

## **Fetal Alcohol Spectrum Disorder as a marker for increased risk of involvement with correction systems**

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*Fetal alcohol spectrum disorders (FASD) may be common in adolescents and adults in the corrections systems. However, current prevalence estimates for FASD suggest that nearly all affected people are undiagnosed in corrections systems. In this article we provide an overview of our experience with FASD in corrections populations and present strategies for screening, assessment and intervention. We conclude with a plan to provide training to corrections staff in response to identified preferences and needs identified by Canadian and American corrections staff.*

**KEY WORDS:** *Fetal Alcohol Syndrome, corrections, prison, screening, diagnosis, management.*

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Of the four million annual pregnancies in the United States, about 40% of women drink some alcohol during pregnancy and about 3-5% of women drink heavily throughout pregnancy (Floyd, Decoufle, & Hungerford, 1999). The prevalence of alcohol use by women during their childbearing years in the United States was 53% in 2006 (Floyd et al., 2008). In pregnant women, frequent alcohol use was reported by 12.5%, and third trimester drinking by 4.6% in 2001 (Floyd & Sidhu, 2004). There is no known safe level of alcohol consumption during pregnancy. For the four million pregnancies each year in the United States, these rates translate to 500,000 pregnant women drinking at least weekly and about 80,000 with high levels of persistent exposure throughout pregnancy. Thus, the cumulative number of prenatally exposed infants, children and adolescents in the United States alone would be in the millions.

The most extreme adverse outcomes from high exposure include miscarriage, stillbirth, and increased risk for mortality throughout the lifespan (Burd & Wilson, 2004; Burd, Carlson, & Kerbeshian, 2009; Stratton, Howe, & Battaglia, 1996). The mortality risk for people with Fetal Alcohol Spectrum Disorders (FASD) is more than doubled. The mortality risk for siblings of people with FASD is increased 530% and the maternal mortality rate in the 10-year period after the birth of the child with FASD is about 4.5% (Burd, Klug, & Martsof, 2004; Burd et al., 2008). With live births, exposure is associated with increased risk for a wide range of birth defects, growth impairments, and brain damage (Abel, 1998; Stratton et al., 1996). The societal implications of prenatal alcohol exposure (PAE) are substantial. The annual cost of care for affected people is estimated to be \$3.6 billion dollars in the United States, and the lifetime cost of care for individuals with FASD is \$2.9 million dollars per case (Lupton, Burd, & Harwood, 2004). Canadian research teams have reported similar costs, with an estimated annual cost close to CA\$4 billion (Stade et al., 2009; Thanh & Jonsson, 2009). These studies have not included the substantial costs associ-

ated with involvement in juvenile corrections or the adult criminal justice system, including policing, lawyers, court time, incarceration, and transition back to the community.

Using current diagnostic criteria, about 5-10% of people with significant prenatal alcohol exposure will have FASD. FASD is an umbrella term encompassing the different diagnostic categories; it is not a diagnosis. The diagnostic categories include Fetal Alcohol Syndrome (FAS), partial Fetal Alcohol Syndrome (pFAS), Alcohol-Related Neurodevelopmental Disorder (ARND) and Alcohol-Related Birth Defects (ARBD) (Stratton et al., 1996).

Currently several schema are being used for diagnosis of FASD (Astley, 2006; Burd, Martsof, & Juelson, 2004; Chudley et al., 2005; Hoyme et al., 2005; Stratton et al., 1996). The diagnosis of ARND is more complex than that of FAS and pFAS because of the absence of physical markers. More attention to ARND is required as many children, adolescents and adults have lifelong difficulties with behavioral and mental disorders from PAE (Burd et al., 2009). Table 1 provides a summary of the Canadian criteria for FASD (Loock, Conry, Cook, Chudley & Rosales, 2005).

