



## Fetal Alcohol Exposure

Fetal alcohol exposure occurs when a woman drinks while pregnant. Alcohol can disrupt fetal development at any stage during a pregnancy—including at the earliest stages before a woman even knows she is pregnant.

Research shows that binge drinking, which means consuming four or more drinks per occasion, and regular heavy drinking put a fetus at the greatest risk for severe problems.<sup>1</sup> But even lesser amounts can cause damage.

Alcohol passes easily from a mother's bloodstream into her developing baby's blood. Alcohol present in a developing baby's bloodstream can interfere with the development of critical organs and body parts, including the brain.

Prenatal alcohol exposure is the leading preventable cause of birth defects in the United States. It can cause a range of developmental, cognitive, and behavioral problems, which can appear at any time during childhood and last a lifetime.

### Fetal Alcohol Spectrum Disorders (FASD)

Scientists define a broad range of effects and symptoms caused by prenatal alcohol exposure under the umbrella term Fetal Alcohol Spectrum Disorders (FASD).

The disorders under the FASD category include:

#### Fetal Alcohol Syndrome (FAS)

Fetal Alcohol Syndrome (FAS) is the most serious consequence of heavy drinking during pregnancy, aside from fetal death. An FAS diagnosis requires:

- » A specific pattern of facial abnormalities, including wide-set and narrow eyes, a smooth ridge on the upper lip, and a thin upper lip border
- » Growth deficits both prenatally and after birth
- » Central nervous system abnormalities

In addition to these three categories of problems, people with FAS also can have:

- » Smaller-than-average size brains
- » Coordination problems
- » Abnormal formation of bones and some organs
- » Reduced immunity



## Partial FAS

This disorder includes some signs and symptoms of full FAS, but not all three. Most often, the growth issues are not present.

## Alcohol-Related Birth Defects (ARBD)

This disorder includes alcohol-related physical abnormalities, such as heart, kidney, and bone problems, as well as difficulty seeing and hearing.

## Alcohol-Related Neurodevelopmental Disorder (ARND)

This disorder includes central nervous system abnormalities and/or cognitive and behavioral problems.



## FASD-Related Problems

People with an FASD also may have difficulty in the following areas:

- » Learning and remembering
- » Understanding and following directions
- » Shifting attention
- » Controlling emotions and impulsivity
- » Communicating and socializing
- » Practicing daily life skills, including feeding, bathing, counting money, telling time, and minding personal safety

FASD-related brain damage makes it difficult to deal with routine life situations. It causes people to make bad decisions, repeat the same mistakes, trust the wrong people, and have difficulty understanding the consequences of their actions.

FASD cases are seriously underdiagnosed. FASD can be difficult for practitioners to distinguish from other developmental disorders, such as Attention Deficit Hyperactivity Disorder (ADHD), since they share some similar learning and behavioral problems. In addition, people with an FASD also may suffer from the following disorders:

- » ADHD
- » Depression
- » Increased incidence of alcohol and other substance use disorders

## Risk Factors<sup>2</sup>

The severity of alcohol's effects on a fetus primarily depends on the following:

- » Quantity—how much a pregnant woman drinks per occasion
- » Frequency—how often a pregnant woman drinks
- » Timing—in what stage of pregnancy a woman drinks and if she drinks heavily just as the fetus develops a particular feature or brain region

### Key Statistics<sup>6</sup> for the United States Maternal Drinking

- » About 20 to 30 percent of women drink at some point during pregnancy
- » 2 percent of pregnant women admitted drinking alcohol in the previous month
- » 12 percent of pregnant women admitted binge drinking in the previous month (4 or more drinks per occasion)



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Other factors can also play a role in how fetal alcohol exposure can affect children. These include:

### Maternal Characteristics

Research demonstrates that children may be more significantly affected by FASD if their mothers drank during pregnancy and also have certain personal characteristics or life experiences.

These characteristics include:

- » Having poor nutrition
- » Having multiple pregnancies and births
- » Having lower-than-average weight, height, and BMI
- » Being a smoker
- » Being older
- » Being a member of a family of heavy drinkers



### Environmental Factors

Research demonstrates that children can be more significantly affected by prenatal alcohol exposure if their mothers drank and also have poor living conditions, lower socioeconomic status, and higher levels of stress. The following are environmental factors that can play a role:

- » Having little awareness of FASD
- » Lacking prenatal care
- » Experiencing social isolation
- » Living under circumstances where binge or heavier drinking is common and accepted

### Genetics

The extent of FASD symptoms can depend on the genetic make-up of the mother who drank during pregnancy, as well as her child's own genetics.

### Interventions

Researchers and clinicians have developed some effective learning and behavioral interventions to help people living with FASD. For example, intervention at school can help children with FASD learn more easily. School interventions can include specialized teaching strategies that provide a consistent routine and allow children to practice new skills over and over again.<sup>3</sup> Other promising interventions include:

- » Family support groups and classes to help parents better care for a child with FASD<sup>3</sup>
- » Nutritional supplements<sup>4</sup>
- » Behavioral interventions, including training in social skills and personal safety<sup>5</sup>

**For more information, please visit: [www.niaaa.nih.gov](http://www.niaaa.nih.gov)**

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<sup>1</sup> National Institutes of Health. Fetal alcohol spectrum disorders. *Yesterday, Today, and Tomorrow: NIH Research Timelines*. Washington, DC: U.S. Department of Health and Human Services, October 2010.

<sup>2</sup> May, P.A., and Gossage, J.P. Maternal risk factors for fetal alcohol spectrum disorders. *Alcohol Research & Health* 34(1):16–23, 2011.

<sup>3</sup> Paley, B., and O'Connor, M.J. Intervention for individuals with fetal alcohol spectrum disorders: Treatment approaches and case management. *Developmental Disabilities Research Reviews* 15:258–267, 2009.

<sup>4</sup> Warren, K.R.; Hewitt, B.G.; and Thomas, J.D. Fetal alcohol spectrum disorders: Research challenges and opportunities. *Alcohol Research & Health* 34(1):4–14, 2011.

<sup>5</sup> Paley, B., and O'Connor, M.J. Intervention for individuals with fetal alcohol spectrum disorders: Treatment approaches and case management. *Developmental Disabilities Research Reviews* 15:258–267, 2009.

<sup>6</sup> National Institutes of Health. Fetal alcohol spectrum disorders. *Yesterday, Today, and Tomorrow: NIH Research Timelines*. Washington, DC: U.S. Department of Health and Human Services, October 2010.