



Maternal and Infant Health Monthly Surveillance Report
Hamilton County
February 2010

Angela Adam, RN, MSN, Epidemiologist
Ted Folger, MS, Senior Epidemiologist
Debbie Gordon, BBA, Data Analyst



**HAMILTON COUNTY
PUBLIC HEALTH**
250 William Howard Taft Road, 2nd Floor
Cincinnati, OH 45219 • 513.946.7800
hamiltoncountyhealth.org

Introduction

The series of Maternal and Infant Health Monthly Surveillance Reports is part of a county-wide initiative to improve maternal and infant health and reduce infant mortality. In order to make effective actions that improve the health and safety of infants in the community, it is essential to identify, describe and monitor the problem and the populations at risk. This report characterizes the current status of infant mortality and select factors in Hamilton County.

Infant Mortality Surveillance

- Number of infant deaths by month
- Current monthly infant mortality rate
- Current monthly neonatal mortality rate
- Current monthly preterm birth rate

Infant Mortality Surveillance

Public health surveillance is the ongoing, systematic collection, analysis, interpretation and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health.¹ The Maternal and Infant Health Surveillance System is designed to better understand infant mortality in our community, monitor infant deaths that occur and evaluate whether collective actions to prevent infant death are effective. The “surveillance chart” is a very useful tool because it is set up to be interpreted quickly. Please read the General Guidelines for Using Surveillance Charts in the Appendix.

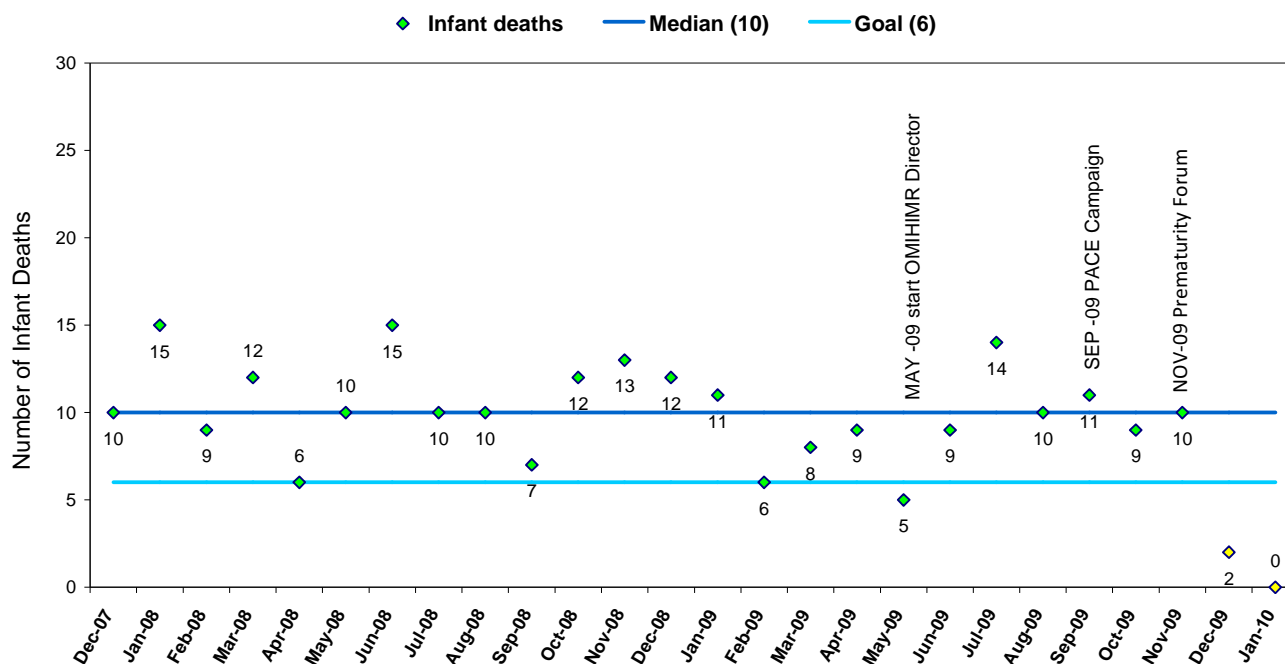
Number of Infant Deaths

There were 10 infant deaths in October 2009.

