SUBSTANCE USE DISORDERS IN PREGNANCY

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GENERAL DISCLOSURES

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SPEAKER DISCLOSURES

✓ No conflicts of interest
OBJECTIVES

• Understand scope and impact of substance use in pregnancy

• Gain a basic understanding of maternal and fetal effects for most common substances

• Review recommendations for screening, intervening and referring
Mother Convicted as Drug Deliverer After Cocaine Is Found in Newborns

July 14, 1989 | From Associated Press

SANFORD, Fla. — An addict who gave birth to two children with traces of cocaine in their systems was convicted of drug delivery Thursday under a law routinely used against drug dealers.

"A derivative of cocaine which the defendant had introduced into her body passed into theirs" through the umbilical cord, Circuit Judge O. H. Eaton Jr. ruled in the non-jury trial.

Jennifer Clarise Johnson, 23, faces up to 30 years in prison, but prosecutor Jeff Deen said he would recommend that she continue in a drug-treatment program and receive a long period of probation.

Deen said the verdict is "a new tool for prosecutors to put a stop to this great problem in this state and in the nation."

Born into suffering: More babies arrive dependent on drugs

Laura Ungar, USA TODAY Published 10:27 a.m. ET July 8, 2015 | Updated 7:10 p.m. ET July 8, 2015

LOUISVILLE, Ky. — Shortly after he was born, tremors wracked Leopoldo Bautista's tiny body as he suffered through the pain of drug withdrawal — pain his mother understands.

Samantha Adams is being treated with methadone for a heroin addiction, and she passed the methadone into Leopoldo's system. Sitting vigil with him at Norton Hospital, she tears up as she describes the 10-day-old "going through what I'd been through."

Being born into suffering is becoming ever more common as research shows a continuing surge in drug-dependent infants amid a national epidemic of pain pill and now heroin abuse, with no end in sight.

ACCESS TO CARE

• Research demonstrates that punitive policies applied to substance use do not improve outcomes

• Improved outcomes are associated with public health models that emphasize harm reduction and access to treatment
ACCESS TO CARE

Early prenatal care is recommended for the best possible maternal and infant outcomes (CDC, 2011).
ACCESS TO CARE

• National Survey: Abstinence rate of 57%
• Prospective Study: Abstinence rate of 96% of heavy drinkers, 78% of cannabis users, 73% of cocaine users and 32% of cigarette smokers
• Precipitous rates of relapse following delivery
5.9% of pregnant women use illicit drugs, 8.5% drink alcohol and 15.9% smoke cigarettes, resulting in over 380,000 offspring exposed to illicit substances, over 550,000 exposed to alcohol and over one million exposed to tobacco in utero.
UNIQUE CONSIDERATIONS

• Impact varies and is complicated by:
  – drug, point of exposure and extent of use
  – polysubstance use
  – comorbid and undertreated psychiatric and medical conditions
  – lack of prenatal care
  – Poverty
  – Interpersonal violence
  – Impaired maternal-infant and bonding

• Limited research
**APPROACH**

Screening and Brief Intervention Algorithm**

Screen for substance abuse @
First Prenatal Visit/Intake:
Tools: 4P+ or CRAFFT
Women should be screened privately
- Assess and address psychiatric co-morbidities (PHQ-9)
- Assess social risk factors: domestic violence/homelessness (PVS or WAST)

Positive screen for substance abuse

Willingness to accept treatment

Signs of acute withdrawal*  
- Yes: Go to emergency department  
- No: Probable physiologic dependence

Negative screen
Re-screen at 24 to 28 weeks

Denies need for treatment

- Provide information about perinatal risks
- Assess/address psychiatric co-morbidities
- Assess/address social risks including domestic violence and homelessness
- Close interval follow-up appointments including motivational interviewing

Unclear or unlikely physiologic dependence

Probable physiologic dependence

Refer to counselor trained in addiction treatment

APPROACH

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- Assess social risk factors: domestic violence/homelessness (PVS or WAST)

Negative screen
Re-screen at 24 to 28 weeks

<table>
<thead>
<tr>
<th>Screen</th>
<th>Sens (%)/Spec(%)</th>
<th>Substance</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUDIT-C</td>
<td>67-95/85</td>
<td>Alcohol</td>
<td>Free</td>
</tr>
<tr>
<td>CRAFFT (15-24 yo)</td>
<td>76/94</td>
<td>Alcohol and drug</td>
<td>Free</td>
</tr>
<tr>
<td>4P’s Plus</td>
<td>87/76</td>
<td>All</td>
<td>Permission</td>
</tr>
<tr>
<td>T-ACE</td>
<td>69-88/1-89</td>
<td>Heavy alcohol</td>
<td>Free</td>
</tr>
<tr>
<td>TICS</td>
<td>80/80</td>
<td>Alcohol and drug</td>
<td>Free</td>
</tr>
<tr>
<td>TWEAK</td>
<td>71-91/73-83</td>
<td>Heavy alcohol</td>
<td>Free</td>
</tr>
</tbody>
</table>
SCREENING

