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Improving Preconception Health and Health Care: From Recommendations to Action

Magda Peck, ScD
CityMatCH Founder and Senior Advisor

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Preconception Issues for Well Women

- Family planning
- Genetic risks: familial, ethnic, racial
- Nutrition and weight
- Tobacco, alcohol, OTC medications, illicit drugs
- Occupational and environmental hazards
- Domestic violence
- Infections and immunization
- Screening for unapparent medical disease
Prevalence of Risk Factors

<table>
<thead>
<tr>
<th>Prevalence</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3%</td>
<td>Hypertension</td>
</tr>
<tr>
<td>3%</td>
<td>Cardiac Disease</td>
</tr>
<tr>
<td>&gt;80%</td>
<td>Dental caries or oral disease (women 20-39)</td>
</tr>
<tr>
<td>6%</td>
<td>Asthma</td>
</tr>
<tr>
<td>0.2%</td>
<td>HIV/AIDS</td>
</tr>
<tr>
<td>7.1%</td>
<td>Rubella seronegative</td>
</tr>
<tr>
<td>15.9%</td>
<td>Recieved inadequate prenatal Care</td>
</tr>
<tr>
<td>3%</td>
<td>Congenital Heart Disease</td>
</tr>
<tr>
<td>2%</td>
<td>Hypertension</td>
</tr>
<tr>
<td>8%</td>
<td>Asthma</td>
</tr>
<tr>
<td>&gt;80%</td>
<td>Dental caries or oral disease (women 20-39)</td>
</tr>
<tr>
<td>5%</td>
<td>Diabetes</td>
</tr>
<tr>
<td>2.6%</td>
<td>On teratogenic drugs</td>
</tr>
<tr>
<td>50%</td>
<td>Overweight or Obese</td>
</tr>
<tr>
<td>69.0%</td>
<td>Not taking Folic Acid</td>
</tr>
</tbody>
</table>

Preconception Care Initiative 2005

Initial Partnership with over 35 National Organizations

Purposes of the CDC Initiative

- Develop national recommendations to improve preconception health
- Improve provider knowledge, attitudes, and behaviors
- Identify opportunities to integrate PCC into federal, state, local health programs and policies
- Develop tools and promote practice guidelines
- Evaluate existing programs for feasibility and demonstrated effectiveness
Components of Preconception Care

**Maternal assessment**
- Family planning and pregnancy spacing
- Family history
- Genetic history (maternal and paternal)
- Medical, surgical, pulmonary and neurologic history
- Current medications (prescription and OTC)
- Substance use, including alcohol, tobacco and illicit drugs
- Nutrition
- Domestic abuse and violence
- Environmental and occupational exposures
- Immunity and immunization status
- Risk factors for STDs
- Obstetric history
- Gynecologic history
- General physical exam
- Assessment of Socioeconomic, educational, and cultural context

---

**Counseling**

- Patients should be counseled regarding the benefits of the following activities:
  - Exercising
  - Reducing weight before pregnancy, if overweight
  - Increasing weight before pregnancy, if underweight
  - Avoiding food additives
  - Preventing HIV infection
  - Determining the time of conception by an accurate menstrual history
  - Abstaining from tobacco, alcohol, and illicit drug use before and during pregnancy
  - Consuming Folic Acid
  - Maintaining good control of any pre-existing medical conditions

---

**Preconception Interventions:**

**Manage conditions**
- **Diabetes:** 3-fold increase in birth defects among infants of women with type 1 and type 2 diabetes, without management
- **Hypothyroidism:** Dosage of Levothyroxine should be adjusted in early pregnancy to maintain levels needed for neurological development
- **Maternal PKU:** Low phenylalanine diet before conception and throughout pregnancy prevents mental retardation in infants born to mothers with PKU
- **Obesity:** Associated adverse outcomes include neural tube defects, preterm birth, c-section, hypertensive and thromboembolic disease.
- **STDs:** have been strongly associated with ectopic pregnancy, infertility, and chronic pelvic pain.
- **Oral Health:** Risk of prematurity and low birthweight
PCHHC: Not A New Concept

Professional organizations:
- AWHONN: Position Statement on Smoking and Childbearing
- ACNM: educational and practice
- MOD: numerous materials for health care professionals
- AAP, ACOG: increasing emphasis
- AAFP: many articles in the official journal

Health Care Community:
- 1979, first federal position paper acknowledges the need to change the nation’s approach to prevention
- 1983, AAP, ACOG, in partnership with MOD: Guidelines for Perinatal Care
- 1985, IOM Preventing Low Birthweight report
- 1989, The Expert Panel on the Content of Prenatal Care
- 1990s: Healthy People 2000
- 1993, MOD: Toward Improving the Outcome of Pregnancy: The 90s and Beyond
- 1995: ACOG technical bulletin on preconception care
- 2005: ACOG Committee Opinion
What Did We Produce First?