TABLE 1

<b>Canadian diagnostic criteria for FASD (adapted from Loock et al., 2005)</b>				
	<i>CNS impairment</i>	<i>Facial anomalies*</i>	<i>Growth Deficiency</i>	<i>History of PAE</i>
<b>FAS</b>	YES (3+ Domains impaired)	YES (3 of 3)	YES ( $\leq 10\%$ )	Confirmed or unconfirmed
<b>pFAS</b>	YES (3+ Domains impaired)	YES (2 of 3)	NO	Confirmed
<b>ARND</b>	YES (3+ Domains impaired)	None present	NO	Confirmed

\*1. short palpebral fissures, 2. smooth philtrum, 3. thin upper lip

The adverse outcomes from PAE are the result of several variables including: the dose and the timing of PAE during fetal development; exposure to other environmental teratogens that frequently accompany PAE (smoking, poor diet, other drug use). Ongoing research is investigating other fetal and maternal genetic/epigenetic factors that may modify the susceptibility from alcohol exposure. The effects from these variables are often compounded by exposure to postnatal adversity including neglect, parental substance abuse, physical and sexual abuse, poor nutrition, and stress. These postnatal adversities are closely associated with PAE and have important effects on severity and response to intervention.

In the corrections population, the primary adverse outcomes of interest are increased prevalence rates of broad cognitive impairments, neuropsychiatric impairments, substance abuse, and mental disorders (Cohen, Burd, & Beyer, 2006; Fast & Conry, 2004). Three broad pathways for development of adverse outcomes from prenatal exposure have been suggested (Burd et al., 2009):

1. Causal outcomes wherein PAE is a prepotent cause of an adverse outcome (mental retardation is one example).
2. A lowered threshold for expression of adverse outcomes (a subthreshold genetic liability and/or an environmentally induced predisposition for mental disorder are expressed as a result of PAE; depression may be a useful example).
3. PAE increases the severity of disorders that might have developed in any case due to other biogenetic vulnerabilities (Attention Deficit Hyperactivity Disorder would be an example). In addition, PAE may be a marker for increased risk of exposure to postnatal environmental adversity over the life span. These postnatal risk factors include neglect, abuse, malnutrition, stressful life circumstances, multiple often-severe cognitive impairments, and mental disorders.

The interaction of these factors further increases risk for additional comorbid mental health and developmental disorders over the life span (Burd, Cotsonas-Hassler, Martsolf, & Kerbeshian, 2003). As people with FASD enter adolescence the risk for substance abuse and involvement with the correc-

tions system increases dramatically and may impact as many as 60% of this population (Streissguth, Barr, Kogan, & Bookstein, 1996). Thus, the developmental course of individuals with FASD are associated with increased risk for additional comorbidities due to long term effects of PAE and exposure to postnatal environmental adversity. In addition, rates of secondary disabilities (potentially preventable disorders) increase with age in people with FASD. In large part this is due to a lack of understanding of the magnitude of risk and under appreciation of the severity of the risk for future problems in people with FASD. Treatment plans for this population would be much more effective if they were developed and applied within the context of the age and development dependent risk for people with FASD. Common examples are not anticipating the risk of substance abuse, school failure and the need for assistance as adults for people with FASD. Since FASD was described over thirty years ago, it has become clear that incorrect diagnosis or lack of a diagnosis increases the likelihood of future problems, decreases the efficacy of interventions and fosters beliefs that the impairments of FASD are transient and are unlikely to have long lasting or severe impact for people with FASD. FASD are not childhood disorders that most people will simply outgrow but are lifelong disorders that change over the life of affected individuals. This point can hardly be overemphasized.

In this article we will discuss the developmental issues that should serve as markers for the need for assessment for FASD. Appropriate diagnosis provides the first step in understanding the lifespan needs for affected people and could serve as an opportunity for entry into a coordinated system of care, and contribute to risk reduction and risk appreciation for this vulnerable population. We will also discuss the prevalence of FASD and the large number of undiagnosed people in the corrections system. Last, we will discuss management of this population and the needs for staff training in the corrections system to improve the ability of this system to identify and develop adequate management plans for them.

