Substance Use During Pregnancy:
Known Effects and How to Assist

A training offered by Dr. Beth Bailey,
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Overview of Today’s Session

✓ Prevalence and dangers of pregnancy smoking and substance use

✓ Intervention approaches and how YOU can implement them: The 5 A’s
• Nationally, 20% of pregnant women consume alcohol; TN rate similar but higher in urban areas.
• Estimates of illicit drug use during pregnancy vary widely (5-20%), and Tennessee is comparable to national rates.
• In Tennessee, marijuana is the most commonly used illicit drug during pregnancy, followed by abuse of prescription narcotics.
Who Uses Substances During Pregnancy?

- Pregnancy substance use tends to co-occur
- Pregnancy smoking, drinking, and drug use during pregnancy is not limited to certain “types” of women
- However, some racial differences and socioeconomic risks
- Further, women with fewer risk factors are more likely to falsely deny use
How Does Substance Use Affect the Fetus?

• Smoking during pregnancy has the following effects:
  • Decreased placental function
  • Decreased nutrient and oxygen transfer
  • Decreased protein metabolism
• Carbon monoxide from smoking binds to fetal hemoglobin, while nicotine causes vasoconstriction of placental blood vessels
• These effects result in abnormal gas exchange across the placenta, and decreased fetal oxygen level
• We also know that fetal neuroendocrine development is negatively impacted
How Does Substance Use Affect the Fetus?

- Alcohol consumption during pregnancy also leads to hypoxia and increased oxidative stress as a result of various ethanol metabolites that cross the placenta.
- The consequence is impaired fetal growth and abnormal brain cell development.
- The mechanisms by which other drugs impact the developing fetus are less well understood, and animal studies are ongoing.
- It is suspected that the following result from pregnancy drug use:
  - Decreased oxygen levels/hypoxia – affects all systems
  - Immature synaptic maturation
  - Change in quality/quantity of neurotransmitter production
  - Impaired endocrine system development
Effects of Pregnancy Illicit Drug Use

- Babies born to women who use drugs such as heroin, cocaine, and methamphetamine are significantly more likely to be preterm and low birth weight.
- These babies are also at risk for NAS.
- Research on the long term effects of these substances on child health and development are mixed:
  - Appears to be an increased likelihood of health problems and delayed growth in childhood.
  - Some evidence of longer term effects on behavior problems and substance use.
Effects of Pregnancy Marijuana Use

• Prenatal marijuana exposure does not appear to carry the same risks as exposure to harder illicit drugs
• No consistent evidence for long term health or growth effects
• Some evidence that prenatal marijuana exposure increases the risk for delays in specific aspects of cognitive development, attention problems, and later substance use problems
Effects of Pregnancy Prescription Drug Abuse

• Recent increasing abuse of prescription drugs in pregnancy
• Effects have not been extensively studied due to recent emergence
• However, use/abuse of both narcotics and benzodiazepines is linked to: increased risk of pregnancy complications, low birth weight, preterm delivery, and NAS
• Longer term effects on child health/development are unknown, but appear to be like what has been found for chemically similar illicit drugs
Effects of Pregnancy Alcohol Use

- Most people are familiar with FAS (Fetal Alcohol Syndrome)
- FAS includes facial dysmorphology, growth restriction, and cognitive impairment
- However, even drinking at much lower levels (5 drinks per week) causes low birth weight, preterm delivery, delayed growth, and long term cognitive, attention, and behavior problems in exposed children
Effects of Pregnancy Tobacco Use

• When pregnancy substance use is discussed, tobacco does not always come immediately to mind
• However, tobacco is the most commonly used substance during pregnancy
• Consequently, it also has the greatest potential for negative effects given its substantially greater known effects and higher rate of use
Effects of Pregnancy Tobacco Use

Effects are seen during:
- Gestation
- Infancy
- Childhood
- Adolescence
- Adulthood

Smoking negatively affects:
- Gestational Development
- Infant Morbidity and Mortality
- Physical Health
- Psychological Health
- Growth
- Attention
- Behavior
- Emotional Regulation
Effects of Prenatal Tobacco Exposure

- Intrauterine growth restriction/low birth weight (250-400gm deficit)
- Spontaneous abortion/miscarriage/preterm delivery
- Decreased growth deficits and health problems into childhood
  - Still an inch or more shorter than peers at age 7
  - Increased risk for SIDS
  - Substantially increased rates of asthma, allergies, respiratory and ear infections
Health Care Costs – 1st Year of Life

Premature Baby: $41,610
Healthy Baby: $2,766
Effects of Prenatal Tobacco Exposure

- Decrease in overall IQ and language delays
- Attention problems in early and middle childhood
- Elevated levels of depression and anxiety disorders
- Conduct /behavior problems and encounters with juvenile authorities
- Adolescent and adult smoking and substance use, and increased likelihood of addiction
A Few Final Notes About Smoke Exposure

- **Second Hand Smoke** is smoke that smokers breathe out and the smoke that comes from a burning cigarette.

