Public Health and Genetics Information Series

Fetal Alcohol Syndrome

Why is Fetal Alcohol Syndrome an emerging public health issue?

Fetal Alcohol Syndrome (FAS) is a significant public health concern because it is one of the most common causes of mental retardation and is the only cause that is completely preventable. It is estimated that between 2,000 and 12,000 babies are born each year in the United States with FAS. In a study done in 1998, 14.6% of the pregnant women in the study admitted to consuming alcohol during their pregnancies, with 2.1% drinking frequently. In addition, the study found that women at a higher risk for alcohol consumption included college-educated, unmarried women who were smokers, students, and those employed with higher than average incomes. In addition, it is speculated by some that there may be a genetic predisposition to alcoholism.

No amount of alcohol consumption during pregnancy has been proven safe. In general, a baby exposed to alcohol during pregnancy is at an increased risk for health problems. Therefore, the most effective means of prevention is for a woman to abstain from consuming alcohol if she suspects that she may be pregnant or is attempting to become pregnant. Effective prevention can be facilitated through community education and intervention.
Suggested Reading: Physician awareness and screening for fetal alcohol syndrome. J Health Hum Serv Adm. 2000 Winter; 22(3):257-76.

What is Fetal Alchol Syndrome?

The collection of classic features known as FAS was first named in 1973 by Jones and Smith. However, the effects caused by alcohol consumption during pregnancy have been recognized for nearly 300 years. Because of these effects, alcohol is considered to be teratogen, or a substance which interferes with normal development of the baby during pregnancy.

It is estimated that up to 40 percent of babies born to mothers who are either alcoholics or chronic alcohol users will have FAS. This estimate is presented cautiously since FAS is often difficult to diagnose and because levels of alcohol consumption during pregnancy are often not accurately reported. FAS and FAE affect males and females of all populations and ethnic groups, with the incidence of FAS and FAE varying among different populations and geographical distributions.

What are the features of FAS?

"Classical" FAS consists of a set of characteristic features. Babies born to mothers who consumed alcohol during pregnancy may exhibit all, some, or none of these features. When only some of the features are present, individuals are often considered to have Fetal Alcohol Effect (FAE). Unfortunately, the prognosis for infants and children diagnosed with FAS or FAE is hard to predict, so abstinence from alcohol is the key to prevention.

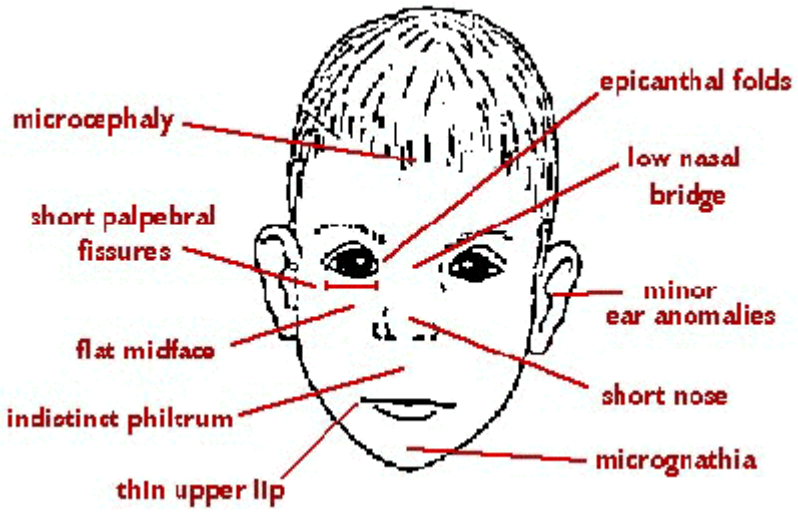

Table 1. Charcteristics and Features of FAS.

Characteristics and Symptoms of FAS

- Small head (microcephaly)
- Underdeveloped jaw (micrognathia)
- Small eyes with sharp, narrow folds
- Short, upturned nose
- Thin upper lip (philtrum)
- Area between the nose and upper lip is smooth and small
- Eye problems
- Ear problems
- Small teeth
- Narrower and flatter faces - "drawn appearance"

Other Symptoms Values

- Growth retardation: height, weight, and head circumference
- Reduced fat tissue
- Intellectual impairment
- Developmental delay
- Poor motor coordination
- Moderate to severe mental retardation
- Behavioral problems
- Heart defects

- Limb abnormalities
- Skeletal abnormalities (scoliosis)
- Kidney problems
- Genital defects

How is FAS Diagnosed?

FAS is not easily diagnosed because many of its features overlap with those of other conditions and many may not become apparent until later in life. However, there are several minimum criteria for diagnosis of FAS:

Growth retardation: decreased growth both pre- and post-natally, with height, weight and/or head circumference being less than the 10th percentile **Central nervous system involvement:** intellectual deficiency or developmental delay **Facial Features:** at least two of the following features must be observed: Head circumference below than the 3rd percentile Small eyes Small or no philtrum "drawn" appearance: thin upper lip and a flat maxilla.

With regard to prenatal diagnosis, some characteristics of FAS may be recognized on ultrasound. These include slow growth in utero and heart malformations. Whether FAS is suspected pre- or post-natally, it is essential that the medical and family histories, including any potential teratogen consumption, of the mother be obtained.

How does Alcohol cause FAS?

Early in development, after fertilization and implantation in the endometrium, the embryo develops the placenta, chorion, and amnion. The fetus and placenta are connected by the umbilical cord umbilical cord. It is through the placental barrier that the developing fetus receives nutrients and oxygen from its mom, and that waste and carbon dioxide leave the fetus. In addition to the nutrients required for the baby's normal development, things like teratogens can also pass through the placental barrier. Therefore, alcohol can easily pass from a mother consuming alcohol to her developing baby. The developing baby is unable to break down the alcohol as quickly as an adult body. Therefore, the alcohol will remain both in higher amounts and longer in the baby's blood.

Although alcohol consumed at any stage of pregnancy can be harmful to the baby, it seems to be most harmful during the first trimester. This is because many key body parts develop during the first trimester. Because these essential structures are in the initial processes of being formed, the effects of alcohol can be devastating to the baby's development from that point onward. Although it is clear that no alcohol consumption is best, it has been recognized that the features of FAS may be minimized if a woman stops drinking at any point during pregnancy. Therefore, stopping alcohol consumption at any stage of pregnancy is hghly commended. However, the effects of alcohol consumption from previous stages in the pregnancy are not reversible.

How can FAS be Treated or Prevented?

There is no effective treatment or cure for FAS, and management can be challenging. Certain features of FAS may be treated individually, such as surgery for heart defects and intervention for developmental delay and behavioral difficulties. In addition, if a pregnant woman is an alcoholic,

rehabilitation programs are recommended to decrease or minimize the severity of the fetus's developmental impairment.

FAS is **100 percent preventable**. It is recommended that pregnant women do not consume any alcohol and that women who are alcoholics seek rehabilitation and use effective means of contraception.

Information and Support Resources

- National Alcohol Abuse Hotline (800) 662-HELP
- National Council on Alcoholism (800)NCA-CALL
- Alcohol and Drug Helpline (800) 821-4357
- Families Anonymous (800) 736-9805
- Centers for Disease Control
- The ARC
- Canadian Centre on Substance Abuse.