

II. What is FAS/ARND?

<i>Learning Objectives and Activities</i>
<ul style="list-style-type: none">● <i>Define the terms FAS, FAE, ARND, ARBD and FASD</i>● <i>Describe the parts of the brain and their functions</i>● <i>Describe how alcohol affects a developing fetus and brain function</i>● <i>Identify the specific physical, mental and behavioral impairments that result from brain damage caused by prenatal exposure to alcohol</i>● <i>Identify the common physical abnormalities associated with FAS/ARND</i>● <i>Identify the common behavioral patterns associated with FAS/ARND at various developmental stages</i>● <i>Define and identify secondary disabilities associated with FAS/ARND</i>● <i>Distinguish myths from facts about alcohol use and FAS/ARND</i>● <i>Identify assessment and diagnostic procedures and tools</i>
<i>Presenters and Materials</i>
<ul style="list-style-type: none">● <i>Overhead or Power Point slides containing major terminology and definitions</i>● <i>Overhead or Power Point slides containing a picture of the parts of the brain</i>● <i>Curriculum, chapter II.</i>● <i>Myths v. Facts Worksheets</i>

There are many medical terms associated with fetal alcohol syndrome. The most common terms defining FAS/ARND are defined as follows:

Fetal alcohol syndrome (FAS) is a birth defect caused by “prenatal alcohol exposure, which produces a spectrum of lifelong effects on offspring depending on the dose, timing and conditions of exposure.”¹ It is a “preventable form of mental retardation and developmental disabilities”² that may appear in children who were exposed to alcohol within their mother’s

1. Streissguth, Ann P., Ph.D. and Connor, Paul D., “Fetal Alcohol Syndrome and Other Effects of Prenatal Alcohol: Developmental Cognitive Neuroscience Implications,” Handbook of Developmental Cognitive Neuroscience; MIT Press (2001).
2. Streissguth, Ann P., Ph.D., “Today I visited an Aleut Village: Observations on Preventing Fetal Alcohol Syndrome,” The IHS Primary Care Provider, Vol. 15, No. 9 (1990).

womb. Children who have FAS have one or more recognizable facial anomalies.

Fetal Alcohol Effect (FAE) is a term that refers to a range of cognitive and behavioral disorders resulting from exposure to alcohol within the womb. Generally, a person who suffers from FAE appears and behaves within a socially normal range although they may also be suffering from forms of brain damage or mental retardation.

Alcohol Related Neurodevelopmental Disorder (ARND) is diagnosed when a child meets the criteria for brain damage but does not have all of the facial features or growth retardation of FAS. Evidence of prenatal alcohol exposure is not necessary for a diagnosis of ARND.³

Alcohol Related Birth Defects (ARBD) refers to any physical abnormalities associated with prenatal exposure to alcohol.

Fetal Alcohol Spectrum Disorder (FASD) refers to the range of lifelong physical, mental and neurobehavioral birth defects associated with prenatal exposure to alcohol.⁴

How Alcohol Affects the Developing Fetus

A fetus is nourished and protected by the placenta which connects the fetus to the mother. The placenta passes oxygen and nourishment to the fetus while protecting it from harmful bacteria. The placenta is unable to protect the fetus from particular viruses, gases, alcohol and drugs. Alcohol in the mother's blood crosses the placenta freely and enters the fetus through the umbilical cord. The extent and severity of effects caused by prenatal alcohol exposure on the fetus depends on several factors including how much alcohol the pregnant mother consumed, at what point during the pregnancy she drank, the genetic structure of the mother and child, and the body size and metabolism of the mother and the child.

When a fetus is exposed to alcohol, the exposure may result in a range of organic brain damage, particularly damaging areas of the brain like the *corpus callosum* which governs the

3. Streissguth, 1997.

4. Streissguth and O'Malley.

interaction between the halves of the brain. Damage to the corpus callosum is associated with deficits in attention, reading, learning, memory, planning, decision-making, and psycho-social function.⁵ The damage is lifelong and irreversible.

Teratogenic Effects of Alcohol

A *teratogen* is a substance or condition that is not part of the normal human body and that disrupts normal development of a fetus causing birth defects. The disruption is a result of gestational exposure to the teratogen. Common teratogens that cause birth defects include alcohol, drugs, viruses, tobacco, and radiation. In general, there are four possible outcomes for a developing fetus exposed to a teratogen: death, malformations, growth deficiency, and functional deficits.

Researchers commonly use the following two principles when examining the effects of teratogens. The first principle of teratology that helps explain the effect of alcohol on the developing fetus is the dose-response relationship: the range of the response (effect of alcohol on the developing fetus) varies with the range of the dosage of alcohol. This principle also assists in understanding how even moderate alcohol consumption can be harmful, especially in the case of binge drinking. For example, seven drinks consumed in one episode will prove more harmful than one drink per day for seven days.⁶

A second principle of teratology is that the timing of the dose affects the type and severity of the response. So, consumption of alcohol during the early period of embryonic development (first trimester) causes deviations in the physical structure of the offspring. Whereas, consumption during the third trimester affects the overall size of the offspring. The central nervous system, which consists of the brain and spinal cord, develops throughout gestation and is there-

