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Diagnostic Assessment of Preschoolers with Prenatal Alcohol Exposure

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KEY MESSAGES

Infants and preschoolers prenatally exposed to alcohol and other substances benefit from specialized multidisciplinary assessments. Assessments by an experienced team supports positive development and facilitates early intervention.

Issue:

The diagnostic assessment of preschoolers 0-5 years of age with prenatal alcohol exposure (PAE) offers an early opportunity to identify young children at risk for behavioural and learning difficulties and to provide them with appropriate early intervention to enhance their development. This assessment can be challenging for many diagnostic teams and clinicians due to the complexities involved in understanding the influence of often complex causes of developmental delays and challenging behaviours that may be present. These may include multiple substance exposures, pre- and post-natal histories of trauma, and complex family histories that may include developmental delays and intergenerational trauma. There is a limited body of research describing the assessment of neurobehavioural patterns seen in preschoolers with PAE.

The assessment of preschoolers with PAE involves understanding the different areas of brain development (domains) affected by PAE as well as the development and plasticity of brain structures. Attributing differences in these domains to PAE in preschoolers is not well described in the literature, and there has been clinical reluctance to consider the interpretation of clinical assessments as definitively diagnostic in this age group. Nevertheless, it is well described that early intervention and diagnosis are critical in reducing the effects of FASD on children and supporting healthier outcomes as the children age.

The purpose of this issue paper is to draw attention to the gap in research focused on FASD diagnosis in preschool aged children and to highlight the benefits of early diagnosis.

Background:

Fetal Alcohol Spectrum Disorder (FASD), a diagnostic term, describes the physical and neurocognitive effects of PAE. It is often assumed that these effects are not fully manifested or available for assessment in the preschool period. According to recent data from CanFASD, 260 preschoolers have

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been seen for assessment of possible FASD, 11.9% received a diagnosis of FASD with sentinel facial features (SFF), 15.8% received a diagnosis of FASD without sentinel facial features, 34.4% were given an at-risk designation, and 37.9% did not receive an FASD diagnosis[1,2]. Preschoolers were often referred because of behavioural issues (60.8%) and developmental delays including motor delays (39.2%)[1]. Importantly, over half of preschoolers (52.3%) assessed for FASD also struggled with social skills and self-regulation[1].

A review of the impact of PAE on early development describes the global impact of PAE across physiological areas such as sleep and arousal, attention regulation, emotions and mood, behavioural regulation and executive function[3]. Families caring for preschoolers with PAE have to manage behaviours resulting from PAE, and struggle with the lack of appropriate resources and informed supports available to them[4].

Researchers have also shown that the brain development of infants and preschoolers with PAE shows thinner cortical structures, reduced cortical volume, and reduced myelination of white matter[5,6]. These neurological changes may influence multiple domains of functioning, including cognitive, adaptive, motor, language, and sensory processing. These documented changes can be assessed using typically available standardized multidisciplinary assessment tools by providers who are experts in the assessment of preschool children[7]. Clinical confidence in the assessment of preschoolers is affected by clinician experience and described patterns in large cohorts of clinical samples[8].

Clinicians and researchers have expressed concerns about diagnosing FASD in the preschool population. There are a limited number of standardized tools to assess preschoolers and specialized training in this age group is important to their interpretation. Many preschoolers have experienced other adverse childhood events including trauma which has well described developmental implications. Often central to clinician concerns is the attribution of clinical developmental delays to PAE alone.

1. Diagnostic Issues

There have been several key Canadian studies describing the diagnostic assessment of preschoolers by experienced multidisciplinary teams. The authors of an Alberta study noted that assessment of preschoolers has its own unique set of challenges[9]. For example, standardized neuropsychological tests are limited for this age group and as the brain is still early in development, there are rapid changes that vary from child to child, making it difficult to assess functioning in a reliable way. The researchers reported that 15% of their sample had confirmed high levels of PAE but were either undiagnosed or deferred for later assessment. Many of these children were one and two years old, highlighting the difficulty in measuring deficits in young children within the current protocols[9]. This work highlights the importance of early referral to a clinically experienced diagnostic team as well as refinement of current guidelines to direct practice in preschool assessment.

Diagnostic assessment of preschoolers should focus on both comprehensive physical exam as well as developmental assessment by a clinical team experienced in preschool assessment. The physical exam should include measurement of growth parameters (head circumference, height, and weight) and assessment of facial dysmorphic features (ie. facial differences, specifically in FASD including short palpebral fissures, smooth philtrum and thin upper lip). Facial features are most sensitively assessed when children are young, ideally in the preschool period[10,11].

Clinically, preschool children who are non-dysmorphic (i.e., who do not have physical or facial features) and normocephalic (i.e., have a head size within the normal range for their age) may not meet FASD diagnostic criteria because current assessment tools may not detect clinically significant developmental differences in language or learning at young ages[12]. These differences may include variable learning profiles or more subtle neurobehavioural problems individually. A diagnostic team may attribute a child's difficulties to other explanations such as trauma or attachment difficulties when present[13]. Therefore, a diagnosis of FASD in preschool aged children is often deferred. A deferral often means that preschoolers and their families are not able to access early intervention and supports specific to PAE. Thus, delayed diagnosis may mean missed early opportunities for FASD specific programming such as FASD-informed classrooms in the education system or summer camps with the appropriate supports.