### Prevalence of FASD

Past prevalence estimates of FASD suggested that it may be far more common than has been reported (Sampson et al., 1997). Newer prevalence studies, which utilized more advanced case finding strategies, have demonstrated alarmingly high rates of FASD in South Africa, Italy, American Indian communities, and in low-income child health service programs. Table 2 presents a summary of prevalence studies from school-based populations modified from May et al. (2009). May et al.

TABLE 2

#### **A summary of school-based prevalence studies of FASD over the past 10 years (modified from May et al., 2009)**

<i>Study</i>	<i>Location</i>	<i>Sample/SES</i>	<i>FASD per 1,000</i>
Hagberg, Hagberg, Lewerth, & Lindberg, 1981	Gothenberg, Sweden	White/Middle	0.45
May et al., 2000	Western Cape, South Africa	Mixed/Lower Upper	40.1-46.4
Clarren, Randels, Sanderson, & Fineman, 2001	Washington State, 2 counties	Mixed Ethnic/ Middle	3.1
Viljoen et al., 2005	Western Cape, South Africa	Mixed Race/ Lower Upper	65.2-74.2
May et al., 2006	Lazio Region, Italy	Mixed/Middle	15.7-31.3
May et al., 2007	Western Cape, South Africa	Mixed/ Middle Upper	16.8-22.0
Poitra et al., 2003	Tribal Nation, ND	Native American/ Low Middle	4.3-21
Urban et al., 2008	Northern Cape, South Africa	Mixed/Low & Middle	7.7-13.5
Petkovic & Barisic, 2010	Croatia	Mixed/Low to Upper	6.4-40.7

concluded that the prevalence of FASD in populations of younger school children may be 2-5% in the United States and many Western European countries. However, it is unknown if the methodology used in these studies has captured most cases of ARND which is thought to be the most common outcome from PAE. If the mother continues to drink during subsequent pregnancies, the recurrence rate for FASD may be as high as 75% (Abel, 1998).

*Prevalence estimates in corrections systems*

Determination of accurate prevalence estimates of FASD in corrections systems has been challenging (Conry & Fast, 2000; Fast, Conry & Looock, 1999). Three issues appear to account for most of the difficulties: (a) changes in the FASD phenotype over the lifespan (b) inadequate documentation of PAE and (c) high rates of postnatal adversity which increase the complexity of diagnosis. Confirmation of PAE can be from a reliable source other than the birth mother, but this is also often problematic to obtain.

In a survey of corrections systems in the United States with 3.08 million inmates, only one inmate was reported to have a diagnosis of FAS (Burd, Selfridge, Klug, & Bakko, 2004). In this article the authors estimate the likely prevalence of undiagnosed FAS and pFAS in the U.S. corrections system population could range from 1,540 to 28,036 (Burd, Selfridge et al., 2004; Table 3). In the Canadian corrections system in a population of 148,979 offenders, 13 identified cases of FAS were reported in this survey. This is a prevalence rate of only 0.087 per 1,000 offenders. The authors also estimate potential rates of undiagnosed FASD in the Canadian corrections system to range from 36 to 1,341 cases of FASD (Burd, Selfridge, Klug, & Juelson, 2003; Table 2). These prevalence estimates do not include ARND, which may be the most prevalent diagnostic category of FASD. If prevalence rates of incarceration from the limited follow-up data from adolescents and adults are accurate, the number of FASD cases would be highly concentrated in corrections systems and could be as high as several hundred thousand.