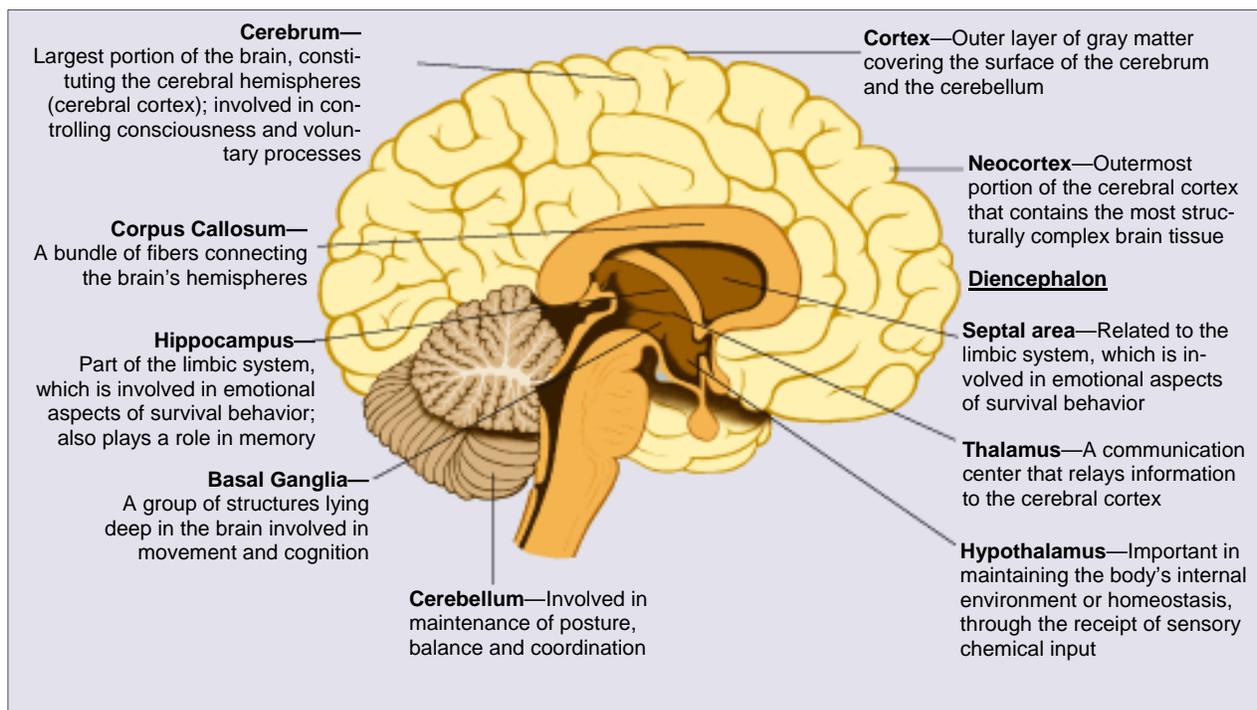
5. Riley, Edward and Mattson, Sarah, "Using brain imaging to track FAS," *Iceberg*, Vol 11, No. 4 (Dec. 2001).

6. Mattson, Schoenfeld, & Riley, 2001.

fore vulnerable during all three trimesters.⁷

Alcohol and the Brain

The type of damage alcohol exposure causes to the brain has been referred to as *static encephalopathy* meaning the damage is permanent but not progressive. Alcohol has a direct toxic effect on cells and can cause cell death. The result is that certain parts of the brain will have fewer than normal cells. Alcohol can impede the transport of amino acids (important building blocks of proteins) and glucose (the main source of energy for cells). It can also impair the blood flow through the placenta causing oxygen deprivation to the developing brain. It can also disturb the function of the hormone and chemical regulatory systems that control the maturation and migration of nerve cells in the brain.⁸



Parts of the human brain and their functions

7. Streissguth, 1997.

8. Michaelis & Michaelis, 1994; Randall, Ekblad, & Anton, 1990; Schenker, Becker, Randall, Phillips, Baskin, & Henderson, 1990.

The brain regions affected by prenatal alcohol exposure include:

- **Hippocampus** - a structure involved in memory. Damage to this area of the brain causes a loss of the ability to store new memories.
- **Cerebellum** - a structure involved in motor and cognitive skills. Damage to this area of the brain has been linked to learning deficits as well as deficits in balance and coordination.
- **Corpus Callosum** - a large bundle of nerve fibers connecting the two hemispheres of the brain and allowing communication between them. Prenatal alcohol exposure is the major cause of impaired development or complete absence of this structure. Approximately seven (7) percent of children prenatally exposed to alcohol might lack a corpus callosum, an incidence rate twenty (20) times higher than that in the general population.⁹ Damage to this area of the brain has been linked with deficits in attention, intellectual functioning, reading, learning, verbal memory, and executive and psychosocial functioning.
- **Basal Ganglia** - a group of nerve cell clusters involved in motor abilities and cognitive functions such as executive functioning. Damage to this area of the brain causes deficits in the ability to shift from one task to another, inhibition of inappropriate behavior, and spatial memory.
- **Frontal Lobe of the Cerebrum** - structures involved in higher-level cognitive abilities, such as problem-solving, abstract thinking, planning, and flexibility in one's thought processes. Damage to this area of the brain causes difficulty in processing information, storing and/or retrieving information, difficulty comprehending abstract concepts such as time, money, consequences, etc.

9. Riley, Mattson, & Sowell, 1995.

Alcohol also causes changes in brain tissue density with a decrease in white matter density and an increase in gray matter density. The effect of this is a reduction in the speed and efficiency of information processing.

<i>GRAY MATTER . . .</i>	<i>WHITE MATTER . . .</i>
<ul style="list-style-type: none">• <i>Contains nerve cells bodies, axons, dendrites, and glial cells;</i>• <i>Is the site of synapses;</i>• <i>Is a cluster of nerve cell bodies; and</i>• <i>Comprises the outermost layer of the cerebral hemisphere.</i>	<ul style="list-style-type: none">• <i>Contains axons of nerve cells, associated glial cells and blood vessels;</i>• <i>Consists of nerve fibers, support cells.</i> 

(Information taken from Mattson, et al., 2001.)

Specific Cognitive and Behavioral Impairments

Verbal Learning

Children prenatally exposed to alcohol exhibit a variety of problems with language and memory. Research has shown that alcohol-related learning problems occur in the initial stages of memory formation (i.e., encoding). In 1996, Mattson and colleagues compared a group of children between the ages of 5 and 16, some with prenatal alcohol exposure and some without. They found that the children with alcohol exposure learned fewer words than those without but demonstrated equal ability to recall what they had learned. This pattern helps distinguish FAS/ARND from Down's syndrome, in which learning and recall are equally impaired.

