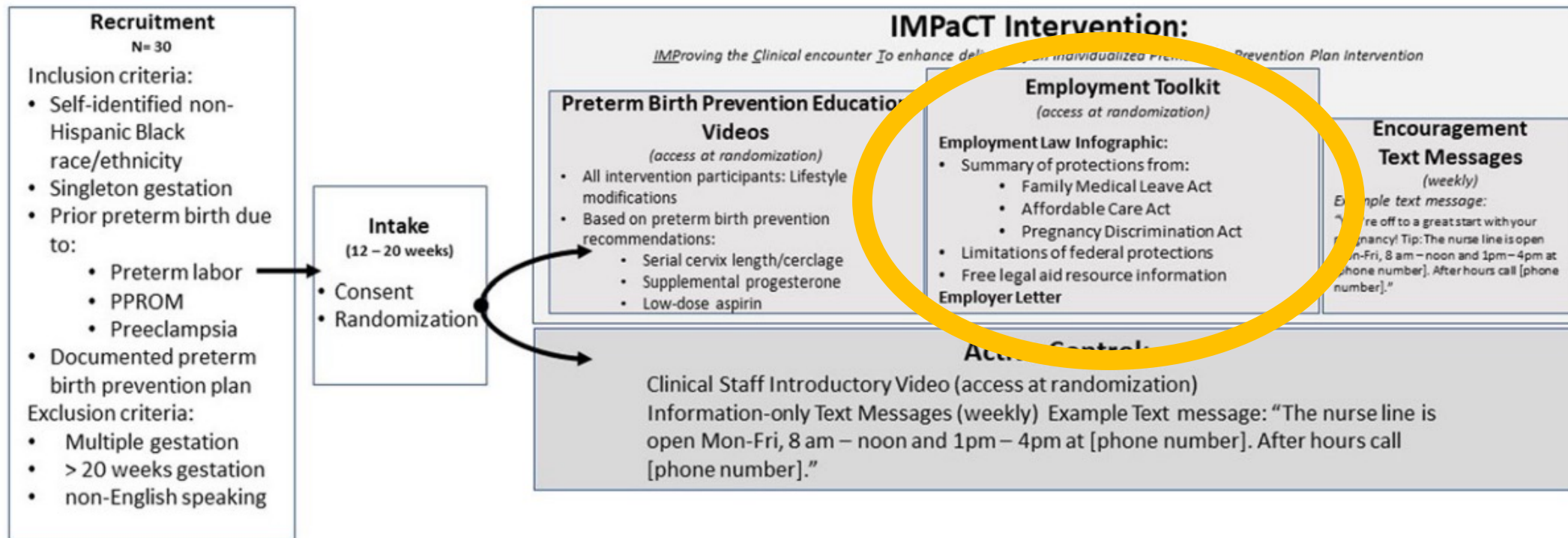participants.

FIG. 1. Participants' flow through the IMPaCT intervention randomized controlled trial. IMPaCT, IMProving the Clinical encounter To enhance delivery of an Individualized Prematurity Prevention Plan.

IMPaCT intervention

FIG. 1. Participants' flow through the IMPaCT intervention randomized controlled trial. IMPaCT, IMProving the Clinical encounter To enhance delivery of an Individualized Prematurity Prevention Plan.