Through collaboration and consensus:

• Assessed current scientific knowledge
• Identified best and promising practices
• Identified issues needing further attention
• Refined definition
• Developed vision and goals
• Developed recommendations and action steps
• Produced documents to share across professional fields.

A Vision for Improving Preconception Health and Pregnancy Outcomes

❖ All women and men of childbearing age have high reproductive awareness (i.e., understand risk and protective factors related to childbearing).
❖ All women have a reproductive life plan (e.g., whether or when to have children, how to maintain reproductive health).
❖ All pregnancies are intended and planned.

A Vision for Improving Preconception Health and Pregnancy Outcomes

❖ All women of childbearing age have health care coverage.
❖ All women of childbearing age are screened prior to pregnancy for risks related to outcomes.
❖ Women with a prior adverse pregnancy outcome have access to intensive interconception care to reduce their risks.
**Combined Definition of PCC**

A set of interventions that aim to **identify and modify biomedical, behavioral, and social risks** to a woman’s health or pregnancy outcome through **prevention and management**, emphasizing those factors which must be acted on before conception or early in pregnancy to have maximal impact.

*CDC’s Select Panel on Preconception Care, June 2005*

---

**Goals for Improving Preconception Health (2005)**

- **Goal 1.** Improve the knowledge and attitudes and behaviors of men and women related to preconception health
- **Goal 2.** Assure that all women of childbearing age in the United States receive preconception care services (i.e., evidence-based risk screening, health promotion, and interventions) that will enable them to enter pregnancy in optimal health

---

**Goals for Improving Preconception Health (2005)**

- **Goal 3.** Reduce risks indicated by a previous adverse pregnancy outcome through interventions during the interconception period, which can prevent or minimize health problems for a mother and her future children, and
- **Goal 4.** Reduce the disparities in adverse pregnancy outcomes
SELECT PANEL RECOMMENDATIONS (2006)

1. Individual responsibility across the lifespan
2. Consumer awareness
3. Preventive visits
4. Interventions for identified risks
5. Interconception care

THE RECOMMENDATIONS (2006)

6. Prepregnancy checkup
7. Health insurance coverage for women with low incomes
8. Public health programs and strategies
9. Research
10. Monitor improvements

Diffusion of Innovation Theory

- Theorists and Innovators
- Evidence
- Guidelines for best practice
- Early adopters
- Opinion leaders
- Later adopters
- Change in dominant practice

National Initiative Update 2007

- 5 Work Groups in Action: Clinical, Public Health, Consumers, Policy/Finance
- Select Panel Meeting # 2, May 2007
- Second National Summit October 29-31, Oakland CA: translation to action
- Clinical Guidelines: Web-based, final draft advancing
- Ongoing support for targeted practice collaboratives: urban and rural

Public Health Group’s Focus

- Emphasis on Selected CDC Recommendations
  - 8 – Public Health Programs and Strategies
  - 10 – Monitoring Improvements (data and surveillance)
- Coordination with Other Work Groups
  - 5 – Interconception Care (assuring access, quality)
  - 3 – Preventive Visits (assuring access, quality)
  - 9 – Research (contribute to public health agenda)
- Incremental, Pragmatic Strategies to Get Results

June 2006: 3 PH Priority Areas

1. Data - Identify data systems and associated indicators related to preconception health and health care.

2. Integration - Encourage and promote integrated preconception and interconception health practices and policies in public health at federal, state and local levels.

3. Workforce - Advance PCHHC in practice through public health workforce education and training.
Initial Integration Activity Plan

- Pilot urban and rural communities to foster local integration of preconception health into public health practices and systems
- Chronic Disease Directors, AMCHP, CityMatCH, and CDC to better collaborate to link MCH and chronic disease programs at state/local levels
- PCH-HC is integrated with Title X, WIC, HIV, Immunization (HPV) and other key federal programs

Major Integration Activities

- CityMatCH launches Urban Preconception Health Practice Collaborative with 3 cities
- NACCHO launches translation project with 3 rural localities
- AMCHP and CityMatCH launch Women’s Health Partnership Healthy Weight in Women of Reproductive Age Action Learning Collaborative with 8 urban-state teams
- “Healthy Start” Interconception Project reviewed impact and best practices in selected sites

What’s Next....

