## The SAMHSA FASD Center for Excellence

The SAMHSA FASD Center for Excellence is a Federal initiative devoted to decreasing FASD incidences and improving the quality of life among individuals and families impacted by FASD. One of the important functions of the FASD Center for Excellence is to disseminate information about the prevalence and effects of FASD to professionals and providers across all healthcare service systems.

# Definition

"Fetal alcohol spectrum disorders" (FASD) is an umbrella term describing the range of effects that can occur in an individual whose mother drank alcohol during pregnancy. These effects may include physical, mental, behavioral, and/or learning disabilities with lifelong implications.

The term FASD is not intended for use as a clinical diagnosis. It refers to conditions such as fetal alcohol syndrome (FAS), alcohol-related neurodevelopmental disorder (ARND), alcohol-related birth defects (ARBD), and partial FAS (pFAS).

While FASD describes a range of disorders, FAS is a specific birth defect caused by alcohol use while pregnant. FAS is a diagnosis: It is medical diagnosis Q86.0 in the *International Classification of Diseases* (ICD-10).

#### Who is at Risk?

Any pregnant woman who drinks alcohol is at risk of having a child with an FASD, regardless of her education, income, or ethnicity. Women who are at particularly high risk of drinking during pregnancy and having a child with an FASD include<sup>1, 2</sup>:

- Women with substance abuse or mental health problems
- Women who have already had a child with an FASD
- Women in recovery from substance abuse issues
- Women who smoke
- Women who have multiple sex partners
- Recent victims of abuse and violence

Factors that have helped pregnant women avoid alcohol included mental health treatment and large social support networks.

#### Prevention

FASDs are 100% preventable. The one sure prevention method is to totally avoid alcohol while trying to get pregnant, during pregnancy, or after having unprotected sex where it was possible to get pregnant. Current research shows that there is no proven safe amount of alcohol to consume during pregnancy.

Pregnant women who drink do not intentionally harm their unborn babies. In most cases, they simply do not know about FASDs or fully understand the risks. They may have been given incorrect information about alcohol and pregnancy from family, friends or health care providers. In some cases, women have a serious problem with alcohol and they need professional help to stop drinking. Others do not even realize they are pregnant when the drinking occurs.

About 50% of all pregnancies are unplanned. As a result, many women will consume alcohol without knowing that they are pregnant. The best thing you can do once you find out you're pregnant is to stop drinking. This will increase the chance of having a healthy baby. Also, if you are trying to become pregnant, stop drinking now.

## Prevalence Data

#### **General Prevalence**

Overall prevalence of FAS in the United States was estimated in 1996 by the Institute of Medicine<sup>3</sup> to be between 0.5 and 3.0 per 1,000 births. In 2001, FAS was estimated to be between 0.5 and 2.0 per 1,000 births,<sup>4</sup>

"Of all the substances of abuse (including

cocaine, heroin, and marijuana), alcohol

produces by far the most serious

neurobehavioral effects in the fetus."

- Report to Congress of the

Institute of Medicine (IOM), 1996

an estimate made from clinic-based studies and referral-based population outreach studies in relatively small communities. Recent studies have shown that FAS and other FASD are more prevalent in school populations, and therefore the general population, than previously estimated.

In 2009, the prevalence of FAS in typical, mixedracial, and mixed-socioeconomic populations of the United States is estimated to be 2 to 7 per

Unites States and some Western European countries.<sup>5</sup>

1,000. Current FASD prevalence in populations of younger school children may be as high as 2-5% in the

Recently there is evidence that in-school studies are innovative, straight-forward, and a most promising method for establishing an accurate and complete epidemiology of FASDs within a population, especially for the diagnosis of FAS and partial FAS.<sup>6</sup>

#### Prevalence of Drinking Among Pregnant Women in the United States

According to 2005-2006 data from SAMHSA's National Survey on Drug Use and Health (NSDUH), 11.8% of pregnant women aged 15 to 44 reported using alcohol in the past month.<sup>7</sup>

NSDUH combined data from 2002 to 20078 for women aged 18 to 44 indicate that:

- Past month alcohol use among women in their first trimester of pregnancy was 19%.
- The rate for those in the second trimester was 7.8%.
- The rate for those in the third trimester was 6.2%.

Women who were unmarried and over 30 tended to have the highest rates of alcohol use in pregnancy.9 However, in 2004, the rate of past-month binge drinking among pregnant women age 15 to 17 (8.8%) was more than twice that of pregnant women age 26 to 44 (3.8%).<sup>10</sup>

> "Alcohol consumed during pregnancy increases the risk of alcohol related birth defects."

