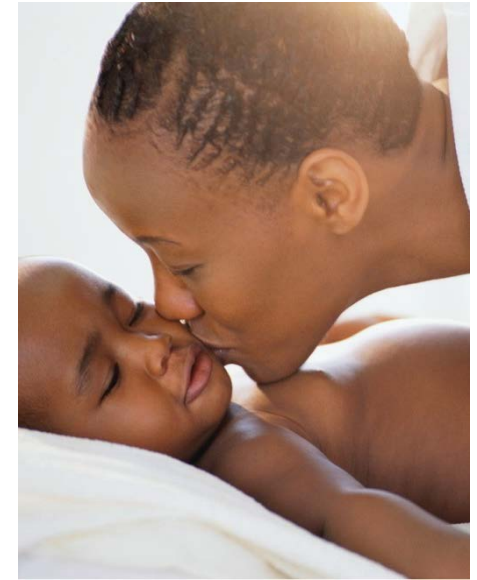


Reducing Infant Mortality:

a Perinatal Periods of Risk Analysis of Fetal-Infant Mortality in King County, WA



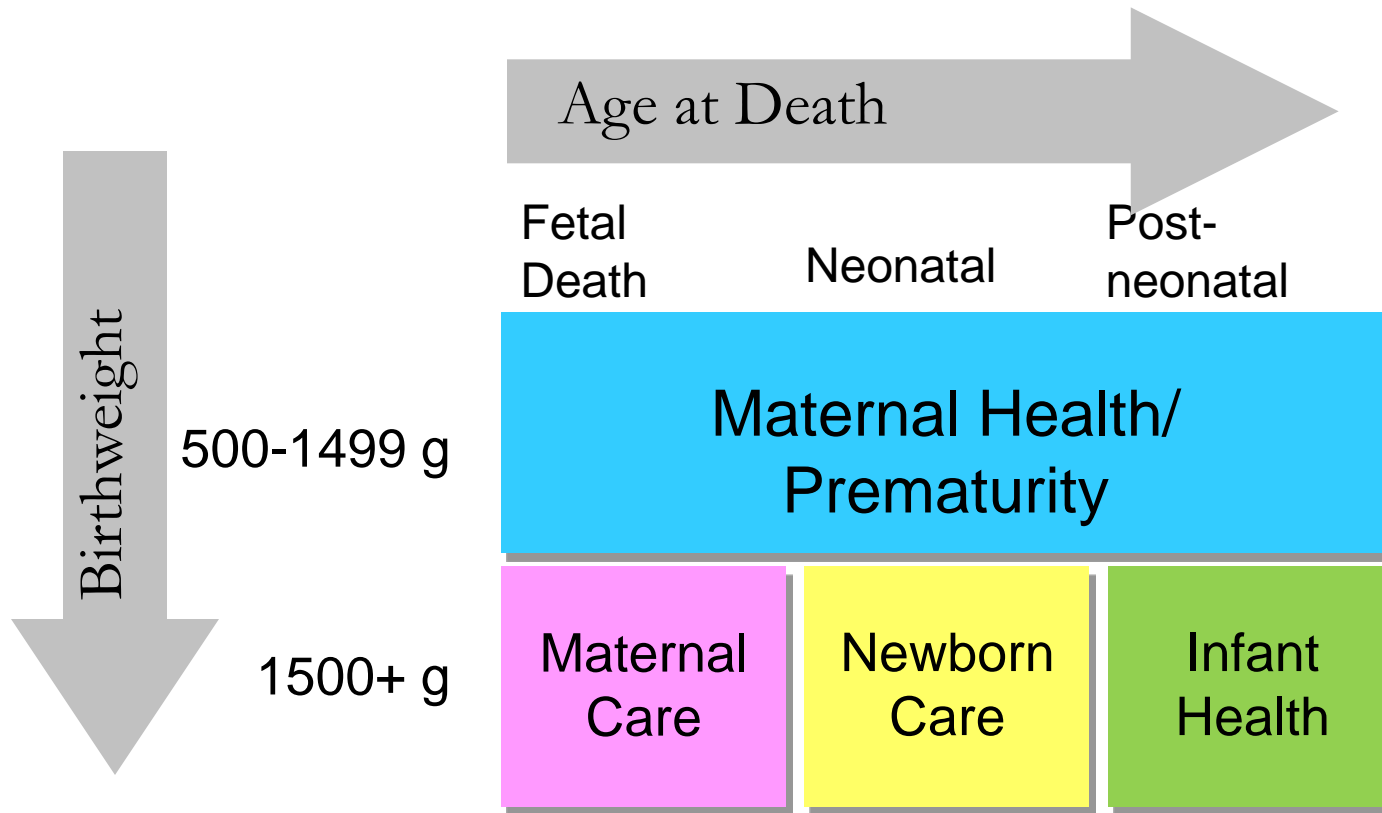
Adverse Birth Outcomes Advisory Committee
Governor's Interagency Council on Health Disparities
February 26, 2015

Perinatal Periods Of Risk (PPOR) Approach – Why?

- A *simple approach* that can be used by communities nationwide.
- An approach that can *identify preventable deaths* in the community.
- An approach that can *target resources* for prevention activities.
- An approach that can *mobilize the community* to action.

PPOR “MAP”

The cells in the PPOR MAP help indicate the actions needed



These four groups are given labels that suggest the primary preventive strategy for preventing the deaths in that group.

Maternal Health/Prematurity

Issues

- Preconceptional Health
- Health Behaviors
- Perinatal Care

Interventions

- Perinatal outreach and education to promote early entry to high quality prenatal care and provide support
- Pre- and post-conception genetic counseling
- Promote access to health care, substance abuse treatment

Maternal Care

Issues

- Access to high quality, continuous prenatal care
- High-risk referral as needed
- Management of medical conditions

Interventions

- Perinatal outreach to promote early entry to high quality, continuous prenatal care
- System of care for high risk pregnancies, with uniform transport policies, accessible to all

Newborn Care

Issues

- Access to neonatal intensive care
- Early and continuous neonatal care
- Pediatric surgery

Interventions

- Early post-birth visits
- Outreach to promote ongoing pediatric care
- Advanced neonatal care
- System of care for high risk infants, with uniform transport policies, accessible to all

Infant Health

Issues

- Sudden Unexplained Infant Death (SUID), Sleep position
- Breast-feeding
- Accidents/injury
- Child abuse/neglect
- Infection

Interventions

- Safe to Sleep campaigns
- Car seat safety
- Breastfeeding
- Ongoing family support
- Access to a medical home
- Reduce substance use

