# Table of Contents

Letter from Chair, Child Fatality Review Board .................................................................1

Executive Summary ..............................................................................................................2

Introduction ..........................................................................................................................4

Summary Data .....................................................................................................................6

Cumulative Data Analysis:
  - Gender ............................................................................................................................7
  - Race ................................................................................................................................10
  - Age Group .......................................................................................................................10
  - Manner and Cause ........................................................................................................13
  - Comparisons with National Rates ................................................................................17

Preventability
  - Overall ..........................................................................................................................18
  - Comparisons with Ohio and Other Selected Counties ..................................................19
  - Gender ...........................................................................................................................19
  - Race ................................................................................................................................20
  - Age Group .....................................................................................................................20
  - Manner ...........................................................................................................................21

Infant Mortality
  - Introduction .................................................................................................................25
  - Local Infant Mortality Data ..........................................................................................25
  - Perinatal Periods of Risk ...............................................................................................33
  - Ohio Infant Mortality Task Force ................................................................................36
  - Sleep-Related Infant Deaths ........................................................................................38
  - Low Birth Weight Registry of Montgomery County ....................................................41
  - Fetal Alcohol Spectrum Disorders ..............................................................................42
  - Preconception Education .............................................................................................45

Gun Violence
  - Community Initiative to Reduce Gun Violence ..........................................................46

Conclusions and Recommendations ..................................................................................48

Appendices:
  - A – Child Fatality Review Board Roster .................................................................51
  - B – Child Death Prevention Committee Roster ..........................................................52
  - C – Child Death Review Committee Roster ...............................................................53
  - D – Report Writing Group .........................................................................................54
  - E – Explanation of Perinatal Periods of Risk (PPOR) ................................................55
  - F – Glossary ................................................................................................................59
November 16, 2010

Dear Community Member:

Montgomery County began reviewing the deaths of its children in 1997. This is the fifth Report to the Community; it reports on the evaluation of child deaths occurring in the years 2005 through 2008 and provides cumulative data from 1997.

A comprehensive, multidisciplinary review is completed for every death of a Montgomery County child. The results of these reviews are shared annually with the State of Ohio as well as contained in this Report. What cannot be captured in this Report is the great loss and sorrow to family, friends and community when a child death occurs. We continue to examine the factors contributing to these children’s deaths in order to improve our understanding of how to prevent them.

I wish to express my sincere appreciation to those individuals who volunteer time from their already demanding schedules to serve on the many committees associated with the Child Fatality Review Board. These professionals truly make a difference in the lives of the children and families in our community.

Sincerely,

James W. Gross, MPH, Chair
Montgomery County Child Fatality Review Board
November 16, 2010

Dear Community Member:

Montgomery County began reviewing the deaths of its children in 1997. This is the fifth Report to the Community; it reports on the evaluation of child deaths occurring in the years 2005 through 2008 and provides cumulative data from 1997.

A comprehensive, multidisciplinary review is completed for every death of a Montgomery County child. The results of these reviews are shared annually with the State of Ohio as well as contained in this Report. What cannot be captured in this Report is the great loss and sorrow to family, friends and community when a child death occurs. We continue to examine the factors contributing to these children’s deaths in order to improve our understanding of how to prevent them.

I wish to express my sincere appreciation to those individuals who volunteer time from their already demanding schedules to serve on the many committees associated with the Child Fatality Review Board. These professionals truly make a difference in the lives of the children and families in our community.

Sincerely,

James W. Gross, MPH, Chair
Montgomery County Child Fatality Review Board
Executive Summary

This Report to the Community is the fifth report of the Montgomery County Child Fatality Review Board (CFRB) covering the deaths of children (less than 18 years of age) in Montgomery County. This Report adds data from 311 deaths occurring between 2005 and 2008 to cumulative data going back to 1997.

Organization of Report

After some introductory material, the Report presents summary data for the 1,031 deaths that the CFRB has reviewed for the period 1997 – 2008, including 720 for the years 1997 – 2004. The cumulative data are then analyzed according to gender, race, age group and manner; this section of the Report concludes by comparing national child death rates with local child death rates.

Beginning in 2001 county CFRBs throughout Ohio have been required to determine the preventability of each child’s death; those data are in the next section of the Report.

Because the majority of child deaths (670 of the 1,031 reviewed) are the deaths of infants, the Report includes an expanded discussion of infant mortality and related issues. This section includes an analysis of local infant mortality data and the findings of a specialized tool called “Perinatal Periods of Risk” (PPOR). The Report also includes a summary of the recommendations from the Ohio Infant Mortality Task Force which was convened since the previous Report. Special attention is given to local efforts of the Safe Sleep Committee to prevent sleep-related infant deaths. In addition, the CFRB has invited representatives of other key local initiatives that address maternal and infant health to provide information on their activities, including the Low Birth Weight Registry, the Fetal Alcohol Spectrum Disorders Task Force, and the Preconception Education Project.

Because children are not immune from the gun violence that plagues the entire community (44 of them died by gunfire between 1997 and 2008), the CFRB also invited some comments from the Community Initiative to Reduce Gun Violence.

Major Conclusions

The CFRB has concluded that what is occurring in Montgomery County is similar to what is being reported elsewhere. For example:

- Overall, Montgomery County’s child death rates are consistent with state and national rates.
- The majority of child deaths are deaths of infants.
- The majority of child deaths are from natural causes.
- Black children die at a much higher rate than white children.

---

a In its previous Report the CFRB had reviewed a smaller number of deaths, 687, for that time period. The additional 33 deaths are primarily those of Montgomery County residents who died outside of Montgomery County and whose records became available after publication of the previous Report.

b For purposes of this Report, an infant is a child in the age range between a liveborn fetus and the completion of 364 days of age.
Locally, at least one out of every three child deaths (33.1%) could have been prevented; one of every five child deaths (19.9%) was due to a preventable accident.

In addition, while local rates of child death (for ages 1 – 14) are consistent with – or slightly lower than – national rates, local rates of child homicide and suicide are higher.

⇒ In other words, children in Montgomery County are more vulnerable to homicide and suicide than children across the country.

Finally, although the local infant mortality rate (IMR) is currently within the range of state and national IMRs, it failed to achieve the downward trend experienced by those rates during the last fifteen years.

⇒ This may represent a missed opportunity to reduce infant mortality rates in Montgomery County.

Key Recommendations

Reduction efforts in infant mortality rates should focus on the specific causes for infant mortality such as prematurity, and the medical risk conditions and behavioral risk factors associated with poor birth outcomes. Therefore, the CFRB endorses the recommendations of the Ohio Infant Mortality Task Force and of local maternal and child health initiatives, and encourages the community to support continuation of these initiatives:

- The ABC’s of Safe Sleep Public Awareness Campaign;
- The Low Birth Weight Registry;
- The Fetal Alcohol Spectrum Disorders Task Force; and
- The Preconception Education Project.

The CFRB endorses the work of the Community Initiative to Reduce Gun Violence, and agrees that public safety is not the exclusive responsibility of law enforcement agencies or the courts, but rather, it is the responsibility of the entire community.

In conclusion, the CFRB has been diligent in its efforts to reduce the number of child deaths and it applauds the collaborative efforts in the community, such as those named in this Report, to decrease the number of preventable deaths. Efforts to address these issues cannot be left to one group or representative body. Saving the lives of children requires a community working together towards a common purpose.
Introduction

This Report to the Community examines raw data concerning child deaths within Montgomery County in many different ways. The manner of death is noted as well as gender, age, and race. This report

- reviews 1997-2008 cumulative data; and
- provides observations in comparison to state and national data.

Over 1,000 Montgomery County child deaths have now been reviewed – enough to make some general observations about rates and to make comparisons with national and statewide data.

In 1997, a voluntary initiative was established in Montgomery County to review the deaths of all children under the age of 18. This effort established a multi-disciplinary team of experts to conduct these reviews. In 2000, Ohio enacted House Bill 448 mandating that counties conduct child fatality reviews. The Montgomery County Board of County Commissioners named the original volunteer team as the official members of the CFRB. The mission of the group is to prevent future child deaths by identifying and documenting risk factors for child deaths and by supporting the development of interventions and services designed to reduce those risk factors.

The CFRB encompasses 17 child-serving organizations. These leaders promote the cooperation, collaboration, and communication within all their agencies that allow the child death process to work in Montgomery County. The CFRB approves the work and recommendations of the Child Death Prevention Committee and the Child Death Review Committee. (See rosters, Appendices A – C.)

Representatives from several of these organizations meet monthly as the Child Death Review Committee to review the death of every child residing in Montgomery County. During these case review discussions, the known facts of each death are shared by all participating agencies with specific information to contribute relating to the child’s death. Confidentiality of each agency’s information is respected. Specific data are collected in a local, confidential database to develop an understanding of the causes and incidence of child deaths and to help identify trends and patterns. Appropriate data are shared with the Child Death Prevention Committee for further evaluation. The Child Death Prevention Committee’s mission is to prevent future child deaths by looking at trends, identifying risk factors, and supporting the development of interventions and community strategies designed to reduce those risk factors. The data are also reported to the state of Ohio in aggregate and are used by the Report Writing Group (Appendix D) in writing this Report.

For child deaths occurring after January 1, 2005, Montgomery County joined all Ohio counties and numerous other states in using the National Child Death Review Case Reporting System. Using a standardized data collection form and uniform data definitions, this new reporting system has achieved more consistency in the data being collected on both statewide and national levels. Increased accuracy and level of detail provided by the data sources will hopefully lead to more successful prevention measures in the future.
The CFRB began initial consideration of the issue of “preventability” for each child death in 2001. With this addition to the review process, we are getting a clearer picture of how children are dying in our community and how we can prevent future deaths. This Report also contains four additional years (2005, 2006, 2007, and 2008) of data regarding “preventability” to supplement the preventability data collected since 2001 and previously reported. The definition of “preventability,” as set forth in the Ohio Administrative Code, is “the degree to which an individual or community could have reasonably done something that would have changed the circumstances that led to the child’s death.” According to the Ohio Department of Health, “A child’s death is considered to be preventable if the community (through reasonable education, etc.) or an individual (through reasonable precaution, supervision, or action) could have done that which could have changed the circumstances that led to the death.” Determining to what degree a death may have been prevented continues to be difficult and complex.

We are finding that patterns in Montgomery County data are similar to patterns reported at state and national levels. Some of the most significant local findings include:

- 65.0% of all child deaths are to infants less than one year of age (page 10);
- 85.9% of all accidental infant deaths and 11.3% of all infant deaths are sleep related (page 38); and
- 25.8% of deaths to children ages 15 – 17 and 12.2% of all deaths to children 1 year and older are the result of firearms (page 46).

This Report will discuss in detail the trends and patterns that have emerged during the reviews of child deaths in our community.
Table 1: Summary Data

The following data provide a summary count and percent by category of the deaths of children less than 18 years of age in Montgomery County. In some categories, these data represent a small number of cases; therefore, a reader should be cautious in drawing conclusions from the data.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaths</td>
<td>79</td>
<td>81</td>
<td>73</td>
<td>78</td>
<td>1,031</td>
</tr>
<tr>
<td>Deaths Reviewed</td>
<td>79</td>
<td>81</td>
<td>73</td>
<td>78</td>
<td>1,031</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>43</td>
<td>46</td>
<td>43</td>
<td>39</td>
<td>603</td>
</tr>
<tr>
<td>Female</td>
<td>36</td>
<td>35</td>
<td>29</td>
<td>39</td>
<td>427</td>
</tr>
<tr>
<td>Unknown</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>43</td>
<td>37</td>
<td>26</td>
<td>33</td>
<td>457</td>
</tr>
<tr>
<td>White</td>
<td>36</td>
<td>42</td>
<td>46</td>
<td>44</td>
<td>566</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Unknown</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Age Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 7 days</td>
<td>28</td>
<td>24</td>
<td>24</td>
<td>29</td>
<td>329</td>
</tr>
<tr>
<td>7 – 27 days</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>81</td>
</tr>
<tr>
<td>28 – 364 days</td>
<td>22</td>
<td>25</td>
<td>21</td>
<td>23</td>
<td>260</td>
</tr>
<tr>
<td>1 – 4 years</td>
<td>7</td>
<td>10</td>
<td>2</td>
<td>4</td>
<td>99</td>
</tr>
<tr>
<td>5 – 9 years</td>
<td>4</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>67</td>
</tr>
<tr>
<td>10 – 14 years</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>70</td>
</tr>
<tr>
<td>15 – 17 years</td>
<td>7</td>
<td>5</td>
<td>10</td>
<td>9</td>
<td>124</td>
</tr>
<tr>
<td>Unknown</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Manner of Death</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural</td>
<td>50</td>
<td>52</td>
<td>45</td>
<td>53</td>
<td>646</td>
</tr>
<tr>
<td>Accident</td>
<td>19</td>
<td>12</td>
<td>19</td>
<td>13</td>
<td>200</td>
</tr>
<tr>
<td>Homicide</td>
<td>4</td>
<td>11</td>
<td>3</td>
<td>6</td>
<td>79</td>
</tr>
<tr>
<td>Suicide</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>27</td>
</tr>
<tr>
<td>Undetermined</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>79</td>
</tr>
<tr>
<td>Preventability Determination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preventable</td>
<td>26</td>
<td>25</td>
<td>24</td>
<td>27</td>
<td>220</td>
</tr>
<tr>
<td>Not Preventable</td>
<td>29</td>
<td>25</td>
<td>25</td>
<td>26</td>
<td>221</td>
</tr>
<tr>
<td>Unsure</td>
<td>24</td>
<td>37</td>
<td>24</td>
<td>25</td>
<td>223</td>
</tr>
</tbody>
</table>

aData Deaths are not reviewed until investigations and/or prosecutions are complete. For this reason, one death in 2004 was not reviewed prior to the previous Report; that death has now been reviewed and is included in this Report.

