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Prenatal alcohol exposure: An assessment strategy for the legal context

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ABSTRACT

Studies over the last two decades have shown that people with fetal alcohol spectrum disorders (FASD) have the kind of brain damage that increases risk of criminal behavior. Thus, it is generally accepted that FASD is likely to affect a sizable minority of individuals involved in the justice system. Most of these defendants have never been diagnosed because they lack the facial abnormalities and severe intellectual deficiency that would have improved identification and diagnosis in childhood. Despite the fact that an FASD diagnosis and associated cognitive deficits may be directly relevant to offense conduct and post-arrest capacities, screening for prenatal alcohol exposure (PAE) by legal teams remains relatively rare. This article addresses the relatively straightforward screening process with strategies that may be used singly or in combination to produce information that can establish PAE and provide a foundation for diagnostic assessment by medical and mental health experts.

1. Introduction

Fetal alcohol spectrum disorders (FASDs), which include fetal alcohol syndrome (FAS), partial FAS (PFAS), and alcohol related neurodevelopmental disorder (ARND), are commonly associated with abnormalities in anatomy, growth, cognition, and behavior (Kodituwakku, 2007; Nash et al., 2006; Sokol, Delaney-Black, & Nordstrom, 2003). Brain damage with associated behavioral dysfunction is a key feature in FASD. Since outward physical manifestations of FAS (i.e., facial abnormalities and growth impairment) may attenuate over time (Bertrand et al., 2004; Klug, Burd, Martsolf, & Ebertowski, 2003; Wetherill & Foroud, 2011) if such symptoms ever existed, and most individuals with FASD have IQs that fall above the intellectually deficient range (Streissguth, Barr, Kogan, & Bookstein, 1996), the possibility that a suspect or criminal defendant suffers from FASD may be overlooked. Since FASD and its associated brain damage could explain offense conduct, screening for PAE by the legal team in the early stages of pretrial investigation is a relatively efficient and low-cost way to determine if there is justification for multidisciplinary diagnostic assessment by experts in FASD.

Despite government health advisories and warning labels on alcoholic beverages in the United States, there is no indication that rates of FASD have declined over the last decade or so (http://www.cdc.gov/features/dsalcoholchildbearingagewomen/). In fact, alcohol use among women of childbearing age is still common. For example, recent epidemiological studies have found that over half of all non-pregnant women of childbearing age report alcohol use, with nearly 13% reporting binge drinking in the month prior to survey CDC, 2009. This statistic has important implications in the forensic context because nearly half of all pregnancies in the United States are unintended (Finer & Zolna, 2011). Of four million pregnancies in the United States each year, approximately one in eight women (500,000 pregnancies) report using alcohol during pregnancy, and nearly 2% of pregnant women (80,000 pregnancies) report heavy drinking (CDC, 2009; Floyd & Sidhu, 2004). Conservatively, these figures suggest a possibility of PAE in up to 12.5% of all infants born annually and, by extension, a substantially increased risk for FASD in the forensic population.

Arrest rates in the general population in the United States are around 4.5% (Federal Bureau of Investigation, 2010), but risk of arrest for those with FASD is much higher. For example, Streissguth et al. (1996) found that approximately 60% of a large sample of individuals diagnosed with FASDs experienced trouble with the law (e. g., arrest and conviction) at least once in their lives. A study in British Columbia found that nearly a quarter of youth in a forensic psychiatric sample met diagnostic criteria for FASD (Fast, Conry, & Loock, 1999). A review of several studies in Canada and the United States found that adolescents with an FASD were 19 times more likely to be arrested than unaffected adolescents (Popova, Lange, Bekmuradov, Mihic, & Rehm, 2011). Thus, it is logical to conclude that a sizable minority of individuals in the juvenile and adult criminal justice systems have histories involving PAE.