- Sustain, expand practice collaboratives to accelerate uptake, yield best practices and lessons learned, finalize useful products
- Sustain and leverage federal, state, local support to encourage greater integration of preconception health practices
The Los Angeles County Preconception Health Collaborative Project

Giannina Donatoni, PhD, MT(ASCP)
Maternal, Child, and Adolescent Health Programs
Los Angeles County

Selected Perinatal Health Statistics, 2005 Compared with HP 2010 Goals

<table>
<thead>
<tr>
<th></th>
<th>LAC</th>
<th>US</th>
<th>HP2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live Births</td>
<td>150,377</td>
<td>4,140,419</td>
<td>-</td>
</tr>
<tr>
<td>Infant Mortality Rate²</td>
<td>5.0</td>
<td>6.9</td>
<td>4.5</td>
</tr>
<tr>
<td>Low Birth Weight¹</td>
<td>7.3%</td>
<td>8.2%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Premature Birth¹</td>
<td>116%</td>
<td>12.7%</td>
<td>7.6%</td>
</tr>
<tr>
<td>5th Trimester Prenatal Care</td>
<td>90.5%</td>
<td>-</td>
<td>80.0%</td>
</tr>
<tr>
<td>Teen Birth Rate²</td>
<td>38.8</td>
<td>48.4</td>
<td>-</td>
</tr>
</tbody>
</table>

¹Source: State of California, Department of Health Services, Birth Records, NCHS Preliminary Data for 2005
²Estimated rate less than 35 weeks of age for 1,000 live births.
²Less than 5 pounds, 15 ounces.
²Less than 37 weeks' gestation.
²Per 1,000 adolescent females aged 15-19 years.

Los Angeles, California
Selected Health Conditions and Behaviors
Women 18 – 44 Years, 2005

<table>
<thead>
<tr>
<th>Condition</th>
<th>LAC</th>
<th>CA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol consumption, (past month)</td>
<td>48.9%</td>
<td>53.6%</td>
</tr>
<tr>
<td>Depression/depressive disorder</td>
<td>13.8%</td>
<td>-</td>
</tr>
<tr>
<td>Diabetes</td>
<td>3.0%</td>
<td>2.3%</td>
</tr>
<tr>
<td>High blood pressure</td>
<td>8.8%</td>
<td>9.3%</td>
</tr>
<tr>
<td>Obesity</td>
<td>17.1%</td>
<td>17.9%</td>
</tr>
<tr>
<td>Smoking</td>
<td>12.2%</td>
<td>12.3%</td>
</tr>
</tbody>
</table>

12005 LA Health Survey
22005 California Health Interview Survey

Public Health Crisis Led to Preconception Health Promotion

- Increased infant mortality in a rural area
- Partnered with community task force to develop action plan
- 2005 Perinatal Summit

Keys to Preconception Health Promotion

- Data
- Community readiness
- Collaboration of diverse stakeholders
- Leadership
- Accountability
Data

- State vital statistics
- National Center for Health Statistics
  http://www.cdc.gov/nchs
- March of Dimes
  http://marchofdimes.com/Peristats

Los Angeles County
Preconception Health Community Profile

Los Angeles Collaborative
Core Members

- LA County Public Health Department
- PHFE – WIC Program
- California Family Health Council
- March of Dimes
- LA Best Babies Network
Collaborative Activities
- Baseline preconception health (PCH) data
- Speakers’ Bureau presentation on PCH
- Curriculum to integrate pre- & interconception health into family planning clinics
- Interconception Care - Case Management of High Risk Women in PHFE – WIC
- Community engagement

Short-Range Project Goals
- Preconception brief
- Speakers’ Bureau presentation
- Reproductive Life Plan Toolkit
- Integrate pre- interconception care into Title X family planning programs
- PHFE-WIC case management to high-risk mothers

Long-Range Project Goals
- Policy/advocacy
- Increase postpartum visits
- Improve content of risk reduction/health promotion at postpartum visit
- Decrease: Unintended pregnancies
  »Prepregnancy obesity
  »Infant mortality
  »Low birthweight births
Questions?

