

**Medical News & Perspectives** .....p451

US Infant Mortality Rate Declines but Still Exceeds Other Developed Countries

**The JAMA Forum** .....p453

4 Simple Reforms to Address Mass Shootings and Other Firearm Violence

**Lab Reports** .....p455

Researchers Design Malaria-Resistant Mosquitoes  
Gut Microbes Stimulate Fat Loss in Response to Cold  
Dietary Fucose Helps Attenuate Metastatic Melanoma in Mice  
Computer Modeling May Lead to More Personalized Epilepsy Surgeries

**News From the Food and Drug Administration** .....p456

Reversing Drug-Induced Paralysis  
Helping Kids Combat Arrhythmia  
From Soldiers to Civilians

**Medical News & Perspectives**

# US Infant Mortality Rate Declines but Still Exceeds Other Developed Countries

Julie A. Jacob, MA

**T**he newest federal data on US infant mortality in 2014 can be viewed as a glass half full or a glass half empty. The good news from the Centers for Disease Control and Prevention's (CDC's) National Center for Health Statistics (NCHS) is that the 2014 infant mortality rate of 582 deaths per 100 000 live births—23 215 infant deaths—is a 2.3% decrease from the 2013 rate. It's also the lowest recorded US infant mortality rate (<http://1.usa.gov/1NbxcwB>).

"Any reduction in the US infant mortality rate is significant. It is welcome news that it has continued to decline," said Paul H. Wise, MD, MPH, professor of neonatal and developmental medicine at the Stanford University School of Medicine. "The precise reasons for the decline, however, are still not clear, and we are waiting for more detailed data to become available."

The bad news is that the US infant mortality rate, which the CDC defines as death before 1 year of age, still far outstrips infant

death rates in other developed countries, such as Finland and Iceland, both of which had a 2013 infant mortality rate of 180 deaths per 100 000 births (<http://bit.ly/1ISXKUM>).

**Preterm Birth a Driving Factor**

According to the NCHS' 2013 linked birth/infant death data set, which provides information about factors linked with infant mortality, complications stemming from preterm births accounted for about two-thirds of US infant deaths (Mathews TJ et al. *Natl Vital Stat Rep.* 2015;64[9]). The data set matches infant birth and death certificates, which enables statisticians to delve deeply into the characteristics of infants who died, such as the infant's birth weight and gestational age, as well as characteristics of the mother, such as age and race.

"Our preterm birth rate is among the highest among the developed countries, and the preterm birth rate drives infant mortality," said Edward McCabe, MD, chief medical officer and senior vice president of the March of Dimes.

Although congenital deformities composed the leading cause of infant mortality in 2014, many of the other top 10 causes of infant mortality are factors associated with preterm birth, including low birth weight, maternal complications such as premature membrane rupture, sudden infant death syndrome, bacterial sepsis,



respiratory distress, and neonatal hemorrhage, including intraventricular hemorrhage. Rates decreased for 8 of the 10 leading causes of infant deaths. For the other 2 leading causes, cord and placental complication, rates remained the same, and neonatal hemorrhage rates increased from 9.9 to 11.1 per 100 000 live births (<http://1.usa.gov/INbxcwB>).

The bright statistical spot was the significant 13.5% reduction in deaths from respiratory distress, the sixth leading cause of infant mortality, noted NCHS statistician Kenneth D. Kochanek, MA.

Reduced respiratory distress deaths could be associated with the dip in the preterm birth rate, which declined from 11.4% in 2013 to 9.6% in 2014, because of premature infants' underdeveloped lungs, McCabe said (<http://bit.ly/1T4rYoi>, <http://bit.ly/1PslqzS>). The use of antenatal steroids over the past 2 decades has helped decrease respiratory distress in preterm infants, noted McCabe, although the practice is underutilized, he said. However, he thinks the most recent modest decrease in a still-too-high preterm birth rate relative to other developed countries may partly be due to stricter hospital policies against early elective cesarean deliveries and induced labor, he added.

"Changing hospital policies to these 39-week hard stops has really done a lot to reduce late preterm birth," McCabe said, referring to hospitals adopting a strict policy against early elective deliveries.

