Why Focus on Infant Mortality?

Infant Mortality Seems to be a Problem for My Community

This toolkit is designed to provide guidance in answering these questions whether it is for your state, county, urban area, tribal region or other population-based area. Evolving from the State Infant Mortality Collaborative, this toolkit was prepared using input from people like you who 1) care greatly about their community, 2) are concerned about infant mortality, and 3) need assistance in gathering the data, analyzing and interpreting it correctly, and making changes based on that information. Understanding and addressing infant mortality problems in your community may be challenging, but it is one of the most important things that can be done to improve the health of your population.

Where do I start?

- Who needs to be involved?
- Where do I get the data?
- What do I do with the data?
A. Importance

Widely used as a measure of population health and the quality of health care, infant mortality is defined as the death of an infant before their first birthday. Infant mortality represents a long-standing concern of public health. The Federal Children’s Bureau, established in 1912, focused on infant mortality as its first initiative, officially recognizing its importance.

The infant mortality rate is not only seen as a measure of the risk of infant death but it is used more broadly as a crude indicator of:
- Community health status
- Poverty and socioeconomic status levels in a community
- Availability and quality of health services and medical technology

The health and well-being of children and families across the globe are measured by infant mortality rates. Wide acceptance and the relative ease of calculating the annual rate have resulted in the infant mortality rate being commonly used for comparisons across regions, populations and time periods. Such comparisons of infant mortality rates are frequently used in needs assessments and to evaluate the impact of public health programs.

B. National Trends in Infant Mortality

The precipitous decline in the U.S. infant mortality rate (IMR) during the early 20th century (Figure 1) was attributed to improvements in milk supplies and sanitation, and to the discovery and availability of antibiotics. During the 1970s, 1980s and 1990s, infant mortality declines were mainly the result of improvements in medical technology and practice in the obstetric and neonatal fields. Specifically, in the area of high-risk obstetrics, antenatal corticosteroids and intrapartum antibiotics have been linked to reductions in infant mortality. High-frequency ventilation, surfactant, postnatal steroid use, thermoregulation, improved nutrition, and advances in respiratory management all contributed to reductions in infant mortality during this time period. Regionalization of perinatal services, particularly in the 1970s, led to improvements in infant survival by increasing access to care in geographic areas where such services were scarce. Increases in early and adequate use of prenatal care over the same period also contributed to improved perinatal health outcomes due to expansions in public programs, such as Medicaid.

In more recent years (as highlighted in Figure 2), progress in reducing the infant mortality rate has slowed. Whereas between 1997 and 2007, the rate declined 5 percent, the overall rate has remained stagnant between 6.8 and 7.0 per 1,000 live births since 2001. Further, the overall infant mortality rate does not address the disparities that exist for many subpopulations (see sections on racial/ethnic and geographic disparities).

To better understand opportunities to further reduce the infant mortality rate, it is important to highlight that improvements may stem from either:
- Decreases in the proportion of low birth weight (<2,500 grams) or preterm births (<37 completed weeks gestation)
- Improvement in birth weight or gestational age specific infant mortality rates (other cause-specific rates, such as birth defects and Sudden Infant Death Syndrome, may also play a role as discussed in other sections)
As seen in Figures 3 and 4, there has been little to no progress in reducing either low birth weight or preterm birth over the past decade. In recent years, the infant mortality rate remained fairly stable, with a relative decrease of only 4 percent from 2000 to 2008, from 6.9 to 6.6 per 1,000 live births (www.cdc.gov/nchs/data/nvsr/nvsr60/nvsr60_05.pdf).

Figure 3: Low Birth Weight, United States, 1999-2009

As seen in Figure 3, there has been little to no progress in reducing low birth weight over the past decade. The infant mortality rate remained fairly stable, with a relative decrease of only 4 percent from 2000 to 2008, from 6.9 to 6.6 per 1,000 live births (www.cdc.gov/nchs/data/nvsr/nvsr60/nvsr60_05.pdf).

Figure 4: Preterm Birth, United States, 1999-2009

As seen in Figure 4, there has been little to no progress in reducing preterm birth over the past decade. The infant mortality rate remained fairly stable, with a relative decrease of only 4 percent from 2000 to 2008, from 6.9 to 6.6 per 1,000 live births (www.cdc.gov/nchs/data/nvsr/nvsr60/nvsr60_05.pdf).

C. Racial/Ethnic Disparities

Infant mortality has reached historic lows, but there has been less success in eliminating racial and ethnic disparities in infant mortality. Historically, infant mortality rates for infants born to African American mothers have notably been two or more times higher than those born to white mothers (Figure 5). Since 1980, there has been an increase in the African American/white infant mortality disparity rate ratio from 2.0 (1980) to 2.4 (2009). Although African American infants born with very low birth weight (<1,500 grams) experienced a ‘survival advantage’ that may have affected the disparity ratio, this ‘survival advantage’ began to decrease in the 1990s.

Racial differences in access to high-risk (tertiary) perinatal services have contributed to racial/ethnic disparities in adverse perinatal outcomes. Individuals, families, communities, and regions that have experienced social and economic disadvantage face greater obstacles to optimal health. Race/ethnicity and a general lack of health equity are linked to exclusion or discrimination and are known to influence health status (U.S. Department of Health and Human Services (HHS) Action Plan to Reduce Disparities and www.nimhd.nih.gov/recovery/gosocialdeterm.asp). The landmark Institute of Medicine 2002 report, *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*, cites lack of health insurance coverage as a significant driver of health disparities, as racial/ethnic minority populations are more likely than the rest of the population to be uninsured or underinsured; impacting the quality of health care received (HHS Action Plan to Reduce Disparities and www.nimhd.nih.gov/recovery/gosocialdetermin.asp). However, if infants are delivered at risk-appropriate facilities, regardless of race/ethnicity, survivability is increased.

Additional contributors to disparities in infant deaths include infant age at death, cause of death, mother’s age and health, multiple gestation (twins, triplets and higher order births), low birth weight, preterm birth, assisted reproductive technology, and prenatal visits.

Figure 5: Infant Mortality Rates by Race/Ethnicity, United States, 2005-2007 3-Year Average

D. Geographic Disparities

There is significant variation in rates of infant mortality by state (Figure 6). State-specific rates of infant mortality are highest in the southern United States. In 2007, infant mortality rates ranged from a high of 12.9 infant deaths per 1,000 live births in the District of Columbia (not shown on map) and 10.0 in Mississippi to a low of 4.9 in both Washington state and Massachusetts. These disparities persist even after controlling for differences in the distribution of race and ethnicity among states. Potential contributors to regional differences may include access to and quality of health care, as well as health insurance access. Health care systems differ by region and should be included in an infant mortality assessment. For example, frontier state regionalized systems of care and neonatal transport may be very different from those in urban, densely populated settings. Additionally, the impact of population distribution, including nativity status, or migration, such as seasonal workers moving in and out of the area, should also be examined.

Figure 6: Infant Mortality Rates, United States 2007

Rate per 1,000 live births
- Over 7.6 (15)
- 5.4–7.6 (19)
- Under 6.4 (17)