Diagnosis and Management of Attention Deficit Hyperactive Disorder in the Context of Fetal Alcohol Spectrum Disorder: A Guide for Primary Health Care Practitioners in Manitoba

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A Capstone Project submission to Masters Physician Assistant Studies program, part of the College of Medicine, Faculty of Health Graduate Sciences, at University of Manitoba.

Due Date: Monday May 22nd, 2017 at 1600hrs

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Word count: 5172 excluding abstract, tables of contents, data tables and figures

Abstract:

Fetal Alcohol Spectrum Disorder (FASD) refers to the broad range of effects that occur with prenatal alcohol exposure (PAE) and is the leading cause of developmental delay worldwide. FASD has a high comorbidity rate with Attention Deficit Hyperactive Disorder (ADHD) but is believed to be frequently missed in diagnosis, leading to sub-optimal management and differing prognosis for individuals who have ADHD with versus without FASD. The purpose of this document is to raise awareness for PAE in all populations, and provide a diagnostic and management approach for ADHD with FASD for primary health care practitioners in Manitoba. Various academic databases were searched with combinations of the terms "fetal alcohol", "attention deficit hyperactive disorder", "epidemiology" and "intervention" for articles that were written in English and peer-reviewed. Relevant organization websites were also reviewed for information and resources. Early multi-modal intervention with collaboration of other professionals, such as pediatricians, psychologists, speech and language therapists, occupational therapists and social workers, have shown improved prognosis for individuals with ADHD and FASD and their caregivers, compared to those who don't receive appropriate supports. Community, behavioural and academic support, and appropriate pharmaceuticals (e.g. psychostimulants) are examples of beneficial supports. Accurate diagnosis and management results in increased life skills, academic skills, likelihood of employment, and mitigates other comorbidities including caregiver burnout, learning disabilities and incarceration for individuals with ADHD and FASD.

Word count: 223

Acknowledgements

Completion of this project would not have been possible without the guidance and reassurance from my academic supervisor, Dr. Ana Hanlon-Dearman. Her keen interest and kind words were highly valued at all stages of the project.

Completion of this project, and the MPAS program, would not have happened without my family. It has been a trying two years. Their steadfast love, infinite understanding and consistent encouragement were the headlights on this education autobahn. Thank you.

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1 Introduction

Fetal Alcohol Spectrum Disorder (FASD) is the most prevalent acquired cause of physical and neurodevelopmental delay worldwide(1). Vast scientific evidence has verified that consumption of alcohol during gestation, particularly in the first trimester, results in alterations to the development of multiple bodily systems. Cardiac, neurological, immunological, psychological and cognitive impairments can be congenital and lifelong. The quantity of prenatal alcohol exposure (PAE) which produces these changes is not determined so it is recommended that no alcohol be consumed during pregnancy. While all populations are at risk, clinically referred patients are often among lower socioeconomic groups, suggesting that FASD has a complex network of contributive factors(2).

One of the most prevalent comorbidities of FASD is Attention Deficit Hyperactive Disorder (ADHD)(3, 4). ADHD is a learning and behaviour disorder characterized by excessive hyperactivity, inattention and impulsivity. Onset is typically in childhood with 60% of patients maintaining diagnosis into adulthood(5). Patients with ADHD frequently have difficulties in school and at home and require multi-modal interventions. Behavioural therapy is aimed at reducing disruptive conduct and is highly important at school. First line pharmaceutical therapy employs psychostimulants to reduce ADHD symptoms(6).

Primary health care practitioners (PHCP), including physician assistants, family physicians and nurse practitioners, are usually the first point of contact when patients present with symptoms related to FASD with co-morbid ADHD. Intertwined neurocognitive and behavioural disorders add a complex challenge in effectively managing this comorbid diagnosis. Knowledge of the similarities and differences of these conditions is prudent to ensure appropriate management. Due to the similar presentation of ADHD and FASD, but lower index of suspicion

for FASD, it is believed that FASD is more likely to be missed and ADHD with a potential learning disability diagnosed(7). This results in patients who may be misdiagnosed and thus inappropriately treated. Appropriate diagnosis is critical to inform optimal management and intervention plans, and to effectively discuss prognosis with the individual. The presence of PAE often requires a differential response to techniques classically used for ADHD where patients are not exposed to alcohol in utero. ADHD and FASD comorbid-specific management plans involving education for caregivers, and behavioural, educational and community supports can be orchestrated by a PHCP(4). Research endorses that early appropriate intervention improves the prognosis of FASD and ADHD comorbidity by reducing development of secondary disabilities and enhancing multi-modal development(4, 8, 9). The purpose of this paper is to provide a brief background, etiology, diagnosis, management plan and rationale for increasing clinical suspicion of treating ADHD and FASD as a unique comorbid diagnosis. The information is presented to educate generalist-trained PHCPs, the frontline workers of preventative health.

2 Methods

Peer-reviewed literature was the main source of data for this paper and was used for background information, prevalence statistics, comorbid conditions, and interventions for ADHD with FASD. Other sources include provincial-specific reports and resource packages. Information was gathered from broad and scholarly search engines accessed through the University of Manitoba or with direction from FASD researchers.

University of Manitoba's online library resource section for Physician Assistants was used to access peer-reviewed journal articles through PubMed, Scopus, Google Scholar and Embase (table 1). Searches that produced over 300 results were narrowed to return more specific results. All searches were limited to articles written in English. Article abstracts were reviewed to

determine whether they were appropriate for the study, then were organized into project sections including; FASD background, ADHD in the context of FASD, interventions for an FASD-affected child, and prevention for the mother.

Inclusion criteria consisted of articles that discussed the comorbid prevalence and impact of ADHD and FASD, or the epidemiology of FASD in North America. Articles written after 2015 were preferred but exceptions were made for Canadian guideline articles, frequently cited articles or Manitoba-specific articles. The majority of articles addressed pediatric patients. If an abstract appeared appropriate for this project, the entire paper was browsed to assess study quality, structure and relevant content. Exclusion criteria included articles that were not written in English, didn't address FASD and/or ADHD, and animal studies. Articles that had a poor study design or were published by journals that were not peer reviewed, or had dead links to on-line articles, were also excluded.

Multiple online resources were utilized for this paper (table 2). Provincial-specific FASD resources were included for this project to aid in clinical application of the material. The Healthy Child Manitoba Act legislated in 2006 provides financial, educational and community resources to support child-centered public policy and includes a strategic approach to FASD. The Healthy Child Manitoba website was used to gather material for prevention, support and education of FASD for care givers and medical providers. Manitoba FASD Centre is a service of Winnipeg Regional Health Authority whose website was also reviewed. Supplementary scientific literature and community resources were available here. A national strategy for FASD was reviewed through the Public Health Agency of Canada. Canadian ADHD Resource Alliance was used to access diagnostic forms and guidelines.

3 Results

3.1 FASD Background

Fetal Alcohol Spectrum Disorder (FASD) is a broad term that refers to developmental deficits in utero from maternal alcohol consumption during pregnancy(10). It is the leading known cause of acquired intellectual disability worldwide. Original Canadian guidelines from 2005 stated that FASD itself is not a clinically diagnostic term but encompasses definitive alcohol-related diagnoses such as fetal alcohol syndrome (FAS), partial FAS (p-FAS), alcohol-related birth defects (ARBD) and alcohol-related neurodevelopmental disorder (ARND)(10). However, revised guidelines published in 2016 state that FASD with or without 3 sentinel facial features is the preferred diagnostic term to communicate various developmental effects resultant from PAE (table 4)(9). FASD can include characteristic dysmorphic facial features, growth retardation, abnormal central nervous system (CNS) development, delayed cognition and/or behaviour, and abnormal structure of bodily systems (table 3).

3.2 Prevalence

Data regarding the incidence and prevalence of FASD in Canada is limited but there are specific geographic population-based studies which inform our understanding of the extent of this disorder. Generalizability of these data may be affected by different population characteristics and differences in case ascertainment (7, 10, 11). For example, a 1999 study conducted in Thompson, Mb found FAS prevalence of 7.2 cases per 1000 though the authors state this is likely an underestimate as only 46% of high risk patients were able to be examined in this retrospective passive surveillance analysis(12). Recent publications from 2015 and 2017 suggests that current rates grossly underestimate the true suspected incidence(1, 7). For example, FAS incidence was previously estimated to be 9.1 per 1000 in the United States and Canada as determined by clinic-based referrals(7, 13). But a study conducted in the mid-western United

States found FAS and PFAS prevalence of 2.9-5.5 per 1000 and 7.9-14.9 per 1000 respectively by active case ascertainment(7). Another study indicating higher than expected incidence rates was Popova's 2017 review. Their findings suggest that Canada's indigenous and non-indigenous populations may different have FASD rates, ranging from 1.1 per 1000 for FAS and 5.3 per 1000 for FASD in the general population to 41.6 per 1000 for FAS and 86.8 per 1000 for FASD in indigenous populations(1, 12). The limitations of his review include the sampling of small communities (limited population), including only individuals who met full criteria for FAS, and the use of passive surveillance methods. Newer studies that use active-case ascertainment, such as that conducted by May (2015), may provide more accurate incidence rates(13).

Interpretation of Popova's 2017 study suggests that certain populations have higher rates for FASD. Ethnicity may appear as a risk factor but it is the underlying socioeconomic issues, not race, that stratify burden. Reduced employment, income, education and social support may increase the risk of gestational alcohol consumption(14). Groups with limited socioeconomic resources, such as those in child care (CFS), those who are incarcerated, or those who experience psychiatric illness, are at higher risk of having FASD(14).

3.2.1 Need for Differentiation

FASD is a disorder with multiple comorbid conditions, one of the most frequent being ADHD(4, 14). Many individuals with FASD are brought to clinical attention due to symptoms of ADHD, as the frequency of this disorder in FASD ranges from 48-98%(1, 15). ADHD is a neurobiological disorder that manifests as hyperactivity, inattention, and impulsivity that interferes with daily function(4). Early personalized intervention leads to better cognitive, academic and social prognoses and amelioration of secondary disorders in individuals with ADHD and FASD. Those without treatment are more likely to have a disrupted education and dysregulated social behaviour that may manifest in difficult-to-navigate platonic and sexual

relationships. This places individuals with FASD and ADHD at higher risk for legal troubles, including incarceration(15). Indeed, an estimated 30% of young offenders and 26% of adult offenders have clinically diagnosable ADHD with comorbid addiction, mood and/or behavioural disorders(4, 11).

3.2.2 Etiology of ADHD and FASD

Though FASD and ADHD without PAE may present similarly, they are important to distinguish as presentation details and treatment differs. Decreased brain volume and neurotransmitter dysfunction have been described in both FASD and ADHD(4). One of the etiological theories behind ADHD is decreased function of the dopaminergic and noradrenergic neurotransmitter systems(11). Individuals with PAE may have broader neurotransmitter dysregulation that includes serotonergic, cholinergic, histaminergic, glutamatergic and GABAergic systems in addition to dopaminergic and noradrenergic systems(11). Interrelated higher order cognitive processes that lead to goal-directed action, known as executive functions, may also differ between individuals who have ADHD with versus without FASD(15). Children with ADHD tend to have less severe and a smaller amount of deficits, but both groups display similar deficits in response inhibition and attentional vigilance(15). The neurocognitive profile of individuals with FASD and ADHD includes more significant deficits in planning, set-shifting, working memory, and fluency compared to ADHD alone. These differences are often exacerbated with age, with more pronounced deficits in 12-15 year old patients compared to 5-12 years old(15). A limitation of these studies is that many did not control for the quantity of alcohol consumed in pregnancy, or comorbid teratogenic substance abuse such as nicotine and cocaine(3, 15). Studies that did control for gestational comorbid substance abuse produced similar results between nicotine use and illicit drug use, suggesting that most children referred to the FASD clinic assessed in the study may have comorbid teratogenic exposure(15). Future

research may include quantified alcohol use and comorbid substance abuse to better delineate alcohol's effects on prenatal and postnatal development.

3.2.3 Nature of Comorbidity

Individuals with FASD and ADHD may present with sub-typical symptom presentation and differing responses to medications and behaviour modification compared with those who have ADHD alone(15). Individuals with and without FASD sentinel facial features appear to behave similarly suggesting that facial differences cannot be solely relied on to diagnose FASD when presenting with ADHD(2, 9). High comorbidity rates from 49%-98% support the importance of considering diagnoses of FASD in individuals with ADHD who also have confirmed or unconfirmed PAE(4, 16).

3.3 Recognizing ADHD in the presence of FASD

A national review cited that less than 60% of family physicians, paediatricians, psychiatrists and midwives recognized the importance of multi-factorial abnormalities in growth (physical and reaching milestones), brain, and facies as contributing to the diagnostic information required for FASD(17). Associated disorders of FASD such as emotional disorders, disrupted education, addiction, and legal problems were known to 61-70% of practitioners. Only 35% of practitioners were aware of uninhibited sexual behavior as a manifestation of FASD, suggesting that appropriate counseling may not have been provided. This review was published in 2005, and practitioner familiarity may have improved since, reflected in the increase in diagnostic capacity in Canada and the United States(18).

3.3.1 Symptoms of ADHD in the presence of FASD

It has been discussed that early recognition of ADHD in the presence of FASD results in improved long term prognosis, but unfortunately this is often complicated by other life

circumstances. Symptoms of ADHD with FASD can be noticed at all stages of development, and will be discussed here.

Behavioural characteristics may suggest the neurobehavioural phenotype of FASD in the individual with PAE who does not demonstrate the characteristic physical features. Neurobehavioural characteristics in infants that may be suggestive of FASD include difficulty with soothing, hyper or hyposensitivity, feeding difficulties and failure to thrive, hypotonia and failure to meet developmental milestones(8, 16, 19). Young children who have entered primary school may show typical signs of ADHD including poor inhibition and short attention span (ADHD), delayed language skills (limited vocabulary and poor grammar), reduced memory (needing constant reminders), impaired motor skills (motor incoordination, tremors, neurologic soft signs) and academic impairment, particularly in arithmetic and language development(19).

As children get older problematic areas become more apparent as the gap between environmental and academic demands and the child's adaptive abilities widens. An untreated older child or teenage patient demonstrates further delays academically, communicatively, socially and in life skills. Without early diagnosis and appropriate supports in place, patients may be more likely to show characteristics of disordered conduct, mood and substance use disorders, and may be more likely to be involved in the justice system(19).

