IACTE Conference

September 23, 2017
Infant Mortality Defined

The death of a baby before his/her first birthday

The Infant Mortality Rate (IMR) is an estimate of the number of infant deaths for every 1,000 live births

Large disparities in infant mortality in Indiana and the United States exist, especially among race and ethnicity

Infant Mortality is the #1 indicator of health status in the world
Annual United States births:  
3.98 million  
23,000 babies die before age 1

Annual Indiana births:  
83,000  
600 babies die before age 1

Source: Birth Rate from- https://www.cdc.gov/nchs/fastats/births.htm
Infant Mortality in Indiana

- 613 Hoosier babies died before their 1st birthday
  - More than 50 babies EVERY month
  - Nearly 12 babies EVERY week
- More than 3,000 infant lives lost in the last 5 years
  - Nearly 42 school buses at maximum capacity

Source: Indiana State Department of Health, Division of Maternal & Child Health [January 24, 2017] Indiana Original Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team
Indiana’s Infant Mortality

Indiana is consistently worse than the U.S. and the national goal

- IN = 7.3 deaths per 1,000 live births
- U.S. = 5.9 deaths per 1,000 live births
- Healthy People 2020 Goal = 6.0 deaths per 1,000 live births

Black infants die 2.1 times more often than White infants in Indiana.

Indiana’s rate of SUIDs deaths is typically worse than the national rate.

(https://www.healthypeople.gov/2020/)
Infant Mortality Rates by Race
Indiana
2006 - 2015

Rate per 1,000 live births

Source: Indiana State Department of Health, Division of Maternal & Child Health [January 24, 2017] Indiana Original Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team
Infant Mortality Rates by Region

2015

Indiana IMR = 7.3
N = 613

Infant Mortality Rate per 1,000 Live Births

Unstable Rate

< 6.0
6.0 - 7.9
≥ 8.0

*Numerator less than 20, the rate is unstable. We do not recommend comparing unstable rates.
Data Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Infant Mortality Rates by Region

2011 - 2015

Indiana IMR = 7.2
N = 3,003

MIDWESTERN
N = 99
8.4

Source: Indiana State Department of Health, Division of Maternal and Child Health
Created: January 4, 2017
Data Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team
Infant Mortality Rates
County Level, All Races
2011 - 2015

HIGHEST Infant Mortality Rates in Indiana

- Bartholomew, 10.7
- Grant, 9.5
- Wayne, 9.0
- Daviess, 8.6
- Marion, 8.6
- LaPorte, 8.5
- Cass, 8.4
- Delaware, 8.4
- Henry, 8.4
- Lake, 8.3
- Shelby, 8.3
- Kosciusko, 8.1
# Infant Mortality Cause of Death Category ICD-10 Codes

<table>
<thead>
<tr>
<th>Cause of Death Category</th>
<th>Description</th>
<th>ICD-10 Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perinatal Risk</td>
<td>Certain conditions originating in the perinatal period (low birthweight, preterm, premature rupture of membranes, bacterial sepsis of newborn, etc.)</td>
<td>P00-P96</td>
</tr>
<tr>
<td>Congenital Abnormalities and Malformations</td>
<td>Physical defects present at birth that result from genetics, through exposure of the fetus to mal-forming agents, or are of unknown origin.</td>
<td>Q00-Q99</td>
</tr>
<tr>
<td>Sudden Unexpected Infant Deaths (SUIDs)</td>
<td>Sleep-related infant deaths and unexpected deaths of no known cause after investigation. Includes Sudden Infant Death Syndrome (SIDS) and accidental suffocation and strangulation in bed. (Centers for Disease Control and Prevention recommendation)</td>
<td>R95, R99, W75</td>
</tr>
<tr>
<td>Assaults and Other Accidents</td>
<td>Deaths related to homicide, neglect, and preventable accidents not included in SUIDs category (inhalation, ingestion, falls, motor vehicle accidents, etc.)</td>
<td>V01-W74, W76-W99, X00-59, X85-Y09, Y20, Y86</td>
</tr>
<tr>
<td>All Other Causes</td>
<td>Residual causes of deaths</td>
<td>Residual</td>
</tr>
</tbody>
</table>