Visual-Spatial Learning

Visual-spatial learners are individuals who learn best from pictures (or a concept of the "whole") rather than through hearing or reading words (building of the concept step-by-step). Alcohol-exposed children have difficulty with tasks involving visual-spatial learning such as solving a picture puzzle from a finished picture or building a model based upon a picture.

Attention

Attention problems are a significant issue for children prenatally exposed to alcohol. Consequently, FAS/ARND are often misdiagnosed as attention deficit hyperactivity disorder (ADHD) and therefore treated ineffectively. Children with ADHD exhibit difficulty focusing and sustaining attention over time. In contrast, alcohol-exposed children display difficulty in shifting attention from one task to another.¹⁰

Reaction Time

Individual differences in intelligence are based in part on how quickly the brain can process information. Prenatal alcohol exposure has been associated with slower, less efficient information processing in school-aged children¹¹ as indicated by slower reaction time.

Executive Functions

Deficits in executive functioning can have real-life implications for people with FAS/ARND. For example, someone with prenatal alcohol exposure may act without thinking about the consequences of their behavior or they may have difficulties with activities that require problem solving or with planning a sequence of activities.¹² These types of deficits may help explain why children with prenatal alcohol exposure, even those with average IQ scores have difficulty succeeding in school.

Children with these birth defects effecting executive functions experience difficulty when asked to switch from naming types of animals to naming types of furniture, and then back to naming animals.¹³ They also have difficulty abandoning ineffective strategies when approaching problem solving tasks even after they realize the strategies are not working.¹⁴ This

10. Coles, Platzman, & Raskind-Hood, 1997.

11. Streissguth, Barr, & Sampson, 1986.

12. Mattson, et. al., 2001.

13. Kodituwakku, Handmaker, Cutler, Weathersby, & Handmaker, 1995.

14. See Kodituwakku, et. al., 1995 and Roebuck, Mattson, & Riley, 1999.

type of behavioral inflexibility is referred to as *perseveration*. Perseveration and impaired ability to shift are consistent with distractibility and impulsivity, factors that might contribute to attention and learning problems.¹⁵

Psychosocial Deficits and Problem Behaviors

Alcohol exposed children have problems with cognitive functioning and are at high risk for problem behaviors that interfere with their home, school, and social environments. These children are at increased risk for *secondary disabilities* such as psychiatric disorders, trouble in school and with the law, alcohol and other drug abuse, and other maladaptive behaviors.¹⁶ Further, they are more likely than non alcohol-exposed children to be labeled as hyperactive, disruptive, impulsive, or delinquent.¹⁷

Children with FAS/ARND often appear to lack personal boundaries and do not often recognize them in others. They appear very friendly and outgoing but are more vulnerable to exploitation and make others uncomfortable with some of their behaviors. Ann Streissguth states:

*This excessive friendliness is often combined with overly tactile behavior ... Young children who are tactile are generally not considered deviant, but adolescents and adults who have little sense of personal space are very “touchy” and have inappropriate and excessive curiosity are often disliked and shunned by their peer group.*¹⁸

Streissguth also suggests that lack of boundaries may increase the likelihood that children or teens who are, or were, sexually abused, will act that abuse out on others. It isn't that they are deviant, but their lack of impulse control coupled with a lack of boundaries may lead the abused child to act out a trauma on other children without any real understanding of the impact of the

15. Mattson, et. al., 1996; Roebuck, et. al., 1999; Hunt, Streissguth, Kerr, & Olsen, 1995

16. Streissguth, Barr, Kogan, and Bookstein, 1996.

17. Roebuck, et. al., 1999 and Mattson & Riley, 2000.

18. Streissguth, LaDue, & Randals, 1986.

behavior. In addition, this same combination can lead a teen with FAS/ARND to go from first kiss to sexual intercourse without any intention of doing so. In other words, the teens may engage in sex against their own values simply because they did not stop to think. This puts them at great risk of repeated pregnancies and of contracting and spreading sexually transmitted diseases.

Poor personal boundaries along with poor impulse control also result in an increased tendency to steal. The affected child has no sense of invading someone else's space. They may see it as "borrowing" and forgetting to give back.

The frustrations and constant negative interactions that are a part of the daily lives of people affected by prenatal alcohol use can become overwhelming at times. For some, the buildup of anger and lack of impulse control may lead to a sudden outburst of aggression or an act of violence. On the other hand, the anger of others toward an affected person can be just as frightening and confusing as the person may have no idea what they did to cause the reaction. They simply cannot make the connections that would explain why others are angry.

- *Early detection and effective treatment enables a person with FAS/ARND to reach their full potential.*

