Establishment of a Low Birth Weight Registry and Outcomes at One Year

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Project Background

- 1998 Greater Dayton Area Hospital Association (GDAHA).
- Collaborative efforts of hospital leaders and business leaders to reduce health care costs and improve care outcomes.
- Improved treatment outcomes in cardiac disease for region.
Why a Registry?

- Consensus of the task force was to develop a **prospective database** of LBW infants born in Montgomery County Hospitals.
- Provide individually identified data set.
- Obtain information not recorded on standard birth certificates.
- Improve on self-reported data for risk factors.
- Permission to review patient’s data.
Why Important?

“...because birth weight is conditioned by the health and nutritional status of the mother, the proportion of infants born with low birth weights (LBW) closely reflects the health status of the communities into which they are born.”

Why Important?

- Increased cost of care

- “The annual economic burden associated with preterm birth in the United States was at least $26.2 billion in 2005.”

Teamwork

Funding

Montgomery County Family and Children First Council (FCFC)
Healthy People Outcome Team

Collaborators

Greater Dayton Area Hospital Association (GDAHA)
Perinatal Data Use Consortium (PDUC)
Public Health Dayton & Montgomery County
Montgomery County Child Fatality Review Board
Objectives

Reduce the incidence of LBW in the Greater Dayton Area by:

- Identifying modifiable risk factors
- Developing strategic community based interventions
How?

- Informed Consent: Includes permission to look at office records and contact mother in future.
- Interview: Based on selected PRAMS questions.
- Birth Certificate Worksheets
- Medical Records Abstraction
One Year Sample (10/26/2007-10/26/2008)

- Screened 630
- Ineligible (not approached) 129
- Approached 501
- Declined 38
- Enrolled 463
- Consent rate 92%
One Year Sample

- Mothers in one year n=463
  (10/26/2007-10/26/2008)

- Babies n=513
- Average weight=1877.5g
- Average gestational age = 33 wks
- Females 53% (n=270)
- Males 47% (n=243)
One Year Sample

- 71 moms had multiples (15% of sample)
- 392 singletons
- 46 instances all babies in sets were LBW
- 4 sets of triplets
- 42 sets of LBW twins
- 25 instances only one baby of set was LBW (discordant twins)
Age of LBW Mothers

Data Source: Medical Record
Race of LBW Registry Mothers

Data Source: Birth Certificate

![Bar chart showing the race distribution of LBW mothers and Ohio mothers. The chart compares Caucasian, African American, and Other races, with a focus on Caucasian mothers, who constitute the majority.]
Pregnancy Intention
Data Source: Interview

2004 Ohio PRAMS Mothers report 55.5% intended the pregnancy
Only 33% of the LBW Registry Mothers intended this pregnancy
Insurance Status
Data Source: Birth Certificate

Type of Insurance

- Medicaid
- Health Ins.
- Uninsured
- Other

% of LBW Mothers and 2004 Ohio PRAMS
Marital Status
Data Source: Medical Record

LBW Registry Mothers: 62% Unmarried, 37% Married
2004 OH PRAMS: 63% of all mothers were married

Copyright The LBW Registry 2008
Adequate Food
Data Source: Interview

94%

6%

Enough
Sometimes/Often Not Enough

Copyright The LBW Registry 2008
Vitamins Before Pregnancy

Data Source: Interview

% LBW Mothers

% 2004 Ohio PRAMS mothers

Times Per Week

- None
- 1 to 3
- 4 to 6
- Every day
Preconceptional Folate Use

“Folate supplementation for at least one year is linked to a 70% decrease in very early preterm deliveries (20-28 weeks in gestational age) and up to a 50% reduction in early preterm deliveries of 28-32 weeks.”

Smoking During Pregnancy
Data Source: Interview

2004 Ohio PRAMS mothers report 20.9% smoking in the last trimester; 44% of LBW Registry mothers smoked while pregnant.
Alcohol Use During Pregnancy

Data Source: Interview

2004 Ohio PRAMS Mothers report 5.2% in the last 3 months of pregnancy

- 16% Yes
- 84% No
Notable Discrepancies

Alcohol use

**Interview data**

- 58.5% of Mothers admitted to drinking alcohol in the 3 mos. prior to pregnancy.
- 16% of Mothers admitted to drinking alcohol while pregnant.