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Los Angeles County
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213-639-6420

The Central Pennsylvania Women’s Health Study (CePAWHS)

Carol S. Weisman, PhD, Principal Investigator
Marianne M. Hillemeier, PhD, Co-Principal Investigator
John J. Botti, MD, Co-Principal Investigator
Sara A. Baker, MSW, Project Director
Funding and organization

- Pennsylvania Department of Health ($4.7 million grant, 2004 – 2008)
- Collaborating organizations:
  Pennsylvania State University
  Franklin & Marshall College
  Lock Haven University of Pennsylvania
  Family Health Council of Central Pennsylvania
- Steering Committee of community representatives

Research Objectives

- To improve understanding of pre- and interconceptional biopsychosocial factors that contribute to unintended pregnancy, maternal morbidity, and adverse birth outcomes (e.g., preterm birth and LBW)
- To improve health and health-related behaviors among pre- and interconceptional women in diverse populations, with initial focus on low-income rural areas in Central Pennsylvania

Innovative Aspects of CePAWHS

- Focus on women’s health (both reproductive and general health)
- Population-based samples with longitudinal follow-up
- Communities along the rural-urban continuum
- Observational and intervention components
CePAWHS: Observational and Intervention Phases

I. Population-based surveys of reproductive-age women in Central PA
   1) establish prevalence of multiple risk factors for adverse birth outcomes
   2) identify subpopulations at greatest risk
   3) provide baseline for prospective cohort study

II. Randomized trial of multidimensional behavioral intervention, targeting risk factors identified in Phase I, for pre- and interconceptional women in low-income rural communities

28-County Study Region

Phase I:
Population-based Surveys
(Began September 2004)

Target population: women ages 18 - 45 in Central PA region

• Baseline RDD Telephone survey of 2,002 women, oversampling rural and minority populations

• Baseline Household survey of 288 Old Order Amish women
Baseline RDD Survey Response*

- 2,002 completed baseline interviews (English and Spanish)

- **Response rate** using estimated proportion of eligible among households of unknown eligibility = 52%

- **Cooperation rate** (proportion of contacted eligible households in which a woman was interviewed) = 63%

* AAPOR 2004 definitions of response rate and cooperation rate were used; RR exceeds that of BRFSS for Pennsylvania, 2004

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<table>
<thead>
<tr>
<th>Table 1: Representation of the CYSAMHE RDD sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic characteristics of RDD sample and U.S. Census, 2000, for Lancaster County, PA.</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Men (0-17)</td>
</tr>
<tr>
<td>Men (18-45)</td>
</tr>
<tr>
<td>Men (46-64)</td>
</tr>
<tr>
<td>Men (65-75)</td>
</tr>
<tr>
<td>Men (75+)</td>
</tr>
<tr>
<td>Women (0-17)</td>
</tr>
<tr>
<td>Women (18-45)</td>
</tr>
<tr>
<td>Women (46-64)</td>
</tr>
<tr>
<td>Women (65-75)</td>
</tr>
<tr>
<td>Women (75+)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education</th>
<th>RDD sample</th>
<th>U.S. Census</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than high school</td>
<td>44</td>
<td>31.3</td>
</tr>
<tr>
<td>High school graduate</td>
<td>38</td>
<td>30.1</td>
</tr>
<tr>
<td>Some college</td>
<td>57</td>
<td>31.3</td>
</tr>
<tr>
<td>College graduate</td>
<td>40</td>
<td>17.2</td>
</tr>
<tr>
<td>Professional degree</td>
<td>10</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Source: Weisman CS et al., Women's Health Issues, 2006

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Baseline Amish Survey

**Sampling frame: 2002 Church Directory of the Lancaster County Amish**

Random sample of households with woman aged 18 - 45 years

- 288 interviews completed; response rate = 63%

Followup survey in the field
Survey Content

- Health status (physical and mental health)
- Pregnancy history and intent
- Health-related behaviors
- Psychosocial stress and exposures
- Health care access and patterns of care
- Sociodemographics

Baseline Birth History (unadjusted data)

