Reducing Infant Mortality in Illinois

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Office of Women’s Health and Family Services
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Objectives

• Discuss current Illinois data on infant mortality
  – Trends
  – Disparities
  – Risk factors
• Describe the connection between infant mortality and social determinants of health
• Discuss current Illinois IM reduction strategies/initiatives

Infant Mortality...

• Is “the most sensitive index we possess of social welfare” (Julia Lathrop, 1913)
• Reflects a society’s commitment to the provision of: (SACIM report, 2013)
  – High quality healthcare
  – Adequate food and good nutrition
  – Safe and stable housing
  – Healthy psychosocial and physical environment
  – Sufficient income to prevent impoverishment
Definitions

- **Infant Death**: any live-born infant who dies within the first year of life
  - **Neonatal Death**: any live-born infant who dies during days 0-27 of life
  - **Post-Neonatal Death**: any live-born infant who dies during days 28-364 of life

Data Definition & Sources

- **Mortality Rates**: expressed as the number of deaths for every 1,000 births
  \[
  \frac{\# \text{ deaths}}{\# \text{ births}} \times 1000 = \text{IMR}
  \]
  - **Deaths**: identified by death certificates
  - **Births**: identified by birth certificates
  - 2013-2014 data are provisional
  - 2012-2014 data are provisional
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**Illinois Infant, Neonatal, & Post-Neonatal Mortality Rates**

<table>
<thead>
<tr>
<th>Year</th>
<th>Infant Mortality Rate (per 1,000 births)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>6.4</td>
</tr>
<tr>
<td>2010</td>
<td>6.3</td>
</tr>
<tr>
<td>2011</td>
<td>6.2</td>
</tr>
<tr>
<td>2012</td>
<td>5.6</td>
</tr>
<tr>
<td>2013</td>
<td>6.2</td>
</tr>
<tr>
<td>2014</td>
<td>4.4</td>
</tr>
<tr>
<td>2015</td>
<td>4.5</td>
</tr>
</tbody>
</table>

*Note:* Data Source: Birth and Death records occurring in Illinois to Illinois residents. 2012-2014 data are provisional and subject to change.

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**Trends in Infant Mortality**

- The infant, neonatal, and post-neonatal mortality rates have essentially remained the same over the last five years.
- A small dip in neonatal mortality in 2013 may be due to incomplete provisional records.
- There may have been a small decrease in post-neonatal mortality in 2014, but can't be confirmed until record finalization.

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**Infant Mortality Rate, IL 2010-2014**

<table>
<thead>
<tr>
<th>Year</th>
<th>Infant Mortality Rate (per 1,000 births)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>6.2</td>
</tr>
<tr>
<td>2011</td>
<td>7.2</td>
</tr>
<tr>
<td>2012</td>
<td>6.1</td>
</tr>
<tr>
<td>2013</td>
<td>5.3</td>
</tr>
<tr>
<td>2014</td>
<td>6.2</td>
</tr>
<tr>
<td>2015</td>
<td>5.3</td>
</tr>
</tbody>
</table>

*Note:* Data Source: Birth and Death records occurring in Illinois to Illinois residents. 2012-2014 data are provisional and subject to change.
Disparities in Infant Mortality

- Infant mortality is highest in Chicago, Suburban Cook Co., and other Urban Counties
  - Trends: May be seeing a slight decrease in Chicago and increase in Suburban Cook and Collar Counties → related to migration out of Chicago?
- Black infants are 2.8 times as likely as white infants to die in the first year of life
  - Trends: no significant changes in last 5 years

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Neonatal Mortality Rate, IL 2010-2014*

Data Source: Birth and Death records occurring in Illinois to Illinois residents
* Note: 2012-2014 data are provisional and subject to change

Disparities in Neonatal Mortality

- Neonatal mortality is highest in Chicago and Suburban Cook County
- Black infants are 2.3 times as likely as white infants to die in the first 28 days of life
  - Trends: No significant changes in last 5 years
**Post-Neonatal Mortality Rate, IL 2010-2014**

Data Source: Birth and Death records occurring in Illinois to Illinois residents

*Note*: 2012-2014 data are provisional and subject to change

<table>
<thead>
<tr>
<th>PNMR (per 1,000 births)</th>
<th>RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>4.4</td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>0.8</td>
<td></td>
</tr>
</tbody>
</table>

**Disparities in Post-Neonatal Mortality**

- Post-neonatal mortality is highest in Chicago, Other Urban Counties, and Rural Counties
- Black infants are 3.4 times as likely as white infants to die during days 28-364 of life
- Trends: no significant changes in last 5 years

