Kaiser Permanente’s Early Start Program
A Successful Perinatal Substance Abuse Abuse Intervention

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EARLY START MEDICAL DIRECTOR
Topics

- Overview of Northern California Kaiser Permanente
- Early Start Mission and Description
- Operational Implementation
- Improved Health Outcomes and Cost Savings
- Keys to Success
- Discussion
Kaiser Permanente Northern California

- 4.2 million members
- 47,000 births in 2017
- 14 hospitals with labor and delivery units
- 57 outpatient prenatal clinics
- Covers ~50,000 drivable sq. miles
- 40 Early Start Specialists
What is Early Start?

An award winning perinatal substance abuse program integrated into the OB clinic as part of prenatal care

Objectives:

- To **decrease substance use** in pregnant women
- To **reduce negative birth outcomes** and medical costs associated with prenatal substance abuse
- To improve **access** to substance abuse services for pregnant women
- To **enhance provider satisfaction** and efficacy
Benefits of Early Start

- Improves maternal and infant outcomes
- **NET COST BENEFIT:** Decrease in neonatal hospital costs > cost of providing the prenatal intervention
- Reduces the utilization of medical and social resources
- Enhances provider satisfaction and efficacy
Early Start Mission

We believe that every woman deserves a non-punitive health care environment where she has access to services and support to have an alcohol, tobacco and drug free pregnancy, allowing the delivery of a healthy baby.
Key Components of Early Start

- Universal screening by urine toxicology screening and questionnaire
- Substance abuse specialist stationed in the prenatal clinic
- Counseling visits linked with routine prenatal care visits
- Assessment, education, and early intervention with patients
- Ongoing counseling and case management
- Provider education and consultation
Universal Screening

- Urine toxicology is included in the panel of standard prenatal lab tests.

- The screening questionnaire is a combination of TWEAK and CAGE questions.

- It asks frequency of use of nicotine, alcohol and other drugs in the 12 months before pregnancy and since pregnancy.
The Need for Perinatal Substance Abuse Programs like Early Start

Substance abuse during pregnancy is recognized as a serious problem with significant adverse neonatal outcomes such as:

- Placental abruption
- Fetal death
- Premature delivery and subsequent complications
- Babies who are small for gestational age
- Fetal Alcohol Spectrum Disorders
- Newborn Opiate Withdrawal
Early Start Workflow

Prenatal Patient Population

Screening Questionnaire & Urine Tox

At-Risk

Early Start Assessment

Positive Assessment

Individualized Care Plan

Not At-Risk

No further action
Early Start Research
Improved Health Outcomes & Cost Savings
Early Start Research

- **Trends in Self-reported and Biochemically Tested Marijuana Use Among Pregnant Females in California From 2009-2016**
  
  Kelly C. Young-Wolff, PhD, MPH; Lue-Yen Tucker, BA; Stacey Alexeeff, PhD; Mary Anne Armstrong, MA; Amy Conway, MPH; Constance Weisner, DrPH3; Nancy Goler, MD4; *Journal of the American Medical Association* 2017; 318(24) : 2490–2491.
  

- **Early Start: A Cost-Beneficial Perinatal Substance Abuse Program**
  
  N Goler MD, MA Armstrong MD, V Osejo BS, YY Hung PhD, M Haimowitz LCSW, A Caughey MD; *Journal of Obstetrics and Gynecology* Volume 119, No 1, Jan 2012; pp 102-110

- **Substance Abuse Treatment Linked with Prenatal Visits Improve Perinatal Outcomes: A New Standard**
  
  N Goler MD, MA Armstrong MD, C Taillac LCSW, V Osejo BS *Journal of Perinatology* April 2008
Substance Abuse Treatment Linked with Prenatal Visits Improve Perinatal Outcomes: *A New Standard*

**Study Methods**

- 49,261 female KP members with birth at KP NorCal Hospital
- Completed Prenatal Substance Abuse Screening Questionnaires 01/99 - 6/03
- Urine toxicology screening test
Methods

Definition of Study Groups

- **SAF**: Screened pos, Assessed pos, Follow-up (2,032)
- **SA**: Screened pos, Assessed pos, no follow-up (1,181)
- **S**: Screened pos (with tox), no assessment, no follow-up (149)
- **C**: Screened negative (45,899)

Maternal outcomes - prenatal through one year post-partum
- Inpatient and outpatient costs

Infant outcomes - birth costs (hospital) through one year of life
- Inpatient and outpatient costs
Data Patterns

- No statistical difference in any outcomes between the Early Start group (SAF group) who got assessment and follow-up and Control group

- The group that screened positive and had no assessment or follow up (S group) had statistically worse outcomes and higher costs than the SAF and C groups

- The women who only had the initial assessment (SA group) had intermediary results

Key:
SAF (2,032): Screened pos, assessed pos, follow-up
SA (1,181): Screened pos, assessed pos, but no follow-up
S (149): Screened pos (including toxicology), no follow-up
C (45,899): Screened negative
With a coordinated program like Early Start, at risk patients’ birth outcomes match controls e.g. Preterm Delivery (<37 weeks)

Note: The rate of Preterm Delivery is 2.1 times higher in S group than SAF (Early Start patients)
The rate of the babies needing a ventilator is 2.2 times higher in the S group than that of the SAF and 3.1 times higher than the controls.
Placental abruption is 7 times more likely in the S group.
Rate of Intrauterine Fetal Demise (IUFD aka stillborn)

Stillborns (IUFDs) were 14.2 times more likely in the S group than the SAF or C groups.