The forensic relevance of FASD is beginning to be recognized. The Substance Abuse and Mental Health Services Administration (SAMHSA) in the United States has posted several fact sheets about individuals with FASD who offend on its *FASD: Center for Excellence* website. A brief review of FASD's forensic relevance was included in a recent

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revision of a major treatise on the U.S. corrections systems (Cohen, Burd, & Beyer, 2006). FASD is relevant across the legal spectrum from offense behavior and arrest through the entire adjudication process to incarceration. For example, the brain damage in FASD may be relevant to diminished capacity when it reduces an individual's self-control and ability to recognize when his/her conduct is subjecting others to harm. After arrest, the cognitive impairments in FASD (e.g., attention, comprehension, memory, communication, social judgment) may affect competency to proceed to trial by causing significant misunderstanding about the implications of waiving rights to silence and legal counsel before and during police questioning (Brown, Gudjonsson, & Connor, 2011). Indeed, as such deficits stem from permanent brain damage, competency restoration may be impossible. Many individuals with FASD also are suggestible, which can lead them to inaccurate statements during questioning simply to satisfy police and end the interrogation process. Generally, individuals with FASD tend to agree with authority figures when they don't understand implications or consequences (i.e., abstract concepts), which also can affect the way they respond to their attorneys. Once incarcerated, persons with FASD often have initial difficulty adjusting to the structure in detention facilities, but after growing accustomed to the routine, functioning typically improves significantly as they no longer have to make self-regulation decisions on their own.

The need for increased awareness of PAE and FASD in the legal community was officially endorsed in a resolution passed by the American Bar Association (ABANow, 2012). The inspiration for the ABA resolution was a stronger and more detailed resolution passed by the Canadian Bar Association (2010). In 2013, the Canadian Bar Association went a step further and urged the federal government to amend the Criminal Code and related legislation so that the diagnostic requirement for evidence of PAE may be waived by the court if there was a good reason why such evidence was unavailable, such as when the birth mother had died or could not be identified or found. Here, the Canadian Bar Association recognized the difficulties facing legal professionals in establishing PAE long after a defendant had reached adolescence or adulthood.

Given the magnitude of implied risk for FASD, one might expect routine PAE investigation in the criminal justice setting. However, screening and assessment are the exception rather than the rule, even in juvenile pretrial investigation (Herrick, Hudson, & Burd, 2011). Thus, it is not surprising that perceived rates of diagnosed FASD in the United States corrections systems appear unreasonably low (Burd, Selfridge, Klug, & Bakko, 2004), which may lead legal teams to assume FASD is unlikely. We suggest that a primary factor limiting pretrial investigation of PAE is a lack of screening measures which can be administered easily by legal teams. Thus, the objective of this article is to structure the task of confirming PAE by outlining procedures which legal professionals can use to screen for and perhaps confirm PAE during the pretrial investigation process.

1.1. Preliminary PAE pre-screening by the legal team

Given the likelihood that the cognitive deficits associated with FASD are directly relevant to pivotal legal issues (e.g., planning, decision-making, judgment, impulse control) and that the diagnosis itself establishes that those deficits preexisted any alternative explanations for the offense conduct at issue, screening for FASD should begin in the initial stages of pretrial investigation prior to formulating case strategy. Since PAE information is typically not readily available and often is difficult to obtain for defendants who were born two or more decades in the past, we suggest that legal teams consider using multiple screens depending upon funding and time constraints. With careful review of the federal government's diagnostic guidelines for FAS (Bertrand et al., 2004) and further informed by diagnostic criteria in the DSM-5 for Neurodevelopmental Disorder associated with Prenatal Alcohol Exposure (ND-PAE), social workers on the legal team should be able to conduct such screening prior to counsel deciding if multidisciplinary FASD assessment by medical and mental health experts is warranted.

It is important to keep in mind during the screening process that the amount of damage in a fetus that a teratogen such as alcohol can cause largely depends on timing, dose, and frequency of exposure. Because alcohol's specific teratogenic threshold is unknown (e. g., Burd, Blair, & Dropps, 2012), the U. S. Surgeon General's health advisory in 2005 indicated that there was no known “safe amount” of alcohol consumption during pregnancy (U.S. Surgeon General, 2005). It appears that at each exposure level, some fetuses are less susceptible to damage than others since only 5–10% of exposed pregnancies are later found to have a child with a diagnosable FASD (Abel, 1998). Thus, it is clear that beyond timing, dose, and frequency, other factors affect the extent of harm, such as maternal health, nutrition, smoking, drug use, and maternal and fetal genetics (Paintner, Williams, & Burd, 2012). Notably, twins may be discordant for FASD (Abel, 1998). Thus, even low levels of fetal exposure may harm some individuals while others may be impervious to relatively high levels of exposure.