**Leading Causes of Death, IL 2010-2014**

<table>
<thead>
<tr>
<th>Cause Category</th>
<th># Deaths (2010-2014)</th>
<th>% Infant Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disorders related to Short Gestation and Fetal Malnutrition</td>
<td>1134</td>
<td>23.8</td>
</tr>
<tr>
<td>Congenital Malformations</td>
<td>746</td>
<td>16.1</td>
</tr>
<tr>
<td>Symptoms, Signs, Findings NIC (includes SIDS)</td>
<td>545</td>
<td>12.5</td>
</tr>
<tr>
<td>Hemorrhagic and Hematological Disorders of Newborn</td>
<td>386</td>
<td>8.1</td>
</tr>
<tr>
<td>Newborn affected by Maternal Complications of Pregnancy</td>
<td>311</td>
<td>6.9</td>
</tr>
<tr>
<td>All Other</td>
<td>1558</td>
<td>32.7</td>
</tr>
</tbody>
</table>

Data Source: Birth and Death records occurring in Illinois to Illinois residents

*Note*: 2012-2014 data are provisional and subject to change
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#### Leading Causes of Death, IL 2010-2014*

<table>
<thead>
<tr>
<th>Cause Category</th>
<th>Neonatal Deaths</th>
<th>Post-Neonatal Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Gestation and Fetal Malnutrition</td>
<td>33.6</td>
<td>33.8</td>
</tr>
<tr>
<td>Congenital Malformations</td>
<td>17.0</td>
<td>14.9</td>
</tr>
<tr>
<td>Neonatal or Perinatal Disorders</td>
<td>11.0</td>
<td>12.0</td>
</tr>
<tr>
<td>Maternal Complications of Pregnancy</td>
<td>6.9</td>
<td>7.4</td>
</tr>
<tr>
<td>Complications of Placenta, Cord &amp; Membranes</td>
<td>4.8</td>
<td>0.8</td>
</tr>
<tr>
<td>All Other</td>
<td>24.6</td>
<td>24.0</td>
</tr>
</tbody>
</table>

*Note*: 2012-2014 data are provisional and subject to change.

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#### INFANT MORTALITY AND SOCIAL DETERMINANTS OF HEALTH

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#### Why Should Health Professionals Care about Social Determinants?

- Social Justice: All Americans deserve an equal opportunity to make the choices that lead to good health.
- Social and physical environment factors are estimated to account for about 55% of population health:
  - Genes, biology, and health behaviors account for only about 25% of population health
  - Medical care accounts for 20% of population health

* http://www.cdc.gov/socialdeterminants/FAQ.html
Economic Disadvantage

- A standardized, composite index used to identify communities with high propensities towards poverty and related disadvantages
- Combines five concepts from Census data
  - Unemployment
  - Poverty
  - Receipt of public assistance
  - Female-headed households
  - Percent of the population that are children

Economic Disadvantage: Measurement Details

- Each county’s rates on the five census variables were compared to the state means
- Counties received a “z-score” for each variable, indicating how close or how far from the mean they were
- The five z-scores (for five variables) within a county were averaged into an aggregate z-score
- Counties were divided into quartiles (4 groups) based on average z-score

The 10 Most Disadvantaged Counties in Illinois:

- Alexander
- Cook
- Kankakee
- Macon
- Marion
- Pulaski
- Saline
- St. Clair
- Vermillion
- Winnebago
Economic Disadvantage & Birth Outcomes

<table>
<thead>
<tr>
<th>Disadvantage Level</th>
<th>Infant Mortality Rate (per 1,000)</th>
<th>Low Birth Weight births (&lt;2500g)</th>
<th>Very Low Birth Weight births (&lt;1500g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>5.4 per 1,000</td>
<td>7.0 %</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Low-Med</td>
<td>5.9 per 1,000</td>
<td>7.4 %</td>
<td>1.35 %</td>
</tr>
<tr>
<td>Med-High</td>
<td>6.6 per 1,000</td>
<td>7.6 %</td>
<td>1.38 %</td>
</tr>
<tr>
<td>High</td>
<td>7.3 per 1,000</td>
<td>8.8 %</td>
<td>1.40 %</td>
</tr>
</tbody>
</table>

Counties with high economic disadvantage have poorer health outcomes than those with low disadvantage.

