

# *Research Priorities for Reducing Racial Disparities in Infant Mortality*

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Innovations in Practice and Policy to End Infant Mortality  
Disparities  
Memphis, Tennessee

# Goals for this presentation

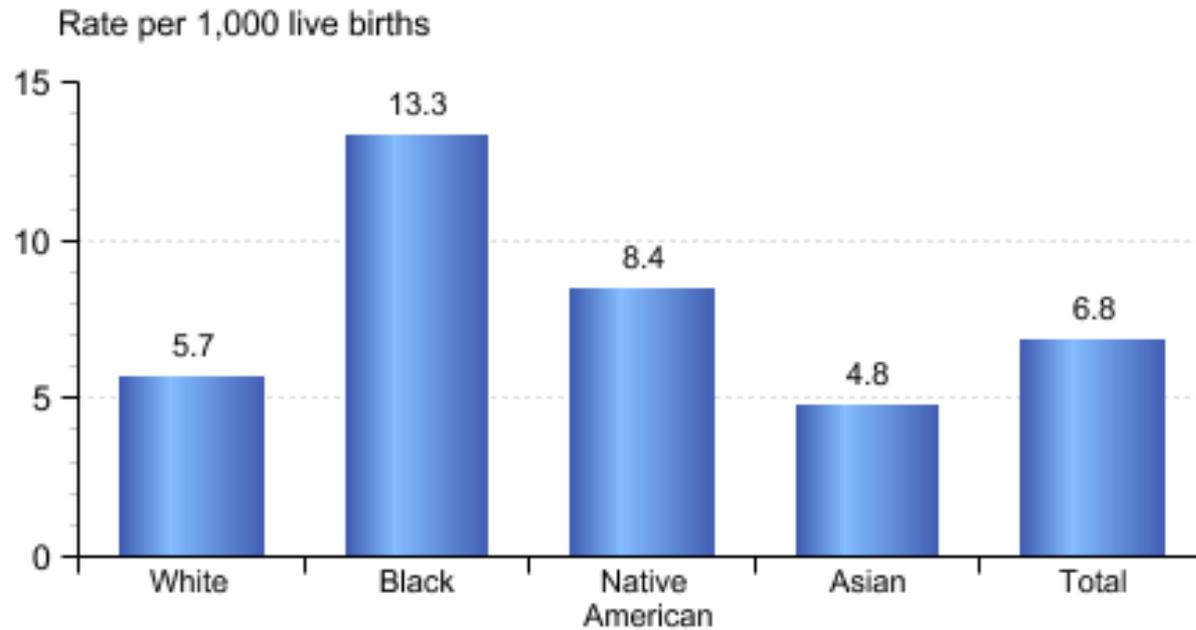
- Identify the major causes of excess infant mortality for African American babies born in the US today
- Discuss possible causes for the excess/disparity
- Discuss what can be done now: priority for action
- Discuss what we need to know: priority for research

# What are the racial disparities in infant mortality?

- U.S.
- Tennessee
- Arkansas
- Mississippi

# Infant mortality rates by race

US, 2003-2005 Average



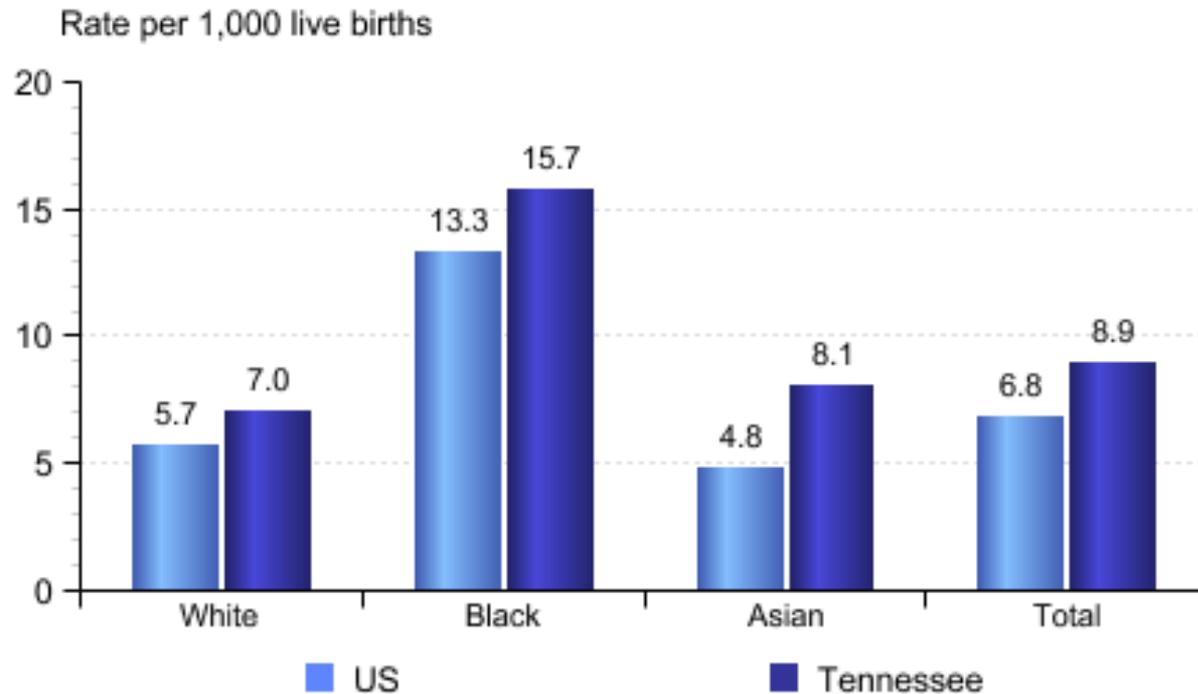
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An infant death occurs within the first year of life.

Source: National Center for Health Statistics, period linked birth/infant death data. Retrieved May 20, 2009, from [www.marchofdimes.com/peristats](http://www.marchofdimes.com/peristats).

