

**Prenatal Substance Abuse:
Improving Birth Outcomes**

Jennifer Yates, MSN
Family Nurse Practitioner
Child Advocacy and Protection Services
Children's Hospital of Wisconsin
Fox Valley Child Advocacy Center (920) 969-7973
Willow Tree Cornerstone Child Advocacy Center in Green Bay (920) 436-8881

Jennifer Yates, Certified Family Nurse Practitioner has no relevant financial relationships to disclose or conflicts of interest to resolve

Overview

- Scope of the Problem
- Common substances of abuse during pregnancy and effects on the fetus
 - A special look at Heroin
- Statutes and Policy
- Identification of prenatal substance abuse and medical issues
- Interventions and improving birth and health outcomes

Prevalence

- Prevalence is hard to confirm - Histories obtained from the mother may be inaccurate and testing biological specimens may also be inaccurate
- The National Survey on Drug Use and Health is an annual survey that provides national and state level information on the use of alcohol, tobacco and illicit drugs and includes reported drug use for pregnant women between the ages of 15 and 44
 - Annual survey at national and state level of more than 67,000 non institutionalized people older than 12

Comparison of Drug Use Among Women 15-44 Years of Age by Pregnancy Status: 2009-2010

	Pregnant Women, %	Non pregnant Women, %
Illicit drug use	4.4	10.9
Alcohol use	10.8	54.7
Binge drinking	3.7	24.6
Cigarette use	16.3	26.7

National Survey on Drug Use and Health
2010
<http://www.oas.samhsa.gov/nhsda.htm>

Illicit Drug Use in the United States

- 2011-2012 data from the National Survey on Drug Use and Health
 - 18.3 percent among pregnant women aged 15 to 17
 - 9.0 percent among pregnant women aged 18 to 25
 - 3.4 percent among pregnant women aged 26 to 44
- These rates were not significantly different from those in the combined 2009-2010 data
- Larger proportions stated they smoked cigarettes and drank alcohol
- Prenatal maternal opiate use increased from 1.19 to 5.63 per 1000 births per year from 2000 to 2009 with a substantial increase in the incidence of neonatal abstinence syndrome from 1.20 to 3.39 per 1000 hospital births (Patrick et al, 2012)

Scope of the Problem

- Almost all drugs are known to cross the placenta and have some effect on the fetus
 - Early in gestation (embryonic stage), drugs can have significant teratogenic effects
 - During the fetal period, drugs may cause growth abnormalities and alterations in brain organization
- Illicit drug use is associated with higher rates of sexually transmitted infections including HIV, depression, domestic violence, poverty and significant prenatal and neonatal complications (KuczKowski, 2007)

Societal Impact of Prenatal Substance Abuse

- In addition to the effects on users and their families, prenatal substance use has significant societal costs
- The use of street drugs and other illicit substances during pregnancy is an expensive public health problem
 - In 2008, an estimated \$605 million was associated with health care costs for drug-exposed newborns in the United States (ACOG, 2008)
- Ongoing interventions are often needed to treat developmental, behavioral, academic, and socio-emotional problems
- The CDC (2011) estimates a lifetime cost for an individual with Fetal Alcohol Syndrome of \$2 million dollars
- Prenatal substance abuse is frequently associated with child neglect and involvement in the child welfare system

Social and Psychological Issues

- A history of child abuse, especially sexual abuse is common in the substance abusing female
- Domestic violence is linked to substance abuse in pregnant women
- Mental illness is common in substance abusing women
- Substance abuse is common in women living in poverty, and many do not receive treatment due to lack of health insurance (SAMHSA, 2010)

What about Martha?