Source: Indiana State Department of Health, Division of Maternal and Child Health
% Distribution of Infant Deaths
N = 613

- 48.0% Perinatal Risks
- 22.8% Congenital Malformations
- 13.5% SUIDs
- 10.9% All Other
- 4.7% Assaults/Accidents

Cause Specific Mortality Rates*
Per 1,000 Live Births

- 3.5
- 1.7
- 1.0
- 0.4
- 0.8

*Note: Cause specific mortality rates may not exactly equal the overall infant mortality rate due to rounding.

Source: Indiana State Department of Health, Division of Maternal & Child Health [January 24, 2017] Indiana Original Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team
Sudden Unexpected Infant Deaths (SUIDs)
Accidental Suffocation / Strangulation in Bed
(ASSB, W75)

- Mechanisms that lead to accidental suffocation include:
  - **Suffocation by soft bedding**
    - Pillow covers an infant’s nose and mouth
  - **Overlay**
    - A person rolls on top of or against the infant while sleeping
  - **Wedging or entrapment**
    - An infant is wedged between two objects such as a mattress and wall
  - **Strangulation**
    - An infant’s head and neck become caught between crib railings

Source: Indiana State Department of Health, Division of Maternal & Child Health [February 11, 2016]
Original Source: Centers for Disease Control and Prevention (CDC), Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion
Demographics of Mothers in Indiana

- **Average age** = 27.5 years (Range: 11 - 51)
- **Education**
  - 43.7% of mothers have a high school diploma or less
  - 20.9% of mothers have some college education, but no degree
  - 35.3% of mothers have a college degree (Associate’s, Bachelor’s, Master’s, Ph.D.)
- **Income** = 43% of births were to women with Medicaid
- **Marital status**
  - 56% of mothers were married
- **Average month prenatal care began** = 3 (range: no care - 9th month)
- **Average number of prenatal visits** = 12 (range: 0 - 49)
- **37.6% of all births were to first-time mothers**
- **10% of all births were to foreign-born mothers**
  - As high as nearly 25%

Source: Indiana State Department of Health, Division of Maternal & Child Health [January 24, 2017] Indiana Original Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team
Factors Contributing to Infant Mortality in Indiana

- **Obesity (ISDH #3 Priority)**
  - If woman is obese = 25% chance of delivering premature infant
  - If woman is morbidly obese = 33% chance of delivering premature infant
  - Indiana is 15th most obese state in U.S.

- **Smoking (ISDH #4 Priority)**
  - 14.3% of mothers smoke during pregnancy (TWICE the U.S. average)
  - 24.7% of mothers on Medicaid smoke

- **Limited Prenatal Care**
  - Only 69.3% of mothers receive prenatal care during the 1st trimester

- **Unsafe Sleep Practices**
  - 13.5% of infant deaths in 2015 can be attributed to SUIDs

(Source: Indiana State Department of Health, Division of Maternal & Child Health [January 24, 2017])
Smoking Risks

• Preterm labor
• Ectopic pregnancy
• Vaginal bleeding
• Placental abruption and previa
• Oxygen deprivation in baby
• Birth defects
• Low birthweight (< 5 lbs., 8 oz.)
• Sudden Unexplained Infant Death (SUIDS)
• Middle ear problems
• Lower respiratory problems

Risks of Substance Abuse

- Birth defects
- Problems with central nervous system
- Low birth weight
- Preterm delivery (< 37 weeks)
- Slow growth and development
- Fetal Alcohol Syndrome (FAS)
- Learning disabilities
- Heart problems
% Women Smoking During Pregnancy
Indiana, U.S. and Healthy People 2020 Goal
2010 - 2015