- **Third Hand Smoke** is tobacco smoke contamination that remains in the air and on surfaces after a cigarette is extinguished.

- BOTH of these are harmful to the developing fetus and developing child – causing effects much like what are seen due to primary prenatal exposure.
A Few Final Notes About Tobacco Exposure

- **Amount** and **timing** of cigarette exposure are important.

- No real threshold – effects with as few as 2 cigarettes per day, however, greatest effects seen at a half a pack/day or more.

- Also, effects on growth and health in particular occur mostly with late pregnancy exposure.

- So, quitting smoking, or even cutting down on smoking by 27 weeks may lead to significant health benefits.
So, what is the relative importance that should be placed on smoking vs other substance use in prenatal care?

Other drug and alcohol use is often the priority.

However, the effect of pregnancy smoking on birth weight and newborn health is double the impact of any other substance.

So, pregnant women should be encouraged to eliminate all substance use, INCLUDING the use of tobacco.
A Few Final Notes About Smoke Exposure

Substance Use Group Differences on Birth Weight

<table>
<thead>
<tr>
<th>Substance Use</th>
<th>Birth Weight Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect of marijuana use*</td>
<td>- 1gm</td>
</tr>
<tr>
<td>Effect of hard illicit drug use</td>
<td>- 163 gm</td>
</tr>
<tr>
<td>Effect of cigarette smoking</td>
<td>-317 gm</td>
</tr>
<tr>
<td>Effect of both hard illicit drug and cigarette use</td>
<td>-352 gm</td>
</tr>
</tbody>
</table>

N=265 newborns with meconium drug testing at delivery

Effect for birth weight controlled for significant confounders (education, preeclampsia, race): F=4.55, p=.004

* This is the effect beyond the effect of already smoking cigarettes, as most marijuana smokers in this sample also smoked cigarettes
Final Issues Related to Quitting

- Does quitting smoking during pregnancy cause too much stress for the fetus?

  NO, the harm of continuing to smoke FAR OUTWEIGHS any small risk associated with the potential stress from quitting.

- According to ACOG and AAP, a woman should NEVER be told not to quit smoking during pregnancy.

- Quitting casual use of other drugs, including alcohol, should also be recommended and women can do this on their own.

- However, for some substances (especially opiates), or for heavy abuse of any substance, quitting should be recommended but also medically supervised.
Implications for Intervention

Mellisa Williamson, 35, a Bullitt Avenue resident, worries about the effect on her unborn child from the sound of jackhammers.

TRAFFIC: Official says wait for end result
Does Intervention Work?

- A woman is more likely to quit smoking/using drugs during pregnancy than at any other time in her life.
- Even simple provider efforts have produced quit rates for all types of drug use of up to 10%.
- Use of a Smoking Quit Line has also produced quit rates of 10%+
- 5 A’s quit rates are up to 20% for smoking and 40% or more for alcohol and illicit drugs.
- Quitting smoking in pregnancy leads to improved birth outcomes, including a 25% reduction preterm delivery.
- Even cutting down leads to a 20% reduction in preterm delivery and a 44% reduction in NICU admissions.
- Efforts must be regular and consistent to have a significant impact.
Does Intervention Work?

Patients in Tennessee report:

✓ A strong preference for individual discussions with their health care provider rather than group support sessions

✓ Knowing the dangers of pregnancy smoking and drug use, but still being unable or unwilling to quit

✓ That their providers did discuss smoking and drug use with them, but that these discussions did not go far enough in helping them to quit (issue of addiction)
Of TIPS participants, who either met with a health educator or received smoking cessation assistance from their prenatal provider, **28% quit smoking** during pregnancy and remained smoke free to delivery.

Women who **quit smoking** had significantly improved birth outcomes including substantially improved birth weights and a **25% reduction in risk for preterm delivery**.

Women who **reduced their smoking** had a **24% reduction in risk for preterm delivery** and a **44% decrease in risk for a NICU admission**.

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### Does Intervention Work?