The Adverse Childhood Experiences Study (ACE)

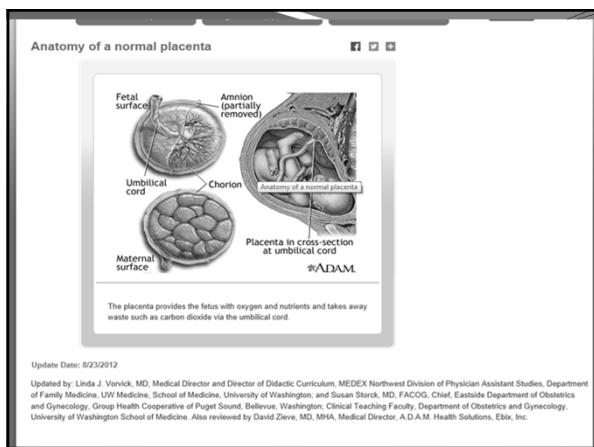
- This study looked at the relationship between self reported adverse childhood experiences and future adverse health and psychological issues
- Adverse childhood experiences include having substance abusing parents, incarcerated parents, and childhood maltreatment
- ACE studies show adverse childhood experiences increase adult risk of alcoholism, drug abuse, depression, suicide attempts, smoking, sexual risk behavior and poor health
- For more information <http://www.cdc.gov/ace/index/htm>

Common Drugs involved in Prenatal Exposure

- Nicotine
- Alcohol
- Marijuana
- Opiates
- Cocaine
- Methamphetamine
- Heroin

Mechanism of Action of Drugs on the Fetus

- Direct Effects of Prenatal Drug/Alcohol Use
 - Early in pregnancy can cause physical defects in the developing embryo
 - After the major structural development is complete, may cause abnormal growth and changes in neurotransmitters, their receptors and brain organization
- Indirect Effects of Prenatal Drug/Alcohol Use
 - Vasoconstriction associated with crack, cocaine, heroin tobacco and marijuana use restricts fetal oxygen supply and may cause prenatal complications such as abruptio placenta
 - Maternal behavior may include poor nutrition, non-compliance with prenatal care, and exposure to sexually transmitted infections and violence



Nicotine

- Nicotine is the most commonly used drug during pregnancy and has a negative effect on infant neuro behavior and long-term behavior, cognition, language, and achievement
- Smoking cigarettes increases the risk of ectopic pregnancy, and placenta previa and has been linked to low birth weight and pregnancy complications including prematurity, placental abruption and intrauterine death (Minnes, 2011)
- The negative effects are likely due to hypoxia, undernourishment of the fetus and vasoconstrictor effects on the placenta and umbilical vessels

Alcohol

- There is no safe amount of alcohol consumption during pregnancy. Avoiding alcohol consumption is the main preventable cause of mental retardation in children
- Alcohol has the potential to cause harm to the fetus at all stages of gestation
 - Significant alcohol exposure during the first trimester is associated with facial anomalies and major structural anomalies, including brain anomalies
 - Exposure in the second trimester increases the risk of spontaneous abortion
 - Exposure in the third trimester predominantly affects weight, length, and brain growth
 - Neurobehavioral effects may occur with a range of exposures throughout gestation, even in the absence of facial or structural brain anomalies

Alcohol

- **Prenatal exposure to alcohol is a leading cause of birth defects and developmental disabilities**
- Fetal alcohol spectrum disorder (FASD) includes the range of effects that can occur in children exposed to alcohol prenatally and includes physical, mental, behavioral and/or learning disabilities
- Alcohol is a teratogen with irreversible central nervous system effects (interferes with the normal prenatal development)
- Long term negative effects on growth, behavior, cognition, language, and achievement

Fetal Alcohol Syndrome is the most serious type of Fetal Alcohol Spectrum Disorder

The diagram shows a baby's face with several facial features labeled as anomalies. On the left side, labels include 'Small palpebral fissures', 'Smooth philtrum', and 'Thin upper lip'. On the right side, labels include 'Microcephaly', 'Low nasal bridge', 'Epicanthal folds', 'Minor ear anomalies', and 'Micrognathia'.