Particular characteristics or 'red flags' seen in individuals with ADHD in whom a diagnosis of FASD may be suspected include a confirmed history of maternal alcohol consumption during pregnancy, ADHD of inattentive impulsive subtype, poor response to methylphenidate (ADHD first line treatment), poor psychostimulant response when IQ is less than 50, poor response to typical behaviour modification, atypical sensory responses, and physical indicators of FASD (see table 3)(4).

3.3.2 Referring for diagnostic assessment of FASD

It is within a medical practitioner's scope of practice to consider the diagnosis of FASD and initiate referral for multidisciplinary assessment (Cook et al, 2016). Care must be taken in eliciting a history of PAE due to the heavy stigma, trauma, and feelings of guilt that may be present in the mother(4). An alcohol history should be taken with respect and in a non-judgmental environment of trust. A harm-reduction, trauma informed approach must be taken in order to minimize further trauma and support treatment(4, 8, 9, 20). An appropriate resource for diagnosing FASD is the newly revised Canadian Guidelines(10). Some diagnostic criteria are physical and thus may provide more obvious evidence towards FASD when other syndromes are ruled out and/or there is a confirmed history of PAE.

The initial diagnostic assessment process for FASD entails a detailed medical and social history. An algorithm adapted from the 2016 review of the 2005 Canadian Guidelines for FASD diagnosis outlines an approach (figure 1). Collaborative sources of information are warranted if existing information is unreliable. Detailed neurobehavioural and functional assessment is recommended as part of the multidisciplinary team including pediatric physicians, psychologists, speech-language pathologists and occupational therapists. It is recommended that pediatric patients be evaluated and managed by pediatric physicians who specialize in FASD(9).

The Canadian FASD Guidelines (9, 10) support the use of the 4-Digit Diagnostic Code developed in by Astley and Clarren (Appendix 1). The system evaluates the four core areas of assessment in FASD on a 4-point scale, 1 representing the feature as unaffected, up to a scale of 4 representing the most severely affected feature. The 4 diagnostic features assessed for this system include growth deficiency, characteristic facies (flattened philtrum, thin upper lip and short palpebral fissures), central nervous system dysfunction, and extent of prenatal alcohol exposure(10). This system is used in many clinics Canada and the United States.

3.3.3 Diagnostic assessment of ADHD

To objectively evaluate the presence and severity of ADHD, the Canadian ADHD Resource Alliance (CADDRA) Guidelines suggest primary care practitioners complete a CADDRA ADHD assessment (appendix 2), Weiss Symptom Record (WSR) screen (appendix 3) and a rating form such as ADHD checklist (appendix 4), Weiss Functional Impairment Rating for Parents (appendix 5), or SNAP-IV (appendix 6)(5). WSR and SNAP-IV may be completed by legal guardians or teachers of the patient. CADDRA also recommends completion of the Teacher Assessment form (appendix 7). A PCP may refer suspect patients to pediatricians who specialized in ADHD if suitable.

One of the most important aspects in working with patients who have FASD is to remain mindful of the individual nature of the condition and consider the multifactorial variables contributing to an individual's presentation and response to treatment. Keeping caregiver and practitioner expectations realistically within reach of the patient's current strengths and abilities is paramount to a successful treatment plan(16). Lastly, patients who demonstrate challenges in any domain (academic, social, language, etc.) must be referred to the appropriate professional, whether or not they are diagnosed with FASD.

3.3.4 Approach to Treatment

Treatment of ADHD in the presence of FASD should encompass a multimodal approach with collaboration from the PHCP, parents, teachers, occupational therapists and speech and language therapists. As the "home base" for life-long medical care, it is important that the PHCP keep abreast of referrals, consultations, suggestions and results from other professionals, and ensure the patient and caregiver understand the information. Patients, caregivers and practitioners may choose to refer to the Learning Disabilities Association of Manitoba for additional education, individual support, and community resources. Some treatment models

engage a psychological and behavioral approach with secondary emphasis on medications but CADDRA suggests simultaneous therapy as per the 2011 guidelines (Figure 2)(4, 5). Previous studies have proposed that early interventions aimed to ameliorate self-regulation and attention have a superior impact on a patient's prognosis(3). Improved executive functioning positively impacts academic skills such as math, reading fluency and verbal and non-verbal reasoning(3).

3.3.5 Assessing the Environment

Individuals should be evaluated with respect to their living environment to screen for other disturbances such as post-traumatic stress disorder or attachment disorders that may stem from having multiple care givers (in the care of Child and Family Services)(4). Healthy Child Manitoba employs an FASD Outreach Team, whose purpose is to help access community-based resources with FASD clients and evaluate home environment(21). Patients should also be evaluated for their ability to comprehend and make treatment decisions, and whether their family should be involved in the treatment plan. Counselling patients and caregivers must be delivered without judgment to foster a trusting life-long relationship for a life-long condition(8, 20).

3.3.6 Caregiver and Peripheral Patient Support and Education

One of the most crucial components of FASD management is support and education of the primary caregivers. Families Moving Forward (FMF) is a community-based program where caregivers receive explicit instruction and education on the nature of FASD and have the opportunity to connect with families in similar circumstances and receive social support. Beneficial outcomes of attending FMF included reduced parental stress and reduction of problematic child behavior from clinical to non-clinical range(3). Support throughout the patient's lifespan from a services program, Coaching Families, has been shown to reduce the need for additional resources (e.g. transportation) and increase attainment of patient and caregiver-sought goals such as reduced stress and improved health(14).

Social and educational services should be informed of the patient's condition (with consent from the patient) to suitably modify services and approaches with the patient. Children who are under provincial care have been shown to stabilize their number of re-placements when caregivers (support workers or foster parents) are provided with adequate FASD training(4, 8). Teachers who received FASD training were also better equipped to adapt curriculums and expectations to be more appropriate for individuals with ADHD and FASD(3). Families may benefit in collaborating with social workers to navigate community support. Manitoba programs are listed on the FASD Resource List, compiled by Healthy Child Manitoba (Appendix 8).

3.3.7 Executive Functioning Management

School age children have shown to improve executive functioning and emotional control through training with the Alert Program. Alert uses a video-game to teach children how to identify their current emotions and consequently choose appropriate interventions that adjust their state of arousal based on the current environment(22). Another FASD-specific program, Math Interactive Learning Experience (MILE), has had good results in improving arithmetic functions in FASD children by targeting working memory, inhibition and reasoning. Both Alert and MILE produced superior results compared to parental instruction of the same subject matter. Cognitive and emotional improvements from Alert and MILE led to gains in other areas of functioning including sustained and selective attention, and general academia including math, language and literacy(3). Improvements were still present at 6 month follow up. As patients age through school, shifting their education from an academic to life skill focus may improve employability and ability to manage time and money(8).

3.3.8 Behavioral Management

Enrolment in a social skills development program has been shown to improve social skills, an area commonly affected in people with FASD. One study utilized FASD-adapted

Child Friendship Training (CFT) to teach parents and children about appropriate social engagement, and practice modelling behavior as coached by parents in a variety of settings. CFT conducted over 12 sessions taught lessons of forming a social network with the help of a parent, interacting with others, joining others already in play, in-home play dates and conflict avoidance and negotiation(23). Children enrolled in the CFT program improved appreciation of social cues, self-esteem and reduced aggressive tendencies compared to children on a waiting list for the same program(3). Social gains were still present at 3 month follow up and improvements were reported from therapists and parents(3). Another study compared changes to self-esteem and social skills for children who received CFT or standard of care therapy for generalized mental health (not specific to FASD) in community settings(23). Standard of care therapy taught social "rules" assumed to be important to adults, but not commonly practiced by socially skilled children. Parents were not included in the training, which due to potentially decreased continuity of lessons taught at the centre versus lessons practiced at home, may have contributed to inferior outcomes. Children who received CTF displayed superior social progresses than those who received standard care not specific to FASD.

3.3.9 Pharmaceutical Therapy

Some caregivers may be concerned about starting their child on pharmaceutical treatment out of fear of potential side effects and associated long term effects. However, compounded cognitive/behavioural morbidities of PAE with ADHD increases the likelihood of struggle coping in school, leading to disrupted learning experiences(4, 14). The practitioner should review the indications for medication carefully with family/caregivers and the child, including a careful review of side-effects and expected outcomes. Establishing baseline physiology including height, weight, blood pressure, heart rate, blood sugar, complete blood count, and thyroid, liver and kidney function is recommended prior to starting medications(4). Side effects

of psychostimulant use such as reduced growth rate, appetite, sleep disturbances and mood lability should be closely monitored with the practitioner. Cardiac function and blood pressure should be closely monitored with use of alpha-2 agonists(8). First line medications are discussed below and a CADDRA list is available in the appendix (Appendix 9).

Symptoms related to ADHD (hyperactivity, inattentiveness, impulsivity) can be ameliorated with use of a stimulant such as methylphenidate, amphetamine with dextroamphetamine or lisdexamphetamine according to the CADDRA Guidelines(6). These psychostimulants generally function by increasing the availability of dopamine and norepinephrine. Methylphenidate's primary active sites are concentrated in the pre-frontal cortex, while amphetamine with dextroamphetamine and lisdexamphetamine act more globally on brain neurotransmitter function(6). Other pharmacological options include; atomoxetine (a norepinephrine reuptake inhibitor), and alpha-2 agonists such as clonidine and guanfacine. While the aforementioned medications are options in treatment of ADHD symptoms, studies have suggested certain medications are more efficacious than others for ADHD in the presence of FASD(11). While methylphenadine is typically first line for uncomplicated ADHD, it has been suggested that dexamphetamine may produce a better selective response in children over 3 years of age with FASD(4, 24). Atomoxetine or longer-acting stimulants are suggested pharmaceutical treatment for adolescents due to lower addictive potential(4).

4 Discussion

4.1 Background and High Prevalence of FASD

FASD is the most common acquired neurodevelopmental disability and has rates that range from 11 to 25 cases per 1000 for standard populations to an estimated significantly higher proportion for at-risk populations including individuals in the care of CFS, individuals with

psychiatric conditions, or those have been incarcerated(2, 7, 12). Evidence has demonstrated that PAE can result in neurobehavioural and physical characteristics of FASD(1, 4, 9, 14, 15). Primary health care providers are often the first medical professionals involved in management of affected patients and thus should be aware of practical points of care and common co-occurring disabilities. One of the most frequently observed difficulties is ADHD/learning disabilities. ADHD is characterized by hyperactivity, inattentiveness and impulsivity(4). Early and effective management of ADHD with FASD mitigates their comorbid impact on academic, social and life skills. This increases the odds of learning adaptive life skills that facilitate gainful employment, mitigate legal trouble, and adequate support for mental health(4, 8, 16).

It is recommended that PHCPs inquire about alcohol consumption for all women of childbearing age, regardless of risk and sexual practices, and be familiar with FASD and ADHD resources to expedite treatment.

4.2 Presentation and evaluation of ADHD in the presence of FASD

Patients often present to primary health care providers because of inattentive and disruptive behaviour at home and/or at school. High comorbid rates of ADHD and FASD warrant screening of patients for FASD when symptoms of ADHD present. This is particularly important when patients have characteristic physical features of FASD and poor response to first line behaviour modifications for ADHD and use of methylphenidate(4). Canadian FASD Diagnostic Guidelines (9, 10) advocate for multidisciplinary diagnosis and assessment of FASD using the 4-Digit Diagnostic Code (appendix 1). Once a patient has been diagnosed with FASD, best practice warrants investigations for other impairments that may be causative for ADHD as well as other associated conditions of FASD. These include, but are not limited to; personality disorders (Conduct Disorder, Oppositional Defiant Disorder); mood disorders (depression, anxiety); sleep and neurological disorders (difficulty falling/staying asleep, seizures); Autism Spectrum

Disorder; addiction; and growth deficiencies(4, 8, 16). ADHD may be assessed using the CADDRA ADHD Assessment form (appendix 2), CADDRA ADHD Checklist (appendix 3), WSR (appendix 4), WFIR-P (appendix 5), SNAP-IV (appendix 6), and ADHD Teacher Assessment form (appendix 7). It is recommended that PHCPs consider a diagnosis of FASD when there is known prenatal exposure to alcohol and when symptoms of ADHD and learning difficulties are present.

It is recommended that PHCPs refer these patients to appropriate professionals (eg. psychiatrist, pediatrician, psychologist, occupational therapy, speech and language pathology, behavioural specialist) for further evaluation as needed.

4.3 Management

FASD necessitates a multi-disciplinary team for effective management(9). Involvement of pediatricians who specialize in FASD, psychologists, psychiatrists, speech-and-language pathologists, occupational therapists, education personal (teachers, educational assistants) and social workers provide integral medical evaluations, needs assessments and observational feedback for the primary health care practitioner. Social workers in particular are important members of the multidisciplinary team and provide education and support to the patient and their family (4, 9). PHCPs must act as the "home base" for medical care and receive assessments, suggestions and progress reports from other professionals, ensuring information and education is understood by the caregiver and patient.

Caregiver education is crucial to positive progression of management, reducing stress and enhancing coping skills for both caregiver and patient(8, 11). An adapted educational curriculum for the patient should focus on ameliorating executive function deficits thereby improving math, language and literacy skills. As children approach adulthood, curriculums should steer towards

practical life skills such as time and money management. Friendship and mindfulness training that targets behavioral symptoms may lead to improved socialization(3, 4).

Pharmaceuticals can play a key role in reducing ADHD symptoms of hyperactivity, impulsivity and inattentiveness. All patients are recommended to undergo a baseline physical examination prior to starting any medications, with repeat examination to monitor side effects(6). Pharmaceutical efficacy is best monitored using consistent score sheets that evaluate ADHD. Psychostimulants are the first line of treatment but there is debate on whether methylphenidate or dexamphetamine is more effective(3, 6, 8, 16). Alpha-2-agonists or long-acting stimulants are recommended for those at risk of addiction. If patients are not improving on their current regiment, consider switching medications and re-evaluate for missed comorbidities.

It is recommended that PHCPs collaborate with the multidisciplinary diagnostic team as the "home base" of care to help patients reach their treatment goals. Psychostimulants are an effective pharmaceutical option for patients with ADHD.

