ANALYZING PROBLEMS AND DEVELOPING INTERVENTIONS

November 15, 2004
Sacramento, CA

Family Health Outcomes Project Staff

Geraldine Oliva, MD, MPH  
Director

Judith Belfiori, MA, MPH  
Director of Planning and Evaluation

Brianna Gass, MPH  
MCAH Project Coordinator

Nadia Thind, MPH  
Research Associate

Jennifer Gee  
Training Coordinator

Mary Tran  
Administrative Assistant
By the end of the workshop, participants should be able to:

- Articulate state-of-the-art knowledge about two MCAH problems and effective community-level interventions
- Identify the significant causal pathways in a problem analysis
- Use information gained from experts’ “proven intervention” literature and local resources to assess potential interventions and identify the most effective strategies for their community(ies)

8:00 am  Coffee and Registration
8:30 am  Welcome and Introductions
         Brianna Gass, MPH
8:45 am  Session 1. Breastfeeding
         Jane Heinig, PhD, IBCLC
10:15 am Break
10:30 am Session 2. Perinatal Substance Use
         Deborah Werner
12:00 pm Lunch
1:00 pm  Session 3. Problem Analysis 101
         Brianna Gass, MPH
         Nadia Thind, MPH
1:45 pm  Exercise: Intervention Strategy Development
3:00 pm  Break
3:15 pm  Exercise: Presentations
3:45 pm  Wrap-Up and Conclusions
Jane Heinig, PhD, IBCLC is an International Board Certified Lactation Consultant and an Academic Administrator in the Department of Nutrition at UC Davis where she conducts research in the areas of clinical lactation, program evaluation and infant nutrition. Dr. Heinig also serves as the Editor-in-Chief of the *Journal of Human Lactation* and is the Executive Director of the UC Davis Human Lactation Center. She has published widely in the scientific literature and is a member of the International Lactation Consultant Association, the California Department of Health Services Breastfeeding Advisory Committee, the American Society for Nutrition Sciences, and the International Society for Research in Human Milk and Lactation.
Lactation Support Programs: What Have We Learned?

M. Jane Heinig, PhD, IBCLC
UC Davis Human Lactation Center

Objectives

- Discuss why breastfeeding interventions are needed
- Review the evidence related to the effectiveness of interventions to increase breastfeeding initiation and duration
- Describe some of the challenges associated with evaluation of lactation programs
- Provide some examples of programs

Babies are Born to Be Breastfed

Breastfeeding...
- Promotes maternal and child health
- Reduces risk for chronic disease and cancer
- Potentially has long term effects on maternal and infant weight status
- Reduces health care costs
- Promotes bonding
- Reduces burden on the environment

California In-Hospital Breastfeeding: 1996-2001

Any and Exclusive Breastfeeding by Age (US National Immunization Data)

Li et al. Pediatrics, 2003; 111: 1198-1201

FHOP Sacramento Workshop November 15, 2004
The Need for Postnatal Support

- Breastfeeding requires support
  - 81% of moms in Davis study had significant questions regarding BF on day 3
  - 27% had difficulties that required intervention/additional follow-up
    - Many of these mothers required several visits/contacts to resolve issues
- BF support is time intensive
  - More about this later....

Models of BF Support

- Hospital-based
- Clinic-based (WIC, HMO)
- Peer counselor/Mother-to-mother support
- In-home visitation programs
- Providers
  - MD only, MD/RN, MD/RD, MD/LC, PHN/LC, RD/LC, LC/CLE, LC/PC, RD only, PC only
  - Ratios?

Evaluation of Interventions on Breastfeeding Initiation

- Successful*
  - Small, informal group trainings
  - Changes in hospital practices
  - Peer counselor programs among motivated women
  - Media campaigns
  - Multifaceted interventions
- Not successful
  - Breastfeeding literature alone
  - HCP trainings
    - Improved knowledge not attitudinal or practice
  - Social support from HCP
    - Home visits by midwives, one study

*better than controls, few reached public health goals

Georgia’s BF Promotion Program for Low-income Women*

<table>
<thead>
<tr>
<th>Program Type</th>
<th>1992 (%)</th>
<th>1996 (%)</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>29.8</td>
<td>33.4</td>
<td>12.1</td>
</tr>
<tr>
<td>Enhanced</td>
<td>33.0</td>
<td>41.0</td>
<td>24.2</td>
</tr>
<tr>
<td>Pump loan</td>
<td>55.6</td>
<td>49.4</td>
<td>-11.2</td>
</tr>
<tr>
<td>Peer counseling</td>
<td>39.5</td>
<td>50.4</td>
<td>27.8</td>
</tr>
<tr>
<td>Hospital-based</td>
<td>29.8</td>
<td>52.2</td>
<td>75.2</td>
</tr>
<tr>
<td>Coalitions</td>
<td>24.0</td>
<td>30.4</td>
<td>26.7</td>
</tr>
<tr>
<td>Total</td>
<td>31.6</td>
<td>39.5</td>
<td>25.0</td>
</tr>
</tbody>
</table>

*Ahluwalia, 2000
Evaluation of Interventions on Breastfeeding Duration

- Successful*
  - Hospital LC with follow-up
  - Incentives for education
  - "Extended bf skills" education
  - Social marketing/multifaceted
  - Culturally-based intervention
  - Prenatal positioning classes
  - Hospital practices
  - Peer counselors
* Most with short follow-up

- Not successful
  - Video + peer counseling
  - Home visitation (2 studies)
  - Research-based training for nurses
  - Doulas (mixed results)
  - In-hospital patient lactation education
  - Peer counselors vs. midwives

Challenges of Evaluation of BF Support Programs

- Obtaining funding
- Defining groups for comparison (BF vs FF, duration, exclusivity)
- Selection of control groups
- "Contamination" and compliance

Examples of Program Evaluations

Cohort Study – WIC Program

- Montgomery (J Am Diet Assoc, 1997)
  - Cohorts of exclusively BF (n=406) or FF (n=470) infants were followed for 6 mo
  - Data collected: costs of WIC vouchers, administrative expenses, manufacturers’ rebates, Medicaid expenditures
  - Values adjusted for demographic and prenatal care variables

Challenges of Evaluation of BF Support Programs

- Defining measurable outcomes
  - Maternal or infant (or both) outcomes
  - Over what period of time?
  - Selection and accessibility of data sources
- Assignment of monetary values
  - Cost data (specific to program)
    - Salaries, supplies, overhead, training, etc.
  - Monetary value of benefits
    - Data collected or estimated?
- Other factors to consider
  - Service utilization and "willingness to pay"
  - Confounders
  - Translation of program elements to other populations

FHOP Sacramento Workshop November 15, 2004 6
### Cohort Study – WIC Program

- Montgomery *J Am Diet Assoc*, 1997
  - Total cost savings $478/ BF infant
  - Costs savings $161/ BF infant (after consideration of formula rebate)
  - $112/BF infant saved by Medicaid alone; prescription costs were half those of the formula fed infants
- Limitations: observational study, self-selected sample, limited outcomes

### Randomized Trial – Professional Support

- Pugh et al. *(Birth, 2002)*
  - Randomized clinical trial of breastfeeding support for low-income mothers *(n=41)*
    - Compared usual care with intervention (hospital and home visits and telephone support) for 6 mo after delivery
    - Community health nurse/peer counselor team
  - Outcomes
    - BF duration
    - Medical visit / hospitalization costs
    - Medication costs

### Randomized Intervention (cont.)

- Pugh et al. *(Birth, 2002)* results:
  - Significantly more mothers in the intervention group versus the usual care group were BF exclusively at 3 (45 vs 25%) and 6 mo (30 vs 15%)
  - Mothers in the intervention group used significantly lower amounts of formula

### Randomized Intervention (cont.)

- Cost of intervention = $301 /mother (including only contact time - salary and mileage)
  - Cost with training and supervision = $795/ mother
- Direct costs (including formula costs) were $54 higher for intervention group
- Intervention group infants had fewer health care visits and prescriptions than controls
  - 3.6 vs 5 visits, 0.25 vs 0.85 prescriptions
- Limitations: small sample size, lack of $ value for health care costs, limited outcomes

### Best Support for Medical Practices

- Baby Friendly Hospitals
  - Longitudinal and RCT studies
- Changes in specific hospital practices
  - Most significant effects seen in worst environments
- Training does not always change behaviors
- Maternal education in primary-care settings was effective
- One-time bed-side education not effective

### Randomized Trial – Peer Counseling among Latinas

- Participants randomized to receive standard care *(n=75)* or peer counselor support *(n=90)*
  - 1 prenatal visit, daily visits in hospital, 3 pp home visits, telephone contact as needed
  - Breastfeeding initiation was higher in intervention group
  - Trend to improve BF duration (1.3 mo) but NS
- Characteristics of peers and programs important
Cost Analysis and Time Utilization

Survey: WIC Lactation Program

- Study of WIC-based lactation support program in Sacramento, California
  - Agency caseload = 21,200 (5000 births/yr)
  - 6 IBCLCs at 3 diff sites
  - 1 CLE trained assistant
- Complete sample of contacts between lactation support staff and BF mothers (2 mo, 5 days/wk)
  - Used 1-page form to record type of contact, problem, time-start, time-stop, equipment used, etc.
  - No identifying data collected (IRB reviewed: exempt)

BF Support Contact by Type

<table>
<thead>
<tr>
<th>Type of Visit</th>
<th>No. of Visits (%)</th>
<th>Mean time (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>316 (100%)</td>
<td>37.2 ± 25.1</td>
</tr>
<tr>
<td>In-Clinic</td>
<td>213 (67.8%)</td>
<td>41.2 ± 24.8</td>
</tr>
<tr>
<td>In-Home (Travel time)</td>
<td>34 (10.8%)</td>
<td>56.5 ± 18.4 (18.5 ± 14.8)</td>
</tr>
<tr>
<td>Phone contact</td>
<td>67 (21.3%)</td>
<td>15.6 ± 10.1</td>
</tr>
</tbody>
</table>

BF Support Contact by Problem

<table>
<thead>
<tr>
<th>Problem</th>
<th>No. (%)</th>
<th>Mean time (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shallow latch/poor positioning</td>
<td>135 (46)</td>
<td>52 ± 25</td>
</tr>
<tr>
<td>Perceived insufficient milk</td>
<td>53 (17)</td>
<td>41 ± 26</td>
</tr>
<tr>
<td>Nipple trauma</td>
<td>50 (16)</td>
<td>37 ± 28</td>
</tr>
<tr>
<td>Infant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General breast refusal</td>
<td>33 (10)</td>
<td>50 ± 24</td>
</tr>
<tr>
<td>Infant medical condition</td>
<td>30 (10)</td>
<td>28 ± 24</td>
</tr>
<tr>
<td>Poor / weak suck</td>
<td>24 (8)</td>
<td>56 ± 31</td>
</tr>
</tbody>
</table>

Cost of Sacramento Program

- Approximately $500,000 per year includes:
  - Salaries
    - Cost of LC salary for average clinic visit = $26.11
    - Supervisor (RD, IBCLC)
    - Assistant (CLE trained)
  - Supplies
  - Pumps (issued in 41% of visits), other equipment also used
- Program capacity about 6750 contacts per year ($75 per contact) - capacity would be greater if other duties were eliminated

Benefits of Collaborative Efforts

- Funding lacking for large multi-center evaluation projects
- Funds for smaller projects and programs more likely to be obtained
- Coordinated evaluation may provide answers we need
- Efforts underway in CA

Steps for Collaborative Evaluation of BF Support Programs

- Develop partnerships among programs/agencies/researchers
- Group comparable models
  - E.g. peer counseling programs with and without IBCLC support
- Select comparable measurable outcomes
  - E.g. BF duration, LATCH scores
Steps for Collaborative Evaluation of BF Support Programs

- Standardize data collection
  - E.g. when, what, where, how
  - Use established tools or identical methods
- Pool data analysis
- Publish results!
- Identify “key” programmatic features for translation of successful programs
  - E.g. salary and benefits essential to successful peer counseling programs

Summary

- Exclusive breastfeeding occurs when mothers are motivated, confident, supported, receptive, educated and allowed to practice skills and find solutions
  - Isolated projects are unlikely to be successful
- Many models are currently used to support breastfeeding mothers

Summary

- Data are available indicating which types of interventions are useful in increasing breastfeeding initiation and duration
  - But few studies have included costs or directly compared interventions
  - New programs and efforts are needed for the diverse populations and circumstances in California

Summary

- Evaluations of breastfeeding programs require careful consideration of study design, selection of costs/outcomes, and potential for programmatic translation
- Collaborative efforts to compare cost-benefit data from BF promotion projects will provide evidence to identify best practices and justify ongoing funding

Planning Interventions

- Clarify your outcomes
- Consider your resources
- Design your evaluation/data collection process
- Consider a model-based approach
- Pre-test everything
- Monitor progress/pitfalls – learn from both
- Share your results

http://lactation.ucdavis.edu

BF is beneficial to infants, families, and society

In California, BF duration is of great concern (initiation over 80%)

Most mothers will have questions in the first week
  - About 30% will need additional (sometimes ongoing) support
Deborah Werner has been leading initiatives to improve community health and safety for women and their families since 1989. She is a founding partner in The Werner Hartman Group, a planning and performance consulting organization based in Los Angeles and specializing in strategic development and change initiatives. She is an accomplished training, facilitator and evaluator. In the area of peri-natal substance abuse, Ms. Werner’s experience includes design of substance abuse treatment programs, training and consultation to health care, public health, WIC, children’s service, adolescent service, educational and domestic violence agencies on substance abuse, risk assessment, intervention and treatment strategies. Ms. Werner’s past employment has included: Associate Director of Beyond Shelter, Inc. and Executive Director for the California Women’s Commission on Alcohol and Drug Dependencies. Current community service activities include serving as the Chair for the Women’s Constituent Committee of the Department of Alcohol and Drug Programs and on the Board of Directors for the Coalition for Community Health.
Perinatal Substance Use

Deborah Werner
The Werner Hartman Group
deb.werner@planandperform.com

Perinatal Substance Use

- Tobacco
- Alcohol
- Illicit Drugs
- Non-illicit Drugs

Perinatal = during pregnancy and/or breastfeeding.

Prevalence of Substance Use

Reasonable Estimates:
- Alcohol use by 10% of pregnant women.
- Illicit drug use by 3% of pregnant women.
- Tobacco use by 17% of pregnant women.

Prevalence of Substance Use

Reasonable Estimates:
- Alcohol use by 10% of pregnant women.
- Illicit drug use by 3% of pregnant women.
- Tobacco use by 17% of pregnant women.

Vega: Regional Prevalence & Number of Births, North

<table>
<thead>
<tr>
<th>Sampling Region</th>
<th>Total Prevalence</th>
<th>Total Births</th>
<th>Total Positive</th>
<th>Alcohol</th>
<th>Non-Illicit Drugs</th>
<th>Tobacco</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>16.3</td>
<td>24,147</td>
<td>2,909</td>
<td>2,087</td>
<td>1,200</td>
<td>867</td>
</tr>
<tr>
<td>California</td>
<td>12.21</td>
<td>36,960</td>
<td>5,159</td>
<td>1,216</td>
<td>1,650</td>
<td>500</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>9.76</td>
<td>31,360</td>
<td>4,502</td>
<td>1,723</td>
<td>1,837</td>
<td>583</td>
</tr>
<tr>
<td>Ventura/Sac</td>
<td>10.83</td>
<td>17,200</td>
<td>1,770</td>
<td>1,157</td>
<td>1,760</td>
<td>261</td>
</tr>
<tr>
<td>San Francisco</td>
<td>11.16</td>
<td>14,589</td>
<td>1,632</td>
<td>936</td>
<td>246</td>
<td>96</td>
</tr>
<tr>
<td>Golden Empire</td>
<td>11.14</td>
<td>12,346</td>
<td>1,594</td>
<td>1,615</td>
<td>449</td>
<td>123</td>
</tr>
<tr>
<td>Northern CA</td>
<td>13.05</td>
<td>16,135</td>
<td>1,643</td>
<td>445</td>
<td>400</td>
<td>293</td>
</tr>
</tbody>
</table>

Vega: Regional Prevalence Rates, North

<table>
<thead>
<tr>
<th>Sampling Region</th>
<th>Alcohol Prevalence Rate</th>
<th>Non-Illlicit Drugs Prevalence Rate</th>
<th>Tobacco Prevalence Rate</th>
<th>Total Prevalence Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>0.49</td>
<td>0.35</td>
<td>0.72</td>
<td>0.86</td>
</tr>
<tr>
<td>California</td>
<td>0.17</td>
<td>0.15</td>
<td>0.15</td>
<td>0.45</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>0.97</td>
<td>0.23</td>
<td>0.67</td>
<td>2.87</td>
</tr>
<tr>
<td>Ventura/Sac</td>
<td>0.49</td>
<td>0.23</td>
<td>0.67</td>
<td>1.64</td>
</tr>
<tr>
<td>San Francisco</td>
<td>0.12</td>
<td>0.08</td>
<td>0.08</td>
<td>0.28</td>
</tr>
<tr>
<td>Golden Empire</td>
<td>0.54</td>
<td>0.23</td>
<td>0.67</td>
<td>1.64</td>
</tr>
<tr>
<td>Mid Coast</td>
<td>0.55</td>
<td>0.23</td>
<td>0.67</td>
<td>1.64</td>
</tr>
<tr>
<td>Northern CA</td>
<td>0.45</td>
<td>0.23</td>
<td>0.67</td>
<td>1.64</td>
</tr>
</tbody>
</table>

Vega: Regional Prevalence for Illicit Drug Exposures, North

<table>
<thead>
<tr>
<th>Sampling Region</th>
<th>Cocaine Prevalence</th>
<th>Opiates Prevalence</th>
<th>Amphetamines Prevalence</th>
<th>Marijuana Prevalence</th>
<th>Total Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>0.58</td>
<td>0.70</td>
<td>1.22</td>
<td>2.32</td>
<td>5.73</td>
</tr>
<tr>
<td>California</td>
<td>0.48</td>
<td>0.62</td>
<td>1.47</td>
<td>2.17</td>
<td>4.73</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>0.16</td>
<td>0.24</td>
<td>0.49</td>
<td>0.61</td>
<td>0.91</td>
</tr>
<tr>
<td>Ventura/Sac</td>
<td>0.45</td>
<td>0.65</td>
<td>1.90</td>
<td>2.99</td>
<td>5.99</td>
</tr>
<tr>
<td>San Francisco</td>
<td>0.12</td>
<td>0.24</td>
<td>0.59</td>
<td>0.61</td>
<td>0.91</td>
</tr>
<tr>
<td>Golden Empire</td>
<td>0.16</td>
<td>0.24</td>
<td>0.59</td>
<td>0.61</td>
<td>0.91</td>
</tr>
<tr>
<td>Mid Coast</td>
<td>0.18</td>
<td>0.24</td>
<td>0.59</td>
<td>0.61</td>
<td>0.91</td>
</tr>
<tr>
<td>Northern CA</td>
<td>0.12</td>
<td>0.24</td>
<td>0.59</td>
<td>0.61</td>
<td>0.91</td>
</tr>
</tbody>
</table>