Findings from the TIPS Program (over 3000 women to date)

<table>
<thead>
<tr>
<th>Birth Outcome</th>
<th>Continued Smoking</th>
<th>Reduced Smoking</th>
<th>Quit Smoking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth Weight (lb)</td>
<td>6.68</td>
<td>6.76</td>
<td>7.18</td>
</tr>
<tr>
<td>Birth Length (in)</td>
<td>19.3</td>
<td>19.2</td>
<td>19.9</td>
</tr>
<tr>
<td>Preterm Birth (%)</td>
<td>18.2</td>
<td>13.9</td>
<td>13.7</td>
</tr>
<tr>
<td>NICU Admission (%)</td>
<td>9.1</td>
<td>7.7</td>
<td>4.8</td>
</tr>
<tr>
<td>Fetal/Neonatal Death (%)</td>
<td>6.3</td>
<td>4.6</td>
<td>0</td>
</tr>
</tbody>
</table>
Intervention: What You Can Do...

Substance Use Counseling

The 5 A's
5 A’s Approach to Smoking Cessation*

- A brief 5-step behavioral intervention (5-15 minutes) designed for smoking cessation
- Adapted for pregnant women by ACOG (American College of Obstetricians and Gynecologists)

* Will be presenting a model for smoking intervention here, but the general approach applies to any pregnancy substance use
The 5 A’s

1. **ASK** about tobacco use
2. **ADVISE** to quit
3. **ASSESS** willingness to make a quit attempt
4. **ASSIST** in quit attempt
5. **ARRANGE** follow-up
Ask — 1 Minute

Which of the following statements best describes YOUR current smoking habits?

- You have *never* smoked or have smoked fewer than 100 cigarettes in your lifetime.
- You stopped smoking *before* you found out you were pregnant and are not smoking now.
- You stopped smoking *after* you found out you were pregnant and are not smoking now.
- You smoke some now but have cut down since you found out you were pregnant.
- You smoke about the same amount now as you did before you found out you were pregnant.

*Congratulate Patient*

*Advise*
Which of the following best describes your exposure to OTHER people smoking?

- You do not have regular contact with anyone who smokes.
  - Congratulate Patient

- You have regular contact (but do not live) with other people who smoke, and they DO NOT smoke around you.
  - Advise

- You have regular contact (but do not live) with other people who smoke, and they DO often smoke when you are around.
  - Advise

- You live with at least 1 smoker, but they DO NOT smoke when you are around.
  - Advise

- You live with at least 1 smoker, and they DO often smoke when you are around.
  - Advise
Alternate Tobacco Use Questions

1) WHICH STATEMENT BEST DESCRIBES YOU NOW?
   a. You smoke regularly now – about the SAME amount as before you found out you were pregnant
   b. You smoke regularly now, but MORE THAN before you found out you were pregnant
   c. You smoke some now, but have CUT DOWN since you found out you were pregnant
   d. You stopped smoking AFTER you found out you were pregnant, and are not smoking now
      # Weeks Quit: ________
   e. You stopped smoking BEFORE you found out you were pregnant, and are not smoking now
      # Weeks/Years Quit: ________
   f. You have NEVER smoked, or smoked fewer than 100 cigarettes in your life

2) IF YOU CURRENTLY SMOKE:
   # CIGARETTES/DAY: Current ________ Pre-Pregnancy ________ # YEARS SMOKED: ________

3) WHICH OF THE FOLLOWING BEST DESCRIBES YOUR EXPOSURE TO OTHER PEOPLE SMOKING?
   a. You do not have regular contact with anyone who smokes
   b. You have regular contact (but do not live) with other people who smoke, but they DO NOT smoke when you are around
   c. You have regular contact (but do not live) with other people who smoke, and they DO often smoke when you are around
   d. You live with at least 1 smoker, but they DO NOT smoke when you are around
   e. You live with at least 1 smoker, and they DO often smoke when you are around
Clear, strong, personalized advice to quit:

**Clear & Strong:** “As your health care provider, my best advice for you and your baby is for you to quit smoking and reduce your secondhand smoke exposure. I need you to know that quitting is one of the most important things you can do to protect your baby and improve your own health.”

**Personalized:** Impact of smoking on the baby, the family, and the patient’s well being
Assess the patient’s willingness to quit in the next 30 days

ASK:
“How WILLING are you to quit smoking in the next 30 days?”