TABLE 3  
**Estimate of Fetal Alcohol Spectrum Disorders (Burd et al., 2003; Burd, Selfridge et al., 2004; Fast, Conry, & Looock, 1999; May et al., 2009; Sampson et al., 1997)**

CANADIAN CORRECTIONS SYSTEM								
	<i>Estimated FAS prevalence</i>	<i>Estimated FASD prevalence</i>	<i>Corrections population</i>	<i>Low FAS only estimate</i>	<i>High FAS only estimate</i>	<i>Low FASD estimate</i>	<i>High FASD estimate</i>	
Canadian corrections population	.33-2.8 /1,000	9.1-233 /1,000	148,797	49	417	1,354	34,669	
U.S. CORRECTIONS SYSTEM								
	<i>Estimated FAS prevalence</i>	<i>Estimated FASD prevalence</i>	<i>Corrections population</i>	<i>Low FAS estimate</i>	<i>High FAS estimate</i>	<i>Low FASD estimate</i>	<i>High FASD estimate</i>	
Burd et. al	.5-2.8 /1,000	9.1-233 /1,000	3,080,904	1,540	8,627	28,036	717,850	
May et. al	2-7 /1,000	9.1-233 /1,000	3,080,904	6,161	21,566	28,036	717,850	



## Screening issues

The purpose of screening is to identify individuals who are likely to have a particular condition so that a comprehensive diagnostic assessment can follow. Screening cannot be used as a substitute for a complete diagnostic assessment, because the screening tools are not detailed enough to be used for diagnosis and treatment planning.

Screening could occur in several systems of care. Those screened could include children of women who are in substance abuse treatment or in prison, children in foster care, and all siblings of children diagnosed with FASD. Thus early screening, followed by diagnosis, could decrease risk for secondary disabilities that may lead to entry into corrections systems. This could potentially decrease the number of people with FASD entering the corrections systems. A second benefit would be to identify individuals who are likely to have a particular condition so that a comprehensive diagnostic assessment can follow. Screening for FASD in the corrections system would make more efficient use of limited resources for diagnosis and treatment. This would increase the number of people with FASD who are identified and they could then receive appropriate interventions and perhaps decrease rates of recidivism.

The Canadian corrections system is already screening offenders to identify those with mental health and substance use disorders (Correctional Service of Canada, 2010). Livingston notes that the American Psychiatric Association and the National Commission on Correctional Health Care have developed standards and best practices for screening and assessment; he also states that the screening process should not rely exclusively on information provided solely by the offender (Livingston, 2009). Three other useful components would include review of health-related records or documents, interviewing offenders about their mental health and substance use problems, and a brief mental status examina-

tion. Important collateral information (e.g. PAE, mental health issues, substance use, and other life experiences) can be obtained from the arresting officer, correctional officers, family members, and others. When the screening reveals a need for further assessment by a mental health professional, more comprehensive information should be gathered, including past history, prior assessments and treatments; formal tests of cognitive and emotional functioning should be administered. This information will also be very useful in screening and assessment for people with FASD, and could also be helpful in the development of management plans.

At present there are no validated screening tools for FASD in corrections settings. However, Goh et al. (2008) evaluated screening tools for FASD, and selected the Asante Centre for Fetal Alcohol Syndrome Probation Officer Screening & Referral Form as a youth justice screening tool. The components of this form include social factors and personal and mental health factors. It is for use by probation officers and is considered easy to use. It relies on information and records generally available to the probation officer; the information is not obtained from the offender. Its validity still needs to be established. However, with a confirmed PAE history, 81% of those who met the screening criteria were ultimately given a diagnosis of ARND (Conry & Asante, 2010).

An essential element in identifying people with FASD in the corrections population, therefore, would be systematic screening of everyone entering this system. Results from screening could allow many people with a possible FASD to have access to diagnostic services, which at present are minimal. These evaluations could provide important information for serving this population and would hopefully modify treatment.