<table>
<thead>
<tr>
<th></th>
<th>RDD Sample (n = 2,002)</th>
<th>Amish Sample (n = 288)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever had live birth</td>
<td>73%</td>
<td>80%</td>
</tr>
<tr>
<td>Age at first live birth:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 20 years</td>
<td>22%</td>
<td>0%</td>
</tr>
<tr>
<td>20 – 29 years</td>
<td>64%</td>
<td>97%</td>
</tr>
<tr>
<td>≥ 30 years</td>
<td>14%</td>
<td>3%</td>
</tr>
<tr>
<td>Among those with live birth:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ever had preterm birth</td>
<td>16%</td>
<td>18%</td>
</tr>
<tr>
<td>Ever had LBW birth</td>
<td>14%</td>
<td>11%</td>
</tr>
<tr>
<td>Ever had VLBW birth</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>First singleton birth preterm</td>
<td>9%</td>
<td>8%</td>
</tr>
<tr>
<td>First singleton birth LBW</td>
<td>8%</td>
<td>4%</td>
</tr>
<tr>
<td>First singleton birth &gt; 4,000 g</td>
<td>12%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Prevalence of Selected Risk Factors
(Baseline, unadjusted data)

<table>
<thead>
<tr>
<th>Chronic Conditions</th>
<th>RDD Sample (n = 2,002)</th>
<th>Amish Sample (n = 288)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression/anxiety, dx past 5 yrs</td>
<td>28%</td>
<td>10%</td>
</tr>
<tr>
<td>Depressive symptoms scale</td>
<td>21%</td>
<td>2%</td>
</tr>
<tr>
<td>Overweight (BMI = 25-29.99)</td>
<td>27%</td>
<td>25%</td>
</tr>
<tr>
<td>Obese (BMI ≥ 30+)</td>
<td>25%</td>
<td>13%</td>
</tr>
<tr>
<td>Hypertension, dx past 5 yrs</td>
<td>11%</td>
<td>8%</td>
</tr>
<tr>
<td>High cholesterol, dx past 5 yrs</td>
<td>10%</td>
<td>4%</td>
</tr>
<tr>
<td>Type 2 diabetes, dx past 5 years</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>Gestational diabetes history</td>
<td>6%</td>
<td>3%</td>
</tr>
<tr>
<td>Infections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1+ gyn. infections, past 5 yrs</td>
<td>38%</td>
<td>36%</td>
</tr>
<tr>
<td>Periodontal disease, past 5 yrs</td>
<td>8%</td>
<td>10%</td>
</tr>
</tbody>
</table>
Selected Risk Factors (continued)

<table>
<thead>
<tr>
<th>Stress/stressors</th>
<th>RDD Sample (n = 2,002)</th>
<th>Amish (n=288)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychosocial Hassles (moderate/severe), past 12 mos.:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Money worries</td>
<td>26%</td>
<td>5%</td>
</tr>
<tr>
<td>Feeling &quot;overwhelmed&quot;</td>
<td>35%</td>
<td>7%</td>
</tr>
<tr>
<td>Illness of family member/friend</td>
<td>19%</td>
<td>6%</td>
</tr>
<tr>
<td>Work or job problems</td>
<td>16%</td>
<td>2%</td>
</tr>
<tr>
<td>Unfair treatment due to race/ethnicity</td>
<td>12%</td>
<td>4%</td>
</tr>
<tr>
<td>Unfair treatment due to gender</td>
<td>20%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Health Behaviors

| Physical activity < 4 days/wk, past month                                       | 70%                    | 83%           |
| Nutritional deficits:                                                           |                        |               |
| Fruit < once/day                                                                | 66%                    | 41%           |
| Vegetables < once/day                                                           | 36%                    | 33%           |
| Cigarette smoking, current                                                      | 25%                    | --            |
| Binge drinking, past month (among drinkers)                                    | 29%                    | --            |
| Folic acid supplementation                                                      | 42%                    | 57%           |

Prevalent Risk Factors in RDD Sample, Compared with PA and U.S.*

(Women ages 18-45, weighted data)

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>RDD Sample</th>
<th>PA</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity (BMI = 30+)</td>
<td>23%</td>
<td>18%</td>
<td>19%</td>
</tr>
<tr>
<td>Depression/anxiety dx</td>
<td>29%</td>
<td>--</td>
<td>16%</td>
</tr>
<tr>
<td>Nutritional deficits:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruit &lt; daily</td>
<td>68%</td>
<td>57%</td>
<td>60%</td>
</tr>
<tr>
<td>Vegetables &lt; daily</td>
<td>56%</td>
<td>31%</td>
<td>34%</td>
</tr>
<tr>
<td>Alcohol use (ever)</td>
<td>48%</td>
<td>--</td>
<td>32%</td>
</tr>
<tr>
<td>Binge drinking (among drinkers)</td>
<td>34%</td>
<td>29%</td>
<td>23%</td>
</tr>
<tr>
<td>Smoking</td>
<td>38%</td>
<td>32%</td>
<td>23%</td>
</tr>
<tr>
<td>Folic acid supplementation</td>
<td>38%</td>
<td>53%</td>
<td>50%</td>
</tr>
</tbody>
</table>