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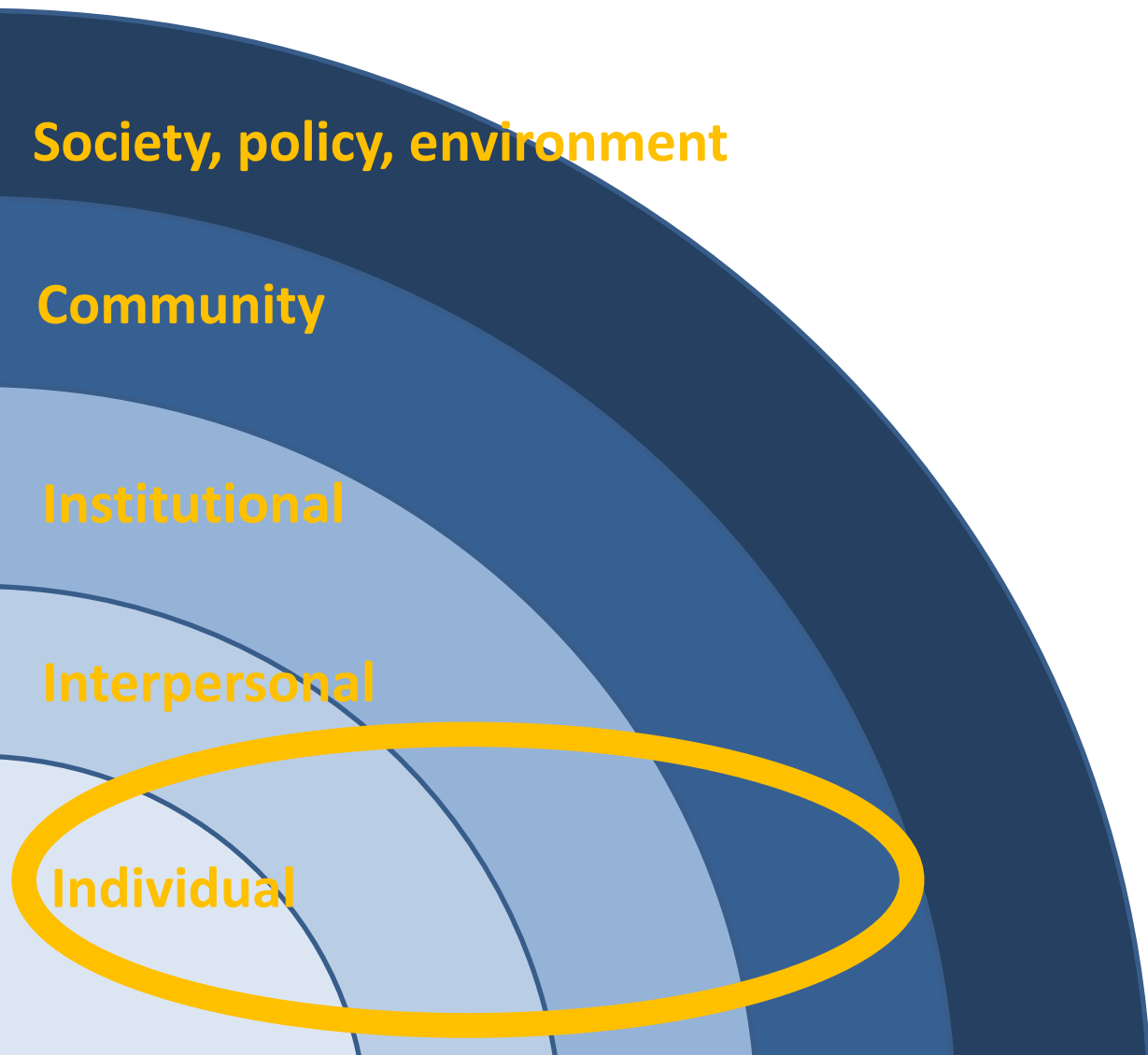
Individual

Individual

INDIVIDUAL

Preeclampsia warning signs visual aid

mHealth application for diabetes

Visual aids for preeclampsia awareness

Ask Your Doctor

Preeclampsia

What Is It?
Preeclampsia is a serious disease related to high blood pressure. It can happen to any pregnant woman.

Risks to You
- Seizures
- Stroke
- Organ damage
- Death

Risks to Your Baby
- Premature birth
- Death

Signs of Preeclampsia
- Stomach pain
- Headaches
- Feeling nauseous; throwing up
- Seeing spots
- Swelling in your hands and face
- Gaining more than 5 pounds in a week

What Should You Do?
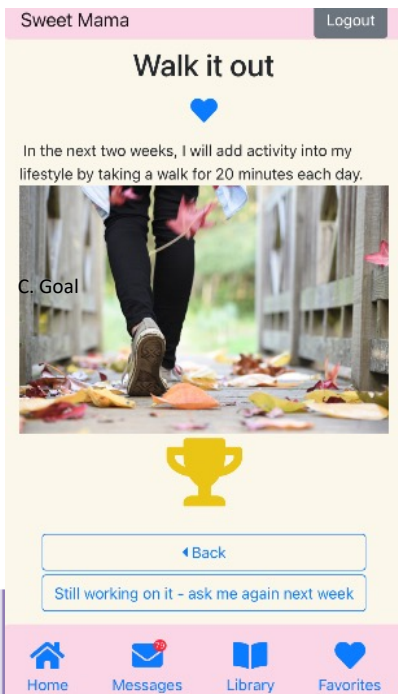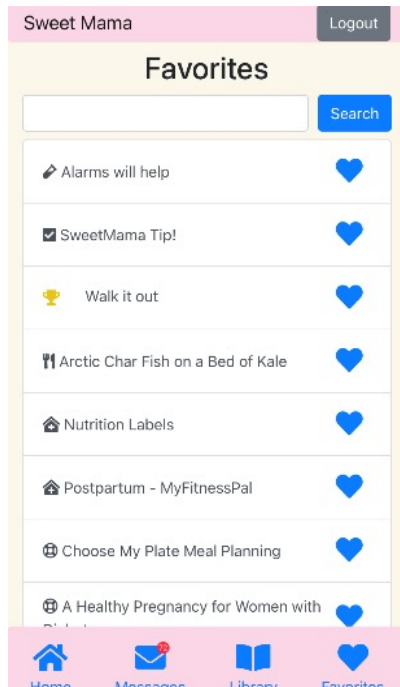Call your doctor right away. Finding preeclampsia early is important for you and your baby.

