

## Fact Sheet

## Fetal Alcohol Spectrum Disorders

### Yesterday

- Alcohol's ability to cause birth defects was recognized more than three decades ago by U.S. researchers, and it is now the leading known environmental teratogen (an agent capable of causing physical birth defects). In a 1981 advisory, the U.S. Surgeon General suggested that pregnant women should limit their alcohol intake – although no recommended level of intake was specified.
- Fetal alcohol syndrome (FAS) is one of the most serious consequences of heavy drinking during pregnancy. FAS is a devastating birth defect characterized by craniofacial malformations, neurological and motor deficits, intrauterine growth retardation, learning disabilities, and behavioral and social deficits.
- While the prevalence of FAS in the U.S. is between 0.5-2.0 cases per 1000 births, it is more common in other parts of the world. For example, in parts of South Africa where heavy drinking prevails, the incidence of FAS exceeds 60 cases per 1000 individuals.
- It is estimated that for every child born with FAS, three additional children are born who may not have the physical characteristics of FAS but still experience neurobehavioral deficits resulting from prenatal alcohol exposure that affect learning and behavior.
- The earliest stages of life are periods of great vulnerability to the adverse effects of alcohol. Embryonic and fetal development are characterized by rapid, but well-synchronized patterns of gene expression, which makes the embryo/fetus particularly vulnerable to harm from alcohol.
- Research shows that patterns of exposure known to place a fetus at greatest risk for FASD include drinking four or more drinks per occasion, and drinking seven or more drinks per week. The outcomes attributable to prenatal alcohol exposure for the children of women drinking in this manner include deficits in growth, behavior, and neurocognition such as problems in arithmetic, language and memory; visual-spatial abilities; attention; and deficits in speed of information processing.
- Imaging and neurobehavioral research in individuals with FAS and FASD reveals that some brain regions appear to be most sensitive to prenatal alcohol while other areas apparently are spared adverse effects. Particularly vulnerable regions include the frontal cortex, hippocampus, corpus callosum, and components of the cerebellum, including the anterior vermis.
- Despite a number of prevention efforts, including point of sale warning signs and bottle labeling, surveillance data indicate that 10% of pregnant women drink some alcohol and 2% are binge drinking. More than 12% of women who are not using contraception and are at risk of becoming pregnant are drinking at levels that exceed 7 drinks per week or 4 or more drinks per occasion.

### Today

- The umbrella term "Fetal Alcohol Spectrum Disorders (FASD)" is now used to characterize the full range of prenatal alcohol damage varying from mild to severe and encompassing a broad array of physical defects and cognitive, behavioral, and emotional deficits.
- In an update of the Surgeon General's advisory of 1981, in early 2005 the U.S. Surgeon General advised pregnant women and women who may become pregnant to abstain from drinking alcohol to eliminate the chance of giving birth to a baby with FASD.

- Based on current research, the Surgeon General's 2005 advisory states:
  - A pregnant woman should not drink alcohol during pregnancy.
  - A pregnant woman who already has consumed alcohol during her pregnancy should stop in order to minimize further risk.
  - A woman who is considering becoming pregnant should abstain from alcohol.
  - Health professionals should routinely inquire about alcohol consumption by women of childbearing age, inform them of the risks of alcohol consumption during pregnancy, and advise them not to drink alcoholic beverages during pregnancy.
  - Health professionals should refer women who have difficulty refraining from alcohol or who are alcohol dependent to an alcohol treatment specialist.

## Tomorrow

- Ongoing NIH research seeks to find more effective ways to prevent and treat FASD. The broadest approach involves universal prevention measures targeted to the global community of men and women, and conveys general education on risks and information to abstain from alcohol in pregnancy.
- Other efforts to explore the possibility of minimizing the damage caused by prenatal alcohol exposure include pharmacological intervention during pregnancy. This alternative approach to prevention may be applicable when there is early alcohol exposure before a woman recognizes that she is pregnant, or otherwise fails to stop drinking during the pregnancy. This research is in an early stage of development.
- Researchers are also exploring several promising approaches to restoring or improving neurobehavioral deficits in animal models of FASD. For example, recent studies suggest that complex motor skill training may help restore performance deficits on a motor task that resulted from binge exposure to alcohol in the neonatal period.

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