One way to monitor infant mortality is to count the number of infant deaths that have occurred. Figure 1 shows the count of infant deaths in Hamilton County by month over the past two years. In November 2009 there were 10 infant deaths, and this number was at the median (10). This may be part of a positive trend, considering Hamilton County tends to have more infant deaths in Fall months - October, November & December (See May Surveillance Report).

¹ Centers for Disease Control and Prevention. *Updated Guidelines for Evaluating Public Health Surveillance Systems: Recommendations from the Guidelines Working Group*, WMMR, July 27, 2001, Vol.50 No. RR—13

Figure 1. Number of Infant Deaths, Hamilton County 2007-2009*



NOTE: The median is calculated using two years of data from December 2007 – November 2009.

NOTE: Yellow points are derived from preliminary data and are likely to change.

*Data for 2009 are preliminary

Data Source: Ohio Department of Health

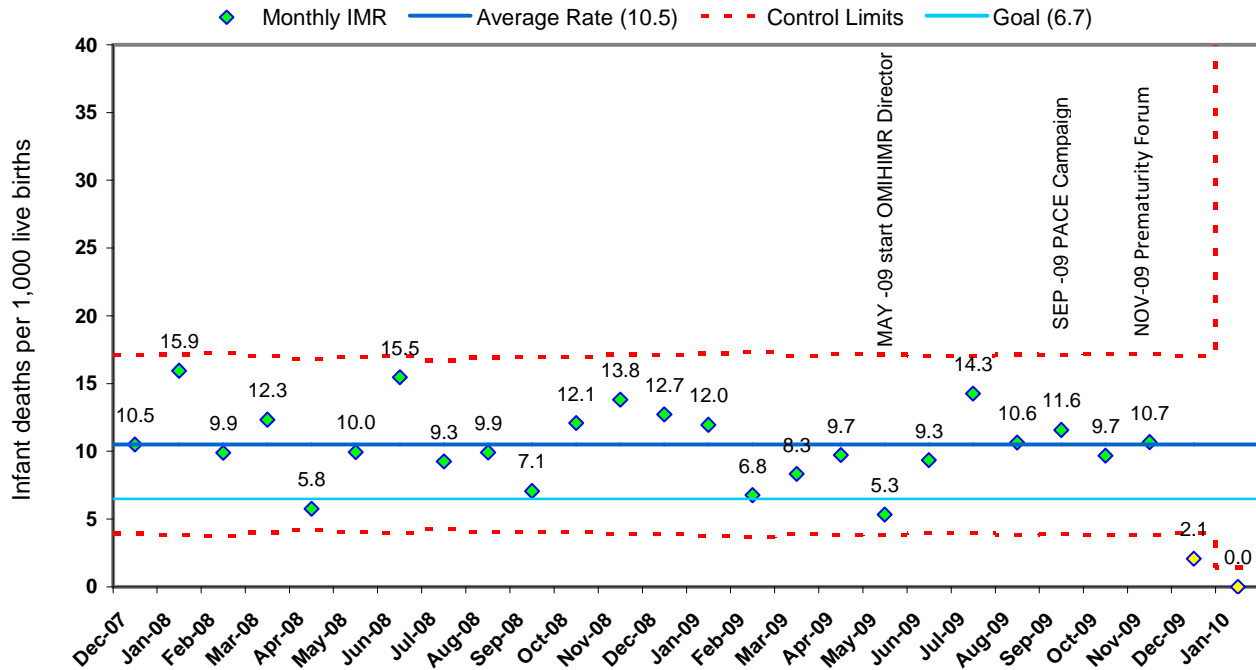
Infant Mortality Rates

Another way to monitor infant mortality is to look at the number of infant deaths with the number of births that occur. An increase in the number of infant deaths may not be surprising if there is also an increase in the overall number of babies born. To evaluate infant deaths with regard to the number of births, we use the Infant Mortality Rate (IMR), or the number of infants less than one year who died per 1,000 live births. The Neonatal Mortality Rate (NIMR) is a specific IMR for neonates, or infants less than 28 days who died per 1,000 live births.

In November 2009 the monthly IMR was close to average, and the NIMR was higher than average.