Definitions and Data Sources

- Fetal death (Fetal Death Certificates)
 - 24+ weeks gestation, 500+g birthweight
- Infant death (Linked Birth-Infant Death File data)
 - Neonatal (0-27 days)
 - Postneonatal (28 days - 1 year)
- Live births: remainder of live birth cohort (Birth Certificate data)

Included in the Analysis

- Fetal Deaths
 - 24+ weeks gestation
 - 500 grams or more
- Infants
 - 500 grams or more
- Excludes spontaneous and induced abortions



Study Population



- Births to King County residents
- Comparison to Washington State
- Analysis Groups
 - White non-Hispanic
 - African American non-Hispanic
 - American Indian/Alaskan Native
 - Hispanic
 - Asian and Pacific Islander

AIAN in Washington State

- 29 Federally Recognized Tribes
- 3 Tribes with Pending Federal Recognition
- 2 Urban Indian Health Organizations: Spokane & Seattle
- Population: 198,998
- Non reservation Population: Approx. 83% (2010 Census)
- $\frac{3}{4}$ live in urban areas; 1 in 5 live in King County

Population Data Source: US Census Bureau, 2010 Census; 2009-2011 American Community Survey

Black/African Americans in Washington State

- Population: 325,004
- Almost half live in King County
- 1 in 5 speak a language other than English at home (1 in 3 in King County)
- About 1 in 4 live in poverty

Population Data Source: US Census Bureau, 2010 Census; 2009-2013 American Community Survey

Steps for PPOR Analysis

1. Identify reference group

King County, white non-Hispanic; age 20+ years; 13+ years education

2. Calculate birthweight proportionate mortality rates (BWPMR) in each cell for both groups

$$BWPMR = \frac{\# \text{ deaths in cell}}{\# \text{ births (still+live) in matrix}} \times 1,000$$

3. Calculate excess mortality: BWPMR for group of interest minus BWPMR for standard.

$$BWPMR_{(group \text{ of interest})} - BWPMR_{(reference)}$$

Perinatal Periods Of Risk (PPOR) Use

- Examine the four “Periods of Risk”
- Identify the groups and periods of risk with the most deaths and the highest rates.
- Use a comparison group to estimate “excess or preventable deaths” for these groups and periods of risk.
- Comparison group: white non-Hispanic; ≥ 20 years of age; ≥ 13 years of education

King County Excess FIMR (Deaths/1000 Births) 2008-2012

White NH (0.2)

| | | |
|-----|-----|------|
| 0.3 | | |
| 0.1 | 0.4 | -0.6 |

African-Am NH
(5.6)

| | | |
|-----|-----|-----|
| 1.6 | | |
| 1.3 | 1.2 | 1.5 |

AI/AN NH* (8.4)

| | | |
|-----|-----|-----|
| 2.2 | | |
| 1.9 | 0.6 | 3.7 |

*Washington analysis

API (1.1)

| | | |
|-----|-----|-----|
| 0.3 | | |
| 0.2 | 0.3 | 0.3 |

Hispanic (2.4)

| | | |
|-----|-----|-----|
| 0.7 | | |
| 0.8 | 0.4 | 0.6 |

King County (2.1)

| | | |
|-----|-----|-----|
| 0.6 | | |
| 0.5 | 0.5 | 0.6 |

Perinatal Periods of Risk Identifies Number of Preventable Deaths King County, WA 2008-2012

| | King | White NH | African Am. NH | AIAN* | API | Hispanic |
|-----------------------------|------------|-------------|-------------------|------------|-----------|-----------|
| Mat. Health/ Prematurity | 71 | 21 | 18 | 19 | 9 | 13 |
| Maternal Care | 66 | 6 | 15 | 16 | 4 | 14 |
| Newborn Care | 57 | 25 | 13 | 5 | 7 | 7 |
| Infant Health | 70 | -40 | 16 | 31 | 8 | 10 |
| Total | 265 | 12 | 62 | 71* | 28 | 43 |

*Washington State data shown/ King County preventable deaths ~ 9 overall.

Numbers do not add to total due to missing information for some deaths.

NH=non-Hispanic, AIAN=American Indian/Alaska Native NH, API=Asian/Pacific Islander NH.

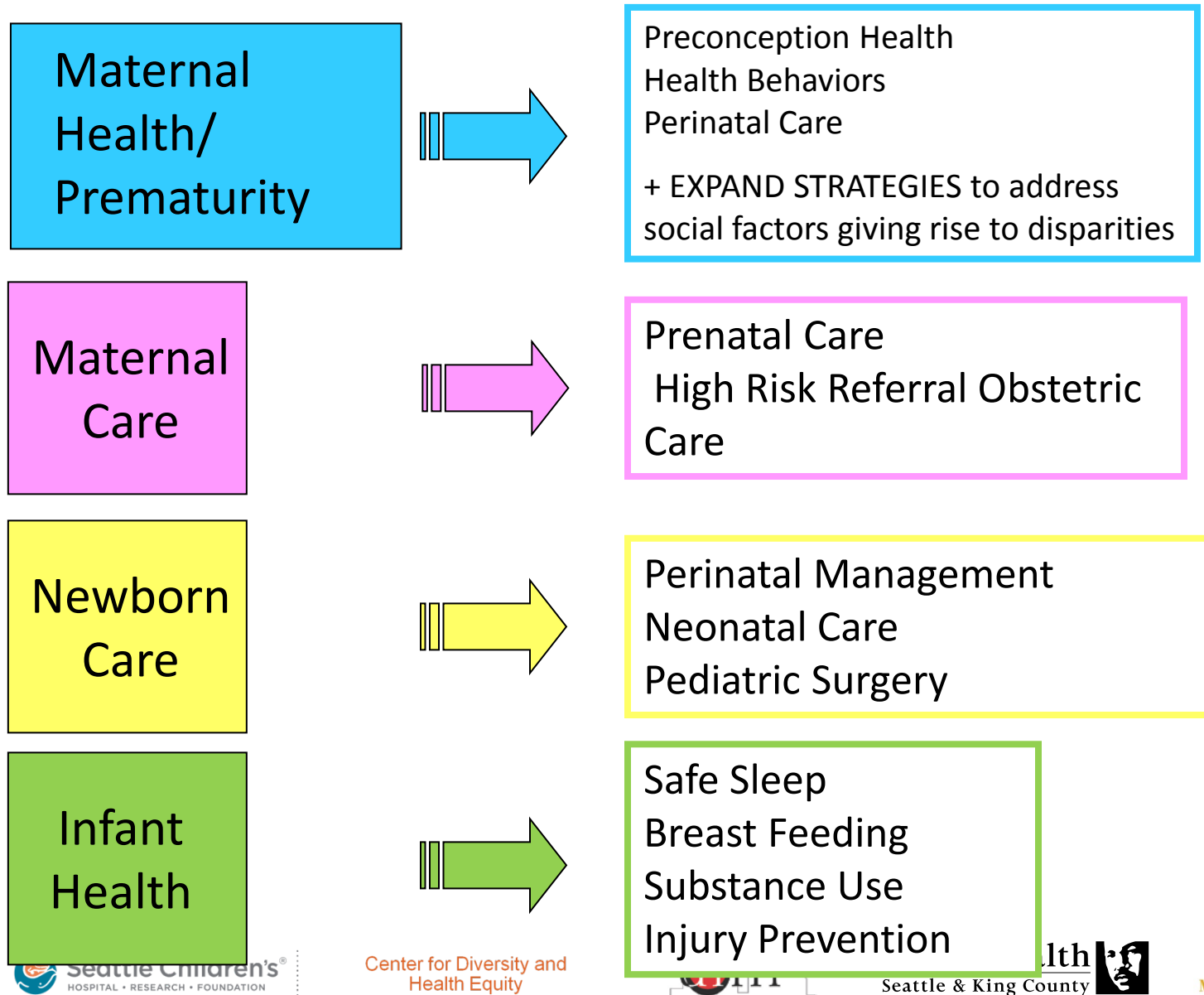
Perinatal Periods of Risk Identifies Number of Preventable Deaths Washington State 2008-2012