bHispanic Ethnicity: 0 in 2005; 2 in 2006; 1 in 2007; 0 in 2008; and a total of 15 from 1997 – 2008.

cPreventability discussions began in 2001 and include a total of 664 deaths.

dDeaths included in the “Somewhat Preventable” category have been incorporated into the “Preventable” category throughout this report. There was one death in 2001 and one death in 2003 determined to be “Somewhat Preventable.” The “Somewhat Preventable” classification has been eliminated as an option when determining preventability.
Cumulative Data Analysis

Table 2: Number and Rate\(^a\) of Reviewed Deaths by Gender and Race

<table>
<thead>
<tr>
<th>Year</th>
<th>Male</th>
<th>Female</th>
<th>Black</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>70,593</td>
<td>67,484</td>
<td>34,955</td>
<td>96,210</td>
</tr>
<tr>
<td>1997</td>
<td>66</td>
<td>39</td>
<td>49</td>
<td>56</td>
</tr>
<tr>
<td>1998</td>
<td>61</td>
<td>37</td>
<td>41</td>
<td>55</td>
</tr>
<tr>
<td>1999</td>
<td>45</td>
<td>24</td>
<td>27</td>
<td>42</td>
</tr>
<tr>
<td>2000</td>
<td>54</td>
<td>41</td>
<td>38</td>
<td>57</td>
</tr>
<tr>
<td>2001</td>
<td>57</td>
<td>40</td>
<td>39</td>
<td>58</td>
</tr>
<tr>
<td>2002</td>
<td>44</td>
<td>48</td>
<td>45</td>
<td>46</td>
</tr>
<tr>
<td>2003</td>
<td>59</td>
<td>30</td>
<td>37</td>
<td>52</td>
</tr>
<tr>
<td>2004</td>
<td>46</td>
<td>29</td>
<td>42</td>
<td>32</td>
</tr>
<tr>
<td>2005</td>
<td>43</td>
<td>36</td>
<td>43</td>
<td>36</td>
</tr>
<tr>
<td>2006</td>
<td>46</td>
<td>35</td>
<td>37</td>
<td>42</td>
</tr>
<tr>
<td>2007</td>
<td>43</td>
<td>29</td>
<td>26</td>
<td>46</td>
</tr>
<tr>
<td>2008</td>
<td>39</td>
<td>39</td>
<td>33</td>
<td>44</td>
</tr>
<tr>
<td>12 year average</td>
<td>50.3</td>
<td>35.6</td>
<td>38.1</td>
<td>47.2</td>
</tr>
</tbody>
</table>

• The key results are in the bottom two lines of this Table. Consider, for example, the column labeled “male.” During the 12 years covered by this review, an average of just over 50 male children died each year. This means that, for every 100,000 male children living in Montgomery County, there were just over 71\(^i\) deaths per year.

• Once the rates for different demographic groups are known, comparisons between groups can be made. In Montgomery County for these 12 years:
  - a male child is 35% more likely (71.2/52.7 = 1.35) to have died than a female child; and
  - a black child is 122% more likely (108.9/49.0 = 2.22) to have died than a white child.

\(^a\) Rates are expressed per 100,000.
\(^b\) Population data provided by Public Health – Dayton & Montgomery County
\(^c\) Race unknown for one death; one child’s race identified as “other.”
\(^d\) One child’s race identified as “other.”
\(^e\) One child’s race identified as “other.”
\(^f\) Two children’s race identified as “other.”
\(^g\) Gender unknown for one death; one child’s race identified as “other.”
\(^h\) One child’s race identified as “other.”
\(^i\) The rate per 100,000 equals the 12-year average divided by the population and multiplied by 100,000; for males, this is \(\frac{50.25}{70,593} \times 100,000 = 71.1826\).
Figure 1. In Montgomery County, reviewed deaths of male children outnumbered reviewed deaths of female children for 10 of the 12 years from 1997 to 2008. Note: Gender is unknown for one death in 2007. This means there were 73 child deaths reviewed for 2007 and 1,031 child deaths reviewed for the years 1997 - 2008.

- In Montgomery County, males represent 58.5% of all child deaths reviewed during the 1997 – 2008 time period (and for which the gender is known), compared to 41.5% for females. Note that these data are for the deaths of all children under 18, i.e., infants to age 17.

- Because infant deaths comprise a significant majority of all child deaths (see Figure 3 on page 10), infant mortality is examined in more detail in a separate section of this Report (pp. 25 – 45). Also, national data on child fatalities are more readily available for children under 15 years old as opposed to under 18 years old. Therefore, when just the deaths of children ages 1 – 14 are considered for Montgomery County, 61.9% of them are those of males, compared to 38.1% for females (data not shown).

- These percentages are slightly different than those from national data for the deaths of children ages 1 – 14 for selected years during the period of this review:

<table>
<thead>
<tr>
<th></th>
<th>Mont. Co.</th>
<th>1999 (US)</th>
<th>2001 (US)</th>
<th>2006 (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>61.9%</td>
<td>58.1%</td>
<td>57.9%</td>
<td>57.2%</td>
</tr>
<tr>
<td>Female</td>
<td>38.1%</td>
<td>41.9%</td>
<td>42.1%</td>
<td>42.8%</td>
</tr>
</tbody>
</table>

The conclusion is that the gender distribution of child deaths in Montgomery County is slightly different than the gender distribution of child deaths across the country.
Cumulative Data Analysis (cont’d.)

Figure 2. The deaths of white children outnumbered the deaths of black children in 10 of the 12 years that have been reviewed. Note: Race is unknown for one death in 1998. This means there were 98 child deaths reviewed for 1998 and 1,031 child deaths reviewed for the years 1997 – 2008.

- In Montgomery County, black children represent 44.4% of all the deaths of children under 18 years old reviewed during the 1997 – 2008 time period (and for which the race is known).

- When just the deaths of children ages 1 – 14 are considered, black children represent 37.7% of the child deaths in Montgomery County.

- The percentage of local child deaths which are black is higher than the national percentage for children ages 1 – 14 for selected years during the period of this review:

<table>
<thead>
<tr>
<th></th>
<th>Mont. Co.</th>
<th>1999 (US)</th>
<th>2001 (US)</th>
<th>2006 (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>37.7%</td>
<td>24.1%</td>
<td>22.7%</td>
<td>23.6%</td>
</tr>
</tbody>
</table>

- The fact that the local percentage of child deaths which are black is higher than the national percentage is consistent with population data from the Census; for example, in 2000 black children comprised 25.7% of the Montgomery County population ages 1 – 14, and 15.2% of the national population of those ages.

The conclusion is that the racial distribution of child deaths in Montgomery County is consistent with the racial distribution of child deaths across the country, taking into account the difference between the racial distributions of the local and national populations.
Figure 3. A total of 1,031 deaths have been reviewed. Infants account for 670 of the deaths, or 65%. The age group with the second highest number of deaths is 15 – 17 years old, accounting for 124 deaths or 12%. Note: The chart above does not include one death in 1998 for which the age is unknown.
Cumulative Data Analysis (cont’d.)

• When just the deaths of Montgomery County children ages 1 – 14 are considered, children 1 – 4 years old at the time of death represent 41.9% of all deaths, children 5 – 9 represent 28.4%, and children 10 – 14 represent 29.7%.

• National data for selected years during the period of this review show the same general pattern of age distribution as the Montgomery County data, i.e., the lowest percentage is for the 5 – 9 age range and the highest percentage is for the 1 – 4 age range:

<table>
<thead>
<tr>
<th>Age</th>
<th>Mont. Co.</th>
<th>1999 (US)</th>
<th>2001 (US)</th>
<th>2006 (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 4</td>
<td>41.9%</td>
<td>40.9%</td>
<td>41.9%</td>
<td>43.0%</td>
</tr>
<tr>
<td>5 – 9</td>
<td>28.4%</td>
<td>27.0%</td>
<td>25.3%</td>
<td>25.4%</td>
</tr>
<tr>
<td>10 – 14</td>
<td>29.7%</td>
<td>32.1%</td>
<td>32.8%</td>
<td>31.7%</td>
</tr>
</tbody>
</table>

The conclusion is that the age distribution of child deaths in Montgomery County is similar to the age distribution of child deaths across the country.
Table 3: Number and Rate<sup>a</sup> of Reviewed Deaths by Age

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>&lt;1</th>
<th>1 – 4</th>
<th>5 – 9</th>
<th>10 – 14</th>
<th>15 – 17</th>
<th>&lt;18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population&lt;sup&gt;b&lt;/sup&gt;</td>
<td>7,416</td>
<td>29,564</td>
<td>39,081</td>
<td>39,070</td>
<td>22,774</td>
<td>137,905</td>
</tr>
<tr>
<td>Number of deaths</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>58</td>
<td>17</td>
<td>6</td>
<td>8</td>
<td>16</td>
<td>105</td>
</tr>
<tr>
<td>1998&lt;sup&gt;c&lt;/sup&gt;</td>
<td>66</td>
<td>6</td>
<td>8</td>
<td>9</td>
<td>98</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>46</td>
<td>5</td>
<td>6</td>
<td>9</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>61</td>
<td>10</td>
<td>4</td>
<td>9</td>
<td>11</td>
<td>95</td>
</tr>
<tr>
<td>2002</td>
<td>63</td>
<td>9</td>
<td>7</td>
<td>7</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>57</td>
<td>9</td>
<td>5</td>
<td>9</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>2004</td>
<td>49</td>
<td>14</td>
<td>4</td>
<td>12</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>55</td>
<td>2</td>
<td>6</td>
<td>7</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>54</td>
<td>10</td>
<td>8</td>
<td>5</td>
<td>12</td>
<td>81</td>
</tr>
<tr>
<td>2007</td>
<td>51</td>
<td>2</td>
<td>7</td>
<td>3</td>
<td>10</td>
<td>73</td>
</tr>
<tr>
<td>2008</td>
<td>57</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>9</td>
<td>78</td>
</tr>
<tr>
<td>12 year average</td>
<td>55.8</td>
<td>8.3</td>
<td>5.6</td>
<td>5.8</td>
<td>10.3</td>
<td>85.9</td>
</tr>
<tr>
<td>Rate 1997 – 2008</td>
<td>752.9</td>
<td>27.9</td>
<td>14.3</td>
<td>14.9</td>
<td>45.4</td>
<td>62.3</td>
</tr>
</tbody>
</table>

• The key results are in the bottom two lines of this Table. Consider, for example, the column labeled “1-4.” During the 12 years covered by this review, an average of just over 8 children in that age range died each year. This means that, for every 100,000 children in that age range living in Montgomery County, there were over 27<sup>d</sup> deaths per year.

• Once the rates for different age ranges are known, comparisons between age ranges can be made. In Montgomery County for the years covered by this review, a child in the age range of 15 – 17 is 217% more likely (45.4/14.3 = 3.17) to have died than a child in the age range of 5 – 9.

---

<sup>a</sup> Rates are expressed per 100,000.

<sup>b</sup> Population for "< 1" is the average number of births to Montgomery County residents for the years 1997 – 2008 as reported by the Ohio Department of Health. Other population data are from the 2000 Census (SF1 P14).

<sup>c</sup> Age is unknown for one death; this death is included in the total, i.e., “< 18.”