ASK:
“What would it take to make you more willing to quit, to get you to move from your score to a score 3 pts higher?”
ASSESS — 1 Minute

- If a patient responds that she **would** like to try to quit within the next 30 days, move on to the **ASSIST** step

- If the patient does **not** want to try to quit, try to increase her motivation via education and personalizing the issue
Initial Considerations

• Addiction has both **PHYSICAL** & **BEHAVIORAL** components

• Both factors must be addressed for successful cessation

• Recognize your own biases regarding smoking during pregnancy
Ask open-ended questions (Why? When?):

• Determine the role that smoking plays in her life
• Discuss her motivations for quitting or continuing
• Talk about her past attempts to quit
• Talk about the health benefits for her and her child and how these are important to her
• Talk about the cost savings from not buying cigarettes and other uses for that money
ASSIST: Coping Techniques

• Identify triggers & roadblocks
• Determine what she can do in situations in which she usually smokes
• Discuss alternative behaviors to smoking
• Plan ways to relieve stress and cope with difficult emotions
• Recognize the withdrawal symptoms that will occur and how to deal with them
ASSIST: Getting Ready to Quit

- Identify & arrange social support
- Determine quit date & sign contract
- Provide self-help materials
- Quit Line information
ASSIST: Provide Self-Help Materials

- Health benefits
- Health benefits timeline
- Withdrawal symptoms: Cravings and coping skills
- Cost savings & personal rewards
- Alternative ways to cope & manage stress
- How to quit without gaining weight
- Dealing with others smoking around you
- Preparing to quit
ASSIST: Additional TIPS

- Keep Hands and Mouth Busy
  - Doodle
  - Squeeze a stress ball
  - Decorate the baby’s room
  - Sew or other crafts
  - Chew on a straw/toothpick/gum
  - Keep a journal
  - Drink water

- Assistance for quitting without gaining weight
  - Keep a food diary
  - Stay busy and physically active—read, walk, call a friend, exercise
  - Drink lots of water
  - Snack healthy on fruits and veggies
  - Good nutrition/avoid high-fat & high-sugar foods
ASSIST: Dealing With Others Smoking

- Ask everyone to not smoke around you
- If they do, you can choose to leave the room
- Create “Smoke-free Zones” (home, car)
- Go to places where smoking is not allowed
- Try to surround yourself with non-smoking friends
ASSIST: Addressing Difficult Questions

- You may hear:
  - “I smoked with my first child and s/he was OK!”
  - “My mom smoked with me and I turned out OK!”

- How to handle this: Circumstances that vary between pregnancies may significantly impact the degree to which the fetus will be harmed by smoking:
  - Overall amount of primary & secondary smoke exposure
  - Stress
  - Nutrition
  - Increased age during pregnancy
  - Environmental factors
  - Overall health
Behavioral intervention is the first-line treatment for pregnant women.

Pharmacotherapy can be considered for heavy smokers unable to quit via behavioral interventions alone; or for women dependent on opioids.

Very limited data on the safety or efficacy of pharmacologic treatments in pregnant women; nicotine gum if needed for smokers (NO nasal sprays; patches not first choice); careful monitoring of methadone for substance users.
ARRANGE — 1+ Minute

- Follow-up to monitor progress
- Ask about concerns or difficulties
- Express a willingness to help
- Offer referrals to the Smoking Quit Lines, or other local programs

Tennessee Tobacco Quit Line
1-800-QUIT-NOW
1-800-784-8669
Helpful Tips when Using the 5A’s

- Encourage patients to be smoke-free but counsel them to cut down if they are unwilling to quit completely.
- Praise any quit attempt—even if it’s only for an hour!
- Acknowledge how difficult behavior change can be.

“Quitting is hard. Make sure your patients get some support.”
Scenario

- Patient reports that she smokes 1 pack per day and has 2 previous quit attempts. In one attempt she was able to remain smoke free for 32 hours. She reports that she might consider quitting now that she is pregnant, but really doesn’t think she can.

- How can you assist her?
Scenario Response Suggestions

• “Wow, you were able to stay smoke free for 32 hours! How’d you do that?”

• “It sounds like ______ was really helpful, what do you think kept you from making it past 32 hours?”

• “What do you enjoy doing that might help ______ during this next quit attempt?”

• The key is to personalize your advice, drawing from what the patient tells you about issues related to her smoking
Suggestions for Post-Delivery Assistance

- The 5 A’s can also be used postpartum to help parenting women quit smoking
- Encourage the patient to remain quit or continue cutting down
- Remind the patient of the health benefits of quitting or remaining smoke free (especially that the baby will be introduced to a smoke free environment)
- Breastfeeding NOT contraindicated for smokers, social drinkers, or temporary narcotic therapy; women using marijuana, heroin, cocaine or meth should NOT breastfeed
Questions and Discussion
Substance Use During Pregnancy: Known Effects and How to Assist

For additional information, copies of materials or resources, or reference information, please contact Dr. Beth Bailey or the TIPS Program

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