<table>
<thead>
<tr>
<th>Year</th>
<th>United States</th>
<th>Indiana</th>
<th>Healthy People 2020 Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>9.2</td>
<td>17.1</td>
<td>1.4</td>
</tr>
<tr>
<td>2011</td>
<td>8.9</td>
<td>16.6</td>
<td>1.4</td>
</tr>
<tr>
<td>2012</td>
<td>8.7</td>
<td>16.5</td>
<td>1.4</td>
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<tr>
<td>2013</td>
<td>8.5</td>
<td>15.7</td>
<td>1.4</td>
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<tr>
<td>2014</td>
<td>8.4</td>
<td>15.1</td>
<td>1.4</td>
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<tr>
<td>2015</td>
<td>7.8</td>
<td>14.3</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Source: Indiana State Department of Health, Division of Maternal & Child Health [January 24, 2017]
United States Original: Centers for Disease Control and Prevention National Center for Health Statistics
Indiana Original Source: Indiana State Department of Health, PHPC, ERC, Data Analysis Team
Smoking and Pregnancy

Effects on Mothers:

- Increases
  - Heart Disease
  - Stroke
  - Cancer
  - Absenteeism from work and school

- Reduces
  - Breastmilk supply
  - Energy and stamina to participate in daily activities

- Economic impact to family is significant and stresses resources

http://www.cdc.gov/reproductivehealth/tobaccousepregnancy/
Smoking and Pregnancy

Effects on Babies:

- Increases
  - Premature birth
  - Low birthweight
  - Stillbirth
  - Risks of Sudden Infant Death Syndrome (SIDS)
  - Birth defects
- Reduces
  - Blood flow and oxygen to baby
- Risk of future health and behavioral problems
Smoking During Pregnancy 2015

Indiana Overall: 14.3%

Source: Indiana Natality Report 2015

Significantly higher than state rate

Significantly lower than state rate

Statistically similar to state rate or unstable rate

(Source: Indiana State Department of Health, Division of Maternal & Child Health [January 24, 2017] Indiana Original Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team)
% Women Receiving Prenatal Care 1st Trimester
Indiana, U.S. and Healthy People 2020 Goal
2010 - 2015

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>73.1</td>
<td>73.7</td>
<td>74.1</td>
<td>74.2</td>
<td>76.7</td>
<td>77.0</td>
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<tr>
<td>Indiana</td>
<td>68.5</td>
<td>68.1</td>
<td>68.4</td>
<td>67.4</td>
<td>67.5</td>
<td>69.3</td>
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<tr>
<td>Healthy People 2020 Goal</td>
<td>77.9</td>
<td>77.9</td>
<td>77.9</td>
<td>77.9</td>
<td>77.9</td>
<td>77.9</td>
</tr>
</tbody>
</table>

Source: Indiana State Department of Health, Division of Maternal & Child Health [January 24, 2017] Indiana Original Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team
United States Original: Centers for Disease Control and Prevention National Center for Health Statistics
## % Women Receiving Prenatal Care 1st Trimester

**Indiana, by Race**

**2010 - 2015**

<table>
<thead>
<tr>
<th>Year</th>
<th>Indiana</th>
<th>Whites</th>
<th>Blacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>68.5</td>
<td>70.7</td>
<td>56.0</td>
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<tr>
<td>2011</td>
<td>68.1</td>
<td>70.3</td>
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<td>2012</td>
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<tr>
<td>2014</td>
<td>67.5</td>
<td>70.1</td>
<td>55.9</td>
</tr>
<tr>
<td>2015</td>
<td>69.3</td>
<td>71.5</td>
<td>59.4</td>
</tr>
</tbody>
</table>

**Source:** Indiana State Department of Health, Division of Maternal & Child Health [January 24, 2017] Indiana Original Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team
% Women Breastfeeding at Hospital Discharge
Indiana, U.S. and Healthy People 2020 Goal
2011 - 2015

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>75.8</td>
<td>77.5</td>
<td>78.8</td>
<td>81.0</td>
<td>82.1</td>
</tr>
<tr>
<td>Indiana</td>
<td>74.0</td>
<td>75.6</td>
<td>77.3</td>
<td>79.3</td>
<td>80.5</td>
</tr>
<tr>
<td>Healthy People 2020 Goal</td>
<td>81.9</td>
<td>81.9</td>
<td>81.9</td>
<td>81.9</td>
<td>81.9</td>
</tr>
</tbody>
</table>