Women at highest risk for producing a child with FASD appear to be those who engage in binge drinking. Binge drinking, defined as alcohol intake that brings blood alcohol concentration (BAC) to 0.08 grams percent or higher, equates to four or more drinks in a 2-hour time period for women (National Institute of Alcohol Abuse & Alcoholism (NIAAA), 2004). Binge drinking represents a particularly dangerous pattern of exposure (Stratton et al., 1996) as such episodes are often coupled with high BACs that produce an intensely toxic amniotic environment for a fetus (Burd et al., 2012; Paintner et al., 2012). In contrast, the toxic effects of low level PAE are unclear and controversial (Stratton et al., 1996), although low levels of exposure may cause FASD.

The timing of a birth mother's drinking is important as PAE during critical periods of gestation affects brain development differently, producing varying neurocognitive deficits (Abel, 1998; Bookstein & Kowell, 2010; Lipinski et al., 2012; Stratton et al., 1996). For instance, exposure during the first few weeks of pregnancy, when cells are forming and migrating to areas in the embryo where brain structures will eventually form, can be quite destructive (US Department of Health et al., 2002; Whitty & Sokol, 1996). Since many women do not learn they are pregnant until the second or third month of pregnancy, they may drink regularly during much of the first trimester without knowing they are exposing their unborn children to risk of brain damage.

1.1.1. Screen no. 1. Record review

Contemporaneous records may contain information that confirms PAE. Thus, record acquisition should be thorough and completed as early as possible in the pretrial process. While it is appreciated that obtaining and reviewing records can be labor intensive and difficult for public defenders with large caseloads and thus beyond many public defense budgets, this is a task for which investigators and social workers are well trained. At a minimum, the legal team should obtain complete medical records for both the client and birth mother, including birth records and lifetime emergency room visits for both. For example, such records may reveal that a birth mother was intoxicated when she presented for medical care during the index pregnancy, which would confirm PAE. Likewise, birth records may show that a client was born with alcohol or drugs in his or her system. Given the correlation between drug and alcohol abuse, if a birth mother is known to have abused drugs, it is highly likely she also abused alcohol (McGlone, Mactier, Cooper, Hassan, & A4–A5, 2012).

Other records involving the birth mother may contain information relevant to her alcohol use around the time of the pregnancy, including:

- mental health records (including psychological and/or psychiatric evaluations);
- substance abuse treatment records;
- child protective/welfare services and dependency records (including court transcripts);
- foster care and/or adoption records;

- sibling birth records, death certificates, and/or adoption records;
- maternal arrest reports and convictions (e. g., public intoxication, drug use, domestic violence, driving under the influence); and
- maternal death certificates.

Since many people with FASD (70–80%) are not raised by their biological parents (Streissguth et al., 2004) and there is an increased rate of mortality among women who give birth to children with FASD (Berg, Lynch, & Coles, 2008; Burd et al., 2008), it may be difficult if not impossible to locate a birth mother, particularly for adults raised by other caregivers. When birth mothers are deceased, missing, or uncooperative, child protective services and adoption records may contain the only documented PAE information available. In some cases, CPS and court records have documented an FASD diagnosis or loss of parental rights due to substance abuse around the time of the index birth. If a sibling is diagnosed with an FASD, this substantially increases a client's risk for FASD (Abel, 1987).

1.1.2. Screen no. 2. Maternal risk screening

Documented evidence of PAE in contemporaneous records is rare. Therefore, in the absence of such data, legal teams can obtain such information directly and/or indirectly. One of the indirect methods includes the maternal risk screen (see Table 1), which is relatively straightforward but dependent upon thorough documentation of a birth mother's history. A checklist of empirically based risk factors found in mothers of children diagnosed with FASD, the maternal risk screen can be completed solely from information contained in records. While the Maternal Risk Screen has no specific cutoff score, if several of the items are endorsed, then the more challenging phase of PAE assessment should begin: interviewing the birth mother and/or informants regarding PAE.