# Infant mortality rates by race

US and Tennessee, 2003-2005 Average



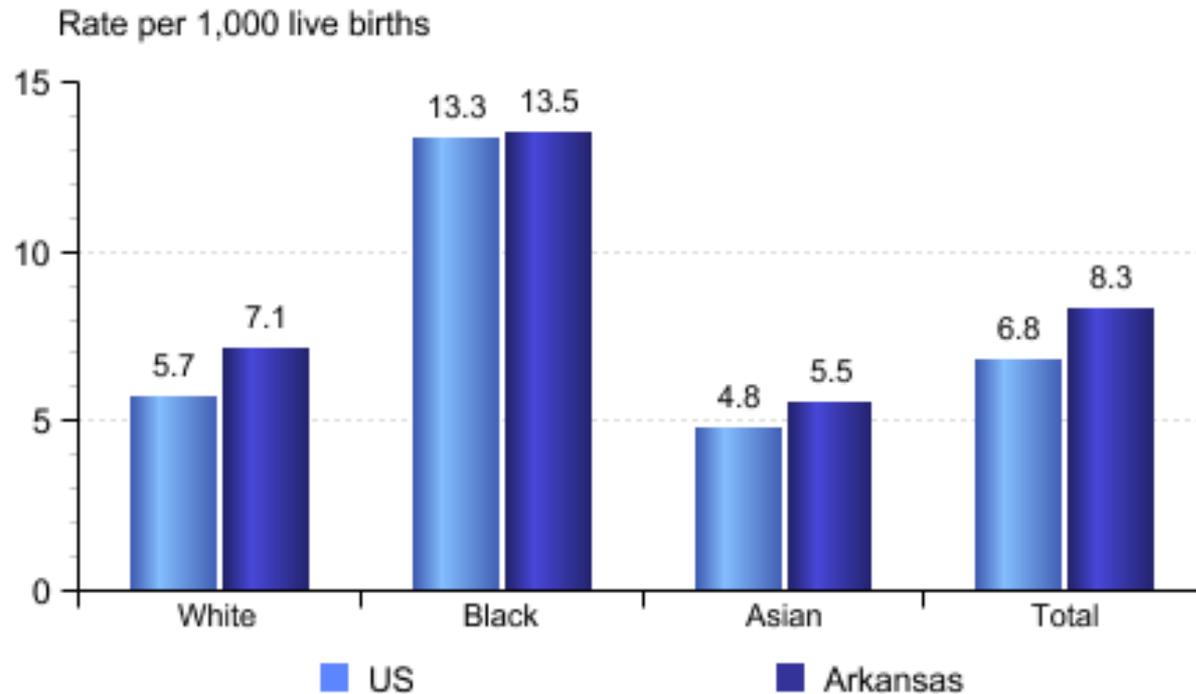
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An infant death occurs within the first year of life.

Source: National Center for Health Statistics, period linked birth/infant death data. Retrieved April 30, 2009, from [www.marchofdimes.com/peristats](http://www.marchofdimes.com/peristats).

# Infant mortality rates by race

US and Arkansas, 2003-2005 Average



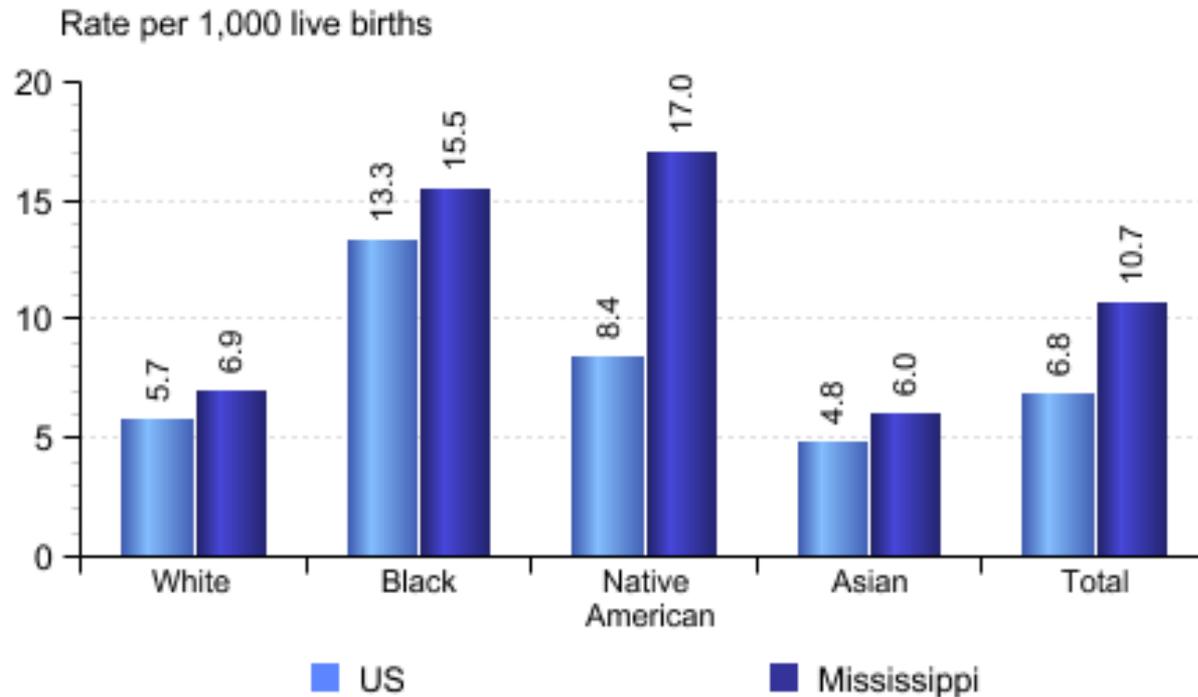
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An infant death occurs within the first year of life.

Source: National Center for Health Statistics, period linked birth/infant death data. Retrieved April 30, 2009, from [www.marchofdimes.com/peristats](http://www.marchofdimes.com/peristats).

