

The slide features a decorative border of watercolor-style floral patterns in shades of orange, green, and blue, framing the central text.

THE IMPACT OF PRENATAL SUBSTANCE EXPOSURE AND FETAL ALCOHOL SPECTRUM DISORDERS

Raymee Sickler-Schelkoph, DO
Fellow in Developmental-Behavioral Pediatrics
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The presenter does not
have any conflict of
interest or disclosure.



Objectives

Review common substances used during pregnancy and their effects on development

Understand the clinical features and diagnosis of FASD

Discuss interventions shown to improve outcomes for individuals with FASD

Prenatal Substance Use

- Substance use during pregnancy is a significant public health issue in the United States.
- According to the National Survey on Drug Use and Health in 2019, **6% of pregnant women** reported illicit drug use in the past 30 days.¹
- Recent estimates from the Pregnancy Risk Assessment Monitoring System (PRAMS) indicate that **7% of women** used opioids and **4% used marijuana** during pregnancy.^{2,3}



Prenatal Substance Use

- Substance use during pregnancy is associated with an increased likelihood of **adverse maternal and infant outcomes**.
- Qualitative analyses indicate that pregnant women with substance use **delay or avoid prenatal care** and other healthcare encounters due to fear of detection and subsequent loss of infant custody and criminal justice involvement.⁴



Alcohol Use in Pregnancy

- While many substances impact development, **alcohol** is unique because of the predictable pattern of **lifelong brain-based effects** and the missed opportunities for diagnosis and intervention.
- Prenatal alcohol exposure is a **leading preventable cause** of birth defects and neurodevelopmental deficits in the United States.⁵
- It can cause a range of **intellectual and behavioral problems**, which appear at any time during childhood and last a lifetime.
- We will focus on **prenatal alcohol use** for the remainder of this presentation.



Prevalence of alcohol use during pregnancy

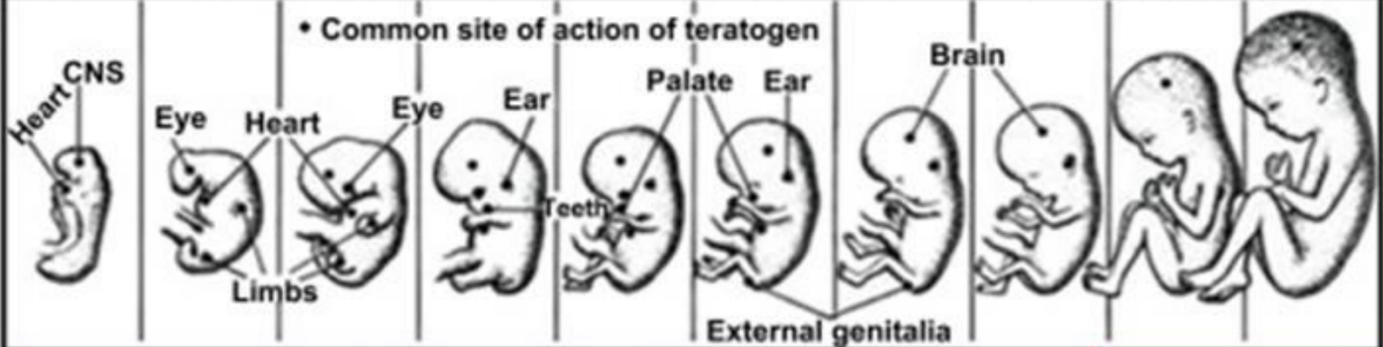
A study analyzing 2015–2018 data from the [National Survey on Drug Use and Health](#) reports:6

- About **1 in 10 (9.8%)** pregnant women report current alcohol use.
- About **1 in 22 (4.5%)** pregnant women report binge drinking.
- Alcohol use is **highest** among women who are in the **first trimester** of pregnancy, with about **1 in 5 (19.6%)** reporting current alcohol use and **1 in 10 (10.5%)** reporting binge drinking.



Impact of alcohol on embryo development:

- The **amount** and **timing** of maternal alcohol use determine the type and extent of resulting birth defects.
- However, there is **no known safe amount** of alcohol consumption during pregnancy.

OVUM STAGE	EMBRYONIC STAGE	FETAL/POSTNATAL STAGE- 2ND YEAR OF LIFE	FETAL STAGE - 2ND YEAR OF LIFE		
F6-11 (days)	F11-F14 (days)	F14-F21 (days)	F21-PN35 (days)	Rodents Human	
1 2	3 4	5 6 7 8	9 16 20-36 38	108 weeks	
Dividing zygote, implantation and gastrulation 					
	Major abnormalities		Functional abnormalities in CNS		
	<ul style="list-style-type: none"> • Neural tube formation • NSCs proliferation 	<ul style="list-style-type: none"> • Differentiation of specific brain areas • Neural stem cells proliferation/differentiation • Neuronal migration • Corpus callosum formation 	<ul style="list-style-type: none"> • Brain growing at its fastest rate • Massive neural cell death • Astroglialogenesis and myelin development • Functional neural connections (synaptogenesis) • Differentiation of cerebellum 	Normal brain development processes	
	<ul style="list-style-type: none"> • FAS dismorphia • Severe neural tube defects • Increased neural crest cell death • Reduced neural proliferation 	<ul style="list-style-type: none"> • Abnormal cell migration • Abnormal radial glia: neuronal and astroglia deficits • Neural cell loss • Corpus callosum malformations 	<ul style="list-style-type: none"> • Prominent microcephaly • Abnormal glial development • Increase in natural cell death and cell necrosis • Alterations in synaptogenesis and plasticity • Alterations in the cerebellum 	Effects of alcohol	

- Given that approximately **half of all pregnancies in the United States are not planned**, the U.S. Surgeon General recommends that women who are pregnant, might be pregnant, or are thinking about getting pregnant **should not drink alcohol at all.**⁷

September is Fetal Alcohol Spectrum Disorders Awareness Month



There is no known safe **amount** of alcohol or **time** to drink during pregnancy.



