

## PRENATAL SUBSTANCE EXPOSURE

### Fetal Alcohol Spectrum Disorder (FASD)

#### Overview

- Prenatal alcohol “exposure has been implicated as the most common cause of intellectual disability and the leading preventable cause of birth defects in the United States, accounting for significant educational and public health expenditures” (Sokol et al., 2003).
- Alcohol destroys and damages cells in the central nervous system. Widespread destruction of brain cells in early fetal development causes malformations in the developing brain structures. This can produce damage to the structure and functioning of the brain, which are permanent.
- Many believe there are safe amounts or types of alcohol to drink during pregnancy; however, research shows “there is no known safe amount of alcohol during pregnancy or when trying to get pregnant. There is also no safe time to drink during pregnancy. Alcohol can cause problems for a developing baby throughout pregnancy, including before a woman knows she’s pregnant. All types of alcohol are equally harmful, including all wines and beer” (Centers for Disease Control and Prevention, 2017).
- It is estimated 22% of women drink early in pregnancy and 11% continue to drink even after they know they are pregnant (Chasnoff, 2010).
- Chasnoff (2010) estimates that between 0.02-0.2% of babies are born with FASD, indicating approximately one million children across the United States are exposed prenatally to alcohol.

#### Terminology

- A variety of terms and phrases are used to describe children who experience prenatal exposure to alcohol.
- **Fetal Alcohol Spectrum Disorder (FASD)** is a term some physicians and researchers are now using which is “umbrella term describing the range of effects that...may include physical, mental, behavioral, and/or learning disabilities with possible lifelong implications” (Bertrand, et.al. 2004 as found in Chasnoff, 2010). This is not a diagnostic term, but an inclusive term to include the various conditions caused by fetal exposure to alcohol.

- **Fetal Alcohol Syndrome (FAS)** is a **specific** set of cognitive and physical characteristics in three areas: growth deficiencies, central nervous system impairment, and facial features (Chasnoff, 2010).
- **Fetal Alcohol Affect (FAA)** is a term for individuals who do not have the facial features associated with FAS. However, this term is being phased out, and the term alcohol-related neurodevelopmental disorder (**ARND**) or alcohol-related birth defects (**ARBD**) are being used for individuals who do not have features in all three categories.

### Developmental Effects

- The degree and type of damage done to the developing fetus depends upon several factors:
  - Which developmental processes were occurring when the alcohol was ingested. For example:
    - During the **first trimester** alcohol consumption affects the limbic system, which is responsible for emotional regulation. Children with damage to this system have difficulty regulating their emotions.
    - During the **third trimester** the cerebral cortex is developing. Alcohol consumption during this period can result in intellectual disability.
  - How much was ingested (even low levels of consumption can cause damage).
  - Whether the drinking was chronic or binge drinking (even infrequent consumption can cause damage).
  - Genetic variations of the baby. For example, there have been cases where one twin had neurological problems as a result of mother's use of alcohol during pregnancy while the other twin did not.
- Physical effects of Fetal Alcohol Syndrome (FAS) include: (Chasnoff, 2010)
  - Epicanthal folds (extra folds in the inner corner of the eye)
  - Small eye openings
  - Flattened philtrum (no groove from the bottom of the nose to the upper lip)
  - Thin upper lip