# Infant mortality rates by race

US and Mississippi, 2003-2005 Average



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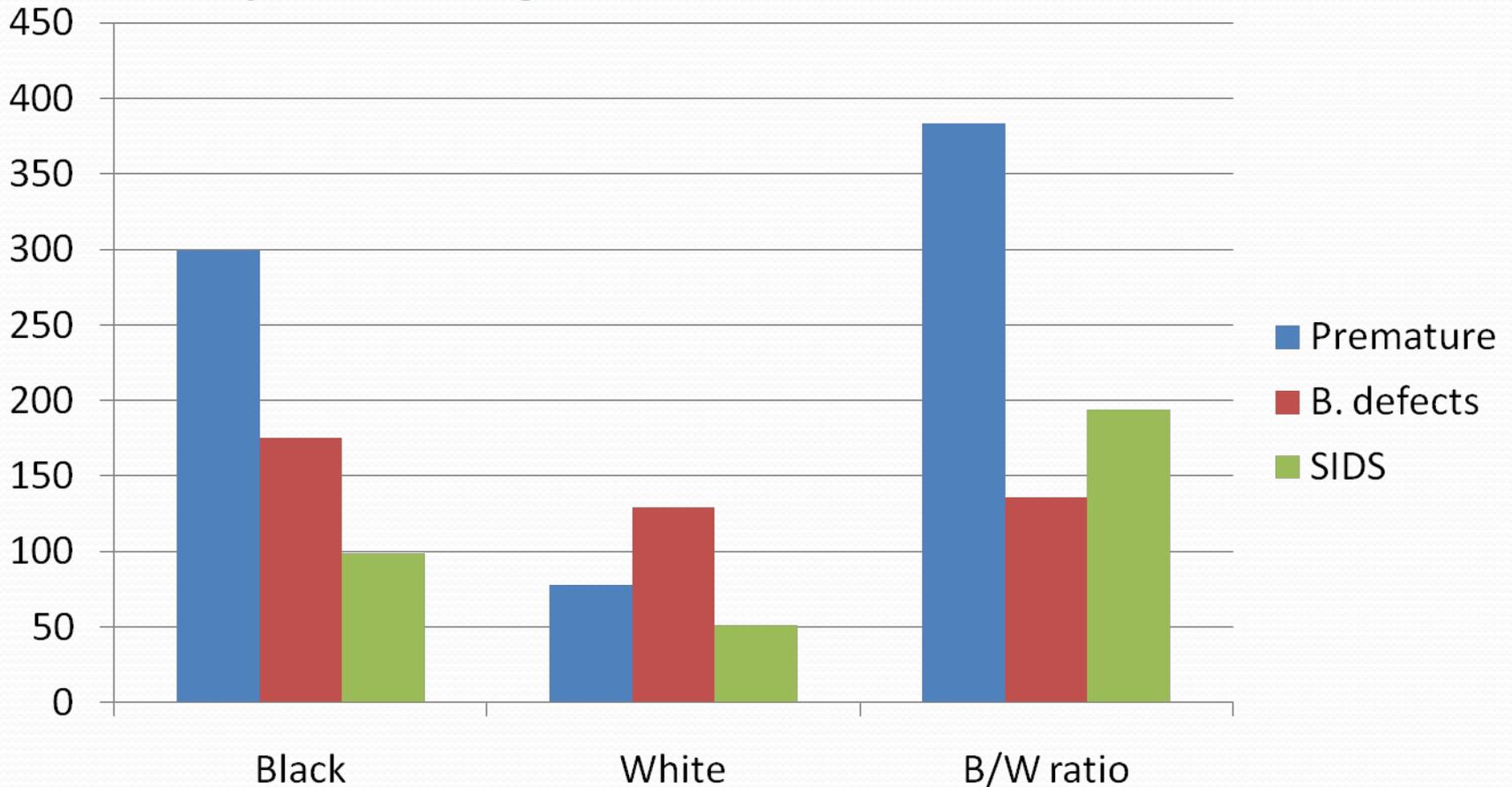
An infant death occurs within the first year of life.

Source: National Center for Health Statistics, period linked birth/infant death data. Retrieved May 20, 2009, from [www.marchofdimes.com/peristats](http://www.marchofdimes.com/peristats).

# What are the causes of infant mortality related to the Black/White disparity?

- Preterm delivery
- Birth defects
- Sudden infant death syndrome (SIDS)

# Infant mortality deaths per 100,000 live births and Black/White Ratio (Black deaths per 100 White deaths) for the top 3 leading causes of infant death, U.S., 2006



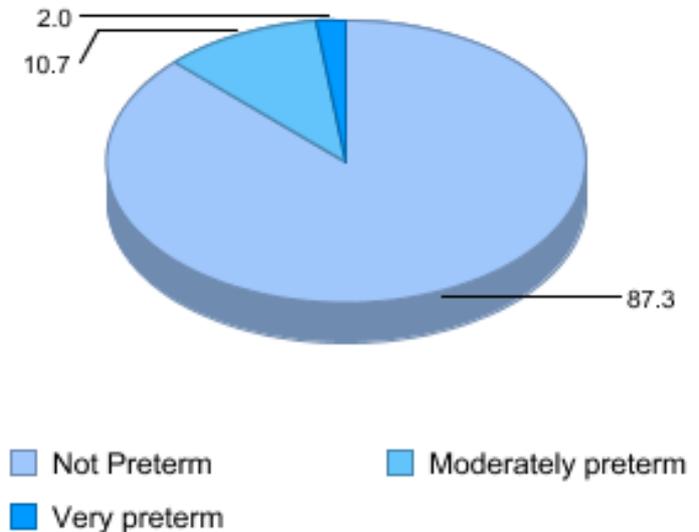
# Very Preterm Birth ( $<32$ weeks' gestation)