* Comparison data sets include BRFSS 2003, Commonwealth Fund Survey of Women’s Health 1998, National Health Interview Survey 2003:

Risks vary by...

- Household income and poverty level
  (RDD sample: 10% poor, 22% near poor)
  (Amish sample: 96% poor)
- Educational level
- Race/ethnicity
- Rural-urban continuum*
- Reproductive life stage and age group**

* Defined by zip code-based RUCA codes
** Weisman CS et al., Women’s Health Issues, 2006
Prospective Cohort Study

Baseline RDD Sample, n = 2,002; 90% consent to follow-up

Follow-up Sample, n = 1,420
(Respons rate = 79%)

224 pregnancies during follow-up period

43 still pregnant
19 pregnancy losses and terminations
132 birth events: 137 live births

Follow-up interviews in field
Birth records being accessed

Relationships to Examine with Longitudinal Data

BASELINE
Pregnancy History and Intentions
Preconception Health Status and Health Risks
Health Care Access and Use Patterns
Sociodemographics

Incident Pregnanacies

FOLLOW-UP
Health-related Behavior Change
Pregnancy Complications
Pregnancy Outcomes

Phase I Timeline

- Phase I follow-up survey completed April 2007; follow-up contact with 43 pregnant women occurring now
- Birth records now being accessed
- 3rd follow-up survey beginning in October 2008 ???
  Estimated to yield 154 pregnancies and > 91 births
**Phase I Publications to date**

- Weisman CS et al., The CePAWHS, Health Study: Implications for the Use of Preconception Care.
- Miller K et al., The Central Pennsylvania Women’s Health Study (CePAWHS), Issues in Health Services Research, 16(4), 2006.
- Miller K et al., Health Status, Health Conditions, and Health Behaviors among Amish Women: Results from the Central Pennsylvania Women’s Health Study (CePAWHS), Women’s Health Issues, 17(3), 2007.

**Phase II: Intervention Trial**

*Target population: pre- and interconceptional women ages 18-35* in low-income rural communities

- **Multidimensional behavioral intervention** developed for groups of 10-12 women in community settings
- **Curriculum targets prevalent modifiable risk factors** identified in Phase I survey

* This age group accounts for > 85% of live births in Central PA

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**Intervention**

- Health information & behavior change skills
- Health behavior change
- Health status improvements
- **Long-term Outcomes**
  - Unintended pregnancies
  - Preterm birth
  - Low Birthweight (LBW)
- Intention to change behavior and self-efficacy

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21
### Intervention Framework and Outcomes

<table>
<thead>
<tr>
<th>Risk Dimension</th>
<th>Behavior Change Goals</th>
<th>Learning Objective (Example)</th>
<th>Behavioral Objective (Example)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress-Management</td>
<td>Decrease psychosocial stress</td>
<td>Understand causes of stress and behavioral responses</td>
<td>Practice relaxation techniques</td>
</tr>
<tr>
<td>Nutrition</td>
<td>Increase healthy food choices</td>
<td>Understand nutrition and identify barriers to healthy eating</td>
<td>Eat healthier foods</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>Achieve exercise recommendations</td>
<td>Understand guidelines and practice exercises</td>
<td>Exercise regularly per guidelines</td>
</tr>
<tr>
<td>Tobacco/Alcohol</td>
<td>Decrease tobacco &amp; alcohol use and exposure</td>
<td>Understand impact on pregnancy, triggers, and alternatives</td>
<td>Decrease behaviors and exposures</td>
</tr>
<tr>
<td>Gynecologic Infections</td>
<td>Decrease gynecologic infx</td>
<td>Understand causes and infection</td>
<td>Decrease risk behaviors and seek care</td>
</tr>
<tr>
<td>Pregnancy Planning</td>
<td>Strategize for pregnancy</td>
<td>Understand maternal health and</td>
<td>Discuss plan with provider; use folic acid</td>
</tr>
</tbody>
</table>