"We do not know what, if any, amount of alcohol is safe. But we do know that the risk of a baby being born with any of the fetal alcohol spectrum disorders increases with the amount of alcohol a pregnant woman drinks.

When a pregnant woman drinks alcohol, so does her baby. Therefore, it's in the child's best interest for a pregnant woman to simply not drink alcohol."

- Surgeon General's Advisory on Alcohol Use in Pregnancy, February 21, 2005

# Effects of Alcohol on the Developing Fetus

### Alcohol as a Teratogen

Drinking alcohol at any time during pregnancy can harm the fetus. Alcohol is a teratogen, a drug or other substance capable of interfering with the development of a fetus, causing birth defects. In pregnant women, alcohol is not only carried to all organs and tissues, but also to the placenta, where it easily crosses through the membrane separating maternal and fetal blood systems. In this way, alcohol is transported directly to the fetus and to all its developing tissues and organs.

When a pregnant woman drinks an alcoholic beverage, the concentration of alcohol in her unborn baby's bloodstream is the same level as her own. Unlike the mother, however, the liver of a fetus cannot process alcohol at the adult rate of one ounce every two hours. High concentrations of alcohol, therefore, stay in the fetus longer, often for up to 24 hours. In fact, the unborn baby's blood alcohol concentration is even higher than the mother's during the second and third hour after a drink is consumed.

Alcohol exposure can cause permanent brain damage, central nervous system defects and/or physical damage. Defects caused by prenatal exposure to alcohol have been identified in virtually every part of the body, including the brain, face, heart, lung, kidneys, and bones.

No single mechanism can account for all the problems that alcohol causes. Rather, alcohol sets in motion many processes at different sites in the developing fetus:

- Alcohol can trigger cell death in a number of ways, causing different parts of the fetus to develop abnormally.
- Alcohol can disrupt the way nerve cells develop, travel to form different parts of the brain, and function.
- By constricting the blood vessels, alcohol interferes with blood flow in the placenta, which hinders the delivery of nutrients and oxygen to the fetus.<sup>11</sup>
- Toxic by-products of alcohol metabolism may become concentrated in the brain and contribute to the development of an FASD.<sup>12</sup>
- Alcohol can cause the thinning or absence of the corpus callosum, which connects the two hemispheres of the brain, allowing the left and right sides to communicate with each other. Approximately 7% of children with FAS lack a corpus callosum, an incidence rate 20 times higher than in the general population.<sup>13</sup>

## **Primary and Secondary Disabilities**

#### **Primary:**

- Lower IQ
  - Impaired ability in reading, spelling, and arithmetic
- Mental retardation
- Premature birth
- Low birth weight Facial deformity
- Motor skills problems (balance and motor coordination)
- Hearing and vision problems
- Growth de cits
- Lower levels of adaptive functioning
  - Learning disabilities, Attention deficits, Hyperactivity, Impulse control, Language, Memory, Social skills, Sensory difficulties

Secondary (develop when primary disabilities are not properly dealt with):

- Unemployment
- Mental health problems
- Problems in school
- Loss of family
- Dependent living/Homelessness
- Problems with the law/Jail
- Premature death
- Increased substance abuse
- Inappropriate sexual behavior

#### **Challenges in Estimating Prevalence**

studies. Each of these approaches presents challenges.

Surveillance systems (passive and record review systems) lack rigor and consistency, and suffer from dependence on a variety of registries for complete and consistent record compilation. Therefore surveillance clearly report very low rates of FAS and all FASDs. Another major problem with passive surveillance which relies on hospital records and birth defects registries is that individuals with an FASD are not typically cutoff of 1 or 2 years old, these individuals are not counted in this type of passive surveillance.

Researchers have used three main approaches to study the prevalence of FASDs; 1) Surveillance and record Clinic-based studies also face challenges. Participants are self-selected, and the women who are at highest review systems, 2) clinic-based studies, and 3) active case ascertainment approaches, including in-school risk for having a child with an FASD are less likely to attend prenatal clinics early in pregnancy, regularly, and /or at all, making consistent and meaningful access to the highest-risk cases difficult or impossible. Secondly, there is extreme variability in the reporting of alcohol use and abuse in various clinics, for a variety of reasons. Thirdly, since FAS is not easily diagnosed at birth, these studies generally underestimate the prevalence of FAS and all FASDs.

Active case ascertainment methods are labor intensive, time consuming, and costly. Also, studies of this diagnosed at birth and may not be identified until they enter school. As many birth defects registries have a type require cooperation from many non-researchers (e.g., community, political, health and education officials, parents), and access to particular populations may be selective.

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