1.1.3. Screen no. 3. PAE interviews

If records do not confirm PAE, but the maternal risk screen indicates a risk of PAE, the legal team has two options: seek confirmation of PAE from the birth mother (if she is available and cooperative) or from collateral informants (family or close friends) who knew her around the time of the index pregnancy. If the birth mother confirms PAE or an informant reports observations of maternal drinking, such retrospective information is considered reliable (Hannigan et al., 2010). However, getting candid disclosure information from birth mothers and informants is extremely challenging due to the social stigma associated with drinking during pregnancy. Because public health messages have created heightened awareness about FASD, most people in North America know that women should not drink during pregnancy, which underlies the stigma. Stigma associated with such drinking also may affect PAE reports from family and friends as well as birth mothers. In particular, there is considerable stigma associated with disclosing personal behavior that might have caused brain damage that contributed to the crime in question.

Beyond stigma, birth mothers may wish to conceal PAE because they fear that revealing such information could result in potential loss of parental rights for siblings who haven't reached adulthood. If the legal professional who conducts the interviews is insensitive to these issues, minimization and denial of PAE may result in erroneous conclusions (Bertrand et al., 2004), which will make FASD diagnosis difficult if not impossible. Consequently, it is important in all cases for legal professionals to assure those who provide PAE information that the data will not be used to "blame" the birth mother or family members but rather to support accurate diagnosis. Because a false step during this interview process may jeopardize eventual diagnosis, it is essential that legal professionals who conduct PAE interviews be formally trained and experienced in forensic interview techniques, as results of these inquiries must meet evidentiary standards. Typically, mitigation specialists, social workers, and psychologists receive such training; attorneys do not. If a birth mother appears uncooperative prior to PAE assessment, the legal team may wish to forego interviewing her during pretrial investigation and instead rely on other screening procedures (e.g., collecting observational information via informants), leaving birth mother interviewing to the diagnostic team eventually appointed to conduct the FASD evaluation.

In interviewing the birth mother, before asking about PAE, it is important to ask about her drinking pattern *prior to the index pregnancy*. Such questions should be embedded unobtrusively in general interview questions about her medical and mental health history. After completing that history, then ask specific questions about the index pregnancy. Table 2 provides an illustrative example of the kinds of questions that should be asked twice during the birth mother's interview: initially during questions about her medical history *prior to* the index pregnancy and then again in a more targeted manner that addresses her behavior *during* the index pregnancy. Both times, it is particularly important to clarify how the birth mother defines "a drink." For instance, women who abuse alcohol may consider one 8–10 ounce glass of vodka to be

Table 1
Maternal risk screen: risk factors correlated in the literature with PAE and FASD.

Risk factor	Present Yes/No	Source of data
History of premature births		
History of alcohol and/or drug abuse		
Another child born with FASD, birth defects, or developmental disabilities		
Stillbirth or deceased child		
One or more children removed from care		
Alcohol use prior to pregnancy		
Single mother		
Victim of domestic violence or sex abuse		
Mental illness, including hospitalization(s)		
History of homelessness		
Did not complete high school		
History of special education		
Low socioeconomic level (e. g., on AFDC, SSI, or income less than $16,000/year)		
Began drinking alcohol before age 15		
History of substance abuse treatment		
Arrest history (e. g., DUI, prostitution, drugs, theft)		

Table 2
PAE interview: questions for the birth mother and/or informant.
Before asking the questions in Table 2 below, first ask the following questions as part of the birth mother's medical history:

How old were you when you were pregnant with (the subject/defendant in question)?
How far along were you when you learned you were pregnant?
How did you learn you were pregnant?

Questions	In the month before you learned you were pregnant:	During the index pregnancy:
On average, how many days per week did you drink?		
What constituted "a drink" for you at the time?		
On an average drinking occasion, how many drinks did you typically have?		
How many drinks would it take for you to feel "buzzed" or intoxicated?		
How often did you become intoxicated?		
How many days per month did you have 4 or more drinks?		
What was the most you had to drink on any one occasion?		
How often did you smoke cigarettes?		
How often did you use drugs (identify the drugs)?		