- Small mouth and high arched palate
  - Small teeth with poor enamel coating
  - Low set ears
  - Malformations of major organs, especially heart, kidneys, eyes, and ears
  - Vision problems, including an eye that turns in (“lazy eye”)
  - Predisposition to ear infections, partial or complete hearing loss
- Developmental problems in FASD can include the following:
    - Pre- and post-natal growth deficiency.
    - An average IQ of 68, which falls within the mild range of intellectual disability.
    - Irritability in infancy.
    - Inattention, distractibility, hyperactivity, mood disorders in childhood (Sokol & Delaney-Black, et al. 2003).
    - Small head circumference (microcephaly) which is usually associated with varying degrees of intellectual disability and abnormal brain development.
    - Dysfunction in fine motor control, such as weak grasp, poor eye-hand coordination, and tremulousness.
    - Difficulties with **executive functioning**: problem-solving, higher-level thinking, self-monitoring, regulation of emotion, motivation, judgment, planning, working memory (pulling information from long term memory to use in the present), time perception, processing information, adaptive functioning (such as telling time, understanding money), and poor perception of their bodies in space (they are unaware of personal space).
      - These behaviors are often misinterpreted as willful, deliberate, or “bad” behavior. This is unfortunate, because children with these problems may not be accurately diagnosed and may not receive developmental services.
      - Children with these developmental problems often have poor social skills, and have difficulty making or keeping friends.
      - Due to difficulties in executive functioning, children with Fetal Alcohol Spectrum Disorder, especially those without facial features, **may be misdiagnosed with ADHD**, which will not provide the necessary treatment and support.

## **Opioids (including Heroin and prescription drugs)**

### **Symptoms**

- Symptoms of neonatal abstinence syndrome (NAS) include: high pitched and excessive crying, fever, irritability, seizures, slow weight gain, sweating, scratching of the skin, tremors, diarrhea, vomiting, and possibly death (NIDA, 2017; Chasnoff, 2010).
- Infants may be born prematurely, with low birth weight, muscle tone changes, and neurobehavioral problems (Householder, Chasnoff, Burns, & Hatcher, 1982).
- These symptoms may be present at birth, but usually do not appear until the baby is three or four days old and may not appear till 10 – 14 days after birth. Withdrawal symptoms peak at about 6 weeks of age and can persist for four to six more months (Chasnoff, 2010).
- Infants exposed to methadone during gestation can have similar symptoms, especially if the mother is taking more than 40 milligrams of methadone per day in the third trimester.

## **Cocaine**

### **Symptoms**

- Impaired self-regulation, cognitive functioning, information processing, and sustained attention to tasks (NIDA, 2017).
- Difficulties with responding to sound and visual stimulation and engaging appropriately with parents or other caregivers. (Chasnoff, 2010).
- Physical problems, due to interrupted blood flow to developing organs in utero, including missing limb or kidney, death of a portion of the bowel. Heart attacks or stroke can also occur, especially if the cocaine was used during the third trimester (Chasnoff, 2010).
- In infants: increased muscle tone can result in tremulousness and arching behaviors, difficulty feeding (Chasnoff, 2010).

## **Methamphetamine**

### **Symptoms**

- For infants 0–3 months: Increased drowsiness, once aroused exhibit increases in physiologic stress (Zabaneh, et al., 2012).

- Children can also be injured if methamphetamine is being produced in their home. Injuries can include respiratory distress (from exposure to anhydrous ammonia used in the production of methamphetamine), chemical burns (from acid exposure), positive urine tests for methamphetamine (Chasnoff, 2010).

## **Marijuana**

### **Symptoms**

- Some research shows that prenatal substance use can cause low birth weight, developmental problems, and difficulty with attention as the child grows older (Centers for Disease Control and Prevention, 2017).
- Longitudinal studies of children exposed to marijuana before birth showed cognitive deficits in children and young adults including deficits in verbal reasoning, composite and short-term memory, lowered intelligence scores and executive functioning, and lower test scores on school achievement as well as increased depressive symptoms, increased hyperactivity, inattention, impulsivity (Chasnoff, 2017).

## **Tobacco**

### **Symptoms**

- Research shows that tobacco use during pregnancy can cause premature birth, low birth rate, and birth defects like cleft palate or cleft lip. After birth, babies are more likely to have longer hospitalizations. Additionally, smoking before and after the birth increases the risk of Sudden Infant Death Syndrome (SIDS) (Centers for Disease Control and Prevention, 2017).
- Modest decrease in height growth trajectory during the first 3 years of life (LaGasse et al., 2012).

- Much of this content adapted from: *Understanding the Needs of Children of Parents with Substance Use or Mental Disorders*. Developed by the National Center for Substance Abuse and Child Welfare (2009). Updated by the Institute for Human Services (2017).
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