FHOP Sacramento Workshop
November 15, 2004
Vega: Regional Prevalence & Number of Births, South

<table>
<thead>
<tr>
<th>Region</th>
<th>Total Prevalence</th>
<th>Total Positives***</th>
<th>Alcohol Positives</th>
<th>Illicit Drug Positives</th>
<th>Non-I illicit Drug Positives</th>
<th>Tobacco Positives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Los Angeles</td>
<td>15.77</td>
<td>285.67</td>
<td>22.235</td>
<td>14.32</td>
<td>5.92</td>
<td>2.412</td>
</tr>
<tr>
<td>San Diego</td>
<td>9.44</td>
<td>43,098</td>
<td>4,392</td>
<td>2,942</td>
<td>1,093</td>
<td>288</td>
</tr>
<tr>
<td>San Bernardino</td>
<td>14.62</td>
<td>26,454</td>
<td>4,157</td>
<td>1,967</td>
<td>1,054</td>
<td>779</td>
</tr>
<tr>
<td>Orange</td>
<td>7.46</td>
<td>53,079</td>
<td>4,005</td>
<td>2,410</td>
<td>1,196</td>
<td>728</td>
</tr>
<tr>
<td>Riverside</td>
<td>11.36</td>
<td>22,013</td>
<td>2,760</td>
<td>1,921</td>
<td>960</td>
<td>331</td>
</tr>
<tr>
<td>Fresno</td>
<td>12.07</td>
<td>14,085</td>
<td>1,877</td>
<td>1,560</td>
<td>288</td>
<td>1,450</td>
</tr>
<tr>
<td>N. San</td>
<td>12.65</td>
<td>21,791</td>
<td>2,785</td>
<td>1,522</td>
<td>967</td>
<td>596</td>
</tr>
<tr>
<td>Central CA</td>
<td>9.75</td>
<td>20,036</td>
<td>1,905</td>
<td>927</td>
<td>752</td>
<td>192</td>
</tr>
<tr>
<td>Imperial</td>
<td>9.94</td>
<td>2,717</td>
<td>282</td>
<td>226</td>
<td>25</td>
<td>27</td>
</tr>
</tbody>
</table>

- **Self reported use, not included in total.
- ***Total projected positives is prevalence multiplied by total births for any drug and/or alcohol, not including tobacco.
- **Total births reported from 1992 data for these 21 regions. N = 593,487.
- *Total prevalence rate listed as % positive for any drug and/or alcohol, not including tobacco.
- 2 Kern, Kings, Madera, Mariposa, Tulare
- 1 Alpine, Amador, Calaveras, Merced, San Joaquin, Stanislaus, Tuolumne
- Inyo/Mono did not participate

---

Vega: Regional Prevalence Rates, South

<table>
<thead>
<tr>
<th>Regional Prevalence Rates, South</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>Los Angeles</td>
</tr>
<tr>
<td>San Diego</td>
</tr>
<tr>
<td>San Bernardino</td>
</tr>
<tr>
<td>Orange</td>
</tr>
<tr>
<td>Riverside</td>
</tr>
<tr>
<td>Fresno</td>
</tr>
<tr>
<td>Central CA</td>
</tr>
<tr>
<td>Imperial</td>
</tr>
</tbody>
</table>


---

Societal Factors Affecting Perinatal Substance Use

- Community norms encouraging use and sexuality.
- Availability of alcohol, tobacco and other drugs.
- Limited prevention programs for both substance use and pregnancy.
- Lack of supportive education of dangers of substance use during pregnancy.
- Limited low-cost, no-cost birth control.
- Limited outreach for birth control for addicted women.

Public Health Approach

- Individual level strategies
- Family level strategies
- Agent-related strategies
- Community level strategies

Other California Studies

- California Policy Research Center evaluation of Trends in Perinatal Drug and Alcohol Use in California, 1991-1998 reviewed hospital records across California and found:
  - 1.19% of births were identified as drug and/or alcohol exposed based on discharge diagnostic codes.
  - Rates of drug exposed births varied by Health Service Area from a high of 3.26% in Northern CA to a low of .04 in Orange County.
  - Rates of drug exposed births were higher in public hospitals (2.86%) compared with private hospitals (9.7%).
  - African Americans had a disproportionate number of the reported alcohol and drug exposed births (32%) compared with 7% of non-exposed births.
  - Latinos had 45% of non-exposed births and 24% of exposed births.

Societal Factors continued

- Stereotypes of who does and does not use substances (racism).
- Medical professionals and other community institutions which condone use.
- Punitive attitude and approach to perinatal substance use.
- Community anger, fear and judgment of women with substance abuse problems.
- Need for quality, culturally relevant, gender-responsive treatment exceeds supply.

Family Factors Encouraging Substance Use

- Intergenerational addiction
- Relationships that encourage use
- Domestic violence
- Childhood abuse (risk factor for pregnancy & drug use)
- Lack of intervention strategies or treatment options

Family Factors Encouraging Substance Use continued

- Lack of self-efficacy
- Lack of self-esteem
- Traumatized
- Fear if seek treatment will loose child
- Lack of social supports
- Mental health, domestic violence or other co-occurring problems
- Poverty – lack of options

Individual Factors Contributing to Use

- Methamphetamine and crack use
- Unprotected sex
- Grief over loss of other child
- Lack of birth control or ability to use type of birth control available
- Addiction or dependence
- Don't know pregnant (lack of self-awareness)
- Don't know substance use is bad

Individual Factors continued

- Lack of self-efficacy
- Lack of self-esteem
- Traumatized
- Fear if seek treatment will loose child
- Lack of social supports
- Mental health, domestic violence or other co-occurring problems
- Poverty – lack of options

Strategies to Reduce Perinatal Substance Use

- Watch stereotypes and biases in program design.
- Stop pregnancy in substance using women through education and birth control.
- Stop substance use in pregnant women through screening, education, intervention and treatment.
- Change community institutions to discourage substance use during pregnancy and provide for supportive interventions.

Watch Biases and Stereotypes

- Do not assume that the poor, African American pregnant woman drinks and does crack. More African American women completely abstain from alcohol/drugs than white women.
- Do not assume that a Spanish-speaking client abstains from alcohol/drugs. While prevalence rates are much higher among English speakers (6 times) too many Latinas are not educated about alcohol use during pregnancy.
- We get angry when we see a pregnant woman using drugs … anger is not constructive.
- Remember alcohol/drug addiction is a disease, not a moral short-coming.
Prevent Pregnancy in Substance Users
- Teens – same at-risk population encourage joint prevention programs
- Educate teens about substance use and sexuality
- Assertiveness training
- Provide access to low-cost, no cost effective birth control
- Reduce the effects of the sex trade
- Provide for grief counseling when a mother loses a child regardless of how.
- Collaborate with AOD programs, homeless services, domestic violence shelters and other agencies to offer family planning/birth control services for at-risk women.

Preventing Substance Use
- Use Occurs on a Continuum
- Pregnancy is a Window of Opportunity
- Universal Screening
- Supportive Education
- Motivational Interventions
- Collaboration with Treatment Providers

Why do pregnant women use?
- Some don’t know they are pregnant.
- Some don’t know that use is bad for the baby.
- For others, the problems run deeper – they may be physically, psychologically dependent, they may use substances to cope with intolerable life conditions.
- For many addicted women, substance use reduces the pain associated with guilt, fear and grief.
- Warning sign of other problems

Continuum of Substance Use
- Abstinence
- Experimental Use
- Responsible Use
- Episodical or Situational Abuse
- Chronic Abuse
- Dependency
- Abstinence

Responsible Use: Pregnancy changes everything
- Responsible Use “non-problematic use” changes during pregnancy.
- Outreach, education and prevention initiatives can eliminate experimental and “responsible” use during pregnancy.
- Approaches include: media campaigns, educational programs, alternative activities, promotion of healthy living and affective (feeling programs).

Addressing Situational/Episodic Abuse
- Situational/Episodic Abuse is time-limited problem use.
- Women are relational in alcohol/drug use, may only use under specific circumstances.
- Screening, assessment and intervention may include: education, development of support system, alcohol/drug counseling, alternative activities, promotion of healthy living.
Intervening in Substance Abuse, Dependency & Addiction

- Screening, assessment, intervention and treatment
- Referrals and collaborations
- Often multiple other problems
- Relapse prevention
- Engagement through motivational interviewing

During Pregnancy

- Want to move women to action as quickly as possible and have viable options to support them in achieving abstinence.
- Women have a rare opportunity to move towards recovery – pregnancy is a strong motivator.
- Most addicted women have low self-efficacy. They do not believe they are capable of completing the tasks and activities required for abstinence.

Providers Often Re-Enforce The 3 Rules of Alcoholic Households

3 Rules: Don’t Talk Don’t Trust Don’t Feel

- Many Providers don’t ask about substance use
- Other providers when substance use is disclosed or suspected are judgmental, angry and may refuse to give care, threaten a woman with the loss of her child or try and scare her into seeking help.
- The pregnant substance abuser is encouraged not to talk to or trust the health care provider and to shut out feelings towards the child.

Results of Provider Abuse/Neglect on Pregnant Women

- Reduction in prenatal care
- Fear, anger, shame resulting in increased use
- Further risks to mother and child
- Reduced attachment to infant
- Or continued prenatal care without addressing substance use

Appropriate Response to Perinatal Substance Use

- Watch personal biases and stereotypes.
- Conduct universal screening
- Offer supportive education
- Know about the stages of change
- Implement motivational interviewing approach
- Be prepared with referrals to treatment and support
- Keep women coming back!
- Collaborate with treatment providers

Stages of Change

- Pre-Contemplation
- Contemplation
- Preparation
- Action
- Maintenance

Source: Prochaska and DiClemente, 1984
Conduct Universal Screening
- During the initial assessment screen everyone for alcohol, tobacco and other drug use.
- Ask if members of the family use alcohol/drugs.
- Ask open ended questions to see if a woman may be having difficulty not using in specific situations.
- Be prepared to listen, non-judgmentally.
- Even if universal screening results in minimal changes in use patterns, the cost savings and life savings make it worthwhile.

Supportive Education
- Be able to offer supportive education through written materials and counseling sessions.
- Written information is helpful because a woman can share it with partners and family and solicit their support for abstinence.
- Videos and discussions which address why it is best to abstain from tobacco, alcohol and other drugs can help non-addicted women make informed choices.
- Identify level of use and be able to offer education on risks with ATOD use during pregnancy, alternatives, healthy living, boundaries etc. education.

Risk Factors Among Pregnant Substance Users
- Poverty
- Domestic violence
- Poor childhood experience: addiction, neglect, abuse
- Homelessness
- Trauma/PTSD
- No/low self efficacy
- No/low self-esteem or sense of self-worth
- Low educational attainment
- Low/no work history
- Co-occurring mental health problem
- Racism

Motivational Interviewing
- Express empathy through reflective listening.
- Develop discrepancy between client’s goals or values and their current behavior.
- Avoid argument and direct confrontation
- Adjust to client resistance rather than opposing it directly.
- Support self-efficacy and optimism.

Motivational Enhancements using the FRAMES approach
- Feedback: regarding risk is given to individual.
- Responsibility: for change is placed with individual.
- Advice: about changing is clearly given in a non-judgmental manner.
- Menu: of self-directed change options and treatment alternatives.
- Empathetic Counseling: showing warmth, respect, and understanding. (uses reflective listening).
- Self-Efficacy: optimistic empowerment is engendered to encourage change.

Effective Referrals
- Know the programs in the community
- Be familiar with types of services
  - Levels of service (outpatient, intensive outpatient, day treatment, residential)
  - Are there culturally specific services in your community?
  - Does your community have centralized assessment?
  - Are there different treatment philosophies at the primary service agencies?
  - Are there other considerations that factor into her referral needs?
- Model services for women with children
- Gender Specific Services are trauma informed, family-centered, relational, culturally competent and integrate mental health services for those who need them.
Collaborate with Treatment Providers

- In California 462 programs (at 26% of facilities) serve pregnant/postpartum women. (National Survey of Substance Abuse Treatment Services- State Profile California, 2002)
- Respect Confidentiality Considerations ... jump through the hoops together.
- Participate in cross-training.
- Learn about different treatment programs. Visit programs. Identify ways to work together.
- Invite them to plan with you ... respond when they invite you to plan with them.
- Overcome hurdles created by silo-building.

Keep Women Coming Back!

- Follow-up related to substance abuse education, counseling and referrals. Hold accountable (non-judgmentally) for commitments.
- Give positive feedback for continued pre-natal care. Emphasize that this is taking good care of her baby.
- Prenatal care will reduce pregnancy risks and promote healthy outcomes.
- Encourage women to attend prenatal care regardless of alcohol, tobacco or other drug use.
- Do you have a public health nurse home visiting program that can help?

Supporting abstinence

Necessary Ingredients for Successful Change

VISION + SKILLS + INCENTIVES + RESOURCES + ACTION PLAN = CHANGE

But ...

VISION + SKILLS + INCENTIVES + RESOURCES + ACTION PLAN = CONFUSION
VISION + INCENTIVES + RESOURCES + ACTION PLAN = ANXIETY
VISION + SKILLS + RESOURCES + ACTION PLAN = GRADUAL CHANGE
VISION + SKILLS + INCENTIVES + ACTION PLAN = FRUSTRATION
VISION + SKILLS + INCENTIVES + RESOURCES = FALSE STARTS
Pregnant Women in Substance Abuse Treatment: 2002

In Brief

- In 2002, 4 percent of 363,000 treatment admissions of women aged 15 to 44 were pregnant at the time of admission.
- Pregnant admissions were less likely to report alcohol as a primary substance of abuse (18 percent) than nonpregnant admissions (31 percent).
- Pregnant admissions were more likely to have never been married (65 percent) than nonpregnant admissions (56 percent).

Forty-four States reported the pregnancy status of substance abuse treatment admissions to the Treatment Episode Data Set (TEDS) in 2002. Out of the more than 363,000 treatment admissions of women of childbearing age (15 to 44 years old) for which pregnancy status was recorded, 15,300 (4 percent) were pregnant at the time of admission.

This number does not include women who became pregnant or became aware of their pregnancies during the course of their treatment episode. This report will examine the pregnant admissions between the ages of 15 and 44 in comparison to the 348,000 nonpregnant female admissions in the same age range in the 44 States which reported pregnancy status.

Substances of Abuse

Compared to nonpregnant admissions, pregnant women aged 15 to 44 entering treatment were more likely to report cocaine/crack (22 vs. 17 percent), amphetamine/methamphetamine (21 vs. 13 percent), or marijuana (17 vs. 13 percent) as their primary substance of abuse (Figure 1). Alcohol was the primary substance of abuse among almost one-third of women aged 15 to 44 (31 percent) who were not
pregnant at the time of admission. In contrast, only 18 percent of pregnant admissions reported alcohol as their primary substance of abuse.

In terms of recency of use, pregnant admissions were more likely than nonpregnant admissions to report not having used their primary (38 vs. 26 percent), secondary (49 vs. 37 percent), or tertiary (72 vs. 55 percent) substance of abuse in the last month (Figure 2). Further, pregnant admissions were less likely to report recent daily use of their primary (33 vs. 41 percent), secondary (20 vs. 26 percent), or tertiary (8 vs. 16 percent) substance of abuse than nonpregnant admissions.

**Socioeconomic Characteristics**

While pregnant admissions were more likely to have never been married (65 percent) than nonpregnant admissions (56 percent), 15 percent of both pregnant and nonpregnant admissions were married and almost equal proportions were separated (7 vs. 8 percent) at the time of admission. Twelve percent of pregnant admissions and 20 percent of nonpregnant admissions were divorced or widowed.

Among women aged 19 to 44 (pregnant and nonpregnant), more than three-quarters were either unemployed or not in the labor force. However, more nonpregnant admissions reported part- or full-time employment (23 percent) than pregnant admissions (13 percent).

**Age of Admission**

Pregnant women aged 15 to 44 entering treatment were, on average, younger than nonpregnant women in the same age group (mean age 27 vs. mean age 31). The majority (53 percent) of pregnant women entering treatment were between the ages of 20 and 29 years old, while the largest proportion of nonpregnant admissions was between the ages of 30 and 39 (40 percent of nonpregnant women).

**Health Insurance**

Many women aged 15 to 44 who entered treatment in 2002 had no health insurance: 38 percent of pregnant women and 54 percent of nonpregnant women were not insured (Figure 3). Pregnant women were more likely than nonpregnant women to be covered by Medicaid (47 vs. 25 percent, respectively).

**Service Setting**

Although the majority of women aged 15 to 44 entered ambulatory treatment settings (66 percent), the distribution of service settings for pregnant and nonpregnant women differed. Pregnant women were less likely than nonpregnant women to enter detoxification services (7 vs. 16 percent). However, pregnant women were more likely to enter residential/rehabilitative (22 vs. 18 percent) and ambulatory service settings (71 vs. 66 percent) than nonpregnant women.
The Drug and Alcohol Services Information System (DASIS) is an integrated data system maintained by the Office of Applied Studies, Substance Abuse and Mental Health Services Administration (SAMHSA). One component of DASIS is the Treatment Episode Data Set (TEDS). TEDS is a compilation of data on the demographic characteristics and substance abuse problems of those admitted for substance abuse treatment. The information comes primarily from facilities that receive some public funding. Information on treatment admissions is routinely collected by State administrative systems and then submitted to SAMHSA in a standard format. TEDS records represent admissions rather than individuals, as a person may be admitted to treatment more than once. State admission data are reported to TEDS by the Single State Agencies (SSAs) for substance abuse treatment. There are significant differences among State data collection systems. Sources of State variation include completeness of reporting, facilities reporting TEDS data, clients included, and treatment resources available. See the annual TEDS reports for details. Approximately 1.9 million records are included in TEDS each year.

End Notes
1 TEDS, a compilation of State administrative data, consists of a Minimum Data Set collected by nearly all States, and a Supplemental Data Set collected by some States. Pregnancy status is a Supplemental Data Set item. It was reported in 2002 for at least 75 percent of admissions of women aged 15 to 44 by the following 44 States: AK, AL, AZ, CA, CO, CT, DC, DE, GA, HI, IA, ID, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NH, NJ, NM, NV, OH, OK, OR, PA, SC, SD, TN, TX, UT, VT, WA, WI, and WV.