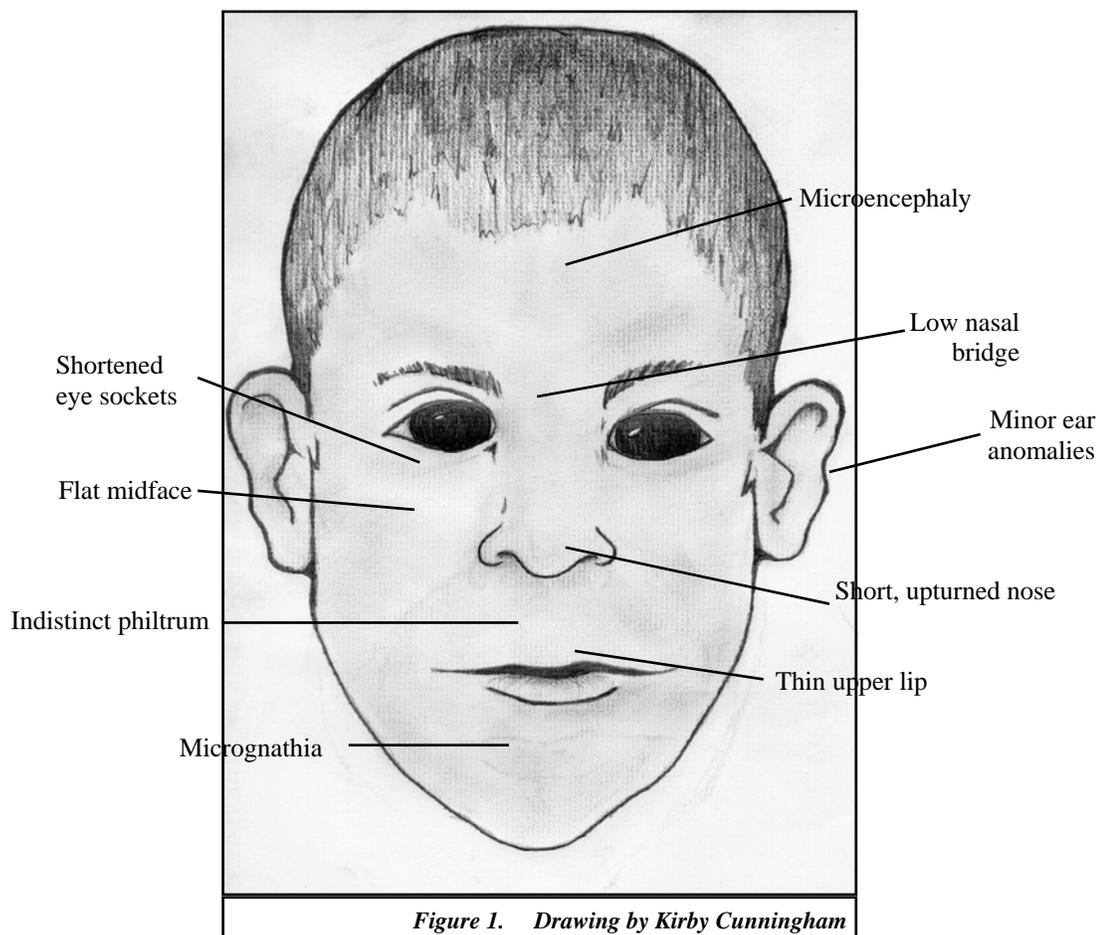
- *Delayed detection and treatment increases the difficulties that they will face in managing day to day activities.*



General Characteristics of Fetal Alcohol Syndrome

Diagnosing FAS requires professional evaluation. Children will vary from mild to severe effects, depending on the type of exposure that occurred. In diagnosing FAS four categories are examined: 1) Growth deficiencies, such as low birth weight, small head size and shorter length compared to other babies of the same age. 2) Facial features include short eye slits (palpebral fissures), flat area between the nose and upper lip, and a thin upper lip. Additional features that may be present include a short upturned nose, flattened mid-face, and smaller jaw. 3) Central Nervous System (CNS) damage, such as, hyper activity, sleep problems, impulsive behavior, sensitivity to touch and sound, easily over stimulated and behavior issues. 4) Evidence of alcohol use by the birth mother during pregnancy.¹⁹

Physical Characteristics of Fetal Alcohol Syndrome in a Young Child



19. www.mofas.org/Projects/protocolsunit2.htm

Alcohol Related Neurodevelopmental Disorder (ARND)

ARND has been characterized as a less severe set of the same symptoms described for FAS.²⁰ This statement is somewhat misleading in that while the facial features indicative of FAS might not be present, the internal damage to the brain may be just as severe. This is because there is only a short window of time during pregnancy where alcohol will produce the facially defined features described above. Thus the child may appear physically “normal,” however central nervous system damage is still present. In addition individuals with ARND may also exhibit average IQ’s, even though they lack the adaptive thinking necessary to perform everyday life skills. It is important for caregivers, educators, social service providers, law enforcement and court personnel to recognize that even though an individual with ARND may appear or test “normal,” they should not be held to normal standards of behavior.²¹

Behaviors associated with FAS/FAE: Infancy through Adulthood

- **Infants:** an infant with FAS may exhibit fitful sleep patterns, a failure to thrive, poor suckling reflex, and irritability.
- **Toddler and Preschool Age:** children 1 to 5 years of age are “high maintenance,” exhibiting uneven sleep patterns and difficulty to manage when out in public. They may be dangerous to themselves and others because they do not grasp the concepts of cause and effect. A toddler may exhibit delays in development such as walking and/or toilet training. He/She may also have difficulty following directions, is easily distractible, demonstrates hyperactivity, manipulative behavior, temper tantrums and memory problems.
- **Early School Age:** children 6 to 11 years of age will experience difficulty predicting outcomes, do not comprehend consequences of their behavior, have behavioral outbursts, de-

20. http://www2.state.id.us/dhw/ecic/PPC/Fetal_A1.htm

21. <http://www.mofas.org/Projects/protocolsunit2.htm>

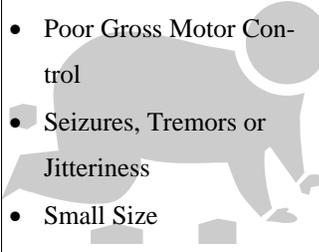
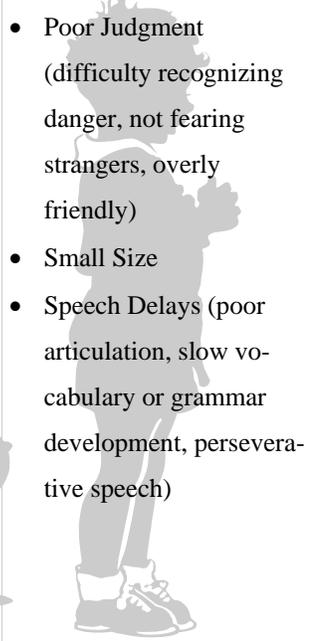
laid physical maturity, hyperactivity, experience memory problems and impulsive behavior, do not understand social rules or boundaries and are void of natural empathy toward others. They will be in need of continuous stimulation and excitement to keep entertained and will require more structure and supervision than their peers.