• **Assess**: Readiness to change
• **Advise**: fill in knowledge gaps for all pts
• **Assist and Arrange**: if ready, refer
SCREENING

Drug toxicology is NOT recommended for universal screening because it has limitations and should only be considered if there is a clinical indication and with consent.
“Go ahead. Nothing to worry about.”
TOBACCO: INTRODUCTION

• Remains one the most prevalent and preventable causes of infant morbidity and mortality in the US

• Almost ½ quit during pregnancy and close to 80% relapse following delivery

• Smokers have the lowest abstinence rates when compared with other substances
TOBACCO: PATHOPHYSIOLOGY

- Nicotine easily crosses the placenta
- Amniotic fluid nicotine levels are severely elevated
- Increases placental resistance and toxin exposure → impaired fetal oxygenation
TOBACCO: ADVERSE EFFECTS

PREGNANCY
• Early Pregnancy Loss/IUFD
• Ectopic Pregnancy
• Preterm Delivery
• Low Birth Weight/SGA
• PROM
• Placental abruption/Previa
• Antenatal depressive symptomatology in the mother

POSTNATAL
• SIDS
• NEC
• Childhood Asthmas/Obesity/Increased risk for Respiratory Infections and Otitis Media
• Associations with poor academic outcomes/ADHD/substance use/antisocial behaviors (studies have mixed results; many confounders)
• Altered maternal/fetal attachment (confounders)
TOBACCO: INTERVENTIONS

• Early identification and counseling
• Contingency management
  – Cochrane review: CM superior to other interventions
• NRT +/- Bupropion
  – NRT increases abstinence rates in late pregnancy by 40%
CONTINGENCY MANAGEMENT

Center for Technology and Behavioral Health
Innovate · Evaluate · Disseminate

PROGRAM REVIEWS

Motive8: Online contingency management for smoking cessation

http://www.c4tbh.org/program-review/motive8-online-contingency-management-for-smoking-cessation/
TOBACCO: INTERVENTIONS

Smoking Cessation For Pregnancy And Beyond: A Virtual Clinic

You have signed up successfully. If enabled, a confirmation was sent to your e-mail.

https://www.smokingcessationandpregnancy.org/course
ALCOHOL: EPIDEMIOLOGY

“CDC to Women: Protect Your Womb From the Devil Drink,” sneered The Atlantic. Slate wondered: “CDC Says Women Shouldn’t Drink Unless They’re On Birth Control. Is It Drunk?!?”

Jezebel, Elle and USA Today all expressed (righteous) outrage at the idea that a government agency should suggest an entire population of adult women stop drinking because of theoretical fetuses.

http://www.huffingtonpost.com/entry/cdc-alcohol-young-women-pregnancy-warning_us_56b22f03e4b04f9b57d805bc
ALCOHOL: EPIDEMIOLOGY

- Approximately 3.3 million U.S. women aged 15-44 years who were not pregnant and not sterile were at risk for an alcohol-exposed pregnancy during 2011–2013.
- A developing baby can be exposed to alcohol before a woman knows she is pregnant.
ALCOHOL: EPIDEMIOLOGY

• Prenatal alcohol exposure is the leading preventable cause of birth defects and neurodevelopmental in the US.
• Binge drinking is clearly associated with harmful effects in pregnancy.
• Studies on light and moderate drinking have inconsistent findings.

ALCOHOL: PATHOPHYSIOLOGY

Figure 5.5 In the placenta alcohol follows nutrients across the interstitial space from the maternal to the fetal blood supply. The baby gets as much alcohol as the mother gets.
Alcohol use during pregnancy can lead to lifelong effects.

Up to 1 in 20 US school children may have FASDs.

People with FASDs can experience a mix of the following problems:

**Physical issues**
- low birth weight and growth
- problems with heart, kidneys, and other organs
- damage to parts of the brain

**Behavioral and intellectual disabilities**
- learning disabilities and low IQ
- hyperactivity
- difficulty with attention
- poor ability to communicate in social situations
- poor reasoning and judgment skills

**Lifelong issues with**
- school and social skills
- living independently
- mental health
- substance use
- keeping a job
- trouble with the law

Which leads to...