The effects of prenatal alcohol exposure can even occur **before** a woman knows she is pregnant.



FASD affects
1 to 5%
of 1st grade children
in the U.S.**

It's never too late! Brain growth occurs throughout pregnancy.
The sooner you stop drinking, the better for your baby.

NIH National Institute
on Alcohol Abuse
and Alcoholism
www.niaaa.nih.gov

*SAMHSA. 2019 NSDUH Table 6.20B—Alcohol Use, Binge Alcohol Use, and Heavy Alcohol Use in Past Month among Females Aged 15 to 44, by Pregnancy Status, Demographic, Socioeconomic, and Pregnancy Characteristics: Percentages, 2018 and 2019.

**May, P.A.; Chambers, C.D.; Kalberg, W.O.; et al. Prevalence of fetal alcohol spectrum disorders in 4 U.S. communities. *JAMA* 319(5):474–482, 2018. PMID: 29411031

Fetal Alcohol Spectrum Disorders (FASD)

- The term fetal alcohol spectrum disorders (FASD) refers to the wide range of **physical, behavioral, and cognitive** impairments that occur due to alcohol exposure before birth.
- Depending on the features identified, the **disorders categorized as FASD** include:
 - Fetal alcohol syndrome (FAS)
 - Partial fetal alcohol syndrome (PFAS)
 - Alcohol-related neurodevelopmental disorder (ARND)
 - Alcohol-related birth defects (ARBD)



Prevalence of FASD

- Due to the changing terms and criteria for FASD and lack of access to diagnostic services, we do not know the exact prevalence of FASD.
- Conservative estimates are **1 in 100** to **1 in 20** children (average 1 child in every classroom!)⁹
- Further, it was recently estimated that approximately **1 in every 13** prenatally alcohol exposed infants will have FASD.
 - Results in approximately **630,000** infants being born with FASD in the world each year.¹⁰