4.4 Closing Remarks

FASD is the most prevalent acquired cause of developmental delay and intellectual disability and is multifactorial in the contributors to its severity. Systemic issues related to social determinants of health are also thought to be a significant contributor to prenatal alcohol exposure(8). Early recognition and intervention is key to improving prognoses and reducing the impact of the challenges that can be associated with FASD. Patient management across the lifespan places primary health care providers in a cornerstone position to recognize, manage, and advocate for individuals with FASD and their families.

5 Resources

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6 Data Tables

Table 1: Databases, search criteria and number of articles searched for this project

Database	Search Criteria and Article Type	Number of Return
PubMed	"FASD epidemiology", all articles	777
	"FASD", reviews only	720
	"fetal alcohol AND ADHD", reviews only	23
	"fetal alcohol AND ADHD AND interventions", all articles	14
	"fetal alcohol AND ADHD AND epidemiology", all articles	44
Scopus	"FASD AND ADHD", all articles	57
Google Scholar	"FASD ADHD", all articles	2210
	"ADHD AND FASD AND interventions"	5670
Embase	"FASD ADHD", all articles	19398
	"attention deficit disorder AND fetal alcohol syndrome", reviews only	287
	"FASD AND ADHD AND intervention", all articles	12

Table 2: Websites reviewed and included as resources for this project

Website	URL
Healthy Child Manitoba	https://www.gov.mb.ca/healthychild/about/index.html
FASD Resources	https://www.gov.mb.ca/healthychild/fasd/resources.html
Manitoba FASD Centre	http://www.fasdmanitoba.com/
Public Health Agency of Canada, Fetal Alcohol Spectrum Disorder	http://www.phac-aspc.gc.ca/hp-ps/dca-dea/prog-ini/fasd-etcaf/index-eng.php
Canadian ADHD Resource Alliance	https://caddra.ca/

Table 3: Potential effects of PAE

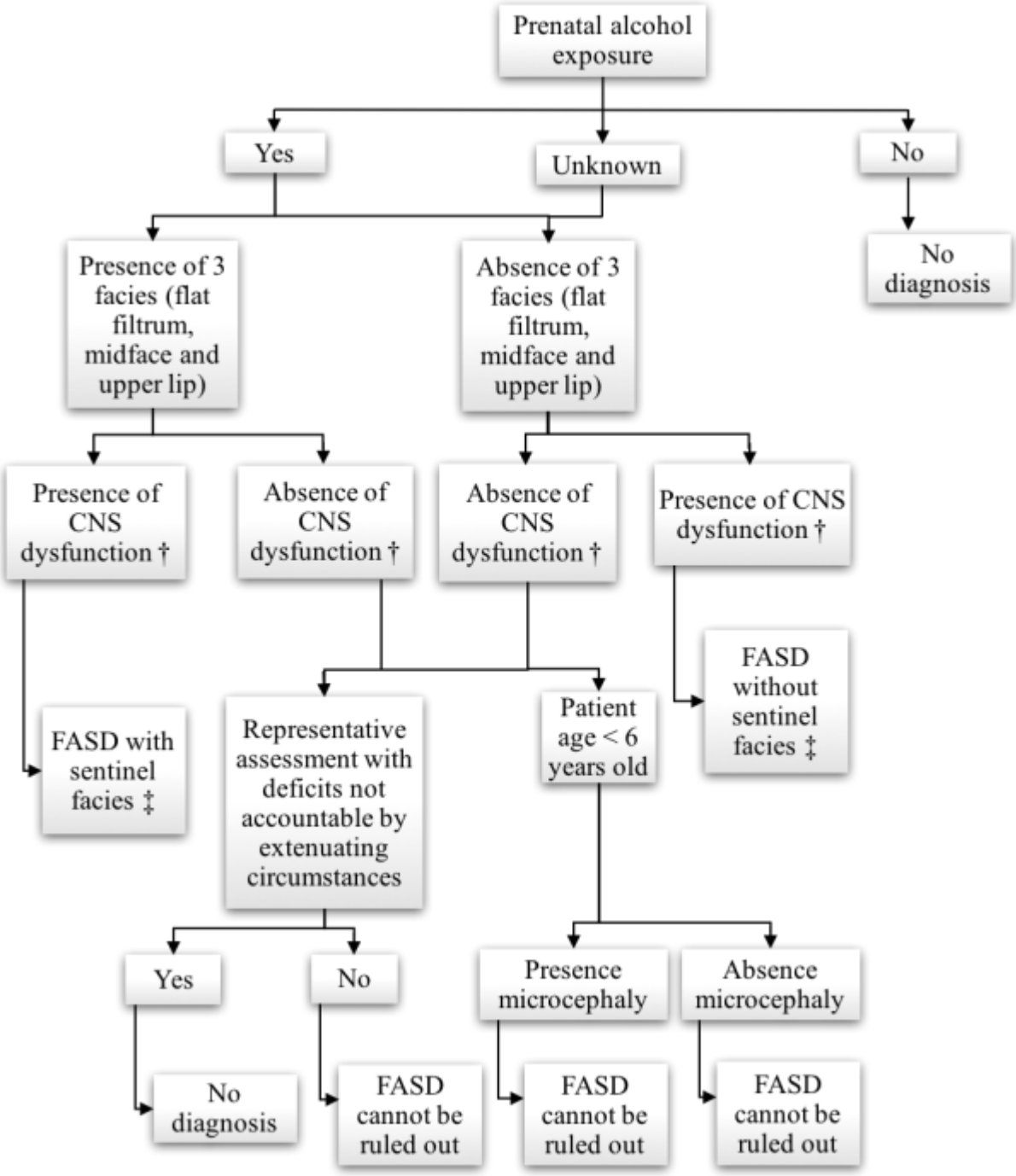
1. Facial dysmorphic features (known as 3 sentinel facial features) – short palpebral fissure, smooth philtrum, thin upper lip
2. Growth retardation – low birth weight, poor weight gain, low weight-to-height ratio
3. CNS abnormalities – decreased cranial size at birth, abnormal brain structure, (failure to meet age-appropriate milestones, abnormal gait, coordination and imbalance difficulties, etc.)
4. Neurodevelopmental Delay – >2 standard deviations below the mean in assessment of >3 neurological domains including motor skills, neuroanatomy/neurophysiology, cognition, language, academic achievement, memory, attention, executive function, affect regulation and adaptive behaviour
5. Abnormal cognition/behaviour not accountable by social/environmental constructs – learning and language deficits, poor impulse control, poor social skills, etc.
6. Congenital physical anomalies – cardiac, skeletal, renal, ocular, and/or auditory

Table 4: Criteria for diagnosis of FASD as per 2016 Canadian guidelines

FASD with sentinel facial features;
• Presentation with 3 sentinel facial features (short palpebral fissure, smooth philtrum, thin upper lip), AND • Confirmed or unconfirmed prenatal alcohol exposure • Evidence of neurodevelopmental delay (table 2) in >3 regions
FASD without sentinel facial features
• Evidence of neurodevelopmental delay in >3 domains (motor skills, neuroanatomy/neurophysiology, cognition, language, academic achievement, memory, attention, executive function, affect regulation and adaptive behaviour) • Confirmed prenatal alcohol exposure

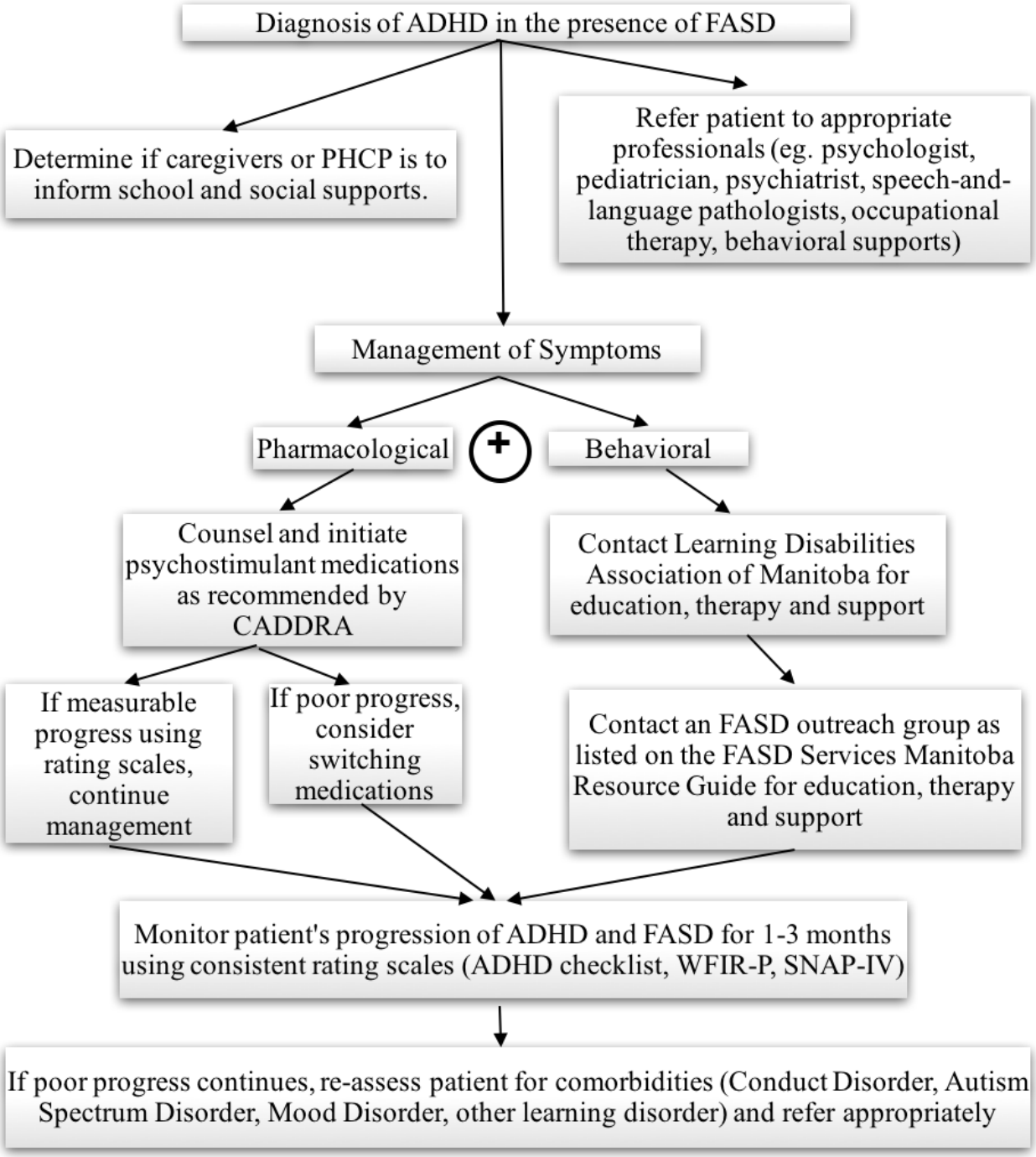
7 Figures

Figure 1: Algorithm for Diagnosing FASD Adapted from Cook et al. (2016)



† CNS dysfunction is multifactorial and best assessed by a team of professionals including psychiatrists, psychologists, neurologists and/or geneticists.
‡ Patients diagnosed with FASD should be referred to the appropriate services for management.

Figure 1: Diagnostic and Management Algorithm for ADHD with FASD Adapted from Canadian ADHD Guidelines (2011) and Young et al. (2015)



8 Appendices

8.1 Appendix 1: 4-Digit FASD Diagnostic Form

Diagnostic Guide for Fetal Alcohol Spectrum Disorders: The 4-Digit Diagnostic Code. Astley, 2004

FASD Diagnostic Form

Medical #		Clinic		Clinic Date	
Patient's Name	First	MI	Last	Age (y)	Birth Date
Name person(s) accompanying patient					
Relationship(s) to patient				Patient's Gender	M F

Patient's Race	
Form completed by:	
Diagnosis made by:	
Diagnosis	

4-Digit Diagnostic Code Grid

(See instructions in Diagnostic Guide for FASD)

Growth Deficiency	FAS Facial Features	CNS Damage		Growth	Face	CNS	Alcohol		Prenatal Alcohol
Significant	Severe	Definite	4					4	High risk
Moderate	Moderate	Probable	3					3	Some risk
Mild	Mild	Possible	2					2	Unknown
None	None	Unlikely	1					1	No risk

GROWTH

Prenatal Growth

	Gestational Age	Birth Length			Birth Weight		
Date	(wks)	(cm)	(inches)	(percentile)	(gm)	(lbs/oz)	(percentile)

Postnatal Growth

		Height					Weight		
Date	Age (yrs/months)	(cm)	(inches)	Unadjusted (percentile)	Mid-birthparent Adjustment (cm)	Parent-Adjusted (percentile)	(kg)	(lbs)	(percentile)

Birth Parent's Heights

Birth Mother Height		Birth Father Height		Mid-Parent Height
cm	inches	cm	inches	cm

ABC-Score for Growth Deficiency

See instructions in the "Diagnostic Guide for FASD" for deriving the ABC-score for growth and translating it into a 4-Digit Diagnostic Code

Circle the ABC Scores for:

	Height	Weight
≤ 3rd percentile = **C**	C	C
>3rd and ≤ 10th percentile = **B**	B	B
> 10th percentile = **A**	A	A

This ABC Score reflects the patient's growth between _____ years and _____ years of age.