<sup>d</sup> The rate per 100,000 equals the 12-year average divided by the population and multiplied by 100,000; for the 1-4 year-old age range, this is $\frac{8.25}{29,564} \times 100,000 = 27.91$. 
### Table 4: Reviewed Deaths by Manner and Cause

#### Natural

<table>
<thead>
<tr>
<th>Category</th>
<th># of Deaths</th>
<th>% of Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer</td>
<td>39</td>
<td>6.0</td>
</tr>
<tr>
<td>Circulatory System, Diseases of</td>
<td>19</td>
<td>3.0</td>
</tr>
<tr>
<td>Congenital Anomalies</td>
<td>152</td>
<td>23.5</td>
</tr>
<tr>
<td>Digestive System, Diseases of</td>
<td>21</td>
<td>3.3</td>
</tr>
<tr>
<td>Infectious Diseases</td>
<td>28</td>
<td>4.3</td>
</tr>
<tr>
<td>Nervous System, Diseases of</td>
<td>25</td>
<td>3.9</td>
</tr>
<tr>
<td>Nutritional &amp; Metabolic Disorders</td>
<td>18</td>
<td>2.8</td>
</tr>
<tr>
<td>Perinatal Conditions *</td>
<td>307</td>
<td>47.5</td>
</tr>
<tr>
<td>Respiratory System, Diseases of</td>
<td>15</td>
<td>2.3</td>
</tr>
<tr>
<td>Renal Failure</td>
<td>4</td>
<td>0.6</td>
</tr>
<tr>
<td>SIDS **</td>
<td>5</td>
<td>0.8</td>
</tr>
<tr>
<td>Undetermined</td>
<td>4</td>
<td>0.6</td>
</tr>
<tr>
<td>All other medical conditions</td>
<td>9</td>
<td>1.4</td>
</tr>
<tr>
<td><strong>Total – Natural</strong></td>
<td><strong>646</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

* Perinatal Conditions include, but are not limited to, low birth weight, maternal complications, cord/placental complications, and respiratory complications occurring during the perinatal period. Perinatal is the period beginning after the 20th week of pregnancy through 28 days following birth. See Glossary for additional terms.

** See also SIDS under “Undetermined” on page 14. Over the years, death scene investigations and forensic tests have become more sophisticated. This has resulted in a decrease in the number of deaths attributed to SIDS and an increase in deaths attributed to unsafe sleep practices.

#### Accident

<table>
<thead>
<tr>
<th>Category</th>
<th># of Deaths</th>
<th>% of Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Vehicle Accident (MVA) – driver</td>
<td>18</td>
<td>9.0</td>
</tr>
<tr>
<td>MVA – passenger</td>
<td>23</td>
<td>11.5</td>
</tr>
<tr>
<td>MVA – pedestrian</td>
<td>15</td>
<td>7.5</td>
</tr>
<tr>
<td>MVA – bicycle</td>
<td>4</td>
<td>2.0</td>
</tr>
<tr>
<td>MVA – various</td>
<td>10</td>
<td>5.0</td>
</tr>
<tr>
<td>Drowning</td>
<td>15</td>
<td>7.5</td>
</tr>
<tr>
<td>Fire – private dwelling</td>
<td>13</td>
<td>6.5</td>
</tr>
<tr>
<td>Hanging</td>
<td>5</td>
<td>2.5</td>
</tr>
<tr>
<td>Poisoning – drug overdose</td>
<td>4</td>
<td>2.0</td>
</tr>
<tr>
<td>Suffocation – sleep related</td>
<td>73</td>
<td>36.5</td>
</tr>
<tr>
<td>Other</td>
<td>20</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>Total – Accident</strong></td>
<td><strong>200</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
Cumulative Data Analysis (cont’d.)

### Table 4: Reviewed Deaths by Manner and Cause (cont’d.)

<table>
<thead>
<tr>
<th></th>
<th># of Deaths</th>
<th>% of Category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Homicide</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drowning</td>
<td>4</td>
<td>5.1</td>
</tr>
<tr>
<td>Fire</td>
<td>4</td>
<td>5.1</td>
</tr>
<tr>
<td>Firearm</td>
<td>31</td>
<td>39.2</td>
</tr>
<tr>
<td>Abusive Head Trauma***</td>
<td>8</td>
<td>10.1</td>
</tr>
<tr>
<td>[formerly Shaken Baby Syndrome]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Struck by another</td>
<td>7</td>
<td>8.9</td>
</tr>
<tr>
<td>Suffocation</td>
<td>10</td>
<td>12.6</td>
</tr>
<tr>
<td>Other</td>
<td>15</td>
<td>19.0</td>
</tr>
<tr>
<td><strong>Total – Homicide</strong></td>
<td><strong>79</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Suicide</strong></th>
<th># of Deaths</th>
<th>% of Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firearm</td>
<td>11</td>
<td>40.7</td>
</tr>
<tr>
<td>Hanging</td>
<td>14</td>
<td>51.9</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>7.4</td>
</tr>
<tr>
<td><strong>Total – Suicide</strong></td>
<td><strong>27</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Undetermined</strong></th>
<th># of Deaths</th>
<th>% of Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire – private dwelling</td>
<td>4</td>
<td>5.1</td>
</tr>
<tr>
<td>SIDS ****</td>
<td>27</td>
<td>34.2</td>
</tr>
<tr>
<td>Undetermined</td>
<td>39</td>
<td>49.4</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>11.4</td>
</tr>
<tr>
<td><strong>Total – Undetermined</strong></td>
<td><strong>79</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

*** Effective 2-29-08 these deaths are reportable under Claire’s Law (2007 SB 144). None of the deaths reported here occurred after the effective date of the law.

**** See also SIDS under “Natural” on page 13. Over the years, death scene investigations and forensic tests have become more sophisticated. This has resulted in a decrease in the number of deaths attributed to SIDS and an increase in deaths attributed to unsafe sleep practices.
Reviewed Child Deaths by Manner of Death 1997 - 2008

Figure 4. The majority of deaths during the 1997 – 2008 time period was due to natural causes and the second highest number was due to accidents. The percentages are as follows: Natural 62.6%, Accident 19.4%; Homicide 7.7%, Suicide 2.6%, and Undetermined 7.7%.
Cumulative Data Analysis (cont’d.)
Figure 4 (page 15) summarizes the deaths of all children under 18 years old in Montgomery County, including infants. When the deaths of children ages 1 – 14 are considered for the same years (1997 – 2008), accidents represent 28.4% of the deaths, homicides 13.1%, and suicides 3.4%. Natural deaths and those of an undetermined manner account for the remaining deaths, 55.1%.

A comparison with national data for selected years during the period of this review shows that the local proportion of deaths due to accidents is lower than the national proportion. Conversely, the local proportions due to homicides and suicides are both higher than the national proportions. The local proportion due to either a natural manner or an undetermined manner is essentially the same as the national proportion:

<table>
<thead>
<tr>
<th></th>
<th>Mont. Co.</th>
<th>1999 (US)</th>
<th>2001 (US)</th>
<th>2006 (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accidents</td>
<td>28.4%</td>
<td>38.8%</td>
<td>37.3%</td>
<td>35.9%</td>
</tr>
<tr>
<td>Homicides</td>
<td>13.1%</td>
<td>6.3%</td>
<td>6.1%</td>
<td>7.0%</td>
</tr>
<tr>
<td>Suicides</td>
<td>3.4%</td>
<td>1.9%</td>
<td>2.2%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Natural/Undetermined</td>
<td>55.1%</td>
<td>53.0%</td>
<td>54.4%</td>
<td>55.1%</td>
</tr>
</tbody>
</table>

The conclusion is that the distribution of child deaths in Montgomery County according to the manner of death is different than the distribution across the country.

Questions raised by this conclusion are the following: Is the proportion of Montgomery County deaths due to homicides and suicides higher because a.) local children are more vulnerable to homicides and suicides than their peers across the nation; or b.) local children are less vulnerable to other causes of death than are children nationally?

To answer this question it is useful to calculate rates (Table 5, page 17). Fatality statistics are typically expressed as rates of death per 100,000 population. This means that in Montgomery County, during the years from 1997 to 2008, there was an annual average of 18.3 deaths of children between the ages of 1 and 14 for every 100,000 children of that age.

Rates enable comparisons between different populations. For example, for 1997 – 2008 the rate for males in this age range is 55% higher than the rate for females of the same age (22.1 / 14.3 = 1.55), meaning that a boy in Montgomery County is 55% more likely to die than a girl. A similar analysis leads to the conclusion that a black child of those ages in Montgomery County is 64% more likely to die than a white child (26.8 / 16.3 = 1.64).

All of the national rates displayed in Table 5 (page 17) declined from 1999 to 2006. The overall rate for Montgomery County (18.3) is slightly lower than the lowest national rate (19.0 in 2006). Many – but not all – of the rates for Montgomery County by gender, race, age group and manner are also lower than the lowest corresponding national rates.

However, in answer to the question posed above, Montgomery County rates are higher than national rates in the areas of homicides (especially of children ages 1 – 4) and suicide.

\[ a \] The suicide rate in 1999 was 0.44 and in 2006 it was 0.38.
Cumulative Data Analysis (cont’d.)

Table 5: Montgomery County and National Ratesa of Death for Children Ages 1 – 14 by Gender, Race, Age Group, and Manner

<table>
<thead>
<tr>
<th></th>
<th>Montgomery County 1997 – 2008</th>
<th>USA 1999</th>
<th>USA 2001</th>
<th>USA 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both Genders, All Races, All Age Groups, All Manners</td>
<td>18.3</td>
<td>23.5</td>
<td>21.6</td>
<td>19.0</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>22.1</td>
<td>26.7</td>
<td>24.5</td>
<td>21.3</td>
</tr>
<tr>
<td>Female</td>
<td>14.3</td>
<td>20.2</td>
<td>18.7</td>
<td>16.7</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>16.3</td>
<td>21.3</td>
<td>20.1</td>
<td>17.5</td>
</tr>
<tr>
<td>Black</td>
<td>26.8</td>
<td>36.6</td>
<td>29.8</td>
<td>27.5</td>
</tr>
<tr>
<td>Age Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 – 4</td>
<td>27.9</td>
<td>34.7</td>
<td>33.3</td>
<td>28.4</td>
</tr>
<tr>
<td>5 – 9</td>
<td>14.3</td>
<td>17.4</td>
<td>15.3</td>
<td>13.9</td>
</tr>
<tr>
<td>10 – 14</td>
<td>14.9</td>
<td>21.1</td>
<td>19.2</td>
<td>16.6</td>
</tr>
<tr>
<td>Manner</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accident</td>
<td>5.2</td>
<td>9.1</td>
<td>8.1</td>
<td>6.8</td>
</tr>
<tr>
<td>Homicide</td>
<td>2.4</td>
<td>1.5</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Suicide</td>
<td>0.6</td>
<td>0.4</td>
<td>0.5</td>
<td>0.4</td>
</tr>
<tr>
<td>Natural/Undetermined</td>
<td>10.1</td>
<td>12.5</td>
<td>11.8</td>
<td>10.5</td>
</tr>
</tbody>
</table>

| Manner, by Age Group |                             |          |          |          |
| Accident, 1 – 4      | 4.2                          | 12.6     | 11.2     | 9.9      |
| Accident, 5 – 9      | 5.6                          | 7.3      | 6.4      | 5.3      |
| Accident, 10 – 14    | 5.5                          | 8.3      | 7.4      | 5.9      |
| Homicide, 1 – 4      | 6.8                          | 2.5      | 2.7      | 2.2      |
| Homicide, 5 – 9      | 0.2                          | 0.9      | 0.7      | 0.8      |
| Homicide, 10 – 14    | 1.3                          | 1.3      | 0.9      | 1.2      |
| Suicide, 10 – 14     | 1.7                          | 1.2      | 1.3      | 1.0      |

The conclusion is that local rates of child death (for ages 1 – 14, by gender, race, age group, and manner) are consistent with – or slightly lower than – national rates, except that local rates of homicide and suicide are higher. In other words, children in Montgomery County are more vulnerable to homicide and suicide than children across the country.

---

Preventability

In 2001 the CFRB began determining preventability, defined in the Ohio Administrative Code as "the degree to which an individual or community could have reasonably done something that would have changed the circumstances that led to the child's death."

Figure 5. The deaths divide almost equally into “preventable” (33.1%), “not preventable” (33.3%), and “unsure” (33.6%).

The conclusion is that at least one out of every three child deaths in Montgomery County during these years could have been prevented.

---

*a In 2005 the state eliminated the "somewhat preventable" category. There were two deaths, one in 2001 and one in 2003, previously determined to be "somewhat preventable." Those deaths have been incorporated into the “preventable” category.
Preventability (cont’d.)