| | WA State | White NH | African Am. NH | AIAN | API | Hispanic |
|-----------------------------|--------------|-------------|-------------------|-----------|-----------|------------|
| Mat. Health/ Prematurity | 316 | 153 | 49 | 19 | 23 | 48 |
| Maternal Care | 310 | 105 | 36 | 16 | 31 | 47 |
| Newborn Care | 136 | 78 | 6 | 5 | 1 | 31 |
| Infant Health | 381 | 229 | 32 | 31 | 19 | 54 |
| Total | 1,143 | 565 | 123 | 71 | 74 | 180 |

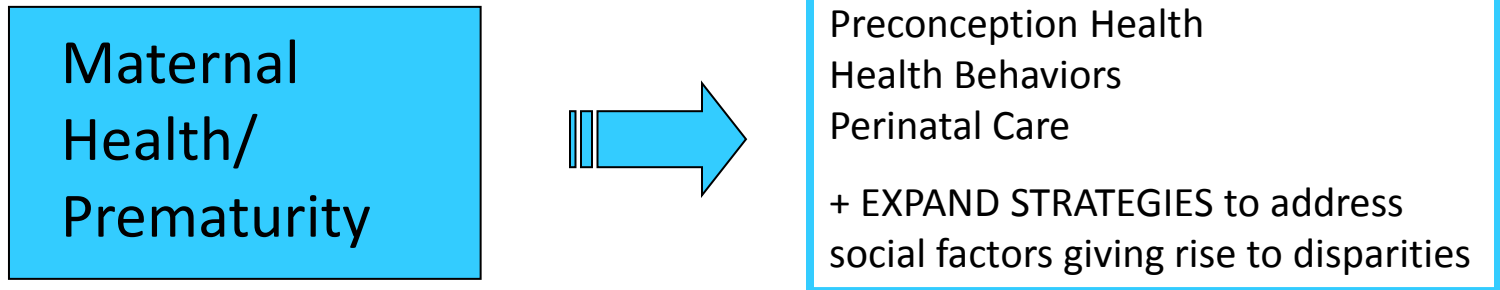
Numbers do not add to total due to missing information for some deaths.

NH=non-Hispanic, AIAN=American Indian/Alaska Native NH, API=Asian/Pacific Islander NH.

Perinatal Periods of Risk Identifies Preventive Action Opportunities



Perinatal Periods of Risk Identifies Preventive Action Opportunities

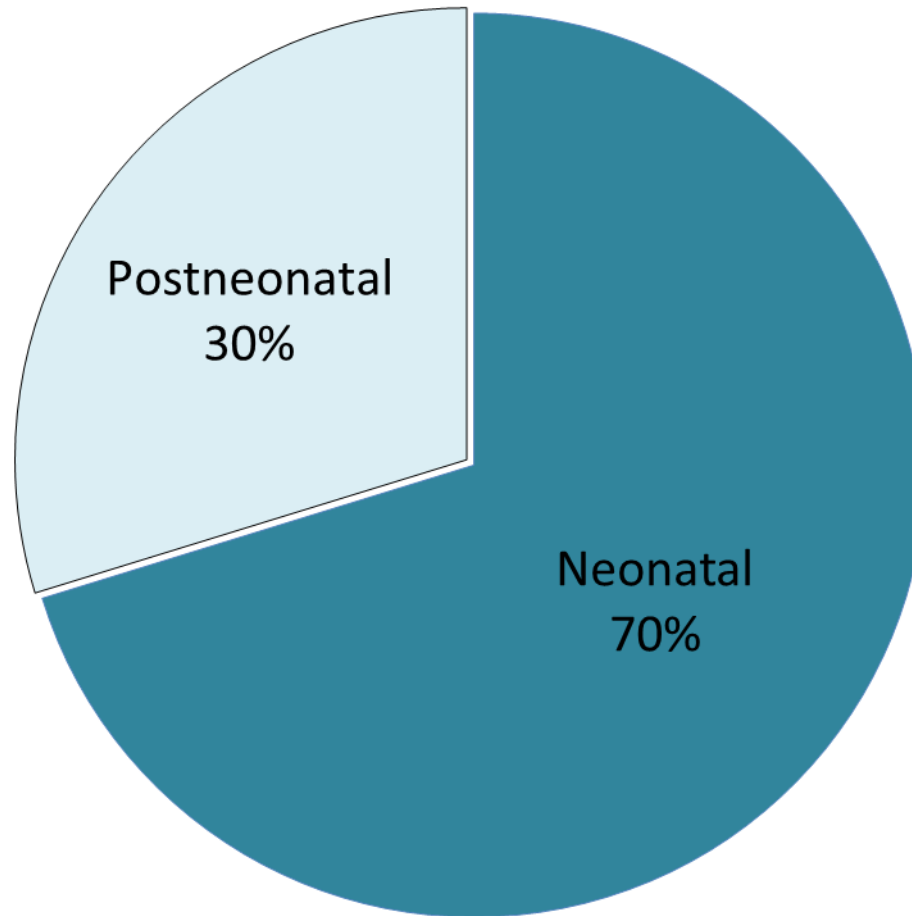


Diving deeper,

Birth weight distribution accounts for 54% of the statewide African American excess mortality rate compared to an average statewide of 28%. This suggests that the excess deaths are due to a higher frequency of prematurity/very low birth weight.