These can lead to...

Drinking while pregnant costs the US **$5.5 billion** (2010).

# ALCOHOL: FASD

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Growth</th>
<th>FAS Face</th>
<th>Brain</th>
<th>Alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. FAS</td>
<td>growth</td>
<td>face</td>
<td>severe</td>
<td>alc</td>
</tr>
<tr>
<td>2. PFAS</td>
<td>face</td>
<td>face</td>
<td>severe</td>
<td>alc</td>
</tr>
<tr>
<td>3. SE/AE*</td>
<td></td>
<td>severe</td>
<td>alc</td>
<td></td>
</tr>
<tr>
<td>4. ND/AE</td>
<td></td>
<td>moderate</td>
<td>alc</td>
<td></td>
</tr>
</tbody>
</table>

* Also referred to as:
  - Alcohol Related Neurodevelopmental Disorder (ARND) or
  - Neurodevelopmental Disorder Prenatal Alcohol Exposed (ND-PAE)

https://depts.washington.edu/fasdpn/htmls/fasd-fas.htm
ALCOHOL: FAS

Faces in Fetal Alcohol Syndrome

Discriminating Features
- short palpebral fissures
- flat midface
- short nose
- indistinct philtrum
- thin upper lip

Associated Features
- epicanthal folds
- low nasal bridge
- minor ear anomalies
- micrognathia

In The Young Child

Streissguth, 1994
ALCOHOL: INTERVENTIONS

• Behavioral Intervention
  – No evidence supporting one intervention over another

• Medication Assisted Treatment
  – Naltrexone (?), disulfiram (no?), acamprosate (no?)

• Referral to a higher level of care as indicated
  – Medically supervised withdrawal
  – Residential treatment

OPIOIDS: ADVERSE EFFECTS

- Placental Abruption
- IUFD
- Intraamniotic infection
- IUGR
- Fetal passage of meconium
- Preeclampsia
- Premature labor and delivery
- Premature rupture of membranes
- Placental insufficiency
- Miscarriage
- Postpartum hemorrhage
- Septic thrombophlebitis
- Mixed data on teratogenicity

OPIOIDS: NAS

FIGURE. Neonatal abstinence syndrome (NAS) incidence rate* — 25 states, 2012–2013†

Source: State Inpatient Databases, Healthcare Cost and Utilization Project.
* NAS cases per 1,000 hospital births.
† Incidence rates reported are for 2013, except for four states (Maine, Maryland, Massachusetts, and Rhode Island) for which 2013 data were not available; 2012 data are reported for these states.

OPIOIDS: NAS

• Clinical diagnosis:
  – hx of maternal opioid use
  – positive tox screen
  – neonatal findings c/w NAS

• Varies widely in presentation

• Potentiated by other substances

• No known long-term adverse effects
OPIOIDS: INTERVENTIONS

COMMITTEE OPINION

Number 524 • May 2012
Committee on Health Care for Underserved Women and the American Society of Addiction Medicine
This information should not be construed as dictating an exclusive course of treatment or procedure to be followed.

ABSTRACT: Opioid use in pregnancy is not uncommon, and the use of illicit opioids during pregnancy is associated with an increased risk of adverse outcomes. The current standard of care for pregnant women with opioid dependence is referral for opioid-assisted therapy with methadone, but emerging evidence suggests that buprenorphine also should be considered. Medically supervised tapered doses of opioids during pregnancy often result in relapse to former use. Abrupt discontinuation of opioids in an opioid-dependent pregnant woman can result in preterm labor, fetal distress, or fetal demise. During the intrapartum and postpartum period, special considerations are needed for women who are opioid dependent to ensure appropriate pain management, to prevent postpartum relapse and a risk of overdose, and to ensure adequate contraception to prevent unintended pregnancies. Patient stabilization with opioid-assisted therapy is compatible with breastfeeding. Neonatal abstinence syndrome is an expected and treatable condition that follows prenatal exposure to opioid agonists.
OPIOIDS: INTERVENTIONS

• Medically supervised withdrawal can be safely performed, but it presents a high risk for relapse (41 to 96%)
  – Placental abruption, PTL, meconium, growth delay, fetal death
  – Poor prenatal care
OPIOIDS: INTERVENTIONS