2 While most of the States that report data to TEDS list amphetamine and methamphetamine separately, some States do not. For the purposes of this report, these two substances have been combined.

3 The primary substance of abuse is the main substance reported at the time of admission. Secondary and tertiary substances are other substances of abuse also reported at the time of admission.

4 Analysis of the employment variable excludes women aged 15 to 18 because they are typically not in the labor force.

5 Health Insurance is a Supplemental Data Set item. It was reported in 2002 by 27 of the 44 States reporting pregnancy status: AK, AZ, CO, DC, DE, GA, HI, ID, IL, IN, KS, KY, MA, MD, MO, MS, MT, NH, NJ, NV, OK, OR, PA, SC, TX, UT, and WV.

6 Service settings are of three types: ambulatory, residential/rehabilitative, and detoxification. Ambulatory settings include intensive outpatient, non-intensive outpatient, and ambulatory detoxification. Residential/rehabilitative settings include hospital (other than detoxification), short-term (30 days or fewer), and long-term (more than 30 days). Detoxification includes 24-hour hospital inpatient and 24-hour free-standing residential.

Figure 2. Frequency/Recency of Use of Primary Substance Among Women Aged 15 to 44 Admitted to Treatment, by Pregnancy Status: 2002

Figure 3. Health Insurance Status Among Women Aged 15 to 44, by Pregnancy Status: 2002

The Drug and Alcohol Services Information System (DASIS) is an integrated data system maintained by the Office of Applied Studies, Substance Abuse and Mental Health Services Administration (SAMHSA). One component of DASIS is the Treatment Episode Data Set (TEDS). TEDS is a compilation of data on the demographic characteristics and substance abuse problems of those admitted for substance abuse treatment. The information comes primarily from facilities that receive some public funding. Information on treatment admissions is routinely collected by State administrative systems and then submitted to SAMHSA in a standard format. TEDS records represent admissions rather than individuals, as a person may be admitted to treatment more than once. State admission data are reported to TEDS by the Single State Agencies (SSAs) for substance abuse treatment. There are significant differences among State data collection systems. Sources of State variation include completeness of reporting, facilities reporting TEDS data, clients included, and treatment resources available. See the annual TEDS reports for details. Approximately 1.9 million records are included in TEDS each year.

The DASIS Report is prepared by the Office of Applied Studies, SAMHSA; Synectics for Management Decisions, Inc., Arlington, Virginia; and by RTI International in Research Triangle Park, North Carolina (RTI International is a trade name of Research Triangle Institute).

Information and data for this issue are based on data reported to TEDS through March 1, 2004.

Access the latest TEDS reports at: http://www.oas.samhsa.gov/dasis.htm
Access the latest TEDS public use files at: http://www.oas.samhsa.gov/SAMHDA.htm
Other substance abuse reports are available at: http://www.oas.samhsa.gov

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Substance Abuse and Mental Health Services Administration
Office of Applied Studies
www.samhsa.gov

FHOP Sacramento Workshop November 15, 2004 20
1986

The Department of Alcohol and Drug Programs (ADP) created the Select Committee on Perinatal Alcohol and Drug Use (first known as the Select Committee on Alcohol-Related Birth Defects) in late 1986. Its original charge was to explore the causes and impact of alcohol-related birth defects and to produce a comprehensive report with concrete recommendations that would significantly reduce this problem. The Committee convened two statewide forums that drew over 150 experts in the fields of alcohol/drug services, maternal and child health, education, and public policy. The four major recommendations resulting from these two forums were:

- establish pilot projects for comprehensive, coordinated services for pregnant and parenting women
- conduct a statewide media campaign on perinatal alcohol and drug use
- establish local coalitions for the prevention of perinatal alcohol and drug use
- provide cross training of health and social services providers

All four of these recommendations were implemented by ADP.

1988

The Health and Welfare Agency began receiving alarming statistics regarding perinatal substance abuse from several departments under its auspices. ADP reported a 243 percent increase in admission requests from women for residential substance abuse treatment. The Department of Health Services (DHS) reported that under the Medi-Cal treatment program, the average cost for an infant requiring admission into a neonatal intensive care unit was $19,000, and that those costs sometimes reached as high as $1 million per episode. The Department of Developmental Services (DDS) reported that their high-risk infant project caseload increased 65 percent from the previous fiscal year for infants affected by alcohol or other drugs. The Department of Social Services (DSS) reported that prenatal alcohol and other drug use and drug-affected infants were placing an expensive burden on the foster care system.

1989

In response to these statistics, the Health and Welfare Agency established the State Interagency Task Force (SITF) to develop a coordinated state strategy to address the substance abuse treatment needs of pregnant and parenting women. The SITF was comprised of representatives from the Departments of Alcohol and Drug Programs, Social Services, Health Services, and Developmental Services.
Budget Act language provided funding for ADP in collaboration with the SITF to create the three-year Options for Recovery (OFR) Pilot Program in the counties of San Diego, Los Angeles (two sites), Sacramento and Alameda, areas of high neonatal toxicology. Each site received $1.5 million to design and implement comprehensive substance abuse treatment programs for pregnant and parenting women and their children. The total budget act authorization for all sites each year was approximately $8 million. In the first year of the project, DSS provided funding for specialized training for foster parents, and DHS funded the case management component. In subsequent years, ADP funded these services.

ADP established technical assistance contracts to provide training to the OFR Pilot Program, cross training of social service agencies and alcohol and drug providers, and to develop a statewide media campaign to raise awareness regarding perinatal substance abuse. The cross trainings and media campaign were Select Committee recommendations.

Also in response to the Select Committee recommendations, ADP granted counties $10,000 by request for proposal to develop local coalitions for the prevention of perinatal alcohol and drug use. There were ten counties initially, and by 1991 there were 29 counties in all. The grants were intended to assist community groups to launch prevention education and service coordination efforts.

1990

AB 3010 (Speier) established in statute the Office of Perinatal Substance Abuse (OPSA) and the SITF. The main task of the SITF was to continually develop and evaluate the pilot projects. The statute also designated ADP as the lead agency for the SITF.

The OFR Pilot Program was expanded to include Contra Costa County and the Regional Project (composed of Shasta, Glenn, Tehama, Siskiyou, and Butte Counties.) As with the original pilots, these sites received $1.5 million each. The total allocation for both sites each year was approximately $3 million.

OPSA staff provided extensive technical assistance to the Pilot Programs and conducted numerous site visits.

1991

Governor Pete Wilson's Perinatal Treatment Expansion Initiative increased perinatal substance abuse services for women and their children statewide. This $25 million initiative provided $15 million in state general funds (SGF) for program expansion (with an $8 million Federal/Drug Medi-Cal match), and $2 million in SGF for the landmark Perinatal Substance Exposure Study (PSES).

OPSA staff wrote the first set of state guidelines for perinatal programs.

1992

OPSA staff traveled statewide conducting site reviews and providing technical assistance to newly established programs. Program guidelines were revised. Reports to the Governor and the Legislature regarding the pilot projects were prepared and distributed.

1993

The Federal Substance Abuse Treatment Block Grant established the Perinatal
Set-Aside, which required that 10% of the grant be used for perinatal services.

The Federal Substance Abuse Treatment Block Grant guidelines established the first federal regulations for programs serving pregnant and parenting women. Most of the standards set forth in these guidelines were already included in California’s requirements for perinatal programs. OPSA revised the state perinatal guidelines to fully comply with federal regulations, to incorporate OFR Pilot Program components and the Governor’s Perinatal Treatment Expansion Initiative requirements. All three of these perinatal programs were now operating under the same guidelines and were called the Perinatal Services Network (PSN).

OPSA expanded its technical assistance contracts to provide service to all perinatal programs and women specific services.

The PSES was released to the public and garnered nationwide attention with the alarming statistic that over 69,000 newborns are prenatally exposed to alcohol and other drugs each year in California.

**1994**

In 1994, the OFR project ceased its pilot status and the SITF was restructured to include representatives from all areas of the state and from other state departments. ADP also ceased being the lead agency for the SITF during 1994.

Studies were initiated on dual diagnosis, children, and other issues.

Technical assistance continued for alcohol and drug programs and other related fields.

**1995**

Pregnant and parenting substance abuse treatment services grew from the initial pilot sites to more than 215 perinatal programs statewide. A total of 8,000 women accompanied by approximately 12,000 of their children were served at these sites in 1995. The guidelines for perinatal programs were revised to address the evolution of services over the past eight years.

**As of 2002**

OPSA currently oversees a statewide network of approximately 288 publicly-funded perinatal alcohol and drug treatment programs that serve over 37,600 pregnant and parenting women accompanied by approximately 56,400 children (from birth through age 17). Programs may supplement their budgets with grants and contributions and can charge fees based on a client’s ability to pay. In addition, State and federal perinatal funds support activities in research, technical assistance, collaboration and coordination, and education and outreach.
Screening for Substance Abuse During Pregnancy: Improving Care, Improving Health
Screening for Substance Abuse During Pregnancy: Improving Care, Improving Health

By Barbara Morse, Ph.D., Shelly Gehshan, M.P.P., and Ellen Hutchins, Sc.D.

Published by National Center for Education in Maternal and Child Health
Arlington, Virginia
the concept for this document came out of a consensus meeting held in July 1992 convened by the Center for Substance Abuse Prevention under the auspices of the National Resource Center for the Prevention of Perinatal Abuse of Alcohol and Other Drugs to examine substance abuse screening and assessment instruments and develop a reference manual. The Maternal and Child Health Bureau would like to thank the participants of that meeting as well as the following persons for reviewing drafts of this document and assisting us in the selection of several screening instruments appropriate for use with pregnant women in the clinic setting: Gene Burkett, M.D., Perinatal Division, University of Miami, Miami, FL; Donna Caldwell, Ph.D., National Perinatal Information Center, Providence, RI; Grace Chang, M.D., Harvard School of Medicine, Boston, MA; Ira Chasnoff, M.D., National Association for Families, Addiction Research and Education, Chicago, IL; Wendy Chavkin, M.D., M.P.H., Chemical Dependency Institute, Beth Israel Medical Center, New York, NY; Nancy Day, Ph.D., Western Psychiatric Institute and Clinic, Pittsburgh, PA; Karol Kaltenbach, Ph.D., Family Center, Jefferson Medical College, Thomas Jefferson University, Philadelphia, PA; Sandra Lapham, M.D., Substance Abuse Research Program, Lovelace Medical Foundation, Albuquerque, NM; Susan Martier, Ph.D., Hutzel Hospital, Detroit, MI; Pat Paluzzi, C.N.M., American College of Nurse-Midwives, Washington, DC; Elizabeth Rahdert, Ph.D., Division of Clinical and Services Research, NIDA, Rockville, MD; Marcia Russell, Ph.D., Research Institute on Addictions, Buffalo, NY; Sydney Schnoll, M.D., M.P.H., Division of Substance Abuse Medicine, Virginia Commonwealth University, Richmond, VA; and Robert A. Welch, M.D., Department of OB/GYN, Providence Hospital, Detroit, MI.

This document was prepared by Barbara A. Morse, Ph.D., Director, Fetal Alcohol Education Program, Boston University School of Medicine, Boston, MA; Shelly Gehshan, M.P.P., Program Principal, Forum for State Health Policy Leadership, National Conference of State Legislatures, Washington, D.C.; and Ellen Hutchins, Sc.D., Health Care Administrator, Maternal and Child Health Bureau, Health Resources and Services Administration, U.S. Department of Health and Human Services, Rockville, MD. Editorial and graphic design services were provided by Judith Serevino, Editor, National Center for Education in Maternal and Child Health (NCEMCH), Arlington, VA; Oliver Green, Senior Graphic Designer, NCEMCH; and Carol Adams, M.A., Director of Communications, NCEMCH.
SUMMARY

Substance Abuse Is a Major Problem During Pregnancy

- Five to 10 percent of all women have substance abuse problems during pregnancy
- Substance abuse contributes to obstetric and pediatric complications, including fetal alcohol syndrome, prematurity, and abruptio placenta
- Treatment for substance abuse during pregnancy is significantly more effective than at other times in a woman's life

Screening Tools Are the Most Effective Way to Determine Risk

- Laboratory tests and urine toxicologies are ineffective tools for determining substance abuse
- Quick, brief questionnaires have been demonstrated to be effective in prenatal care for assessing alcohol and drug use
- Pregnant women describe their health care providers as the best source of information and will generally follow the provider's advice

How to Use Screening Tools

- Choose a screen that fits your style
- Be nonjudgmental and supportive when asking about use
- Stress benefits of abstinence and offer to help the patient achieve it
- Know where to refer a patient for further assessment

Screening Example: **T-ACE**

- How many drinks does it take for you to feel high? (Tolerance)
- Have people annoyed you by criticizing your drinking?
- Have you ever felt you ought to cut down on your drinking?
- Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover? (Eye-opener)

(Sokol et al. 1989)
“Not in my practice.” This statement describes the belief of many health care providers regarding the occurrence of domestic violence, HIV, and substance abuse among their patients (Schwartz 1993). Everyone agrees that these problems exist— but not in their practice. As a result, inquiring about drug and alcohol use is often neglected when providing prenatal care.

In today’s fiscal climate, it is difficult to hear of one more problem that should be addressed in the medical setting. Time allotted with each patient is reduced, and successful practice is measured by cost containment as often as by patients’ health. Yet attention to substance abuse problems during pregnancy is one area in which patient health can be improved and costs can be reduced. This manual was developed to provide prenatal providers with the background and skills to successfully recognize alcohol and drug abuse among patients, to institute protocols to improve the health of both mother and newborn, and to reduce the financial and physical costs associated with prenatal substance abuse.

Alcohol abuse and/or drug abuse occurs in 5 to 10 percent of women in the childbearing years, evenly spread across all ethnic, geographic, and socioeconomic groups (Stratton et al. 1996; Chasnoff et al. 1990). There are multiple risks to both mother and child when alcohol or drugs are abused during pregnancy. Alcohol abuse is associated with fetal alcohol syndrome (FAS) or fetal alcohol effect (FAE), which represent neurologic disorders and physical anomalies. FAS and FAE affect as many as 30,000 births each year (Abel and Sokol 1991). Cocaine or crack abuse contributes to extreme prematurity and possible long-term central nervous system disorders. Estimates of the number of infants in the United States born exposed to cocaine each year range from 91,500 to 240,000 (GAO 1990; Gomby and Shiono 1991). Opiate use can cause physical addiction in the newborn, requiring intensive medical intervention at birth. Substance abuse can also contribute to decreased birthweight and the risk of increased obstetrical problems such as poor weight gain, abruptio placenta, and HIV.

The most recent nationally cited estimates report that 5.5 percent of all pregnant women use an illicit drug during pregnancy (National Pregnancy and Health Survey 1996). Abuse of drugs and alcohol among pregnant women often remains unnoticed and untreated. Outward signs of substance abuse may be subtle. Pregnant women who are abusing drugs or alcohol may not present with the same stereotypical symptoms seen in an older or late-stage abuse population. Studies at Boston City Hospital in the late 1970s found that heavily drinking women were no more likely than nonabusing patients to miss appointments, register for prenatal care late, or come in intoxicated. They were, however, slightly older and more likely to use other drugs and cigarettes (Rosett et al. 1983). Early studies of alcohol abuse among prenatal patients found that clinic staff reported no alcohol abuse among their patients, when, in fact, screening identified between 9 and 11 percent drinking at risk levels (Rosett et al. 1983; Sokol 1980; Larsson 1983). Addiction
specialists estimate that in the early stages of heavy use as many as 90 percent of all people who abuse drugs or alcohol are able to maintain their normal lifestyle, keeping appointments, jobs, and relationships. It would be a rare professional today who does not have someone in his or her practice with drug or alcohol problems. Attention to illicit drug abuse has alerted practitioners that addictions are more widespread than might be expected. However, many are still unclear how to routinely and comfortably identify women at risk, and how to provide effective interventions.

THE SOLUTION

A number of clinical methods have been developed to detect substance abuse. These include blood tests, urine toxicology screens, and educated guessing based on clinical experience. Blood tests (such as liver function tests) may detect organ damage or malfunction, but only identify those patients with long-term use in whom secondary symptoms have occurred. Early stage substance-abusing women are rarely identified by this means. In spite of the popularity of urine toxicologies (in response to illicit drug use), these screens are able to identify only fairly recent use of a substance (i.e., cocaine may be detected for no more than 36 hours after use) and provide no information about frequency or length of use. Women who have not used drugs in the day or two prior to a prenatal visit will not be identified. Urine, blood, and breath tests are all unreliable indicators of alcohol use, as alcohol is metabolized quickly and is unlikely to be detected in body fluids (Christmas 1992). Educated guessing based on clinical experience may identify some users, but is heavily dependent on the practitioner’s attitudes and experiences. The majority of at-risk women who do not fit stereotypic molds will be missed. The most effective method for detecting substance abuse remains a screening tool.

Screening tools are questionnaires designed to be administered face-to-face, patient to provider. They are not designed to diagnose a substance abuse problem, but are intended to determine if a patient may be at risk for alcohol or drug problems and would benefit from a more comprehensive evaluation by a specialist. Effective screening tools in the prenatal setting are those that:

• Can be administered in 5–10 minutes
• Are used routinely with every patient, not just those in whom substance abuse is “suspected”
• Can be adapted to fit a provider’s personal history-taking style
• Can be administered multiple times across a pregnancy, since patients may be more forthcoming as they develop trust with a provider
• Provide an opportunity to educate about alcohol and drug abuse and the benefits of stopping while pregnant

A screening tool for substance abuse should be incorporated into every prenatal intake.
and history form. Asking every patient questions in a health context lessens the stigma associated with the topic, and expresses concern for the health of the mother and baby. Just as screening for diabetes is a routine and ongoing part of prenatal care, questions about substance abuse are most effective when used consistently and routinely. Intervention can be provided for problems as soon as they are identified, reducing the chances of obstetrical and newborn complications.

Pregnancy may be a window of opportunity to intervene for substance abuse problems (Weiner and Larsson 1987). It may be the first time that a woman has sought medical care (Woods 1993). Denial—a concern whenever questions are asked about substance abuse—may be less common during pregnancy. Pregnant women as a group are invested in the health of their babies and can no longer deny that their alcohol or drug abuse is hurting anyone but themselves. Women in recovery have reported that they wanted help during pregnancy but didn’t know how to ask (McElaney 1991). Pregnant women report that they consider health care providers one of their best sources of information, and are likely to comply with advice given (Minor and Van Dort 1982). This makes the prenatal setting the ideal place for discussion of substance abuse.

Even for women who do not have substance abuse problems, a routine screening offers the chance to discuss the risks of alcohol and drug use, particularly use that may have occurred prior to knowledge of pregnancy. Substance abuse problems in a partner may also be discussed. Initiating this discussion in what is generally a nonjudgmental, health-oriented setting conveys the message that these issues are important to the healthiest possible pregnancy.