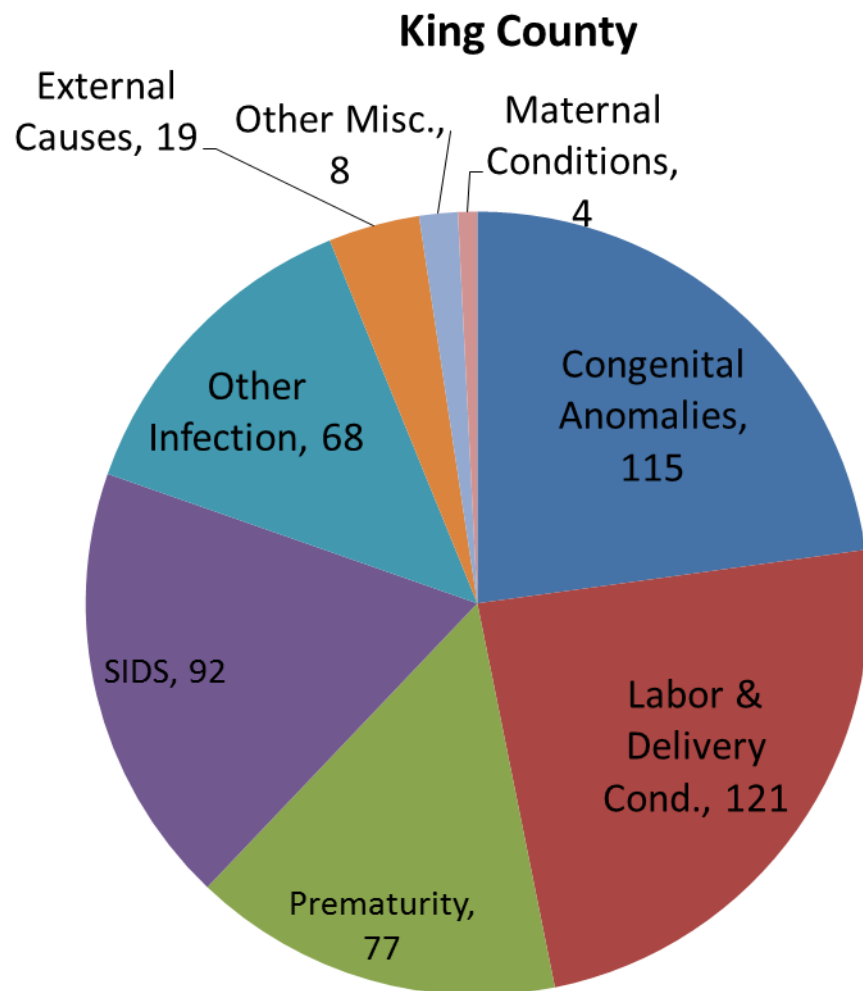
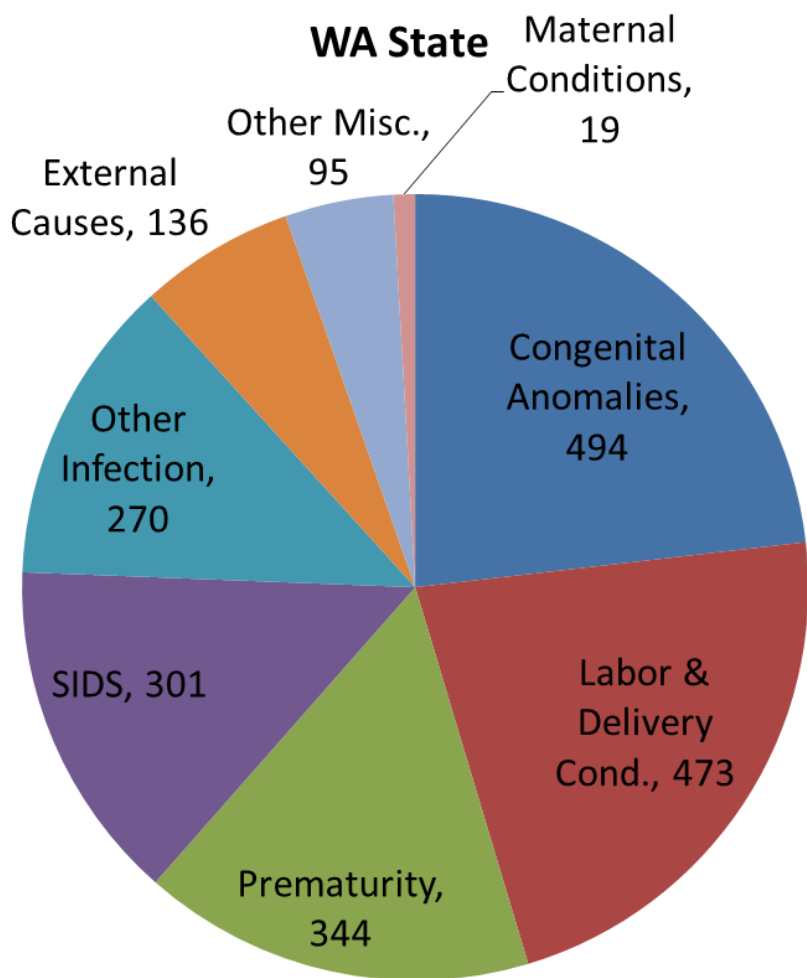
AIAN excess deaths due to higher mortality rates among very low birth weight babies.

