The Impact of Birth Defects on Infant Mortality in Ohio

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Outline

• National statistics
• Birth defects mortality in Ohio
• Prevention strategies
Birth Defects in the U.S.

- Birth defects affect 3% of births (1 in 33)
- National estimates of leading birth defects:
  - Genetic defects
  - Cleft lip and/or palate
  - Heart defects
  - Musculoskeletal defects
  - Stomach/intestinal defects
  - Eye defects

(https://www.cdc.gov/ncbddd/birthdefects/data.html)
Infant Mortality in Ohio

Ohio Leading Causes of Infant Mortality:

- Birth defects - 20%
- Prematurity and low birthweight - 19%
- SIDS - 8%
- Maternal Conditions - 8%
- Accidents - 6%

(2015, Ohio Public Health Data Warehouse)
Ohio Birth Defect Mortality 2007-2015

Cause of Death - Birth Defect vs. All Other Causes

(2007-2015, Ohio Public Health Data Warehouse)
Birth Defects Causing Infant Mortality in Ohio

(2011-2015, Ohio Public Health Data Warehouse)
## Demographic Differences - Sex

Infant mortality attributable to birth defects **VS.** Infant mortality due to all causes outside of birth defects

<table>
<thead>
<tr>
<th></th>
<th>IM-Other Causes</th>
<th>IM-Birth Defects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>5.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Male</td>
<td>6.7</td>
<td>1.5</td>
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<tr>
<td>Unknown</td>
<td>22.6</td>
<td>7.2</td>
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Per 1,000 live births (2007-2015, Ohio Public Health Data Warehouse)
## Demographic Differences - Race

<table>
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<th>IM-Other Causes</th>
<th>IM-Birth Defects</th>
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<tbody>
<tr>
<td>White</td>
<td>4.7</td>
<td>1.5</td>
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<tr>
<td>Black</td>
<td>13.2</td>
<td>1.7</td>
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<tr>
<td>Asian/ Pacific Islander</td>
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<td>0.9</td>
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<tr>
<td>Other/ Unknown</td>
<td>3.9</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Per 1,000 live births (2007-2015, Ohio Public Health Data Warehouse)
Demographic Differences- Ethnicity

<table>
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<th>IM-Birth Defects</th>
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<tbody>
<tr>
<td>Hispanic</td>
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<tr>
<td>Non-Hispanic</td>
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<tr>
<td>Unknown</td>
<td>2.4</td>
<td>0.9</td>
</tr>
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</table>

Per 1,000 live births (2007-2015, Ohio Public Health Data Warehouse)
Ohio Infant Mortality Data

- Vital Statistics Death Certificates (VS)
  - Records all deaths in Ohio
  - Underlying cause of death
- Child Fatality Review (CFR)
  - All deaths under age 18 are reviewed by county boards
  - Preventable cause of death
- Comparison study:
  - Linked records for VS and CFR for deaths 2009-2013
Figure. Causes of infant mortality according to CFR and VS for 4,828 infant deaths from 2009-2013. Colors correspond to cause of death as assigned by CFR. The bands originate from the CFR cause of death and terminate at the VS cause of death. Created using Circos.
Death Certificates

CFR

(Martha Montgomery, 2016)
Death cert. where CFR agrees

Ruled non-BD by death cert.

CFR where death cert. agrees

Ruled non-BD by CFR
Strategies to Reduce Risk/ Prevent Birth Defects Contributing to Infant Mortality
Birth Defects Causes

- Can be caused by:
  - Genetic factors
  - Environmental injuries (infection, radiation, drug exposure)
- Only 30% have identified cause
- 70% without straightforward cause:
  - Multifactorial causes
  - Or unknown cause
Top Birth Defects Contributing to IM

1. Heart Defects
2. Musculoskeletal, limb, integument
3. Genito-urinary
4. Anencephaly and similar conditions
5. Respiratory
Heart Defects

• Exact causes of all defects unknown
• Many happen during first trimester
• Proven to reduce risk:
  • Daily consumption of 400 micrograms folic acid
• Other recommendations:
  • Obtain Rubella vaccination
  • Maintain healthy weight
  • Control chronic medical conditions
  • Avoid alcohol, drugs, other harmful substances
Musculoskeletal, Limb, Integument

- Unknown cause, but certain behaviors or exposures increase risk:
  - Obesity and preexisting maternal conditions
  - Exposure to chemicals, viruses, certain medications, alcohol, smoking
- Recommendations:
  - Daily multivitamin, avoid exposures
Anencephaly and Spina Bifida

- Folic acid prior to conception and during spinal cord formation can prevent half of all neural tube defects.
- Anencephaly is fatal and was responsible for nearly 2% of infant mortality in Ohio in 2015.
Crucial development occurs before women know they are pregnant

Source: National Organization on Fetal Alcohol Syndrome (NOFAS); adapted from Moore, 1993.
Folic Acid

Most often cited reasons for not taking (2008 survey):

- 29% forgot
- 18% don’t need
- 12% get nutrients need from food

More likely to take if recommended by health care provider

Good Well Woman Care is Best!

- Be healthy at time of conception
  - Multivitamin with folic acid daily
  - Maintain healthy weight
  - Keep chronic conditions in control
  - Avoid smoking and second hand smoke
  - Avoid alcohol if trying to become pregnant or sexually active and not using effective birth control
  - Avoid drug use or misuse
- Infection prevention (CMV, toxoplasmosis, STDs, Zika)
- Immunizations up to date
- Consult provider:
  - Share family health history
  - Seek referral to genetic center if needed
  - Disclose OTC, prescriptions, and supplements
Contact Information

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