- **Adolescence:** children 12 to 17 years of age are at a high risk for being drawn into antisocial behavior, such as lying, stealing and running away. During this stage they experience the greatest gap between their physical development and their emotional maturity. They become easy targets for victimization, are at risk of pregnancy, depression, alcohol and drug abuse. They may demonstrate low self esteem, a lack of motivation, inappropriate sexual behavior and are terrified of major transitions. They are unaware of normal hygiene needs, vulnerable to ideas in movies, music and T.V. and unable to take responsibility for their actions.
- **Adults:** Individuals 18 and over commonly experience depression, alcohol and drug abuse, lack of job skills, unpredictable behavior, inappropriate sexual behavior, pregnancy and residential placement.²² They run the risk of finding the structure and supervision they need within the criminal justice system. FAS/ARND adults may lack the ability to manage money and are susceptible to co-dependent relationships involving domestic violence. They are unlikely to follow basic rules of safety in regards to fire hazards, vehicle operation, meal preparation and infectious disease. Many are in need of shelter and employment opportunity.

22. www.mofas.org/Projects/protocolsunit2.htm.

Characteristics of FAS at various Developmental Stages

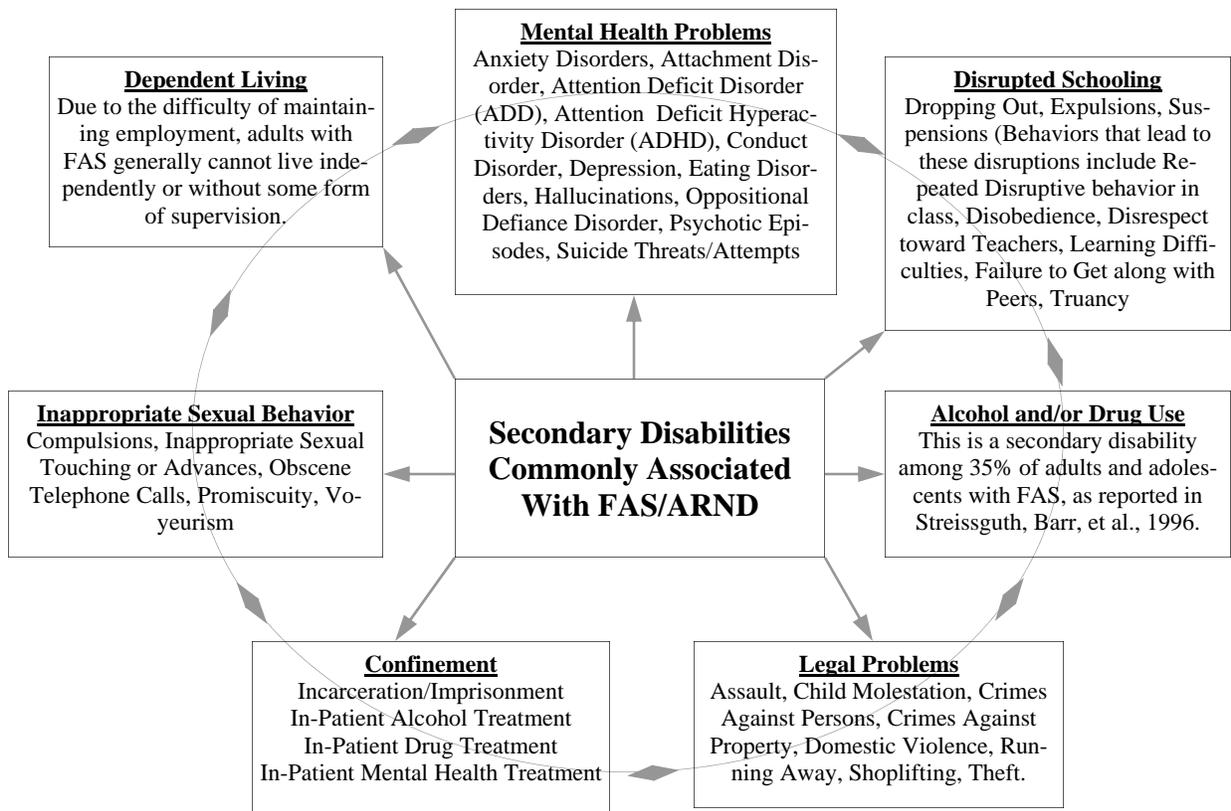
(Not every individual will exhibit all of the characteristics at a given age.)

Newborns & Infants	Preschool Aged Children	Elementary School Aged Children	Adolescents & Young Adults
<ul style="list-style-type: none"> • Difficulty Sleeping—Unpredictable Sleep/Wake Cycle • Electroencephalogram (EEG) Abnormalities • Failure to Thrive • Feeding Difficulties • Heart Defects • Kidney Problems • Skeletal Anomalies • Increased Sensitivity to Light and Sound—Easily Overstimulated • Neurological Dysfunctions • Poor Fine Motor Control • Poor Gross Motor Control • Seizures, Tremors or Jitteriness • Small Size • Susceptibility to Infections 	<ul style="list-style-type: none"> • Emotional Over-Reaction and Tantrums • Hyperactivity • Lack of Impulse Control • Mental Retardation • Poor Eye-hand and Physical Coordination • Poor Judgment (difficulty recognizing danger, not fearing strangers, overly friendly) • Small Size • Speech Delays (poor articulation, slow vocabulary or grammar development, perseverative speech) 	<ul style="list-style-type: none"> • Attention Deficits • Hyperactivity • Language Difficulties • Learning Disabilities • Cognitive Disabilities • Memory Difficulties • Poor Impulse Control (lying, stealing or defiant acts) • Small Size • Social Difficulties (overly friendly, immaturity, easily influenced and difficulty with choices) 	<ul style="list-style-type: none"> • Difficulties with Abstract Reasoning • Difficulty Anticipating Consequences • Low Academic Achievement • Low Self-Esteem • Memory Impairments • More Pronounced Impulsiveness (stealing, defiant acts) • Poor Judgment 