"a drink," when actually it is equivalent to 6–10 standard drinks of alcohol (National Institute on Alcohol Abuse & Alcoholism (NIAAA), 2007). If a birth mother seems reluctant to disclose, questioning her about her drinking behavior during the pregnancy should not be attempted until the end of the entire interview, as these questions obviously screen for PAE and may increase her resistance.

1.1.4. Screen no. 4. Behavioral screening

If document review and PAE interviews suggest but do not confirm PAE, an additional step may be undertaken before referring the case to experts for diagnostic assessment: behavioral screening. In the 1970s, Streissguth created the 79-item Personal Behaviors Checklist (PBCL), which structured informant-based behavioral assessment with parents and caregivers of children with FASDs. By 1994, PBCLs were available on 134 patients enrolled in a longitudinal FASD study at the University of Washington. In order to create an assessment scale with fewer items, the PBCL was subjected to principal components analyses (Streissguth, Bookstein, Barr, Press, & Sampson, 1998), and only items that had high item-to-scale correlations (0.32 or better) for each of four age groups were retained. By 1995, after a larger and more representative sample of PBCLs ($n = 322$) was available, a second principal components analysis was conducted, which resulted in a second scale with high item-to-scale validity. The two scales correlated 0.92, and 36 items representing the union of items selected by these analyses became the current PBCL-36.

The PBCL-36 (Table 3) is one of a few behavior screens for FASD that has been empirically validated. Independent of age, IQ, sex, race, and FASD diagnosis, a cutoff score of "7" or above on the measure reliably distinguishes individuals with FASD from those without FASD in both general and prison samples. PBCL-36 results should be provided to the FASD diagnostic team.

1.2. Multidisciplinary assessment by a diagnostic team

Multidisciplinary diagnostic assessment by medical and mental health experts has been the standard of care for FASD diagnosis in the clinical setting for many years (Bertrand et al., 2004) and also is the standard of care in the forensic setting involving crimes such as capital murder (Brown, O'Malley, & Streissguth, 2012; Brown, Wartnik, Connor, & Adler, 2010). For teenagers and adults involved in the forensic context, multidisciplinary assessment typically meant the involvement of at least two FASD experts: a psychologist or neuropsychologist to identify current and historical central nervous system deficits and resulting impairments and a physician to perform physical examination (including facial analysis), order ancillary testing (e. g., neuroimaging), conduct differential diagnosis, and ultimately render an FASD diagnosis if appropriate. With the inclusion of ND-PAE in the DSM-5, it is now possible for an individual FASD expert to diagnose the condition, which is good news for under-funded defense budgets. However, in high-stakes criminal cases where the involvement of multiple experts with unique training and experience is often warranted, it is essential that at least one FASD expert on the diagnostic team have forensic expertise in order to explain to the court how the condition not only affected the client's lifelong behavior but, more relevantly, affected behavior at the

Table 3
Informant-based behavioral screening: Personal Behaviors Checklist-36 (PBCL-36)[a].
The PBCL-36 may be administered to informants either as a checklist or embedded within interview questions. If informants have not seen the person being evaluated for FASD (i.e., evaluee) for many years, they should rate the behavior for the period during which they had the most contact with the evaluee. For each behavior, informants should endorse "yes," "no," or "DK" (don't know) regarding whether the behavior describes the evaluee. Some of these behaviors may have occurred only during childhood or adolescence. In such cases, informants should be asked to note the age at which the behavior occurred. Examples should be provided wherever possible.