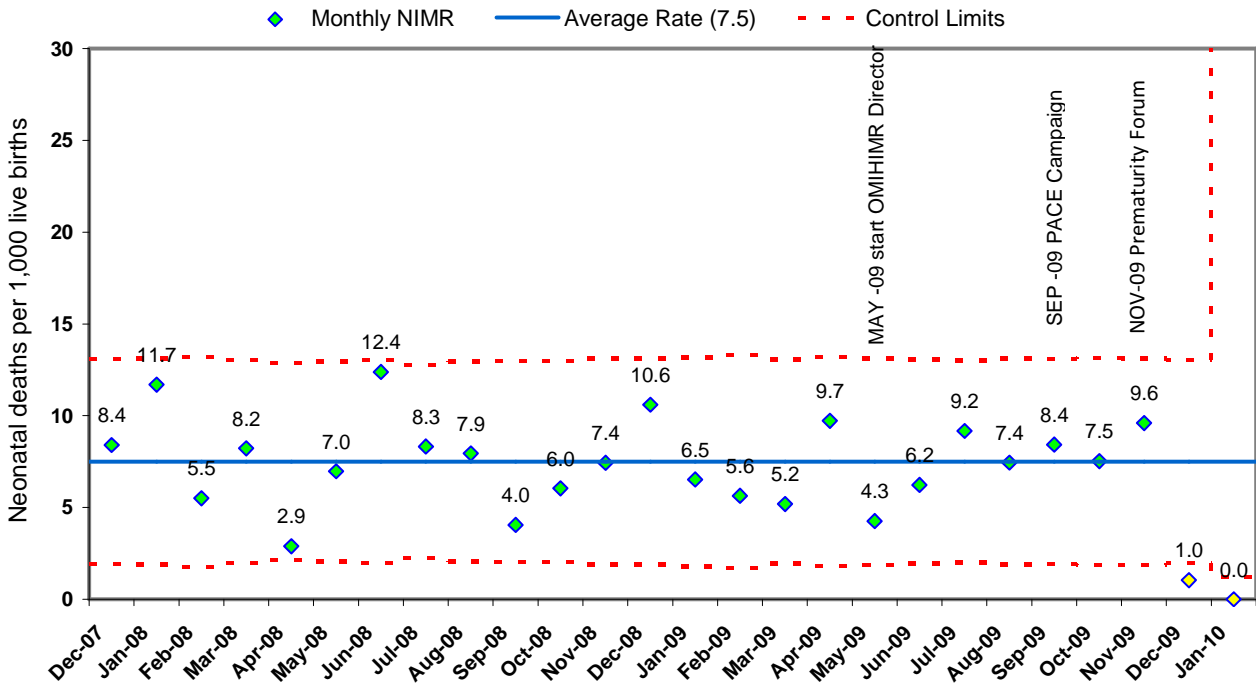
The IMR in November (10.7 deaths per 1,000 live births) was close to the two year average (10.5). The NIMR in November (9.6) was higher than the two-year average (7.5). Almost all the infants who died in November (9 out of 10) were neonates, and the fact that the overall IMR did not increase in November may indicate a simultaneous decline in post-neonatal deaths (infants one month up to one year of age).

Figure 2. Infant Mortality Rate Surveillance Chart, Hamilton County 2007-2009*



NOTE: The mean is calculated using two years of data from December 2007 – November 2009.
 NOTE: Yellow points are derived from preliminary data and are likely to change.
 *Data for 2009 are preliminary
 Data Source: Ohio Department of Health