Most infant deaths occur in the neonatal period

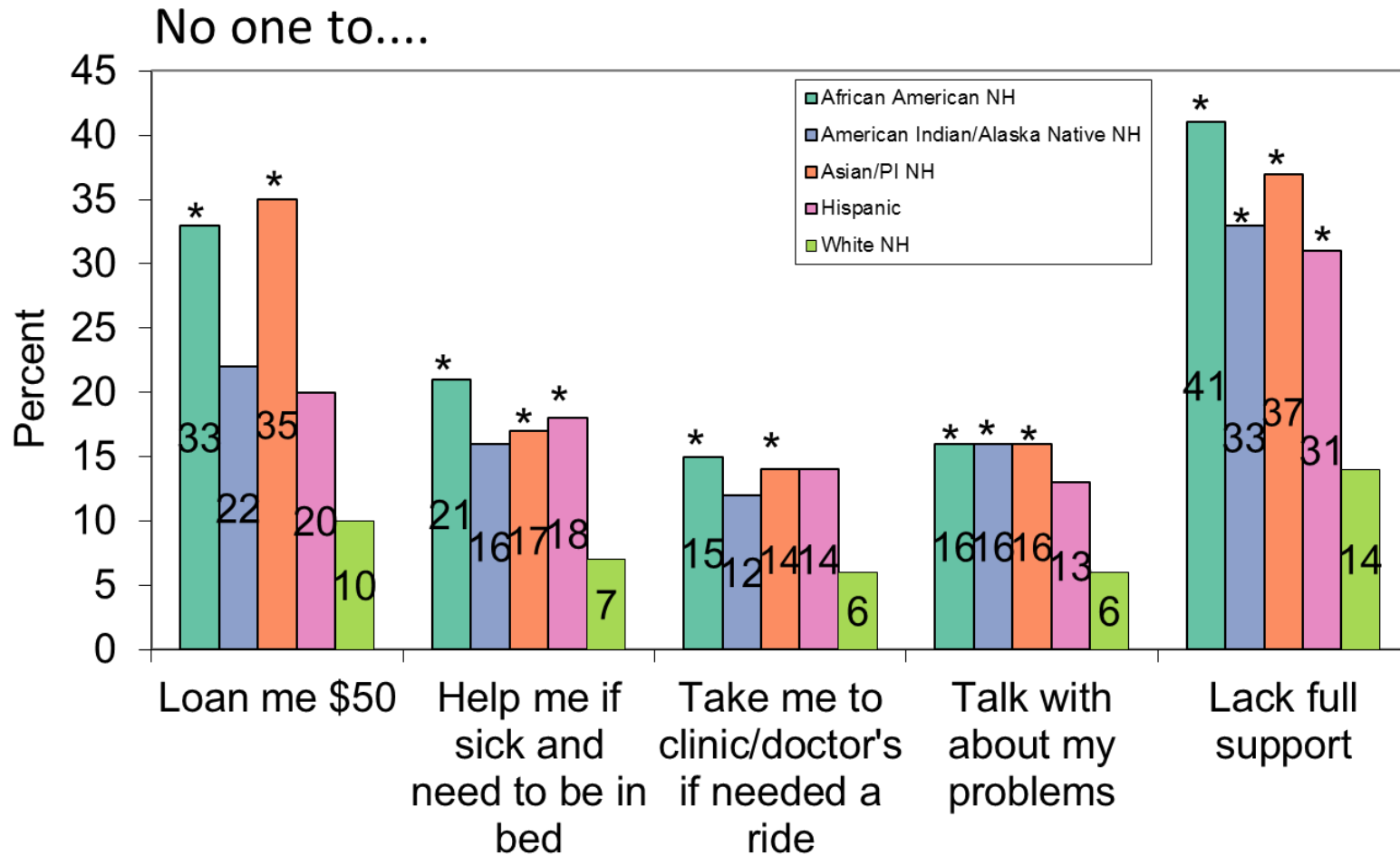


King County, 2008-2012

Causes of Infant Mortality

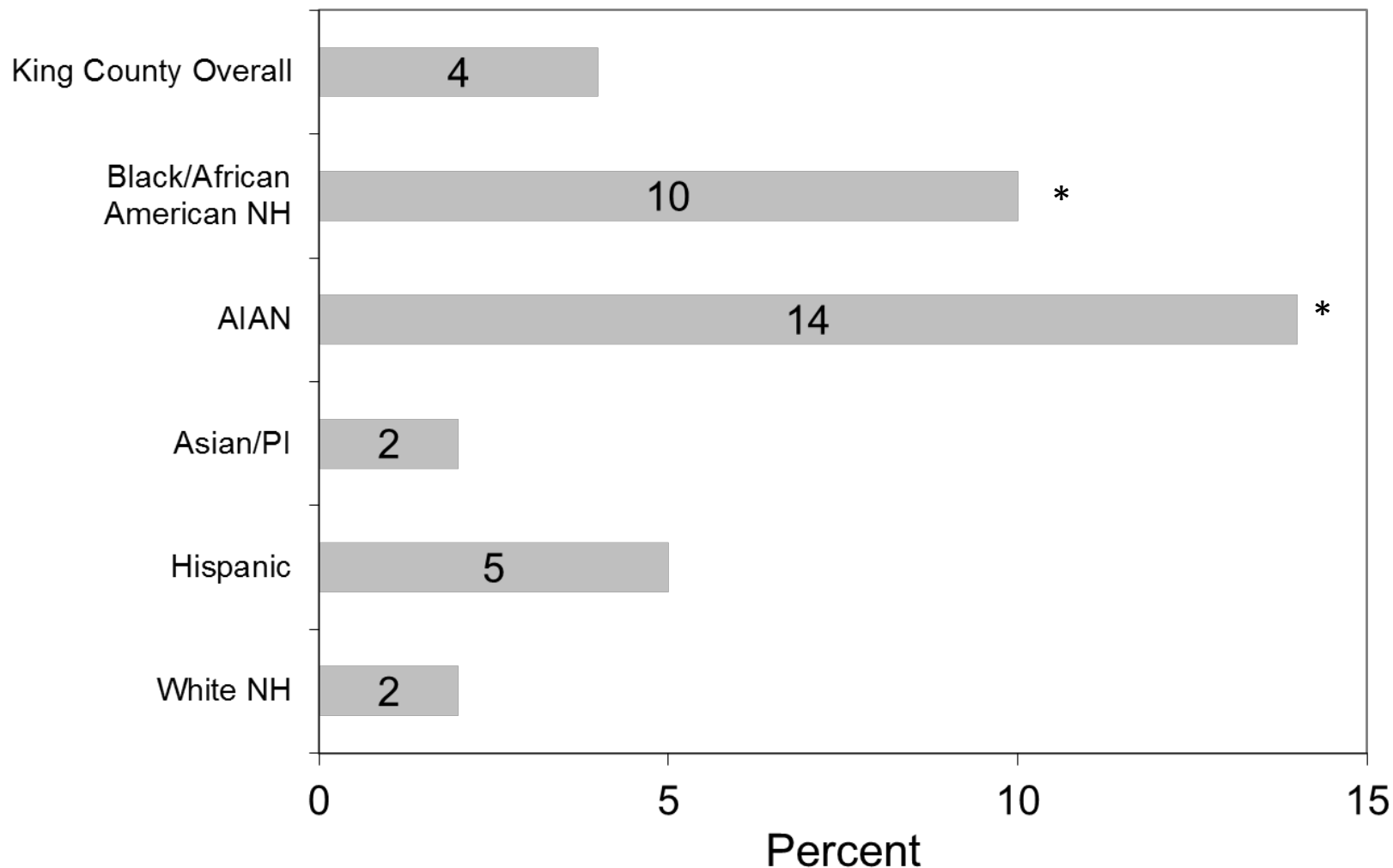


Lack of Social Support During Pregnancy, by Race/Ethnicity, King County, 2007-2011