**The Benefits of Screening**

Screening can have several immediate benefits:

1. Substance abuse during pregnancy is placed as an issue critical to the health of mothers and babies.
2. Education can be provided about the risks of alcohol and illicit drugs, and about behaviors that might have occurred prior to the prenatal visit.
3. Identification of women whose pregnancies are at risk due to their substance abuse allows for the earliest possible intervention or referral to specialized treatment.

While each of these benefits is important, the greatest one is identification of women at risk. Over the past 20 years multiple studies have demonstrated benefits to both mothers and their infants when substance abuse treatment was provided. Rosett et al. (1983) demonstrated that women identified as heavy drinkers in the prenatal setting were responsive to treatment. Those who
completed at least three counseling sessions (66 percent) had babies who were significantly healthier at birth. Obstetrical complications were also reduced. Larsson (1983) and Smith et al. (1986) had similar findings. Follow-up studies of children born to heavily drinking women who responded to treatment demonstrated a persistence of the benefits observed at birth (Larsson 1985).

Chasnoff (1989) reported a reduction of one-half in the incidence of abruptio placenta and prematurity among a group of women who reduced cocaine abuse during pregnancy. Low birthweight was not observed among the group participating in treatment, but was 25 percent among those who continued cocaine use.

Cost savings from screening and identification of substance-abusing mothers are also substantial. For every birth with cocaine exposure that can be prevented, more than $5,000 in medical costs can be saved. Reductions in crack use, other drug use, or the use of foster care can add substantially to the savings. At the national level, the total medical cost for neonatal cocaine exposure is estimated to be $500 million (Phibbs et al. 1991).

Preventing FAS could save at least a portion of the $74.6 million dollars estimated to be the annual cost for the care of affected individuals (Abel and Sokol 1991). Thus the 5–10 minutes of screening followed by an appropriate intervention during prenatal care is a relatively modest investment that can result in enormous cost benefits.

**THE ROLE OF THE HEALTH CARE PROVIDER**

Physicians, nurses, and others involved in prenatal care can play a unique role in the reduction of substance abuse during pregnancy and its related problems. In this positive, health-oriented context, supportive inquiry about all aspects of a woman’s life, including her use of drugs or alcohol, can open the door to referral and treatment. Many pregnant women will reduce their use of drugs and/or alcohol following supportive advice from a health care professional, even if they never disclose that use (Rosett and Weiner 1981). Health care professionals can also help women see the benefits of stopping through improved sense of well-being, physical measures such as weight gain, and better personal relationships.

All health care professionals have the basic skills to identify and refer at-risk women for treatment. While the topic may be difficult for patients and providers alike to discuss, the basic skills of interviewing, being empathic and supportive, providing education on the risks of continuing the adverse behaviors, and describing the benefits of treatment, referral, and follow-up are no different than they would be for any other medical problem. Providers can make the difference.
FINDING AND USING A SCREENING TOOL

The first question that occurs to most practitioners about screening is, “When am I going to find the time to do this?” followed by, “There’s really no point in asking anyway. Denial is so powerful that no one will tell you the truth.” Finding time for any additional procedure is a challenge for every provider. Yet most screening will take a relatively short amount of time—perhaps 30 seconds for the majority of patients who do not have a substance abuse problem and 5–10 minutes for the 10–15 percent of patients who do. Many professionals find that the time taken for the screening actually saves time in other ways, either by answering questions that might have come up at another time, or in reduced care time for a patient in whom obstetrical complications can be prevented.

While denial may occur, routine screening begins the discussion. For those patients in whom you suspect substance abuse, even if they have been unable to disclose it to you, it is important to review the benefits of reduction or abstinence. Some women may seek help or cut down on their own, based on your advice. However, statements such as “Now that you’re pregnant, just don’t drink” or “You don’t drink or use drugs, do you?” may inadvertently reinforce denial and may convey the message that there is no benefit to be achieved by stopping now. The purpose of the screening should be to begin an open discussion about alcohol and drug use.

HOW TO ASK AND HOW TO RESPOND

1. Find an approach that is comfortable for you.

Choose a screening tool that you can use with all patients. For convenience, five screens are listed in the back of this document. Remember that there is no one perfect way to ask, and that screens can be adapted to fit each person’s preferred style.

2. Be nonjudgmental.

Experience has shown that patients are generally not offended by questions about alcohol and drug use if they are asked in a nonjudgmental, nonmoralistic, nonthreatening manner, and if the health implications and benefits of reduction and abstinence are stressed. As each of us comes with experiences, attitudes, and beliefs that may be intentionally or unintentionally conveyed during an interview, it is always important to recognize and address personal attitudes that may influence a patient’s response. In an office or clinic setting, it is important that all staff understand the reasons for asking about substance abuse, even those who may not be involved in the actual interview. This helps reduce bias that may be conveyed to patients.
3. **Make it a routine part of prenatal care.**
   Just as women are routinely screened for gestational diabetes, appropriate weight gain, anemia, etc., screening for substance abuse should be seen as another low-cost way to provide optimal prenatal care. Asking the same questions of every patient reduces subjectivity in deciding who should and should not be screened.

4. **Know how to respond.**
   Prepare yourself for patients’ questions about why you are asking. Become familiar with the risks of substance abuse and the benefits of stopping during pregnancy. Set the tone with introductory statements such as “I ask all my patients these questions because it is important to their health and the health of their babies.” Know how to counsel women with both negative and positive screens.

   For patients with a negative screen (no risk determined):
   a. Review the benefits of abstinence for the duration of the pregnancy.
   b. Reassure patients that small amounts of alcohol (one drink or less in any 24-hour period) consumed prior to the visit need not be a concern, that occasional use before conception does not pose a risk, and that foods containing alcohol (such as Kahlua ice cream or rum cake) are not a problem.

   For patients who have a positive screen (risk determined):
   a. Review for the patient what she has just reported to you.
   b. State your concern for the health of the mother and the baby.
   c. State your belief that you know the mother wants her baby to be as healthy as possible and that she can improve the health of her baby by stopping use of alcohol and drugs.
   d. State the need for her to stop using drugs and/or alcohol during pregnancy, and that you and she will work together to achieve this.
   e. Discuss possible strategies for her to stop—e.g., individual counseling, 12-step programs, and addiction treatment programs.
   f. Suggest a referral for a more in-depth assessment by a specialist. Become knowledgeable regarding specialists and treatment centers for appropriate referrals. If feasible, call and make the appointment while the patient is in the office.
   g. Make a follow-up appointment to see the patient after her drug/alcohol assessment and keep an ongoing interest in the problem. Praise any reduction in use that she reports to you.
   h. Maintain communication with the treatment provider to monitor progress.

5. **Be positive.**
   While no one can promise any woman a perfect pregnancy outcome, you can assure women that they will improve the chances that their babies will be healthy by discontinuing drug and alcohol use. Emphasize that benefits will begin as soon as the woman reduces or stops use, and that the earlier she is able to stop the better. It is never too late.
**REFERRAL SOURCES**

Most hospitals have substance abuse treatment programs and should be able to provide you with patient assessments. If a program is not available where you practice, contact your state Division of Substance Abuse Services (usually part of the Department of Public Health) and ask for a referral. Pregnant women have unique treatment needs, and will do best in a program that can address these needs. Most states now have programs specifically designed for pregnant women and for mothers. There are also numerous private hospitals and counselors who treat substance abuse. Twelve-step programs such as Alcoholics (or Cocaine or Narcotics) Anonymous can also provide useful support to women addressing these problems. All of these programs are listed in the Yellow Pages.

If you live in an area where no formal treatment programs exist or access to them is extremely limited, you may be the only resource available to a woman to help her reduce her substance use during pregnancy. In these circumstances, meeting weekly or even biweekly (as is done with other high-risk pregnancies) may be a first step towards expressing your concern and the seriousness of the situation. Suggest that the woman reduce her use by one-half each day, over several days until abstinence is achieved. Determine if her use is related to other problems in her life (depression, marital problems or domestic violence, history of sexual or physical abuse) and seek referrals for these issues. Above all, maintain support for her and affirm your belief that you know she can reduce her use and improve the health of her baby.

**SCREENING INSTRUMENTS**

Five screening instruments are presented on the following pages. They were chosen from a large field of instruments for their brevity, validity, specificity, and sensitivity in detecting alcohol and drug problems. All have been tested with populations of pregnant women. While most substance abuse screens were initially developed to inquire about alcohol use, it is possible to add the term “drugs” (or specifically list drugs of concern) to any of the screens listed here. Some of these screens inquire about the frequency and quantity of use; others ask about problems associated with substance abuse. Ideally the questions are asked face-to-face while taking a history. However, many providers have had success screening for substance abuse by placing these questions on an intake form that the patient fills out, and then doing follow-up when reviewing the history.

The screens are presented in alphabetical order.
1. How often do you have a drink containing alcohol?
   (0) Never
   (1) Monthly
   (2) 2–4 times a month
   (3) 2–3 times a week
   (4) 4 or more times a week

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
   (0) 1–2
   (1) 3 or 4
   (2) 5 or 6
   (3) 7–9
   (4) 10 or more

3. How often do you have six or more drinks on one occasion?
   (0) never
   (1) less than monthly
   (2) monthly
   (3) weekly
   (4) daily or almost daily

4. How often during the last year have you found that you were unable to stop drinking once you started?
   (0) never
   (1) less than monthly
   (2) monthly
   (3) weekly
   (4) daily or almost daily

5. How often during the last year have you failed to do what was normally expected of you because of drinking?
   (0) never
   (1) less than monthly
   (2) monthly
   (3) weekly
   (4) daily or almost daily

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
   (0) never
   (1) less than monthly
   (2) monthly
   (3) weekly
   (4) daily or almost daily

7. How often during the last year have you felt guilt or remorse after drinking?
   (0) never
   (1) less than monthly
   (2) monthly
   (3) weekly
   (4) daily or almost daily

8. How often during the last year have you been unable to remember what happened the night before because of drinking?
   (0) never
   (1) less than monthly
   (2) monthly
   (3) weekly
   (4) daily or almost daily

9. Have you or someone else been injured as the result of your drinking?
   (0) no
   (2) yes, but not in the last year
   (4) yes, during the last year

10. Has a friend, relative, or doctor or other health worker been concerned about your drinking or suggested you cut down?
    (0) no
    (2) yes, but not in the last year
    (4) yes, during the last year

Scores are in parentheses. A score of 8 or more is considered a positive screen.
4Ps

Have you ever used drugs or alcohol during this pregnancy?
Have you had a problem with drugs or alcohol in the past?
Does your partner have a problem with drugs or alcohol?
Do you consider one of your parents to be an addict or alcoholic?

This screening device is often used as a way to begin a discussion about drug or alcohol use. Any woman who answers yes to one or more questions should be referred for further assessment.

Ewing H. Medical Director, Born Free Project, Contra Costa County, 111 Allen Street, Martinez, CA 94553. Phone: (510) 646-1165.

T-ACE

How many drinks does it take for you to feel high? (Tolerance)
Have people annoyed you by criticizing your drinking?
Have you ever felt you ought to cut down on your drinking?
Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover? (Eye-opener)

Any woman who answers more than two drinks on the tolerance question is scored 2 points. Each yes to the additional three questions scores 1. A score of 2 or more is considered a positive screen, and the woman should be referred to a specialist for further assessment.

How many drinks does it take for you to feel high? (Tolerance)
Does your partner (or do your parents) ever worry or complain about your drinking?
Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover? (Eye-opener)
Have you ever awakened the morning after some drinking the night before and found that you could not remember part of the evening before?
Have you ever felt that you ought to cut down on your drinking?

A woman receives 2 points on the tolerance questions if she reports that she can hold more than five drinks without falling asleep or passing out. A positive response to the worry question scores 2 points, and a positive response to each of the last three questions scores 1 point each. A total score of 2 or more indicates that the woman is a risk drinker and requires further assessment.


Beer: How many times a week do you drink beer?
How many cans do you have at one time?
Do you ever drink more?

Wine: How many times per week do you drink wine?
How many glasses do you have at one time?
Do you ever drink more?

Liquor: How many times per week do you drink liquor?
How many drinks do you have at one time?
Do you ever drink more?

Has your drinking changed during the past year?

Any woman who reports drinking more than four drinks once a week or more is considered at risk and requires further evaluation.

REFERENCES


Chapters 5 and 6 from
Clinical Preventive Services in Substance Abuse
and Mental Health Update: From Science to Services

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Substance Abuse and Mental Health Services Administration
Center for Mental Health Services
www.samhsa.gov

Public Domain Notice
All material appearing in this report is in the public domain and may be reproduced or copied
without permission from SAMHSA. Citation of the source is appreciated. However, this
publication may not be reproduced or distributed for a fee without the specific, written
authorization of the Office of Communications, SAMHSA, DHHS.

Electronic Access and Copies of Publication
This publication can be accessed electronically through the following Internet World Wide Web
connection: www.samhsa.gov/. For additional free copies of this document, please call
SAMSHA’s National Mental Health Information Center at 1-800-789-2647.

Recommended Citation
Nitzkin, J., & Smith, S. A. Clinical preventive services in substance abuse and mental health
Center for Mental Health Services, Substance Abuse and Mental Health Services Administration.

Originating Office
Office of the Associate Director for Organization and Financing, Center for Mental Health
Services, Substance Abuse and Mental Health Services Administration, 5600 Fishers Lane,
Rockville, MD 20857.

2004 DHHS Publication No. (SMA) 04-3906
Table of Contents

I. Executive Summary

II. Introduction
   A. Clinical Preventive Behavioral Services
   B. Models of Preventive Services
   C. Clinical vs. Community Preventive Services
   D. Health Care Delivery System Provision of Preventive Behavioral Services
   E. Organization of This Report

III. Methods

IV. Overview of Interventions

V. Pregnant Women
   A. Tobacco
   B. Alcohol
   C. Illicit Drugs

VI. High-Risk Pregnant Women and Children to Age 5
   A. Social and Economic Dependency
   B. Educational Services To Improve the Intelligence of Selective Infants and Preschool Children

VII. Screening Children and Adolescents (5–18 Years)
   A. Screening for Evidence of Behavioral Disorder

VIII. Adolescents (12–18 Years)
   A. Tobacco
   B. Alcohol
   C. Illicit Drugs
   D. Depression

IX. Adults (19 Years and Older)
   A. Tobacco
   B. Alcohol
   C. Adult Use/Abuse of Illicit Drugs
   D. Depression and Anxiety
   E. Depression in High-Cost Patients Without a Major Chronic Disease

X. Psychoeducation for Three Categories of Patients
   A. Why Psychoeducation?
   B. Psychoeducation for Patients With Chronic Disease
   C. Psychoeducation for Patients Scheduled for Surgical Procedures
   D. Psychoeducation for Patients With Somatization

XI. Conclusions
XII. References
XIII. Appendix A: Literature Search Methods and Results
XIV. Appendix B: Policy and Management Issues and Guidelines
XV. Appendix C: Billing for Preventive Behavioral Services
XVI. Appendix D: Procedures for Implementation and Evaluation of Preventive Services
V. Pregnant Women

The literature provides strong evidence that substance use disorder (tobacco, alcohol, and use of illicit drugs) services for pregnant women can substantially reduce premature births, neonatal deaths, birth defects, and the need for neonatal intensive care. Alcohol use that would not be considered physically problematic for non-pregnant women is medically contraindicated during pregnancy. Effective interventions to address tobacco and alcohol use in pregnancy yield benefits in excess of program costs within 12 months of program initiation. Preventing use of illicit drugs during pregnancy may generate similar benefits, but studies have not been done to definitively confirm or deny this impression. The health care cost savings achieved within 12 months of program initiation will be due to reduction in use of newborn intensive care unit (NICU) services.

The evidence base for the recommended tobacco-related and alcohol-related universal interventions for pregnant women is very strong and includes well-designed, randomized controlled trials. The evidence base for services related to illicit drugs does not include randomized controlled trials because ethical and practical considerations preclude such studies. (Randomized studies would require purposely denying care for substance abuse to half the women in the study.) Despite this limitation, the data from currently available nonrandomized studies fully justify vigorous efforts to identify and address illicit drug use by pregnant women.

The literature specific to depression during pregnancy was insufficient to justify pregnancy-specific depression screening because it does not seem to be of value in preventing postpartum depression (Hayes, Muller, & Bradley, 2001).

Screening pregnant women for use of tobacco, alcohol, and illicit drugs during pregnancy may be considered in the context of similar interventions for all adolescents and all adults. Special emphasis is given to pregnant women in this section of this monograph because such screening usually can be relied upon to be cost-effective by offsetting reductions in health care costs within 12 months of providing the screening service.

Yet another factor is the well-documented increased responsiveness to such screening and counseling during pregnancy, when women appear more sensitive to such screening. After delivery of the infant, they are likely to relapse into previously established patterns of substance use disorder. This relapse, although undesirable, does not negate the value of their abstinence from substance use disorder during pregnancy.

A. Tobacco

Robust research suggests that tobacco screening and follow-up be classified as essential for all pregnant women in all health care settings. The immediate benefit (direct outcome) is reduction of tobacco use for the duration of pregnancy. The indirect but definitive benefit is reduction in the percentage of women delivering low birthweight infants who are at high risk of requiring neonatal intensive care (NICU) services and reduction of infant mortality.

Tobacco-related programming for pregnant women has a very high probability of being cost-effective by reducing the need for NICU and other hospital services. This is true even with very low quit rates because of the extremely high cost of NICU and other hospital services.
Within the doctor-patient interface, tobacco control for pregnant women is perhaps best delivered in the context of tobacco and alcohol screening and related services for pregnant women. The primary intervention takes place at the first prenatal visit, when a full history is taken and substantial counseling is provided.

From the perspective of the health care system, the initial screening and follow-up services are best developed in the context of a well-established array of related services for all life-cycle groups, with links to community-based support services.

**Interventions**

General information on screening, follow-up, and data gathering are presented in Appendix D of this monograph.

The literature provides evidence that every pregnant woman should be asked whether she smokes or uses any other form of tobacco. If so, she may be counseled to quit—at least for the duration of the pregnancy—for the benefit of the unborn child. This may be reinforced at every outpatient visit.

Intervention issues specific to tobacco and pregnancy are as follows:

- Research studies indicate that more intensive smoking cessation programming for pregnant women has not been shown to be more effective than less intense interventions (unlike studies for non-pregnant adult smokers).
- Adequate data are not available to recommend for or against the use of nicotine-replacement products in pregnant women.

**Review of Literature**

A more general review of the tobacco and health literature is presented in the discussion of tobacco in the Adults (19 Years and Older) section of this report. The following review is limited to literature specific to pregnant women.

