Perinatal Health: A Public Health Approach

November 16, 2009
Virginia Commonwealth University
Joan Corder-Mabe, RNC, M.S., WHNP
Director, Division of Women’s and Infants’ Health
Virginia Department of Health

Core Functions of Public Health

Assessment
Assurance
Policy

Assessment

• Analysis of birth certificate data
• Fetal and Infant Mortality Review (FIMR)
• Child Fatality Review
• Pregnancy Risk Assessment Monitoring System (PRAMS)
• Maternal Death Review

Infant Mortality in Virginia

Infant Mortality as a Measure of Health

"Infant death is a critical indicator of the health of the population. It reflects the overall state of maternal health as well as the quality and accessibility of primary health care available to pregnant women and infants. Despite steady declines in the 1980’s and 1990’s, the rate of infant mortality in the United States remains one of the highest in the industrialized world."

Healthy People 2010 Report

“Perhaps the most glaring health failure is our infant mortality rate.”

-Governor Timothy M. Kaine
Setting a Goal for Reduction of Infant Deaths

- Virginia is working toward the goal to reduce its infant death rate to 7.0 per thousand live births by 2009.
- This would surpass the Healthy People 2010 goal of reducing the infant mortality rate to 7.2 per thousand.

Infant Mortality: The Problem World Rank

Infant Mortality Rates Per 1,000 Births in Virginia

Total Infant Mortality Rates Per 1,000 Births in Virginia

Top 4 Causes of Infant Death, Virginia 1998-2008
### Top Causes of Death

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disorders Related to Short Gestation and Low Birth Weight</td>
<td>194</td>
<td>158</td>
</tr>
<tr>
<td>Congenital Malformations, Deformations, and Chromosomal Abnormalities</td>
<td>135</td>
<td>119</td>
</tr>
<tr>
<td>SIDS</td>
<td>81</td>
<td>59</td>
</tr>
<tr>
<td>Maternal Complications of Pregnancy</td>
<td>63</td>
<td>45</td>
</tr>
<tr>
<td>Other Conditions in the Perinatal Period</td>
<td>42</td>
<td>24</td>
</tr>
<tr>
<td>Abnormal Clinical Findings</td>
<td>29</td>
<td>36</td>
</tr>
<tr>
<td>Complications of Placenta, Cord, and Membranes</td>
<td>26</td>
<td>22</td>
</tr>
<tr>
<td>Unintentional Injury (Accidents)</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

### Prematurity and Late Preterm Births

Low Birth Weight is associated with multiple factors:

- **Medical Risk Factors**
  - High parity
  - Chronic diseases
  - Previous Low Birth Weight infants
  - Genetic factors
  - Multiple gestation
  - Poor weight gain
  - Infection
  - Placental problems
  - Premature rupture of membranes
  - Fetal anomalies
  - Maternal stress

### Low Birth Weight (continued)

- **Demographic Risk Factors**
  - Age < 17 years and > 34 years
  - African-American race
  - Low socioeconomic status
  - Unmarried
  - Low education

- **Behavioral Risk Factors**
  - Smoking
  - Poor nutrition
  - Toxic exposure
  - Inadequate prenatal care
  - Substance abuse

### Long-term effects of Low Birth Weight

- Neurologic disorders
- Learning disabilities
- Delayed development
The etiology of preterm labor and premature birth is unknown.

Maternal Mortality Has Not Changed Since 1982

Reasons for reduction in maternal mortality

- Sulfa and antibiotic drugs
- Decrease infections secondary to illicit abortions
- Availability of banked blood
- Safer surgical procedures, including Cesarean

The 3 leading causes of natural maternal death in the United States and Virginia

- Hemorrhage, including ectopic pregnancy
- Pregnancy-Induced Hypertension
- Pulmonary Embolism

What can we do?
• Natisha Jones: 19 year old, G3 P1 A1, A.A. woman
• Infant died of SUID
• 5’5” tall and weighs 185 lbs
• 185% of poverty
• Works part-time at Walmart
• The boyfriend is unemployed

Prematurity and SIDS

• A premature infant less than 37 weeks sleeping prone is **85 times** more likely to die of SIDS
• A premature infant lying on its side is **40 times** more likely to die of SIDS

Prematurity: SIDS Rate and Sleep Position

Obesity in Pregnancy

• Pregnancy loss
• Diabetes and hypertension
• Preeclampsia
• Indicated Preterm Birth
• Operative delivery and complications
• Birth injury
• Childhood obesity
• Anesthesia complications

Fact

Women are more at risk of infant deaths as **poverty increases** in their communities

Resident Infant Death Rates by Method of Payment and Race/Ethnicity
**Fact**

African American women experience significantly higher rates of infant mortality in the Commonwealth. Babies born to African American females are 2.5 times more likely to die during the first year of life than other babies.

