

Maternal and Infant Health Monthly Surveillance Report
Hamilton County
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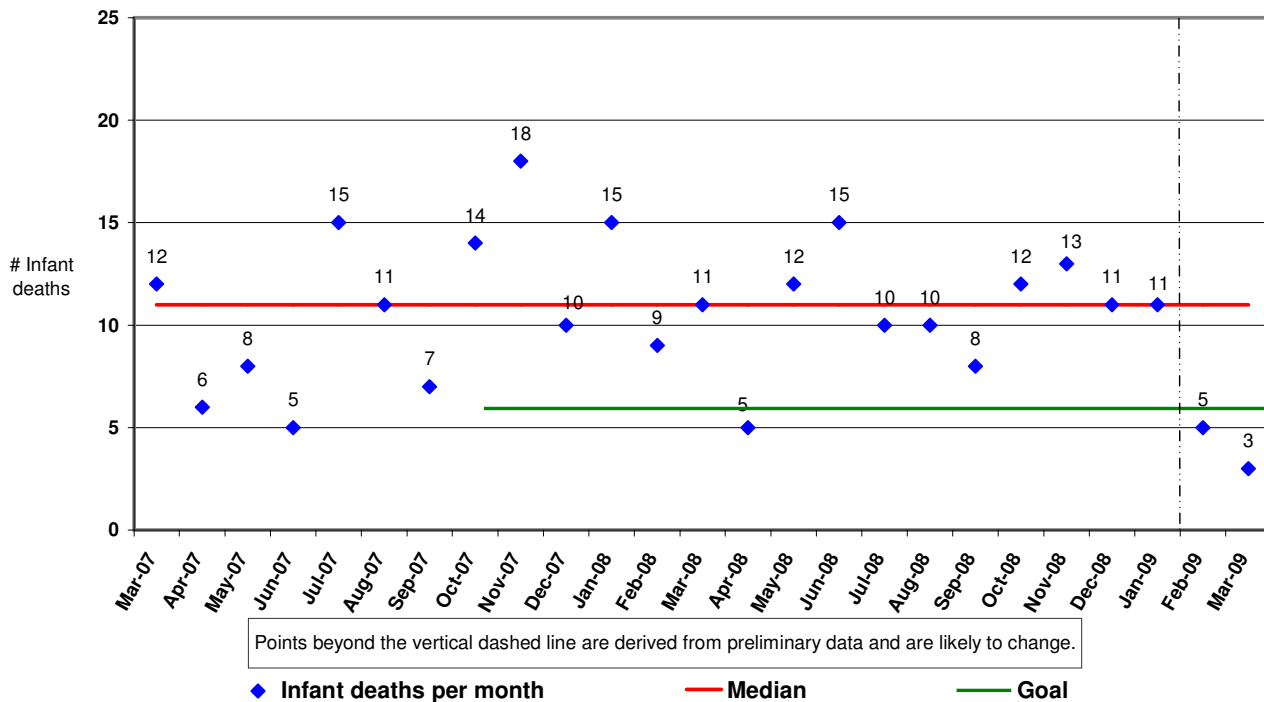
Introduction

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 risk factors in Hamilton County. Moreover, the historical seasonal pattern of infant mortality in Hamilton County is explored.

Number of Infant Deaths

In January 2009 the number of infant deaths equaled the 2007-2009 median and was almost twice the community goal of approximately six deaths (Figure 1).

Figure 1. Infant Mortality Run Chart for Hamilton County, March 2007 through March 2009*