**Evidence of Need**


… Smoking during pregnancy causes about 5 percent to 6 percent of perinatal deaths, 17 percent to 26 percent of low-birthweight births, and 7 percent to 10 percent of preterm deliveries (DHHS, 1989; Centers for Disease Control and Prevention [CDC], 1990), and it increases the risk of miscarriage and fetal growth retardation. It may also increase the risk for sudden infant death syndrome (SIDS) (Mitchell, Ford, Steward, et al., 1993; Schoendorf & Kiely, 1992)....

Pregnant women who stop smoking by the 30th week of gestation have infants with higher birthweights than infants born to women who smoke throughout pregnancy (CDC, 1990).

**Effectiveness: Evidence Base for Intervention**

In two of the earlier randomized clinical trials, tobacco cessation counseling with self-help materials increased mean birthweight and decreased the incidence of intrauterine growth retardation (Ershoff, Quinn, Mullen, & Lairson, 1990; Sexto & Hebel, 1984).
Studies indicate that asking pregnant women about tobacco use, combined with physician counseling and supplementary smoking cessation programming can increase tobacco-abstinence rates 5–23 percent, comparing intervention to control groups (Ershoff et al., 1990; Sexto & Hebel, 1984; Hjalmarson, Hahn, & Svanberg, 1991; Windsor, Lowe, Perkins, et al., 1993; Mayer, Hawkins, & Todd, 1990).

Since the mid-1980s, every major health-related organization that has addressed this issue has recommended routine clinician counseling of adults, pregnant women, parents, and adolescents to avoid or discontinue smoking and use of smokeless tobacco (USPSTF, 1996; American College of Physicians Health and Public Policy Committee, 1986; American Academy of Family Physicians [AAFP], 1994; American Academy of Pediatrics [AAP], 1994, 1988; American College of Obstetricians and Gynecologists [ACOG], 1993; Manley, Epps, Husten, et al., 1991; American Medical Association [AMA], 1993, 1994a; American Dental Association [ADA], 1992; Canadian Task Force on the Periodic Health Examination, 1994b; National Institutes of Health [NIH], 1989, 1994; American Academy of Otolaryngology—Head and Neck Surgery, 1992; Green, ed., 1994).

Strong evidence for the efficacy and cost-efficiency of tobacco-related interventions for pregnant women can be found in multiple randomized controlled trials and metaanalyses. Four are briefly reviewed below.

The first set of randomized controlled trials was published by Ershoff et al., from Kaiser Permanente, in Los Angeles (Ershoff et al., 1990; Ershoff, Mullen, & Quinn, 1989). These studies explored the benefits of various intensities of smoking cessation programming for pregnant women in an HMO, representing a wide range of socioeconomic classes and racial and ethnic diversity. Women who were welfare clientele or who did not speak English were not included in these studies.

The first trial included 126 cases and 116 controls. The experimental intervention consisted of one-time counseling and a set of eight short self-help booklets distributed by mail at weekly intervals, with the women committed to completion of activity assignments within the booklets. The control group received the initial counseling, a two page brochure, and usual physician counseling. No attempt was made to modify the physician counseling or to provide other health education to the intervention group. This intervention resulted in a 22.2 percent quit rate in the study group, compared with an 8.6 percent quit rate in controls. Compared with the control group, the self-help groups were 45 percent less likely to deliver a low-birthweight infant. Within the studied population, mean cost per full-term birth, without intrauterine growth retardation, was $695. Mean cost per preterm birth was $6,213. Benefit-cost ratio, based on data limited to the infants’ initial hospitalization, was estimated at about 3:1.

In 1995, Ershoff et al. published data from 171 pregnant women who quit smoking prior to pregnancy, then relapsed during pregnancy (Ershoff, Quinn, & Mullen, 1995). These women were provided the same interventions noted above (simultaneous with the study noted above). In the intervention group, 16 percent relapsed, compared with 20 percent in the control group—a difference too small to be of statistical significance.

In 1996 and 1997, the Ershoff team ran another smoking cessation trial among pregnant women. This study, published in 1999 (Ershoff et al., 1999), randomized 390 English-speaking women, 18 years of age and older, into three groups. The first received usual physician counseling and a self-help book. The second also was given telephone access to a
The third received the booklet, usual counseling, plus proactive telephone counseling from nurse educators using motivational interviewing techniques and strategies. All three groups achieved the approximate 20 percent quit rate achieved in the earlier study, but the more intensive interventions provided no additional benefit. In all three groups, cessation rates among initially heavy smokers were strikingly low. Within each of the groups, approximately two thirds of the women made at least one serious attempt to quit smoking, at least for the duration of pregnancy. Most were unable to do so. Mean reductions in cigarette smoking among those who continued to smoke were modest, averaging a reduction from 8.3 cigarettes per day to 7.8 cigarettes per day.

Windsor et al. reported on a preliminary and more definitive trial conducted in a public health clinic population in Birmingham, Alabama (Windsor, Warner, & Cutter, 1988; Windsor et al., 1993). The initial study randomized 309 pregnant smokers into three groups. Group 1, the control, received information in a non-focused interaction on smoking and pregnancy requiring approximately 5 minutes at the first prenatal visit. Group 2 received the standard clinic information plus a copy of Freedom From Smoking in 20 Days, a self-help manual published by the American Lung Association (ALA). They also received an ALA informational packet entitled “Because You Love Your Baby” and a 10-minute educational session by a baccalaureate-trained health education specialist at the initial prenatal visit. The third group received the Group 2 intervention, but with a pregnancy-specific self-help manual, A Pregnant Woman's Self-Help Guide To Quit Smoking. No smoking cessation interventions were used in any of the three groups after the first prenatal visit. Smoking status was confirmed mid-pregnancy and at the end of pregnancy using patient self-reports and saliva thiocyanate tests. The quit rates were 2 percent, 6 percent, and 14 percent for the three groups, respectively.

In the follow-up study, published in 1993 (Windsor et al., 1993), the Windsor team randomized 814 pregnant smokers from the same clinic setting to case and control groups. The control group received an intervention similar to that of Group 2 from the earlier study. The experimental group received more extensive written materials and counseling, with follow-up and reinforcement at each subsequent clinic visit. Quit rates in the two groups were approximately the same as the quit rates in the earlier study—8.5 percent and 14.3 percent in the two groups, respectively. Quit rates were higher for African Americans than for Whites in both control and experimental groups (10.7 percent and 18.7 percent for African Americans, compared with 5.2 percent and 10.0 percent for Whites).

In a study similar to the second Windsor study but conducted in a Women, Infants, and Children (WIC) clinic in Grand Rapids, Michigan, Mayer et al. (1990) demonstrated quit rates of 11 percent among the experimental group and 3 percent among the controls. When measured 4.7 weeks postpartum, the quit rates within the two groups were 7 percent and 0 percent, respectively.

The strength of this evidence base and benefits of such screening were reaffirmed in a 2002 meta-analysis by Melvin et al. (Melvin, Dolan-Mullen, Windsor, Whiteside, & Goldenberg, 2000). Another extensive literature review published that same year (Lumley, Olver, & Waters, 2000) noted that smoking cessation programs in pregnancy appeared to reduce smoking, low-birthweight and preterm birth, but no effect was detected for very low birthweight or perinatal mortality. Five trials of (postpartum) smoking relapse prevention showed no significant benefit (Lumley et al., 2000).
**Efficacy and Program Implementation Issues**

A meta-analysis by Mullen (1999) provides a summary of the available literature and implementation-related issues to be considered by individual managed care plans. Important program implementation points include the following:

- Smoking during pregnancy is a substantial health hazard to the fetus/infant and mother.
- These hazards appear to be best avoided by having the woman quit smoking prior to pregnancy; but if that has not been achieved, substantial benefits may be secured by having her quit, or at least substantially reduce cigarette consumption during pregnancy.
- Available interventions only offer limited quit rates (5–23 percent).
- Prevalence of smoking is higher and response to smoking-cessation programming is less substantial in low-income and otherwise economically and socially vulnerable women.
- Estimating both current smoking rates and quit rates in a given population can be problematic because smokers who know they should not smoke often lie. The better studies (such as all those referenced above) supplement the women’s statements with laboratory measures of tobacco exposure. Laboratory confirmable quit rates tend to run much lower than the rates suggested by interviews of smokers. (Editorial note: such laboratory confirmation, measuring cotinine or thiocyanate used in research studies, is not suggested for routine clinical practice.)
- Studies show that pregnant women seem to respond differently to smoking cessation programming, compared with other adults who smoke. In other adults, more intensive programming with more frequent personal contact increases quit rates, as does use of nicotine replacement products. With pregnant women, basic physician counseling, supplemented by limited interventions, such as self-help materials, appears to generate maximal benefit, while more intensive programming does not increase quit rates.
- High-quality data on the efficacy of nicotine replacement products are not available for pregnant women.

The one issue of greatest concern not addressed by Mullen is the level of benefit, according to quit rate, that is needed to generate cost-effectiveness within 12 months of program initiation. This issue is addressed in a cost-benefit/cost-effectiveness analysis of such programming published by Marks and his team at the Centers for Disease Control and Prevention (CDC) in 1990 (Marks, Koplan, Hogue, & Dalmat, 1990). This analysis, based on the studies referenced previously in this report and a number of similar studies by other authors, demonstrates an average savings of $3.31 for each dollar spent on effective smoking cessation programming. This estimate assumes a quit rate of approximately 15 percent, with the cost calculations limited to prenatal care and the initial hospitalization at time of birth of the infant. Considering the cost of care for the infant in subsequent years, the benefit exceeds $6 per dollar spent on smoking cessation programming for pregnant women. According to these limited calculations, a program with a quit rate of only 5 percent could pay for itself within a year. These cost-benefit calculations do not include costs averted relative to respiratory illness in mother and infant or any of the other smoking-related costs, some of which can be substantial.

One other study of note is that of Latts et al. (Latts, Prochaska, Salas, & Young, 2002) in a Denver, Colorado, managed care plan. In this study, the sponsoring plan staff from participating physician offices were trained and paid $150 for each pregnant woman counseled. This study, reported as an uncontrolled pilot study, failed to increase the number of smokers counseled.
Program implementation issues deal with the social and cultural milieu of the pregnant woman, her educational and socioeconomic status, and the dedication of both the physician and health care system to tobacco control. The Ershoff (Ershoff et al., 1999), Windsor (Windsor et al., 1988, 1993), and Mullen (1999) studies referenced above provide information on providing effective and cost-efficient smoking-cessation services to pregnant women in conventional HMO settings (Ershoff et al., 1999) and indigent care clinics (Windsor et al., 1988, 1993). The Mullen study (Mullen, 1999) provides excellent guidance on issues to be addressed in the design of such programs.

In the studies where this has been documented, more than half the women who quit smoking during pregnancy resume smoking after the birth of the infant (CDC, 2002). Thus, screening of pregnant women for tobacco use and provision of antismoking programming does not eliminate the need for the pediatrician to address these same issues after birth of the infant, for the benefit of both mother and child.

Data Needs Specific to Tobacco and Pregnancy
Refer to Appendix D, Procedures for Implementation and Evaluation of Preventive Services, for a discussion of issues related to screening, follow-up, and data gathering.

Assessment of Need for Programming and Assessment of Program Efficacy
Collecting the following data would help health plans track and evaluate the impact of tobacco interventions:

- Medical records data showing use or suspicion of use of tobacco before and during pregnancy
- The number and percentage of these women who quit prior to the first prenatal visit
- Rates of NICU utilization and other hospital services during the first 30 days of life
- Perinatal death rates (infant death rates during the first 30 days of life)
- Comparison of fetal/infant illness, death, and health care utilization through the first 30 days of life, comparing mothers who quit, those who did not, and nonusers (as ascertained by interview and recorded in the medical record)

Summary of Tobacco Use and Pregnancy
Tobacco use during pregnancy is a major cause of prematurity, low birthweight, and neonatal death. The robust literature indicates that all pregnant women—and those contemplating becoming pregnant—should be screened for use of tobacco and advised to quit. In response to such screening and follow-up, quit rates from 5 to 30 percent can be expected. Even a 5 percent quit rate is likely to pay for itself in reduced utilization of intensive care for premature infants within 12 months of program initiation.

B. Alcohol

Screening pregnant women for alcohol use is classified as “general.” This means that extensive research suggests programming is beneficial to all pregnant women in all health care settings. The direct outcome is reduced alcohol use during pregnancy. The immediate benefit is a dramatic reduction in Fetal Alcohol Spectrum Disorders (FASD), including the most debilitating form, Fetal Alcohol Syndrome (FAS), and a modest reduction in prematurity. Given the relative rarity of FAS and FASD in most health care settings, and the nature and quality of the literature available, the primary measurable benefit to reducing alcohol use in pregnancy relates to the
reduction in prematurity and low birthweight. The absence of claims for FAS and FAE does not suggest a lack of need for alcohol control programming for pregnant women.

Alcohol-related programming for pregnant women has a very high probability of being cost-effective by reducing the need for NICU services. This is true even with very low abstinence rates because of the extremely high cost of premature births and underweight newborns.

At the doctor-patient interface, alcohol control programming for pregnant women is probably best delivered in the context of tobacco and illicit drug screening and related services for pregnant women. The primary intervention takes place at the first prenatal visit, when a full history is taken and substantial counseling is provided.

From the perspective of the health care system, the initial screening and the follow-up services may be best developed in the context of a well-established array of such services for all life-cycle groups, with links to community-based support services.

**Interventions**

A general discussion of factors related to screening, follow-up, and data gathering appears in Appendix D, Procedures for Implementation and Evaluation of Preventive Services. The literature provides strong evidence that every pregnant woman should be asked about alcohol consumption and should be urged to abstain, at least for the duration of the pregnancy for the benefit of the unborn child. Similarly, research suggests that those who historically have consumed alcohol would benefit from having this message reinforced at every outpatient visit.

**Intervention-Related Issues Specific to Alcohol and Pregnancy**


- All pregnant women be screened for evidence of problem drinking or risk drinking (two drinks or more per day or binge drinking), especially during the first trimester of pregnancy.
- All pregnant women and all women contemplating pregnancy be informed of the harmful effects of alcohol on the fetus and be advised to cease drinking.
- Women who both smoke and drink be advised that their risk of low-birthweight infants is greatest.
- Patients with evidence of alcohol abuse or hazardous drinking be offered brief advice and counseling.
- Patients with evidence of alcohol dependence be referred to appropriate clinical specialists or community programs.
- Physician education: Because of the difficulty in ascertaining alcohol use in many women, use of facilitators, as suggested later in this report, or use of videotape-augmented training of obstetric care practitioners may be considered. A group in New Mexico has demonstrated the value of the videotape augmented training in a randomized controlled trial (Handmaker, Hester, & Delaney, 1999).

In a 2002 review of alcohol problem related screening questionnaires, the National Institute on Alcohol Abuse and Alcoholism (NIAAA, 2002) stated—
Two questionnaires are available that are appropriate for pregnant women, both derived in part from CAGE (Cut Down/Annoyed/Guilty/Eye opener) (Chan et al., 1994), T-ACE Tolerance-Annoyed/Cut down/Eye Opener (Sokol, Martier, & Ager, 1989) takes approximately 1 minute to complete and is more accurate than AUDIT (Alcohol Use Disorder Identification Test) for detecting current alcohol consumption and risky drinking, as well as history of past alcoholism; however, it is less specific (Chang, 2001). The five-item TWEAK (Tolerance/Worried/Eye opener/Amnesia/K(c)ut down) (Russell, Martier, & Sokol, 1991) performs similarly to T-ACE (Chang, 2001) and can be used to detect a range of drinking levels from moderate to high-risk consumption (Dawson, Das, Faden, et al., 2001).

Details on these and other alcohol-related screening tests can be found on the NIAAA Web site at www.niaaa.nih.gov. Additional information and sample questionnaires for CAGE and AUDIT are provided in the discussion about alcohol in this monograph.

**Literature Review**

More substantial reviews of the alcohol-and health literature can be found in the sections of this monograph related to selected children, adolescents, and adults. The discussion on adults and alcohol includes presentation and discussion of the most important alcohol screening questionnaires.

**Evidence of Need**


The proportion of pregnant women who report drinking has declined steadily in the U.S. (Serdula, Williamson, Kendrick, et al., 1991). Recent surveys indicated 12–14 percent of pregnant women continue to consume some alcohol (Goodwin, Bruce, Zahniser, et al., 1994; CDC, 1994b), with most reporting only occasional, light drinking (median: four drinks per month) (Serdula et al., 1991). Binge drinking or daily risk drinking (usually defined as two drinks per day or greater) is reported by 1–2 percent of pregnant women (Goodwin et al., 1994; CDC, 1994b, 1995a), but higher rates (4–6 percent) have been reported in some screening studies (Sokol et al., 1989; Russell, Martier, Sokol et al., 1994).

Excessive use of alcohol during pregnancy can produce fetal alcohol syndrome (FAS), a constellation of growth retardation, facial deformities, and central nervous system dysfunction (microcephaly, mental retardation, or behavioral abnormalities) (Rosett, Weiner, & Edelin, 1983). Other infants display growth retardation or neurologic involvement in the absence of full FAS (i.e., fetal alcohol effects [FAE]) (NIAAA, 1993). FAS has been estimated to affect approximately one in 3,000 births in the U.S. (1,200 children annually), making it a leading treatable cause of birth defects and mental retardation (Abel & Sokol, 1991; CDC, 1993b).

The level of alcohol consumption that poses a risk during pregnancy remains controversial (NIAAA, 1993; Russell, 1991). FAS has only been reported in infants born to alcoholic mothers, but the variable incidence of FAS among alcoholic women (from 3 to 40 percent) (Abel & Sokol, 1991) suggests that other factors ... may influence the expression of FAS (NIAAA, 1993). Most studies report an increased incidence of FAE among mothers who consume 14 drinks per week or more (Russell, 1991; Virji, 1991; Forrest, Florey, et al., 1991; Verkerk, Noord-Zaadstra, Florey, et al., 1993), but the effects at lower levels have been inconsistent (Russell, 1991; Jacobson, Jacobson, Sokol, et al., 1993; Streissguth, Barr, & Sampson, 1990). Modest developmental effects have been attributed to light drinking (seven drinks per week) in some
studies, but underreporting by heavy drinkers and confounding effects of other important factors (nutrition, environment, etc.) make it difficult to prove or disprove a direct effect of light drinking (NIAAA, 1993; Russell, 1991; Knupfer, 1991). Timing of exposure and pattern of drinking may be important, with greater effects proposed for exposure early in pregnancy and for frequent binge drinking (NIAAA, 1993).