FACIAL FEATURES (and other physical findings)

CURRENT PHENOTYPE: (Age _____ yrs/months)

Direct Measures

	True estimate (mm)	z-score	Normal Chart Used
Left PFL			
Right PFL			
Mean PFL			
Inner Canthal Distance			

	5-Point Rank	Lip-Philtrum Guide Used
Philtrum		
Upper Lip		

Clinic Photograph

Frontal digital photo filename	Internal measure of scale (dot on forehead)		
	True dot size	Units (mm, cm, inches)	Dot size in photo

	Length in photo (pixel or mm)	True estimate (mm)	z-score	Normal Chart Used
Left PFL				
Right PFL				
Mean PFL				
Inner Canthal Distance				

Photo filename		5-Point	Lip-Philtrum Guide Used	
	Philtrum			Upper Lip Circularity
	Upper			

PAST PHENOTYPE (Age _____ yrs/months) (Date _____/_____/_____)

Source of Information	Internal measure of scale (dot on forehead)		
	True dot size	Units (mm, cm, inches)	Dot size in photo (pixels)
Photo:			
Text Record:			

	Length in photo (pixel or mm)	True estimate (mm)	z-score	Normal Chart Used
Left PFL				
Right PFL				
Mean PFL				
Inner Canthal Distance				

Photo filename		5-Point	Lip-Philtrum Guide Used	
	Philtrum			Upper Lip Circularity
	Upper			

FACIAL ABC-SCORE *See instructions in the "Diagnostic Guide for FASD" for deriving the ABC Score and 4-Digit Code*

5-Point Likert Rank for Philtrum & Lip	Z-score for Palpebral Fissure Length	Circle the ABC Scores for: Palpebral Fissure	Philtrum	Upper Lip
4 or 5	≤ -2 SD	C	C	C
3	>-2 SD and ≤ -1 SD	B	B	B
1 or 2	> -1 SD	A	A	A
Source of Data for each Facial Feature →				

OTHER PHYSICAL FINDINGS / SYNDROMES / MEDICAL CONDITIONS

CENTRAL NERVOUS SYSTEM (CNS)

Severity Score: Severity of Delay/Impairment (Displayed along left margin)
Circle: **0** = Unknown, Not Assessed **1** = Within Normal Limits **2** = Mild to Moderate **3** = Significant

Severity **STRUCTURAL**

0 1 2 3										
	OFC	cm	%tile	age (yrs/mos)	cm	%tile	age (yrs/mos)	cm	%tile	age (yrs/mos)

0 1 2 3 Structural anomalies seen on brain imaging _____

0 1 2 3 Other: _____

NEUROLOGICAL

0 1 2 3 Seizures: type:_____ meds._____ Age at onset _____(yrs/mos)

0 1 2 3 Other neurological signs: _____

_____

FUNCTIONAL/Standardized Measures *Document most recent, valid test scores.*

0 1 2 3 **Cognition** (e.g., WISC-III, WAIS, DAS, Stanford-Binet, etc.)

Test Name					*Age (yr/mos) or Date*	*FSIQ*	*PIQ*	*VIQ*	*Verb. Comp*	*Percept Org.*	*Free. Distr.*	*Process. Speed*
Info	*Simil.*	*Arith.*	*Voc.*	*Comp*	*Digit.*	*Pict. C.*	*Pict. A.*	*Block*	*Obj.*	*Coding*	*Mazes*	*Symbol*

Other Test/Subtest Names	*Score*	*Type of Score*	*Age (yr/mos) or Date*	*Other Test/Subtest Names*	*Score*	*Type of Score*	*Age (yr/mos) or Date*

0 1 2 3 **Academic Achievement** (e.g., WIAT, Woodcock Johnson, WRAT, etc)

Test/Subtest Name	*Score*	*Type of Score*	*Age (yr/mos) or Date*	*Test/Subtest Name*	*Score*	*Type of Score*	*Age (yr/mos) or Date*

0 1 2 3 **Adaptive Behavior / Social Skills** (e.g., VABS, BASC, Adaptive Behavior Assessment System, etc)

Test/Subtest Name	*Score*	*Type of Score*	*Age (yr/mos) or Date*	*Test/Subtest Name*	*Score*	*Type of Score*	*Age (yr/mos) or Date*

CNS (Continued)

Severity Score: Severity of Delay/Impairment (Displayed along left margin)
Circle: **0** = Unknown, Not Assessed **1** = Within Normal Limits **2** = Mild to Moderate **3** = Significant

Severity

0 1 2 3 **Neuropsychological** (e.g., CVLT, D-KEFS, WRAML, CMS, Rey Complex Figure Test, WCST, NEPSY, etc)

Test/Subtest Name	*Score*	*Type of Score*	*Age (yr:mos) or Date*	*Test/Subtest Name*	*Score*	*Type of Score*	*Age (yr:mos) or Date*

0 1 2 3 **Motor / Sensory Integration** (e.g., PDMS, SSP, QNST, VMI, Bruininks-Oseretsky Scales of Motor Dev, etc.)

Test/Subtest Name	*Score*	*Type of Score*	*Age (yr:mos) or Date*	*Test/Subtest Name*	*Score*	*Type of Score*	*Age (yr:mos) or Date*

0 1 2 3 **Language/Social Communication** (e.g., TOLD, PLS-3, Narrative production, Mental state reasoning, etc)

Test/Subtest Name	*Score*	*Type of Score*	*Age (yr:mos) or Date*	*Test/Subtest Name*	*Score*	*Type of Score*	*Age (yr:mos) or Date*

CNS (Continued)

Severity Score: Severity of Delay/Impairment (Displayed along left margin)
Circle: **0** = Unknown, Not Assessed **1** = Within Normal Limits **2** = Mild to Moderate **3** = Significant

Severity

0 1 2 3 **Mental Health/Psychiatric Conditions:** (e.g., ODD, Generalized Anx. Disorder, Maj. Depression, etc)

Disorder	*Age (yr/mos) or Date Diagnosed*	*Disorder*	*Age (yr/mos) or Date Diagnosed*	*Disorder*	*Age (yr/mos) or Date Diagnosed*

Medication. √ if Currently Taking	*Response (+, -, none)*	*Medication. √ if Currently Taking*	*Response (+, -, none)*	*Medication. √ if Currently Taking*	*Response (+, -, none)*

0 1 2 3 **Behavior/Attention/Activity Level** (e.g., CBCL, Conners Rating Scale, Continuous Perform. Test, IVA, etc.)

Test/Subtest Name	*Score*	*Type of Score*	*Age (yr/mos) or Date*	*Test/Subtest Name*	*Score*	*Type of Score*	*Age (yr/mos) or Date*

0 1 2 3 **Development** (e.g., Bayley Scales of Infant Dev., Battelle Dev. Invent., Miller Assessment of Preschoolers, etc.)

Test/Subtest Name	*Score*	*Type of Score*	*Age (yr/mos) or Date*	*Test/Subtest Name*	*Score*	*Type of Score*	*Age (yr/mos) or Date*

CNS (Continued)

FUNCTIONAL / Non-Standardized Observational Measures

Severity Score: Severity of Delay/Impairment (Displayed along left margin)
Circle: **0** = Unknown, Not Assessed, Too Young **1** = Within Normal Limits **2** = Mild to Moderate **3** = Significant

Severity

Caregiver Interview

Planning / Temporal Skills

0 1 2 3 Needs considerable help organizing daily tasks _____
0 1 2 3 Can not organize time _____
0 1 2 3 Does not understand concept of time _____
0 1 2 3 Difficulty in carrying out multi-step tasks _____
0 1 2 3 Other _____

Behavioral Regulation/ Sensory Motor Integration

0 1 2 3 Poor management of anger / tantrums _____
0 1 2 3 Mood swings _____
0 1 2 3 Impulsive _____
0 1 2 3 Compulsive _____
0 1 2 3 Perseverative _____
0 1 2 3 Inattentive _____
0 1 2 3 Inappropriately [high or low] activity level _____
0 1 2 3 Lying/stealing _____
0 1 2 3 Unusual [high or low] reactivity to [sound touch light] _____
0 1 2 3 Other _____

Abstract Thinking / Judgment

0 1 2 3 Poor judgment _____
0 1 2 3 Cannot be left alone _____
0 1 2 3 Concrete, unable to think abstractly _____
0 1 2 3 Other _____

Memory / Learning / Information Processing

0 1 2 3 Poor memory, inconsistent retrieval of learned information _____
0 1 2 3 Slow to learn new skills _____
0 1 2 3 Does not seem to learn from past experiences _____
0 1 2 3 Problems recognizing consequences of actions _____
0 1 2 3 Problems with information processing speed and accuracy _____
0 1 2 3 Other _____

Spatial Skills and Spatial Memory

0 1 2 3 Gets lost easily, has difficulty navigating from point A to point B _____
0 1 2 3 Other _____

Social Skills and Adaptive Behavior

0 1 2 3 Behaves at a level notably younger than chronological age _____
0 1 2 3 Poor social/adaptive skills _____
0 1 2 3 Other _____

Motor/Oral Motor Control

0 1 2 3 Poor/delayed motor skills _____
0 1 2 3 Poor balance _____
0 1 2 3 Other _____

CNS (Continued)

FUNCTIONAL DOMAINS

Examples include, but are not limited to Memory, Cognition, Language, Executive Function, and Attention.

Severity Score: Severity of Delay/Impairment (Displayed along left margin)
Circle: **0** = Unknown, Not Assessed **1** = Within Normal Limits **2** = Mild to Moderate **3** = Significant

Severity

0 1 2 3 Name of Domain:__________
Supportive Evidence:__________

0 1 2 3 Name of Domain:__________
Supportive Evidence:__________

0 1 2 3 Name of Domain:__________
Supportive Evidence:__________

0 1 2 3 Name of Domain:__________
Supportive Evidence:__________

0 1 2 3 Name of Domain:__________
Supportive Evidence:__________

0 1 2 3 Name of Domain:__________
Supportive Evidence:__________

0 1 2 3 Name of Domain:__________
Supportive Evidence:__________

0 1 2 3 Name of Domain:__________
Supportive Evidence:__________

0 1 2 3 Name of Domain:__________
Supportive Evidence:__________

0 1 2 3 Name of Domain:__________
Supportive Evidence:__________

See the "Diagnostic Guide for FASD" for instructions on deriving the 4-Digit Diagnostic Code for CNS

MATERNAL ALCOHOL USE

Alcohol Consumption of the Birth Mother

Before Pregnancy	**average number of drinks** per drinking occasion:					
	maximum number of drinks per occasion:					
	average number of **drinking days per week**:					
	Type(s) of alcohol	wine	beer	liquor	unknown	Other (specify)

During Pregnancy	**average number of drinks** per drinking occasion:					
	maximum number of drinks per occasion:					
	average number of **drinking days per week**:					
	Type(s) of alcohol	wine	beer	liquor	unknown	Other (specify)

Trimester(s) in which alcohol was consumed	1st	2nd	3rd	unknown	none
Was the birth mother ever reported to have a **problem** with alcohol?	yes	suspected	no	unknown	
Was the birth mother ever **diagnosed** with alcoholism?	yes	suspected	no	unknown	
Did the birth mother ever **receive treatment** for alcohol addiction?	yes	suspected	no	unknown	
Was alcohol use during this pregnancy **positively confirmed**?	yes	no			
If yes, **source** of confirmation:					
Reported use of alcohol during this pregnancy is:	reliable	somewhat reliable	unknown reliability		
Other information about alcohol use **during** this pregnancy					

4-DIGIT RANK for Alcohol Exposure

4-Digit Diagnostic Rank	Prenatal Alcohol Exposure Category	Description
4	High Risk	• Alcohol use during pregnancy is CONFIRMED. *and* • Exposure pattern is consistent with the medical literature placing the fetus at "high risk" (generally high peak blood alcohol concentrations delivered at least weekly in early pregnancy).
3	Some Risk	• Alcohol use during pregnancy is CONFIRMED. *and* • Level of alcohol use is less than in Rank (4) or level is unknown.
2	Unknown Risk	• Alcohol use during pregnancy is UNKNOWN.
1	No Risk	• Alcohol use during pregnancy is CONFIRMED to be completely ABSENT from conception to birth.

Circle the 4-Digit Diagnostic Rank in the table above that best reflects the patient's Prenatal Alcohol Exposure

OTHER PRENATAL AND POSTNATAL EXPOSURES / EVENTS

PRENATAL

High risk	Some risk	Unknown risk	No risk
4	3	2	1

See the "Diagnostic Guide for FASD" for instructions on deriving the rank for Prenatal Exposures/Events

Prenatal

1. Parity _____, Gravity _____ of this birth. Birth order if child is the result of a multiple birth pregnancy: _____ of _____
2. Prenatal care: ____ Yes, (If yes, when did it start?_____). ___ No, ___ Unknown
3. Complications (specify) _____

Genetics

1. Parental learning difficulties (e.g. Special Ed., ADD, MR, did not complete high school, etc.)

   Mother _____ Yes _____ Suspected _____ No _____ Unknown

   Father _____ Yes _____ Suspected _____ No _____ Unknown

   If yes, specify Maternal _____

   Paternal _____
2. Other conditions of heritability or malformation that may be relevant to this case. *(specify)*

   _____

Prenatal Exposure to Other Substances (e.g., medications, tobacco, illicit drugs, other teratogens, etc.)

_____

_____

POSTNATAL

High risk	Some risk	Unknown risk	No risk
4	3	2	1

See the "Diagnostic Guide for FASD" for instructions on deriving the rank for Postnatal Exposures/Events

Perinatal Difficulties

_____

_____

Issues of Nurture

1. Abuse: Physical _____ Sexual _____
2. Number of home placements _____
3. Other (e.g., neglect, adverse home environment, significant traumas, etc.) _____

_____

_____

_____

Other Issues That Could Explain CNS Abnormalities (e.g., head injury, substance abuse by patient, etc.)