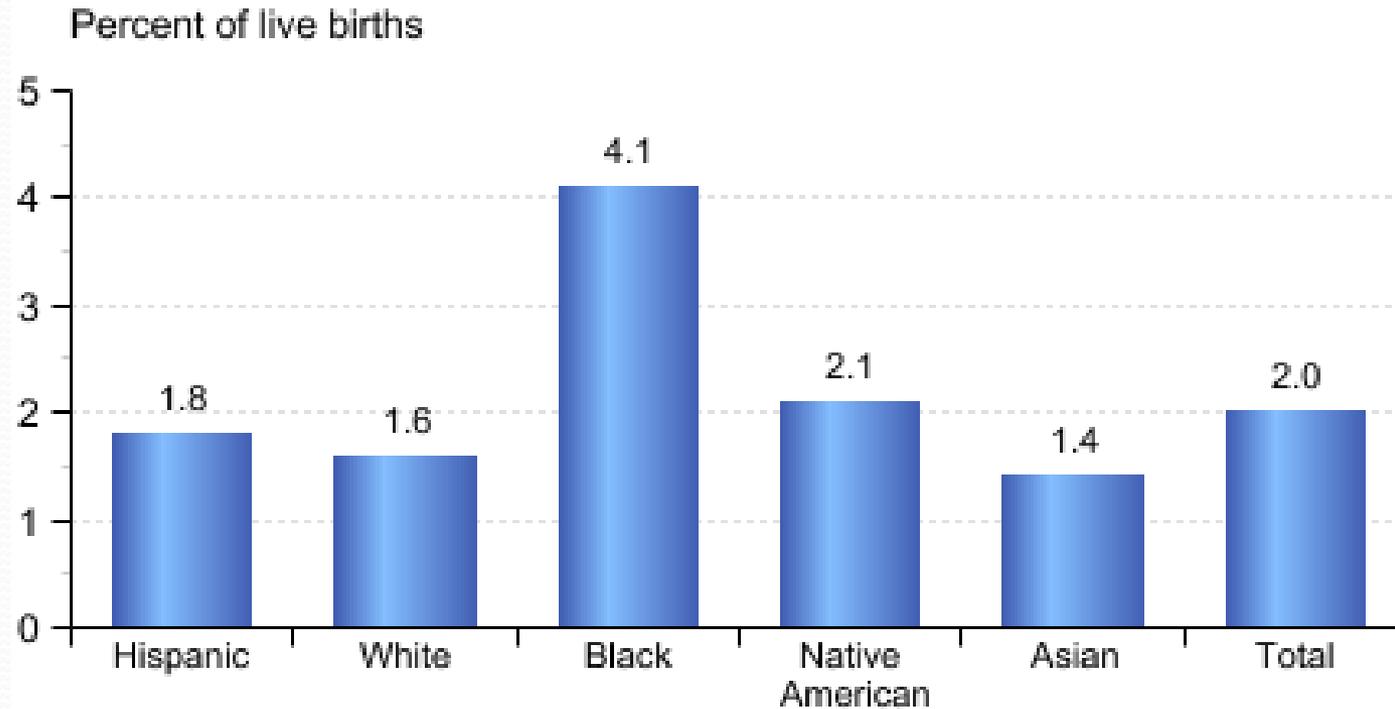
# Very Preterm Birth (VPTB) is a major health problem in the U.S.

- VPT babies are only 2 % of live births in U.S. in 2006, yet
- 1/3 of U.S. infant deaths (< 1 years of age)
- 2/3 of U.S. neonatal deaths (< 28 days)