Figure 3. Neonatal Mortality Rate Surveillance Chart, Hamilton County 2007-2009*



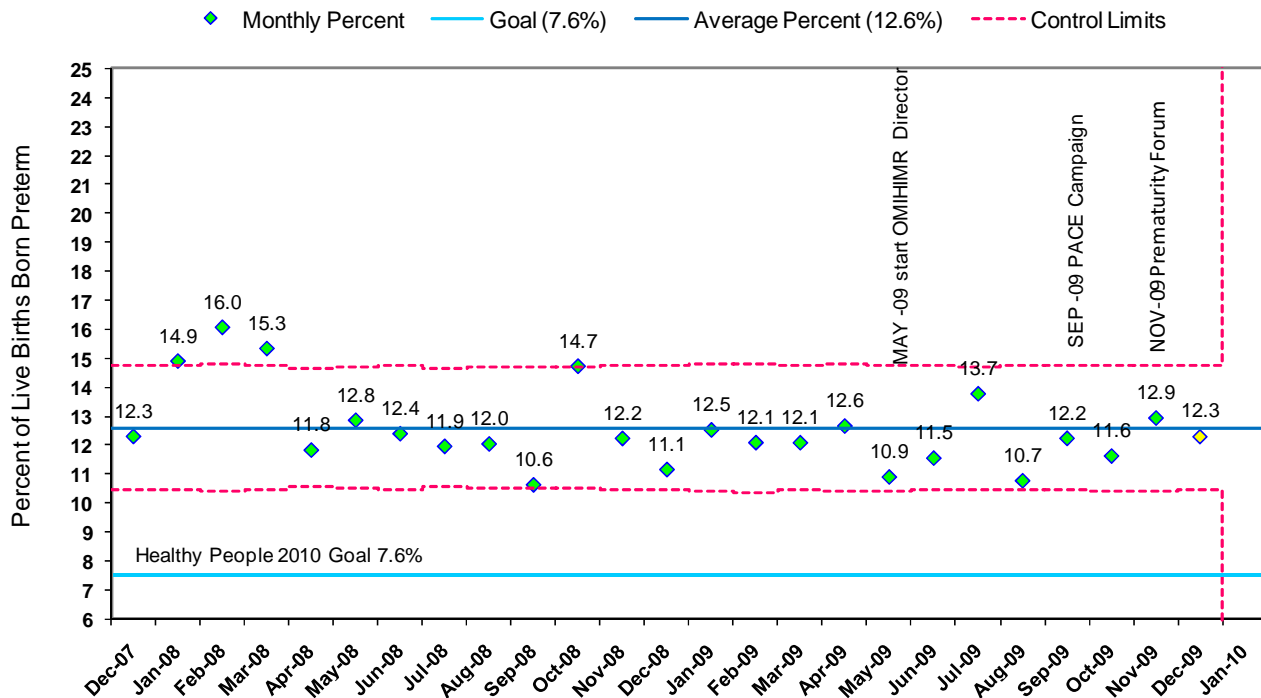
NOTE: The mean is calculated using two years of data from December 2007 – November 2009.
 NOTE: Yellow points are derived from preliminary data and are likely to change.
 *Data for 2009 are preliminary
 Data Source: Ohio Department of Health

Preterm Birth Rates

The preterm birth rate is the percentage of infants born before 37 weeks gestation. The overall significant decline in the preterm birth rate over 2008 was first noted in the February surveillance report. This decline continued through the first half of 2009, and the rate remained fairly steady in the latter half of 2009. In November the percentage of preterm births (12.9%) increased from October (11.6%) and was slightly higher than average (12.6%). This increase in the percentage of preterm births corresponds with an increase in the NIMR in November.

The percentage of births born preterm in November 2009 (12.9%) was slightly higher than the two-year average (12.6%).

Figure 4. Preterm Birth Rate Surveillance Chart, Hamilton County 2007-2009*



NOTE: The mean is calculated using two years of data from December 2007 – November 2009.

NOTE: Yellow points are derived from preliminary data and are likely to change.

