

**Perinatal Periods of Risk (PPOR)**

**Public Health – Muskegon County**

**5/28/10**

**Method**

For the 2000-08 time period, there were 21,255 births, 58 fetal deaths, and 119 infant deaths in Muskegon County. Of the total, 4,109 births (19.3%), 14 (24.1%) fetal deaths, and 32 (26.8%) infant deaths were non Hispanic black.

PPOR analysis was conducted based on the CDC’s protocol. Frequencies were determined for birth weights, age at death, and gestation. Fetal deaths prior to 24 weeks gestation, fetal deaths weight less than 500 grams, and infant deaths with birth weights of less than 500 grams were excluded (Table 1).

<b>Table 1. Map of Feto-Infant Mortality</b> Muskegon County, All Races 2000-2008		
<b>Deaths related to Maternal Health/Prematurity</b> <b>60</b>		
Deaths related to <b>Maternal Care</b> <b>44</b>	Deaths related to <b>Newborn Care</b> <b>29</b>	Deaths related to <b>Infant Health</b> <b>44</b>

<b>177 Feto-Infant Deaths</b>
<b>21,313 Fetal Deaths &amp; Live Births</b>

## Overall Feto-Infant Mortality Rate

As the Table 2 shows below, by category, the group-specific mortality rate per 1,000 live births for Maternal Health/Prematurity is 2.8, the rate for Maternal Care is 1.9, the rate for Newborn Care is 1.4, and the rate for Infant Health is 2.1. Added together, the overall feto-infant mortality rate is 8.4. The numbers do not add up exactly because of rounding.

- The highest group rate is Maternal Health/Prematurity , the component related to VLBW births.
- The second highest rates are related to Maternal Care and Infant Health.

<b>Table 2. Fetal-infant Death Rate* by PPOR Category Muskegon County Overall</b>				
<b>Description of population:</b>				
Time period-2000-08				
Muskegon County residents				
Race/ethnicity (Same as mother) – All				
Maternal age – All				
Feto-Infant mortality rate: $\frac{177 \times 1,000}{21,313} = 8.3$				
<b>Total fetal-infant death rate=8.4</b>				
		<b>Age at death</b>		
		Fetal (24+ weeks)	Neonatal (<28 days of life)	Infant death postneonatal (28 days-1 year)
Birth-weight	500-1,499 grams (very low birth weight)	<b>Maternal health/prematurity 2.8</b>		
	>=1,500 grams	<b>Maternal care 2.1</b>	<b>Newborn care 1.4</b>	<b>Infant health 2.1</b>
$\frac{14+40+6(\text{VLBW})}{21,255(\text{live births})+58(\text{Fetal deaths})} \times 1,000$				
*Number of fetal and infant deaths per 1,000 live births plus fetal deaths.				

### Black Feto-Infant Mortality Rate in Muskegon County

As the Table 3 shows below, the group-specific mortality rate per 1,000 live births for Maternal Health/Prematurity is 3.8, the rate for Maternal Care is 2.7, the rate for Newborn Care is 2.2, and the rate for Infant Health is 2.4. Added together, the black feto-infant mortality rate is 11.1.

- The highest group rate is Maternal Health/Prematurity, the component related to VLBW births.
- The second highest rate is Maternal Care deaths, the component related to prenatal care.

**Table 3. Fetal-infant Death Rate\* by PPOR Category  
Muskegon County, African American**

**Description of population:**

Time period-2000-08

Muskegon County residents

Race/ethnicity (Same as mother) – African American

Maternal age – All

**Total African American fetal-infant death rate=11.1**

		Age at death		
		Fetal (24+ weeks)	Neonatal (<28 days of life)	Infant death postneonatal (28 days-1 year)
Birth- Weight	<b>500-1,499</b> grams (very low birth weight)	<b>Maternal health/prematurity</b> <b>3.8</b>		
	<b>&gt;=1,500</b> grams	<b>Maternal care</b> <b>2.7</b>	<b>Newborn care</b> <b>2.2</b>	<b>Infant health</b> <b>2.4</b>

\*Number of fetal and infant deaths per 1,000 live births plus fetal deaths.

**White Feto-Infant Mortality Rate in Muskegon County**

The group-specific mortality rate per 1,000 live births for Maternal Health/Prematurity is 2.4, the rate for Maternal Care is 1.9, the rate for Newborn Care is 1.1, and the rate for Infant Health is 1.8. Added together, the White overall feto-infant mortality rate is 7.2.