The Leapfrog Group, an organization promoting health care quality and safety, found that the percentage of hospitals where early elective births are less than 5% of total births jumped from 30% in 2010 to 78% in 2014. During those same 4 years, the percentage of women undergoing early elective delivery declined from 17% to 3.4% (<http://bit.ly/1YlOxrE>).

Improvements in techniques for in vitro fertilization, which have increased live birth rates using fewer transferred embryos, also may be a factor in reducing preterm birth and subsequently the infant mortality rate, noted Scott A. Lorch, MD, MSCE, associate professor of pediatrics at the Perelman School of Medicine at the University of Pennsylvania. Fewer transferred embryos mean a lower likelihood of multiple births, which are more likely

to be delivered preterm and have a mortality rate almost 5 times that of singleton births (<http://1.usa.gov/1JpD8OQ>; Mathews TJ et al. *Natl Vital Stat Rep*. 2015;64[9]).

### Detailed Data Forthcoming

While the CDC statistics indicate that US infant mortality is declining, what's still missing for 2014 is detailed demographic information, including geographic variations in infant mortality; maternal race, age, and marital status; the infant's gestational age; and singleton vs multiple births. The CDC will fill those gaps with new linked birth/infant death data, set for release some time in 2016, Kochanek explained. Although the 2014 data will not be available for some months, the 2013 report showed that the infant mortality rate for babies born to non-Hispanic black mothers was nearly twice the rate for non-Hispanic white or Hispanic mothers. The 2013 data set also found that infant mortality rates were higher among single mothers' babies and those born to mothers younger than 20 years or older than 40 years. Infant mortality was more prevalent in southern states than in other parts of the country, as well.

Because preterm births are concentrated in certain demographic pockets, the March of Dimes recently announced that it will focus its preterm prevention programs in "high-burden communities" in 6 states with the highest preterm birth rates, McCabe said. These programs will include information, for example, on optimal spacing between births because an interval of less than 18 months between the birth of one child and the conception of the next one is another risk factor for preterm birth, McCabe explained.

Several states have also created perinatal quality collaboratives in which public health agencies and hospitals work together to use evidence-based practices to improve pregnancy outcomes (<http://1.usa.gov/1RSChgl>).

"There's been a revolution in quality improvement and developing improved systems of care for [perinatal] infants," said Lorch. To what degree improvements in neonatal care may be contributing to decreased mortality rates remains to be determined, Lorch noted.

### United States Lags Behind

The dismal contrast between the US infant mortality rate, which ranks 26th in the world (<http://1.usa.gov/1mSEOpA>), and that of other developed countries raises the question of how "public policies toward poverty, pregnancy, delivery, and the postpregnancy time period may play an important role," noted Lorch.

Those policies include health care access and pregnancy counseling, Wise noted.

"The infant mortality rate is in some large measure a reflection of the poor general health status of young women in the United States and the complexity and difficulties that young women have in getting reproductive health services in this country," he said.

Women in countries with a lower infant mortality rate may have access to more comprehensive prenatal and neonatal care, Wise noted.

In Finland, for example, which has an infant mortality rate about one-third of that in the United States, pregnant women have access to free maternal health services and also receive a cash bonus or infant clothing and supplies, if they undergo a prenatal examination by the fourth month of pregnancy (<http://bit.ly/1NxyccE>).

However, some differences in infant mortality rates may be due to discrepancies in how infant deaths are categorized, Lorch noted. The minimal gestational age or weight used to distinguish an infant death from a stillbirth can differ among countries and also may vary across the United States, he said.

Differences in how infant deaths are defined notwithstanding, the gap in infant mortality rates between the United States and other developed countries underscores the importance of providing quality health care services for women, the neonatal clinicians said.

"We don't need to fix the whole health care system to reduce infant mortality or reduce disparities in infant mortality, [but] there are things we can do now that we are not doing," Wise noted. Examples of such actions, he said, include improvements in health care for women both before and during pregnancy, such as better primary health care services for underserved women and broader access to contraceptives. ■