_____

_____

_____

8.2 Appendix 2: CADDRA ADHD Assessment Form

CADDRA
CANADIAN ADHD RESOURCE ALLIANCE

Patient Name:	
Date of Birth:	MRN/File No:
Physician Name:	Date:

CADDRA ADHD ASSESSMENT FORM

Identifying Information

Patient:		**Date of Birth:**	**Date seen:**
Age:	**Gender:** ☐ m ☐ f	**Grade** (actual/last completed):	
Current Occupation: ☐ student ☐ unemployed ☐ disability		occupation:	
Status: ☐ child/adolescent	*OR* adult ☐ single ☐ married ☐ common-law ☐ separated ☐ divorced		
Ethnic Origin: *(check all that apply)*	☐ Caucasian ☐ Asian ☐ Hispanic ☐ African-American ☐ Native		
Other person providing collateral:		**Patient's phone no:**	

Demographics

	Biological Father (if known)	**Biological Mother** (if known)	**Spouse/Partner** (if applicable)
Name			
Occupation			
Highest education			
Adopted: ☐ No ☐ Yes	**Age of Adoption:**	**Country of Adoption:**	
Number of biological and/or half siblings:			
	Stepfather (if applicable)	**Stepmother** (if applicable)	**Other Guardian** (if applicable)
Name			
Occupation			
Highest education			
Number of step-siblings:			
Custody (circle custodial parent)	**Time with bio Father**	**Time with bio Mother**	**Time with step family**
Language	**At home:** ☐ English	☐ Other _____	☐ At school _____
Children (if applicable)	**Number of biological:**	**Number of step children:**	
Names and ages			

Reason for Referral

Referred by:		**Phone:**	**Fax:**
Initiated by: ☐ self ☐ parent ☐ spouse ☐ employer ☐ school ☐ physician			☐ other:
Chief complaint: (check all that apply)	☐ impulsiveness ☐ disorganization ☐ self esteem ☐ aggression	☐ inattention ☐ mood/anxiety ☐ substance use ☐ other	☐ hyperactivity ☐ procrastination ☐ academic problems
Details:			
Attitude to referral:			

ADHD SYMPTOM HISTORY: (onset, progression, worsening factors, protective factors, adaptive strategies, outcome)

CADDRA
CANADIAN ADHD RESOURCE ALLIANCE

Patient Name:	
Date of Birth:	MRN/File No:
Physician Name:	Date:

Medical History

Allergies: ☐ No ☐ Yes (Details):

Cardiovascular medical history:
☐ hypertension ☐ tachycardia ☐ arrhythmia ☐ dyspnoea ☐ fainting ☐ chest pain on exertion ☐ other

Specific cardiovascular risk identified: ☐ No ☐ Yes (Details):

Positive lab or EKG findings:

Positive medical history:	☐ In utero exposure to nicotine, alcohol or drugs	☐ Stigmata of FAS/FAE	☐ History of anoxia/perinatal complications
☐ Developmental delays	☐ Coordination problems	☐ Cerebral palsy	☐ Lead poisoning
☐ Neurofibromatosis	☐ Myotonic dystrophy	☐ Other genetic syndrome	☐ Hearing/visual problems
☐ Thyroid disorder	☐ Diabetes	☐ Growth delay	☐ Anemia
☐ Traumatic brain injury	☐ Seizures	☐ Enuresis	☐ Injuries
☐ Sleep apnea	☐ Tourette's/tics	☐ Enlarged adenoids or tonsils	☐ Asthma
☐ Sleep disorders	☐ Secondary symptoms to medical causes	☐ Medical complications of drug/alcohol use	

Other/details:

Medication History

Extended health insurance: ☐ No ☐ Yes (Details):

☐ Public ☐ Private insurance Coverage for psychological treatment: ☐ No ☐ Yes

Adherence to treatment/attitude towards medication:
Difficulty swallowing pills: ☐ No ☐ Yes
(If applicable) Contraception: ☐ No ☐ Yes (Details):

Current medications	**Dose**	**Duration Rx**	**Outcome and side effects**
Previous medications	**Dose**	**Duration Rx**	**Outcome and side effects**

CADDRA
CANADIAN ADHD RESOURCE ALLIANCE

Patient Name:	
Date of Birth:	MRN/File No:
Physician Name:	Date:

Physical Examination

Practice guidelines around the world recognize the necessity of a physical exam as part of an assessment for ADHD in order to rule out organic causes of ADHD, rule out somatic sequelae of ADHD, and rule out contraindications to medications. While this physical exam follows all the usual procedures, several specific evaluations are required. These include, but are not limited to:

Rule out medical causes of ADHD-like symptoms

1. Hearing and vision assessment
2. Thyroid disease
3. Neurofibromatosis (cafe au lait spots)
4. Any potential cause of anoxia (asthma, CF, cardiovascular disease)
5. Genetic syndromes and facial or dysmorphic characteristics
6. Fetal alcohol syndrome: growth retardation, small head circumference, smaller eye openings, flattened cheekbones and indistinct philtrum (underdeveloped groove between nose and upper lip)
7. Physical abuse: unset fractures, burn marks, unexplained injuries
8. Sleep disorders: enlarged tonsils and adenoids, difficulty breathing, sleep apnea
9. Growth delay or failure to thrive
10. PKU, heart disease, epilepsy and unstable diabetes can all be associated with attention problems
11. Head trauma.

Medical history/lab work provides information on maternal drinking in pregnancy, sleep apnea, failure to thrive, lead poisoning, traumatic brain injury.

Rule out sequelae of ADHD

1. Abuse
2. High pain threshold
3. Irregular sleep, delayed sleep phase, short sleep cycle
4. Comorbid developmental coordination disorder, evidenced by motor difficulties in doing routine tasks such as getting on the exam table
5. Picky eater: will not sit to eat
6. Evidence of injuries from poor coordination or engagement in extreme sports

Rule out contraindications to medication:

1. Glaucoma
2. Uncontrolled hypertension
3. Any evidence of significant cardiovascular abnormality

Date of last physical exam:	**By who:**
Abnormal findings last exam:	

Current Physical Exam

System	Done		Normal		Findings (Details of Abnormality)
	No	Yes	No	Yes	
Skin	☐	☐	☐	☐	
ENT	☐	☐	☐	☐	
Respiratory	☐	☐	☐	☐	
GI and GU	☐	☐	☐	☐	
Cerebrovascular	☐	☐	☐	☐	
Musculoskeletal	☐	☐	☐	☐	
Immunol. & Hematological	☐	☐	☐	☐	
Neurological	☐	☐	☐	☐	
Endocrinological	☐	☐	☐	☐	
Dysmorphic facial features	☐	☐	☐	☐	
Other	☐	☐	☐	☐	

Weight:	Height:	Head Circum:	BP:	Pulse:
In children: percentile	In children: percentile	(In children only)		

Positive Findings on Observation: (Details)

Psychiatric History

Assessed in childhood/adolescence/adulthood? ☐ No ☐ Yes **By whom:**	
Previous diagnoses:	
Previous suicidal attempts or violent gestures toward others: ☐ No ☐ Yes	**Details:**
Psychological treatments: ☐ No ☐ Yes	
Previous psychiatric evaluation/hospitalization: ☐ No ☐ Yes	

Developmental History

Pregnancy Problems: ☐ No ☐ Yes Delivery ☐ on time ☐ Early (# of weeks: _____) ☐ Late (# of weeks: _____) ☐ forceps used ☐ Caesarean section ☐ breech	**Details:**
Difficulties gross motor: crawl, walk, two-wheeler, gym, sports: ☐ No ☐ Yes	
Difficulties Fine motor: tracing, shoe laces, printing, writing: ☐ No ☐ Yes	
Language difficulties: first language, first words, full sentences, stuttering ☐ No ☐ Yes	
Odd behaviours noted: (e.g. rocking, flapping, no eye contact, odd play, head banging etc) ☐ No ☐ Yes	
Temperament: (eg. difficult, willful, hyper, easy, quiet, happy, affectionate, calm, self soothes, intense)	
Parent description of child's temperament:	
Learning Disorder identified: ☐ No ☐ Yes ☐ dyslexia ☐ dysorthographia ☐ dyscalculia ☐ dsyphasia ☐ other: _____	

Family History in First Degree Relatives

Childhood temperament of the biological parents, if known: (e.g. internalizing versus externalizing)
Father: **Mother:**

Positive family history of:

☐ ADHD (probable)	☐ ADHD (confirmed)	☐ Learning Disorders	☐ Mental Retardation
☐ Autism Spectrum Disorders	☐ Congenital Disorders	☐ Anxiety	☐ Depression
☐ Bipolar	☐ Psychosis	☐ Personality Disorders	☐ Suicide
☐ Sleep Disorders	☐ Tourette's/Tics	☐ Epilepsy	☐ Alcohol/Drug Problems
☐ Legal Convictions			
☐ **History of early cardiac death**		☐ Known arrhythmias	☐ Hypertension

Details:

Functioning and Lifestyle Evaluation

General Habits (depending on the subject's age, some may not apply). **Give frequency and/or details:**	
Exercise	
Nutrition	
Self care, personal hygiene	
Adequate leisure activity	
Sleep Routine and Quality of Sleep	Bedtime: Time to fall asleep: Wake up time: # Sleep hours: Melatonin: ☐ No ☐ Yes Dose:
Sleep Problems? (BEARS)	Bedtime resistance: ☐ No ☐ Yes Regularity: ☐ No ☐ Yes Excessive daytime sleepiness: ☐ No ☐ Yes Snoring: ☐ No ☐ Yes Awakening: ☐ No ☐ Yes

Important Risk Factors to Identify

Risk Factor	No	Yes	Details and Attitude towards Change
Excessive screen time	☐	☐	
Accident-prone	☐	☐	
Extreme sports	☐	☐	
Caffeine	☐	☐	
Smoking	☐	☐	
Alcohol	☐	☐	
Drugs	☐	☐	
Financial	☐	☐	
Driving	☐	☐	
Relationships	☐	☐	
Parenting	☐	☐	
Family conflict	☐	☐	
Legal	☐	☐	
Discipline	☐	☐	
Witness to violence	☐	☐	
Trauma	☐	☐	
Physical abuse	☐	☐	
Emotional abuse	☐	☐	
Sexual abuse	☐	☐	
Foster placements	☐	☐	
Significant losses	☐	☐	
Illness	☐	☐	

Current Functioning at Home (depending on age, some may not apply). **Give frequency and/or details:**	
Family/patient strengths	
Stressors within the family	**Past:**
	Present:
Family atmosphere	
Morning routine	
Attitudes towards chores (adult: doing housework)	
Attitudes towards rules (adult: able to set/follow rules)	
Engagement in family fun	
Discipline in the family (adult: parenting abilities)	
Relationship to siblings (adult: partner relationship)	
Parent/spouse frustrations	

Social Functioning (depending on age, some may not apply). **Give frequency and/or details:**	
Patient's strengths:	
Hobbies, activities	
Friends (e.g. play dates, parties, social events)	
Social skills (e.g. social cues compassion, empathy)	
Humour	
Anger management (e.g. aggression, bullying)	
Emotional intelligence (e.g. emotional control, awareness)	
Sexual identity	

Functioning at School (if not at school, indicate where academic history took place and if there were difficulties)		
School name	☐ English Second Language ☐ Individual Education Plan ☐ Specialized Class ☐ Specialized Designation **Details:**	
	Kindergarten to Grade 8	**High School**
Report card grades		
Report card comments		
Behaviour problems		
Peer relations		
Teacher-child relationships		
Teacher-parent relationships		
Homework attitudes		
Organizational skills		
Achieving potential/difficulties		
Written output		
Accommodations		
Tutoring and/or Learning assistance		
Assistive Technology		
College/University		
Accommodations		
Achieving potential/ difficulties		

Functioning at Work (depending on the subject's age, some may not apply) **Frequency and/or details:**	
Current employment status:	☐ FT ☐ PT ☐ Unemployed ☐ Self-employed ☐ Contract ☐ Disability
Vocational Assessment:	☐ No ☐ Yes If yes, suitable jobs:
# of past jobs:	**Length of longest employment:**
Work strengths:	
Work weaknesses:	
Complaints:	
Workplace accommodations:	
Other information about work:	

RATING SCALES: *Administer one or more of the relevant rating scales to the parent, teacher or patient*

STEP ONE: Check the ADHD scale(s) used

ADHD symptoms in childhood:	☐ ADHD Checklist	☐ SNAP-IV	☐ Other
Current ADHD symptoms:	☐ ADHD Checklist ☐ SNAP- IV (for children)	☐ Weiss Symptom Record (WSR) ☐ ASRS (for adults)	☐ Other

The ADHD Checklist can retrospectively be used to assess childhood ADHD symptoms (in adults), for current symptoms and for follow-up (all ages)

STEP TWO: Fill in the result of the scale

SYMPTOM SCREENER (enter the number of positive items for each category, circle the box if the threshold was met or if ODD or CD is a concern)								
Retrospective Childhood symptom screen	IA	/9	HI	/9	ODD	/8	CD*	/15
Current								
Parent	IA	/9	HI	/9	ODD	/8	CD*	/15
Self	IA	/9	HI	/9	ODD	/8	CD*	/15
Teacher	IA	/9	HI	/9	ODD	/8	CD*	/15
Collateral	IA	/9	HI	/9	ODD	/8	CD*	/15
Other comorbid dx*								

* Conduct disorder and other comorbid disorder only applies to the WSR

FOR ADULTS: The Adult ADHD Self Report Rating Scale (ASRS) can be used for current ADHD symptoms, part A being the screener section

ADULT ADHD SELF REPORT RATING SCALE (ASRS) (record the number of positive items for Part A and Part B, circle the box where threshold is made)			
Part A (Threshold > 4)	/6	Part B	/12

STEP THREE: Administer the Weiss Functional Inventory Rating Scale (WFIRS)

WEISS FUNCTIONAL INVENTORY RATING SCALE (WFIRS) (record the number of items rated 2 or 3, circle the boxes where you perceive a problem)														
Parent	Family	/10	School (learning)	/4	(behaviour)	/6	Life Skills	/10	Self	/3	Social	/7	Risk	/10
Self	Family	/8	Work	/11	School	/10	Life Skills	/12	Self	/5	Social	/9	Risk	/14

OTHER SCALES

Psychometric Evaluation – Done? ☐ No ☐ Yes ☐ Requested **Date(s) of Testing:**					
Intelligence Tests Score: ☐ marked below ☐ above average ☐ borderline ☐ marked above ☐ low average ☐ superior ☐ average					
WISC or WAIS (%ile or scaled score)	**Verbal Comprehension**	**Perceptual Reasoning**	**Working Memory**	**Processing Speed**	**Older IQ tests used %ile/IQ** Full Scale IQ Verbal IQ Performance IQ
Achievement tests Score: -2 (>2 yrs below) -1 (1-2 yrs below) 0 (grade level) +1 (1-2 yrs above) +2 (>2 yrs above)					
Grade level:	Reading	Spelling	Math	Writing	

MENTAL STATUS EXAMINATION (clinical observations of the interview)

SUMMARY OF FINDINGS

(This allows a clinician reflect on the global collection of information in readiness for the diagnosis, feedback and treatment)

Item of Relevance	N/A	Does not indicate ADHD	Marginally indicates ADHD	Strongly indicates ADHD	Comments
Symptoms of ADHD in childhood	☐	☐	☐	☐	
Current ADHD symptoms	☐	☐	☐	☐	
Collateral information	☐	☐	☐	☐	
Clinical observation	☐	☐	☐	☐	
Family history of diagnosed first degree relatives	☐	☐	☐	☐	
Review of school report cards	☐	☐	☐	☐	
Previous psychiatric assessments	☐	☐	☐	☐	
Psychometric/psychological assessments	☐	☐	☐	☐	
	N/A	Suggesting an alternative explanation is better	ADHD is possible but other factors relevant	ADHD is still the best explanation of findings	Comments
In utero exposure to substances	☐	☐	☐	☐	
Neonatal insult	☐	☐	☐	☐	
Infant temperament	☐	☐	☐	☐	
Developmental milestones	☐	☐	☐	☐	
Psychosocial stressors before 12					
Accidents and injuries (particularly head injury)	☐	☐	☐	☐	
Major trauma before age 12 (e.g. abuse-physical, sexual, neglect)	☐	☐	☐	☐	
Substance use history	☐	☐	☐	☐	
Other psychiatric problems	☐	☐	☐	☐	
Other medical problems	☐	☐	☐	☐	

DIAGNOSIS

Note: This table helps the clinician understand how the DSM-IV-TR records axial information

Axis I: Actual diagnosis and any learning disabilities
Axis II: Mental retardation, developmental delay and any personality disorders (traits if sub-threshold for an actual disorder)
Axis III: Any medical disorders or any past medical disorders that might be important to note
Axis IV: Severity of psychosocial stressors: Name the stressors and indicate their severity from Mild, Moderate, Severe
Axis V: Global Assessment of Functioning: This is a number given (from the table below) that helps to monitor functioning over time. This is a quick way of being able to record clinical progress.