**Effectiveness Evidence Base for Intervention**


There are no definitive controlled trials of treatments for excessive drinking in pregnancy (Schorling, 1993). In several uncontrolled studies, a majority of heavy-drinking pregnant women who received counseling reduced alcohol consumption (Rosett et al., 1983; Larson, 1983; Halmesmaki, 1988) and reductions in drinking were associated with lower rates of FAS (Rosett et al., 1983; Halmesmaki, 1988). Many women spontaneously reduce their drinking while pregnant, however, and women who continue to drink differ in many respects from women who cut down (e.g., heavier drinking, poorer prenatal care, and nutrition). As a result, it is difficult to determine precisely the benefit of screening and counseling during pregnancy. In two trials that employed a control group, the proportions of women abstaining or reducing consumption were similar in intervention and control groups (Waterson & Murray-Lyon, 1990; Meberg, Halvorsen, Holter, et al., 1986).

The U.S. Surgeon General (Surgeon General, 1981) and the American Academy of Pediatrics (AAP) and American College of Obstetricians and Gynecologists (ACOG) (AAP/ACOG, 1992; American Academy of Pediatrics Committee on Substance Abuse and Committee on Children with Disabilities, 1993) advise counseling all women who are pregnant or planning pregnancy that drinking can be harmful to the fetus and that abstinence is the safest policy. The Canadian Task Force (CTF) recommends that all women be screened for problem drinking and advised to reduce tobacco use during pregnancy (CTF on the Periodic Health Examination, 1994a).

**Efficacy and Program Implementation Issues**

In the case of alcohol control during pregnancy, the major program implementation issue will relate to the sociodemographic profile of the membership and issues that will need to be addressed relative to cultural sensitivity. The overall community tolerance for alcohol consumption, use, and abuse will be a significant factor.

A major part of the problem is identifying alcohol use in pregnant women, since many will not admit such use. Several studies have demonstrated the value of structured questionnaires as an effective means of ascertaining alcohol use (Chang et al., 1998; Chang, Goetz, Wilkins-Haug, & Berman, 1999; Midanik, Zahnd, & Klein, 1998; Bull, Kvigne, Leonardson, Lacina, & Welty, 1999; Chasnoff, Neuman, Thornton, & Callaghan, 2001).

Another part of the problem is the limited utility of interventions, especially in heavier drinkers and those who do not access early prenatal care. As noted below, results are mixed and not well documented in controlled studies. The better controlled studies did not address the cost-benefit or cost-efficiency of treatment options.

Despite this lack of firm evidence, the hazard posed by alcohol consumption during pregnancy and the apparent ease by which alcohol consumption can be reduced in many pregnant women would seem to indicate that all health care providers should address this issue.
Although they did not provide new findings or evidence, two recent reviews nicely summarized literature more recent than the USPSTF Guide (USPSTF, 1996). These are a 1999 review in the Milbank Quarterly (Frohna, Lantz, & Pollack, 1999) and a 2000 review from a group at Wayne State University in Detroit (Hankin, McCaul, & Heussner, 2000).

Data Needs Specific to Pregnancy and Alcohol
Collecting the following data would help health plans track the impact of their alcohol-screening intervention. Refer to Appendix D.

- Numbers of cases of FAS and FASD diagnosed in prior year
- Evidence of alcohol-related problems in other members of the managed care plan that might suggest a community-wide alcohol problem
- Medical records data showing use or suspicion of use of alcohol before and during pregnancy
- The number and percentage of these women who quit prior to the first prenatal visit
- Rates of NICU utilization and other hospital services during the first 30 days of life
- Perinatal death rates (infant death rates during the first 30 days of life)
- Comparison of fetal/infant illness, death, and health care utilization through the first 30 days of life, comparing mothers who quit, those who did not, and nonusers (as ascertained by interview and documented in the medical record)

Summary of Alcohol Use and Pregnancy
The robust literature indicates that all pregnant women—and those contemplating becoming pregnant—should be screened for the use of alcohol and advised to abstain while pregnant.

C. Illicit Drugs

Screening pregnant women for use of illicit drugs is classified as “general.” This means that strong research supports this for all pregnant women in all managed care and other health care settings. With the exception of withdrawal symptoms at time of delivery, no studies have successfully separated the effects of the illicit drugs on the fetus/infant from the effects of concurrent tobacco and alcohol use and lack of prenatal care. The literature clearly indicates that pregnant women using illicit drugs have poor pregnancy outcomes, but separating the influence of the drug itself from these other risk factors has proven practically impossible (USPSTF, 1996). There are no published studies in which the woman has been given drug treatment without concurrent prenatal care.

The benefits to be pursued are reduction of illicit drug use during pregnancy and elimination of maternal, fetal, and infant complications of such use. At the doctor patient interface, programming for pregnant women using illicit drugs is probably best delivered in the context of tobacco and alcohol screening and related services for pregnant women. The primary intervention takes place at the first prenatal visit, when a full history is taken and substantial counseling is provided. From the perspective of the health care system, the services are best developed within the context of established services for all life-cycle groups with links to community-based support services.

Intervention
Robust research supports asking every pregnant woman about use of illicit drugs and urging pregnant women to abstain, at least for the duration of the pregnancy, for the benefit of the
unborn child. Similarly, the literature provides strong evidence that this message should be reinforced at every outpatient visit for those who historically have used such drugs.

**Service-Related Issues Specific to Illicit Drugs and Pregnancy**


- Every managed care organization has access to psychiatrists and/or other professional staff who are expert in the diagnosis and management of women who engage in the use of illicit drugs (marijuana, cocaine, heroin, and others) during pregnancy.
- All clinicians in managed care settings that participate in the provision of prenatal care be trained to recognize signs and symptoms that suggest use of illicit drugs during pregnancy and how best to interview such patients.
- All pregnant women be advised of the potentially adverse effects of drug use on the development of the fetus.
- Routine (blood and urine) screening of pregnant women for illicit drug use is only justified when dealing with populations known to have a high prevalence of use of such drugs (more than 2 percent of pregnant women as ascertained by record review and/or claims data). There is no need for such a screening program in most managed care organizations.
- Organizations dealing with a high prevalence of use of illicit drugs or an otherwise exceptionally high-risk population for such substance abuse are virtually assured of encountering high rates of tobacco use and alcohol abuse. Such organizations can consider their options for screening through modification of one of the alcohol related screening instruments, and adoption of follow-up of such screenings patterned after their alcohol-control programming.

**Review of Literature**

**Evidence of Need**


A national probability sample of 2,613 women giving birth in 1992–93 estimated that 5.5 percent used some illicit drug during pregnancy: the most frequently used drugs were marijuana (2.9 percent) and cocaine (1.1 percent) (National Institute on Drug Abuse [NIDA], 1994c). Anonymous urine testing of nearly 30,000 women giving birth in California in 1992 detected illicit drugs in 5.2 percent: marijuana (1.9 percent), opiates (1.5 percent), and cocaine (1.1 percent) were the most frequently detected substances (Vega, Kolodny, Hwang, & Noble, 1993). Prevalence of drug use generally is higher among mothers who smoke or drink, are unmarried, are not working, have public or no insurance, live in urban areas, or receive late or no prenatal care (NIDA, 1994c; Vega et al., 1993; Moser, Jones, & Kuthy, 1993). Anonymous urine testing detected cocaine use in 7–15 percent of pregnant women from high-risk, urban communities (Schulman, Morel, Karmen, et al., 1993) and in 0.2 percent to 1.5 percent of mothers in private clinics and rural areas (Sloan, Gay, & Snyder, 1992; Burke & Roth, 1993).

Drug use during pregnancy has been associated with a variety of adverse outcomes, but problems associated with drug use (e.g., use of alcohol or cigarettes, poverty, poor nutrition, inadequate prenatal care) may be more important than the direct effects of drugs (Mayes,
Granger, Borstein, et al., 1992; Robins & Mills, eds., 1993). Regular use of cocaine and opiates is associated with poor weight gain among pregnant women, impaired fetal growth, and increased risk of premature birth; cocaine appears to increase the risk of abruptio placentae (Volpe, 1992). The effects of social use of cocaine in the first trimester are uncertain (Graham, Dimitrakoudis, Pellegrini, et al., 1989; Chasnoff, Griffith, MacGregor, et al., 1989). Cocaine has been blamed for some congenital defects (Robins et al., 1993), but the teratogenic potential of cocaine has not been definitively established. Infants exposed to drugs in utero may exhibit withdrawal symptoms due to opiates, or increased tremors, hyperexcitability, and hypertonicity due to cocaine (Robins et al., 1993; Hutchings, 1982). Possible long-term neurologic effects of drug exposure are difficult to separate from the effects of other factors that influence development among vulnerable children (Robins et al., 1993; Frank, Bresnahan, & Zuckerman, 1993; Chasnoff, Griffith, Freier, & Murray, 1992). The effects of marijuana on the fetus remain controversial (Zuckerman, Frank, Hingson, et al., 1989; Day & Richardson, 1991; Bell & Lau, 1995).

**Effectiveness: Evidence Base for Intervention**

Although the risk of drug use to the mother and fetus is clear, the evidence base for effective interventions during pregnancy is largely limited to observational studies showing a decrease in the risk of low birthweight with increasing numbers of prenatal visits (Chasnoff et al., 1989; Zuckerman et al., 1989).

Two studies published since the 1996 Guide reaffirmed that substance abuse in pregnancy continues to be a significant problem (Butz, Lears, O'Neil, & Lukk, 1998; Richardson, Hamel, Goldschmidt, & Day, 1999). Our literature search also identified five clinical trials relating to treatment to secure discontinuation of illicit drug use in pregnancy (Elk, Mangus, Rhoades, Andres, & Grabowski, 1998; Eisen, Keyser-Smith, Dampeear, Sambrano, 2000; Schuler, Nair, Black, & Kettinger, 2000; Jansson et al., 1996; Svikis et al., 1997). All were controlled to some degree, with study populations ranging from 12 (Elk et al., 1998) to 658 (Eisen et al., 2000). Taken together, these studies reaffirm previously established impressions that aggressive provision of basic prenatal care is of substantial value for these women, but supplementary programs for illicit drug use in pregnant women are of only marginal value. In the only one of these studies to address this issue (Eisen, et al., 2000), it was noted that none of the reductions in use of alcohol or illicit drugs was maintained through 6 months postpartum.

Given this circumstance, the recommendation of the American College of Obstetricians and Gynecologists is limited to “a thorough history of substance use and abuse in all obstetric patients, and remain alert to signs of substance use disorder in all women” (USPSTF, 1996; ACOG, 1994).

**Efficacy: Program Implementation Issues**


The diagnostic standard for drug abuse and dependence is the careful diagnostic interview (USPSTF, 1996; APA, 1994). … There are few data to determine whether or not the use of standardized screening questionnaires can increase the detection of potential drug problems among patients. Brief alcohol screening instruments such as the CAGE or MAST [Michigan Alcoholism Screening Test] can be modified to assess the consequences of drug use in a standardized manner (Trachtenberg & Fleming, 1994; Skinner, 1982), but these instruments have not been compared with routine history of clinician assessment. Questionnaires … [that]
identify adolescents at increased risk for drug use … have not been validated in prospective studies (Schwartz & Wirtz, 1990). Other instruments such as the Addiction Severity Index (McLellan, Luborsky, Woody, et al., 1980) are useful for evaluating treatment needs but are too long for screening.

… Drug testing is frequently performed without informed consent in the clinical setting on the grounds that it is a diagnostic test intended to improve the care of the patient. Because of the significance of a positive drug screen for the patient, however, the rights of patients to autonomy and privacy have important implications for screening of asymptomatic persons (Merrick, 1993). If confidentiality is not ensured, test results may affect a patient’s employment, insurance coverage, or personal relationships (Rosenstock, 1987). Testing during pregnancy is especially problematic because clinicians may be required by State laws to report evidence of potential harmful drug or alcohol use in pregnant patients.

There is a single recent paper suggesting that primary care clinicians can ask three questions in the context of a prenatal health evaluation to target women for referral to a full clinical assessment for drug and alcohol use (Chasnoff et al., 2001). The three questions are—

1. Have you ever drunk alcohol?
2. How much alcohol did you drink in the month before pregnancy?
3. How many cigarettes did you smoke in the month before pregnancy?

The screen is intended for use by primary practitioners to sort women by risk category.

In at least one high-prevalence population where this issue was addressed in a recent study in Pittsburgh, women commonly denied their use of tobacco, alcohol, and cocaine. Interviews detected only about half of the women whose urine tests were positive for one or more of these substances (Markovic et al., 2000).

There are few controlled trials of interventions for pregnant women who use illicit drugs (USPSTF, 1996). The lack of randomized and controlled studies is not accidental. It is due to the perception by investigators that it would be unethical to deny pregnant women treatment believed to be beneficial (Burkett, Gomez-Martin, Yasin, & Martinez, 1998). As a result, there is a continuing flow of observational studies (Kukko & Halmesmaki, 1999; Newschaffer, Cocroft, Hauck, Fanning, & Turner, 1998; Berkowitz, Brindis, & Peterson, 1998; Clark, Dee, Bale, & Martin, 2001; Corse & Smith, 1998) and one controlled but not randomized study (Burkett et al., 1998) that showed substantial benefit to mother and fetus/infant. These studies suggest, but do not confirm, that detection of substance use disorder in pregnant women should be cost-effective within 12 months of program initiation through reduction in need for NICU services.

The AMA and most other medical organizations endorse urine testing when there is reasonable suspicion of substance use disorder, but none of these groups recommends routine drug screening in the absence of clinical indications (USPSTF, 1996).

**Program Implementation Issues:**

**How To Manage the Intervention So That It Succeeds in Securing Desired Benefits**

In most health care settings, issues relative to substance use disorders among pregnant members will be limited to assurance that clinicians engaged in prenatal care have the capacity to recognize such cases and have the capacity to refer such members to appropriate...
specialists. In those few plans with a prevalence of use of illicit drugs likely to be more than 2 percent of pregnant women, substance use disorder screening and follow-up can be managed in a manner patterned after what should already be well developed alcohol control programming in those managed care plans.

**Data Needs Specific to Illicit Drugs and Pregnancy**

The following data should help health plans track and assess the impact of their intervention. Refer to Appendix D.

- Numbers of cases of illicit drug use diagnosed in prior year in pregnant women and newborn infants
- Data from the local criminal justice system that might suggest a communitywide drug problem or specific problems within geographically or demographically defined subpopulations
- Use of NICU services for infants

**Summary: Use of Illicit Drugs During Pregnancy**

All pregnant women should be asked about their use of illicit drugs and advised to abstain. Those who report using drugs during pregnancy need follow-up, supplementary case management, and counseling to receive optimal medical care.
VI. High-Risk Pregnant Women and Children to Age 5

Preventive services during pregnancy, infancy, and early childhood can reduce the prevalence and severity of future medical, behavioral, and social problems. Risk is highest in low-income and socially disadvantaged family units. The term “high risk” in the literature refers to those low-income, first-time mothers at risk for poverty, welfare dependency, and involvement with the criminal justice system. The term also refers to babies with low birthweight, prematurity, or mental deficits such as retardation. Medicaid and public sector health care systems see large numbers of such families. As poverty is not the only determinant of risk, there are likely to be small numbers of high-risk individuals in every health care system, whether public or private.

Two sets of services are presented. The first is a program of home visitation for family units characterized by social and economic vulnerability. The second is the need for supplemental educational services for the infants and preschool children from these families, plus selective low-birthweight infants; those exposed to substance use disorder during pregnancy; and those born to mothers with mental retardation. Although the provision of the supplemental educational services might not be the role of the health care delivery system, if pediatric staff does not identify the infants in need of service, it is unlikely that the infants will receive the needed services.

A. Social and Economic Dependency

Family units at highest risk of social and economic dependency are those with one or more of the following risk characteristics: low-income, adolescent pregnant woman or mother, unemployed, fewer than 12 years of education, or membership in a socially vulnerable ethnic, racial, or non-English-speaking group. Individuals with these risk factors tend to depend on Medicaid-oriented managed care plans, public systems of care, or do without routine care altogether. Two sets of services and benefits may be best for these high-risk family units. The first set, focusing on early and comprehensive prenatal care, can reduce prematurity and infant mortality, and by reducing the need for intensive hospital services during the first 30 days of life, reduce health care costs. The second set—addressed here—is primarily non-medical. This second set, for families that could benefit from these interventions, can yield substantial social, educational, economic, and behavioral benefits—but is unlikely to generate immediate reductions in health care costs.

Prenatal and infant home visitation to reduce family dependence on welfare is classified as “targeted” in this report. This is an intervention with a strong evidence base, but with social, economic, educational, and other non-medical goals. The home visit intervention involves nurses visiting homes to deliver education and emotional coaching to low-income, first-time, disadvantaged pregnant women. The intervention consists of prenatal and infancy home visits by nurses every 2 weeks for an average of nine prenatal visits lasting over an hour each. The nurses also screen infants for sensory and developmental problems. There is provision of free transportation to prenatal and well child visits to local clinics, and in some cases, continued home visits for up to 2 years after the birth of the child. While in the home, nurses promote health-related behaviors during pregnancy, appropriate care for infants by parents, and maternal life-course family planning and educational achievement (Olds et al., 1993; 1997).

Home visitation primarily relates to health care organizations that serve socially and economically vulnerable populations. As noted above, however, every health care system is
likely to have small numbers of family units that could benefit from such services. Since the benefits are substantial, these services might be implemented by health care systems serving high-risk populations. Other health care systems may choose to be aware of such services and develop the capacity to connect selected families to these outreach and educational programs.

The literature, reviewed below, attests to the benefits of home visitation in the context of a comprehensive program of preventive services in preventing future mother and child illness, handicap, social dependency, and behavioral problems.

Issues and problems addressed include the following:

- Outcomes of pregnancy—low birthweight and infant mortality
- Spacing between pregnancies
- Welfare dependency
- Use of tobacco, alcohol, and illicit drugs
- Nutritional status
- Various measures of child development
- Child abuse
- Criminal behavior
- Infant/child intelligence
- Maternal scholastic achievement

Women who may benefit from the addition of home visitation services—in addition to already comprehensive medical, financial, and social-support services—are women with multiple sociodemographic risk factors such as being an adolescent, being unmarried, having fewer than 12 years of education, and/or being unemployed. The primary benefits relate to welfare dependency. Other benefits included a wide range of health, social, and financial domains. The concept of offsetting savings in other health care costs was not pursued.

These services are not inexpensive. The benefits are unlikely to include substantial short-term reductions in health care costs. This creates a situation where supplemental funding might be pursued to cover the costs of these services. One would expect such funding to be tied to supplemental guidelines and standardized reporting procedures to document the efficacy and efficiency of these services.