Secondary Disabilities

Research materials often refer to “primary disabilities” and “secondary disabilities” to describe and differentiate between various physical and behavioral conditions associated with a particular condition. For FAS/ARND, the **primary disability** describes a condition that results from brain damage caused by exposure to alcohol in the womb. These conditions include the resulting structural malformation of the brain and the functional deficits. **Secondary disabilities** are the conditions that arise as a result of the central nervous system deficits associated with FAS/ARND. Not all persons with FAS experience secondary disabilities. Please refer to the SCREAMS brochure by Teresa Kellerman in the Resources Section for strategies for preventing secondary disabilities associated with FAS disorders. The most commonly seen secondary disabilities are:

1. Mental Health Problems
2. Disrupted School Experience
3. Alcohol or Drug Use
4. Legal Problems
5. Confinement
6. Inappropriate Sexual Behavior
7. Dependent Living



Common Misconceptions About Alcohol Use

Myth	Fact
<i>Alcohol is not a drug.</i>	Any substance that changes the way the body or mind works is a drug. Alcohol is a chemical that slows down the central nervous system and alters the functioning of both the body and mind. Alcohol abuse is our nation's biggest drug problem. Alcohol-related deaths kill more people than all other drugs combined.
<i>Alcohol is a stimulant.</i>	Alcohol is considered a central nervous system depressant. At first an individual may feel stimulated but the overall effect is that alcohol is depressing the brain. Individuals will be inhibited from the ability to make good judgments and lose coordination and motor skills. If taken in a high enough dose, alcohol will depress the central nervous system enough to affect breathing and heart rhythm functions.
<i>Alcohol is not an addictive drug.</i>	Alcohol is a drug. Alcohol is addictive. Addiction is indicated by symptoms of withdrawal. Alcoholics may experience the following symptoms when they stop drinking: agitation, insomnia, fever, loss of appetite, nausea, pain, the shakes or tremors, hallucinations, coma and death.
<i>Everybody reacts to alcohol the same way.</i>	Alcohol affects everyone in a different manner. One individual can react differently to alcohol depending on the circumstances at the time of drinking. Mental state, body chemistry, gender, body weight, age, etc. all play a part in the individual reaction.
<i>You can get drunk a lot quicker from hard liquor than you can from a wine cooler or a beer.</i>	Standard amounts of alcohol will make you equally intoxicated. One standard drink is equal to 12 ounces of beer or wine cooler, 5 ounces of table wine, 1 ounce of 100 proof hard liquor, 1.25 ounces of 80 proof hard liquor and .5 ounces of pure ethanol.
<i>I just need to learn how to hold my alcohol.</i>	If the amount of alcohol you normally drink no longer has an effect and you have to consume more to get a "buzz" you are developing a tolerance. Developing a tolerance is not a good thing. It means that your liver is constantly being exposed to alcohol and is trying to compensate by working overtime. A tolerance may be a sign of a drinking problem.
<i>Alcohol can help you feel better.</i>	Alcohol makes some people feel happier and more relaxed, but makes others feel more depressed, guilty or angry. Drinking to forget your problems only lets you put off dealing with them. It does not help you solve your problems or make them go away.
<i>Everybody is doing it.</i>	Drinking is a popular social activity but not everybody is or should be drinking. Non-drinkers should never be encouraged to drink because they may have health, safety, or pregnancy concerns behind their refusal.
<i>I can control my drinking by watching how much others drink.</i>	Alcohol affects everyone differently. Impacts are governed by individual weight, mood and prior experience. You should only drink the amount you feel comfortable drinking. How much you can or should drink is your decision.
<i>Pregnant women can safely drink alcohol in moderation.</i>	If a pregnant woman drinks alcohol it will always pass from her bloodstream into the bloodstream of the fetus. Doctors are unable to determine any safe level of alcohol consumption for pregnant women. Expectant mothers should not drink alcohol.
<i>Alcoholism is an individual's problem.</i>	Children whose parents were alcoholics run an increased risk of developing the problem as well. Families with higher risk are those with a history of alcoholism, abstinence, routine chaos and arguments and/or acceptance of excessive drinking behaviors.

References:

University of Wisconsin-Stout and the U.S. Department of Health, Education and Welfare.
 Reflections in a Glass, U.S. Department of Health, Education and Welfare, Alcohol , Drug Abuse and Mental Health Administration, 1977.
<http://www.uwstout.edu/aod/mythfact.shtml>
 Myths about Drinking: Separating Fact from Folklore, Life Skills Education, 2001.

Myth v. Facts: Common Misconceptions about FAS/ARND

MYTH	FACT
<i>FAS means mental retardation.</i>	While it is true that some people with FAS are mentally retarded, some people with FAS are not. Individuals with FAS can fall within the normal to above intelligence range. Damage to the brain will occur in different ways, leaving each person with FAS different strengths and weaknesses.
<i>Behavioral problems associated with FAS/ARND are the result of poor parenting.</i>	Individuals with FAS/ARND have undergone damage to their brain. They do not process information the same way that other people do. Children with FAS/ARND are difficult to raise, their parents need support instead of criticism.
<i>Children with FAS/ARND will grow out of the condition.</i>	The effects of FAS/ARND last a lifetime. The manifestations of FAS/ARND and problems associated with it will change over time but will always remain.
<i>Diagnosing a child with FAS/ARND will create negative consequences for the child and inhibit their development.</i>	The diagnosis will help the child, caregiver, and educator understand the problem. In addition it will assist the child in getting appropriate treatment and relieve him or her of having to meet unreasonable expectations. Many families feel a sense of the relief after the child has been diagnosed.
<i>Diagnosis is useless because there is no "real" treatment approach.</i>	Treatment will not cure the condition but it will help the child reach his or her best potential. Diagnosis assists everyone involved, service providers and educators can create individual developmental approaches, parents can learn how to effectively respond to their child's behavior and build support networks.
<i>Individuals with FAS/ARND are just unmotivated and irresponsible.</i>	People with FAS/ARND suffer from memory problems, the inability to effectively solve problems and are often overwhelmed by surrounding circumstances.
<i>People with FAS/ARND can be helped by a single mode of treatment.</i>	The needs of individuals with FAS/ARND have to be met by various types of interventions and agencies. Cooperation and collaboration are the keys to effective treatment.
<i>The birthmother is to blame. She could have simply stopped drinking.</i>	A drinking problem is not easy to stop. Women who drink during pregnancy do not intend to harm their children. Some women are addicted and others are uninformed. Pregnancy is a great time to broach the topic of abstaining from or at least reducing alcohol use. These women need respect, understanding, caring and assistance, not blame.
<i>The incidences of FAS/ARND are higher among American Indians because they have a genetic predisposition to alcohol addiction.</i>	FAS/ARND is related to the use of alcohol during pregnancy, not to racial or ethnic identity. There is no scientific evidence to support a claim that Indians have a greater genetic susceptibility to addiction. Socio/economic factors and cultural attitudes toward drinking vary among tribal communities, thus the prevalence of FAS varies as well.
<i>The FAS/ARND problem will eventually go away.</i>	It will not go away on its own. FAS/ARND is 100% preventable. But prevention and education efforts must continue to counteract social and cultural attitudes toward alcohol.
<i>We should just force pregnant women who misuse drugs and alcohol into prisons and treatment centers to keep them away from alcohol.</i>	Alcohol and drugs are available in prisons and treatment centers. If there is a will there is a way. If the mother is going to change her habits she needs support in making the decision to change and setting realistic goals for herself and child.