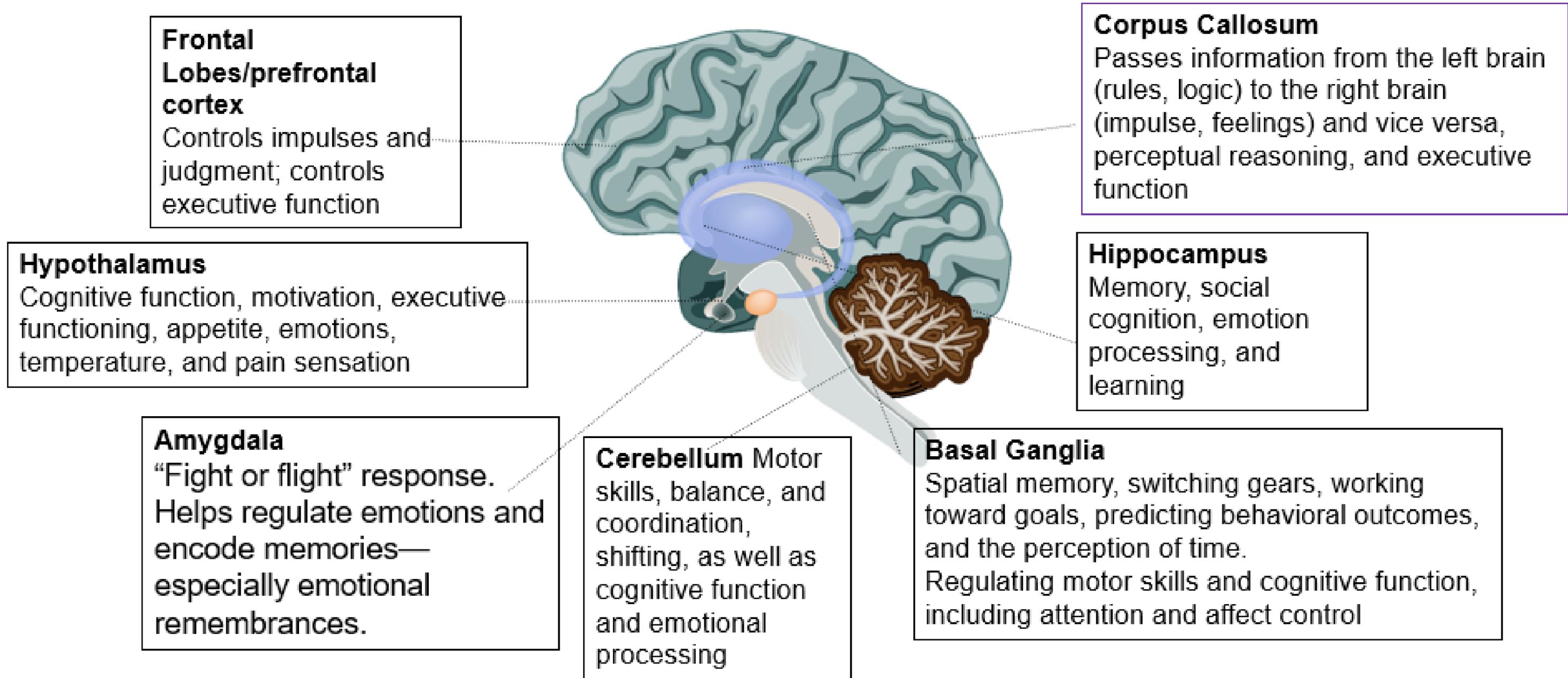


Prevalence of FASD

- Prevalence is around **25%** for children in out-of-home care in the US including **foster care and correctional facilities**.¹¹
- Prevalence is also higher in **special education populations** as well as **specialized clinical populations** (e.g. psychiatric care), as individuals with FASD are likely to suffer from developmental delay, learning problems and mental health problems.¹¹
- Prevalence varies by community and demographic factors.



Areas of the brain affected



Symptoms of FASD

- Individuals with FASD experience day-to-day challenges, which may include **cognitive and behavioral impairments** as well as secondary disabilities including **medical, educational, mental health, and social challenges**, throughout their life.
- They are also subject to **stigmatization** for their disorder.



Symptoms of FASD

- People with FASD may have **difficulty** in the following areas:¹²
 - Learning and memory
 - Understanding and following directions
 - Switching attention between tasks
 - Controlling emotions and impulsivity
 - Communicating and developing social skills
 - Experiencing depression and anxiety
 - Performing daily life skills
 - Including feeding, bathing, counting money, telling time, and minding personal safety
 - Motor tasks



Typical Cognitive/Behavioral Profiles

Low **working memory**:

- They “**Live in the Moment**”
- Can't remember or apply **consequences**
 - Consequence based therapies/ natural consequences don't seem to have the same positive outcomes
- Can't remember to apply **social rules** in the moment
- **Impulsive** behaviors
 - Coloring on the walls, stealing, breaking laws, etc.



Typical Cognitive/Behavioral Profiles

They usually **want to please others**, are friendly

- They can be overly attached to caregiver (who is often their “external brain”)
- Extremely chatty
- Don’t remember **social boundaries**
- Are often **naïve and gullible**
 - Can be prompted to do things against rules by those who are taking advantage of gullibility
 - This can also manifest in **poor sexual boundaries**
 - This can feed into anxiety as they get older and notice differences between themselves and peers



Typical Cognitive/Behavioral Profiles

- Poor **executive function** skills
 - Similar to ADHD and Autism, can have poor ability to plan, follow multi-step instructions, and inhibit impulses.
- **Adaptive abilities** can be much lower than cognitive abilities or chronological age
 - Often require **more supervision** and much longer than expected
 - Often require **more repetition** and supervision to learn daily living skills.
 - Have more difficulty with **time and money** management.
 - Especially when they have also had traumatic experiences, **adaptive abilities can vary from day to day.**



Typical Cognitive/Behavioral Profiles

- They can have great difficulty with **emotional regulation**.
 - May continue to have big tantrums at older ages, into the teen years
 - May punch holes in walls, destroy property
 - Aside from treatment for ADHD and Anxiety, this seems to be a frequent reason for **seeking medication management**.
- They can be considered **“high needs”**
 - **Fast metabolism** for food, drink, and medications
 - **Tire easily** – may need naps at an older age
 - Some **sensory** seeking and avoidant behaviors



Physical Features of FASD

- Facial features
 - Small palpebral fissures
 - Smooth philtrum
 - Thin upper lip
- Microcephaly
- Low body weight
- Shorter than average height



Co-occurring diagnoses

- Over **400 medical conditions** have been identified as occurring as a comorbid condition with FASD.¹³
- Identified common medical comorbidities include:
 - Sleep disorders
 - Chronic otitis media
 - Receptive and expressive language disorders
 - Seizures
 - ADHD
 - Sensorineural and conductive hearing loss
 - Disorders of the eye and vision
 - Cardiac, kidney, bone, and neurological congenital anomalies
 - Peripheral nerve disorders
 - Microcephaly
 - Growth restriction
 - Feeding and eating disorders



Diagnosing FASD

There are **four** diagnostic approaches used:

- DSM-5, ND-PAE
- Institute of Medicine or NIAAA framework
- Canadian FASD framework
- University of Washington 4-digit code



