Pathway diagrams for housing, transportation, education and employment

HPIO draft for review at August 2017 Advisory Group meeting

Purpose

Pathway diagrams are commonly used in Health Impact Assessments to explore, describe and prioritize the direct and indirect ways that non-health factors affect health outcomes and equity[1]. For this project, the purpose of these diagrams is to illustrate the complex connections between each social determinant of health topic (housing, transportation, education and employment) and the leading causes of infant mortality.

The dark blue boxes along the left side of each diagram provide general categories for the ways that housing characteristics, for example, affect health. We will use these categories when we identify policy recommendations by, for example, exploring policies to address housing affordability. The dark blue boxes generally align with the *public policy* and *community* levels of the social-ecological framework, including underlying factors that cause inequities such as structural racism.

The light blue boxes represent intermediate outcomes that are risk factors for the leading causes of infant mortality, including access to care, health behaviors and exposure to toxins. These boxes generally align with the *community*, *organizational*, *interpersonal* and *individual* levels of the social-ecological framework. The relationships between these factors are complex and multi-directional; poverty and persistent stress are consistent elements across all four diagrams.

The red boxes represent the leading causes of infant mortality: poor birth outcomes, sudden unexplained infant death and accidents and injuries. The red arrows indicate that the literature review identified credible research connecting an intermediate outcome to a leading cause of infant mortality.

Process

These diagrams were informed by HPIO's draft literature review and will accompany the literature review narrative in the final report. The Housing and Transportation diagrams build upon previous work by HPIO sponsored by the Ohio Commission on Minority Health. The research citations for the four topic-specific literature reviews are included in the literature review narratives which will be shared at the Advisory Group meeting.

HPIO staff consulted peer-reviewed studies (journal articles) and grey literature (e.g. reports from government agencies, policy organizations, etc.). Some articles and reports described results of quantitative research studies, while others described qualitative studies, practice-based research, theoretical models, conceptual frameworks or historical context of inequities. In addition to topic-specific search terms (such as "housing affordability"), HPIO used the following search terms: infant mortality, low birth weight, pre-term birth, premature birth, birth outcomes, sudden infant death, sleep-related death, birth defects, SIDS and SUID. HPIO used PubMed to identify journal articles (search tool from the U.S. National Library of Medicine, National Institutes of Health).

In order to be eligible for inclusion in the review, HPIO prioritized the following types of literature:

- Systematic reviews and meta-analyses, when available
- Research done in the U.S. (although systematic reviews may include international studies)and articles published in English
- Literature published from 2010 to 2017, when possible
- Literature that addresses disparities or inequities, including findings specific to African American/Black women or other women of color