Fetal Alcohol Syndrome

- a small head
- a smooth ridge between the upper lip and nose, small eyes, a very thin upper lip, or other abnormal facial features
- below-average height and weight
- hyperactivity
- lack of focus
- poor coordination
- delayed development and problems in thinking, speech, movement and social skills
- poor judgment
- problems seeing or hearing
- learning disabilities
- mental retardation
- heart problems
- Kidney defects and abnormalities
- deformed limbs or fingers
- mood swings

Marijuana

- Smoking marijuana produces 5 times the amount of carbon monoxide as cigarette smoking which may alter fetal oxygenation
- Has been shown to alter brain neurotransmitters and brain biochemistry and has shown subtle abnormalities in infant's neurobehavior
- Associated with deficits in school achievement, problem solving and attention

Opiates

- In the United States, **heroin** and **methadone** are the most common opioids used during pregnancy, and there is an increase in the use of hydrocodone (Vicodin) and buprenorphine (Suboxone) (Manchikanti, 2012)
- Opiates rapidly cross the placenta
- Infant withdrawal (Neonatal Abstinence Syndrome) is the most significant effect of prenatal opiate exposure
- Long-term effects on behavior
- No consensus on the effects on cognition, language and achievement

Cocaine

- High prevalence of prenatal crack cocaine use during the 1980s and 1990s
- Easily crosses the placenta and the blood-brain barrier and is a potent vasoconstrictor affecting growth
- Exposure during development of the nervous system may result in permanent changes in the brain affecting responsiveness; cognition, language and behavior
- Increased risk of premature rupture of membranes and abruptio placenta (separation of the placenta from the uterus)
- Long term effects on behavior and some effects on language

Methamphetamines

- Cross the placenta and cause vasoconstriction which leads to negative effects on the mother and the fetus
- Fetal and newborn risks include abruption, preterm birth, intrauterine growth restriction, low birth weight, small head circumference and learning difficulties
- Possible mechanism of action also includes an interaction and change in neurotransmitter systems in the developing fetal brain
- Most studies do not control for other factors such as tobacco use, poly drug exposure, nutrition and access to prenatal care (Ladhani, et al, 2011)

Heroin

- An opiate drug that floods receptors throughout the body and causes tolerance and addiction
- Heroin gets into the brain quickly, causing an almost immediate euphoric high
- Intravenous route is the most efficient as this produces a high concentration of drug that reaches the brain
- There is an ever increasing need for larger amounts of heroin to maintain the euphoria and avoid the discomfort of withdrawal and 1/3 of users will relentlessly pursue heroin after the first use

Heroin

- Intravenous use produces effects within seconds and puts the mother and fetus at risk for HIV and Hepatitis
- Symptoms of withdrawal include restlessness, insomnia, bone pain, vomiting, stomach cramps, diarrhea, and cold flashes
- Exposure prenatally decreases birth weight, length and head circumference
- Changes in the pregnant woman's daily heroin use can cause fetal abstinence syndrome which increases the risk of premature delivery and still birth

Heroin

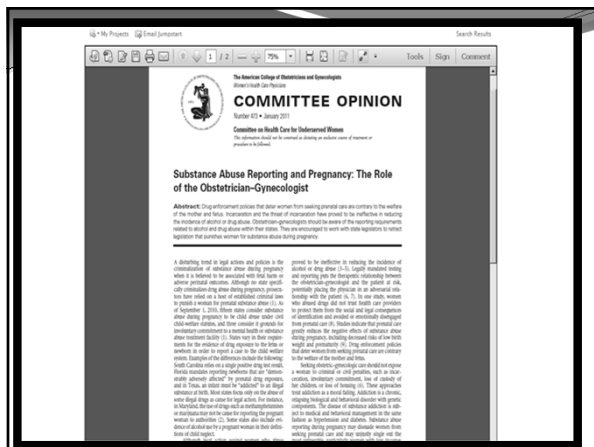
- Rapidly passes through the placenta and accumulates in the amniotic fluid
- Chronic untreated heroin use in pregnancy is associated with poor fetal growth, premature rupture of membranes, preterm birth, still birth, Neonatal Abstinence Syndrome (withdrawal), and increased rates of infections such as HIV and Hepatitis
- Since the late 1970's, the standard of care for pregnant women addicted to heroin is Methadone Maintenance Treatment (MMT)