References:

This information was adapted from materials produced by the Ministry of Children and Family Development.

Community Action Guide: Working Together for the Prevention of Fetal Alcohol Syndrome, http://www.mcf.gov.bc.ca/child_protection/fas/fas2c.htm

FAS: A Guide for Daily Living, http://www.mcf.gov.bc.ca/child_protection/fas_dailyliving/misconceptions.htm

Ten Common Misconceptions About FAS/ARND

(Streissguth, 1997)

1. FAS means mental retardation.

- Some people with FAS are mentally retarded, others are not.
- People with FAS can have normal intelligence.
- They are brain damaged and have specific areas of strengths and weaknesses. It's more like people who have sustained brain injury from an auto accident.

2. The behavior problems associated with FAS/ARND are the result of poor parenting or a bad living environment.

- No, being brain damaged can lead to behavior problems because brain damaged people don't process information the same way that other people do, so they don't always behave the way others expect them to.
- Brain damaged children are hard to raise even in the best environments.
- Their parents need help and support, not criticism.

3. They will outgrow "it" when they grow up.

- Unfortunately they do not. FAS/ARND last a lifetime, but the manifestations and type of problems change with each age.
- It takes a longer period of sheltered living for brain-damaged children to grow up.

4. They are brain damaged so we should give up on them.

- Have we given up on children with other defects?
- We need research to understand the needs of patients with FAS/ARND and how to help them.

5. Diagnosing them will brand them for life.

- A diagnosis tells you what the problem is, helps you figure out how to treat the problem, and relieves the person of having to meet unrealistic expectations.

- 6. They are unmotivated when they don't keep appointments or don't act in a way we consider responsible.**
 - Probably the best explanation lies in memory problems, inability to problem solve effectively, or simply being overwhelmed.
 - Sometimes they misconstrue reality.

- 7. One agency can solve any or all of the problems alone.**
 - The multiple needs of patients with FAS/ARND require multiple fronts of intervention and intense interagency cooperation – team approach.

- 8. This problem will be solved with existing knowledge.**
 - Research is desperately needed, and the magnitude of the problem necessitates further research.

- 9. The problem will go away.**
 - FAS/ARND are preventable, but alcohol is so much a part of our culture and so aggressively marketed to those least able to resist, that active prevention activities must continue on all fronts to safeguard our children's future and the future of our people.

- 10. Their mothers had an easy choice not to drink during pregnancy, and through callousness or indifference, permanently damaged their children.**
 - Biological mothers of children with FAS/ARND need help with their abuse of alcohol and/or the proper use of birth control.
 - Pregnancy is an excellent time for alcohol abusing mothers to stop drinking, but they need help.

Diagnosing

The following information is excerpted from **Table 3: Brief Outline of Diagnostic criteria for Fetal Alcohol Syndrome of the Fetal Alcohol Syndrome: Guidelines for Referral and Diagnosis** published by the National Center on Birth Defects and Developmental Disabilities, Centers for Disease Control and Prevention in coordination with the National Taskforce on Fetal Alcohol Syndrome and Fetal Alcohol Effect.

Facial dysmorphism

Based on racial norms, individual exhibits all three characteristic facial features:

- Smooth philtrum (University of Washington Lip-Philtrum Guide rank 4 or 5)
- Thin vermilion (University of Washington Lip-Philtrum Guide rank 4 or 5)
- Small palpebral fissures (at or below 10th percentile)

Growth problems

Confirmed prenatal or postnatal height or weight, or both, at or below the 10th percentile, documented at any one point in time (adjusted for age, sex, gestational age, and race or ethnicity).

Central Nervous System Abnormalities

I. Structural

- 1) Head circumference (OFC) at or below the 10th percentile adjusted for age and sex.
- 2) Clinically significant brain abnormalities observable through imaging.

II. Neurological

Neurological problems not due to a postnatal insult or fever, or other soft neurological signs outside normal limits.

III. Functional

Performance substantially below that expected for an individual's age, schooling, or circumstances, as evidenced by:

1. *Global cognitive or intellectual deficits representing multiple domains of deficit (or significant developmental delay in younger children) with performance below the 3rd percentile (2 standard deviations below the mean for standardized testing) or*
2. *Functional deficits below the 16th percentile (1 standard deviation below the mean for standardized testing) in at least three of the following domains:*
 - a) cognitive or developmental deficits or discrepancies
 - b) executive functioning deficits
 - c) motor functioning delays
 - d) problems with attention or hyperactivity
 - e) social skills

f) other, such as sensory problems, pragmatic language problems, memory deficits, etc.