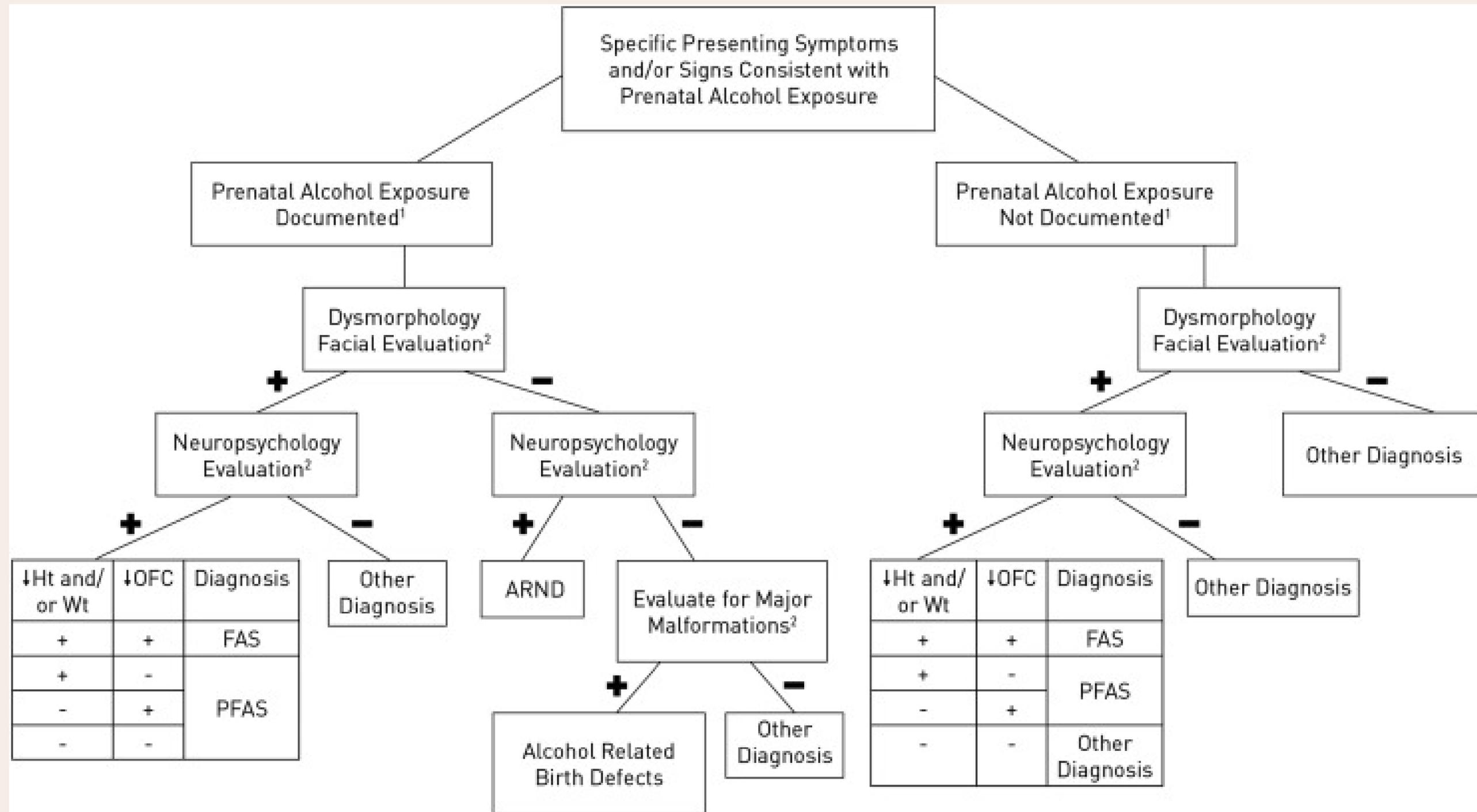
DSM-5, ND-PAE

- **Neurodevelopmental Disorder associated with Prenatal Alcohol Exposure (ND-PAE)**
 - More than minimal prenatal alcohol exposure
 - More than 13 drinks per month or more than 2 drinks in one sitting
 - Impairments in 3 domains:
 - Neurocognitive
 - Self-Regulation
 - Adaptive
- This **does not account for** physical features, growth restriction, microcephaly, or medical complications.
- This is **not a medical diagnosis**, and is often used by psychologists and other mental health professionals.

Institute of Medicine or NIAAA framework

- Breaks FASD down into **4 categories**:
 - Fetal Alcohol Syndrome
 - Partial Fetal Alcohol Syndrome
 - Alcohol Related Neurodevelopmental Disorder
 - Alcohol Related Birth Defects
- Must have documented prenatal alcohol exposure and facial characteristics.
- This framework was created in 1996, but was updated in **Pediatrics in 2016.8**

NIAAA framework



Canadian FASD Framework

- FASD Clinical Diagnosis:14
 - Prenatal alcohol exposure, allows for unknown
 - Includes 3 facial features
 - Neurocognitive Impairments
 - **Does not** include growth restriction

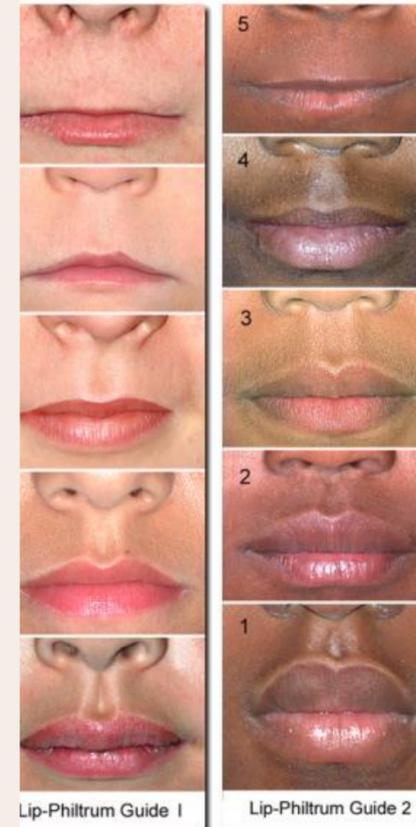


University of Washington

4-digit code

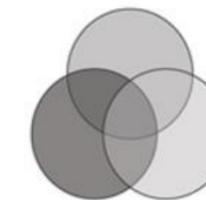
- Includes **4 Criteria** – Each ranked 1 to 4
 - Growth
 - Height and Weight percentiles
 - Facial Features
 - CNS Involvement
 - Microcephaly, seizures, MRI abnormalities, neurodevelopmental impairments
 - Prenatal Alcohol Exposure