Preschool developmental assessment of brain domains should be undertaken by a clinical team experienced in preschool assessment. These domains should include language, motor function, executive function, adaptive functioning, with additional assessment of sensory processing differences. Researchers have shown early motor and sensory differences in preschoolers with PAE that later have an impact on the child's performance (e.g cognitive and motor skills)[14]. The authors of a study with 155 preschoolers found that assessment of physical growth, facial features, and neurobehavioural characteristics allowed for an accurate diagnosis of most children with FASD as early as 9 to 18 months[15]. A Manitoba study published in 2020 based on 10 years of diagnostic assessments of preschoolers with PAE showed that preschool children with FASD demonstrated significant difficulties with executive functioning skills, language, motor, sensory processing, and adaptive functioning skills[16]. The authors of this study found that the measurable differences described in standardized assessment of motor and sensory processing skills in combination with clinically significant delays in language are significant predictors of FASD diagnosis for preschoolers with PAE[16]. Recent international research has shown that the effects of PAE on preschoolers can be reliably assessed using a battery of tests measuring non-verbal, visual spatial skills, and executive functioning, noting measures of executive functioning were particularly sensitive to PAE[7].

Although there are challenges in preschool diagnosis of FASD, with still few diagnostic clinics in Canada offering preschool assessment, there is increasing evidence supporting the importance of early identification and assessment[15,17,18]. More research is needed to define the most appropriate diagnostic tools for preschoolers. With more clarity and confidence for clinicians, the early diagnosis of preschoolers will lead to more specific early intervention to improve outcomes[13].

2. Benefits of Early Diagnosis

Early intervention is important in reducing the impact of risk factors like PAE on neurobehavioural outcomes of children while at the same time supporting and enriching protective factors. As the severity of delays and impairments can become more pronounced with age, it is critical that appropriate supports are put in place as soon as possible[13,19]. With the implementation of proper supports, later life challenges often associated with FASD can be prevented, and opportunities for success across environments can be promoted throughout the lifespan.

Appropriate identification of PAE and multidisciplinary assessment by a team experienced in preschool diagnosis can provide accurate diagnosis and reduce mislabelling of behaviour. Early recognition and diagnostic assessment are critical for providing appropriate management and dedicated support to these children and their families. Early intervention can help provide proactive,

inclusive services for caregivers and service providers. The guidance that comes with a diagnosis of FASD early on is paramount in creating a good fit between the child and their environments, as well as building a circle of support in their community.

Diagnosing children with FASD at an early age can increase their ability to access supports that may have been out of reach. Clinicians can improve outcomes in preschoolers with PAE and reduce the burden of care on families by offering areas for targeted intervention at an early age[13,19]. Comprehensive assessment and recommendations can also provide caregivers and teachers with more tools to build a solid foundation for learning and modifying the child's environment in the best way possible. Early diagnosis is incredibly important as it allows preschoolers with PAE to grow in a supportive environment.

Recommendations for Research and Practice:

FASD diagnosis in preschool aged children is possible, but further research and refinement of assessment practice is needed to support clinicians and diagnostic teams in their efforts.

Future Research:

- Multisite, longitudinal studies with preschool aged children and their families is needed, as well as further research on the ways in which interventions can impact their lives.
- Further studies of appropriate assessment protocols and tools for preschool aged children undergoing FASD assessment are also required.

Multidisciplinary Assessment:

Preschool aged children need to be assessed by clinicians experienced in preschool behaviour and development.

- Preschool assessment should be:
    - Multifaceted: using a variety of measures and approaches
    - Ecological: considering the child in multiple contexts, such as in the home, preschools, and communities
    - Comprehensive
    - Strengths-based
    - Informative for early intervention strategies and referrals
- In keeping with the current Canadian Guidelines,[10] FASD assessment should include a multidisciplinary team experienced in the developmental and medical assessment of preschoolers including:
    - Coordinator
    - Social worker
    - Developmental pediatrician or psychologist experienced in preschool assessment
    - Geneticist
    - Speech-language pathologist
    - Occupational therapist
    - Physiotherapist
- The team must be able to carefully and comprehensively consider differential diagnosis, cumulative risk, and protective influences.

Conclusion:

The early identification and assessment of preschoolers with PAE and complex additional risk factors which may include exposures to other substances, trauma, and stressors is critical to inform early intervention, potentially decrease the severity of deficits later in life, and improve outcomes. Effective assessment of preschoolers with PAE/FASD, provides an opportunity for more accurate understandings of developmental patterns and offering targeted early intervention. Early comprehensive assessment of cognitive and behavioural functioning in preschoolers with PAE will inform appropriate diagnosis and intervention and can help support optimal outcomes. Further research with preschoolers impacted by PAE, may help clinicians to become more confident in assessing and diagnosing FASD at an early age.

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