Summary of Effects of Prenatal Drug Exposure (Pediatrics, 2013)

	Nicotine	Alcohol	Marijuana	Opiates	Cocaine	Methamphetamine
Short-term/Birth outcome						
Fetal growth	Effect	Strong effect	No effect	Effect	Effect	Effect
Anomalies	No consensus	Strong effect	No effect	No effect	No effect	No effect
Withdrawal	No effect	No effect	No effect	Strong effect	No effect	Limited data
Neurobehavior	Effect	Effect	Effect	Effect	Effect	Effect
Long-term effects						
Growth	No consensus	Strong effect	No effect	No effect	No consensus	Limited data
Behavior	Effect	Strong effect	Effect	Effect	Effect	Limited data
Cognition	Effect	Strong effect	Effect	No consensus	Effect	Limited data
Language	Effect	Effect	No effect	Limited data	Effect	Limited data
Achievement	Effect	Strong effect	Effect	Limited data	No consensus	Limited data

Statutes and Policy

Statutes and Policy	Topic
WI Statute s.48.133	Unborn Child in Need of Protection or Services
Federal Child Abuse Prevention and Treatment Act	Substance Affected Infants and Infants Diagnosed with Fetal Alcohol Spectrum Disorder
WI Statute s. 146.0255	Testing Expectant Mothers and Infants for Controlled Substances/Analogues
WI Statute s. 146.0257	Evaluation of Infants for Fetal Alcohol Spectrum Disorders
WI Department of Children and Families	Child Protective Services Access and Initial Assessment Standards



- ## Screening for Drug Use During Pregnancy
- The American College of Obstetricians and Gynecologists (ACOG) recommend screening all pregnant women for alcohol and illicit drug use as part of routine obstetrical care
 - Screening should be repeated periodically during pregnancy
 - Denial, fear and guilt are barriers to self report during pregnancy
 - Use of a validated screening tool is recommend

Screening for Drug Use During Pregnancy

- Self report
 - Inexpensive
 - May be issues with accurate history and recall
- Biological specimens – there is no biological specimen when obtained randomly that identifies prenatal drug use with 100% accuracy
 - Three most common specimens to establish drug use during pregnancy
 - Urine- identifies recent drug use (longer with marijuana)
 - Hair – can reflect drug use over a long period of time, controversial
 - Meconium – reflects exposure during the second and third trimester of pregnancy

CRAFFT Substance Abuse Screen for Adolescents and Young Adults

- **C** – Have you ever ridden in a **CAR** driven by someone (including yourself) who was high or had been using alcohol or drugs?
- **R** – Do you ever use alcohol or drugs to **RELAX**, feel better about yourself or fit in?
- **A**- Do you ever use alcohol or drugs while you are by yourself or **ALONE**
- **F**- Do you ever **FORGET** things you did while using alcohol or drugs?
- **F**- Do your **FAMILY** or **friends** ever tell you that you should cut down on your drinking or drug use?
- **T**- Have you ever gotten in **TROUBLE** while you were using alcohol or drugs?

Possible Indicators of Maternal Substance Abuse - General

- Young women, especially adolescents
- Lack of or inadequate prenatal care
- Multiple missed appointments for prenatal care
- Patients who appear depressed, agitated or have difficulty making eye contact
- Presentation to an emergency room (especially as a result of motor vehicle accidents, falls, burns, or fights)

Possible Indicators of Maternal Substance Abuse – Psych/Soc

- Current enrollment in a drug treatment program
- Previous history of delivery of a prenatally drug exposed infant
- Histories that put them at risk for HIV infections
- Family history of addiction
- History of childhood sexual, physical, or emotional abuse
- Loss of custody of children