Economic Disadvantage & Risk Factors

<table>
<thead>
<tr>
<th>Disadvantage Level</th>
<th>Teen Birth Rate (per 1000 women ages 15-19)</th>
<th>Late (3rd Tri) or No Prenatal Care Rate (per 100000)</th>
<th>Homicide Rate (per 100000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>19.0 per 1,000</td>
<td>2.5 %</td>
<td>5.0</td>
</tr>
<tr>
<td>Low-Med</td>
<td>22.5 per 1,000</td>
<td>2.3 %</td>
<td>7.3</td>
</tr>
<tr>
<td>Med-High</td>
<td>28.6 per 1,000</td>
<td>2.8 %</td>
<td>9.9</td>
</tr>
<tr>
<td>High</td>
<td>38.9 per 1,000</td>
<td>4.9 %</td>
<td>29.1</td>
</tr>
</tbody>
</table>

Counties with high economic disadvantage have higher rates of teen birth, late/no prenatal care, and homicide.

Infant Mortality and Economic Disadvantage

- High economic disadvantage in a community is related to:
  - Higher infant mortality
  - Higher rates of other poor birth outcomes: LBW, VLBW
  - Higher rates of factors predicting risk behaviors (like unsafe sleep practices) and IM: Teen Birth, Inadequate Prenatal Care
  - Higher rates of violence/homicide, which may influence MCH through chronic stress.
Addressing SDOH in Infant Mortality

• Place matters!
  – Where we live has a profound affect on our health
• Making substantial changes in infant mortality requires considering how to intervene on social and structural factors
  – To either change the factor itself
  – Or to somehow “mediate” or block the impact of that factor

CURRENT ILLINOIS INFANT MORTALITY REDUCTION EFFORTS

MISSION
To improve health outcomes of all Illinoisans by providing preventive education and services, increasing health care access, using data to ensure evidence based practice and policy, and empowering families.

VISION
A future free of health disparities, where all Illinoisans have access to continuous high quality health care.
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**OWHFS’ Lens for Addressing IM**

- **Life Course Perspective**
  - An infant’s health is not merely the result of a pregnancy, but of its mother’s lifetime of health experiences

- **Social Determinants of Health**
  - The social and physical conditions in which we live affect our health

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**CoIIN Initiative**

- Collaborative Innovation and Improvement Network (CoIIN) to Reduce Infant Mortality
- Sponsored by HRSA Maternal and Child Health Bureau through 2016
- Began as regional initiative in 2013
- Recently expanded to federal initiative
- Six potential sub-areas for state participation
- Uses quality improvement lens to tackle major determinants of infant mortality

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**Illinois CoIIN Workgroups**

- In the new federal roll-out, Illinois chose:
  - Perinatal Regionalization
  - Pre-/Inter-conception Care
  - Safe Sleep
  - Social Determinants of Health

*After a federal re-launch of CoIIN, the workgroups are currently in the process of developing their workplans and activities*
CoIIN: Perinatal Regionalization

- Illinois has had a regionalized system for perinatal care since the 1970’s, but is in need of enhancement
- **CoIIN Activities:**
  - Ensure high-risk moms and babies are delivered at appropriate facilities
  - Address issues related to transfer of high risk newborns
  - Reconsider the site visit and re-designation process for maternity hospitals

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CoIIN: Pre-/Inter-conception Care

- Pre-/Inter-conception care works to ensure that women are healthy prior to becoming pregnant
- **CoIIN Activities**
  - Adolescent well visits
  - Postpartum visits
  - Postpartum LARC & Family Planning Services
  - Extensive coordination with Medicaid to improve reach of these services

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CoIIN: Safe Sleep

- Despite “Back to Sleep” messaging, there is significant improvement to be made in improving the safety of infant sleep
- **CoIIN Activities:**
  - Improve hospital policies on safe sleep
  - Work with home visiting programs and DCFS to deliver safe sleep education to caregivers
  - Consider messaging strategy for a public awareness marketing campaign
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**CoIIN: Social Determinants of Health**

- Social determinants impact a woman’s health long before she becomes pregnant and addressing upstream factors is critical for IM reduction.

- **CoIIN Activities:**
  - Develop a statewide plan to reduce disparities in infant mortality by July 2016
  - Enhance care coordination
  - Educate others about the impact of poverty on infant mortality

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**A Few Other State Activities to Reduce Infant Mortality**

- Illinois Perinatal Quality Collaborative (ILPQC)
- OWHFS Resource Database
- Family Planning & Cook County Corrections Partnership
- Breastfeeding Collaborations

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**IL-PQC**

- Formed in 2012 to engage in ongoing quality improvement initiatives in tandem with IL regionalized perinatal system
- Strong partnership between OWHFS and IL-PQC
- Past and Current Initiatives: Early Elective Delivery, Maternal Hypertension, Birth Certificate Data Collection
OWHFS Resource Database