Percent of live births



# Racial disparity in very preterm birth, 2003-2005



# African American babies...

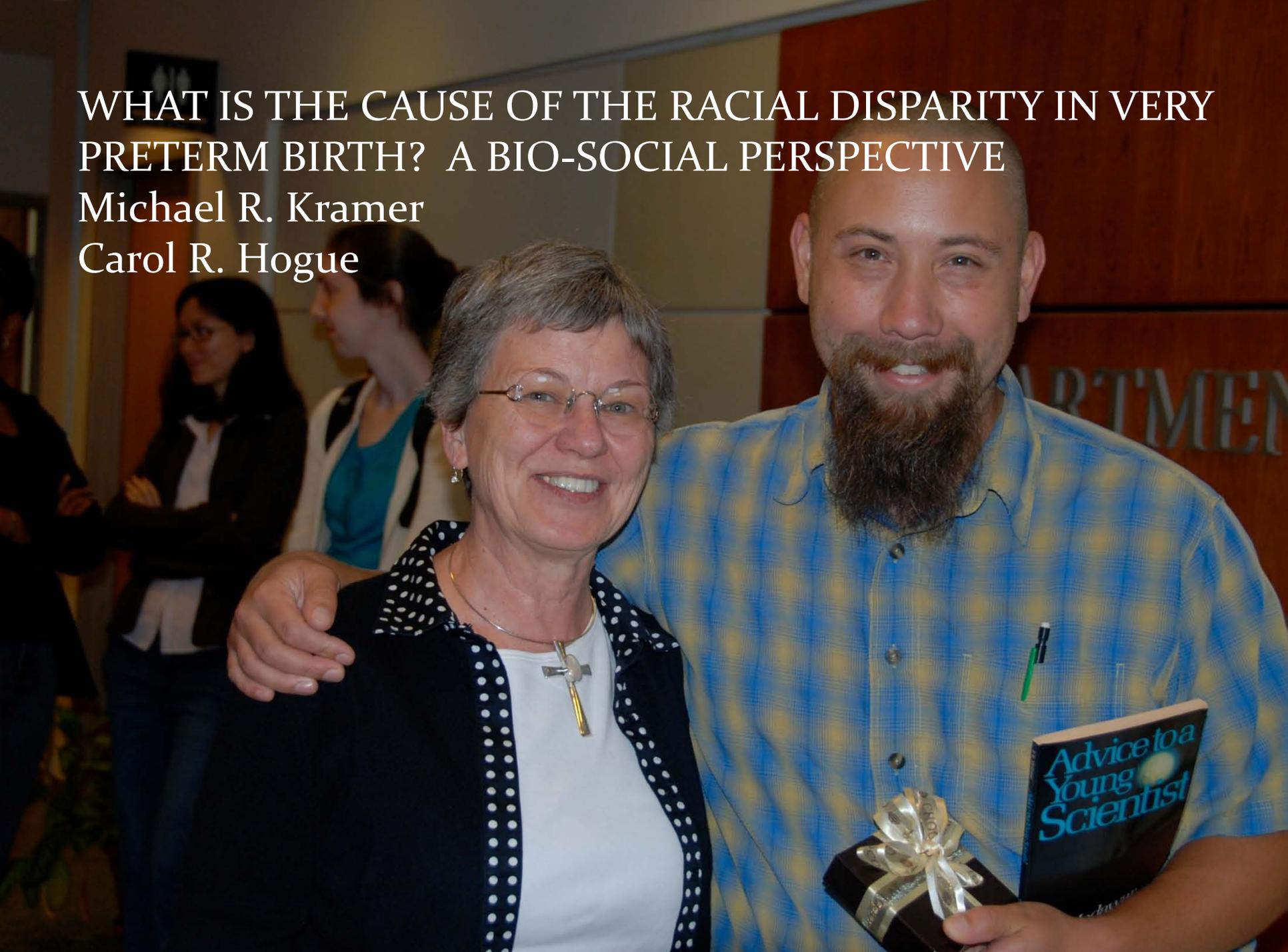


- African American births at 3 times the risk of European American births
  - For gestation < 32 weeks
  - For birth weight < 1500 g
  - For birth weight < 1500 g even for college-educated women married to college-educated men, in first or second pregnancy, with early prenatal care

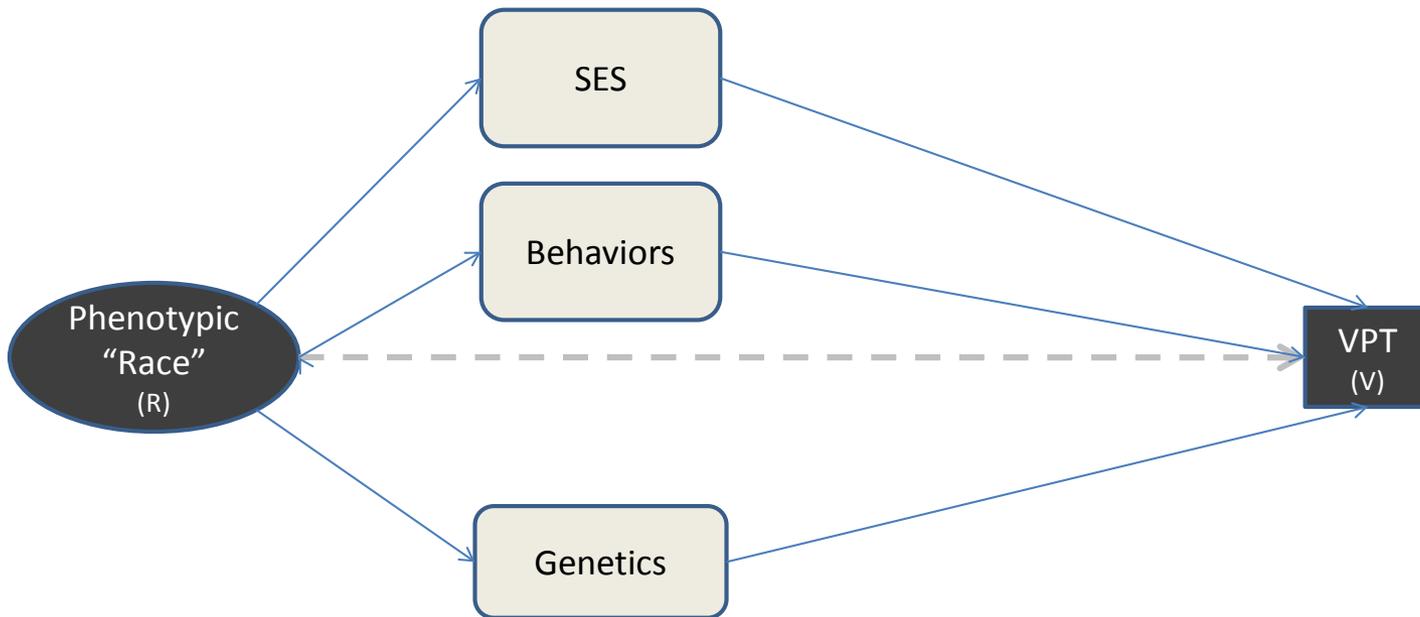
WHAT IS THE CAUSE OF THE RACIAL DISPARITY IN VERY  
PRETERM BIRTH? A BIO-SOCIAL PERSPECTIVE