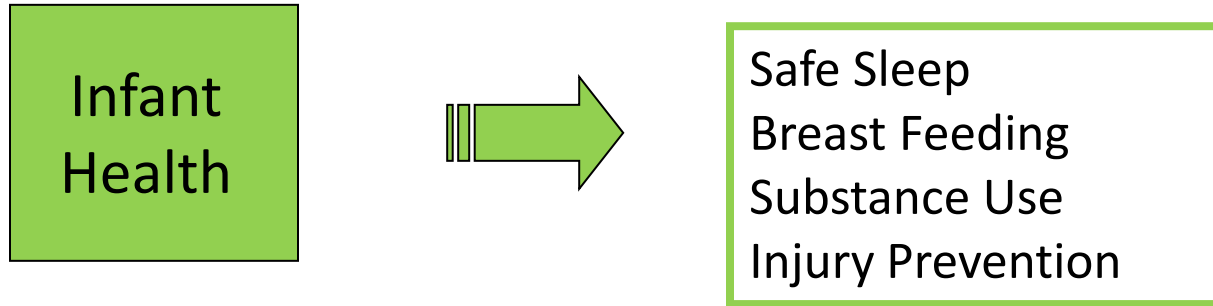
Source: Pregnancy Risk Assessment Monitoring System

High Level of Stressful Life Events (6+) in the year before birth, by Race/Ethnicity, King County, 2007-2011



Source: Pregnancy Risk Assessment Monitoring System

Perinatal Periods of Risk Identifies Preventive Action Opportunities

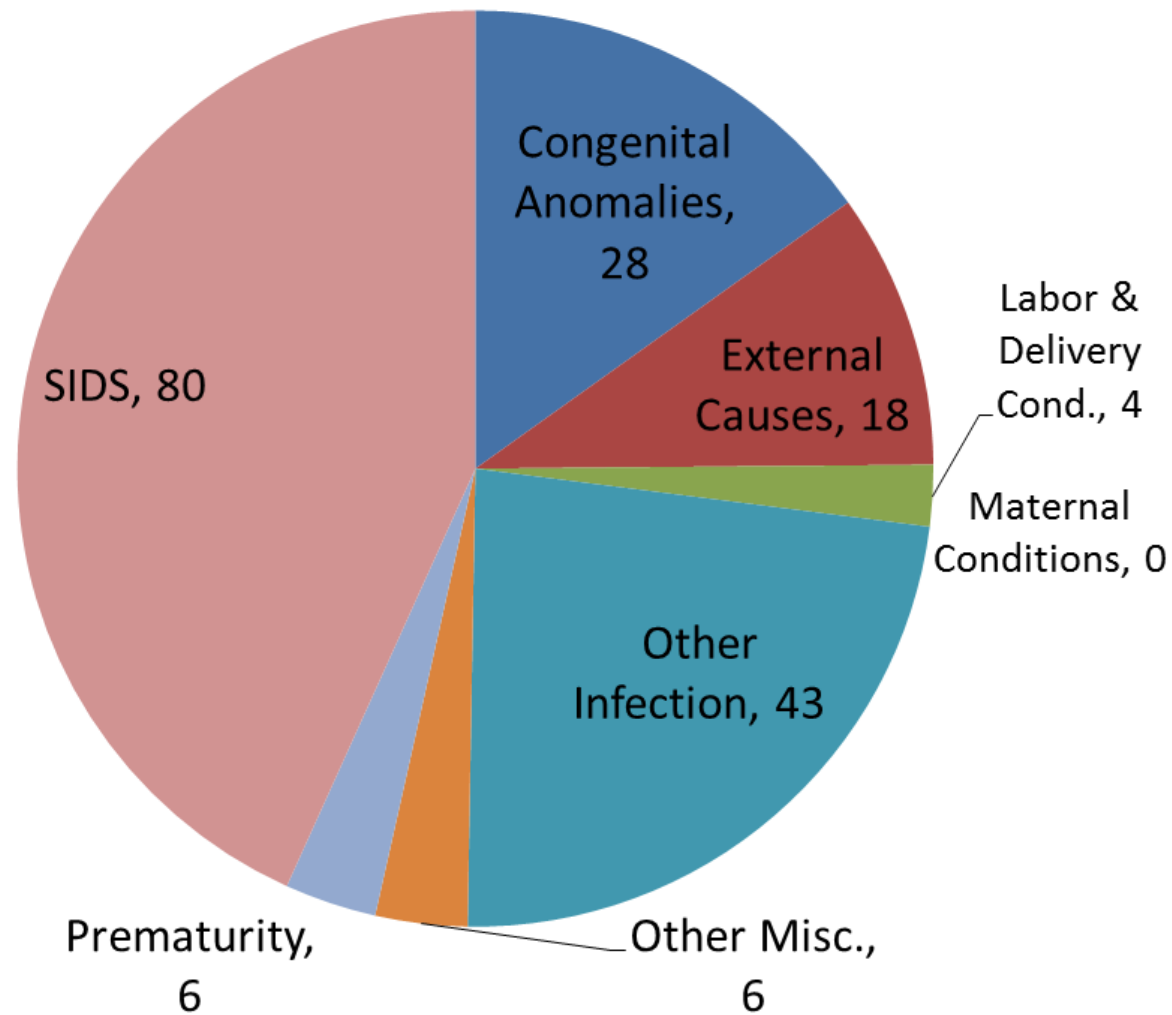


Diving deeper:

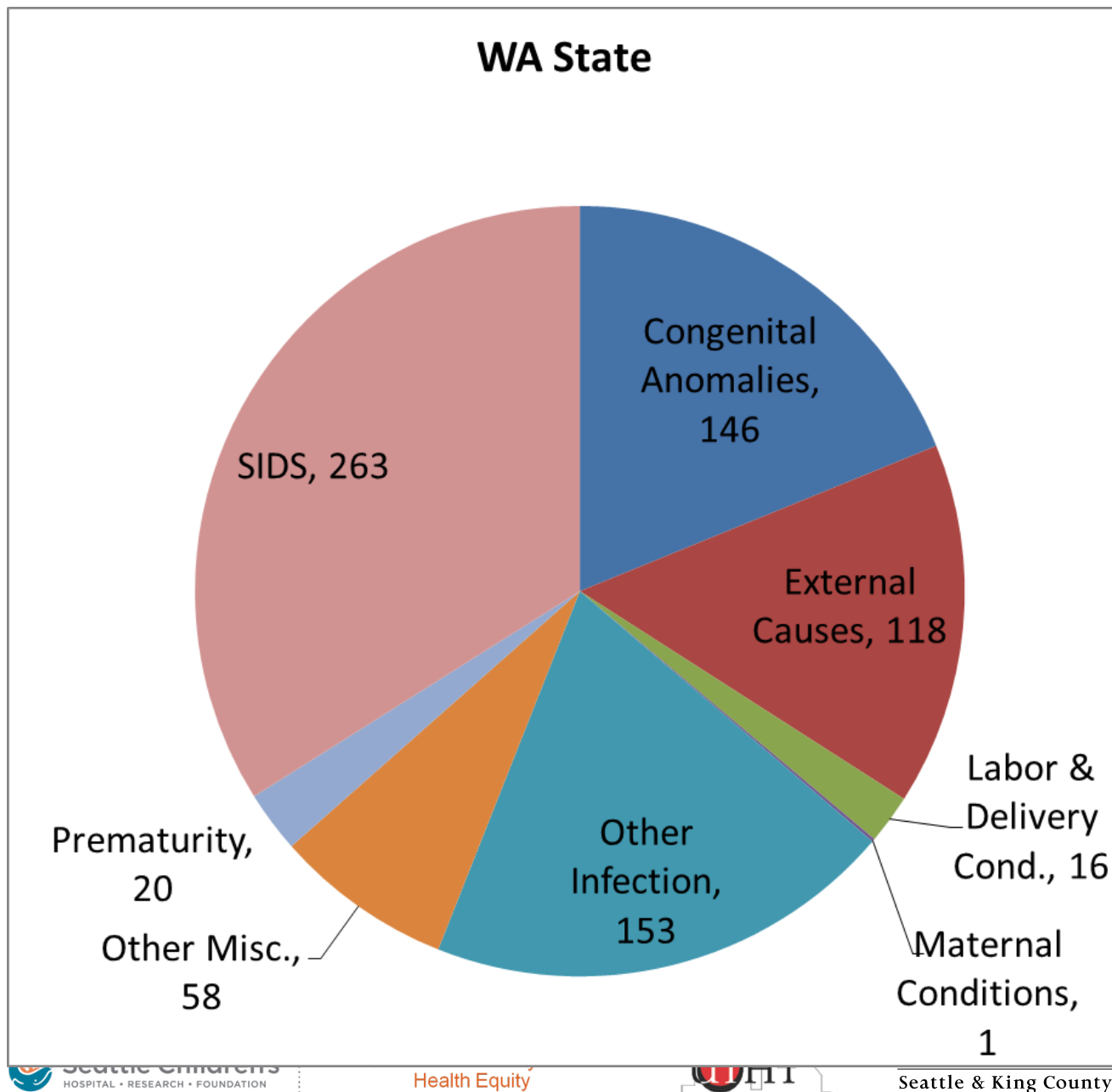
What causes of death are contributing to excess mortality in this box?