## Diagnostic issues

Both the United States and Canada recommend that the diagnosis of one or more of the FASD conditions is best made by a multidisciplinary team that includes pediatricians/physicians, psychiatrists, geneticists, psychologists, speech pathologists, social workers, and other health professionals. All must be experienced in working with people with FASD. This is a medical diagnosis that involves considering other developmental disabilities, genetic syndromes, mental health disorders, and postnatal effects that could cause physical and cognitive impairments. Multidisciplinary input may be especially useful for the diagnosis of ARND where there are no physical features characteristic of PAE. In the criminal justice system, the team depends on information from the client and collateral sources. The information from someone who may have FASD can be unreliable. Information from collateral sources may be difficult, and even impossible, to obtain, especially the prenatal, birth, and developmental history. Confirming PAE presents special problems in this population where rates of family fragmentation are high and contact with birth mothers or other knowledgeable informants may be difficult. Youth with FASD are less likely to be living with a biological family member (Conry, Fast, & Loock, 1997). However, this does not negate the value of the assessment and the development of a diagnostic formulation that utilizes available information and addresses the impairments of people with FASD and also documents likely FASD if exposure could be confirmed.

Making the diagnosis requires assessment in the three key areas of growth, facial features, and the central nervous system. Some of these features change with time. Spohr et al. and Steinhausen et al. found that only 10% of the original diagnosed group continued to have the recognizable facial dysmorphology of FASD (Spohr, Willms, & Steinhausen, 1993; Spohr, Willms, & Steinhausen, 1994; Steinhausen, Willms, & Spohr, 1993). However, Astley has reported that the facial features can still be recognizable in some adults (Astley,

2010). In Canada only a diagnosis of full FAS in which the person meets criteria in all three areas, can be made with or without a confirmed history of PAE. It would be risky for the assessment team to conclude that the cognitive and behavioral impairments are the result of PAE without establishing a confirmed history. In other areas both FAS and pFAS may be diagnosed without a confirmed history of PAE. The diagnosis of pFAS relies on having some of the physical characteristics, definite neurodevelopmental and behavioral impairments. In the absence of growth deficiency and characteristic facial features, the diagnosis of ARND relies on a comprehensive neuropsychological assessment and a confirmed history of PAE. This assessment looks for indications of prenatal brain damage, which are reflected in impairments in cognition, communication, memory, executive function, academic skills, adaptive behavior, and attention and activity level.

The clinical team also needs to consider other prenatal and postnatal factors affecting the person's development. Almost three quarters of youth and adults with FASD have experienced physical, emotional, and sexual abuse (Conry et al., 1997; Streissguth et al., 2004). In addition, they commonly have experienced other adverse life events, such as emotional and physical neglect, having an alcohol or drug abuser in the household, having an incarcerated household member, having someone who has a chronic mental illness, witnessing their mother being treated violently, and having one or no parent in their lives (Conry et al., 1997; Conry & Lane, 2009). In addition, individuals may have experienced traumatic brain injuries (e.g., from child abuse, assaults, and motor vehicle accidents) often complicating the assessment of central nervous system function.

### **Mental health issues**

People with FASD are also at high risk for mental health disorders, which need to be considered in the diagnostic assessment (Burd et al., 2009; Famy, Streissguth, & Unis, 1998;

Fast & Conry, 2009; Lynch, Coles, Corley, & Falek, 2003; Mattson & Riley, 1998; O'Connor & Paley, 2009). Research suggests that individuals with FASD are overrepresented in psychiatric populations and in correctional settings (Fast & Conry, 2004; Moore & Green, 2004; O'Connor & Paley, 2009). In their longitudinal follow-up study, Streissguth et al. found that 94% of people with FASD reported mental health problems (Streissguth et al., 1996). The research team later noted that alcohol or drug dependence, depression, psychotic disorders, and avoidant, antisocial, and dependent personality disorders were the most common psychiatric diagnoses in adults with FASD (Famy et al., 1998). In their study of youth in a forensic psychiatric assessment unit, Conry et al. identified the most common psychiatric diagnoses, for both controls and youth with FASD, as Conduct Disorder, Attention Deficit Hyperactivity Disorder (ADHD), and Substance Use Disorder (Conry et al., 1997). All youth with FASD had at least one psychiatric diagnosis. Treating these individuals is extremely challenging because of their cognitive limitations, profound adverse life events, and mental health issues from PAE.