FASD Diagnostic Tools and Training
www.fasdpn.org

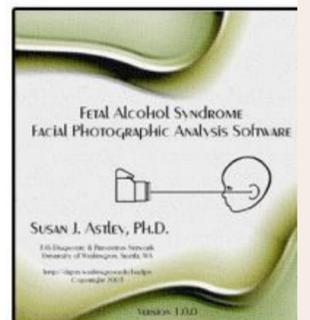


		4-Digit Code			
		3	4	3	4
Rank	4	< 3%	all 3 features	abnormal structure	high
	3	3-5%	2 features	severe dysfunction	moderate
	2	6-10%	1 feature	moderate dysfunction	unknown
	1	> 10%	no features	no dysfunction	none
		Growth	Face	CNS	Alcohol

DIAGNOSTIC GUIDE FOR
FETAL ALCOHOL SPECTRUM DISORDERS
The 4-Digit Diagnostic Code
Third Edition
2004



FAS DIAGNOSTIC AND PREVENTION NETWORK
UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON



University of Washington

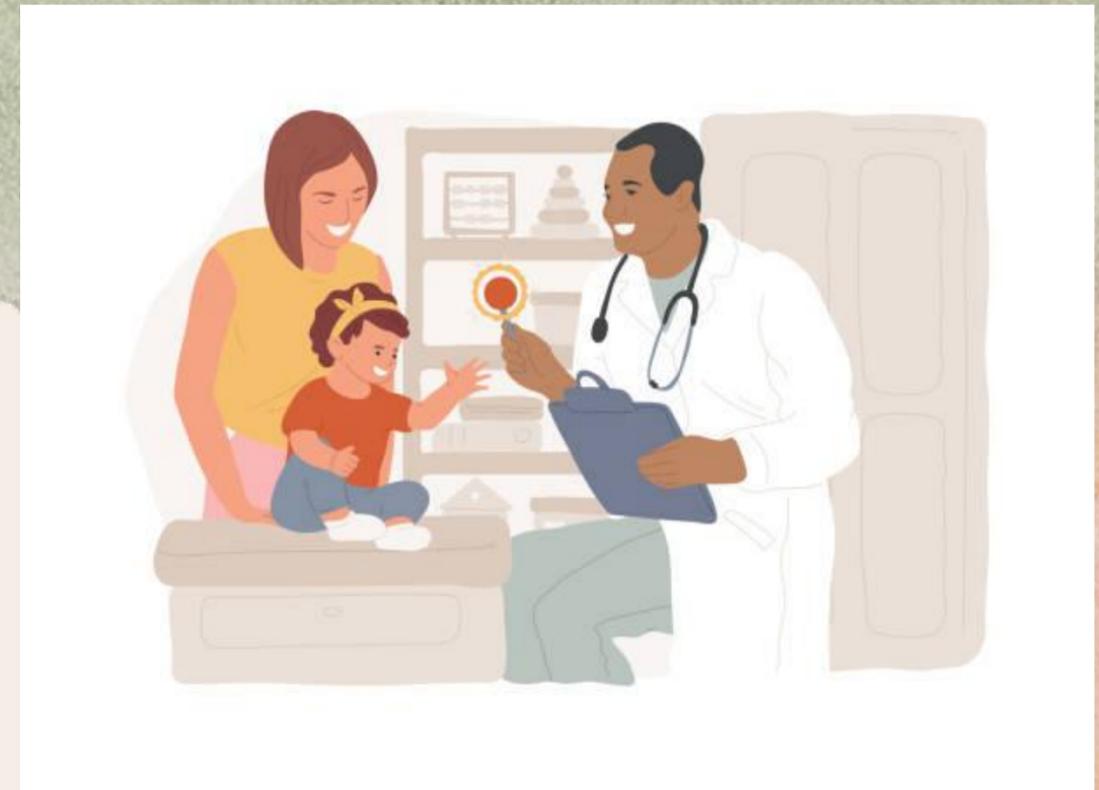
4-digit code

FASD Umbrella

3 Diagnoses under the FASD Umbrella		Growth	FAS Face	Brain	Alcohol
1. FAS	Fetal Alcohol Syndrome	growth	face	severe	exposed
2. SE/AE	Static Encephalopathy / Alc-Exposed			severe	exposed
3. ND/AE	Neurodevelopmental Disorder / Alc-Exposed			moderate	exposed

Role of General Pediatricians

- Developmental surveillance and screening
 - Pediatricians are the **first line of defense**
- Perform **routine developmental and behavioral screenings** at recommended intervals (e.g., ASQ, M-CHAT).