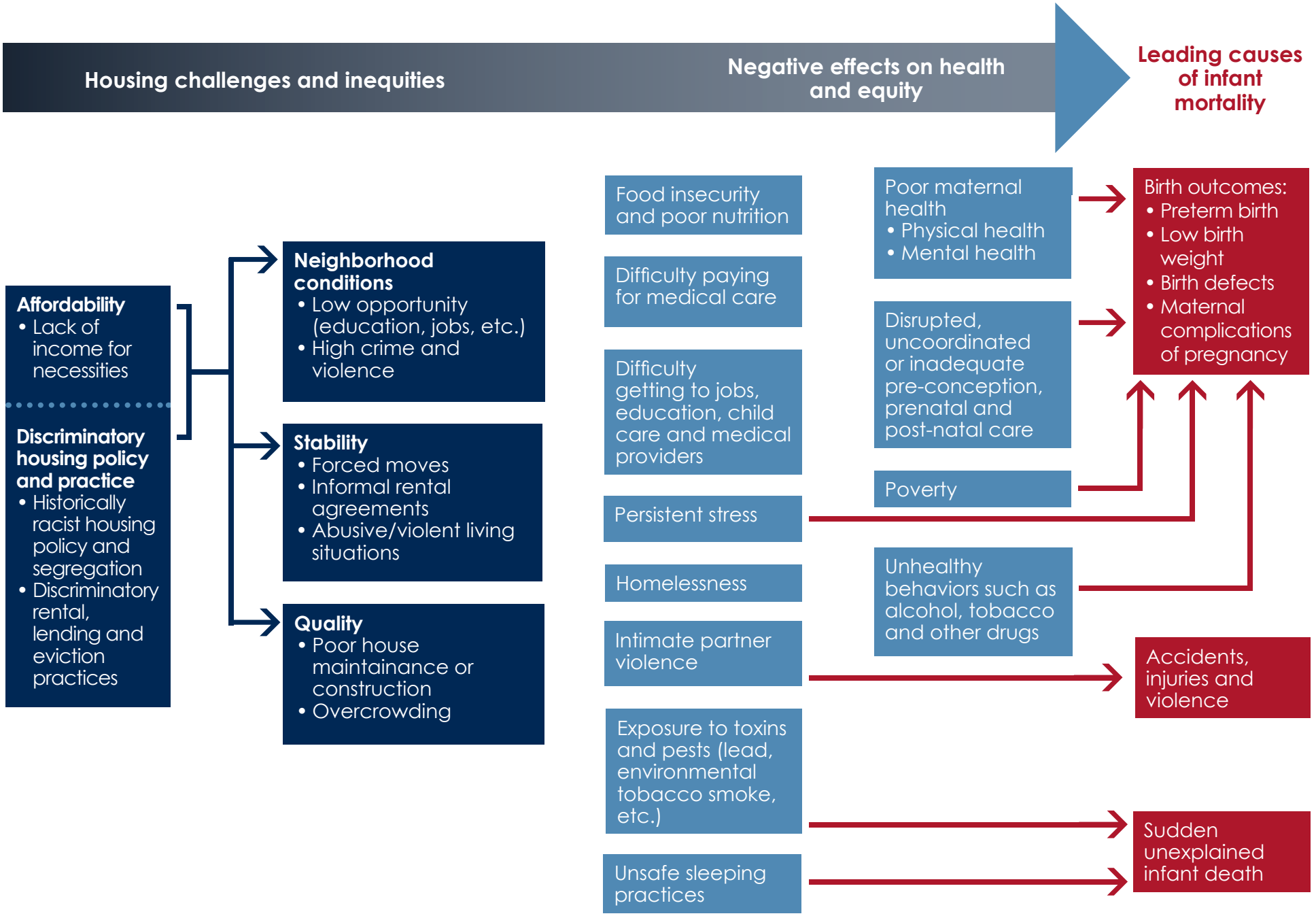
Next steps

HPIO will revise the draft pathway diagrams and literature reviews based on feedback from Advisory Group members at the August 17 meeting. This work will then be used to inform exploration of policy recommendations.