The Ohio Department of Health, aggregating data from Review Boards across the state, recently reported that 25% of the deaths reviewed were considered preventable, 60% were considered not preventable, and 15% were considered unsure.\textsuperscript{a} Determining preventability is, ultimately, a subjective exercise. This is the most plausible explanation for the variance between the statewide percentages and Montgomery County’s. This explanation is supported by the preventability data from two other urban counties: Hamilton County has, on average, considered close to 50% of its child deaths as preventable over the years of its reviews\textsuperscript{b}, while Franklin County considered 21% of its child deaths as preventable in a recent report.\textsuperscript{c}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{preventability_chart.png}
\caption{From 2001 – 2008 the percentage of deaths of male children found to be “preventable” (36.6\%) was higher than that of female children (28.7\%).
\footnotesize{Note: Gender is unknown for one “not preventable” death in 2007. This means that preventability was determined for 664 child deaths from 2001 – 2008.}
}\end{figure}

\textsuperscript{a} Ohio Child Fatality Review, Ninth Annual Report, 2009.
\textsuperscript{b} Child Fatality Review Team Annual Report 2008, Hamilton County Family and Children First Council.
\textsuperscript{c} Franklin County Child Fatality Review, 3\textsuperscript{rd} Annual Community Report, Columbus Public Health.
Figure 7. From 2001 – 2008, the deaths of black children and of white children were considered “preventable” in essentially equal proportions: 32.8% (99/302) and 33.7% (120/356) respectively.

- Deaths considered “preventable” account for about one-third of all deaths. Over 58% of the remaining deaths of white children were considered “not preventable” compared to less than 40% of the remaining deaths of black children.\(^a\) The reason for this difference is not known, but it may be due to racial differences in deaths due to prematurity for which preventability is difficult to determine.

\(^a\) 58% = (138/[138 + 98]); 40% = (80/[80 + 123]).
Preventability (cont’d.)

Preventability of Reviewed Child Deaths
by Age Group, 2001 - 2008

Figure 8. In the period 2001 – 2008, preventability was categorized as “unsure” for 46.7% of infant deaths compared to 8.0% of the deaths of children one year old and older.\(^a\)

- The largest number of deaths for which preventability is considered “unsure” occurred in the neonatal period, <28 days. Many of these are deaths of children born prematurely and/or with congenital anomalies.

*The conclusion is that determining preventability is extremely difficult in some cases, e.g., where the child is born prematurely and/or with congenital anomalies.*

\(^a\) 46.7% = (158 + 47) / (256 + 183); 8.0% = (4 + 5 + 5 + 4) / (61 + 43 + 42 + 79)
Figure 9. Fewer than 6% of the deaths of neonates (infants less than 28 days old) were determined “preventable.” (See the comments under Figure 8 on page 21.) Nearly 3 out of 4 deaths to children age 15 – 17 were determined “preventable”; accidents were the leading cause of death for this age group.

*The conclusion is that the proportion of deaths considered “preventable” generally increases with increasing age.*
Preventability (cont’d.)

Percentage of All Preventable Reviewed Deaths Which Are Within Each Age Group, 2001 - 2008

Figure 10. In the 2001 – 2008 time period, the two age groups with the highest number of “preventable” deaths were 28 – 364 days and 15 – 17 years. (See Figure 8 on page 21.) Together these two groups account for 39.5% of all child deaths but 63.2% of “preventable” deaths.

The conclusion is that, while each age group experiences some “preventable” deaths, the majority of them are found in two age groups.
Preventability (cont’d.)

Figure 11. 60% (132/220) of the deaths considered “preventable” were due to accidents, and 94% (132/141) of accidental deaths were determined to be “preventable.”


The conclusion is that one of every five child deaths is due to a preventable accident.
Infant Mortality

Introduction

Well over half of the children whose deaths have been reviewed over the past 12 years were infants under one year of age (670 out of 1,031, or 65%). It is useful, therefore, to consider infant mortality in Montgomery County in some detail. We do so by considering, in order, the following issues related to infant health and mortality:

- Local infant mortality data, including recommendations which emerge from a specialized analysis called “Perinatal Periods of Risk;”
- Recommendations from a statewide task force convened to examine infant mortality in Ohio;
- A local campaign to prevent sleep-related deaths;
- Local efforts to analyze the incidence of babies born with a low birth weight;
- The work of a local task force addressing Fetal Alcohol Spectrum Disorders; and
- A local project to improve the ability of home health providers to educate women on the risks of preterm births, a leading cause of mortality.

Local Infant Mortality Data

The gender and race of infant deaths in Montgomery County are displayed in Figures 12 and 13 (page 26). Overall, for the period 1997 through 2008, the deaths of male infants (362 or 54% of all infant deaths) outnumbered the deaths of female infants (307, 46%)\(^a\), and the deaths of white infants (351, 52%) outnumbered the deaths of black infants (315, 47%)\(^b\). Here it is important to highlight the fact that during the years covered by this review black infants comprised 26% of Montgomery County’s births; however, they represented 47% of the infant deaths. As a result, the death rate for black infants is greater than the rate for white infants. This is discussed further on page 32.

The fact that deaths of males outnumber deaths of females, and that deaths of whites outnumber deaths of blacks, is true for all children (Figure 1 on page 8 and Figure 2 on page 9) as well as for infants.

\(^a\) For one infant death in this period the gender is unknown.
\(^b\) It should be noted that in some individual years the pattern was reversed (2002 and 2008 for gender, and 1997, 2002, and 2004 – 2006 for race).
Infant Mortality (cont’d.)

Reviewed Infant Deaths by Gender
1997 - 2008

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>34</td>
<td>39</td>
<td>27</td>
<td>34</td>
<td>35</td>
<td>22</td>
<td>33</td>
<td>27</td>
<td>28</td>
<td>29</td>
<td>28</td>
<td>26</td>
<td>362</td>
</tr>
<tr>
<td>Female</td>
<td>24</td>
<td>27</td>
<td>19</td>
<td>27</td>
<td>28</td>
<td>35</td>
<td>20</td>
<td>22</td>
<td>27</td>
<td>25</td>
<td>22</td>
<td>31</td>
<td>307</td>
</tr>
<tr>
<td>Totals</td>
<td>58</td>
<td>66</td>
<td>46</td>
<td>61</td>
<td>63</td>
<td>57</td>
<td>53</td>
<td>49</td>
<td>55</td>
<td>54</td>
<td>50</td>
<td>57</td>
<td>669</td>
</tr>
</tbody>
</table>

**Figure 12.** Male deaths outnumbered female deaths in ten of the twelve years that have been reviewed.

Note: The gender is unknown for one death in 2007. This means there were 51 infant deaths reviewed in 2007 and 670 infant deaths reviewed for the years 1997 – 2008.

Reviewed Infant Deaths by Race
1997 - 2008

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>30</td>
<td>28</td>
<td>21</td>
<td>25</td>
<td>29</td>
<td>29</td>
<td>24</td>
<td>26</td>
<td>34</td>
<td>27</td>
<td>17</td>
<td>25</td>
<td>315</td>
</tr>
<tr>
<td>White</td>
<td>28</td>
<td>37</td>
<td>25</td>
<td>36</td>
<td>34</td>
<td>28</td>
<td>29</td>
<td>22</td>
<td>21</td>
<td>26</td>
<td>33</td>
<td>32</td>
<td>351</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>66</td>
<td>46</td>
<td>61</td>
<td>63</td>
<td>57</td>
<td>53</td>
<td>49</td>
<td>55</td>
<td>54</td>
<td>51</td>
<td>57</td>
<td>670</td>
</tr>
</tbody>
</table>

**Figure 13.** White deaths outnumbered black deaths in seven of the twelve years that have been reviewed.
Infant Mortality (cont’d.)

Reviewed Infant Deaths by Age
1997 - 2008

Figure 14. Infants are especially vulnerable during their first days of life. Almost half (329/670, or 49.1%) of all infant deaths occur within the first week, and an additional 12.1% (81/670) occur between 7 and 27 days after birth.

When the data regarding the race and age of infant deaths are combined (Table 6, below), the deaths of white infants less than seven days old outnumber those of black infants of the same age, while the deaths of black infants 7 - 27 days old outnumber white infants of the same age.

Table 6: Infant Deaths by Race and Age 1997 – 2008
(Total = 670)

<table>
<thead>
<tr>
<th>Age</th>
<th>Black</th>
<th>White</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;7 days</td>
<td>152 (22.7%)</td>
<td>176 (26.3%)</td>
<td>1 (0.2%)</td>
</tr>
<tr>
<td>7 – 27 days</td>
<td>43 (6.4%)</td>
<td>38 (5.7%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>28 – 364 days</td>
<td>120 (17.9%)</td>
<td>137 (20.4%)</td>
<td>3 (0.4%)</td>
</tr>
<tr>
<td>Total</td>
<td>315 (47.0%)</td>
<td>351 (52.4%)</td>
<td>4 (0.6%)</td>
</tr>
</tbody>
</table>
Figure 15. The vast majority of infant deaths (495/670, or 73.8%) are due to natural causes. Accidents and homicides combined account for 16.0% (107/670) of infant deaths. For the remaining 10.1% (68/670) the manner was undetermined.
A key statistic in the analysis of infant mortality is the **infant mortality rate** (IMR). The IMR is generally expressed as the number of deaths of children under one year old in a given time period (usually a calendar year) per 1,000 live births in the same time period. The IMR is useful for examining trends in infant mortality over time and for comparing infant mortality between different groups.

For this discussion we are using IMR data as reported by the Ohio Department of Health (ODH) Information Warehouse which draws from the state’s Vital Statistics system. For the years covered by this Report (1997 – 2008), the ODH Warehouse reports a total of 685 infant deaths for Montgomery County while the CFRB has reviewed 670. (Table 7, below.)

**Table 7.** Reviewed infant deaths compared to those in the ODH Warehouse.

<table>
<thead>
<tr>
<th></th>
<th>White</th>
<th>Black</th>
<th>Other</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>Reviewed</td>
<td>White</td>
<td>28</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>ODH</td>
<td>32</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>1998</td>
<td>Reviewed</td>
<td>37</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>ODH</td>
<td>41</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td>1999</td>
<td>Reviewed</td>
<td>25</td>
<td>21</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>ODH</td>
<td>26</td>
<td>22</td>
<td>0</td>
</tr>
<tr>
<td>2000</td>
<td>Reviewed</td>
<td>36</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>ODH</td>
<td>37</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>2001</td>
<td>Reviewed</td>
<td>34</td>
<td>29</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>ODH</td>
<td>35</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td>2002</td>
<td>Reviewed</td>
<td>28</td>
<td>29</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>ODH</td>
<td>29</td>
<td>31</td>
<td>0</td>
</tr>
<tr>
<td>2003</td>
<td>Reviewed</td>
<td>29</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>ODH</td>
<td>30</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>2004</td>
<td>Reviewed</td>
<td>22</td>
<td>26</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>ODH</td>
<td>23</td>
<td>26</td>
<td>1</td>
</tr>
<tr>
<td>2005</td>
<td>Reviewed</td>
<td>21</td>
<td>34</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>ODH</td>
<td>22</td>
<td>31</td>
<td>0</td>
</tr>
<tr>
<td>2006</td>
<td>Reviewed</td>
<td>26</td>
<td>27</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>ODH</td>
<td>27</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td>2007</td>
<td>Reviewed</td>
<td>33</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>ODH</td>
<td>33</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>2008</td>
<td>Reviewed</td>
<td>32</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>ODH</td>
<td>28</td>
<td>29</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>Reviewed</td>
<td>351</td>
<td>315</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>ODH</td>
<td>363</td>
<td>318</td>
<td>4</td>
</tr>
</tbody>
</table>

* Available at http://dwhouse.odh.ohio.gov/
Infant Mortality (cont’d.)

Many, if not all, of Ohio’s Child Fatality Review (CFR) boards experience this sort of discrepancy. As the state explains in its annual report on child fatalities, “In spite of their best efforts, CFR boards are not able to review every child death. Some reviews must be delayed until all legal investigations and prosecutions are completed. Some deaths occur outside the county of residence or outside the state, resulting in long delays in notification for the CFR board. Because of these variables, it is usually impossible to find an exact number-for-number match between CFR data and data from other sources such as vital statistics. The unique role of CFR data is to provide a comprehensive depth of understanding to augment other, more one-dimensional data sources.”

The IMRs for the USA, Ohio, and Montgomery County are shown in Figure 16 (below). The downward trend of the national and state IMRs can easily be seen. However, during the years displayed on this graph, the IMR for Montgomery County has fluctuated and does not display an obvious trend.