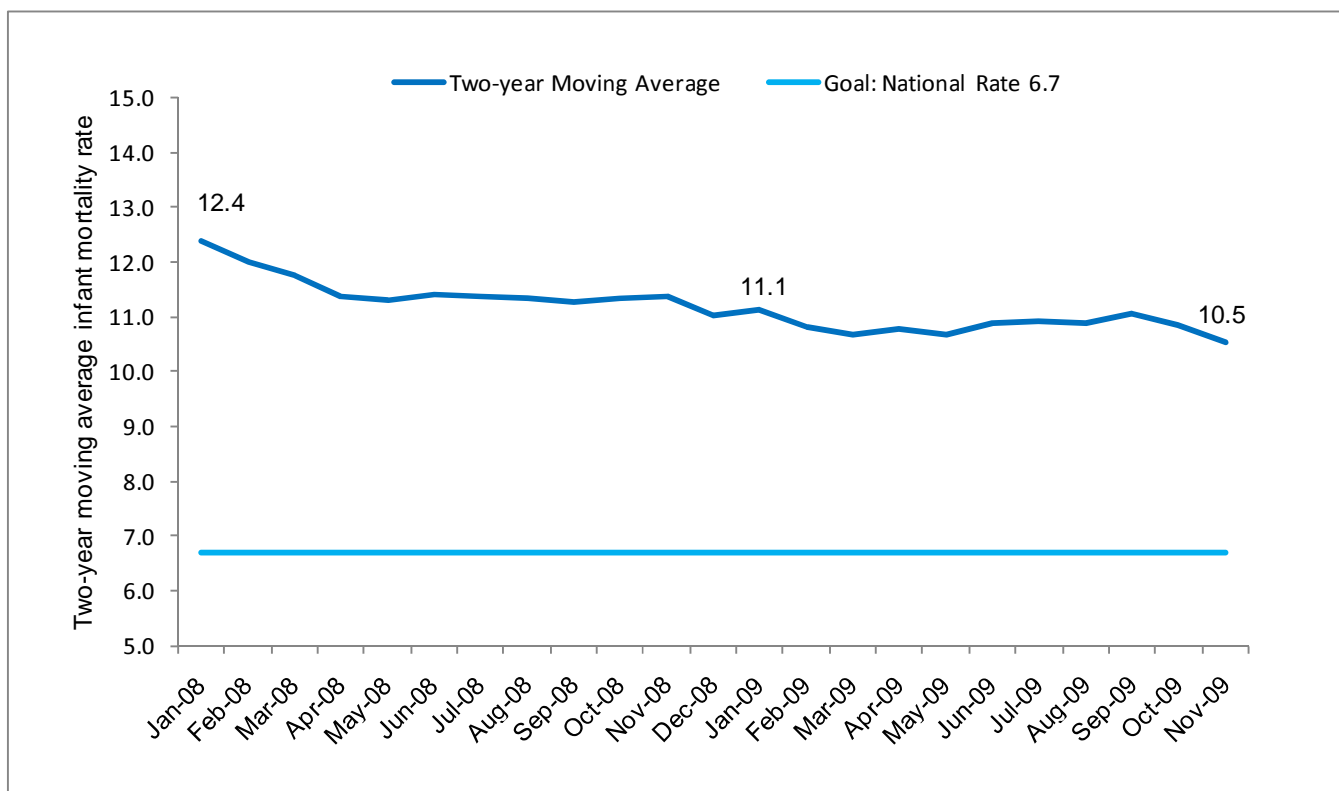
*Data for 2009 are preliminary

Data Source: Ohio Department of Health

Two Year Moving Average

Reviewing rates by month is one way of looking at data to see whether there has been a change over time, but these rates have a tendency to fluctuate and may disguise a developing historical trend. An alternative measure is the monthly moving average, which can stabilize some of the variation in monthly rates and allows for a better picture of the overall trend. In Figure 5 the infant mortality rate for each month is the twenty-four month average of months immediately prior to and including the current month. Figure 5 shows that since January 2008 the infant mortality rate in Hamilton County has dropped by nearly 2 infant deaths per 1,000 live births. Stated differently, from January 2008 to November 2009 we have made it one-third of the way to the goal!

Figure 5. Two Year Moving Average Infant Mortality Rate by Month, Hamilton County 2008-2009*



NOTE: The infant mortality rate for each month is the average of twenty-four months immediately prior to and including that month.

NOTE: Data for 2009 are preliminary

Data Source: Ohio Department of Health

Appendix

General Guidelines for Using Surveillance Charts

The Hamilton County Infant Mortality Surveillance System, part of the Office of Maternal and Infant Health and Infant Mortality Reduction, uses **surveillance charts** to monitor infant mortality rates and preterm birth rates. These charts provide a method for monitoring the status of infant health over time and provide timely feedback on the effectiveness of local efforts to reduce infant deaths and preterm births.

Several tools are included in the surveillance charts that help facilitate interpretation: (1) a baseline - the center line [solid] which is the average number of deaths or births per month over the preceding two years, (2) a goal line which shows the goal that has been established by the community and (3) upper and lower control limits [dashed] that allow users to detect unusual events. Annotations indicate when certain interventions began or special changes occurred.

Here are some types of unexpected events that could be detected within surveillance charts:

- * A single point outside of the control limit
- * A run of eight or more consecutive points below or above the center line
- * Six consecutive decreasing or increasing points
- * Two out of three consecutive points near a control limit

This report was prepared for the Office of Maternal and Infant Health and Infant Mortality Reduction, now known as the Women and Infant Vitality Network.



Thank you to John Paulson and Inez Williams at the Ohio Department of Health for providing data for this report, the Child Policy Research Center at Cincinnati Children's Hospital Medical Center for ongoing quality improvement support and the HCIMSS Data Work Group for input and guidance.

**With questions or comments regarding this report please contact:
Angela.Adam@Hamilton-co.org or Ted.Folger@Hamilton-co.org**