Personal Behaviors Checklist-36 (PBCL-36)				
1	Yes	No	DK	Loud, deep, or unusual sounding voice
2	Yes	No	DK	Talks too much/too fast
3	Yes	No	DK	Interrupts (with poor timing in terms of listener)
4	Yes	No	DK	Unusual conversational topics (dwells on one or two particular subjects or speaks about unrealistic or unusual topics)
5	Yes	No	DK	Likes to talk (talking seems more important than the content)
6	Yes	No	DK	Repeats certain words or phrases often
7	Yes	No	DK	Makes "off the wall" (out of context) comments
8	Yes	No	DK	Talks a lot but says little (chatty but with shallow content)
9	Yes	No	DK	Klutzy (tasks often unintentionally end up in a mess; tends to upset/spill things more than normal)
10	Yes	No	DK	Messy (paperwork is smudgy/rumpled; makes more of a mess eating than others the same age; unconcerned about personal cleanliness)
11	Yes	No	DK	Touches things/people frequently (needs to touch or be touched more than others; needs lots of hugs)
12	Yes	No	DK	Loves to be center of attention (draws attention to self)
13	Yes	No	DK	Loses/misplaces things a lot
14	Yes	No	DK	Rapid mood swings triggered by seemingly small things
15	Yes	No	DK	Over-reacts, with emotional reactions often stronger than expected
16	Yes	No	DK	Difficulty performing or learning precise tasks (e. g., writing with a pencil, gluing models, cutting out cookies or measuring ingredients)
17	Yes	No	DK	Finds team sports (e. g., soccer, football) difficult or has trouble playing on a team
18	Yes	No	DK	Overly friendly with strangers
19	Yes	No	DK	Often demands attention or monopolizes a conversation
20	Yes	No	DK	Establishes superficial friendships easily but has no close friends
21	Yes	No	DK	Unaware of the consequences of his/her behavior, particularly the social consequences
22	Yes	No	DK	Unaware of or ignores "good manners" (e. g., may pass gas or burp in public)
23	Yes	No	DK	Can't take a hint (needs strong, clear commands because the fine points escape him/her)
24	Yes	No	DK	Physically loving/demonstrative (enjoys bodily contact more than most people his/her age; sometimes touches peers more than they prefer)
25	Yes	No	DK	Gets over-stimulated in social situations, especially in a crowded room or when strangers are present
26	Yes	No	DK	Shows poor judgment in the people he/she trusts
27	Yes	No	DK	Engages in inappropriate behaviors at home with family or pets
28	Yes	No	DK	Engages in inappropriate behaviors outside the home, such as at school with teachers/students, in the neighborhood, at work
29	Yes	No	DK	Poor attention span
30	Yes	No	DK	Tries hard and wants to please, but end result is often disappointing
31	Yes	No	DK	Trouble completing tasks
32	Yes	No	DK	Very sensitive to loud noises (e. g., startles easily, doesn't tune out repetitive noises, seems bothered by certain sounds)
33	Yes	No	DK	Fidgety/can't sit still
34	Yes	No	DK	Sleep problems (e. g., unpredictable sleep/wake patterns, difficulty falling asleep, waking very early in the morning, irregular naps)
35	Yes	No	DK	Personal hygiene problems (e. g., forgets to bathe, wash hands, brush teeth)
36	Yes	No	DK	Sexual functioning problems (e. g., inappropriate masturbation, inappropriate touching of others, other unusual sexual activity)

[a] Streissguth et al., 1998.

time of the offense. If PAE has not been confirmed by the legal team during initial pretrial investigation, this diagnostic criterion will need to be established during FASD evaluation.

In situations where there is detailed PAE information, the diagnostic team may be able to reasonably establish the dose of teratogenic alcohol exposure, also referred to as dosimetry. Contrary to dosimetry information acquired for the purpose of scientific research, such information for legal purposes may put the amount of PAE into context for the trier of fact. For example, Barr and Streissguth (2001) conducted research on prospectively reported dosimetry in pregnancies resulting in FASD offspring. If dosimetry can be calculated for a particular case, it can be compared to the results of such research studies, thereby clarifying the magnitude of teratogenic exposure for the trier of fact.

In summary, we have presented here a systematic approach for assessing PAE in order to assist legal teams in determining whether FASD should be explored. It should be emphasized that PAE is but one factor to consider in differential diagnosis of deleterious factors affecting prenatal development, as our experience in the forensic arena reflects that PAE is often compounded by other influences such as drug abuse, poor prenatal care, and inadequate nutrition (Rivkin et al., 2008). While PAE doesn't guarantee an FASD diagnosis or neurocognitive deficits, routine screening in all criminal cases where there is any suspicion that the birth mother had a substance abuse problem before, during, or after pregnancy merits consideration given the potential implications for defense. We also recommend routine screening in dependency cases where the court is contemplating removing a child from the home. If screening proves positive, diagnostic assessment should follow as eventual diagnosis could be foundational in terms of competency, diminished capacity, or mitigation.

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