![Infant Mortality Rates](image-url)

**Figure 16.** During these years the IMR for Montgomery County has fluctuated between 9.2 (in 1990) and 6.2 (in 1999). The wide swings make it difficult to compare the local IMR to the state and national IMRs, both of which have generally had smaller changes year-to-year.

---

*a Merrily Wholf, Child Fatality Review Coordinator, Bureau of Child and Family Health Services, Ohio Department of Health*
Infant Mortality (cont’d.)

One way to smooth out the wide swings of a relatively small area such as Montgomery County is to calculate the “moving average.” This is done by replacing a given year’s IMR with the average of the IMRs for a certain number of years preceding and including the given year. By smoothing out these wide swings, moving averages provide an easier way to compare the local rate to rates for larger areas, such as the state and the country.

The 5-year moving averages for the local, state and national IMRs are displayed in Figure 17 (below). An examination of the graph shows that at the beginning of the time period the 5-year moving average for the Montgomery County IMR was less than that of Ohio or the USA; by the end of the time period it was greater than the national IMR but less than the state’s IMR.

The conclusion is that the local IMR is currently within the range of the state and national IMRs but failed to achieve the downward trend experienced by those rates during the last fifteen years. This may represent a missed opportunity to reduce infant mortality rates in Montgomery County.

Figure 17. When the data in Figure 16 (page 30) are displayed as 5-year moving averages, the local IMR has a relatively flat trend compared to the downward trend of the national and state IMRs.
Infant Mortality (cont’d.)

As mentioned above, the IMR is also a useful tool for comparing infant mortality between different groups. For example, Figure 18 (below) displays the Montgomery County IMRs for both black and white infants; it can easily be seen that the black IMR is much higher than the white IMR. When the IMRs for each year between 1990 and 2008 (inclusive) are compared, the black IMR is (on average) 251% greater than the white IMR. Similar graphs with similar results can be constructed for state and national data (not shown).

*The conclusion is that the racial disparity in infant mortality rates has been and remains very pronounced at the local, state, and national levels.*

![Montgomery County Infant Mortality Rates 5-Year Moving Averages](image)

**Figure 18.** The black IMR for Montgomery County has consistently been more than twice as large as the white IMR.

During the 12 years of this review, 85 Montgomery County infants died as a result of accidents and 22 as a result of homicide (Figure 15 on page 28). In Table 8 (page 33) the local rates of infant deaths due to accidents and homicides are displayed and compared to national rates. Although the Montgomery County accident rate for children ages 1 through 14 is lower than the national rate (see Table 5 on page 17), this does not hold true for the accident rate of infants.
Infant Mortality (cont’d.)

Table 8: Montgomery County and National Infant Mortality Rates\(^a\) by Selected Manner

<table>
<thead>
<tr>
<th></th>
<th>Montgomery County 1997 – 2008</th>
<th>USA 1999</th>
<th>USA 2001</th>
<th>USA 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accident</td>
<td>94.6</td>
<td>21.3</td>
<td>24.2</td>
<td>26.9</td>
</tr>
<tr>
<td>Homicide</td>
<td>22.1</td>
<td>8.4</td>
<td>8.2</td>
<td>7.9</td>
</tr>
</tbody>
</table>

The conclusion is that local infant death rates due to accidents and homicides are considerably higher than national rates.

Perinatal Periods of Risk (PPOR)

Interest in issues surrounding infant mortality naturally leads to a more population-oriented consideration of maternal, fetal, neonatal and post-neonatal health and care. Toward that end, a comprehensive approach called the “Perinatal Periods of Risk” (PPOR)\(^b\) is useful. The overall intent of the PPOR approach is to develop a simple method based on a strong conceptual framework that can be used by communities to mobilize and prioritize prevention efforts.

The results from Montgomery County’s first PPOR analyses were presented in the 2003-2004 Report to the Community. Since then two more PPOR analyses have been conducted with improved data sources, specifically the birth-death linked files from the Ohio Department of Health. These state datasets have allowed for more accurate analyses of fetal and infant deaths, which were underestimated in the first PPOR due to the limits of the available datasets at that time. The most recent PPOR analysis is presented in this report. A review of the PPOR methodology is provided in Appendix E.

For the current report, the Perinatal Data Use Consortium\(^c\) (PDU) analyzed local data for the 2002 to 2005 period. Using birth weight and age at death, each of the 333 fetal-infant deaths\(^d\) occurring in that period was assigned a region on the map according to the PPOR protocol (Figure 19 on page 34).

---

\(^{a}\) Rates are expressed per 100,000. National data are from the National Vital Statistics System of the Centers for Disease Control/National Center for Health Statistics.

\(^{b}\) The Perinatal Periods of Risk Approach was developed by Dr. Brian McCarthy from the W.H.O. (World Health Organization) Perinatal Collaborative Center at CDC and other W.H.O. colleagues. Much of the description of PPOR comes from material prepared by the Perinatal Periods of Risk Work Group, a joint initiative of CityMatCH at the University of Nebraska Medical Center, The Centers for Disease Control and Prevention, The National March of Dimes Birth Defects Foundation, and the Health Resources and Services Administration/Maternal and Child Health Bureau.

\(^{c}\) A group of community partners including representatives from The Children’s Medical Center of Dayton, Miami Valley Hospital, Public Health – Dayton & Montgomery County, the University of Dayton, Wright State University, the Montgomery County Family and Children First Council, and Help Me Grow/Brighter Futures.

\(^{d}\) 102 fetal deaths; 231 infant deaths.
Infant Mortality (cont’d.)

**Figure 19. Number** of fetal and infant deaths in each region of the PPOR map.

During that same time period (2002-2005) there were 28,997 fetal deaths and live births\(^a\) of Montgomery County residents. Fetal-infant mortality rates can be calculated\(^b\) and are shown in Figure 20 (below). The total fetal-infant mortality rate is 11.5 (= 3.5 + 2.2 + 2.9 + 2.9).

**Figure 20.** Rate (per 1,000 births and fetal deaths) of fetal and infant deaths in each region of the PPOR map.

A reference group of women who had the best birth outcomes was identified for the state of Ohio. These women consisted of white, non-Hispanic mothers, greater than 20 years of age and with more than 12 years of education. Using the same procedure as above, a PPOR map for this group (which has been shown to have some of the best pregnancy outcomes) was also constructed (Figure 21 on page 35, middle section). By comparing the local data to the external reference group, a map of “excess deaths” is generated (Figure 21, right section).

---

\(^a\) 102 fetal deaths; 28,895 live births.

\(^b\) For example: For Maternal Health/Prematurity, the rate = 1,000 * 101 / 28,997 = 3.5.
In other words, if the entire population were achieving the pregnancy outcomes of the reference group, the fetal-infant mortality rate would be 5.4/11.5 or 47% lower. The highest excess rates of death are in the areas of Infant Health (2.9 – 1.0 = 1.9) and Newborn Care (2.9 – 1.3 = 1.6).

The conclusion is that addressing these two strategic prevention areas (Infant Health and Newborn Care) should be the highest priority in an effort to reduce the local fetal-infant mortality rate. By a similar analysis the strategic prevention area of Maternal Health/Prematurity should be the next priority. (See Table 9.)

Because the black infant mortality rate (IMR) is so much higher than the white IMR (see page 32), it is important to conduct a PPOR analysis of black fetal-infant deaths using the same external reference group (white, non-Hispanic mothers from Ohio, greater than 20 years of age, with more than 12 years of education). Those results for the 2002 – 2005 period are shown in Figure 22 (page 36).

The conclusion is that recommended intervention strategies for black mothers and infants are different from the overall PPOR. Maternal Health/Prematurity and Infant Health have the highest excess rates of death, followed by Newborn Care. (See Table 9.)

<table>
<thead>
<tr>
<th>Maternal Health/Prematurity</th>
<th>Maternal Health/Prematurity</th>
<th>Maternal Health/Prematurity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal Care</td>
<td>Newborn Care</td>
<td>Infant Health</td>
</tr>
<tr>
<td>3.5</td>
<td>2.3</td>
<td>1.2</td>
</tr>
<tr>
<td>2.9</td>
<td>1.5</td>
<td>0.7</td>
</tr>
<tr>
<td>1.5</td>
<td>1.3</td>
<td>1.0</td>
</tr>
<tr>
<td>2.9</td>
<td>1.3</td>
<td>1.6</td>
</tr>
<tr>
<td>11.5</td>
<td>6.1</td>
<td>5.4</td>
</tr>
</tbody>
</table>

Table 9: Recommendations for Translating PPOR Data into Action

As described in Appendix E, each region of the PPOR map is labeled with a name that suggests appropriate prevention and intervention activities. Interventions that pertain to the “Maternal Health/Prematurity” region address topics such as preconception health, unintended pregnancy, smoking, drug abuse, and specialized perinatal care. For the “Maternal Care” region prevention efforts may include focusing on early continuous prenatal care, referral of high risk pregnancies, and good medical management of diabetes, seizures, postmaturity, or other medical problems. For “Newborn Care” the focus may need to be on advanced neonatal care and treatment of congenital anomalies. For “Infant Health” communities may need to focus on activities such as sleep position education, breast-feeding promotion, access to medical care, and injury prevention.
Infant Mortality (cont’d.)

**Figure 22.** PPOR Analysis of Black Fetal-Infant Deaths

The findings in this report indicate that, although infant mortality for all races is comparable to state and national rates, the overall rate of black infant deaths remains alarmingly high. Reduction efforts in infant mortality rates should focus on the specific causes of infant mortality such as prematurity and the medical risk conditions and behavioral risk factors associated with poor birth outcomes.

**Ohio Infant Mortality Task Force**

The infant mortality rate in Ohio for 2005 was the eighth highest in the nation, and there are marked disparities in birth outcomes when comparing different racial, ethnic, and geographic subpopulations. For these reasons, Governor Strickland asked the Ohio Department of Health to convene an Ohio Infant Mortality Task Force early in 2009. The Task Force, 70 individuals from a wide range of backgrounds, met several times during the year and issued its Final Report in November 2009. CFRB member Tom Breitenbach, CEO of Premier Health Partners, and Alvin Jackson, M.D., Director of the Ohio Department of Health, were co-Chairs of the Task Force. Local members of the Task Force were Sara Paton, Center for Global Health Systems Management & Policy, Wright State University, and Public Health – Dayton & Montgomery County; Marilyn McFadgen, Public Health – Dayton & Montgomery County; and Nancy Nevin-Folino, The Children’s Medical Center of Dayton.
Infant Mortality (cont'd.)

Ten recommendations and accompanying strategies to reduce infant mortality and disparities in Ohio were identified reflecting the following overarching themes:

• Complete and coordinated health care throughout a woman’s and child’s life is essential to prevent infant mortality;

• Disparities in infant mortality and their underlying causes, including racism, exist and need to be eliminated;

• Evidence-based practice and data must be used to drive decisions; and

• Public education about infant mortality and ways to decrease it are needed.

Briefly, the ten recommendations are as follows:

1. Provide comprehensive reproductive health services and service coordination for all women and children before, during and after pregnancy.

2. Eliminate health disparities and promote health equity to reduce infant mortality.

3. Prioritize and align program investments based on documented outcome and cost effectiveness.

4. Implement health promotion and education to reduce preterm birth.

5. Improve data collection and analysis to inform program and policy decisions.

6. Expand quality improvement initiatives to make measurable improvements in maternal and child health outcomes.

7. Address the effects of racism and the impact of racism on infant mortality.

8. Increase public awareness on the effect of preconception health on birth outcomes.

9. Develop, recruit and train a diverse network of culturally competent health professionals statewide.

10. Establish a consortium to implement and monitor the recommendations of the Ohio Infant Mortality Task Force (OIMTF).
Infant Mortality (cont’d.)

Sleep-Related Infant Deaths

While the majority of infant deaths from 1997 through 2008 were due to natural causes, 11.3% of all infant deaths were sleep-related deaths. Of the infant deaths determined to be accidental during these years, more than 8 of every 10 (85.9%) were sleep-related. Sleep-related deaths occur as a result of suffocation in the following circumstances:

- Overlay - An infant dies from suffocation as a result of sleeping with an adult or older child who has rolled on to the infant or against the infant’s face or mouth causing accidental smothering.
- Positional asphyxia - An infant dies from suffocation as a result of sleeping on inappropriate soft bedding or becomes wedged between mattresses, cushions or blankets.
- Unsafe sleep environment - The deceased infant is found in a place that is not proper for sleeping.