**Intervention**

Possible intervention has two major elements. The first is an institutional infrastructure with a complete array of health and social services, including all needed outpatient and inpatient care modalities, social, financial and psychological support services, health education, and case management. The second element is a highly structured nurse home visitation program for adolescent and/or unmarried and/or otherwise socially or economically vulnerable pregnant women and their infants—to deal with the full array of medical, social, economic, and behavioral issues and problems that reflect the profile of unmet needs of each of the women/infants served.

To be effective and cost-efficient, these services might be best delivered by specially trained staff and in accordance with strictly defined protocols. Training requirements and protocols can
be accessed at the Internet site of the National Center for Children Families and Communities (NCCFC) at the University of Colorado Health Sciences Center, www.nccfc.org.

Review of Literature

Olds and Kitzman

A substantial body of literature relating to prenatal and infant home visits for socially and economically vulnerable families has been generated by Drs. Olds and Kitzman. They have explored this intervention in a predominantly White population in semirural Elmira, New York, and in an urban, predominantly African American population in Memphis, Tennessee. They have published long-term follow-up studies to demonstrate continuation of benefit up to 15 years after initial delivery of the service (Eckenrode et al., 2000; Kitzman et al., 2000; Olds et al., 1998; Olds, Henderson, Tatelbaum, & Chamberlin, 1988; Olds, Chamberlin, & Tatelbaum, 1986; Olds, Henderson, Tatelbaum, & Chamberlin, 1986; Kitzman et al., 1997; Olds et al., 1997; Olds, Henderson, Kitzman, & Cole, 1995; Olds, 1994; Olds, Henderson, Phelps, Kitzman, & Hanks, 1993; Olds, 1992). Women in the control groups received free transportation to the clinics and an array of screening and referral services, in addition to routine prenatal and pediatric care. This high level of service to the control population has probably reduced what otherwise might have been even more substantial differences between case and control groups.

Olds and Kitzman published six papers between 1986 and 1994 on their Elmira study, dealing with parental care-giving at 25 to 40 months of age (Olds, 1994); effect of the nurse visitation program on government spending (AFDC, food stamps, Medicaid and Child Protective minus tax revenues from maternal employment (Olds et al., 1993) (AFDC is Aid for Families with Dependent Children, since renamed TANF, Temporary Aid to Needy Families); adverse maternal health behavior, dysfunctional infant care and stressful environmental conditions (Olds, 1992); maternal life course vis-a-vis completion of high school and employment (Olds et al., 1988); prenatal care and outcomes of pregnancy (Olds, et al., 1986); and prevention of child abuse during infancy (Olds et al., 1986). In 1995, Olds et al. (1995) reported interim strongly favorable results relative to child abuse and neglect in Elmira.

In 1997, Kitzman et al. (1997) published the results of their Memphis trial on a number of maternal and infant health measures. Dramatic and highly statistically significant benefits were shown for pregnancy-induced hypertension, visits and hospitalizations for infant injuries and ingestions, and second pregnancies. There were no program effects on preterm delivery, low birthweight, children’s immunization rates, mental development, or behavioral problems or mother’s education and employment.

In 1997, Olds et al. (1997) also published a 15-year follow-up on the Elmira study, showing dramatic and highly statistically significant benefits in areas of welfare dependency, child abuse and neglect, arrests, and behavioral impairments related to alcohol and other drugs.

In 1998, Olds et al. (1998) published another 15-year follow-up of the Elmira study. The case families showed substantial clinical benefits and statistically significant differences from the control families in the incidence of running away, arrests, convictions, number of lifetime sex partners, tobacco use, alcohol use, and problems related to alcohol and drugs.

In 2000, Kitzman et al. (2000) published a 3-year follow-up of their trial of home visits to a cohort of 743 mainly African American women in Memphis, Tennessee. These women had no previous live births and at least two of three sociodemographic risk factors (unmarried, fewer than 12 years of education, or unemployed). Modest but strongly statistically significant outcomes were
noted, all in favor of the intervention group, for intervals between pregnancies and months of
dependence on AFDC and food stamps. This study showed persistence of benefit over the 3-
year period with findings consistent with their prior studies of White women in a rural area.

In 2000, the Olds/Kitzman group—this time with Eckenrode as prime author (Eckenrode et al.,
2000)—published yet another 15-year follow-up of the Elmira study. The group successfully
reached 315 of the 400 families visited during pregnancy and up to 2 years postpartum. The
women had been adolescent, unmarried, and/or low-income at the time of initial enrollment.
This publication showed a substantial and highly statistically significant reduction in a number of
measures of child abuse and neglect, but only among the families that had received postnatal
visits, and only among family units with 28 or fewer incidents of domestic violence.

Other Investigators
In 1994, Marcenko and Spence (1994) reported on a home visitation program for women
considered to be at risk for out-of-home placement for their newborns. The study included 125
cases and 100 controls, with home visits provided weekly or biweekly from initiation of prenatal
care through the first birthday. The authors considered the intervention successful on the basis
of greater social support, greater access to services, and less psychological distress among the
intervention families, even though more case children were placed out of home than controls.

In 1996, Margolis et al. did a randomized trial involving 93 Medicaid eligible pregnant women in
two North Carolina counties to see whether home visitation would do a better job of accessing
prenatal care. Results were strongly positive (Margolis et al., 1996).

In 1998, Ramey et al. published the combined results from three trials intended to demonstrate
prevention of intellectual disability in low-birthweight and economically vulnerable newborns
(Ramey & Ramey, 1998). These early intervention programs were multidisciplinary in that they
included early childhood education, family counseling and home visits, health services, medical
services, nursing services, nutrition services, service coordination, special instruction, speech-
language services, and transportation. The study relative to the low birthweight infants (Ramey
et al., 1992) is reported in the next section of this report. The Abecedarian and Carolina
Approach to Responsive Education (Project CARE) studies were randomized controlled trials of
an educational intervention using a 36- month program known as Partners for Learning. These
two trials showed consistent and substantial improvements in IQ, as measured in cognitive
assessments at 6, 12, 18, 24, and 36 months of age.

In 1999, Armstrong et al. published results of a randomized controlled trial of nurse home visits
to “vulnerable” families with newborns to see whether they could reduce maternal depression
and improve maternal infant bonding. This study, conducted in Australia with 180 participants
and 6 weeks of follow-up measurement, showed strong and highly significant improvement in
measures of emotion and maternal-child inter- action.

In 2001, Margolis et al. in North Carolina reported on the results of a validation study expanding
this approach to a systematic community-wide intervention involving teams of nursing staff
working with both private practitioners and community health centers. Levels of participation by
both physician offices and eligible women were very high. Multiple outcome measures very
strongly favored the intervention women in this randomized trial (Margolis et al., 2001).

In October of 2003, an independent, nonfederal task force with support from CDC—the task
force developing the Guide to Community Preventive Services—issued a report recommending
early childhood home visitation for the prevention of child abuse and neglect (Task Force on Community Preventive Services, 2003). This was based on a highly structured review of the literature.

Program Implementation Issues:
How To Manage the Intervention So That It Succeeds in Securing Desired Benefits
The primary program implementation issue would appear to be the already well developed system of medical, social, and financial support services, with home visitation added as an extra benefit. The number of home visits is dependent on the judgment of the nurse and study protocols and will vary considerably from family to family. This enables the program to secure maximum benefits without excess expenditures for home care services.

Data Needs Specific to Home Visitation

- As the level of service is fairly intense, it would probably be best to maintain a line listing of cases, with quarterly updates for discussion and presentation quarterly at pediatric quality assurance meetings.
- Program planning, quality assurance, and evaluation should be in accordance with the guidelines available through the National Center for Children, Families and Communities Web site at www.nccfc.org.

B. Educational Services To Improve the Intelligence of Selective Infants and Preschool Children

The following groups of infants and preschool children are at high risk of subnormal intellectual development—a risk that can be identified by the health care provider, and then addressed through the delivery of specialized educational services:

- Social and economic vulnerability
- Low birthweight
- Exposure to alcohol or illicit drugs during pregnancy
- Offspring of a mentally retarded mother

Research indicates that health care delivery systems should be alerted to the need for supplemental educational services for these infants. Although it may not be incumbent upon the health care system to provide the needed education, these infants are likely to be missed unless detected and brought to the attention of social service agencies by pediatric staff.

The need for supplemental educational services will be most apparent to the pediatric medical and nursing staff if they have been alerted to this problem. Awareness of the problem through in-service education would seem reasonable for all health plans, especially those serving large numbers of at risk families. Whether or not the needed supplemental educational services are paid for by the health plan or provided by the health care delivery systems will depend on plan-specific scope-of-contract decisions, and plan and health-care-delivery-system definition as to whether such services are considered medical, rather than social or non-medical (Rosenbaum et al., 2003). If deemed outside the scope-of-contract or non-medical, research would indicate it is incumbent upon the health care system to refer such cases to appropriate educational and social service programs, and to assist the family in securing the needed service. For these
reasons, the provision of the supplemental educational services are classified as “targeted/social and educational” in this report.

These interventions have a moderate evidence base, as reviewed below, and are fully consistent with the larger and more definitive studies presented in the prior section that demonstrate the value of intensified services to economically and socially vulnerable mother/infant dyads. The benefits to be secured from these services are primarily social rather than medical in nature. The literature demonstrating the value of such services for improving infant and child intelligence does not address the possibility that such services might reduce health care costs. As a result, these services are not expected to generate a health care cost-related return on investment.

**Intervention**

The literature indicates that the services to be provided are educational in nature. They may include infant stimulation, home visitation and special classes in health care, and educational or social service settings. These services can be coordinated with the home visitation and other preventive services provided by the health care delivery system. The health care system case managers can also oversee them.

Such services could be dismissed easily as social and educational in nature and not the concern of health care delivery systems. However, if they are not addressed by pediatric staff, it is unlikely that the families in need of such services will connect with them, regardless of who pays for them.

Provision of such supplemental educational services can be seen as having three distinct stages. The first is detection of the need for such services. The second is delivery of the services. The third is follow-up to determine if the services were provided and whether they were effective in enhancing infant and child intelligence. The decision to pay for or provide the educational service is one to be made by each health care delivery system on the basis of its scope of coverage and conceptualization of whether such services are medical in nature. However, the research indicates that a good case can be made for all health care systems having the capacity to identify the need for such services and to follow up to help assure that they have been provided effectively.

At the health care system level, the following will be beneficial, based on the literature:

- Periodic educational programming for medical and nursing staff caring for infants and small children as to the conditions suggesting a special need for supplemental educational services, plus how such services are arranged and provided for within or through the health care system
- Policies and procedures by which family units that may have the need for such supplemental educational services are individually assessed to confirm or deny the impression that such services might be needed, and to ascertain the package of services for that family
- Periodic follow-up to include assessment of infant and child intelligence on subsequent “well baby” visits
- Occasional special quality assurance studies to document that infants at risk have been properly identified and that follow-through has been appropriate
Review of Literature

Services to Low-Birthweight Infants To Improve Infant/Child Intelligence

In 1992, Ramey et al. published the results of an eight-site randomized controlled trial of a 3-year intervention consisting of home visitation, parent support groups, and a systematic educational program provided in specialized child development centers. There were 377 intervention families and 608 control families. Both cases and controls received all indicated pediatric care. Both cases and controls showed similar profiles of prematurity.

The results showed statistically significant increases in mean Stanford-Binet IQ scores, comparing cases to controls, and a dose response relationship within the case population showing increases in IQ with increasing participation in the program, with the low participation group showing a mean IQ about five points higher than controls, and the highest participation group showing a mean IQ almost 15 points higher. Although the factors determining levels of program participation among the cases were not randomly distributed and probably reflected important confounding variables, it seems reasonable to conclude that the three part intervention did have a significant impact on the child’s IQ score at age 36 months (Ramey et al., 1992).

In 1997, McCarton et al. published an 8-year follow-up on a randomized controlled trial of educational services, home-based family support, and pediatric follow-up to low-birthweight infants. The results showed small, but favorable differences, comparing the intervention to control groups, with most of the benefit in the heavier infants (McCarton et al., 1997).

In 1999, Bao et al. published the results of a randomized controlled trial conducted in Beijing, China (Bao, Sun, & Wei, 1999). Enrollees were all low-birthweight infants. The intervention consisted of an educational program that taught mothers techniques of infant stimulation to be used in the home. At the end of the 2-year intervention, the Mental Development Index scores for the intervention infants were approximately 14 points higher than for the low-birthweight controls, and approximately six points higher than the small group of normal birthweight control infants.

Services to Economically and Socially Vulnerable Families To Improve Infant/Child Intelligence

Olds and Kitzman also considered the impact of their home visitation program on infant/child intelligence, but only as one of many outcome parameters being considered. There were no statistically significant treatment effects on infant/child intelligence in either their Elmira (Olds, 1994) or Memphis (Kitzman et al., 1997) studies.

In 1998, Ramey and Ramey published the combined results from three trials intended to demonstrate prevention of intellectual disability in low-birthweight and economically vulnerable newborns (Ramey & Ramey, 1998). The study relative to the low-birthweight infants (Ramey et al., 1992) is reported in the next section of this monograph. The Abecedarian and CARE studies were randomized controlled trials of an educational intervention of a 36-month program known as Partners for Learning. These two trials showed consistent and substantial improvements in IQ, as measured in cognitive assessments at 6, 12, 18, 24, and 36 months of age.

Based on this research, it appears that generalized home visitation programs are likely to have a minimal impact on infant/child intelligence, but intensive educational programs can have a significant effect.
Services to Infants Born to Mentally Retarded or Otherwise Challenged Mothers
Two studies published 6 years apart by Ramey and Ramey (Ramey & Ramey, 1992, 1998) provided intensive educational interventions for children of low-IQ mothers to compensate for the mother's inability to provide adequate infant stimulation and education. They reported on two similar randomized trials of infants born to mentally retarded mothers and one trial of low-birthweight infants. The sample sizes in the two studies with mentally retarded mothers were small. The Abecedarian study had 41 cases and 45 controls. The Care study had 24 cases and 15 cases, respectively, in two intervention groups and 23 controls. The impact of the supplemental education was dramatic, in most cases moving the child from an IQ of approximately 90 to an IQ of approximately 110. In addition to education, the interventions also provided medical and nutritional support. The benefits, although substantial, did not appear likely to reduce other health care costs. The studies on this topic did not address the issue of health care cost.

Securing the participation of enough infants of mentally retarded mothers to do reasonably rigorous randomized controlled trials is a difficult task. Given the magnitude of the benefit documented in this study, and the consistency of these results with the results of other studies of intensive support services provided to vulnerable mother/infant dyads, it seems reasonable to accept the results of these studies as strong evidence that intensive educational support services provided as a supplement to reasonably comprehensive medical care can be effective in dramatically improving the intellectual performance of infants born to mentally retarded mothers.

Other
In 1994, Olds published data from the Elmira trial (White, semirural, low-income), which compared intellectual development of infants whose mothers smoke more than 10 cigarettes a day. The study population provided 64 cases and 57 controls. The data showed that the generalized Olds/Kitzman home visitation intervention was effective in preventing intellectual impairment related to smoking in the infants receiving the home visitation intervention (Olds, Henderson, & Tatelbaum, 1994).

In 1994, Black et al. (1994) published results of a small randomized clinical trial, including 31 cases and 29 controls, of home visitation for newborn infants of drug abusing women. This program of generalized support through biweekly home visits by nurses during the first 18 months of life showed modest improvements in maternal drug-related behavior, improvements in parenting, and improvements in child development. Although this study is weak and far from definitive (it is the only one covering this issue from the perspective of drug-abusing pregnant women), its findings suggest that these women and their infants respond to infant visitation programs offering comprehensive maternal and pediatric care in a manner similar to other vulnerable women and their infants.

Program Implementation Issues:
How To Manage the Intervention So That It Succeeds in Securing Desired Benefits
Management of these interventions will probably best be done using collaboration with external agencies than has traditionally been experienced within the managed care community.

Data to Be Gathered
As the level of service is fairly intense, it would probably be best to maintain a line listing of cases, with quarterly updates for discussion and presentation quarterly at pediatric quality assurance meetings.
Summary: High-Risk Women and Children

Targeted interventions, including home visits to at-risk, low-income, pregnant women and developmental/sensory screening of their infants, may yield short-term benefits to the health plan of healthier babies with fewer problems, and long-term benefits to the mother and child.
References Chapters 5 and 6


disadvantaged mothers and children. A feasibility study. *Archives of Pediatric and Adolescent Medicine, 150*(8), 815-821.


XVI. Appendix D: Procedures for Implementation and Evaluation of Preventive Services

Preventive services, unlike therapeutic services, are provided to persons who currently do not show evidence of disease. As a result, those persons who might benefit from such services often cannot be identified through claims data, but rather by identifying risk and protective factors. This creates a situation where health care delivery systems need policies and procedures for preventive services (both behavioral and medical) and quality assurance services (both behavioral and medical) that rely on data systems other than health care claims. This chapter provides general information regarding the implementation of preventive behavioral services. Additional information appears in Appendix B: Policy and Management Issues Guidelines; and in Appendix C: Billing for Preventive Behavioral Services.

Basic Principles

- Those most in need of preventive behavioral services often are those least likely to volunteer for such services. Addressing this issue requires assertiveness on the part of both the health plan and provider.
- Not all persons provided preventive services will have experienced the disease or complication the service was intended to prevent.
- The literature indicates that interview and counseling-based preventive services are far less than 100 percent effective in securing the desired risk modification or behavior change.
- Most of the preventive behavioral services intended to prevent onset of the behavioral disorder are provided in school and community settings. Preventive behavioral services offered in clinical settings tend to detect those at high risk or those who are in the early stages of illness, and they tend to reduce health care costs of other illnesses.
- As with other preventive services and quality assurance programming, more than claims data are needed to identify those in need of services. Most often, patient interview is required for case finding, and record review and special physician and patient surveys are needed for program planning and evaluation.

Steps To Be Taken at the Level of the Health Care Delivery System

- Policies, procedures, and quality assurance guidelines can be in place for all clinical preventive behavioral services that are to be implemented within the health care delivery system.
- When dealing with multiple screening procedures for a single age/life-cycle group, it may be helpful to have a single policy statement/document dealing with the entire set of screening procedures for that group.
- These policies and procedures can be summarized in posters and other reminders to cue the clinical staff.
- Physicians, nurses, and other staff as appropriate can be trained in screening, follow-up, and other policies and procedures.
- Printed informational materials specific to preventive services can be distributed to all primary care providers.
- The health care system may wish to have the capability to provide—directly or indirectly—all needed follow-up services.
• Quality assurance programming can be in place to track the provision of each screening, preventive, and follow-up intervention, and the impacts and outcomes of each service on behaviors, clinical outcomes, and use of other health care resources.