- Reduces risk of illicit opiate use and other drugs diminishing risk of transmission of infectious diseases
- Prevents fluctuation in maternal drug level over the course of the day thus avoiding fetal distress
- Improves participation in prenatal care
- Improves maternal nutrition and infant birth weight
- Reduces obstetric complications (IUFD, PTL etc)
- Removes opiate-dependent woman from high-risk environment

Outcomes comparing methadone to buprenorphine

- Mean Total Dose of Morphine (mg)
- Mean Hospital Stay (days)
- Mean Duration of NAS Treatment (days)
OPIOIDS: INTERVENTIONS

Methadone

Most evidence in pregnancy
Daily observed dosing
No diversion potential
No ceiling effect
Longer NAS hospital stay

Buprenorphine

Office based therapy
Diversion potential
Need to be in withdrawal to start
Ceiling effect
Shorter NAS hospital stay

Slide by David Sapienza, MD 2016
COCAINE

The New York Times
Revisiting the ‘Crack Babies’ Epidemic That Was Not

Michael Winerip
RETRO REPORT  MAY 20, 2013

http://www.nytimes.com/2013/05/20/booming/revisiting-the-crack-babies-epidemic-that-was-not.html
COCaine: ADVERSE EFFECTS

- PROM
- Placental abruption
- Preterm birth (OR = 3.38; 95% CI: 2.72–4.21)
- Low birth weight (OR = 3.66; 95% CI: 2.90–4.63)
- SGA (OR = 3.23; 95% CI: 2.43–4.30)

COCAINE: INTERVENTIONS

• CBT, MI and CM

• No evidence-based pharmacologic treatments
CANNABIS: EPIDEMIOLOGY

- Most commonly used illicit substance in pregnancy and lactation
- Prevalence ranges from 10% to 43%
CANNABIS: PATHOPHYSIOLOGY

• δ-9-tetrahydrocannabinol (THC) crosses the placenta, but its major metabolite does not
• Fetal THC concentrations are lower than maternal
• Produces 5x the amount of CO as cigarette smoke
CANNABIS: ADVERSE EFFECTS

Pregnant Women Turn to Marijuana, Perhaps Harming Infants

More expectant mothers are using marijuana, believing it safe. But research suggests it may hurt brain development and reduce birth weight.

NYTIMES.COM
CANNABIS: ADVERSE EFFECTS

• LBW*
• PTL*
• SGA*
• Fetal brain growth
• Poor attention and executive functioning
• Lower academic achievement
• Increased behavioral problems
CANNABIS: INTERVENTIONS

• CBT, MI, CM?
  – Brief Marijuana Dependence Counseling by SAMSHA

• No evidence-based pharmacologic treatments

BREASTFEEDING

• Illicit substances including marijuana, heroin, cocaine and methamphetamine: contraindicated in breastfeeding according to the AAP.

• Nicotine and alcohol: benefits outweigh risks with limited use

• Methadone: encouraged

SUMMARY

• Screen all pts for substance use in pregnancy and screen more than once
• Fill in gaps in knowledge around substance use in pregnancy
• Weigh the r/b of various treatments with the risks of continued substance use in pregnancy
• Refer to a higher level of care as indicated
July 24, 1992

Mother Cleared of Passing Drug to Babies

By TAMAR LEWIN

Correction Appended

The Supreme Court of Florida yesterday overturned the conviction of Jennifer Clarice Johnson, the first woman in the nation convicted of delivering drugs to her newborn infants through the umbilical cord in the seconds after their births.

Ms. Johnson, 26 years old, of Altamonte Springs, was charged and found guilty under laws intended to apply to drug traffickers. About 160 such criminal cases have been brought nationwide.

"It's a great victory for public health, for women and newborns and common sense," said Lynn Paltrow, litigation director of the Center for Reproductive Law and Policy, which provided legal representation for Ms. Johnson. "It's the first Supreme Court in any state to address a conviction of a pregnant woman for giving birth to a substance-exposed newborn. It's significant both because it's a unanimous decision and because now all the courts that have ruled on these cases say they're illegal, unconstitutional or both."
RESOURCES

• See email attachment for more information:
  – Swedish OB Outreach Clinic
  – 26 day inpatient "Chemically Using Pregnant Women" programs
  – Outpatient Treatment Programs
  – 6 month residential treatment programs for pregnant and parenting women
  – Parent-Child Assistance Program (PCAP)
  – MOMs Plus Case Management
  – Nurse-Family Partnership
  – Maternity Support Services and Infant Case Management
SPECIAL THANKS TO

Drs. Duncan, Sapienza and Peterson
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