### **Interventions in corrections settings**

Conry and Fast describe the neuropsychological deficits associated with FASD using the mnemonic, ALARM (2000). It is a useful reminder for those in the legal system who are working with individuals with FASD of the challenges they face. The acronym stands for Adaptive functioning, Language, Attention, Reasoning, and Memory. Cognition, as measured by standardized intelligence (IQ) tests, was not included in the acronym. The cognitive abilities of those with FASD fall within a broad range of intelligence, from intellectual disability to the average range or higher. Those with higher IQ may actually have more difficulties with day to day functioning than those in the lower range and may be more likely to end up in trouble with the law (Streissguth et al., 1996). Under-

standing these behaviors as underlying brain-based disabilities rather than as willful misconduct can lead to better management and better outcomes in the legal system.

Adaptive behavior refers to the effectiveness with which a person meets the standards of personal independence and social responsibility expected of an individual of the same age and cultural group (Grossman, 1983). Society expects adults to be able to get and maintain employment, manage household activities and budgeting, look after personal care and well being, and enjoy personal and social relationships. For many adults with FASD the ability to meet these requirements for a positive life style can be compromised. For people with FASD who have been incarcerated, the transition back to community living is particularly challenging. Streissguth et al. (2004) compared adaptive behavior with cognitive abilities, and found that for the individuals with FASD the adaptive scores were significantly (1 to 1.5 standard deviations) below their IQ scores. This could suggest that, at chronological age 18, when people in both Canada and the United States enter the adult criminal justice system, their adaptive skills may be at age 10 or younger. At age 12, when children enter the youth criminal justice system, they may be functioning as 6-8 year olds. Note that even with these low adaptive scores, the IQs may be in the average range! Conry et al. reported that, for youth on a forensic psychiatric inpatient unit, their significant problem behaviors were being socially inept or inappropriate and having poor understanding of personal boundaries (Conry et al., 1997).

Language and communication skills are often underappreciated as a source of impairment, having serious implications in the criminal justice system. Both expressive language and receptive language (comprehension) are often impaired (Conry & Lane, 2009). This can compromise their fair treatment in all stages of the legal process: responding to the initial interrogations, communicating with their lawyers, participating in court, and understanding the proceedings.

Concrete and literal interpretations of questions and responses can be the source of much confusion in legal settings. Communication also includes nonverbal skills, such as the ability to correctly read social cues, which can also be impaired in individuals with FASD. They can misinterpret the intentions of other people.

Attention deficit, impulsivity, increased distractibility, and high activity level have been found in up to 60-75% of individuals with FASD (Burd et al., 2003; Streissguth et al., 2004). Reacting impulsively, especially while under the influence of alcohol and drugs, often leads to trouble with the law. Being agitated and distractible frequently leads to conflict while in the prison system. It appears that having additional comorbid disorders, such as Conduct Disorder and Substance Use Disorder, can increase the risk for trouble with the law in this population (Conry et al., 1997; Streissguth et al., 1996).

Reasoning, and specifically executive function, includes the ability to plan ahead, to anticipate and learn from the consequences of one's actions, to inhibit an initial response in favor of a better long-term choice, to self-monitor and evaluate, and to consider alternative possibilities if the first plan does not work out. For individuals with FASD faulty reasoning exacerbates their struggles in the legal system. For example, the presumed lack of remorse for their actions may, in part, be due to impaired reasoning. The person with FASD who holds up someone on the street demanding his or her cell phone insists "it was not stealing, because he gave it to me." Schonfeld et al. (2006) found that these impairments in reasoning and executive functioning contributed to social difficulties. Impairments in judgment and reasoning can lead to repeat offenses and increased interaction with the corrections system (Schonfeld, Paley, Frankel, & O'Connor, 2006).