Key:
- SAF: Screened pos, assessed pos, follow-up
- SA: Screened pos, assessed pos, but no follow-up
- S: Screened pos (including toxicology), no follow-up
- C: Screened negative
Mean Cost for Preterm Birth: 33-36 weeks (per baby)

Note: The birth rate at this gestation age is 1.6 times higher in the S than SAF group at this Gestational age. No significant cost differences between the SAF and C groups, suggesting ES reduces costs in this high-risk population to the overall baseline.
Mean Cost for Maternal Emergency Services

Note: ED costs for the S group are 1.8 times higher than the SAF group and 2.5 times higher than the C group.
Maternal and Infant Mean Costs Comparison

Key:
SAF: Screened pos, assessed pos, follow-up
SA: Screened pos, assessed pos, but no follow-up
S: Screened pos (including toxicology), no follow-up
C: Screened negative

<table>
<thead>
<tr>
<th>Maternal Total Costs</th>
<th>Infant Total Costs</th>
<th>Maternal and Infant Costs Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAF</td>
<td>SA</td>
<td>S</td>
</tr>
</tbody>
</table>

- SAF: Screened positive, assessed positive, follow-up
- SA: Screened positive, assessed positive, but no follow-up
- S: Screened positive (including toxicology), no follow-up
- C: Screened negative
Cost-Benefit Analysis

- Compared the total cost differences between SAF and SA groups to the S group including the costs of the ES program
- The total ES Specialist salary costs for providing care to the study cohort over 3.5 years totaled $2,347,100 or $670,600 annually
- By providing ES to this study cohort we provided an overall cost savings of $23,160,694
- Assumes outcomes of the S group for the SAF and SA group
When there is a coordinated program like Early Start, net cost savings are realized

- Kaiser Permanente Northern California realized a net cost benefit of $20,813,594 over 3.5 years for a cohort of 49,261 pregnancies or $5,946,741 annualized.

- Early Start shifts cost spending from the costs associated with preterm births and other negative birth outcomes to their prevention.
Within 12 months of implementation, Early Start, will not only improve outcomes for mothers and babies, it will provide a net cost benefit for your organization.
Keys to Success

- Educate ObGyn staff and providers on positive health outcomes, stigma, and how to encourage patients

- Have a physician champion who can help doctors
  - Managing severely ill patients
  - Overcoming denial
  - Unconscious bias
  - Mandatory reporting

- Create reports to track patients and monitor performance
Questions and Discussion
APPENDICES
Figure 4.5 Past Month Cigarette Use among Women Aged 15 to 44, by Pregnancy Status: Combined Years 2002-2003 to 2012-2013

- Difference between this estimate and the 2012-2013 estimate is statistically significant at the .05 level.

Source: SAMHSA 2013 National Survey on Drug Use and Health; p 51
Past Month Alcohol Use and Binge Alcohol Use among Pregnant Women Aged 15 to 44, Overall and by Trimester*: 2011 and 2012

Source: SAMHSA 2013 National Survey on Drug Use and Health

*Pregnant women are defined as women aged 15 to 44 who reported that they were pregnant at the time of the survey interview. Pregnant women aged 15 to 44 not reporting trimester are excluded.
Marijuana Use in Pregnancy Is Increasing

<table>
<thead>
<tr>
<th>Age</th>
<th>2009</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>4.2%</td>
<td>7.1%</td>
</tr>
<tr>
<td>&lt; 18 years old</td>
<td>12.5%</td>
<td>21.8%</td>
</tr>
<tr>
<td>18-24</td>
<td>9.8%</td>
<td>19%</td>
</tr>
<tr>
<td>25-34</td>
<td>3.4%</td>
<td>5.1%</td>
</tr>
<tr>
<td>&gt;34 years old</td>
<td>2.1%</td>
<td>3.3%</td>
</tr>
</tbody>
</table>

Adjusted Prevalence of Marijuana Use among Pregnant Women in KPNC, by Screening Type, 2009-2016
Figure 1. Past month opioid misuse among women aged 15 to 44, by pregnancy status and age: 2007 to 2012

Note: Estimate for pregnant women aged 35 to 44 is suppressed because of low precision.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2007 to 2012.
Early Start Drugs of Choice Over Time Based on Positive Toxicology Screen
Proportion of pregnant women who filled an opioid prescription, Medicaid 2000-2007

Fig. 2. Proportion of pregnant women who filled an opioid prescription, Medicaid 2000–2007. P value for the tests of linear trend <.001 for all the trimesters and at any time during pregnancy.

Binge Alcohol Use by Pregnancy Trimester

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP*, No Child</td>
<td>32.6%</td>
</tr>
<tr>
<td>Trimester 1</td>
<td>8.0%</td>
</tr>
<tr>
<td>Trimester 2</td>
<td>1.8%</td>
</tr>
<tr>
<td>Trimester 3</td>
<td>1.0%</td>
</tr>
<tr>
<td>NP, Child &lt;3 months</td>
<td>10.0%</td>
</tr>
<tr>
<td>NP, Child 3-5 months</td>
<td>15.5%</td>
</tr>
<tr>
<td>NP, Child 6-8 months</td>
<td>14.6%</td>
</tr>
<tr>
<td>NP, Child 9-11 months</td>
<td>16.9%</td>
</tr>
<tr>
<td>NP, Child 12-14 months</td>
<td>17.6%</td>
</tr>
<tr>
<td>NP, Child 15-17 months</td>
<td>16.8%</td>
</tr>
<tr>
<td>NP, Child 18+ months</td>
<td>19.7%</td>
</tr>
</tbody>
</table>

* NP = Non-Pregnant

Cermak, Timmen L., M.D., Past president of the California Society of Addiction Medicine (CSAM). (September 2012), *Addiction as a Brain Disease*, Presentation at the Early Start Regional Team Meeting, Oakland, CA
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