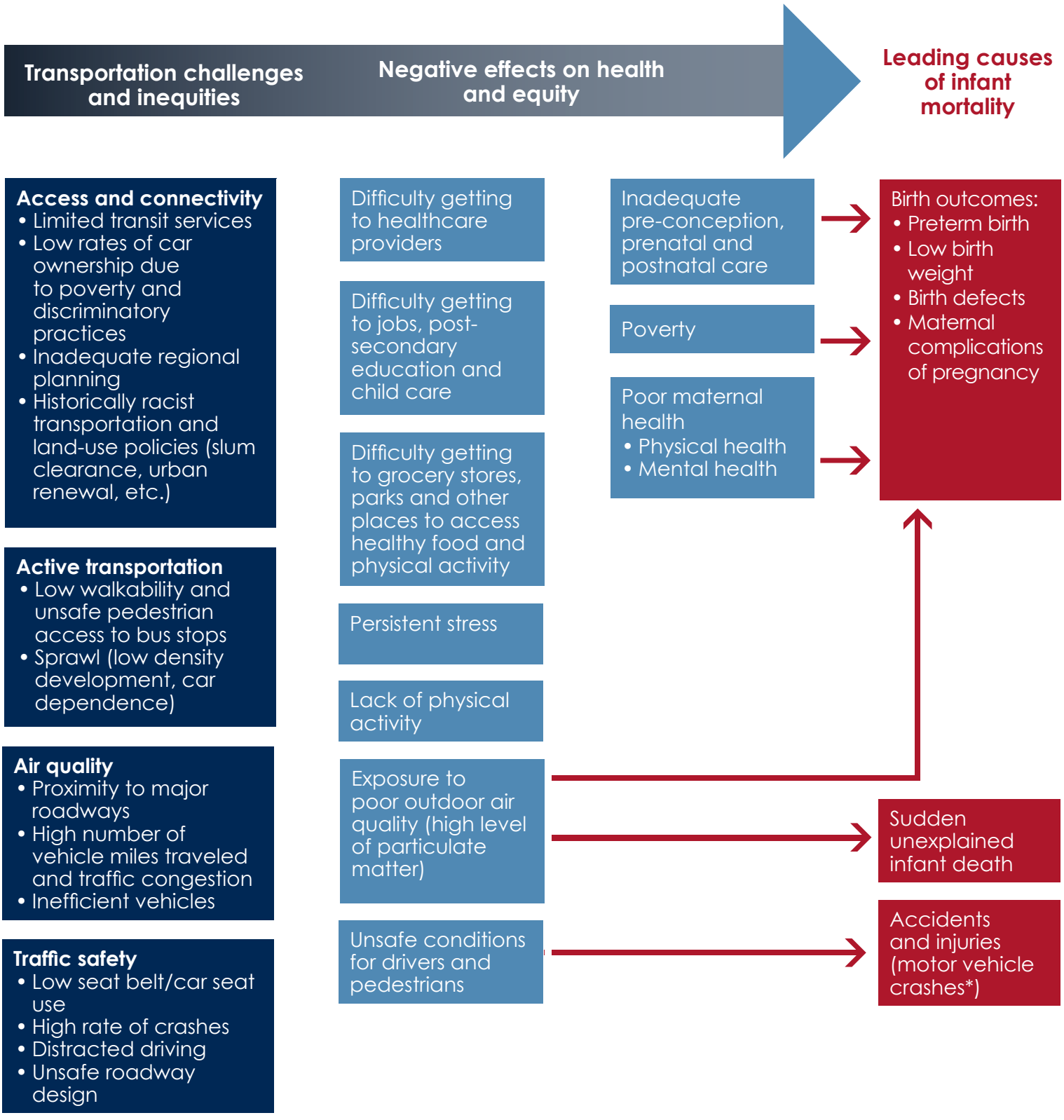
HPIO plans to develop similar pathway diagrams to describe the potential impact of policies and programs on reducing infant mortality or leading causes of infant mortality, including a description of the strength of available research evidence. (See the logic model on page 6 of this report from a Washington State Health Impact Review for an example of this type of pathway diagram.)

[1] A Health Impact Assessment Toolkit: A handbook to conducting Health Impact Assessments, 3rd Edition. Human Impact Partners, 2011.

1 Relationship between housing and infant mortality



2 Relationship between transportation and infant mortality



*__Note:__ Motor vehicle crashes cause a relatively small number of infant deaths.

3 Relationship between education and infant mortality

Education challenges and inequities → **Negative effects on health and equity** → **Leading causes of infant mortality**

Educational attainment
- Grade-level reading
- High school graduation
- Post-secondary education

Education system quality
- Early childhood
- K-12
- Post-secondary
- School segregation

Income
- Limited employment opportunities
- Low earnings potential

Health literacy
- Poor knowledge of healthy behaviors and practices
- Limited ability to successfully interact with healthcare providers and follow medical advice

Social capital
- Low rank in society
- Social network norms

Personal control and self-efficacy
- Low self-confidence
- Belief that external forces, rather than personal decisions and actions, impact life

Poverty

Inadequate access to healthy foods and opportunities for physical activity

Persistent stress

Disrupted, uncoordinated and inadequate pre-conception, prenatal and post-natal care, including access to contraception