### Intervention Process

- Six 2-hour sessions over 12-weeks
- Groups facilitated by 2 trained personnel
- Mix of topics at each session
- Active learning (discussions, physical activity sessions, cooking, handouts)
- Goal-setting (“baby steps”)
- Social support (buddy system; facilitator phone calls)
- Incentives (gift cards, supplies)

### Study Design

1. Recruitment
2. Baseline Risk Assessment
3. Random Assignment
4. Intervention (12 weeks) → Control
5. Follow-up Risk Assessment
6. Follow-up telephone surveys at 6 and 12 months; birth records appended
Risk Assessment Content
(Behavioral and Biological Markers)

- Questionnaire (health status, health behaviors, psychosocial stress, access to health care, behavioral intent, self-efficacy, etc.)
- Anthropometric measurements (height, weight, BMI, waist circumference)
- Blood pressure
- Non-fasting blood glucose and lipid panel using fingerstick blood and CardioCheck analyzer

Intervention Communities

- Age 18-35 years at enrollment
- Resides in Central PA target area
- Not pregnant at enrollment
- Capable of becoming pregnant (no hysterectomy or tubal ligation)
- Exclusions: non-English speaking
Recruitment Methods

Active
• One-on-one recruitment at social service agencies (e.g., WIC programs, childcare), educational and retail settings

Passive
• Presentations in social service agencies, educational settings
• Posters and tear-off flyers in community businesses and organizations (e.g., churches, community centers)
• Kiosks at local health fairs, farm shows
• Inserts in utility bills
• Postcards to parents of subsidized child care

Lebanon County Sites: Participant Recruitment Sources

<table>
<thead>
<tr>
<th>Source</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word of Mouth, Other</td>
<td>12%</td>
</tr>
<tr>
<td>Social Service Agencies</td>
<td>25%</td>
</tr>
<tr>
<td>Subsidized Child Care</td>
<td>12%</td>
</tr>
<tr>
<td>Retail Establishments</td>
<td>19%</td>
</tr>
<tr>
<td>Educational Institutions</td>
<td>12%</td>
</tr>
<tr>
<td>Utility bill</td>
<td>23%</td>
</tr>
<tr>
<td>Mailing</td>
<td>7%</td>
</tr>
<tr>
<td>Inserts in utility bills</td>
<td>9%</td>
</tr>
<tr>
<td>Other</td>
<td>0%</td>
</tr>
</tbody>
</table>

Phase II Enrollees, Compared with Phase I Pre- and Interconceptional Women Ages 18-35 in Target Counties

<table>
<thead>
<tr>
<th>Category</th>
<th>Phase I (n = 257)</th>
<th>Phase II (n = 692)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor or near poor</td>
<td>34%</td>
<td>63%</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Rural</td>
<td>33%</td>
<td>51%</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Education &lt; college</td>
<td>35%</td>
<td>41%</td>
<td>ns</td>
</tr>
<tr>
<td>Non-white</td>
<td>3%</td>
<td>9%</td>
<td>.003</td>
</tr>
<tr>
<td>Unmarried</td>
<td>28%</td>
<td>49%</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>No usual source of care</td>
<td>7%</td>
<td>24%</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>No health insurance</td>
<td>20%</td>
<td>29%</td>
<td>.004</td>
</tr>
<tr>
<td>Preconceptional c</td>
<td>37%</td>
<td>43%</td>
<td>ns</td>
</tr>
</tbody>
</table>

a Based on federal poverty level
b Based on zipcode-based RUCA codes
c Never pregnant
**Phase II Enrollees**

<table>
<thead>
<tr>
<th>Total Phase II Enrollees</th>
<th>692</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention</strong></td>
<td>473 (68%)</td>
</tr>
<tr>
<td>221 (47%)</td>
<td>Did not complete FURA</td>
</tr>
<tr>
<td>252 (37%)</td>
<td>Completed FURA</td>
</tr>
<tr>
<td>110 (50%)</td>
<td>Did not Complete FURA</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td>219 (32%)</td>
</tr>
<tr>
<td>Telephone interviews</td>
<td>(ongoing)</td>
</tr>
<tr>
<td>Base n for pre-post change in biomarkers = 362</td>
<td></td>
</tr>
<tr>
<td>Mean number of sessions attended = 3.9</td>
<td></td>
</tr>
<tr>
<td>0 (14%)</td>
<td>1 – 2 (11%)</td>
</tr>
<tr>
<td>3 – 4 (21%)</td>
<td>5 – 6 (54%)</td>
</tr>
</tbody>
</table>