Memory impairments are very common in people with FASD. Inability to remember instructions from lawyers and details of events may have significant consequences in legal settings. In

recalling events, details of time and the sequence of events may be confused, jeopardizing the testimony of the individual with FASD. People with even mild learning disabilities and mild mental handicap are prone to suggestibility when questioned (Clare & Gudjonsson, 1993). People with FASD are also very suggestible, and Judge Barry Stuart noted that their combination of memory deficits and language deficits can produce confused and seemingly unreliable testimony in court (Conry & Fast, 2000). Suggestibility can increase with more complex events and as they become more distant in time. Memory impairments can become more pronounced in adults who may have their own extensive histories of alcohol and drug misuse. The most serious of memory deficits can arise from confabulation where individuals confuse events that really happened with events that they heard about or saw on TV; this may lead to false confessions. Repeated questioning can lead to confusion and confabulation, and suggests proceeding with caution when using this information in legal settings.

As noted above, the impairments and their ramifications tend to increase as people mature. Figure 1 depicts the increasingly important role of cognitive impairments, mental disorders, and comorbidity as people with FASD mature. These data are from a long-term follow up of people with FASD seen and followed over the last thirty years (Burd, Selfridge, Klub, & Juelson, 2003). The facial features and growth impairments of FASD typically have modest effects on overall function. On the other hand, the cognitive disabilities and mental disorders are critical factors in severity of impairment and risk for involvement with police and entry into corrections systems. Table 4 shows achievement levels for people with FASD who have been followed into adult life (Burd, 2010). This information has important implications for treatment programs and depicts the need for modifications of intervention programs to ensure maximum benefit for people with FASD. The ALARM schema has considerable heuristic value for translation of the results of the screening and assessment into practical strategies that can be utilized in the corrections systems and in the parole and probation systems.



TABLE 4 **Basic cognitive skills in adolescents and adults with an FASD: Summary data from the North Dakota Fetal Alcohol Syndrome Clinic over the past 30 years (Burd, 2010).**

<i>Characteristics</i>	
	<i>Grade level</i>
Reading	5.0
Reading comprehension	4.5
Oral comprehension	5.0
	<i>Percent affected</i>
Memory	80%
Attention (ADHD)	75%
Executive function impairments	80%

FIGURE 1 **FASD - phenotype severity neurobehavioral impairments\***



\*Figure is a composite illustration of data from over 500 subjects with FASD seen over the last 30 years in the North Dakota FAS Clinic (Burd et al., 2003; Burd et al., 2009).

**Vulnerability**

The history of many people with FASD is often one of exploitation before, during and after entry into the corrections systems. This adds to the complexity of intervention at each subsequent step in these systems. People with FASD, because of the central nervous system deficits, will often be manipulated or led into actions with adverse consequences for them. In a corrections

system these can result in an increase in danger to them and an increased risk of sexual exploitation in a custodial setting. Ideally, increased awareness of these deficits would be sufficient for staff to provide additional protection or special placement, which might include restricted access to the general prison population. Violations of regulations are common and may be the result of impulsivity and impaired comprehension of written materials and verbal instructions, and can be increased from association with exploitative inmates. Giving directions more slowly, simply, and concretely, and using multiple repetitions of instructions may be useful. Often these behaviors will be repeated with no apparent gain or motivation. As inmates move into the community, impairments in time estimation and planning ahead can cause great difficulty in getting to important meetings on time and keeping scheduled probation appointments, leading to breaches of probation conditions. Table 5 summarizes examples of intervention strategies. Many of these could very likely be implemented by having inservice training for corrections, parole and probation staff who work with individuals with a known diagnosis of FASD.