Unhealthy behaviors such as alcohol, tobacco and other drug use

Lack of breastfeeding

Unhealthy relationships, abuse and violence

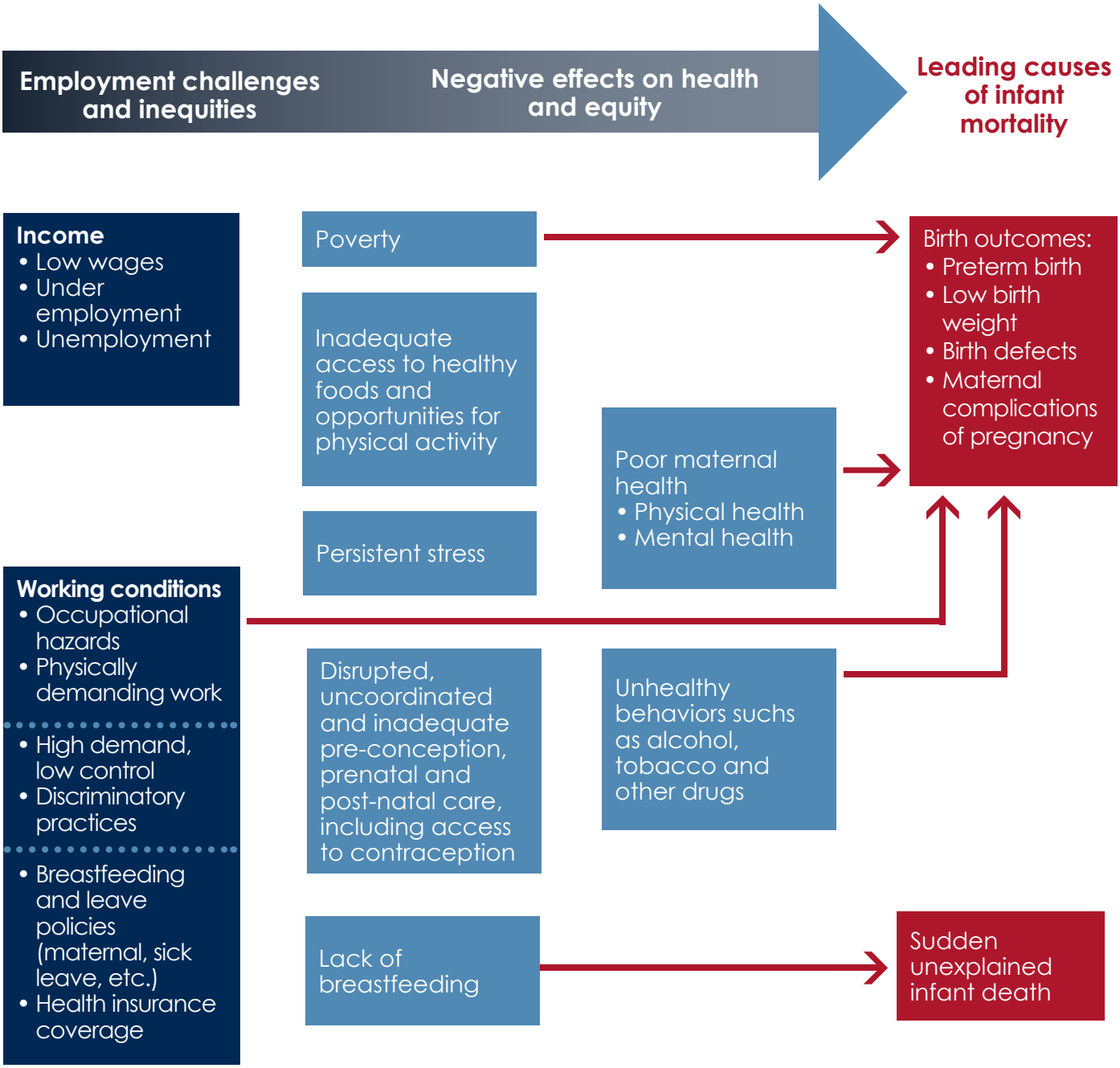
Poor maternal health
- Physical health
- Mental health

Unplanned pregnancies, including teen pregnancies and inadequate birth spacing

Unsafe sleeping practices

Birth outcomes:
- Preterm birth
- Low birth weight
- Birth defects
- Maternal complications of pregnancy

Sudden unexplained infant death

Accidents, injuries and violence

4 Relationship between employment and infant mortality