Possible Indicators of Maternal Substance Abuse - Physical

- Premature labor
- Abruptio placenta or still birth
- History of gastrointestinal bleeds, peptic ulcers, or pancreatitis, or hepatitis
- Cellulitis, skin abscess, endocarditis, or osteomyelitis
- Poor dentition
- Suspicious trauma
- Symptoms of withdrawal: dilation or constriction of pupils, tachycardia, sweating, slurred speech

Neonatal Screening

- Urine screening of the newborn has a low sensitivity (high false negative rate) as only infants with recent exposure for most substances will test positive
- Meconium (the first feces of a newborn infant) may be analyzed and is sensitive and specific for drugs (including opioids)
 - Testing is not usually available on-site at hospitals, and results often take days or weeks
 - Analysis of meconium may indicate drug use during the second and third trimester and not reflect periods of drug abstinence closer to delivery
- Testing of umbilical cord tissue by drug class-specific immunoassays is commercially available

Neonatal Abstinence Syndrome

- A newborn infant born to a mother dependent on opioids or other substances is at risk for drug withdrawal commonly referred to as neonatal abstinence syndrome (NAS). NAS is a variable, complex, and incompletely understood spectrum of signs of neonatal behavioral dysregulation. It is not defined by the need for pharmacotherapy. Although most commonly associated with opioid exposure, other substances have been associated with NAS, including sedative-hypnotics.

Signs and Symptoms of NAS

- The American Academy of Pediatrics (AAP) recommends the use of an objective abstinence scoring tool to measure the severity of withdrawal and the Finnegan neonatal abstinence scoring system is often used to measure the severity of NAS and guide pharmacologic therapy when, despite supportive care, infants exhibit significant symptoms
 - Central Nervous System – Irritability, fussiness, high-pitched cry, hypersensitivity to stimuli, tremors, seizures, skin excoriation, changes in muscle tone, sleep problems
 - Gastrointestinal – Dehydration, poor feeding, regurgitation, diarrhea, skin excoriation on buttock, excessive sucking
 - Metabolic, Vasomotor, Respiratory – Nasal stuffiness, sneezing, frequent yawning, frequent hiccups, fever, sweating, tachypnea, apnea

Symptoms of Neonatal Abstinence Syndrome

- **W** – Wakefulness
- **I** – Irritability
- **T** – Trembling, temperature variation, tachypnea
- **H** – Hyperactivity, high-pitched persistent cry, hyperreflexia, hypertonus
- **D** – Diarrhea, diaphoresis, disorganized suck, difficult to comfort
- **R** – Rub marks, respiratory distress, rhinorrhea,
- **A** – Apneic attacks, autonomic dysfunction
- **W** – Weight loss or failure to gain weight
- **A** – Alkalosis (chemical change in blood due to rapid breathing)
- **L** – Lacrimation (tearing)

Baby's behavior what you can do to help
 Wisconsin Association for Perinatal Care Newborn Withdrawal Project www.perinatalweb.org

Prolonged and/or high-pitched crying

- Hold your baby close to your body
- Decrease loud noises, bright lights, or touching your baby too much
- Humming and gentle rocking may help

Sleeplessness

- Reduce noise, bright lights, and patting, or touching your baby too much
- Soft, gentle music and rocking may help
- Keep your baby's diaper area clean and dry; Watch for redness or diaper rash, and do what your baby's health care provider suggests
- Feed your baby when he or she is hungry, your baby may want to eat often

Excessive sucking of fists

- Offer a pacifier.
- Cover your baby's hands with gloves or mittens if his or her skin becomes sore
- Keep his or her hands clean
- Avoid lotions and creams on your baby's hands

Difficult or poor feeding

- Feed small amounts often
- Feed in a quiet, calm place with little noise and activity
- Allow time for rest during feedings

Baby's behavior what you can do to help
 Wisconsin Association for Perinatal Care Newborn Withdrawal Project www.perinatalweb.org