Source: Indiana State Department of Health, Division of Maternal & Child Health [January 24, 2017] Indiana Original Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team
United States Original: Centers for Disease Control and Prevention National Center for Health Statistics
Breastfeeding Exclusivity and Duration
Indiana and United States
*based on 2013 births

<table>
<thead>
<tr>
<th>Category</th>
<th>Indiana</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever breastfed</td>
<td>76.1%</td>
<td>81.1%</td>
</tr>
<tr>
<td>Breastfeeding at 6 months</td>
<td>37.7%</td>
<td>51.8%</td>
</tr>
<tr>
<td>Breastfeeding at 12 months</td>
<td>20.7%</td>
<td>30.7%</td>
</tr>
<tr>
<td>Exclusive breastfeeding at 3 months</td>
<td>39.3%</td>
<td>44.4%</td>
</tr>
<tr>
<td>Exclusive breastfeeding at 6 months</td>
<td>16.5%</td>
<td>22.3%</td>
</tr>
</tbody>
</table>

Source: Indiana State Department of Health, Division of Maternal & Child Health [January 24, 2017] Indiana Original Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team
United States Original: Breastfeeding Report Card 2016, National Center for Chronic Disease Prevention and Health Promotion
% Women Breastfeeding at Hospital Discharge
Indiana, by Race
2010 - 2015

Source: Indiana State Department of Health, Division of Maternal & Child Health [January 24, 2017] Indiana Original Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team
Breastfeeding

- 80.4% of all Hispanic mothers breastfeed for first 6 months
- 74.3% of all white mothers breastfeed for first 6 months
- 54.4% of all Black mothers breastfeed for first 6 months

If 90% of US families complied with medical recommendations to breastfeed exclusively for 6 months, the United States would save
- $13 billion per year,
- Prevent an excess 911 deaths.

Decrease in Infant deaths would save $10.5 billion and 741 deaths at 80% compliance.


Age-Specific Birth Rates for Teen Mothers Indiana and U.S., Ages 15-19 2010 - 2015

Source: Indiana State Department of Health, Division of Maternal & Child Health [January 24, 2017] Indiana Original Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team
Summary

- **613 infants** in Indiana died before their first birthday.
- Nearly 14% of infant deaths can be attributed to SUIDs.
- Much higher percentage of women smoking during pregnancy when compared to the nation.
- Lower percentages of women receiving early prenatal care and breastfeeding when compared to the U.S.
- Low birthweight, very low birthweight and preterm births are highest in urban counties.
- Women smoking during pregnancy, not getting early prenatal care and not breastfeeding are most prevalent in rural counties.
- **Large disparities** in all indicators make prevention efforts complex.

(Source: Indiana State Department of Health, Division of Maternal & Child Health [January 24, 2017])
ISDH Programs and Initiatives
To Help Reduce Infant Mortality Rates

Source: http://www.in.gov/laboroflove/664.htm

Safe Sleep Program

Healthy Babies. Born on Time.

Indiana’s Early Start Program

Fetal-Infant Mortality Review (FIMR)

MCH MOMS HELPLINE
1-844-MCH-MOMS
(844-624-6667)

Neonatal Abstinence Syndrome (NAS) Survey

Centering®

The key to a healthy baby and a happy mom

Nurse-Family Partnership
Helping First-Time Parents Succeed
Pregnancy Mobile Application

- As part of the statewide efforts to reduce Indiana infant mortality rates, ISDH has contracted with Indianapolis-based technology solutions company eimagine to create and implement a pregnancy mobile application.

- The application will provide valuable health resources to parents, caregivers and to women of child bearing age that are pregnant or planning to be pregnant.

- The main goal is to improve the health of mothers and their children.

- Anticipated launch in September 2017.
Contact

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Each pair of baby booties represents an Indiana child who died before reaching age one.