These sleep-related infant deaths are often confused with Sudden Infant Death Syndrome (SIDS). SIDS is the death of an infant in a sleeping environment when a thorough autopsy, scene investigation and review of medical history cannot find a cause of death; these deaths are typically ruled “natural” or “undetermined.”

Over the years, death scene investigations and forensic tests have become more sophisticated. The number of deaths identified as SIDS has decreased while those classified as sleep-related have grown. From 1997 through 2000, 22 deaths were attributed to SIDS and another 10 were accidental deaths due to sleep-related suffocation. In comparison, 10 deaths were attributed to SIDS from 2001 through 2008, when there was a total of 66 sleep-related suffocation infant deaths. In addition, there were other deaths where sleep environment was determined to be a possible contributing factor: 16 from 1997 through 2000, and 34 from 2001 through 2008. During this latter period, an average of 11 infant deaths occurred per year in unsafe sleep environments.

The frequency of preventable sleep-related deaths has been a cause of concern among the Child Fatality Review Board (CFRB) for many years. Sleep-related infant deaths were identified in the CFRB’s Inaugural Report to the Community, 1997 - 1998 - 1999 as a particular area of concern and have been highlighted in each of the CFRB’s subsequent reports. Several years ago, the CFRB created a Safe Sleep Committee composed of individuals from many disciplines who represent numerous agencies and organizations throughout Montgomery County.

In 2003 and 2004, the Safe Sleep Committee finalized and began distributing an educational brochure (in English and in Spanish) outlining what constitutes safe sleep. The Committee was optimistic that a drop in the number of sleep-related deaths would occur as the community became more aware of the risks associated with unsafe sleep practices and more knowledgeable about safe sleep habits for infants. The Committee also identified other opportunities to further educate the public regarding safe sleep practices should
Infant Mortality (cont’d.)

funding become available: additional printed materials, TV and radio announcements, creation and production of a video, etc.

From 2005 through 2007, an average of one baby died each month in Montgomery County due to unsafe sleeping conditions. It became clear that more extensive educational efforts were critical to reach the public in an attempt to reduce the rate of sleep-related infant deaths. Through the Montgomery County Office of Family and Children First, $100,000 was made available to the Committee for a public education campaign about safe sleep practices.

Public Awareness Campaign

The Committee conveyed to the public a simple, straightforward message that would be easy to remember and apply. The message of the campaign was ABC's of Safe Sleep – Alone; On his/her Back; and in a Crib. A baby is safest when sleeping Alone, not with other people, pillows, blankets or stuffed toys; and on his/her Back, not on the stomach or side; in a Crib, not on an adult bed, sofa, cushion or other soft surface. This message was published in brochures, billboards, posters, display boards, magnets, printed on “onesies” and aired on radio announcements.

• Brochures and magnets were distributed to prospective or new parents, grandparents and other caregivers using a comprehensive system implemented by the Safe Sleep Committee.
• Onesies – a tee-shirt type item for the baby – had the ABC message silkscreened on the front and the message “If I’m sleeping, turn me over” on the back. The onesies were distributed to new moms at birthing hospitals and through selected Public Health programs.
• Two Display Boards containing the ABC message and safe sleep information were created for use at health fairs, meetings, lobbies, or wherever the message may be appropriate. Unless used for a meeting or health fair, one display board is posted in the lobby of the Charles R. Drew Health Center; the other board is part of a rotating display in the lobby of the Reibold Building.
• Radio spots (15 seconds and 60 seconds) were aired on various stations from August 6 through November 30, 2007. The radio spots were written from a mother’s perspective, the coroner’s perspective, and an emergency room doctor’s perspective.
• Billboards, six each month for four months, were posted strategically throughout Montgomery County to target the highest number of citizens while keeping costs under control. Twenty-four extra boards were printed and used as free space became available.

A survey was taken prior to the release of the ABC message and was completed by 108 participants. Five months after the inception of the campaign, the survey was completed by 106 participants. At both times, surveys were administered at several Public Health programs and area hospitals and were targeted towards parents, parents-to-be, family
members and caregivers of infants less than one year old. The results illustrate an increase in awareness of safe sleep issues and the ABC’s of Safe Sleep.

Despite this public education campaign, there were 13 preventable infant deaths related to unsafe sleep environments in 2008. Obviously, there is more work to be done in preventing sleep-related infant deaths, which will be the focus of the Safe Sleep Committee’s continuing activities.

**Figure 23.** Knowledge of the ABC’s of Safe Sleep nearly tripled (i.e., 25% to over 65%) after exposure to the Safe Sleep Campaign.

**Figure 24.** A marked increase in placing the baby on his/her back versus side or stomach was realized as a result of the Safe Sleep Campaign.
Infant Mortality (cont’d.)

The survey results indicate increased awareness among some parents and caregivers. Resources have not been available to evaluate the long-term impact of the public awareness campaign. In addition, there is no immediate way to know how many infant lives may have been saved once parents and caregivers learned about the importance of safe sleep. However, the Safe Sleep Committee is hopeful a reduction of sleep-related infant deaths will be realized. The Committee will continue to monitor sleep-related infant deaths through representation and participation on the Child Death Review Committee and the Child Death Prevention Committee.

Low Birth Weight Registry of Montgomery County

The Low Birth Weight Registry was established to collect data from mothers of low birth weight (LBW) infants (<2,500 gm or 5.5 lbs.) shortly after birth in an attempt to identify modifiable risk factors and create interventions that might decrease the number of LBW infants. Mothers of LBW infants were identified, approached when feasible or appropriate, and given the option of participating. Informed consent for participation in the LBW registry was obtained. The consent tells mothers that all the information gathered will be held confidentially and not disclosed in an individually identifiable manner. A highly trained nurse contacted the mothers and conducted the interviews on behalf of the Registry. The nurse also received permission to review the mothers’ medical records and the birth certificate disclosures. The following table gives some information about the enrollment process.

Table 10: Low Birth Weight Registry Enrollment Process

<table>
<thead>
<tr>
<th>Category</th>
<th>Low Birth Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td># Identified</td>
<td>1,312</td>
</tr>
<tr>
<td># Not Contacted</td>
<td>330</td>
</tr>
<tr>
<td># Approached</td>
<td>982</td>
</tr>
<tr>
<td># Consented</td>
<td>892</td>
</tr>
<tr>
<td>% Enrolled</td>
<td>90.8 %</td>
</tr>
</tbody>
</table>

Some mothers were not contacted because they were discharged on a weekend, were too ill to be contacted, or for other miscellaneous reasons. % enrolled = (# consented/#approached)*100.

The Registry reported the data analysis from the first year of enrollment (10/26/2007-10/26/2008) to the Child Death Prevention Committee in July 2009.

Since that time the Registry continued to enroll LBW mothers and also randomly selected some mothers of normal birth weight infants to conduct the same interview and data collection to have a comparison group.

---

a Submitted by David E. Uddin, PhD, Clinical Research Center, Miami Valley Hospital, Principal Investigator for the Low Birth Weight Registry.
Infant Mortality (cont’d.)

The Registry has begun analysis on the 2-year LBW cohort. A general observation is that the information for most variables has not changed much at 2 years of data collection with a couple of notable exceptions. Analysis of the question:

“During the past 12 months, which one of the following statements best describes the food eaten by you and your family?  
   Enough food to eat
   Sometimes not enough food to eat
   Often not enough food to eat”

has shown a regular increase in the “not enough” answers from 5.9% in the first 6 month cohort to 6.7% in the second 6 months, 8.5% in the third 6 months, and up slightly at 8.7% in the last six month set. Furthermore, in a similar manner, use of fertility treatments and/or assisted reproduction techniques went from 5.0% to 6.7% to 11.7%, and 7.8% in the same time periods.

The data continue to indicate that a large number of mothers are under great stress in Montgomery County, and that the worsening economic situation in Dayton is reflected in the data. Several potential interventions that should be undertaken include referring every eligible mom to the Help Me Grow/Brighter Futures Nurse-Family Partnership program, emphasizing smoking cessation programs, encouraging preconception vitamin use, conducting more preconception health education using materials at the appropriate literacy levels, implementing the Ohio Fetal Alcohol Spectrum Disorders (FASD) Initiative “Not a Single Drop” campaign regarding no alcohol use during pregnancy, and advocating for an enhanced Fetal and Infant Mortality Review (FIMR) in Montgomery County.

Fetal Alcohol Spectrum Disorders

Fetal Alcohol Spectrum Disorders (FASD) is the leading known preventable cause of mental retardation in the United States. FASD is not a diagnostic term used by clinicians, yet it serves as an umbrella term describing the range of effects that can occur in an individual who is prenatally exposed to alcohol. Alcohol is a teratogen, meaning that it causes malformations or defects to the developing fetus. When a pregnant woman drinks, the alcohol crosses the placenta into the fetal blood system. Thus, alcohol reaches the fetus, its developing tissues, and organs.

There are many types of disorders associated with FASD, ranging from the very severe to the mildly impacting. Effects may include physical, mental, behavioral, and/or learning disabilities. The damage is irreversible, leading to life-long consequences.

---

Submitted by Andrea Hoff, Office of Family and Children First, Staff for the Montgomery County Fetal Alcohol Spectrum Disorders Task Force.
Infant Mortality (cont’d.)

The prevalence of FASD is estimated to be 10 per 1,000 births, meaning that FASD affects at least 40,000 newborns each year in the United States, outranking both Down syndrome and autism.¹ That means that of the 7,000 to 8,000 babies born annually to Montgomery County residents, it is estimated that 70 to 80 children are born with FASD.

The following are disorders included in the FASD continuum. These are placed in order of severity, with the most severe listed first:

- Fetal Alcohol Syndrome (FAS)
- Partial Fetal Alcohol Syndrome (Partial FAS)
- Alcohol-Related Neurodevelopmental Disorder (ARND)
- Alcohol-Related Birth Defects (ARBD)

FAS and partial FAS are medical diagnoses that include physical deformities such as a characteristic pattern of facial abnormalities, growth deficiencies, and brain damage. ARND and ARBD, on the other hand, are behavioral diagnoses that include cognitive deficiencies in the absence of physical deformities. Symptoms consist of a pattern of behavioral and cognitive deficits that can interfere with growth, learning, and socialization.

The FASD problem is exacerbated by the number of unintended pregnancies - 42% according to the 2004 Ohio Pregnancy Risk Assessment Monitoring System (PRAMS) used by the Centers for Disease Control. It is logical to assume that a woman’s normal drinking pattern continues when she is unaware of being pregnant. According to data from the U.S. Department of Health and Human Services, women of childbearing age (ages 15 to 44) in the United States report the following drinking patterns:

- 1 in 2 report using alcohol in the past month
- Approximately 1 in 4 report binge drinking (defined as four or more drinks, on one occasion)
- About 1 in 20 report heavy alcohol use (defined as binge drinking on at least five days in the last month)

The good news is that FASD is 100% preventable! The only cause of FASD is prenatal exposure to alcohol. Therefore, if a woman does not drink during pregnancy, her baby will not have FASD.

If FASD is to be prevented, women must be educated, and provided the proper intervention and ongoing support that will induce positive attitudinal and behavioral changes regarding alcohol consumption during pregnancy. There is also a need to develop a comprehensive continuum of care for individuals with a positive FASD diagnosis.

In response to this community need, the Family and Children First Council, in partnership with Public Health – Dayton & Montgomery County, pursued grant funding to tackle this

Infant Mortality (cont’d.)

problem within our community. This funding has a two-tiered focus: to implement FASD prevention services in the Montgomery County Women, Infants, and Children (WIC) Program; and to develop a county-wide Task Force to combat this issue on a large scale. Thus, in 2008, the Montgomery County FASD Task Force – a multi-collaborative group including professional, faith-based, and parent representatives – was formed.

The goals of the Montgomery County FASD Task Force are to:

1) Increase inter-agency coordination in the development of a comprehensive continuum of services;

2) Increase awareness regarding the risks associated with alcohol use during pregnancy;

3) Increase the availability of services for those already affected by FASD and for parents and other caregivers;

4) Implement and collect data that will track FASD risk factors, prevalence, and incidence in order to advance the field of FASD for future providers; and

5) Increase the number of women who choose not to drink alcohol while they are pregnant.

The Task Force also provides oversight to the Alcohol Screening and Brief Intervention (ASBI) program, a best practices model conducted in all five Montgomery County WIC clinics. This program screens for alcohol use every pregnant woman accessing WIC services. Those women who screen positive are provided a brief intervention to educate them on the detrimental effects of alcohol use during pregnancy. A referral is made to treatment for those who exhibit addictive behaviors. In the first twenty months of the ASBI program:

• 5,160 women have been screened for alcohol consumption during pregnancy;
• 300 received a “brief intervention” educating them about the risks and supporting them in staying alcohol-free;
• 298 received a one-month follow-up;
• 289 of these 298 women (97%) self-reported abstinence from alcohol consumption;
• 173 post-partum visits were completed;
• and nine women were referred to drug and alcohol treatment services.