<b>Table 4. Fetal-infant Death Rate* by PPOR Category</b> Muskegon County, White, nonHispanic				
<b>Description of population:</b>				
Time period-2000-08				
Muskegon County residents				
Race/ethnicity (Same as mother) – White, nonHispanic				
Maternal age – All				
Total fetal-infant death rate=7.2				
		<b>Age at death</b>		
		<b>Fetal</b> (24+ weeks)	Infant death	
			<b>Neonatal</b> (<28 days of life)	<b>postneonatal</b> (28 days-1 year)
Birth-weight	<b>500-1,499</b> grams (very low birth weight)	<b>Maternal health/prematurity</b> <b>2.4</b>		
	<b>&gt;=1,500</b> grams	<b>Maternal care</b> <b>1.9</b>	<b>Newborn care</b> <b>1.1</b>	<b>Infant health</b> <b>1.8</b>
*Number of fetal and infant deaths per 1,000 live births plus fetal deaths.				

## Problems and Issues

- There are 2 major problem areas identified from PPOR analysis, which are clearly related to Maternal Health/Prematurity and Maternal Care.
- A significant disparity persists between African-American and Caucasian Feto-infant deaths.

## Map Connections to Action

According to the CDC, the labels and the four categories were designed to suggest preventive action.

- **Maternal Health and Prematurity:** Prevention may need to focus on preconceptional health, unintended pregnancy, smoking, drug abuse, and specialized perinatal care.
- **Maternal Care:** Prevention may need to focus on early continuous prenatal care, referral of high risk pregnancies and good medical management of diabetes and postmaturity or other medical problems.
- **Newborn Care:** The focus may need to be on advanced neonatal care and treatment of congenital anomalies.
- **Infant Health:** Communities may need to focus on SIDS prevention activities such as sleep position education or breast-feeding promotion. Access to medical homes and injury prevention.

## FIMR Data and Gap

The next step should focus on the gap, such as why rates are highest for maternal health/prematurity in Muskegon County. Therefore, the FIMR data were reviewed and compiled. Based on the 78 cases from 2006, 2007, and 2008, four primary problem areas and its related factors were identified (Table 5).

- **Mental and social risks:** At least 40% of these women experienced mental illness during perinatal period.
- **Gap in care and screening for risks:** More than 40% of these women showed lacks of critical referral or/and screening for health or psychosocial problems.
- **Health risk behaviors:** Risk factors related to poor nutrition, tobacco use, and obesity were identified.
- **Medical risks:** More than one-third of these women experienced STDs and other infections.

These issues are clearly associated with Maternal Health/Prematurity and Maternal Care. Intervention and prevention should focus on identification and modification of biomedical, behavioral, and social risks to a woman's health and future pregnancies. Emphasis are on screening for risks, health promotion and education, and interventions to address identified risks.

**Table 5. Maternal Health/Prematurity and Maternal Care (Overall Cases)**  
 (Issues Related to Preconceptional Health, Health Behaviors, and Prenatal/Perinatal Care,  
 Based on 2006, 2007, and 2008 FIMR'S 78 Cases)

Categories	2006 (n=34)	2007 (n=26)	2008 (n=18)	% Average
<b>Mental and Social Risks</b>				
Maternal History of Mental Illness	47.1%	35.7%	50.0%	<b>44.2%</b>
Mental Illness during Perinatal	47.6%	50.0%	44.4%	<b>47.3%</b>
Multiple Stresses during Perinatal	47.1%	53.6%	44.4%	<b>48.4%</b>
<b>Screening for Risks</b>				
Missed Doc. Appointments	58.8%	50.0%	72.2%	<b>60.3%</b>
Health/Psychosocial Critical Referrals not Made	52.9%	39.3%	44.4%	<b>45.5%</b>
Screening for Health/Psychosocial Problem not Done	41.2%	53.6%	33.3%	<b>42.7%</b>
Fear of/Dissatisfaction w/System	41.2%	39.3%	50.0%	<b>43.5%</b>
<b>Behavioral Risks</b>				
Tobacco	38.2%	25.0%	38.9%	<b>34.0%</b>
Alcohol	14.7%	14.3%	16.7%	<b>15.2%</b>
Obesity	29.4%	28.6%	50.0%	<b>36.0%</b>
Poor Nutrition	44.1%	50.0%	50.0%	<b>48.0%</b>
Second Hand Smoking	26.5%	39.3%	38.9%	<b>34.9%</b>
<b>Biomedical and Medical Risks</b>				
STDs	29.4%	53.6%	33.3%	<b>38.8%</b>
Other Infection	41.2%	35.7%	27.8%	<b>34.9%</b>