Sneezing, stuffy nose or breathing troubles

- Keep your baby's nose and mouth clean
- Don't put too many clothes or blankets on your baby
- When your baby is awake, hold him or her upright with his or her bottom on your lap, and support his or her chest with your hand
- Feed small amounts more often
- Feed your baby slowly, allowing for rest periods during feedings
- Always place your baby to sleep on his or her back

Spitting up or vomiting

- Support your baby's cheeks and lower jaw to help sucking and swallowing
- Burp your baby each time he or she stops sucking and after each feeding
- Keep your baby clean, and keep bedding free of vomit, the smell may make your baby uncomfortable, and soiled bedding may make your baby's skin sore

Easily upset or bothered

- Keep things quiet for your baby
- Try not to touch your baby too much
- Try not to wake him or her if he or she is sleeping
- Swaddle your baby loosely, but avoid over-wrapping to prevent overheating

Methadone Maintenance Therapy

- Mimics the pharmacological effects of morphine with a longer half-life (24 hours)
- Medication assisted treatment can stabilize patients who are spending most of their time trying to obtain heroin or prescription narcotics and is more effective for long term success
- Heroin-addicted women using MMT have infants with higher birth weights and lower rates of intrauterine growth retardation

Methadone Maintenance Therapy

- A harm-reduction treatment approach that reduces illicit drug use, withdrawal symptoms and cravings
 - Able to focus on nutrition
 - Access prenatal care
 - Participate in drug treatment, behavior therapy and other supportive services for issues of domestic violence, employment, housing and food
 - Decrease risk of HIV/Hepatitis infection with dirty needles, seek medical care to decrease perinatal transmission if infected

Methadone Maintenance Therapy

- Typical therapeutic dose during pregnancy is 60-100 mg daily
- Methadone is currently the treatment of choice for opioid-dependent pregnant women because of the many years of experience with its use (ACOG Committee on Health Care for Underserved Women, 2012)
- However, studies suggest that buprenorphine (suboxone) is safe and has been shown to decrease hospital stays and the length of treatment for neonatal abstinence syndrome as compared to methadone (Jones, H.E., Johnson, R.E, Jasinski, D.R. et al, 2005) (Kakko, J, Hellig, M, Saman, I, 2008)

Breastfeeding

- Risk versus benefit of drug use and breast feeding must be considered
- The American Academy of Pediatrics considers the use of illicit drugs including marijuana, opiates, cocaine and methamphetamines to be contraindicated to breastfeeding
- Supervised methadone use may be compatible with breastfeeding
- Heavy alcohol use has been shown to be associated with neurobehavioral effects on the infant and is a contraindication
- The benefits of breastfeeding with limited use of alcohol (occasional 1 drink 2 hours before breastfeeding) may outweigh the potential risks
- Nicotine should be discouraged but is not a contraindication

Breastfeeding is encouraged in some opioid-dependent mothers

- In drug treatment and counselor states mother is not using illicit substances
- Negative maternal urine toxicology except for prescribed medications
- Consistent prenatal care
- No contraindications such as HIV or other prescribed medications that are contraindicating while breast feeding
- Breastfeeding by methadone-maintained mothers can reduce the severity of NAS

Wisconsin Association for Perinatal Care – Perinatal Substance Abuse

- In 1989, Wisconsin Act 122 created a task force to address the needs of substance abusing pregnant women and their families. WAPC developed a publication, *Challenges in Perinatal Substance Abuse: Educational Strategies for Care Providers and Communities* as well as many others.
- WAPC's Infant and Family Committee also has worked on the issue of neonatal opioid withdrawal and has published *"The Effects of Opioid Dependence during Pregnancy—Addressing both Maternal and Neonatal Issues."* In addition, the committee developed the Newborn Withdrawal Project Educational Toolkit.