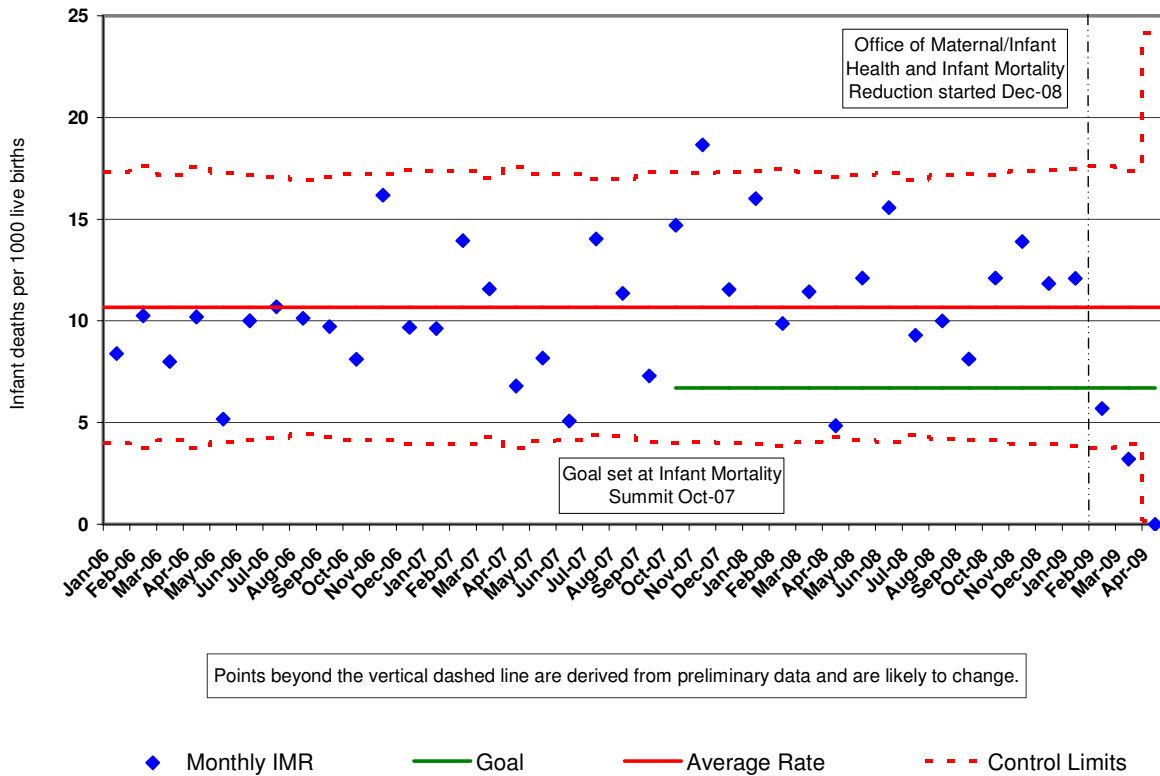


*Data from 2008 & 2009 are preliminary

Infant Mortality Rates

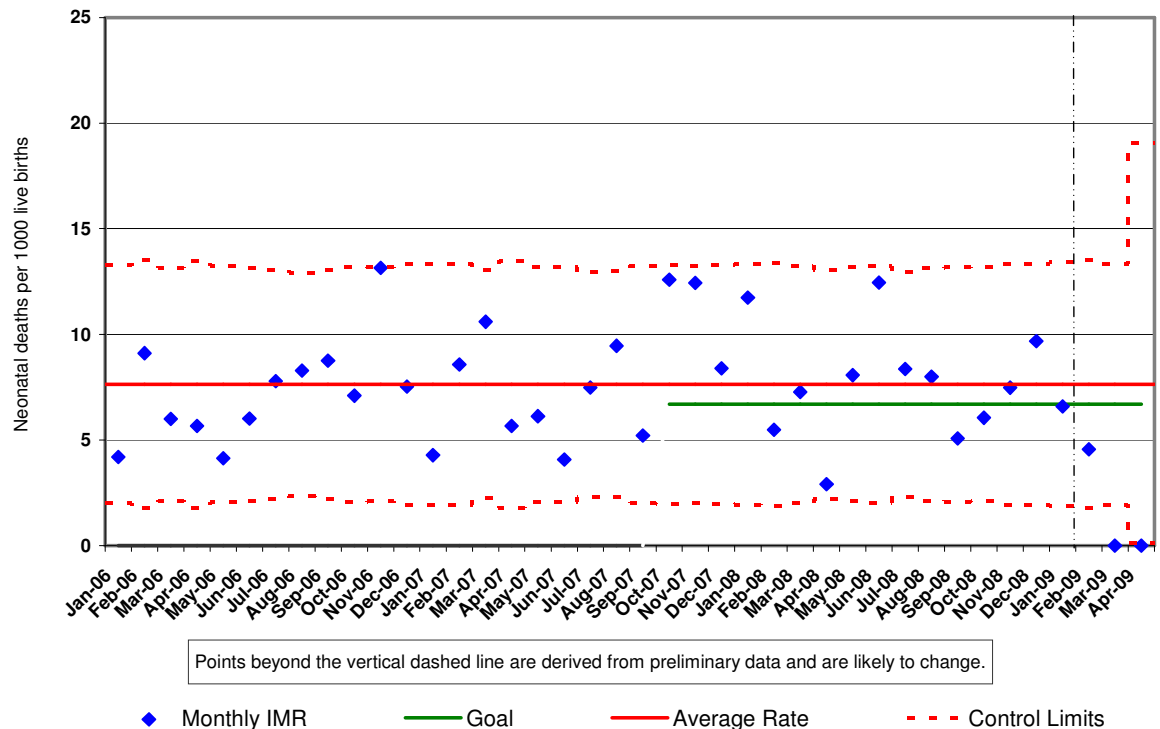
The Infant Mortality Rate (IMR), or number of infants less than one year old who died per 1,000 live births, in January 2009 remained above the 2006-2009 average of 10.7 (Figure 2). The January 2009 IMR of 12.1 was also markedly higher than the established goal of 6.7 infant deaths per 1,000 live births set at the October 2007 Summit. The Neonatal Mortality Rate (NIMR), or number of infants less than 28 days old who died per 1,000 live births, was 6.6 in January 2009 - just below the overall IMR goal of 6.7 deaths per 1,000 live births (Figure 3).