Michael R. Kramer

Carol R. Hogue

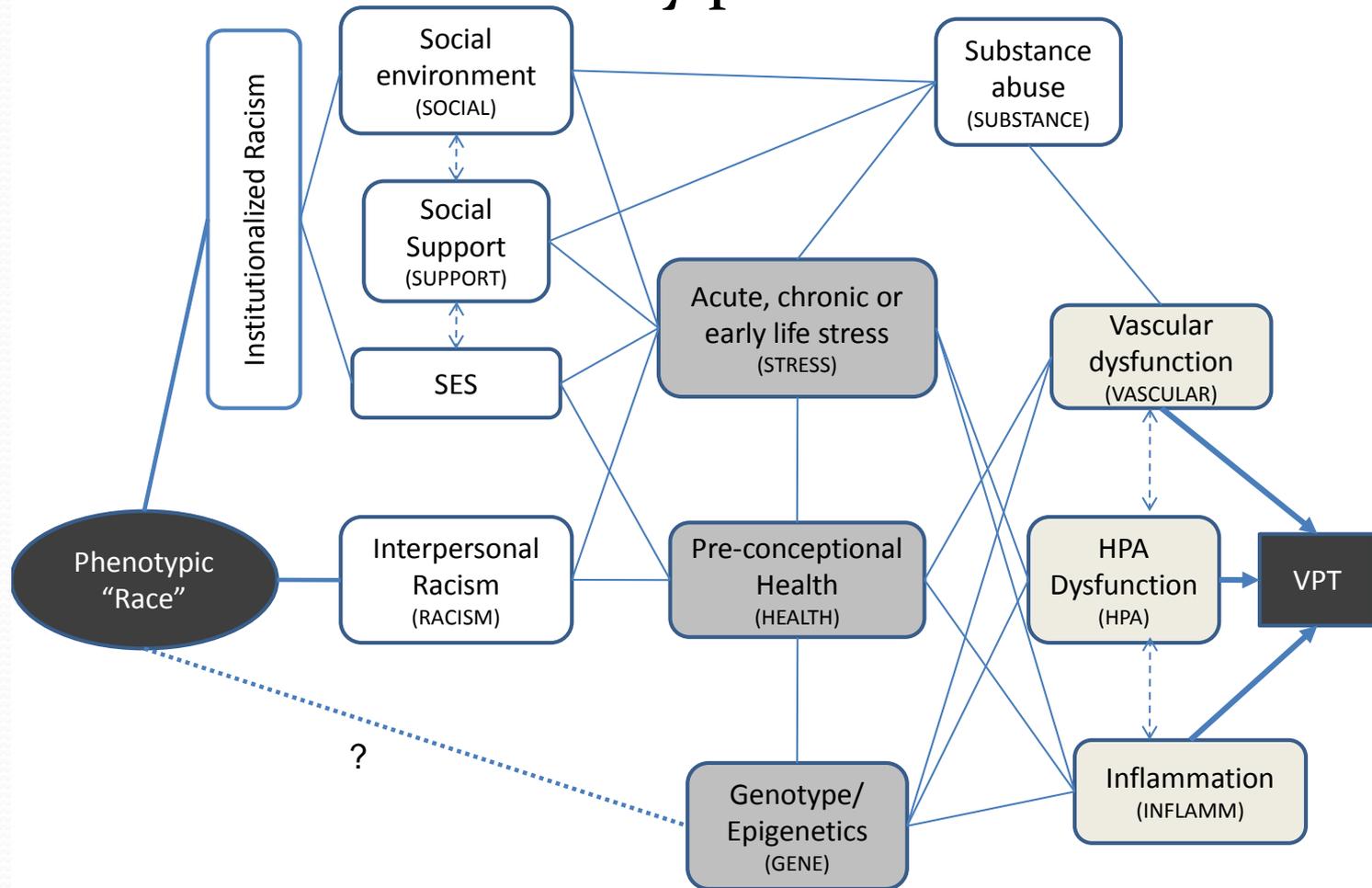


# Typical conceptual framework for explaining association of race and very preterm birth

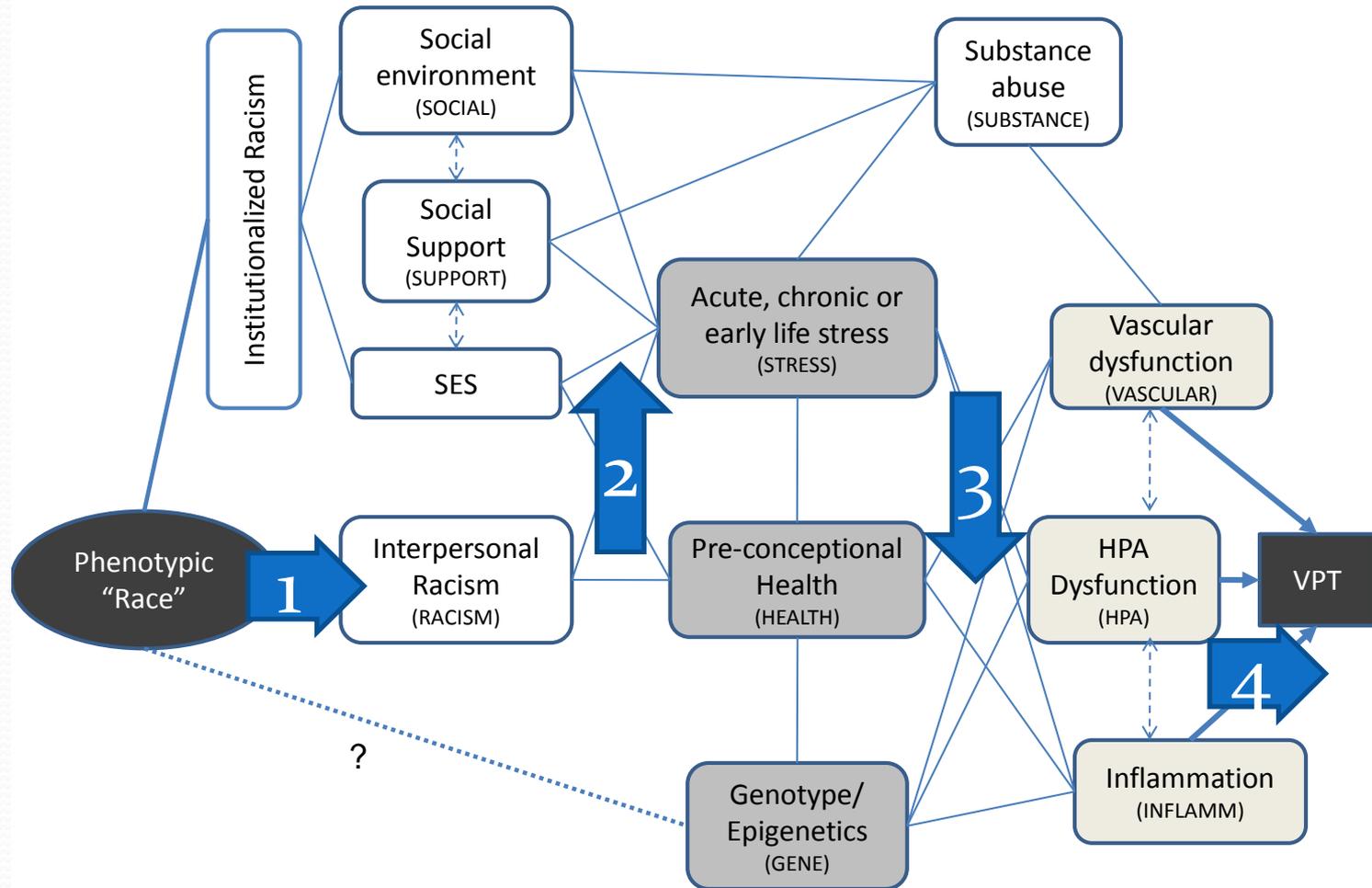


Source: MR Kramer & CR Hogue, Epidemiologic Reviews, 2009.