**Fact**

Women with less than 12 years of education are **2.1 times more likely** to experience infant death.

**Prematurity and Smoking**

Exposure to smoking is associated with:
- 20% of all low birth weight babies
- 8% of preterm births
- SIDS
Why?

Early prenatal care is an indicator for access to health care services.

Resource Mothers Program

- Lay home visitors who mentor pregnant teenagers
- Decrease infant mortality and low weight births
- 25 contractors enrolling approximately 1100 newly pregnant teens per year in 88 Virginia localities
- Early and regular prenatal care, increased healthy behaviors, delay of repeat pregnancy, enrollment in school or employment, and creation of a stable home environment
- Staff aim to motivate program participants to stop smoking

Loving Steps/Virginia Healthy Start Program

Goal of reducing infant deaths and improving birth outcomes through early intervention:

- Case management and health education
- Registered nurses provide medical nursing care
- Registered dietitians provide medical nutrition therapy services
- Resource Mothers (Community Health Workers)
- FIMR

Role Periodontal Disease in Preterm Birth

- Inflammation associated breakdown of membranes
- Associated with preterm labor and low weight birth
- Treatment not harmful
- Treatment reduce preterm

Poor Nutrition
18 week prenatal visit – no show
Home visit by Loving Steps nurse
Natisha reported she was busy working
Several facial and arm bruises noted

Racism

Natisha reported some back pain and not feeling well
Referred to the local ER
Admitted for 24 hours
20 weeks prenatal visit
Wants to breastfeed

Breastfeeding: The Benefits

Lower rates of SIDS
Fewer ear infections
Fewer asthma/allergy cases
Less obesity
Less diabetes
Fewer childhood leukemia cases
Fewer infections in premature babies

Promote Breastfeeding

Educate mothers before birth
Provide support from family, friends, healthcare workers, employers, society
Provide safe places to nurse and pump

Interventions That May Reduce Prematurity/Infant Deaths

Education about preterm labor signs and symptoms
• 34 weeks admitted again for preterm labor
• Delivered a 4lb 6oz baby boy
• Baby had bradycardia, apnea and oxygen desaturation

Safety Net Providers

• Prenatal care in local health departments
• WIC in local health departments
• Community Health Centers
• Car seat program

Preconception

• Prevention of birth defects
• Treatment of chronic conditions
• Promotion of healthy lifestyles (smoking, alcohol)

Regional Perinatal Councils (RPCs)

Regional Perinatal Councils (RPCs) improve the infrastructure through which perinatal health is provided within the Commonwealth.

• Conduct Fetal and Infant Mortality Review
• Engage communities to address local systems issues

Newborn Screening

• Coordinated and comprehensive system consisting of education, blood screening tests, follow-up and referrals, diagnosis, medical and dietary management, and treatment
• Effective March, 2006, Virginia screens for 28 disorders
Setting Standards/Quality of Care

- Neonatal Regulations
- Screening for domestic violence, perinatal substance use, and perinatal depression
- Web-based training on Bright Futures and Perinatal Depression
- Provision of culturally competent care

Policy and Planning

Implementation of Codes Regarding Perinatal Substance Use:
- 54.1-2403.1 of the Code of Virginia Substance Use Screening in Prenatal Care
- 63.2-1509 of the Code of Virginia Physician referral of Substance Exposed Newborns
- 32.1-127 of the Code of Virginia Hospital Discharge Planning for Substance using Postpartum Women
- 32.1-134.01 of the Code of Virginia Discharge Education on Postpartum Blues, Perinatal Depression, Shaken Baby Syndrome

Interagency Substance Exposed Newborn Workgroup (DMHMRAS, DSS, DCJ)
- Analysis of proposed legislation
- Supports Governor’s task forces and commissions

Early and regular use of prenatal care is a strong predictor of positive pregnancy outcomes.

Health Commissioner’s Workgroup on Infant Mortality

- Diverse groups represented
- Identify evidence-based effective programs
- Develop unified message on how everyone can make a difference

Conclusions

- Studies of underlying factors that contribute to morbidity and mortality are needed
- Review of quality of health care and access to care for all women and infants is needed
- Racial/ethnic disparities need to be eliminated
- Research to determine effective public health programs to make a difference
- Resource and implement programs we know work

THANK YOU