Figure 2. Infant Mortality Rate Control Chart, January 2009 through April 2009*- Hamilton County, Ohio



*Data from 2008 & 2009 are preliminary

Figure 3. Neonatal Mortality Rate Control Chart, January 2009 through April 2009*- Hamilton County, Ohio

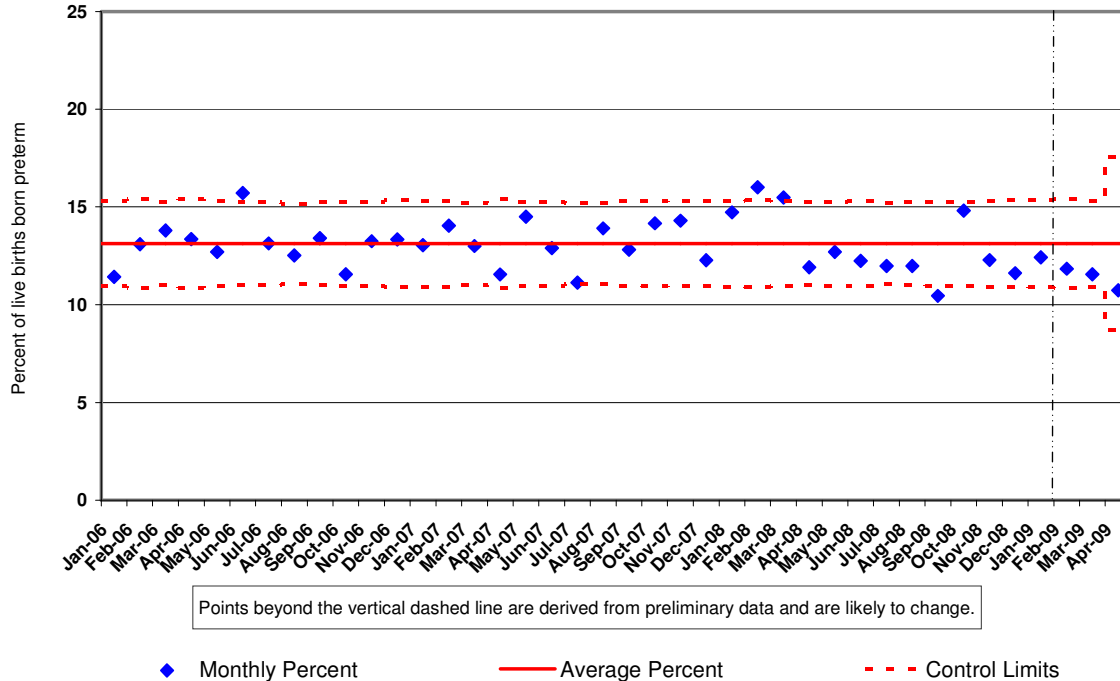


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Preterm Birth Rates

In January of 2009 the preterm birth rate remained below the 2006-2009 average of 13% (Figure 4). The rate has remained below the average for nine of the ten most recent months.

Figure 4. Prematurity Rate Control Chart, January 2009 through April 2009*- Hamilton County, Ohio



*Data from 2008 & 2009 are preliminary

Seasonal Trend Analysis

An infant mortality trend analysis was performed to further investigate the suspected seasonal trend noted in the April Surveillance report. It was reported that the IMR was notably lower in May 2006, June 2007, and April 2008, and peaks were observed each year in November. To investigate the trend, infant deaths were grouped by quarter, according to the month in which the death occurred:

- Quarter 1 Winter (Jan, Feb, Mar)
- Quarter 2 Spring (Apr, May, Jun)
- Quarter 3 Summer (Jul, Aug, Sep)
- Quarter 4 Fall (Oct, Nov, Dec)

Grouping months into Quarters captured months with notably lower or higher numbers of infant deaths observed in recent years. A Poisson distribution was used to model the number of infant deaths by Quarter in recent years 2006-2008. As expected, based on previous observations, the IMR was significantly lower in the Spring compared to that in the Fall ($p=0.0072$). The distribution was subsequently modeled including each prior year of data to determine the duration of the significant trend. In the years 2002 to 2008 the IMRs in both the Spring and Summer Quarters were significantly lower than the IMR in the Fall ($p=0.010$ and $p=0.012$, respectively). This translated into a risk 25% higher risk for infants born in the Fall quarter.

The IMRs for Spring/Summer and Fall/Winter were calculated for the combined years 2002-2008. The Spring/Summer IMR was 9.98 per 1,000 births, and the Fall/Winter IMR was 11.86.

Conclusions

The sustained lower preterm birth rate has not translated into a reduction in the NIMR. The overall NIMR changed only slightly from 7.9 in 2007 to 7.7 in 2008.

Increasing awareness of infant mortality, especially during the Fall and Winter, could potentially mitigate seasonal risk factors directly contributing to infant deaths.

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