Role of General Pediatricians

- Be alert for:
 - **Delayed milestones** (especially language and executive function).
 - **Behavioral** dysregulation: impulsivity, hyperactivity, emotional lability.
 - **Poor social skills**, especially difficulty interpreting social cues.
 - **Discrepancy** between verbal skills and adaptive functioning (e.g., can talk well but can't handle daily tasks for age).
- Use red flags as a cue to **dig deeper**, not just diagnose ADHD and move on.



Role of General Pediatricians

Identifying and documenting prenatal alcohol exposure:

- Pediatricians can **normalize** sensitive history-taking:
 - Frame questions as part of routine care:
 - “We ask all families about possible exposures during pregnancy because it helps us understand how to best support your child’s development.”
- Ask **open-ended, nonjudgmental** questions:
 - “During your pregnancy, were there times when alcohol was used, even before you knew you were pregnant?”



Role of General Pediatricians

- If a child is **adopted or in foster care**, ask about collateral records, consult caseworkers, or review birth records if possible.
- **Document** carefully in the chart:
 - “History of confirmed prenatal alcohol exposure per birth parent report / adoption record / CPS documentation.”
- Even if exposure is suspected but unconfirmed, **document that concern.**
 - This can support future diagnostic evaluations and eligibility for services.

Role of General Pediatricians

- Making referrals and coordinating care
 - If FASD is suspected:
 - Refer to developmental-behavioral pediatrics or psychology
 - Suggest early intervention, school evaluations, or behavioral therapy—even **before** a formal diagnosis is made!
- Provide family education about FASD and how behaviors might relate to **brain-based differences** rather than "bad behavior."

When to Consider Referral

- History of prenatal alcohol or substance exposure
- Developmental, cognitive, or behavioral concerns
- Complex medical concerns
- Intrauterine or postnatal growth deficits (e.g. microcephaly)
- Cardinal dysmorphic facial characteristics associated with FASD
- History of a sibling diagnosed with an FASD



Role of General Pediatricians

- Advocacy and Support
 - Pediatricians can advocate for:
 - **School supports** (e.g., IEP, 504 plan)
 - **Community resources** for families (support groups, parent training)
 - **Trauma-informed care**—many children with FASD also have adverse childhood experiences
- FASD is a diagnosis that **opens doors to services**, but only if pediatricians start asking the right questions and initiating evaluations.

What Can We Do?

- Early identification and diagnosis:
 - Can improve outcomes
 - Can **decrease unnecessary** testing, referrals, and interventions resulting from misdiagnoses
 - Helps parents and teachers **reframe challenging behaviors** that are a result of **prenatal brain damage** rather than willful disobedience
 - Help provide parent and child **awareness and education** about an FASD diagnosis which can reduce household frustrations



What Can We Do?

- Interventions for **executive functioning deficits/ADHD**:
 - Treat the ADHD!
 - Employ more external supports
 - Visual Schedules
 - Calendars
 - Checklists
 - Break down chores/activities into smaller steps, reward small progress
 - Keep environment uncluttered
 - Limit choices
 - Keep structured routines and schedules



What Can We Do?

- Interventions for **adaptive behavior** deficits:
 - **Simple rules** or scripts to help them remember what is expected of them
 - **Lots of repetition** when learning a new rule or skill
 - Adapt for **slow verbal processing**
 - Speak slow and with fewer words – **don't lecture!**
 - Have them **repeat** back instructions
- If adaptive delays are suspected, have them **evaluated by a psychologist** ~12 years and again when making decisions for **post-high school planning**.



What Can We Do?

- Interventions for **social delays**:
 - Try Social Skills groups
 - Social Stories
 - Daniel Tiger's Neighborhood
 - Caregivers can spend 5-10 minutes **"tuning in"** to their chatter
 - Use **very explicit and simple** rules to teach social behavior
 - "Stay 1 arm's length away," private part rules, "no hurts" rules
 - Encourage a positive **friendship**
 - Provide opportunities for **peer interactions**



What Can We Do?

- Interventions for delays in **emotional regulation**:
 - Parent Child Interaction Therapy
 - Parents remain calm
 - **Respite** for parents
 - **Parent education** that this is part of the known deficit of FASD
 - Not necessarily a mental illness
 - Teach the “no hurts” rule very **young** and enforce it with everyone
 - We understand their reaction is sometimes **“their brain”** having a hard time coping with a situation, but we know “they” are doing their best.



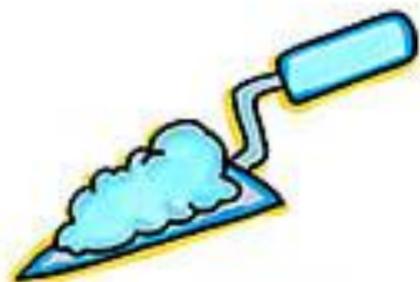


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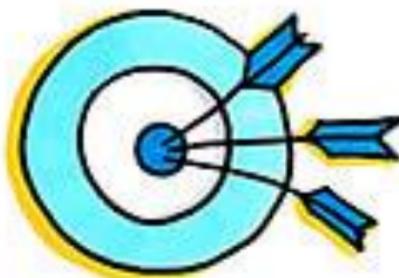
EIGHT MAGIC KEYS