Axis V	CGAS Anchor Points	Score
91-100	Superior functioning in all aspects of life; active, likeable, confident	
90-81	Good functioning in school, home, peers, transient everyday worries have mild reaction	
80-71	Slight impairment in school, home or peers, transient behaviour and emotional reaction	
70-61	Difficulty in an area of life but functioning well (mood change, sporadic anti-social act)	
60-51	Variable functioning and sporadic difficulties in several areas of life, apparent to others	
50-41	Moderate interference in functioning or severe impairment in school, home or peers	
40-31	Major impairment; unable to function in one area (suicide attempt, persistent aggression, marked withdrawal and isolation, severe mood or thought disturbance)	
30-21	Unable to function in life, severe impairment in communication and reality testing	
20-11	Needs supervision to be safe and for self-care, gross impairment in communication	
10-0	Needs 24 hour supervision for severe aggressive, self-destructive behaviour, affect, thought, reality testing, communication impairment.	

Diagnosis following DSM:
Axis I: DSM Diagnoses
Axis II: Personality/Developmental delay
Axis III: Medical conditions
Axis IV: Stressors (mild, moderate, severe)
Axis V: Global Assessment of Functioning

Important Lifestyle Issues:

Treatment Plan

Patient Name: _____ **MRN/File No.:** _____

	N/A	To Do	Done	Referred to and comments/Details
Psychoeducation				
Patient Education	☐	☐	☐	
Parent Education	☐	☐	☐	
Info to School	☐	☐	☐	
Handouts	☐	☐	☐	
Medical				
Physical Exam	☐	☐	☐	
CV Exam	☐	☐	☐	
Baseline Ratings	☐	☐	☐	
Lab Investigation	☐	☐	☐	
Other	☐	☐	☐	
Pharmacological Interventions				
Review Medication Options	☐	☐	☐	
Medication Treatment	☐	☐	☐	
Non Pharmacological Interventions				
Psychological Testing	☐	☐	☐	
Social Skills Management	☐	☐	☐	
Anger Management	☐	☐	☐	
Addiction Management	☐	☐	☐	
Therapy	☐	☐	☐	
Cognitive Behaviour Therapy	☐	☐	☐	
Parent Training	☐	☐	☐	
OT Referral	☐	☐	☐	
Speech Therapy	☐	☐	☐	
Educational & Vocational				
Psychoeducational Assessment	☐	☐	☐	
Special Education/Accommodations	☐	☐	☐	
Vocational Assessments	☐	☐	☐	
Workplace Accomodations	☐	☐	☐	
Completion of Special Forms				
CRA Tax Credits	☐	☐	☐	
Insurance	☐	☐	☐	
Other	☐	☐	☐	

Physician Signature: _____ **Date:** _____

Copy sent to: _____ **Fax No:** _____

_____

8.3 Appendix 3: CADDRA ADHD Checklist

CADDRA
CANADIAN ADHD RESOURCE ALLIANCE

Patient Name:
Date of Birth: MRN/File No:
Physician Name: Date:

ADHD CHECKLIST

Retrospective assessment of childhood symptoms ☐ Current symptoms ☐
Current medication: _____

SYMPTOMS: Check the appropriate box	Not at all (0)	Somewhat (1)	Pretty much (2)	Very much (3)	Diagnoses
ATTENTION 314.00 (≥6/9)	**SEVERITY**				**TOTAL**
Fails to give close attention to details, careless mistakes					
Difficulty sustaining attention in tasks or fun activities					
Does not seem to listen when spoken to directly					
Does not follow through on instructions and fails to finish work					
Difficulty organizing tasks and activities					
Avoids tasks that require sustained mental effort (boring)					
Losing things					
Easily distracted					**_/9**
Forgetful in daily activities					**≥6/9**
HYPERACTIVE/IMPULSIVE 314.01 (≥6/9)					
Fidgety or squirms in seat					
Leaves seat when sitting is expected					
Feels restless					
Difficulty in doing fun things quietly					
Always on the go or acts as if "driven by a motor"					
Talks excessively					
Blurts answers before questions have been completed					
Difficulty awaiting turn					**≥6/9**
Interrupting or intruding on others					**_/9**
OPPOSITIONAL DEFIANT DISORDER 313.81 (>4/8)					
Loses temper					
Argues with adults					
Actively defies or refuses to comply with requests or rules					
Deliberately annoys people					
Blames others for his or her mistakes or misbehavior					
Touchy or easily annoyed by others					
Angry or resentful					**≥4/8**
Spiteful or vindictive					**_/8**
COMMENTS					

Version: March 2014. Refer to www.caddra.ca for latest updates.

8.4 Appendix 4: Weiss Symptom Record

CADDRA
CANADIAN ADHD RESOURCE ALLIANCE

Patient Name:
Date of Birth: MRN/File No:
Physician Name: Date:

Weiss Symptom Record (WSR)

Instructions to Informant: Check the box that best describes typical behavior *Instructions to Physician:* Symptoms rated 2 or 3 are positive and total count completed below	Not at all (0)	Somewhat (1)	Pretty much (2)	Very much (3)	N/A	# items scored 2 or 3 (DSM Criteria)
ADHD COMBINED TYPE 314.01						**≥6/9 IA & HI**
ATTENTION 314.00						
Fails to give close attention to details, careless mistakes						
Difficulty sustaining attention in tasks or fun activities						
Does not seem to listen when spoken to directly						
Does not follow through on instructions and fails to finish work						
Difficulty organizing tasks and activities						
Avoids tasks that require sustained mental effort (boring)						
Losing things						
Easily distracted						
Forgetful in daily activities						/9 (≥6/9)
HYPERACTIVE/IMPULSIVE 314.01						
Fidgety or squirms in seat						
Leaves seat when sitting is expected						
Feels restless						
Difficulty in doing fun things quietly						
Always on the go or acts as if "driven by a motor"						
Talks excessively						
Blurts answers before questions have been completed						
Difficulty awaiting turn						
Interrupting or intruding on others						/9 (≥6/9)
OPPOSITIONAL DEFIANT DISORDER 313.81						
Loses temper						
Argues with adults						
Actively defies or refuses to comply with requests or rules						
Deliberately annoys people						
Blames others for his or her mistakes or misbehaviour						
Touchy or easily annoyed by others						
Angry or resentful						
Spiteful or vindictive						/8 (≥4/8)

Version: March 2014. Refer to www.caddra.ca for latest updates. *WSR 1/5*

	Not at all (0)	Somewhat (1)	Pretty much (2)	Very much (3)	N/A	Diagnoses
TIC DISORDERS 307.2						**SEVERITY**
Repetitive involuntary movements (blinking, twitching)						
Repetitive involuntary noises (throat clearing, sniffing)						
CONDUCT DISORDER 312.8						
Bullies, threatens, or intimidates others						
Initiates physical fights						
Has used a weapon (bat, brick, bottle, knife, gun)						
Physically cruel to people						
Physically cruel to animals						
Stolen while confronting a victim						
Forced someone into sexual activity						
Fire setting with the intent of damage						
Deliberately destroyed others' property						
Broken into a house, building, or car						
Often lies to obtain goods or benefits or avoid obligations						
Stealing items of nontrivial value without confronting victim						
Stays out at night despite prohibitions						
Run away from home overnight at least twice						
Truant from school						/15(≥3/15)
ANXIETY						
Worries about health, loved ones, catastrophe						300.02
Unable to relax; nervous						300.81
Chronic unexplained aches and pains						300.30
Repetitive thoughts that make no sense						
Repetitive rituals						300.01
Sudden panic attacks with intense anxiety						300.23
Excessively shy						
Refusal to do things in front of others						309.21
Refusal to go to school, work or separate from others						300.29
Unreasonable fears that interfere with activities						312.39
Pulls out hair, eyebrows						
Nail biting, picking						
Refusal to talk in public, but talks at home						mutism
DEPRESSION 296.2 (single) .3 (recurrent)						
Has been feeling sad, unhappy or depressed	Yes		No	Must be present		
No interest or pleasure in life	Yes		No	Must be present		
Feels worthless						
Has decreased energy and less productive						
Hopeless and pessimistic about the future						
Excessive feelings of guilt or self blame						
Self-injurious or suicidal thoughts						

	Not at all (0)	Somewhat (1)	Pretty much (2)	Very much (3)	N/A	Diagnoses
DEPRESSION (CONT'D)						**SEVERITY**
Social withdrawal						
Weight loss or weight gain						
Change in sleep patterns						≥5/9>2wks
Agitated or sluggish, slowed down						
Decreased concentration or indecisiveness						
Past suicide attempts	#		Serious			
MANIA 296.0(manic) .6(mixes) .5(depressed)						
Distinct period of consistent elevated or irritable mood	Yes		No	Must be present		
Grandiose, sudden increase in self esteem						
Decreased need for sleep						
Racing thoughts						
Too talkative and speech seems pressured						
Sudden increase in goal directed activity, agitated						≥3 >1wk
High risk activities (spending money, promiscuity)						/3 (≥3)
SOCIAL SKILLS 299						
Makes poor eye contact or unusual body language						
Failure to make peer relationships						
Lack of spontaneous sharing of enjoyment						
Lacks reciprocity or sensitivity to emotional needs of others						
Language delay or lack of language communication						
Difficulty communicating, conversing with others						
Speaks in an odd, idiosyncratic or monotonous speech						
Lack of creative, imaginative play or social imitation						
Intensely fixated on one particular interest						
Rigid sticking to nonfunctional routines or rituals						
Preoccupied with objects and parts of objects						
Repetitive motor mannerisms (hand flapping, spinning)						
PSYCHOSIS 295						
Has disorganized, illogical thoughts						
Hears voices or sees things						
Conviction that others are against or will hurt them						
People can read their thoughts, or vice versa						
Belief that the television is talking specifically to them						
A fixed belief that is out of touch with reality						
Thought sequence does not make sense						

	Not at all (0)	Somewhat (1)	Pretty much (2)	Very much (3)	N/A	Diagnoses
SUBSTANCE ABUSE						**SEVERITY**
Excessive alcohol (> 2 drinks/day, > 4 drinks at once)						305
Smokes cigarettes						
Daily marijuana use						
Use of any other street drugs						
Abuse of prescription drugs						
SLEEP DISORDERS 307.4						
Agitated or sluggish, slowed down						
Has difficulty falling asleep						
Has difficulty staying asleep						
Has abnormal sleep patterns during the day						347
Unanticipated falling asleep during the day						307.4
Sleep walking						307.4
Has nightmares						307.45
Falls asleep late and sleeps in late						3.27
Sleep schedule changes from day to day						
Excessive snoring						
A feeling of restless legs while trying to sleep						
Observed to have sudden kicking while asleep						780.57
Observed to have difficulty breathing at night						
ELIMINATION DISORDERS 307						
Wets the bed at night						
Wets during the day						
Soils self						
EATING DISORDERS 307						
Vomits after meals or binging						
Underweight and refuses to eat						307.1
Distorted body image						
Picky eater						
High junk food diet						
LEARNING DISABILITIES 315						
Delayed expressive language						
Stuttering						
Problems articulating words						315
Below grade level in reading						315.1
Below grade level in math						315.2
Trouble with writing (messy, tiring, avoids writing)						
Variable performance in school						
Underachieves at school relative to potential						315.4

	Not at all (0)	Somewhat (1)	Pretty much (2)	Very much (3)	N/A	Diagnoses
DEVELOPMENTAL COORDINATION DISORDER						
Difficulty with gross motor skills (i.e. gym, sports, biking)						
Clumsy						
Difficulty with fine motor (buttons, shoe laces, cutting)						
PERSONALITY 301						**SEVERITY**
Unstable interpersonal relationships						
Frantic efforts to avoid abandonment						
Recurrent suicidal ideation or attempts						
Intense anger						
Major mood swings						BPD 301.83
Impulsive self destructive or self injurious behavior						
Fragile identity or self image						
Chronic feelings of emptiness						
Transient stress related dissociation or paranoia						/9 (≥5/9)
Self centred or entitled						NPD 301.81
Deceitful, aggressive, or lack of remorse						ASP 301.7
COMMENTS:						

ADHD=attention deficit hyperactivity disorder; IA=inattentive subtype; HI=hyperactive impulsive subtype; BPD=borderline personality disorder; NPD=narcissistic personality disorder; ASP=antisocial personality disorder.

8.5 Appendix 5: CADDRA Weiss Functional Impairment Rating Scale for Parents

CADDRA
CANADIAN ADHD RESOURCE ALLIANCE

Patient Name:	
Date of Birth:	MRN/File No:
Physician Name:	Date:

WEISS FUNCTIONAL IMPAIRMENT RATING SCALE – PARENT REPORT (WFIRS-P)

Your name: _____ Relationship to child: _____

Circle the number for the rating that best describes how your child's emotional or behavioural problems have affected each item in the last month.