For more information go to www.preeclampsia.org

- 120 pregnant people randomized to receive a standard pamphlet, no information, or new tool

- Better understanding of preeclampsia with new visual aid

- No differences in knowledge improvement by HL status
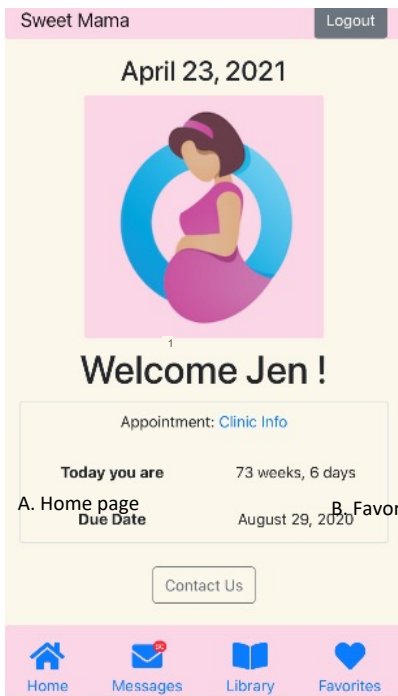
SweetMama:
mHealth tool to address social determinants of diabetes-related perinatal health

- Promotes diabetes literacy and numeracy
- Connects to community-based food, exercise, and social support resources
- Motivational and goal-setting exercises
- Appointment tracking, reminders, and logistical support
- Culturally-relevant

Summary of evidence on SDoH interventions

- Most social needs interventions address violence, social support, food insecurity, and housing

- Interventions with BOTH screening and ongoing services appear to have better outcomes

- Clinically-embedded interventions may be successful at improving perinatal outcomes, but more rigorous studies are needed

Final thoughts on SDoH assessment & interventions

1. Universal, standardized SDoH assessment

Table 1. Sample Screening Tool for Social Determinants of Health ⇔

Domain	Question
Food	In the last 12 months, did you ever eat less than you felt you should because there was not enough money for food?
Utility	In the last 12 months, has your utility company shut off your service for not paying your bills?
Housing	Are you worried that in the next 2 months, you may not have stable housing?
Child care	Do problems getting childcare make it difficult for you to work, study, or get to health care appointments?
Financial resources	In the last 12 months, have you needed to see a doctor but could not because of cost?
Transportation	In the last 12 months, have you ever had to go without health care because you did not have a way to get there?
Exposure to violence	Are you afraid you might be hurt in your apartment building, home, or neighborhood?
Education/health literacy	Do you ever need help reading materials you get from your doctor, clinic, or the hospital?
Legal status	Are you scared of getting in trouble because of your legal status? Have you ever been arrested or incarcerated?
Next steps	If you answered yes to any of these questions, would you like to receive assistance with any of those needs?

2. Aim for solution-based design & design justice

Target unique processes of obstetric care

Function despite limitations of health system

Establish clear and measurable SDoH goals

Center maternal and family experience

Center the margins

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3. Goal = Equitable implementation

Occurs when strong equity components—including explicit attention to the culture, history, values, and needs of the community—are integrated into the principles and tools of implementation science.

(DuMont, Metz, Woo 2019)

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4. Evaluate SDoH interventions

- Systematic and empirical investigations of the effects of a SDoH intervention are a <u>must</u>
- Intervention evaluation types vary by intervention:
  - Traditional experimental (RCT) and quasi-experimental (difference-in-difference, interrupted time series) research designs
  - Plan-Do-Study-Act cycles
  - Process evaluations and process mapping
  - Qualitative evaluations with stakeholders

Gaps in addressing SDoH in maternal-child care

- Data collection is inadequate

- Most SDoH interventions are individual level

- Biomedical interventions rarely consider social needs

- Innovative care delivery models are needed

- Community engagement often overlooked

- Implementation science remains nascent

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https://sites.northwestern.edu/yeelab