@kwiens62

PLANNING FOR STUDENTS WITH FETAL ALCOHOL SPECTRUM DISORDER



CONCRETE
TALK IN CONCRETE TERMS
AVOID ABSTRACT LANGUAGE



CONSISTENCY
PARENTS & EDUCATORS USE
THE SAME WORDS & STRATEGIES



REPETITION
RE-TEACH MANY TIMES TO RETAIN
IN LONG-TERM MEMORY



ROUTINE
HELP REDUCE ANXIETY



Keep
It
Short &
Sweet



SIMPLICITY



SPECIFIC
SAY EXACTLY WHAT YOU MEAN
GIVE STEP BY STEP DIRECTIONS



STRUCTURE
THE GLUE THAT MAKES THE WORLD
MAKE SENSE... THEIR FOUNDATION



SUPERVISION
SCAFFOLD INDEPENDENCE

Kristin Wiens 2017

Behavior and Education Therapy

The following are behavior and education therapies that have been shown to be effective for some children with FASDs:

- **Good Buddies**
 - A children's friendship training to teach individuals with FASD appropriate social skills
- **Families Moving Forward (FMF)**
 - A program to provide support for families who deal with challenging FASD behaviors
- **Math Interactive Learning Experience (MILE)**
 - A program to help with mathematics difficulty
- **Parents and Children Together (PACT)**
 - A neurocognitive habilitation program to improve self-regulation and executive function



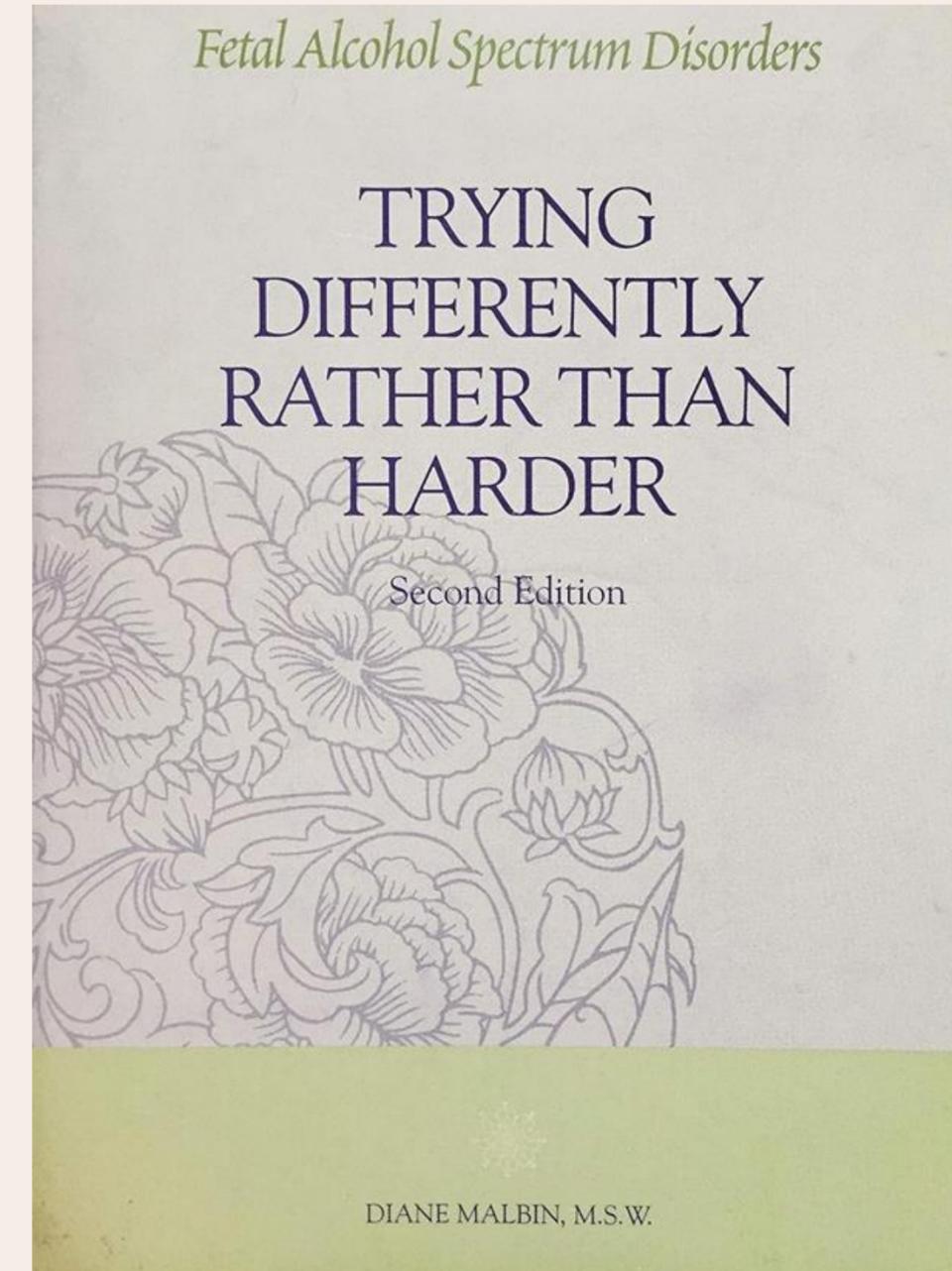
Strengths of FASD

- Individuals with [\(FASD\)](#) often possess unique strengths, including:
 - Can be highly **creative and artistic**, expressing themselves through various mediums like painting, drawing, or music
 - Many excel in **hands-on tasks** and working with tools, demonstrating a natural aptitude for practical skills
 - They are often described as **friendly, caring, and eager to help** others, making them valuable members of their communities
- It's important to remember that individuals with FASD are not a homogenous group and their **strengths and challenges can vary significantly**. By recognizing and **supporting** their individual strengths, they can lead fulfilling and successful lives.