Interventions for Newborns

- Many newborns need special care and have prolonged hospital stays
- Infants exposed to heroin, methadone or other opioids often experience neonatal abstinence syndrome (NAS) and require medications to prevent seizures and promote weight gain
- Home-based interventions and early intervention programs enhance child development

Drug Endangered Environments

- Prenatal substance use is often associated with child maltreatment, neglect and involvement with the child welfare system
- The need for foster care placements is increasing for children prenatally exposed to drugs
- Children prenatally exposed to drugs have a higher incidence of behavior problems making them more vulnerable to child maltreatment

The Importance of Prenatal Care

- Prenatal care improves the health of the substance abusing woman and unborn child even if the mother continues to use
- Screening women for substance abuse can lead to interventions that encourage and educate women, minimizing poor birth outcomes

Interventions for Pregnant and Parenting Substance Users

- The Substance Abuse and Mental Health Service Administration recommends a comprehensive model for treating substance abusing women and their newborns that includes health, mental health and social services components
- Recommended treatment for these women is gender specific, relationship-based and trauma-informed
- Family treatment drug courts for substance abusing families have been more effective in assisting substance abusing women reunify with their children (NPC Research, 2007)

References

- ACOG Committee on Health Care for Underserved Women, American Society of Addiction Medicine. (2012). ACOG Committee Opinion No. 524: Opioid abuse, dependence, and addiction in pregnancy. *Obstetrics and Gynecology* 119:2070.
- American Academy of Pediatrics Committee on Substance Abuse, and Committee on Fetus and Newborn. Behnke, M. & Smith, V.C. (2013). Technical Report: Prenatal Substance Abuse: Short- and Long-term Effects on the Exposed Fetus, *Pediatrics*, 131(3): 1009-1024.
- Jones, H.E., Johnson, R.E., Jasinski, D.R. et al. Buprenorphine versus methadone in the treatment of pregnant opioid-dependent patients: effects on the neonatal abstinence syndrome. *Drug and Alcohol Dependence* 79:1.
- Kakko, H., Heli, M., Sarman, I. (2008). Buprenorphine and methadone treatment of opiate dependence during pregnancy: comparison of fetal growth and neonatal outcomes in two consecutive case series. *Drug and Alcohol Dependence* 96:60.
- Kuczkowski, K.M. (2007). The Effects of Drug Abuse on Pregnancy. *Current Opinion Obstetrical Gynecology*, 19: 578-585.
- Ladhani, N.N., Shah, P.S., Murphy, K.E. (2011). Knowledge Synthesis Group on Determinants of Preterm/LBW Births. Prenatal amphetamine exposure and birth outcomes: a systematic review and metaanalysis. *American Journal of Obstetrics and Gynecology*, 205 (219): et.
- Lindsay, M.K., Burnett, E. (2013). The Use of Narcotics and Street Drugs During Pregnancy. *Clinical Obstetrics and Gynecology*, 56 (1): 133-141.

References

- Logan, B.A., Brown, M.S., Hayes, M.J. (2013). Neonatal Abstinence Syndrome: Treatment and Pediatric Outcomes. *Clinical Obstetrics and Gynecology*, 56 (1): 186-192.
- Manchikati, L., Helm, S. 2nd, Fellows, B. et al. (2012). Opioid epidemic in the United States. *Pain Physician* 15:ES0.
- Minnes, S., Lang, A. (2011). Prenatal Tobacco, Marijuana, Stimulant, and Opiate Exposure: Outcomes and Practical Implication. *Addiction Science Clinical Practice*, 6 (1): 57-70.
- Sachs, H.C., Committee on Drugs. (2008). The transfer of drugs and therapeutics into human breast milk: an update on selected topics. *Pediatrics* 132: e796.
- Substance Abuse and Mental Health Services Administration. (2010). *Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings. NSDUH Series H-41, HHS Publication No. (SMA) 11-4658*. Rockville, MD: SAMHSA; 2011. Available at <http://www.oas.samhsa.gov/NSDUH/2k10NSDUH/2k>
- Substance Abuse and Mental Health Services Administration. (2010). *Substance use treatment need and receipt among people living in poverty*. Retrieved from <http://www.oas.samhsa.gov/2k10/173/173Poverty.htm>