		Never or not at all	Sometimes or somewhat	Often or much	Very often or very much	n/a
A	**FAMILY**					
1	Having problems with brothers & sisters	0	1	2	3	n/a
2	Causing problems between parents	0	1	2	3	n/a
3	Takes time away from family members' work or activities	0	1	2	3	n/a
4	Causing fighting in the family	0	1	2	3	n/a
5	Isolating the family from friends and social activities	0	1	2	3	n/a
6	Makes it hard for the family to have fun together	0	1	2	3	n/a
7	Makes parenting difficult	0	1	2	3	n/a
8	Makes it hard to give fair attention to all family members	0	1	2	3	n/a
9	Provokes others to hit or scream at him/her	0	1	2	3	n/a
10	Costs the family more money	0	1	2	3	n/a
B	**SCHOOL**					
	Learning					
1	Makes it difficult to keep up with schoolwork	0	1	2	3	n/a
2	Needs extra help at school	0	1	2	3	n/a
3	Needs tutoring	0	1	2	3	n/a
4	Receives grades that are not as good as his/her ability	0	1	2	3	n/a
	Behaviour					
1	Causes problems for the teacher in the classroom	0	1	2	3	n/a
2	Receives "time-out" or removal from the classroom	0	1	2	3	n/a
3	Having problems in the school yard	0	1	2	3	n/a
4	Receives detentions (during or after school)	0	1	2	3	n/a
5	Suspended or expelled from school	0	1	2	3	n/a
6	Misses classes or is late for school	0	1	2	3	n/a
C	**LIFE SKILLS**					
1	Excessive use of TV, computer, or video games	0	1	2	3	n/a
2	Keeping clean, brushing teeth, brushing hair, bathing, etc.	0	1	2	3	n/a
3	Problems getting ready for school	0	1	2	3	n/a

		Never or not at all	Sometimes or somewhat	Often or much	Very often or very much	n/a
4	Problems getting ready for bed	0	1	2	3	n/a
5	Problems with eating (picky eater, junk food)	0	1	2	3	n/a
6	Problems with sleeping	0	1	2	3	n/a
7	Gets hurt or injured	0	1	2	3	n/a
8	Avoids exercise	0	1	2	3	n/a
9	Needs more medical care	0	1	2	3	n/a
10	Has trouble taking medication, getting needles or visiting the doctor/dentist	0	1	2	3	n/a
D	**CHILD'S SELF-CONCEPT**					
1	My child feels bad about himself/herself	0	1	2	3	n/a
2	My child does not have enough fun	0	1	2	3	n/a
3	My child is not happy with his/her life	0	1	2	3	n/a
E	**SOCIAL ACTIVITIES**					
1	Being teased or bullied by other children	0	1	2	3	n/a
2	Teases or bullies other children	0	1	2	3	n/a
3	Problems getting along with other children	0	1	2	3	n/a
4	Problems participating in after-school activities (sports, music, clubs)	0	1	2	3	n/a
5	Problems making new friends	0	1	2	3	n/a
6	Problems keeping friends	0	1	2	3	n/a
7	Difficulty with parties (not invited, avoids them, misbehaves)	0	1	2	3	n/a
F	**RISKY ACTIVITIES**					
1	Easily led by other children (peer pressure)	0	1	2	3	n/a
2	Breaking or damaging things	0	1	2	3	n/a
3	Doing things that are illegal	0	1	2	3	n/a
4	Being involved with the police	0	1	2	3	n/a
5	Smoking cigarettes	0	1	2	3	n/a
6	Taking illegal drugs	0	1	2	3	n/a
7	Doing dangerous things	0	1	2	3	n/a
8	Causes injury to others	0	1	2	3	n/a
9	Says mean or inappropriate things	0	1	2	3	n/a
10	Sexually inappropriate behaviour	0	1	2	3	n/a

SCORING:

1. Number of items scored 2 or 3
   or
2. Total score
   or
3. Mean score

DO NOT WRITE IN THIS AREA

A. Family	
B. School	
Learning	
Behaviour	
C. Life skills	
D. Child's self-concept	
E. Social activities	
F. Risky activities	
Total	

8.6 Appendix 7: CADDRA SNAP-IV Rating Scale

CADDRA
CANADIAN ADHD RESOURCE ALLIANCE

Patient Name:
Date of Birth: MRN/File No:
Physician Name: Date:

SNAP-IV 26 – Teacher and Parent Rating Scale

Name: _____ Gender: _____ Age: _____

Grade: _____ Ethnicity: ☐ African-American ☐ Asian ☐ Caucasian ☐ Hispanic Other: _____

Completed by: _____ Type of Class: _____ Class size: _____

For each item, check the column which best describes this child:	Not At All	Just A Little	Quite A Bit	Very Much
1. Often fails to give close attention to details or makes careless mistakes in schoolwork or tasks				
2. Often has difficulty sustaining attention in tasks or play activities				
3. Often does not seem to listen when spoken to directly				
4. Often does not follow through on instructions and fails to finish schoolwork, chores, or duties				
5. Often has difficulty organizing tasks and activities				
6. Often avoids, dislikes, or reluctantly engages in tasks requiring sustained mental effort				
7. Often loses things necessary for activities (e.g., toys, school assignments, pencils, or books)				
8. Often is distracted by extraneous stimuli				
9. Often is forgetful in daily activities				
10. Often fidgets with hands or feet or squirms in seat				
11. Often leaves seat in classroom or in other situations in which remaining seated is expected				
12. Often runs about or climbs excessively in situations in which it is inappropriate				
13. Often has difficulty playing or engaging in leisure activities quietly				
14. Often is “on the go” or often acts as if “driven by a motor”				
15. Often talks excessively				
16. Often blurts out answers before questions have been completed				
17. Often has difficulty awaiting turn				
18. Often interrupts or intrudes on others (e.g. butts into conversations/ games)				
19. Often loses temper				
20. Often argues with adults				
21. Often actively defies or refuses adult requests or rules				
22. Often deliberately does things that annoy other people				
23. Often blames others for his or her mistakes or misbehavior				
24. Often touchy or easily annoyed by others				
25. Often is angry and resentful				
26. Often is spiteful or vindictive				

SNAP-IV-26 1/1

8.7 Appendix 7: CADDRA Teacher Assessment Form

CADDRA
CANADIAN ADHD RESOURCE ALLIANCE

Patient Name:	
Date of Birth:	MRN/File No:
Physician Name:	Date:

CADDRA Teacher Assessment Form

Adapted from Dr Rosemary Tannock's Teacher Telephone Interview.
Reprinted for clinical use only with permission from the BC Provincial ADHD Program.

Student's Name:	Age:	Sex:
School:	Grade:	

Educator completing this form: _____ Date completed: _____

How long have you known the student? _____ Time spent each day with student: _____

Student's Placement: _____ Special Ed: ☐ Yes ☐ No Hrs per week: _____

Student's Educational Designation: _____ ☐ None

Does this student have an educational plan?: ☐ Yes ☐ No

ACADEMIC PERFORMANCE	Well Below Grade Level	Somewhat Below Grade Level	At Grade Level	Somewhat Above Grade Level	Well Above Grade Level	n/a
READING						
a) Decoding						
b) Comprehension						
c) Fluency						
WRITING						
d) Handwriting						
e) Spelling						
f) Written syntax (sentence level)						
g) Written composition (text level)						
MATHEMATICS						
h) Computation (accuracy)						
i) Computation (fluency)						
j) Applied mathematical reasoning						
CLASSROOM PERFORMANCE	Well Below Average	Below Average	Average	Above Average	Well Above Average	n/a
Following directions/instructions						
Organizational skills						
Assignment completion						
Peer relationships						
Classroom Behaviour						

CADDRA Teacher Assessment Form

Strengths: What are this student's strengths? _____

Education plan: If this student has an education plan, what are the recommendations? Do they work? _____

Accommodations: What accommodations are in place? Are they effective? _____

Class Instructions: How well does this student handle large-group instruction? Does s/he follow instructions well? Can s/he wait for a turn to respond? Would s/he stand out from same-sex peers? In what way? _____

Individual seat work: How well does this student self-regulate attention and behaviour during assignments to be completed as individual seat work? Is the work generally completed? Would s/he stand out from same-sex peers? In what way? _____

Transitions: How does this student handle transitions such as going in and out for recess, changing classes or changing activities? Doe s/he follow routines well? What amount of supervision or reminders does s/he need? _____

Impact on peer relations: How does this student get along with others? Does this student have friends that seek him/her out? Does s/he initiate play successfully? _____

Conflict and Aggression: – Is s/he often in conflict with adults or peers? How does s/he resolve arguments? Is the student verbally or physically aggressive? Is s/he the target of verbal or physical aggression by peers? _____

Academic Abilities: We would like to know about this student's general abilities and academic skills. Does this student appear to learn at a similar rate to others? Does this student appear to have specific weaknesses in learning?

Self-help skills, independence, problem solving, activities of daily living: _____

Motor Skills (gross/fine): Does this student have problems with gym, sports, writing? If so, please describe.

Written output: Does this student have problems putting ideas down in writing? If so, please describe.

Primary Areas of concern: What are your major areas of concern/worry for this student? How long has this/these been a concern for you?

Impact on student: To what extent are these difficulties for the student upsetting or distressing to the student him/herself, to you and/or the other students?

Impact on the class: Does this student make it difficult for you to teach the class?

Medications: If this student is on medication, is there anything you would like to highlight about the differences when s/he is on medication compared to off?

Parent involvement: What has been the involvement of the parent(s)?

Are the problems with attention and/or hyperactivity interfering with the student's learning? Peer relationships?

Has the student had any particular problems with homework or handing in assignments?

Is there anything else you would like us to know? If you feel the need to contact the student's clinician during this assessment please feel free to do so.

8.8 Appendix 8: FASD Resource List for Manitoba

FASD Services in Manitoba Resource List

I. Pregnancy and FASD Prevention Services

Manito Ikwe Kagiikwe (The Mothering Project)

Mount Carmel Clinic
886 Main Street
Winnipeg, MB R2W 5L4
Phone: 204-589-9409

This program is for any woman who is pregnant or early parenting (child under 3) and has a substance use problem. Services provided include outreach, 1 on 1 support, support groups, access to prenatal care, referrals, advocacy and access to traditional ceremony and teachings

Project CHOICES

Project CHOICES provides information and brief support for women who drink alcohol and don't use birth control regularly. Girls and women who are not pregnant are offered up to four counselling sessions and one visit with a nurse. The program uses motivational interviewing strategies and content to encourage women to explore their use of alcohol and/or effective birth control. Women may self-refer or can have a service provider make the referral for them.

Project CHOICES sites are:
NorWest Co-op Community Health 204-938-5941
Klinic Community Health Centre: 204-784-4090
Project CHOICES: www.ProjectCHOICES.ca

InSight Mentoring Program

The InSight Mentoring Program is an intensive three-year outreach program for women who are pregnant or have recently given birth and are using alcohol and/drugs. Using harm reduction strategies, mentors provide comprehensive case management for women. They work one-on-one with women to provide practical supports, promote healthy living and connect women to community services. This woman-centered program uses a trauma-informed approach and is committed to providing holistic, culturally grounded care to clients. Women can self-refer or have service providers make the referral for them. The community-based InSight Mentoring sites are:

Aboriginal Health and Wellness Centre

215-181 Higgins Ave.
Winnipeg, MB R3B 3G1
Phone: 204-925-3750

This program is specific to Aboriginal and Metis women.

Nor'West Co-op Community Health

785 Keewatin Street
Winnipeg, MB R2X 3B9
Phone: 204-938-5998

Northern Health Region

867 Thompson Drive
Thompson, MB R8N 1Z4
Phone: 204-677-5372

111 Cook Ave.
The Pas, MB R9A 1K4
Phone: 204-623-9670

1 North Avenue
Flin Flon, MB R8A 1V9
Phone: 681-3135 ext. 30528

Portage Friendship Centre

20 - 3rd Street North East
Portage la Prairie, MB R1N 1N4
Phone: 204-239-6333

Prairie Mountain Health

625 Third Street S.W.
Dauphin, MB R7N 1R7
Phone: 204-638-3054

Healthy Child Manitoba
Putting children and families first

Manitoba

Updated April 2015

II. Diagnostic Services

Manitoba FASD Centre

633 Wellington Crescent
Winnipeg, MB R3M 0A8
Phone: 204-235-8866
www.fasdmanitoba.com

The Manitoba FASD Centre is a multidisciplinary assessment, education, training and research service of the Winnipeg Regional Health Authority Child Health Program. The centre provides multidisciplinary assessment, diagnosis and short term follow-up services where there has been confirmed prenatal exposure to alcohol. Diagnostic services are provided for children and youth up to the age of 18. Referrals are accepted from health care providers, families and other agencies with the consent and involvement of the legal guardian. Referral forms are available on the Manitoba FASD website.

In addition to the Winnipeg-based operations, the Manitoba FASD Centre provides leadership and training for a provincial network called the Manitoba FASD Network that includes all Manitoba regional health authorities.

To inquire about the status of service in your area call:

Interlake – Eastern RHA	
Selkirk	Phone: 204-785-7789
Beausejour	Phone: 204-268-7705
Prairie Mountain Health	
City of Brandon	Phone: 204-578-4821
Brandon rural	Phone: 204-578-2487
Dauphin	Phone: 204-622-6223
Northern RHA	
Thompson	Phone: 204-778-1468
The Pas	Phone: 204-623-9649
Southern Health	
Portage la Prairie	Phone: 204-239-2429
Steinbach	Phone: 204-346-7039
Winnipeg RHA	
Winnipeg	Phone: 204-235-8868
Churchill	Phone: 204-675-8881

III. Outreach and Support Services

A. Children, Youth and Families

FASD Family Support, Education and Counselling Program

Unit 10 – 254 Stella Walk
Winnipeg, MB R2W 2T3
Phone: 204-582-8658
www.newdirections.mb.ca/services/ifasd.php

The FASD Family Support, Education and Counselling Program works in partnership with parents and professionals to develop programs that are individualized to meet the needs of children with FASD up to age fourteen, living in Winnipeg. The program also provides home-based services and counselling to families and helps to access family advocacy and other services.