The FASD Task Force has developed a community-wide strategic plan to address the FASD issue on a large scale. This plan is based on “Five Points of Intervention: A Policy and Practice Framework.”

---

b Developed by the National Center on Substance Abuse and Child Welfare to address the issue of substance-exposed infants and to increase the local capacity to address the issue of prenatal exposure to alcohol.
Infant Mortality (cont’d.)

Preconception Education

This project was initiated in response to a previous survey by the Perinatal Data Use Consortium of home health care providers who indicated a desire for increased education regarding risk factors for preterm birth.

The goals of the project are 1.) to increase the knowledge and education of home health providers working with women at risk for preterm birth regarding modifiable risk factors for preterm birth; 2.) to improve the health literacy of women at risk for preterm birth; and 3.) to decrease prematurity in the Montgomery County Region.

Education is accomplished with a March of Dimes PowerPoint presentation about modifiable risk factors for preterm birth and region-specific information regarding prematurity. A toolkit is given to each health care provider with pamphlets provided by March of Dimes and the Centers for Disease Control.

Evaluation is accomplished with pre- and post-education surveys and with follow up approximately six months later to assess self-reported knowledge, intent and preparation to discuss modifiable risk factors.

Pre- and post-surveys indicate that knowledge of modifiable risk factors increased from 37.3% to 63.8%; the six-month follow-up indicated an increase to 86.5%. Of participating home health care providers, 41.5% reported being well prepared to discuss risk factors prior to the initial intervention with improvement to 76.3%. Comfort level with discussion increased from 45.2% to 84.2% after the initial intervention.

Home health care providers attending the program demonstrated knowledge gain in relation to modifiable risk factors of premature birth. The home health care providers showed increased feelings of preparedness and comfort with discussion of modifiable risk factors with clients.

This intervention has the potential to increase knowledge of modifiable risk factors for preterm birth factors among home health care providers who work with women at risk for preterm delivery. In addition, there is the potential to increase the health literacy of women at risk for preterm birth. These could possibly lead to a decreased preterm birth rate in the Montgomery County region.

The plan for the future is to evaluate women’s behavior change in regard to modifiable risk factors for prematurity by use of information obtained on intake forms and a follow-up survey.

---

b A group of community partners including representatives from The Children’s Medical Center of Dayton, Miami Valley Hospital, Public Health – Dayton & Montgomery County, the University of Dayton, Wright State University, the Montgomery County Family and Children First Council, and Help Me Grow/Brighter Futures.
Gun Violence

In the years covered by this review (1997 – 2008), 44 children died by firearm: 31 homicides, 11 suicides, and 2 accidents. (Table 4, pages 13 and 14.) All 44 of these children were one year or older, meaning that 12.2% of all deaths to children after infancy are the result of firearms. Older children are particularly vulnerable; 25.8% of the deaths to children ages 15 – 17 are due to firearms.

Since the last Report to the Community, a local initiative to reduce gun violence has been launched. Because of its relevance to this Report a summary follows.

Community Initiative to Reduce Gun Violence

Homicides and gun-related violence are at an unacceptable level in the Dayton region. Gun crimes, including homicides, terrorize neighborhoods, local businesses, and individual citizens. Because of the outcry from the community, law enforcement agencies gathered and analyzed 5 years (2003 – 2008) of homicide cases and found that over 800 individuals and over 60 groups are engaged in some manner of violent group member gun violence. Additionally, this analysis indicated that both homicide victims and violent gun offenders are disproportionately male, from high risk, low income communities. These young men are our sons, our grandsons, our nephews, and our neighbors. We cannot continue to lose them to death or incarceration. We need all of our community members to realize our community’s potential. The Community Initiative to Reduce Gun Violence (CIRGV) is about the urgent need for gun violence to stop.

CIRGV is a multi-jurisdictional, multi-agency, mutual effort, intended to reduce quickly and effectively gun violence and associated homicides, with sustained reductions over time. This initiative is a focused deterrence strategy, modeled after the 1990's Boston Gun Project, using the 2007 Cincinnati Initiative to Reduce Gun Violence Best Practices as a guide, with variations tailored to meet our local community. The City of Dayton Police Department, Montgomery County Sheriff's Office, and the City of Trotwood Police Department are collaborating with state and federal law enforcement agencies, social service providers, and the community to present a clear message that gun violence must stop. CIRGV's “Gun Violence Must Stop” message, targeted toward group-member-involved violent offenders, is disseminated by call-in sessions with group member involved probationers and parolees and via direct contact from community volunteers. Offenders are presented with a clear message that gun violence will no longer be tolerated in this community. Over 70% of the individuals brought into call-in sessions to hear the “Gun Violence Must Stop” message have begun efforts to leave their violent lifestyle. However, only 20% of the total population has been reached by call-in sessions. The message must permeate the community, using the community members themselves to declare that they will no longer tolerate gun violence in their neighborhoods. If gun violence occurs, a coordinated effort by law enforcement agencies will use all available lawful means to

---

a Submitted by Richard Biehl, Chief, Dayton Police Department.

b “Group” refers to a gang, family, extended family, etc., who, via peer pressure, can negatively influence a person’s actions.
address the gun violence, focusing on all members of the group. Offenders are also offered alternatives. Those individuals seeking to leave a violent lifestyle are provided streamlined social services, training, education, and employment preparation. Street Advocates are the first point of contact for the client and serve as advocates for the clients, helping them to navigate the social service system, working with caseworkers from human and social service agencies to assess client needs and develop a life change plan, and encouraging clients to stay the course and change their lifestyles.

CIRGV measures success by the reduction of homicides and gun violence as well as by former group and gang members becoming contributing members of the community. The results after 19 months of CIRGV efforts are exciting. Group-related homicides have decreased 7% and other crime, such as gun violence with injury, is down over 20%. However, the truest measure of success is the increased community capacity and a spirit of optimism that is breathing new life into neighborhoods. Individuals and neighborhood organizations are joining with churches and synagogues, schools and civic groups, to carry the message that gun violence must stop. The responsibility to achieve a peaceful community and to maintain public safety is often delegated to law enforcement agencies or to the criminal justice system. The reality is that public safety is not the exclusive responsibility of law enforcement agencies or the courts, but rather, public safety is all of our responsibility. A safe community, one without gun crime, can only be achieved when all the individuals within the community work in concert. Through the implementation of this proven focused deterrence method, we have seen lives saved and injuries reduced.
Conclusions and Recommendations

Conclusions

Throughout this Report a number of conclusions have been stated as part of the analysis and discussion of the data. These conclusions fall into three broad categories, and they are restated here:

Overall Findings

- The gender distribution of child deaths in Montgomery County is slightly different than the gender distribution of child deaths across the country.

- The racial distribution of child deaths in Montgomery County is consistent with the racial distribution of child deaths across the country, taking into account the difference between the racial distributions of the local and national populations.

- The age distribution of child deaths in Montgomery County is similar to the age distribution of child deaths across the country.

- The distribution of child deaths in Montgomery County according to the manner of death is different than the distribution across the country.

- Local rates of child death (for ages 1 – 14, by gender, race, age group, and manner) are consistent with – or slightly lower than – national rates, except that local rates of homicide and suicide are higher. In other words, children in Montgomery County are more vulnerable to homicide and suicide than children across the country.

Preventability

- At least one out of every three child deaths in Montgomery County during these years could have been prevented.

- One of every five child deaths is due to a preventable accident.

- While each age group experiences some preventable deaths, the majority of them are found in two age groups (28 – 364 days old, and 15 – 17 years old).

- The proportion of deaths considered preventable generally increases with increasing age.

- Determining preventability is extremely difficult in cases where the child is born prematurely and/or with congenital anomalies.

Conclusions and Recommendations (cont’d.)
Infant Mortality

- The local infant mortality rate (IMR) is currently within the range of the state and national IMRs but failed to achieve the downward trend experienced by those rates during the last fifteen years. This may represent a missed opportunity to reduce infant mortality rates in Montgomery County.

- The racial disparity in infant mortality rates has been and remains very pronounced at the local, state, and national levels.

- The local infant death rates due to accidents and homicides are considerably higher than national rates.

- Addressing the strategic prevention areas of “Infant Health” and “Newborn Care” should be the highest priority in an effort to reduce the local fetal-infant mortality rate. The strategic prevention area of “Maternal Health/Prematurity” should be the next priority.

- The highest priority intervention strategies for black mothers and infants are “Maternal Health/Prematurity” and “Infant Health.”

- Although the local infant mortality rate for all races is comparable to state and national rates, the overall rate of black infant deaths remains alarmingly high.

- A large number of mothers are under great stress in Montgomery County, and the worsening economic situation in Dayton is reflected in the data of the Low Birth Weight Registry.

Recommendations

Throughout this Report a number of recommendations have been made in response to the findings and conclusions. These recommendations are restated here:

- Reduction efforts in infant mortality rates should focus on the specific causes for infant mortality such as prematurity and the medical risk conditions and behavioral risk factors associated with poor birth outcomes. In particular:

  - The community should make it a high priority to focus on interventions that promote “Infant Health” for all infants such as sleep position education, breastfeeding promotion, access to medical care, and injury prevention.

  - The community should make it a high priority to focus on interventions that promote “Newborn Care” for all infants such as advanced neonatal care and treatment of congenital anomalies.

  - The community should make it a high priority to focus on interventions that address “Maternal Health/Prematurity” (especially for black mothers and
infants) such as preconception health, unintended pregnancy, smoking, drug abuse, and specialized perinatal care.

➢ The CFRB endorses the recommendations of the Ohio Infant Mortality Task Force and encourages the community to support them.

➢ The CFRB endorses the efforts of the Safe Sleep Committee and recommends continuation of the *ABC’s of Safe Sleep* Public Awareness Campaign.

➢ The CFRB finds the work of the Low Birth Weight Registry to be extremely valuable and endorses the recommendations based on its work to date, namely:

  o referring every eligible mom to the Help Me Grow/Brighter Futures Nurse-Family Partnership program;
  o emphasizing smoking cessation programs;
  o encouraging preconception vitamin use;
  o conducting more preconception health education using materials at the appropriate literacy levels;
  o implementing the Ohio Fetal Alcohol Spectrum Disorders (FASD) Initiative “Not a Single Drop” campaign regarding no alcohol use during pregnancy; and
  o advocating for an enhanced Fetal and Infant Mortality Review (FIMR) in Montgomery County.

➢ The CFRB highly recommends that continuation of the Registry be a priority for the community.

➢ The CFRB endorses the FASD Task Force’s community-wide strategic plan to address the issue of substance-exposed infants and to increase the local capacity to address the issue of prenatal exposure to alcohol.

➢ The CFRB recommends that efforts to promote preconception education be continued, and recognizes that home health care providers play a vital role.

• The CFRB endorses the work of the Community Initiative to Reduce Gun Violence, and agrees that public safety is not the exclusive responsibility of law enforcement agencies or the courts, but rather, it is the responsibility of the entire community.