# Alternative conceptual framework for understanding association of race and very preterm birth



# Alternative conceptual framework for understanding association of race and very preterm birth



## Arrow ONE: Racism in the U.S. exists.

- 2007 poll by the Pew Research center found that 81 percent of African-Americans in the US report 'frequent' experiences of discrimination in at least one of the following categories: applying for a job, eating in a restaurant, renting or buying a house, or applying to a university or college.

# Arrow TWO (Racism causes chronic stress)

- Well-established that interpersonal discrimination results in acute stress response
- Increasing evidence that early life experiences of discrimination result in later health problems
  - “Weathering”
  - Post-traumatic stress response

# Arrow THREE (Stress increases HPA dysfunction).

- Increasing evidence that African-American women are more likely to have differences in stress hormone reactions in pregnancy that parallel patterns of chronically stressed adults (e.g., PTSD).

# Arrow FOUR (HPA dysfunction increases risk of preterm delivery).

- Ample evidence of the effect of chronic stress on reduced immune function and increased inflammatory processes – which are thought to be the most likely pathways to premature rupture of membranes or preterm labor.

## Arrow One (Racism)-Four (Preterm delivery)

- In four studies of interpersonal racism, Black mothers of VLBW or preterm infants were approximately three times as likely to have experienced racial discrimination as mothers of normal birth weight infants.
- In the CARDIA prospective cohort, experiences of discrimination increased risk of self reported preterm birth 2.4-fold.
  - Control for experiences of discrimination reduced the black-white disparity by 50 percent.

## Arrow TWO (Stress) – FOUR (Preterm delivery)

- 4 of 6 studies of recent adverse life events found an association of number of events and increased risk of preterm delivery for African-American women.
  - In one study, the odds ratio was  $> 3$  for three or more negative life events
- Adverse childhood events, including sexual abuse were associated with preterm birth in two studies but not in a third.

# Summary of research priorities to reduce the Black/White gap in infant mortality

- Future studies should incorporate a rich causal framework
  - broader selection of potential factors in studies primarily focused on finding genetic differences
  - hypothesized biologic markers routinely incorporated into all preterm birth studies of racial disparities.
- Creative ways to combine vital statistics with richer clinical and social information



What can be done now? Develop effective programs to address known risk factors for preterm delivery.

- Too-short inter-pregnancy intervals
- Lack of care for high-risk women
- Unwanted pregnancies
- Smoking

# Too-short inter-pregnancy intervals

- The ideal inter-pregnancy interval is 18-23 months.
- The least healthy inter-pregnancy interval is  $< 6$  months.
- Many women with poor pregnancy outcomes have very short next-inter-pregnancy intervals.

# Lack of Care for High-Risk Women

- Medicaid routinely stops 6 weeks' postpartum.
- Women with LBW often have chronic conditions (e.g., HBP, diabetes) that require ongoing care.
- Women with LBW may lack resources to obtain desired birth control.

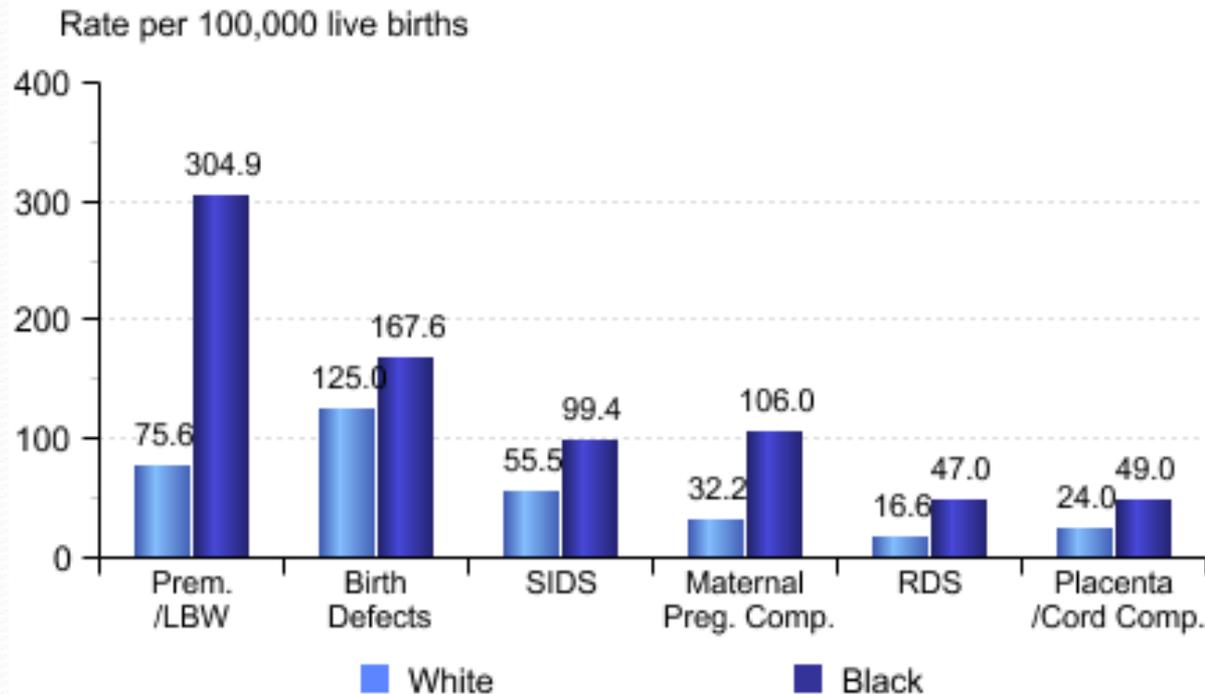
# Situation today

- Unintended pregnancy is increasing, as is non-use of contraception.
- Unintended pregnancy is a risk factor for preterm births and other adverse outcomes to mother and child.
  - Through short inter-pregnancy intervals
  - Through pregnancies that weren't wanted by the mother