Manitoba Key Worker Program

Interlake-Eastern Regional Health Authority
343A Main Street
Selkirk, MB R1A 1T3
Phone: (204) 785-4893 or (204) 785-4892

The Manitoba Key Worker Program provides support and personalized information to families of children and youth (ages 0-21) with FASD or confirmed prenatal alcohol exposure. Since each family is unique, Key Workers will assist the family in accessing supports, community resources, and health and education information that reflects the specific needs of the family. Key Workers supplement and enhance, but do not replace existing community resources. Key Workers work in collaboration with parents, family members, adoptive parents, caregivers and service providers to assist the child/youth experience less frustration and more success.

FASD Outreach Team

2015 Portage Avenue
Winnipeg, MB R3J 0K3
204-945-0354

The FASD Outreach Team works in Winnipeg with parents and professionals to develop specialized early interventions for children up to six years of age with an FASD diagnosis. Home and community-based services address the environmental, behavioural, and attachment related issues that influence the child's ability to function. Short-term consultation may be available to families or agencies in rural Manitoba who are able to travel to Winnipeg.

FASD Youth Justice Program

Manitoba Youth Centre
170 Doncaster St.
Winnipeg, MB R3N 1X9
Phone: 204-928-7170

This program is for youth living in Winnipeg and The Pas who are in the pre-sentence phase of the justice system, have confirmed prenatal exposure to alcohol and no prior FASD diagnosis. The goal is to ensure youth affected with FASD who are in conflict with the law receive a multidisciplinary assessment, diagnosis, appropriate judicial disposition and improved access to appropriate services. Referrals are accepted from the justice system, parents/guardians and youth.

New Directions for Children, Youth, Adults and Families
The Family Therapy Program

400 – 491 Portage Ave.
Winnipeg, MB R3B 2E4
Phone: 204-786-7051 ext. 5269
www.newdirections.mb.ca

This program offers group and individual counselling, tailored to meet the needs of the family. The program helps to identify and address issues such as change in the family, physical aggression, delinquency, drug or alcohol abuse, running from home, managing anger and anxiety, childhood depression and fears. Families may call directly to request services.

B. Adults Living with FASD

FASD Life's Journey Inc.

102-720 Broadway
Winnipeg, MB R3G 0X1
Phone: 204-772-1591
www.fasdlji.ca

FASD Life's Journey Inc. provides a full range of supports to adults affected by FASD who qualify for funding from the Community Living disABILITY Services, Provincial Special Needs Program or Community Mental Health. Spectrum Connections, a program of FASD Life's Journey, also provides services for adults who are ineligible for other Manitoba support program funding.

Touchstone FASD Program

302-1200 Portage Avenue
Winnipeg, MB, R3G 0T5
Phone: 204-925-1928

This Initiatives for Just Communities program provides support for adults with FASD residing in or near Winnipeg through one-on-one mentorship and facilitation of support circles. It also provides peer support groups for families, as well as workshops and presentations for families and faith communities.

Visions and Voices

302-1200 Portage Avenue
Winnipeg, MB, R3G 0T5
Phone: (204) 925-1928

This Initiatives for Just Communities program offers presentations led by adults living with FASD. Visions & Voices seeks to increase FASD awareness, combat the stigma of FASD and encourage healthy living and reproductive choices. Presenters will share personal stories of struggle, hope and achievement, which will vary from speaker to speaker, as FASD can affect numerous brain domains. Presentations are offered in a variety of settings and are intended for anyone caring for or working with an individual with FASD.

Community Living disABILITY

Check regional listings at www.manitoba.ca/fs/pwd

Community Living disABILITY Services provides a range of support services for Manitobans living with a mental disability and their families. The program supports eligible adults to live safely and participate fully in the community. To be eligible, an individual must be 18 years of age or older and have significantly impaired intellectual functioning. The program includes residential services, day services and support services.

FASD STRENGTHS Program

A Program of DASCH Inc.
1-117 Victor Lewis Drive
Winnipeg, MB R3P 1J6
Phone: (204) 987-1550

The STRENGTHS Program offers residential (including respite) and clinical support services to individuals including children, youth and adults living with developmental disabilities who have also been diagnosed with FASD/ARND. Clinical services available to clients include behavioural supports, counseling, psychiatry, life skills education, occupational therapy, communication and speech and language pathology. Available components of the STRENGTHS program also include cultural programming, recreational and vocational services and agency training. The goal of the STRENGTHS program is to empower individuals to use their strengths within a holistic and service driven approach, ultimately increasing their independence and enhancing their quality of life.

Provincial Special Needs Program

896 Main St.
Winnipeg, MB R2W 3P3
Phone: 204-945-4514

Provincial Special Needs Program offers services to people with a mental disorder or disability who pose a high risk to themselves or others, and who are not eligible for other existing services. The program helps support individuals to live successfully in the community, while striving to ensure public and personal safety. Services include case management, consultation, funding support and resource development.

Onashowewin Justice Circle

101-720 Broadway Avenue
Winnipeg, MB R3G 0X1
Phone: 204-336-3600

Onashowewin Justice Circle provides diversion services for the Manitoba Crown Attorney's Office for those in conflict with the law, while ensuring healing occurs for those harmed. The program incorporates cultural understandings and traditional teachings in a series of capacity building workshops (e.g. Negative Energy, Living in Balance, One Life, Sense of Belonging, etc). Mediation services, conference circles and Cultural Advisory Counselling sessions also aid in healing and reparation of harms. The program has an open door policy to any one in conflict with the law or anyone feeling they need to make a positive change in their life. Onashowewin incorporates an FASD lens and individualized case planning into its program delivery.

IV. Mental Health Services for Children and Youth

Centralized Intake - Child and Adolescent Mental Health Program

848 William Ave.
Winnipeg, MB R3E 0Z6
Phone: 204-958-9660

To improve access to WRHA child and adolescent mental health resources, intake and referral services have been linked to create a single point of entry within Winnipeg. These services are for children and adolescents (age three to 18 yrs) experiencing emotional or behavioural concerns as well as symptoms of mental illness. Parents, caregivers, doctors and/or counsellors can make referrals. ***Centralized Intake is able to directly refer to services at MATC, St. Boniface General Hospital and Health Sciences Centre.***

Rural Manitoba:

Contact Mental Health Services at your local regional health authority office.

V. Information and Education

Addictions Foundation of Manitoba

1031 Portage Ave.
Winnipeg, MB R3G 0R8
Phone: 204-944-6200
www.afm.mb.ca

AFM offers courses related to women and addictions and FASD. The Knowledge Exchange Centre's William Potoroka Memorial Resource Collection holds the largest collection of FASD resources in the province, focusing on FASD research, prevention and awareness, as well as parenting, caregiving and educational strategies.

Manitoba Coalition on Alcohol and Pregnancy

www.capmanitoba.ca

MCAP brings together families, service providers, community organizations and government representatives from across the province to share information and resources, co-ordinate activities and plan together to address issues related to FASD. The coalition regularly holds lunch-hour information sessions, which are broadcast via the Telehealth network, and produces a newsletter.

Canada FASD Research Network

This is Canada's first comprehensive national Fetal Alcohol Spectrum Disorder (FASD) research network. CanFASD supports two blogs that provide news, events, research, resources, and perspectives on both FASD prevention and interventions for individuals affected by FASD across the lifespan.

Visit the prevention blog at:
http://fasdprevention.wordpress.com/
and the intervention blog at
http://fasdintervention.wordpress.com/.

Healthy Child Manitoba Office

3rd Floor - 332 Bannatyne Avenue
Winnipeg, MB R3A 0E2
Phone: 204-945-2266 Toll Free: 1-888-848-0140
www.gov.mb.ca/healthychild/fasd/index.html

Healthy Child Manitoba bridges departments and governments and, together with the community, works to improve the well-being of Manitoba's children and youth. HCM's efforts include funding FASD prevention programs and programs that support families and individuals living with FASD: creating and supporting community partnerships: and making resources available to the public.

Public Health Agency of Canada

Manitoba and Saskatchewan Regional Office

300-391 York Avenue
Winnipeg, MB R3C 4W1
Attention: Kim Watts
Phone: 1-866-225-0709
www.phac-aspc.gc.ca/fasd-etcaf/index.html-eng.php

PHAC leads and co-ordinates national policy, program development and strategic advice from FASD experts. The PHAC website provides basic information on FASD, as well as up-to-date news and links to important resources and reports.

Pluri-elles (Manitoba) Inc.

570 rue Des Meurons
Winnipeg, MB R2H 2P8
Phone: 204-233-1735 Toll Free: 1-800-207-5874
www.pluri-elles.mb.ca

This organization offers French language programming specific to FASD when requested by community.

8.9 Appendix 9: CADDRA Recommended Medication List for AD

CADDRA Guide to ADHD Pharmacological Treatments in Canada - 2016

Medications available and illustrations	Characteristics	Duration of action [1]	Starting dose [2]	Dose titration as per product monograph	Dose titration as per CADDRA www.caddra.ca
AMPHETAMINE-BASED PSYCHOSTIMULANTS					
Dexedrine® tablets 5 mg Dexedrine® spansules 10, 15 mg 	Pill can be crushed [3] Spansule (not crushable)	~ 4 h ~ 6 - 8 h	Tablets = 2.5 to 5 mg BID Spansules = 10 mg q.d. a.m.	↑ 2.5 - 5 mg at weekly intervals; Max. dose/day: (q.d. or b.i.d.) All ages = 40 mg	↑ 2.5 - 5 mg/day at weekly intervals Max. dose/day: (q.d. or b.i.d.) Children and Adolescents = 20 - 30 mg Adults = 50 mg
Adderall XR® Capsules 5, 10, 15, 20, 25, 30 mg 	Sprinkable Granules	~ 12 h	5 - 10 mg q.d. a.m.	↑ 5 - 10 mg at weekly intervals Max. dose/day: Children = 30 mg Adolescents and Adults = 20 - 30 mg	Children: ↑ 5 mg at weekly intervals Max. dose/day = 30 mg Adolescents and Adults: ↑ 5 mg at weekly intervals max. dose/day = 50 mg
Vyvanse® Capsules 10, 20, 30, 40 50, 60 mg 	Capsule content can be diluted in water, orange juice and yogurt	~ 13 - 14 h	20 - 30 mg q.d. a.m.	↑ by clinical discretion at weekly intervals Max. dose/day: All ages = 60 mg	↑ 10 mg at weekly intervals Max. dose/day: Children = 60mg Adolescents and Adults = 70 mg
METHYLPHENIDATE-BASED PSYCHOSTIMULANTS					
Methylphenidate short acting, tablets 5 mg (generic) 10, 20 mg (Ritalin®) 	Pill can be crushed [3]	~ 3 - 4 h	5 mg b.i.d. to t.i.d. Adult = consider q.i.d.	↑ 5 - 10 mg at weekly intervals Max. dose/day: All ages = 60 mg	↑ 5 mg at weekly intervals Max. dose/day: Children and Adolescents = 60 mg Adults = 100 mg
Biphentin® Capsules 10, 15, 20, 30, 40, 50, 60, 80 mg 	Sprinkable Granules	~ 10 - 12 h	10 - 20 mg q.d. a.m.	↑ 10 mg at weekly intervals Max. dose/day: Children and Adolescents = 60 mg Adults = 80 mg	↑ 5 - 10 mg at weekly intervals Max. dose/day: Children = 60 mg Adolescents and Adults = 80 mg
Concerta® Extended Release Tabs 18, 27, 36, 54 mg 	Pill needs to swallowed whole to keep delivery mechanism intact	~ 12 h	18 mg q.d. a.m.	↑ 18 mg at weekly intervals Max. dose/day: Children = 54 mg Adolescents = 54 mg / Adults = 72 mg	↑ 9 - 18 mg at weekly intervals Max. dose/day: Children = 72 mg Adolescents = 90 mg / Adults = 108 mg
NON PSYCHOSTIMULANT - SELECTIVE NOREPINEPHRINE REUPTAKE INHIBITOR					
Strattera® (Atomoxetine) Capsules 10, 18, 25, 40, 60, 80, 100 mg 	Capsule needs to swallowed whole to reduce GI side effects	Up to 24 h	Children and Adolescents : 0.5 mg/kg/day Adults = 40 mg q.d. for 7-14 days	Maintain dose for a minimum of 7 - 14 days before adjusting: Children = 0.8 then 1.2 mg/kg/day 70 kg or Adults = 60 then 80 mg/day Max. dose/day : 1.4 mg/kg/day or 100 mg	Maintain dose for a minimum of 7 - 14 days before adjusting: Children = 0.8 then 1.2 mg/kg/day 70 kg or Adults = 60 then 80 mg/day Max. dose/day: 1.4 mg/kg/day or 100 mg
NON PSYCHOSTIMULANT - SELECTIVE ALPHA-2A ADRENERGIC RECEPTOR AGONIST					
Intuniv XR® (Guanfacine XR) Extended release tabs 1, 2, 3, 4 mg 	Pills need to be swallowed whole to keep delivery mechanism intact	Up to 24 h	1 mg q.d. (morning or evening)	Maintain dose for a minimum of 7 days before adjusting by no more than 1 mg increment weekly Max. dose/day: Monotherapy: 6-12 years = 4 mg, 13-17 years = 7 mg As adjunctive therapy to psychostimulants 6-17 years = 4 mg	Maintain dose for a minimum of 7 days before adjusting by no more than 1 mg increment weekly Max. dose/day: Monotherapy: 6-12 years = 4 mg, 13-17 years = 7 mg As adjunctive therapy to psychostimulants 6-17 years = 4 mg

Note: Illustrations do not reflect real size of pills/capsules. For specific details on how to start, adjust and switch ADHD medications, clinicians are invited to refer to the Canadian ADHD Practice Guidelines (www.caddra.ca)

[1] Pharmacokinetics and pharmacodynamic response vary from individual to individual. The clinician must use clinical judgement as to the duration of efficacy and not solely rely on reported values for PK and duration of effect.

[2] Starting doses are from product monographs. CADDRA recommends generally starting with the lowest dose available. [3] Higher abuse potential.

Document developed by Annick Vincent MD (www.attentiondeficit-info.com) and Direction des communications et de la philanthropie, Laval University, with the special collaboration of CADDRA.

UNIVERSITÉ LAVAL CADDRA CANADIAN ADHD RESOURCE ALLIANCE

Version : April 2016