Maternal Alcohol Exposure

- I. Confirmed prenatal alcohol exposure
- II. Unknown prenatal alcohol exposure

Criteria for FAS Diagnosis

Requires all three of the following findings:

1. Documentation of all three facial abnormalities (smooth philtrum, thin vermillion, and small palpebral fissures);
2. Documentation of growth deficits
3. Documentation of CNS abnormality

To obtain a complete copy of the Fetal Alcohol Syndrome: Guidelines for Referral and Diagnosis, go to:

http://www.cdc.gov/ncbddd/fas/documents/FAS_guidelines_accessible.pdf

Misdiagnosing or Confusing FAS with Other Conditions Is Common

FAS is sometimes misdiagnosed as other disabilities, especially attention deficit/hyperactivity disorder (ADHD). Children with FAS can be diagnosed with both FAS and ADHD, but the ADHD diagnosis may cover up the other diagnosis of FAS.

ADHD is a diagnosis based on symptoms and behaviors that may involve distractibility, hyperactivity, and difficulties with impulse control. Medication may be prescribed to minimize symptoms so that a child can participate more fully in academic activities. Attention problems may occur without hyperactivity.

Other disorders or conditions sometimes identified as secondary to FAS or as related to prenatal exposure to alcohol include:

- Oppositional defiant disorder/Disruptive behavior disorder/Conduct disorders/
Intermittent explosive disorders
- Attachment disorders

- _ Sensory integration dysfunction
- _ Autism
- _ Mild neurocognitive disorder
- _ Static encephalopathy

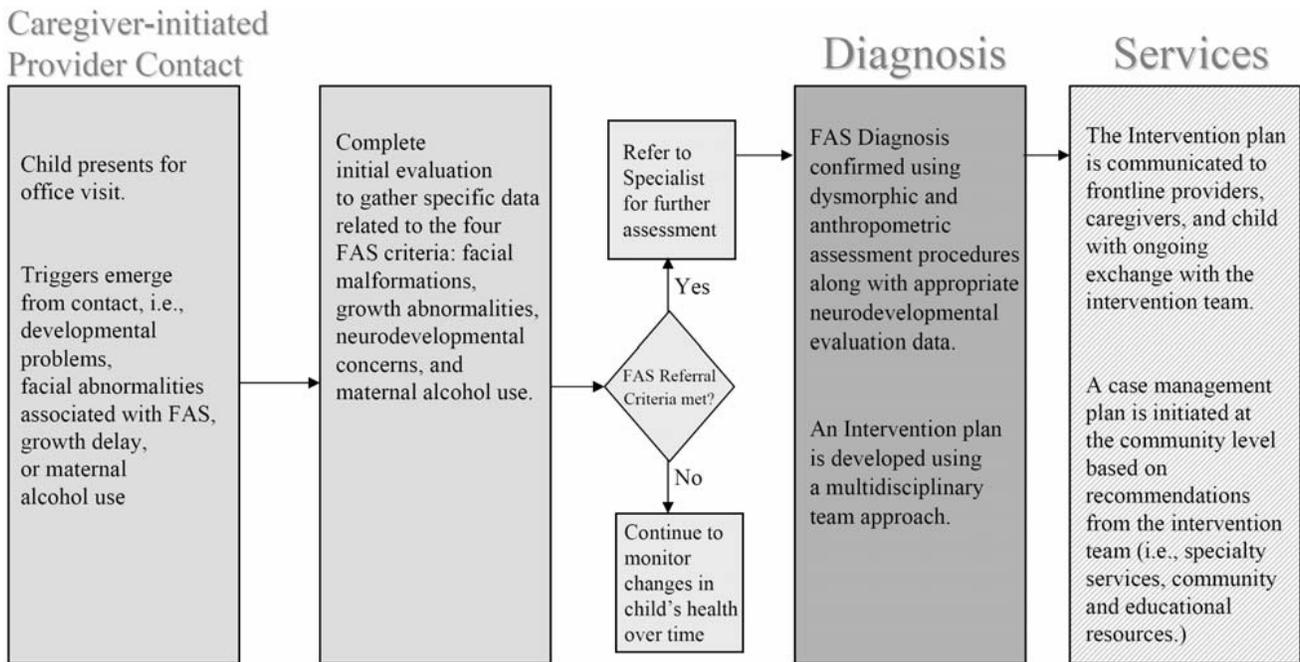
For more information, see Coles, CD et al. A comparison of children affected by prenatal alcohol exposure and attention deficit, hyperactivity disorder. *Alcohol Clin Exp Res.* 1997. Feb; 21 (1):150-61.

What To Do After Diagnosing FAS

Obtaining a diagnosis can also increase the probability that other people in the child's life may be more understanding and attempt to assist the child, becoming more patient with him or her. This is especially important in the classroom setting where teachers have an opportunity to use more effective learning strategies with children with FAS.

Once the diagnosis is given, parents and teachers can learn about **the probability of secondary disabilities**. We will discuss some of the more common secondary disabilities experienced by individuals with FAS/ARND in Section 4. Those most susceptible to experiencing secondary disabilities are the children and adults who are less disabled or do not have full FAS or mental retardation, but still have obvious FAS/ARND behaviors that get them into trouble. Without an accurate diagnosis, many children, adolescents and adults have fallen into a constant cycle of problematic behaviors with no hope for any help in getting out of the cycle. An early diagnosis is related to more independent living and fewer employment problems as an adult.

Ultimately, obtaining the diagnosis can help others have a more positive attitude toward the child when they come to realize the reason behind the behaviors and when they learn about strategies to help the child cope with FAS/ARND.



This chart is excerpted from **Figure 1: Framework for Diagnosis and Services excerpted from the Fetal Alcohol Syndrome: Guidelines for Referral and Diagnosis** published by the National Center on Birth Defects and Developmental Disabilities, Centers for Disease Control and Prevention in coordination with the National Taskforce on Fetal Alcohol Syndrome and Fetal Alcohol Effect.

To obtain a complete copy of the Fetal Alcohol Syndrome: Guidelines for Referral and Diagnosis, go to:

http://www.cdc.gov/ncbddd/fas/documents/FAS_guidelines_accessible.pdf