Leading Causes of Postneonatal Mortality

King County

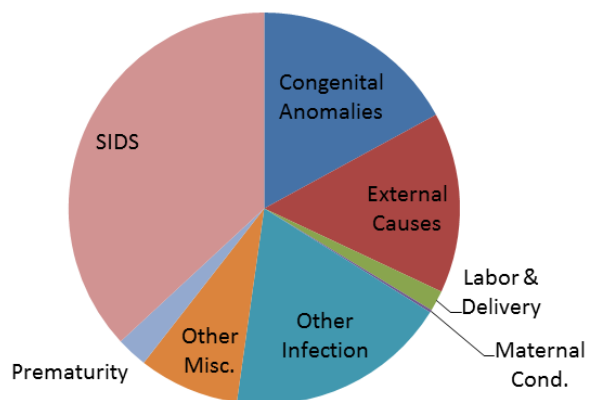


Leading Causes of Postneonatal Mortality, 2008-2012

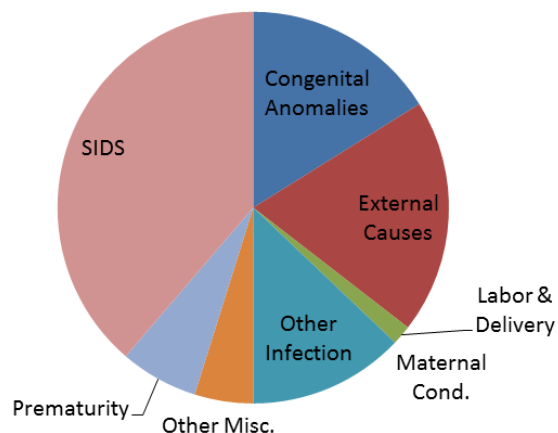


Postneonatal Mortality Causes, WA State

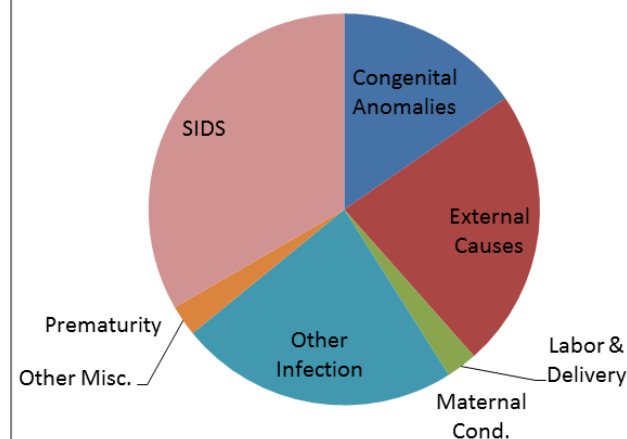
White NH



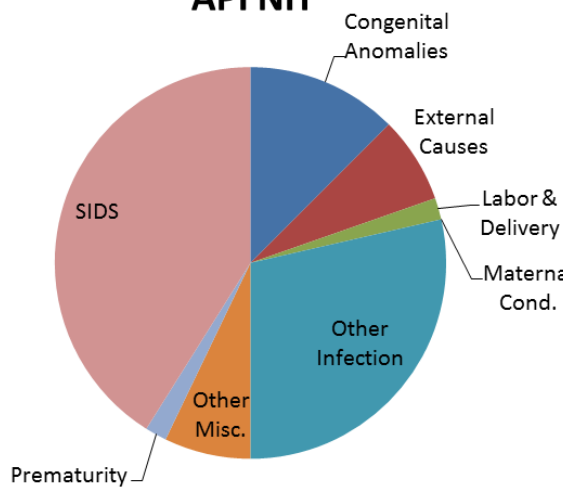
African American NH



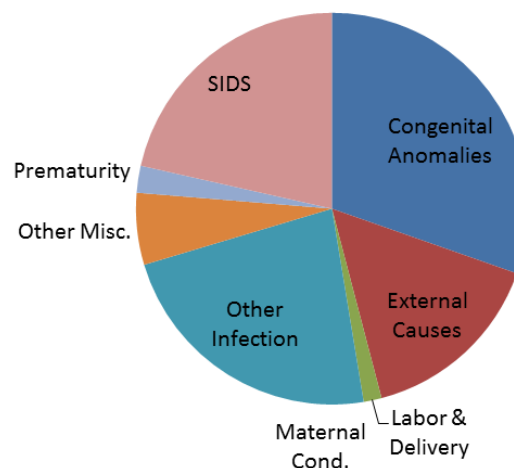
AIAN NH



API NH



Hispanic



INSTITUTIONALIZED RACISM/ Historical Trauma

Discrimination

- Health Care
- Housing
- Legal System
- Employment
- Refused care over IHS status

Poverty

- Affordable Housing
- Moving frequently
- Adequate Education
- Employment
- Access to Health Care
- Perceived as wealthy

Abuse

- Institutional
- Interpersonal
- Cycles
- Substance

Internalized Racism

- Hopelessness
- Self-hatred and blame
- Inability to see family/ community as support
- Ancestry seen as hindrance to life's goals

STRESS

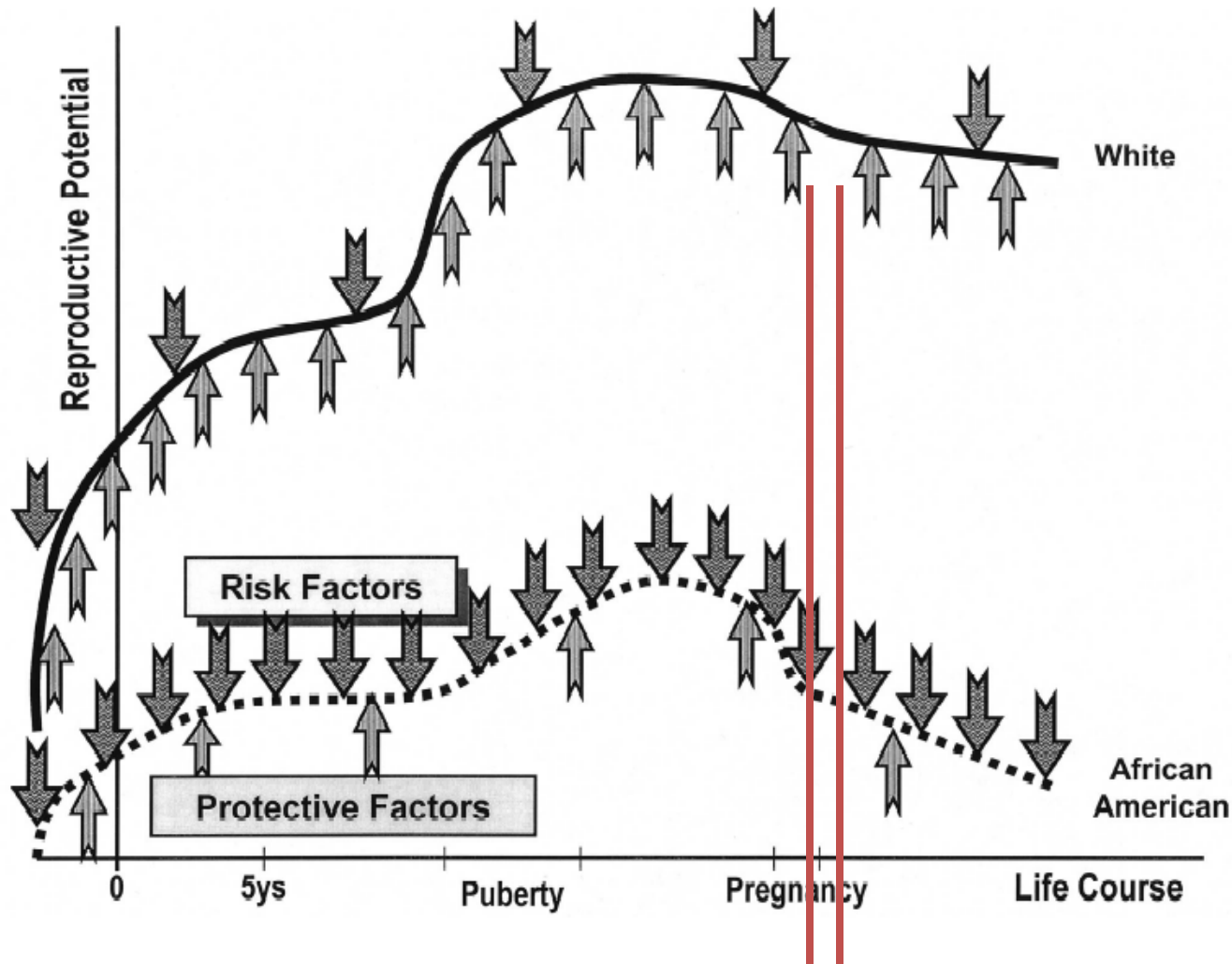
Direct Effects: Endocrine System Response - Increased cortisol levels, decreased immune function, increased vulnerability to infection, trigger onset of labor

Indirect Effects: Maternal Behaviors – Smoking, alcohol, substance use, poor nutrition, survival supersedes wellness

DISPARITIES IN BIRTH OUTCOME

Adapted from M. Dalila,
IntraAfrikan Konnections

Life Course Perspective



Lu MC, Halfon N. Racial and ethnic disparities in birth outcomes: a life-course perspective. *Matern Child Health J.* 2003;7:13-30.



What More Needs to be Done:

- Use PPOR data to **target prevention** efforts and support the work of the community
- Support women
 - Recognize the impact of adverse childhood experiences across the life span
 - Prevention focus on **pre-conception** health, health behaviors, and specialized perinatal care services
 - Sustain programs that provide for early and continuous **prenatal** care services, referral of high-risk pregnancies and good medical management of medical problems
- Support **infants**
 - Support SIDS risk reduction, access to a medical home, injury prevention, early childhood development
- Support **families**
 - Invest in early childhood development, wrap-around support of families to address multiple needs
- Support communities
 - Foster community and individual **resilience** and **social support**

Thank you!

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