**Phase II Time Frame**

- Intervention groups completed in February 2007
- Followup telephone interviews completed March 2008
- Birth records appended by May 2008

**Preliminary Results: Significant Pre-Post Intervention Effects**

<table>
<thead>
<tr>
<th></th>
<th>Intervention Effect</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-Efficacy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For Eating Healthy Food</td>
<td>GLM coefficient=1.109</td>
<td>0.018</td>
</tr>
<tr>
<td>For Recommended Physical Activity</td>
<td>GLM coefficient=1.457</td>
<td>0.074</td>
</tr>
<tr>
<td>Perceived Internal Control of Birth Outcomes</td>
<td>OR=1.916</td>
<td>0.031</td>
</tr>
<tr>
<td>Behavioral Intent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To Eat Healthier Foods</td>
<td>OR=1.757</td>
<td>0.008</td>
</tr>
<tr>
<td>To Be More Physically Active</td>
<td>OR=2.185</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Behavior Change</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read Food Labels for Nutritional Values</td>
<td>OR=2.264</td>
<td>0.001</td>
</tr>
<tr>
<td>Meets Recommended Exercise Guidelines</td>
<td>OR=1.867</td>
<td>0.019</td>
</tr>
<tr>
<td>Daily Use of a Multivitamin With Folic Acid</td>
<td>OR=6.595</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**NOTE:** GLM and logistic regression models also included pre-intervention measurement, age, and educational attainment.
### Preliminary Results

<table>
<thead>
<tr>
<th>Biomarkers</th>
<th>Intervention Effect</th>
<th>GLM coefficient</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>-0.355</td>
<td>0.689</td>
<td></td>
</tr>
<tr>
<td>Systolic Blood Pressure</td>
<td>-0.655</td>
<td>0.574</td>
<td></td>
</tr>
<tr>
<td>Diastolic Blood Pressure</td>
<td>0.213</td>
<td>0.845</td>
<td></td>
</tr>
<tr>
<td>Blood Glucose</td>
<td>0.351</td>
<td>0.915</td>
<td></td>
</tr>
<tr>
<td>HDL Cholesterol</td>
<td>-2.548</td>
<td>0.225</td>
<td></td>
</tr>
<tr>
<td>Total Cholesterol</td>
<td>-1.548</td>
<td>0.756</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: GLM models also included pre-intervention measurement.

### Preliminary Results: Significant Intervention Dose Effects

<table>
<thead>
<tr>
<th></th>
<th>Effect per Additional Session</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Self Control of Birth Outcomes</td>
<td>OR=1.309</td>
<td>0.002</td>
</tr>
<tr>
<td>Behavior Change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read Food Labels for Nutritional Values</td>
<td>OR=1.161</td>
<td>0.015</td>
</tr>
<tr>
<td>Done Relaxation Exercise or Meditation to Relax</td>
<td>OR=1.236</td>
<td>0.009</td>
</tr>
<tr>
<td>Daily Use of a Multivitamin With Folic Acid</td>
<td>OR=1.448</td>
<td>0.000</td>
</tr>
</tbody>
</table>

NOTE: GLM and logistic regression models also included pre-intervention measurement, age, and educational attainment.

### Phase II Manuscripts In Press


Velott D et al., “Participant Recruitment to a Randomized Trial of a Community-based Intervention for Pre- and Interconceptional Women: Findings from the Central Pennsylvania Women’s Health Study.” Women’s Health Issues (in press).
Future Research

- **Continue the Phase I Cohort Study:** 3rd wave of data collection
- **Modify the Strong Healthy Women intervention** based on Phase II data
- **Test the modified intervention** in a randomized trial of alternative modes of delivery in a more diverse target population
- **Develop a form of the intervention** that would be feasible in **clinical settings** (e.g., family planning centers, primary care practices)

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**NACCHO**

**Question & Answer Session**

To ask a live question over the phone please select *1* on your touch-tone phone.

or

Type your question into the “questions” box located on the lower left side of your screen.

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Thank you for your participation!

Please take a moment to submit the online evaluation form for this session. Click on the “Evaluation” link to the left of the slide.