
The Changing Paradigm of Maternal and Child Health: from Infant Mortality Reduction to Life Course Theory

Kenneth D. Rosenberg, MD, MPH
Oregon Public Health Division

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What is a Paradigm Shift?

Thomas Kuhn, *The Structure of Scientific Revolutions* (1962)

- Scientists explore and test an idea
- Eventually there's too much that the idea doesn't explain
- A new idea replaces the old idea
 - Example: Copernicus: sun as center of the solar system

Infant Mortality Reduction

- Early 20th century: public health funding to decrease infant mortality.
- 1900-1950: money was used for vital statistics and control of infectious diseases and poverty.
- Development of vital statistics reinforced public health's focus on decreasing infant mortality. It also led to the discovery of black-white IMR differences.
- Since 1950: most of the decrease in infant mortality has been because neonatologists have gotten better at saving low birthweight infants.

Infant Mortality Rate (IMR) reduction strategies

- Perinatal epidemiology is only about 50 years old.
- The quest to decrease IMR has been the main focus of perinatal epidemiology since the 1960s.
- Perinatal epidemiologists and other public health professionals have sought interventions to decrease infant mortality -- especially black infant mortality.
- I will describe 9 hypotheses and interventions, most of which were not effective in decreasing the infant mortality rate (IMR).

IMR reduction strategies

Interventions that were conceptualized and tested by perinatal epidemiologists in their quest to decrease IMR. (They include both clinical and public health interventions.)

1970s-1980s

- Treatment of asymptomatic urinary tract infections (1970): not effective
- Apnea monitors (SIDS prevention) (1970s): not effective
- Tocolytics (drugs that would stop or slow down premature labor) (1980s): marginally effective
- Home uterine monitoring (to detect premature labor) (1980s): not effective

Interventions to decrease IMR (continued)

Since 1990

- Vaginal douching (late 1990s): not effective
- Back to Sleep (SIDS prevention) (1990s): effective through the efforts of public health, hospitals and physicians
- Folic acid (in grains and multivitamins) (1990s): to decrease birth defects (especially neural tube defects): effective
- Stress, especially stress of racism (1990s): never fully formed as an intervention; never tested: unclear
- 17-OHP (2000s): effective for women who have had previous preterm labor

IMR and the Streetlight Effect

A policeman sees a drunk man searching for something under a streetlight and asks what the drunk has lost. He says he lost his keys and they both look under the streetlight together. After a few minutes the policeman asks if he is sure he lost them here, and the drunk replies, no, that he lost them in the park. The policeman asks why he is searching here, and the drunk replies, "this is where the light is." (1)

Perinatal epidemiology and public health have spent decades studying IMR because that's where the data was. But we now know that the study of IMR is not the way to improve child and maternal health.

(1) David H. Freedman. Wrong: Why Experts Keep Failing Us. Little, Brown & CO, 2010

Prenatal Care Initiation and IMR

- Since the early 1990s, public health agencies have spent much of their energy promoting early initiation of prenatal care as the practical answer to the effort to decrease infant mortality.
- The underlying assumption has been that adequate prenatal care could decrease the risk of preterm birth and infant mortality.
- BUT: As early as 1998, it was clear that there was early and adequate prenatal care did not lead to decreased infant mortality.
- In the absence of alternative activities, MCH programs continued to focus on promoting early initiation of prenatal care.
- **TO PUT THIS INTO THE LANGUAGE OF “PARADIGM SHIFT”:** IMR reduction activities continued until a new framework emerged to take its place.

Life Course Epidemiology (1)

- New paradigm: Life Course
 - starting with the work of David Barker.
- Impact of early events on later health outcomes.
 - Example: Dutch famine of 1944
- Life course theory is very broad
- Generating new questions, new hypotheses, new research.
 - Example: breastfeeding's apparent role in decreasing adult obesity.

Life Course Epidemiology (2)

- In a world that is trying to be evidence-based, Life Course epidemiology is in its infancy.
- But researchers and public health professionals are trying to see the health of mothers and children through this new lens.
- Benefit of Life Course epidemiology and this paradigm shift:
 - public health programs can **pay less attention to IMR-reduction** (which has been largely unsuccessful) and
 - pay more attention to issues with long-term health consequences especially for the child.

Next steps

- Nurse home visiting can have longlasting impact
- Preconception health
- Breastfeeding: may decrease adult obesity
- Impact of Adverse Childhood Events (ACEs) on adult health
- What can we do to decrease adult diabetes?
- What is the impact of early childhood programs on adult health?
 - Reading to children
 - Improve early childcare (especially informal childcare)
 - Head Start (including Early Head Start and Migrant Head Start)
- We need to develop hypotheses and interventions and test them.
- We need to explore this new framework.