• Developing a directory to house information on programs that serve MCH populations in IL
• Database currently contains information on 388 MCH agencies and 893 community programs!
• Ultimately, the plan is to make this directory available to providers and consumers, including a query system to identify relevant programs
  – By zip code or county of residence
  – By population group and services provided

Family Planning: Cook County Corrections

• Women leaving incarceration are at high risk for unintended pregnancy
• Working to integrate Title X family planning services into existing health services at CCDOC, including those enrolled in daytime program
• Provide health education and reproductive services, including contraception and STI testing

Breastfeeding Collaborations

Decatur Women’s Prison

• Better support breastfeeding women
• Purchasing 50 breast pump and breast milk storage bag kits
• Breastfeeding education and “train the trainer” for prison staff
Breastfeeding Collaborations

Hospital-Based Initiatives

• Conduct an analysis of needs and barriers to breastfeeding in hospital
• Train and educate staff
• Improve hospital BF policies
• Promote Baby-Friendly practice implementation

Contact Info

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EXTRA DATA SLIDES
NEONATAL DEATHS:
LEADING CAUSE = PREMATURITY

Low Birth Weight

- Infants born too early or too small are at increased risk of infant mortality (particularly neonatal mortality)

In 2014...
- Over 12,000 infants (7.8%) were low birth weight (LBW; <2500 grams)
- Over 2,000 infants (1.3%) were very low birth weight (VLBW; <1500 grams)

Data are from provisional 2013 vital records data and may be subject to change upon finalization.

% of Infants that were LBW, IL 2014*

Data Source: Birth records occurring in Illinois to Illinois residents
* Note: 2014 data are provisional and subject to change.
Low birth weight rates vary across the state. 19 counties in IL have LBW rates that do not meet the HP2020 objective.

Disparities in LBW
- LBW rates are highest in Chicago
- Black infants are twice as likely as white infants to be LBW
  - Geographic differences likely driven by population’s racial/ethnic composition
- Young and older mothers are most likely to have LBW babies

Risk Factors for Prematurity
- Prenatal Smoking
- Short inter-pregnancy interval
- Inadequate Prenatal Care
- Multiple Births
- Previous preterm or LBW delivery
- Poor nutrition, low gestational weight gain
- Chronic conditions (hypertension, diabetes)
- Stress
POST-NEONATAL DEATHS: LEADING CAUSE = SIDS/SUID

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SUID Mortality Rate, IL 2010-2014*

Data Source: Birth and Death records occurring in Illinois to Illinois residents
* Note*: 2012-2014 data are provisional and subject to change

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SIDS/SUID Deaths

• SIDS and other sudden unexpected causes of infant death are the leading cause of post-neonatal mortality
• SUID Deaths are highest in Cook County, Non-Chicago Metro Urban Counties, and Rural Counties
• Black infants are 3.5 times as likely to experience a SUID death as white infants
Risk Factors for SIDS/SUID

- Non-Back Sleep Position
- Sleep Environment (blankets, pillows, etc.)
- Bed-sharing (esp. when caregiver uses alcohol or drugs)
- Exposure to Tobacco Smoke
- Lack of Breastfeeding
- Prematurity
- Male Gender

Disparities in Prenatal Care

- Despite decades of work to improve receipt of PNC services, less than 80% of Illinois women receive at least adequate prenatal care
- There are wide regional, racial/ethnic, and age-based disparities in PNC utilization
  - Black mothers 2.5 times as likely to have inadequate PNC as white mothers
  - Young mothers are 2 times as likely to have inadequate PNC than older mothers
Since 2004, the percent of infants put to sleep in an unsafe position has declined. Despite this, roughly one-quarter of Illinois infants are not put to sleep on their backs.

Data Source: Illinois Pregnancy Risk Assessment Monitoring System (PRAMS)

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Percent of Illinois Infants NOT Put to Sleep on Back, 2009-2011

Data Source: Illinois Pregnancy Risk Assessment Monitoring System (PRAMS)

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Percent of Infants in Unsafe Sleep Environments, 2009-2011

Data Source: Illinois Pregnancy Risk Assessment Monitoring System (PRAMS)
Percent of Infants Sleeping in Unsafe Environment, 2009-2011

Data Source: Illinois Pregnancy Risk Assessment Monitoring System (PRAMS)

Unsafe Sleep Practices Summary

• 1 in 4 infants are not put to sleep on back
• 3 in 5 infants are put to sleep in unsafe environments
• Racial/ethnic and age-based disparities in safe sleep practices
  – Shows need to target Minority and Young Mothers with safe sleep messages