In conclusion, the CFRB has been diligent in its efforts to reduce the number of child deaths and it applauds the collaborative efforts in the community, such as those named in this Report, to decrease the number of deaths that are categorized as “preventable.” It is recognized that these efforts must be multifaceted in order to address specific issues largely responsible for taking the lives of Montgomery County’s children. But efforts to address these issues cannot be left for one group or representative body. Saving the lives of children requires a community working together towards a common purpose.
Appendix A

MONTGOMERY COUNTY CHILD FATALITY REVIEW BOARD

January 2010

James Gross (Chair) Public Health – Dayton & Montgomery County
Chief Rick Barnhart Montgomery County Association of Police Chiefs
Ken Betz Miami Valley Regional Crime Laboratory
Chief Richard Biehl Dayton Police Department
Thomas Breitenbach Premier Health Partners
Bryan Bucklew Greater Dayton Area Hospital Association
James H. Davis, M.D. Montgomery County Coroner
Frank DePalma Montgomery County Educational Service Center
Mark Gerhardstein Montgomery County Board of Developmental Disabilities Services
Mathias H. Heck, Jr. Montgomery County Prosecuting Attorney
David Kinsaul, FACHE The Children’s Medical Center of Dayton
Judge Nick Kuntz Montgomery County Juvenile Court
Christy Norvell Montgomery County Department of Job & Family Services
Sheriff Phil Plummer Montgomery County Sheriff
Chief Herbert C. Redden, II Dayton Fire Department
Kurt T. Stanic Dayton Public Schools
Joseph L. Szoke ADAMHS Board for Montgomery County
MONTGOMERY COUNTY CHILD FATALITY REVIEW BOARD

CHILD DEATH PREVENTION COMMITTEE

January 2010

Libby Nicholson (Chair)  CARE House
Susan Bash  Miami Valley Hospital
Ken Betz  Miami Valley Regional Crime Laboratory
Beverly Broestl  Montgomery County Educational Service Center
Julie Bruns  Montgomery County Prosecutor’s Office
Gina Feller  Montgomery County Juvenile Court – CASA Program

Sgt. Tom Flanders  Dayton Police Department
Roy Jordan  Public Health – Dayton & Montgomery County
Tarina Mason  Montgomery County Department of Job & Family Services – Children Services Division

Su-Ann Newport  ADAMHS Board for Montgomery County
Steve Pilkenton  Public Health – Dayton & Montgomery County
Tom Pugh  Montgomery County Board of Developmental Disabilities Services

Eric Shafer  Montgomery County Juvenile Court - Probation Department

Sgt. Julie Stephens  Montgomery County Sheriff’s Office
Mary Ann Swank  The Children’s Medical Center of Dayton
Marianne Urban  Dayton Public Schools
Lori Vavul-Roediger, MD  The Children’s Medical Center of Dayton
Det. Nathan Via  Dayton Police Department
Beth Wolpert  Greater Dayton Area Hospital Association

Staff:
Jan DeVeny  Public Health – Dayton & Montgomery County
Catherine Rauch  Montgomery County Office of Family and Children First
Appendix C

MONTGOMERY COUNTY CHILD FATALITY REVIEW BOARD

CHILD DEATH REVIEW COMMITTEE
January 2010

Debra B. Armanini  Montgomery County Prosecutor's Office
Ken Betz  Miami Valley Regional Crime Laboratory
James H. Davis, MD  Montgomery County Coroner
Sgt. Tom Flanders  Dayton Police Department
Roy Jordan  Public Health – Dayton & Montgomery County
Tarina Mason  Montgomery County Department of Job & Family Services - Children Services Division

Libby Nicholson  CARE House
Steve Pilkenton  Public Health – Dayton & Montgomery County
Sgt. Julie Stephens  Montgomery County Sheriff’s Office
Lori Vavul-Roediger, MD  The Children's Medical Center of Dayton
Det. Nathan Via  Dayton Police Department

Staff:
Jan DeVeny  Public Health – Dayton & Montgomery County
Catherine Rauch  Montgomery County Office of Family and Children First
MONTGOMERY COUNTY CHILD FATALITY REVIEW BOARD

REPORT WRITING GROUP
January 2010

Robert L. Stoughton (Chair)  Fitz Center for Leadership in Community, University of Dayton; and Montgomery County Office of Family and Children First

Ken Dahms  Center for Global Health Systems, Management, and Policy, Wright State University

Jan DeVeny  Public Health – Dayton & Montgomery County

Roy Jordan  Public Health – Dayton & Montgomery County

Libby Nicholson  CARE House

Sara Paton  Center for Global Health Systems, Management, and Policy, Wright State University; and Public Health – Dayton & Montgomery County

Catherine Rauch  Montgomery County Office of Family and Children First
Explanation of Perinatal Periods of Risk (PPOR)

Background

Interest in issues surrounding infant mortality naturally leads to an expanded consideration of maternal, fetal, neonatal and post-neonatal health and care. Such a consideration leads quickly to the realization that improving birth outcomes (which includes, of course, reducing infant mortality rates) requires consideration of events that precede birth. This, in turn, leads to an analytic process that encompasses fetal deaths as well as the deaths of infants born alive.

The overall intent of this approach – called the “Perinatal Periods of Risk” or PPOR for short – is to develop a simple method based on a strong conceptual framework that can be used by communities to mobilize and prioritize prevention efforts.

The PPOR approach has five major steps for addressing fetal-infant mortality:

1. Engage community partners early to gain consensus and support.
3. Focus on reducing the overall fetal-infant mortality rate.
4. Examine potential opportunity gaps between population groups.
5. Target further investigations and prevention efforts.

Each of these steps is essential, with each building upon the previous. Locally, a group of community partners has been engaged for several years in learning and applying the PPOR approach. Called the Perinatal Data Use Consortium, it includes representatives from The Children’s Medical Center of Dayton, Miami Valley Hospital, Public Health – Dayton & Montgomery County, the University of Dayton, Wright State University, the Montgomery County Family and Children First Council, and Help Me Grow/Brighter Futures. Many of the organizations represented by Consortium members are also on the Child Fatality Review Board so it is logical to engage the Board in support of this approach.

PPOR mapping of fetal-infant mortality enables communities to identify and further investigate areas in which there are the greatest opportunities for local impact. Follow-up investigations provide in-depth information and strategic direction for targeted prevention of fetal and infant mortality.

---

*a* The Perinatal Periods of Risk Approach was developed by Dr. Brian McCarthy from the W.H.O. (World Health Organization) Perinatal Collaborative Center at CDC and other W.H.O. colleagues. Much of this description of PPOR comes from material prepared by the Perinatal Periods of Risk Work Group, a joint initiative of CityMatCH at the University of Nebraska Medical Center, The Centers for Disease Control and Prevention, The National March of Dimes Birth Defects Foundation, and the Health Resources and Services Administration/Maternal and Child Health Bureau.
Explanation of Perinatal Periods of Risk (PPOR) (cont’d.)

Method

The PPOR tools have been widely used and refined over a number of years. The current approach begins by collecting two pieces of information for each death: age at death and birth weight. For fetal deaths, only those occurring at or after 24 weeks of gestational age and with a weight equal to or greater than 500 grams (1.1 lbs) are considered for analysis. Infant deaths are also restricted to those with birth weight equal to or greater than 500 grams.

Using these two pieces of information one can construct a “map” of fetal-infant mortality with six “regions” (Figure A, below):

1. Fetal deaths with a birth weight 500 – 1,499 grams (region 1).
2. Neonatal (less than 28 days old) deaths with a birth weight 500 – 1,499 grams (region 2).
3. Postneonatal (28 – 364 days old) deaths with a birth weight 500 – 1,499 grams (region 3).
4. Fetal deaths with a birth weight 1,500 grams or higher (region 4).
5. Neonatal (less than 28 days old) deaths with a birth weight 1,500 grams or higher (region 5).
6. Postneonatal (28 – 364 days old) deaths with a birth weight 1,500 grams or higher (region 6).
Explanation of Perinatal Periods of Risk (PPOR) (cont’d.)

Before focusing on the six cells, it is important to note which adverse pregnancy events are missing from the fetal-infant mortality map:

- First, there is a gestational age restriction on fetal deaths. Fetal deaths less than 24 weeks are excluded. Because Ohio’s legal reporting requirement for fetal deaths begins at 20 weeks, this cutoff excludes some reported fetal deaths.

- Second, the birth weight minimum of 500 grams for both fetal deaths and live births also excludes many reported fetal and infant deaths.

Due to these cutoffs, the combined exclusions of pregnancy events may be larger in number than the actual number of deaths included within the six-cell map. Therefore, those using the PPOR approach need to be aware that it may fail to identify some significant opportunities for prevention of all adverse pregnancy events.

Two other important groups of adverse reproductive events are excluded from this approach:

- First, roughly 16% of all pregnancies nationally are thought to end in spontaneous abortions and are not routinely reported through vital records systems. This magnitude of pregnancy events clearly outnumbers the reported fetal and infant deaths included in the six-cell approach.

- Second, induced abortions account for another significantly large group of pregnancy terminations. They may account for the largest percentage of all pregnancy events short of live births.

As stated before, it is important to recognize such limitations when considering the use of this or any other infant mortality approach.

In the PPOR approach birth weight is divided into two major categories: those less than 1,500 grams (very low birth weight – VLBW) and those 1,500 grams or more (higher birth weight – HBW). Much of the mortality impact of low birth weight can be captured in the VLBW experience. Therefore, regions 1, 2 and 3 are often combined. As a result, this approach divides fetal-infant mortality into four strategic prevention areas:

- Maternal Health/Prematurity (regions 1 – 3).
- Maternal Care (region 4).
- Newborn Care (region 5).
- Infant Health (region 6).
Explanation of Perinatal Periods of Risk (PPOR) (cont’d.)

These labels were designed to suggest preventive action:

- For Maternal Health and Prematurity (Regions 1-3), prevention may need to focus on preconception health, unintended pregnancy, smoking, drug abuse, and specialized perinatal care.

- For Maternal Care (Region 4), prevention may need to focus on early continuous prenatal care, referral of high risk pregnancies and good medical management of diabetes, seizures, postmaturity, or other medical problems.

- For Newborn Care (Region 5), the focus may need to be on advanced neonatal care and treatment of congenital anomalies.

- For Infant Health (Region 6), communities may need to focus on activities such as sleep position education, breast-feeding promotion, access to medical care, and injury prevention.

Once a community has collected its local statistics it can compare itself to the performance of a predefined reference group (with “best outcomes”) and determine in which region(s) it suffers “excess” mortality.
Appendix F

Glossary

Accident – Death caused by unforeseen or unplanned event.

Cause of death – “the classification of death listed in box 30 on the Ohio death certificate, or an equivalent box on future forms. Examples of causes include, but are not limited to, birth defects, drowning and submersion, electrocution, extreme prematurity, falls, fire and burn, firearms and weapons, pneumonia, poisoning, shaken baby syndrome, sudden infant death syndrome, suffocation and strangulation, vehicular, and other cause.” Section 3701-67-01(A) of the Ohio Administrative Code

Child – For the purposes of this Report, any human under the age of 18 years.

Congenital – Present at birth.

Homicide (Coroner’s definition) – Death at the hands of another, without reference to intent.

Homicide (Criminal definition) – Death at the hands of another purposely, knowingly, or recklessly and not excusable. If deadly weapon is involved, can also be done negligently.

Infant – A liveborn fetus from time of birth through the completion of 364 days of age.

Manner of death – “the classification of death listed in box 32 on the Ohio death certificate, or equivalent box on future forms. The classification is limited to natural, accident, homicide, suicide, and undetermined.” Section 3701-67-01(K) of the Ohio Administrative Code

Natural – Conforming with the usual or ordinary course of nature.

Neonatal – Concerning the first 28 days after birth.

PPOR – See “Perinatal Periods of Risk.”

Perinatal – The period beginning after the 20th week of pregnancy through 28 days following birth.

Perinatal Conditions – Include, but are not limited to, low birth weight, maternal complications, cord/placental complications, and respiratory complications, occurring during the perinatal period.

Perinatal Periods of Risk – An analytic process for examining perinatal and infant deaths that encompasses fetal deaths as well as the deaths of infants born alive.
Glossary (cont’d.)

Postmaturity – a baby born two weeks (14 days) or more after the usual nine months (280 days) of pregnancy.

Preventable – “The degree to which an individual or community could have reasonably done something that would have changed the circumstances that led to the child’s death.” Section 3701-67-01(L) of the Ohio Administrative Code

“A child's death is considered to be preventable if the community (through reasonable education, etc.) or an individual (through reasonable precaution, supervision, or action) could have done that which could have changed the circumstances that led to the death.” Ohio Department of Health

Sleep-related death – the death of an infant that occurred as a result of suffocation in one of the following circumstances: (unsafe sleep environments)
- Overlay - An infant dies from suffocation as a result of sleeping with an adult or older child who has rolled on to the infant or against the infant’s face or mouth causing accidental smothering.
- Positional asphyxia - An infant dies from suffocation as a result of sleeping on inappropriate soft bedding or becomes wedged between mattresses, cushions or blankets.
- Unsafe sleep environment - The deceased infant is found in a place that is not proper for sleeping.

Sudden Infant Death Syndrome (SIDS) – “Sudden death of an infant that remains unexplained after a review of the medical history, a complete death scene investigation in which a thorough postmortem examination, including autopsy, fails to demonstrate an adequate cause. A diagnosis of exclusion can be made when no underlying cause of death can be identified. It is not caused by abuse or neglect.” Ohio Department of Health

Suicide – Death intentionally caused by self.

Undetermined – Death in which the manner cannot be determined. (Classified on the death certificate as “Could Not Be Determined.”)

Sources: Centers for Disease Control and Prevention (CDC)
Montgomery County Coroner’s Office
Montgomery County Prosecutor’s Office
Ohio Administrative Code
Ohio Department of Health