**Birth Certificate data**

- 2.4% of Mothers admitted to drinking alcohol in the 3 mos. prior to pregnancy.
- 1.3% of Mothers admitted to drinking alcohol during pregnancy (1% left blank).

Flynn et al. found that 15.1% of their sample reported any alcohol use during pregnancy.


“Nearly 27% of respondents were calculated as having used alcohol during pregnancy.”

“Behavioral Risk Factor Surveillance System (BRFSS) and the National Household Survey on Drug Abuse ..show that 13-15% of pregnant women have used alcohol...”
Drug Use During Pregnancy
Data Source: Interview

86% No
14% Yes
STD/GYN/UTI During Pregnancy

Data Source: Interview

48% 52%

Yes
No
Prenatal Care

Inadequate care as defined by MD as none, late, or poor care

Source: Medical Record Data

17% Adeq
83% Inadeq
### Notable Discrepancies

#### Infertility Treatment

<table>
<thead>
<tr>
<th></th>
<th>Interview</th>
<th>Birth Certificate</th>
<th>Medical Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 2.4%</td>
<td></td>
<td>ART 1.1%</td>
<td>ART 2.6%</td>
</tr>
<tr>
<td>Fertility Drugs/Al</td>
<td>5.4%</td>
<td>Fertility Drugs/Al</td>
<td>Fertility Drugs/Al</td>
</tr>
<tr>
<td>1.5%</td>
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<td>4.1%</td>
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Note: There is overlap e.g. some mothers had both fertility drugs and ART
Summary of Findings

- Unintended pregnancies
- Medicaid
- Single
- Low educational level
- High levels of smoking, alcohol, drug use
- Poor nutrition
- Inadequate prenatal care
- Infections
- Stress
STRESS

The common thread amongst all participants: lack of support, intense unstable relationships (FOB in prison), lack of education, lack of resources or knowledge of resources, frightened, poor coping skills (smoking, drug use, drinking), infections or chronic health conditions, working poor.
STRESS

- Stress IS a potentially modifiable risk factor.

- Several of the programs noted in the recent March of Dimes Webcast on Preterm Birth mentioned or focused on stress.

- Stress management curriculum effective heart disease patients, diabetes patients.
STRESS

- Significant older body of evidence that supports stress as strongly related to PTB, LBW

STRESS

- Studies of stress, cortisol, and corticotropin-releasing (CRH) hormone levels strongly relate PTB, LBW.


- “....when the independent variance of maternal sociodemographic, psychological distress, and biochemistry measures were accounted for, prenatal cortisol was the only significant predictor of fetal weight.”
Wu et al (2004) found “Infants who had **four of these five risk factors** had a maltreatment rate seven times higher than the population average.”:

- mother smoked during pregnancy
- Medicaid beneficiary
- unmarried
- low birth weight
- more than two siblings

Relationship to other issues

- The first four risk factors apply to 30% of infants in The Low Birth Weight Registry at one year of data collection.

- Information could be used *sensitively* to funnel at-risk moms and infants into programs to potential reduce maltreatment rates.
Other *Modifiable* Risk Factors

- Preconception vitamin use
- Smoking, drinking, drug use
- Reduce % of inadequate prenatal care
- Encourage ideal weight before pregnancy
- Encourage planning a pregnancy
- Poverty, health insurance coverage
Evidence Based Interventions

- Dr. David Olds

- Nurse Family Partnership (Brighter Futures)
  Miami Valley Hospital, Dayton, OH in 1996

Evidence Based Interventions

- Telephonic / case management interventions
  - Anthem’s Future Moms Program
    http://www.anthem.com
Evidence Based Interventions

- Delaware’s success
- Registry based
- Produced usable outcomes & interventions:
  - Home Visiting Program
  - FIMR (National Fetal and Infant Mortality Review)
  - Pre-conception Education Program
  - Successful in reducing PTB, LBW, Infant Mortality
Achievements

- Our LBW Registry provides:
  - Real-time data
  - Interview data more accurately reflects risk factors
  - Consent rate of 92%
  - Builds community specific evidence for targeted interventions
Recommendations

- Replicate Delaware’s successful preconception education campaign
- Stress Management Curriculum
- Expand Nurse Home Visitation Program
- Join FIMR initiative
- Increase availability of maternal substance abuse treatment options
Questions?

- Thank You!

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