• Each preventive service for each age/lifecycle group may be tracked separately. Although the data to be tracked are similar for tobacco, alcohol, and illicit drugs, separate data can be gathered for each substance. Data pooled across multiple substances are of little practical value. The same is true when dealing with screening and other preventive services, as discussed in this report.

The Role of the Primary Care Practitioner

• The physician or other health care provider can briefly screen each person for all the topics for which screening is indicated on the basis of his or her lifecycle group (age and/or pregnancy).

• The initial set of screening questions for each life-cycle group may be organized so that the screening can be completed in less than 3 minutes.

• Follow-up on positive findings may be considered a diagnostic activity and will take as long as required to rule out the problem, treat the disorder, or identify the need for referral to a mental health professional. Initial follow-up can be done by the primary care practitioner. Patients may be referred to mental health practitioners with initial confirmation of the need to do so by the primary care practitioner.

• Primary care practitioners can follow up at subsequent outpatient visits to monitor behavioral change and assure that mental health professionals have provided appropriate services.

• Provisions might be made for the clinician to record the screening, the findings, and the various levels and types of follow-up.
  o In health care systems with electronic medical records, specific fields can be provided.
  o In health care systems without electronic medical records—
    ▪ Dummy billing codes can be developed (to record the provision of the service on the billing form, even though it is not separately reimbursed).
    ▪ Specific space can be provided on the medical record to facilitate medical record review.

Assessment of Need for Programming

• Assessment of need may not be required to initiate the preventive behavioral services suggested for universal implementation. The needed data can be secured in the process of identifying the number and percentage of patients who screen positive and require some form of follow-up service.

• Special assessment of needs can be done by contacting the local or State health department and requesting data available on prevalence of substance use disorder within the community(ies) being served by the health care delivery system. All States and some localities will have such data, and some may have data specific to substance use disorder in pregnancy through the Behavioral Risk Factor Surveillance Survey (BRFSS) and locally conducted surveys.

• Claims data can be reviewed for data relating to the prevalence of substance use disorders, depression, and behavioral disorders.
• Claims and medical records data can be reviewed for patients with diabetes, asthma, and other chronic diseases to determine whether it is appropriate to invest in preventive behavioral programming to improve patient compliance with prescribed regimens of care.

Assessment of Program Efficacy

• Number and percentage of patients screened.
• Percentage of those screened with positive findings.
• Percentage of patients counseled.
• Percentage offered post–initial-screening special education, extended counseling, or other follow-up services.
• Documentation of use on each subsequent visit to document changes in behavior, outcomes, quit rates, and relapse rates (medical record reviews).
• Comparison of overall health care utilization, including those who screened positive and participated in follow-up, those who screened positive and did not follow up, and those who screened negative.
• Comparison of utilization data for before-and-after implementation of the new preventive behavioral programming. Medical records can be reviewed and small surveys of both patients and providers can be conducted to assess the preprogram screening for substance use disorder, depression, and behavioral disorders.
• Provider and patient surveys to address behaviors, perceptions, and satisfaction with services.
III. C. 2: PRIORITY PROBLEM 2: LOW RATE OF EXCLUSIVE BREASTFEEDING

1. SUMMARY OF THE PROBLEM

- Breast milk is the optimal infant food. It has nutritional properties superior to formula and transmits protective immunoglobulins to the newborn. ¹
- Preliminary research findings demonstrate breast feeding may be protective against increased BMI through adolescence and adulthood.²
- The Healthy People 2010 objective is to increase the proportion of mothers who breastfeed their babies to 75% in the early postpartum period, to 50% at 6 months and to 25% at 1 year.
- 57% of women in X County are exclusively breastfeeding postpartum, within the first few weeks³
- Local survey results showed that only 68% of Caucasian women in the County chose to breastfeed and 30% of African American Women.
- Among 150 women surveyed in the county, the two most often cited reasons for not breastfeeding were embarrassment about breastfeeding in public and feeling there was no benefit to breastfeeding. Women who were planning to return to work were also less likely to breastfeed.⁴

2. DESCRIPTION OF THE PLANNING GROUP AND ITS PROCESS

The Intervention Planning Workgroup of the Breastfeeding Coalition was formed at the end of the Needs Assessment year, and consists of staff from MCAH, WIC, Public Health Nursing, and CPSP and a lactation specialist from the local nurses association. (See Appendix C for a complete list of planning group members). A survey and focus groups were used to obtain community level input. Following identification of problem analysis pathways a representative from the local chamber of commerce and physician and nurse

³ Maternal and Child Health Branch, California Department of Health Services
⁴ X County survey results (2004)
representatives from the local health plan were asked to come to a session to 

discuss intervention development.

A. The epidemiologist gave a brief overview of the data findings, from last 
year’s report
B. A health educator went over the survey and focus group results
C. The epidemiologist was the lead and asked the workgroup group 
members to brainstorm possible precursors for low breastfeeding rates
D. After some discussion, the planning group placed the precursors in the 
appropriate categories in the diagram and began identifying causal 
pathways
E. Three causal pathways and four intervention points were identified as 
described in Section 4 below and “Figure 1. Exclusive Breastfeeding 
Problem Analysis Diagram”.
F. The group took its work to our full Coalition and MCAH staff coordinated 
the development of interventions and the identification of member’s roles 
and responsibilities in intervention planning and implementation. See 
“Figure 2. The Community Plan to Promote Breastfeeding,” (Logic Model) 
below.

3. PROBLEM ANALYSIS DIAGRAM:

The Group began with a breastfeeding problem analysis diagram from the FHOP 
website. After reviewing the local data, data from the surveys, focus groups and 
the literature review, the group adjusted the diagram to reflect our local problem.
The pathways and intervention points, although initially developed on separate 
sheets, have been entered by MCAH staff on the Problem Analysis diagram. See 
“Figure 1. Exclusive Breastfeeding Problem Analysis Diagram.”

4. SUMMARY OF THE RATIONALE FOR THE SELECTED INTERVENTIONS

• Indicator data demonstrated that only 57% of women in X County were 
exclusively breastfeeding at discharge. Because some planning group 
members expressed concern over how well these data actually reflect 
breastfeeding rates in X county, the group decided to gather additional 
local information about breastfeeding through a survey.
• Exit Surveys were conducted at two hospitals in the county to collect data 
on exclusive breastfeeding at time of hospital discharge. A Public Health 
Nurse visited the women before discharge and either asked the survey 
questions or left the survey with the women. The survey asked what 
decision the woman had made about breastfeeding and her two main 
reasons for her decision. Demographic data was collected. Additional 
data was obtained from WIC regarding rates of women who report
exclusive breastfeeding 3 months following the delivery of their infant. The survey questions and a summary of the results can be found in Appendix D.

- A literature review showed that a number of factors contribute to the problem: provider’s attitude about breastfeeding (lack of advocacy/referral), lack of parental education about breastfeeding benefits and techniques, no staff support within the hospital and after discharge, and no support from the family. The literature also revealed that there is a lack of knowledge among health care professionals, lack of knowledge among the general population, and the lack of consistent information regarding breastfeeding.5

- A national survey indicates that many women are aware of breastfeeding, but by the time of discharge, only a small percentage are exclusively breastfeeding, and many have chosen to adopt formula, over breast milk6.

- Focus groups were conducted with women who were recruited at two WIC sites and two supermarkets. They received Safeway food certificates for participating. These focus groups again demonstrated women’s general concern regarding breastfeeding in public: “There is nowhere private in a restaurant or shopping mall to breastfeed. It’s much easier to just give the baby a bottle.” “I just don’t like when people stare at me.” Focus groups also showed that women found it difficult to exclusively breastfeed upon returning to work.7

- One literature article stated that education and support interventions to promote breastfeeding appear to improve breastfeeding initiation and maintenance up to 6 months. Educational sessions that review the benefits of breastfeeding, principles of lactation, myths, common problems, solutions, and skills training appear to have the greatest single effect.8

Based on this analysis, the group decided that they would focus on the following intervention points. Because the Coalition has a broad spectrum of members, the group felt that different members of the Coalition would be called upon to address the different intervention points. The intervention points are

A. providers’ knowledge and practice
B. hospital policy (local)
C. breast feeding environments/policies

---

7 PHN focus group results report, 2003
D. It was also decided that through members of the Coalition an attempt will be made to influence the curriculum content of the local nursing school

5. Intervention Development / Logic Model

The Coalition is in the process of planning and implementing identified interventions. See “Figure 2. The Community Plan to Promote Breastfeeding.”
FIGURE 1. EXCLUSIVE BREASTFEEDING PROBLEM ANALYSIS DIAGRAM

Societal/ Policy Level/ Tertiary Precursors
- Public’s attitude about breastfeeding
- Formula marketing
- Inadequate Curriculum/training @ Med/Nurse schools
- Lack of providing lactation resource information to providers

Family/ Institutional Level/ Secondary Precursors
- Lack of breastfeeding environments
- No post discharge follow-up with PHN
- Language/ cultural barriers
- Lack of in-hospital education and support to new mothers
- Unavailability of breast pumps
- Lack of workplace and family support
- No “emergency” support for breastfeeding
- No support groups
- Lack of provider knowledge/ Poor adherence to best practices/Lack of referrals

Individual Level/ Primary Precursors
- Birth defects
- Embarrassment to breastfeed in public
- Lack of knowledge about breastfeeding benefits and technique
- Prematurity
- No or limited access to support resources
- Poor mother- baby bonding
- No rooming-in at the hospital

Targeted Problem:
- Mothers’ choose not to or prematurely discontinue infant breastfeeding

Consequences:
- sick baby, obesity, lack of bonding, dental issues, formula costs, anemia
Causal Pathways for Low Rates of Exclusive Breastfeeding in X County:
The following is an alternate method of representing causal pathways from the problem analysis diagram. This is not required. It is intended to be an example of how one might illustrate causal pathways if the word processor used for the problem analysis diagram is unable to insert arrows properly into the diagram.

Causal Pathway 1:

*Formula marketing* has a direct influence on the public’s attitude about breastfeeding. This leads to a lack of environments conducive to breastfeeding in the community, and a lack of workplace and family support. This lack of support further contributes to a mother’s sense of embarrassment and hesitation to breastfeed in public, making her less likely to choose not to breastfeed, or to discontinue breastfeeding of her infant.

Formula Marketing $\Rightarrow$ public’s attitude about breastfeeding $\Rightarrow$ lack of breastfeeding environments $\Rightarrow$ lack of workplace and family support $\Rightarrow$ embarrassment to breastfeed in public $\Rightarrow$ mothers choose not to breastfeed/discontinue breastfeeding prematurely

Causal Pathway 2:

*Formula marketing AND lack of medical/nursing school curricula AND lack of providing lactation resource information* affects providers’ knowledge about breastfeeding in general, and decreases the likelihood that providers will adhere to best practices (which support breastfeeding over formula feeding), nor will providers refer patients to breastfeeding services. This has a direct impact on mothers’ knowledge about the benefits of breastfeeding, and the proper techniques. As a result, the mother may try to breastfeed and give up, or may choose not to breastfeed altogether.

Formula marketing AND lack of medical/nursing school curricula AND lack of providing lactation resource information $\Rightarrow$ lack of provider knowledge/poor adherence to best practices/lack of referrals $\Rightarrow$ lack of knowledge about breastfeeding benefits and technique $\Rightarrow$ mothers choose not to or prematurely discontinue breastfeeding

Causal Pathway 3:

A large hospital conglomeration policy contributes to an overall lack of in-hospital education and support to new mothers. This in turn, creates an overall lack of knowledge about breastfeeding benefits and technique among new mothers, and also limits their access to breastfeeding support resources.

Large hospital conglomeration policy $\Rightarrow$ lack of in-hospital education and support to new mothers $\Rightarrow$ mothers’ lack of knowledge about breastfeeding benefits and technique AND limited access to support services $\Rightarrow$ mothers choose not to or prematurely discontinue breastfeeding their infants.
TIPS for a Successful Problem Analysis and Identification of Points of Intervention

Planning Group

• Assign roles to people best suited to a task. Determine where expertise is necessary. Who will facilitate a meeting with the planning group? Who will present data to the planning group?

• Assure a representative, planning group with people from various backgrounds who can contribute to a discussion about the problem, its causes and possible interventions. Include representatives who can give insights about those actually experiencing the problem.

• Suggested script for introducing the problem analysis process to your planning group:

  “Our MCH program is required to create a problem analysis diagram for all of the priority health problems that have been identified in our Title V Needs Assessment Report. This diagram is intended to present a picture of the problem as we see it in our community. It provides a simple way to explain our best conclusions as to the causes of or risk factors associated with the problem in our community. It is also intended to present a more comprehensive understanding of how larger societal, local community and individual characteristics interact in creating the problem. The process also requires that we define the short or long term consequences of not intervening. We think that this understanding will help us to develop rational strategies, realistic objectives and evaluation measures that will reflect the impact of our strategies.”

Problem Analysis/Diagram Development

• Turn the problem into a clear statement. Instead of placing “Breastfeeding” in the target indicator/problem area of the diagram, state “Mothers choose not to continue breastfeeding.” Try to be as specific as possible.

• Use the correct levels of the diagram for your precursors. Using the correct levels will assist in a useful problem analysis. The levels help in identifying whether and how the factors are related to each other.

  What do the three levels include? The three levels reflect different domains that can impact an individual.
  1. The first level includes factors relevant to the particular individual or group of individuals with the identified problem, e.g., genetic factors, biological factors and personal behaviors that are directly or indirectly related to the identified problem.
  2. The second level includes factors in the environment/community in which the individual(s) resides, that affect the individual or are related to individual level factors e.g. family poverty, poor quality schools, and inadequate health resources.
3. The third level includes larger societal factors that have a more global affect on the health and well-being of anyone exposed to their effects e.g. state or national conditions, policies or attitudes.

*Can the same factor be active at more that one level?*
Yes, depending on whether your planning group thinks that there are ways to intervene at the local level, e.g., there may be lack of a national policy on universal health insurance for children but county or city action can be initiated to redirect local funds to provide insurance. In the latter case, lack of insurance can be a factor at both the local institution level and the societal level.

*How are the levels useful?*
The levels can assist in identifying whether and how factors relate to one another. This in turn helps us to make decision about where to intervene, i.e., directly with the affected individuals, with the family or local institutions or through policy or legislative action at the state or national level.

- To determine causal pathways answer the question, “How do these factors relate to one another and the problem statement?” Place your causal pathways on the diagram or use separate sheets to draw pathways. Once a pathway is visualized, it presents possibilities for interventions.

*How are decisions made about those causal pathway(s) in which to intervene and best intervention point(s)?*
This is the time to consider findings from the peer review literature, risk analysis and local input, such as special population concerns or resource availability.
- Use literature reviews, survey results, interviews with experts and relevant data to assess the information presented in the diagram so far.
- Know your county resources — what can your county feasibly do with its resources? How many intervention strategies can be accomplished? In larger counties or those with more resources or where collaborations are able to tap multiple resources, more than one pathway and/or several points of interventions can be addressed.
- Be sure to keep a record of the factors used in intervention decision-making so that you can summarize the process and supporting factors in your Action Plan Report.
**FIGURE 2. LOGIC MODEL: COMMUNITY PLAN TO PROMOTE BREASTFEEDING**

**Problem Statement:** Mothers choose not to exclusively breastfeed or prematurely discontinue infant breastfeeding

<table>
<thead>
<tr>
<th>INPUTS (Resources)</th>
<th>OUTPUTS Activities</th>
<th>Participation (those affected)</th>
<th>OUTCOMES - IMPACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breastfeeding Coalition</td>
<td>• Assess provider breastfeeding promotion/education policies &amp; practices</td>
<td>• OB-GYN Physicians</td>
<td>• Completed assessment of provider policies and practices</td>
</tr>
<tr>
<td>Breastfeeding Promotion Grant $60,000</td>
<td>• Develop culture appropriate breastfeeding promotion materials</td>
<td>• Family Practice Physicians</td>
<td>• 95% of providers educated about breastfeeding</td>
</tr>
<tr>
<td>Breastfeeding promotion is a priority Maternal and Child Health Program function</td>
<td>• Provide lactation resource information to providers</td>
<td>• Provider Staff</td>
<td>• 90% of providers have educational material displayed in their offices</td>
</tr>
<tr>
<td>Staff with expertise in breastfeeding information</td>
<td>• Educate providers</td>
<td>• Pediatricians</td>
<td>• 25% of businesses display “Baby-Friendly” stickers</td>
</tr>
<tr>
<td>Access to staff with assessment skills</td>
<td>• Develop system of Provider referral to breastfeeding classes</td>
<td>• Businesses/ business organizations</td>
<td>• 95% of new mothers receive in-hospital nurse education</td>
</tr>
<tr>
<td>Liaison with County Hospital</td>
<td>• In-hospital education of new mother</td>
<td>• City and County representatives</td>
<td>• Directory of “Baby Friendly” businesses on internet</td>
</tr>
<tr>
<td>Relationship with local provider organization / professional groups</td>
<td>• Collaborate w/ local Hospital to develop “Baby-Friendly” policy</td>
<td>• Pregnant Women</td>
<td>• Establishment of “Baby-Friendly” rest area at County Fair</td>
</tr>
<tr>
<td></td>
<td>• Collaborate on nursing school breastfeeding curriculum</td>
<td>• Lactating Women</td>
<td>• Nursing School curriculum incorporates breastfeeding</td>
</tr>
<tr>
<td></td>
<td>• Promote “Baby-Friendly” workplace policy for City of ___</td>
<td>• Local Hospital Staff</td>
<td>• ↑ (# /%) (from baseline) of women completing a breastfeeding class who choose to breastfeed</td>
</tr>
<tr>
<td></td>
<td>• Educate businesses about “baby-friendly” practices</td>
<td>• ___ College Nursing Program Faculty and Staff</td>
<td>• “Baby-Friendly” policy adopted by local Hospital</td>
</tr>
<tr>
<td></td>
<td>• Develop directory of businesses friendly to breastfeeding</td>
<td>• Local Medical Association</td>
<td>• Local College Nursing Program incorporates new curriculum</td>
</tr>
<tr>
<td></td>
<td>• Promote “Baby-Friendly” rest area at County Fair</td>
<td></td>
<td>• 50% of businesses will display baby friendly stickers</td>
</tr>
</tbody>
</table>

# ASSUMPTIONS

- Breast milk is the optimal infant food. It has nutritional properties superior to formula and transmits protective immunoglobulins to the newborn.

- Lactation resources are available in the community

- Although previous attempts to influence African American women’s intent to breastfeed have been unsuccessful in this community, successful programs have been reported in the literature

# ENVIRONMENTAL FACTORS

**Negative:**

- State budget crisis could result in funding cuts for many members of the Collaborative.

- There is an increase in formula marketing in the media

**Positive:**

- There is a grant application pending for a program that would increase resources for several members of the Collaborative for breastfeeding promotion