TABLE 5

**Programmatic check list of important issues**

Important issues in formulating and implementing treatment programs for people with FASD in the corrections system:

- ✓ *Duration*—treatment or interventions need to last longer
- ✓ *Make it concrete*—picture guides are helpful for teaching key concepts
- ✓ *Small groups*—allow more attention to topical material
- ✓ *Anxiety increases impairment*—especially important in treatment of substance abuse, sexual abuse or PTSD
- ✓ *One problem at a time*—allow participants to learn and apply solution before moving on to next topic
- ✓ *Appreciate impairments*—some problems cannot be treated and we need to learn how to adapt to them and minimize their effects
- ✓ *Aftercare is essential*—improves generalization of learned behaviors
- ✓ *Short directions*—an essential key for successful interventions
- ✓ *Mental health concerns*—need appropriate treatment

TABLE 6 **Corrections system training recommendations**

<i>Who</i>	<i>When</i>	<i>Content/Format</i>
All Staff	At orientation Biannual inservice training	Overview of FASD Anticipated prevalence in corrections Prevalence of cognitive and mental health impairments Effects of schedule and structure
Medical staff Substance abuse staff Disciplinary staff Parole planning staff Educational staff	<ul style="list-style-type: none"> <li>• Preservice</li> <li>• Inservice</li> <li>• Biannually after initial training</li> </ul>	Expected prevalence of FASD Screening strategies Diagnosis—referral services Comorbidity Benefits of routine and schedule Potential for abuse Exploitation Medical—Behavioral needs
System changes • Monitor staff awareness and competency	Within 2 years	• Complete above
• Strategies for screening and identification of FASD	Within 3 months of incarceration	• Screening strategy
• Assessment—resources	Within 3 months of positive screen or referral	• Identify referral source
• Planning and intervention	Within 3 months of completed assessment	<ul style="list-style-type: none"> <li>• Track progress</li> <li>• Need to maintain services across placements</li> </ul>
• Assure substance abuse treatment and mental health staff have competency and adequate time to implement program goals	Within 3 months of hiring and biannually	• Modifications in treatment strategies and content for people FASD

### **Training recommendations**

A systematic survey of training methodologies preferred by corrections systems has been completed (Burd et al., 2003; Burd, Selfridge et al., 2004). The reported training needs in the corrections systems are huge and require urgent attention. In the survey of corrections systems, respondents ranked different training methods based on preference for their system. The first choice for training was the combination of a manual and video (25.9%), followed by a workshop (16.7%), regional conference for corrections staff (14.8%), national conferences for corrections staff (7.4%), and a CD-based education program (3.7%) (Burd, Selfridge et al., 2004).

The following six content areas from table 6 are recommended for staff training in the corrections systems: 1) Overview of FASD 2) Screening strategies to improve identification 3) Management strategies for people with FASD 4) Impact of FASD on learning and development of daily living skills 5) The potential effects of FASD on meeting the conditions of parole and independent living and 6) Essential services and service delivery systems which coordinate services across placements to maintain gains and decrease risk in the future.

### **Discussion**

Recent prevalence estimates suggest that the rates of FASD may approach 2-5% (May et al., 2009). It is likely that these affected people enter corrections systems at a disproportionate rate resulting in large numbers of people with undiagnosed FASD in corrections systems. Huge challenges confront corrections systems in developing an appropriate response to this problem. Large-scale changes in prevention strategies, improved screening, and a massive increase in diagnostic services are urgently needed. Many thousands of people in these systems require more comprehensive services.

The potential benefits are also very large. These could include reduced prison time, decreased rates of recidivism, and improved outcomes for people reentering society. In addition to increased funding for these efforts, large-scale research networks are required to conduct multisite studies across varying communities. With 1-2% of all live births at risk for FASD we must marshal the resources to begin this process as soon as possible. Few areas in public health offer such a compelling opportunity. The design of these studies must address the lifespan problems of people with FASD and focus on development of risk reduction strategies to prevent the use of prisons as large-scale service systems for so many people with preventable problems.

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