# What can be done today

- Clinical interventions can reduce risk of short inter-pregnancy intervals.
- Clinical interventions may reduce risk of pregnancies for which the couple isn't ready.
- These actions would reduce the black/white gap in LBW and PTD.
- There is a great need for clinical research in this area.

# Leading cause-specific infant mortality rates by maternal race/ethnicity, 2005



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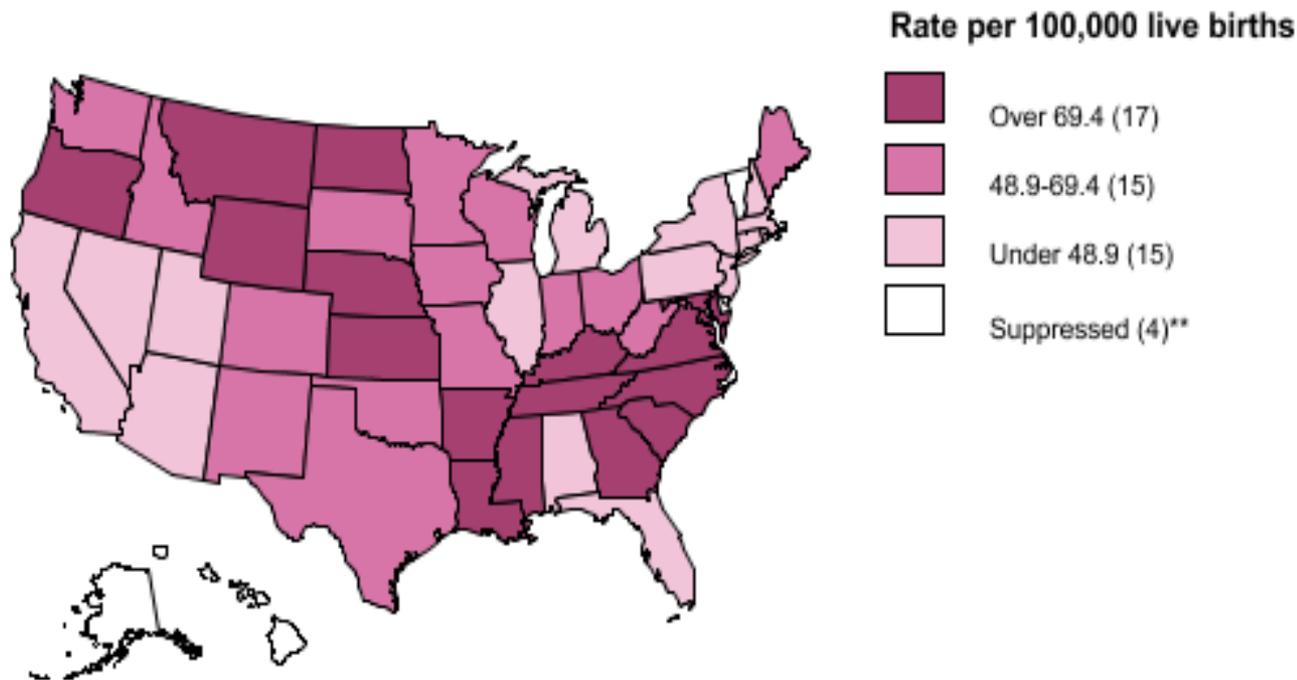
All race categories exclude Hispanics. An infant death occurs within the first year of life. SIDS is Sudden Infant Death Syndrome. RDS is Respiratory Distress Syndrome. "Maternal Preg. Comp." stands for "Maternal Complications of Pregnancy." "Prem./LBW" stands for "Prematurity/Low Birthweight." "Placenta/Cord Comp." stands for "Complications of the Placenta, Cord, and Membranes."

Source: National Center for Health Statistics, period linked birth/infant death data. Retrieved April 8, 2009, from [www.marchofdimes.com/peristats](http://www.marchofdimes.com/peristats).

# Racial disparity in infant mortality due to birth defects

- Relatively “new” phenomenon – no difference in birth defects mortality by race for babies born in 1980
- Birth defect mortality has declined for all, but more for Whites than Blacks
- Cause for increasing gap unknown
  - Differential prenatal diagnosis and termination?
  - **Differential folic acid protection?**
  - **Increasing gap in postnatal care for affected infants?**

# Infant deaths due to sudden infant death syndrome, 2005



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# What can be done to reduce the Black/White gap in SIDS?

- Prone sleeping may be more common for Black than for White babies.
  - Evidence suggests that prone sleeping increases in economic downturns.
  - Co-sleeping with prone sleeping may be more likely in Black than in White families.
- “Dummy” or pacifier may reduce the risk of prone or co-sleeping. Would increasing pacifier use be more or less culturally acceptable than changing sleep patterns?

# Conclusion: The 5 top research priorities

1. Etiologic research within a rich causal framework to understand the causes of very preterm delivery disparity
2. Health policy, clinical, and behavioral research to increase access to contraception and contraceptive use to reduce unintended pregnancies
3. Epidemiologic research to determine whether postnatal care is contributing to excess birth defects deaths for Black babies

# Conclusion: The 5 top research priorities continued

4. Case-control studies of sudden, unexplained deaths to determine main causes for the racial disparity, followed by:
5. Community-based intervention research to determine culturally appropriate approaches to reduce SIDS disparities