FASD Resources

- AAP - Fetal Alcohol Spectrum Disorders
 - <https://www.aap.org/en/patient-care/fetal-alcohol-spectrum-disorders/>
- FASD United
 - <https://fasdunited.org/>
- CDC - FASDs
 - <https://www.cdc.gov/fasd/index.html>
- Podcast episode about FASD
 - <https://www.navneuro.com/18-fetal-alcohol-spectrum-disorder-with-dr-jeffrey-wozniak/>
- Book “Trying Differently Rather Than Harder”



WHAT IS FETAL ALCOHOL SPECTRUM DISORDER?

Fetal Alcohol Spectrum Disorder or FASD is a neurodevelopmental condition with lifelong cognitive, emotional and behavioral challenges. In addition to effects on the brain, FASD is a full-body diagnosis that can include most other organ systems.

Although alcohol can affect the development of all cells and organs, the brain is particularly vulnerable to the effects of prenatal alcohol exposure. As a result, children and adults with FASD often experience difficulties in dealing with information. They may find it hard to translate hearing into doing, thinking into saying, reading into speaking or feeling into words. They may also have difficulty in applying what they have learned in the past to new experiences or situations. This means they may not be able to see patterns, predict events, or make judgments.

Every person with FASD is affected differently. This is why it is a spectrum disorder. A common misconception persists that someone has to have specific facial features to have a diagnosis. This is incorrect. By some estimates, less than 10% of those on the FASD spectrum have these distinctive facial features. Often, people with FASD are undiagnosed or misdiagnosed. Recent studies estimate that between 1 in 100 and 1 in 10 children in the US may have FASD.

Diagnosis of FASD looks at 4 areas. 1) height and weight, 2) facial feature measurements, 3) head size and brain function, including development and behavior, and 4) history of prenatal alcohol exposure.

The good news is, there are known strategies that can help someone with FASD to build upon their many strengths and to lead happy and fulfilling lives.

A person with an FASD might have:

- Low body weight
- Poor coordination
- Hyperactive behavior
- Difficulty with attention
- Poor memory
- Difficulty in school (especially with math, time, and money)
- Learning disabilities
- Speech and language delays
- Intellectual disability or low IQ
- Poor reasoning and judgment skills
- Sleep and sucking problems as a baby
- Vision or hearing problems
- Problems with the heart, kidneys, or bones
- Shorter-than-average height
- Small head size
- Distinctive facial features, such as a smooth ridge between the nose and upper lip (this ridge is called the philtrum)

Common strengths of people with FASD include:

- Friendly
- Creative
- Loyal
- Musical
- Athletic
- Hard-working

WHAT CAN WE DO?

Parent Education and Support

- It is very important for parents to learn about FASD. Informed parents will be able to support their child to access services and in learning how to advocate for themselves as they mature.

Early Intervention Services and Therapies

- Speech/Language Therapy
- Occupational Therapy
- Physical Therapy

FASD Specific Interventions

- Good Buddies—a social skills training
- Families Moving Forward—parent support
- Math Interactive Learning Experience (MILE)
- Parents and Children Together (PACT)

*<https://www.cdc.gov/ncbddd/fasd/index.html>

Parent Behavior Management Training

- Parent Child Interaction Therapy (PCIT)
- Triple P Parenting (triplep-parenting.com)
- Parent to Parent (through CHADD.org)
- The Incredible Years (incredibleyears.com)

Protective Factors and Building Resilience

- Early Diagnosis
- Special Education and Social Services
- Nurturing Home Environment
- Absence of Violence in the Environment
- Hobbies and Activities which provide Avenues of Success

Medication Management

- Individuals with FASD often struggle with executive function skills and impulsivity. Medications used for ADHD can be helpful for these symptoms, as well as medication management of anxiety, depression, aggression, and other symptoms that can co-occur.

LEARNING ABOUT FASD

Studies have shown that early diagnosis, and telling the child about their diagnosis, correlate to better outcomes.

- Check out <https://fasd.me/> for help in talking about FASD with a child.

The more parents and caregivers understand FASD, the better equipped they will be to care for and guide a child or young person with FASD. Check out the following:

Books:

- *Trying Differently Rather Than Harder: Fetal Alcohol Spectrum Disorders* by Diane Malbin
- *Foetal Alcohol Spectrum Disorder: Parenting a child with an invisible disability* by Julia Brown and Dr Mary Mather
- *Guided Growth: Educational and Behavioral Interventions for Children and Teens with Fetal Alcohol Spectrum Disorders and Early Trauma* by Ira J. Chasnoff MD and Ronald J. Powell PhD
- *Understanding Fetal Alcohol Spectrum Disorders* by Maria Catterick and Liam Curran
- *FASD Sound Bites and Sanity Savers: A catalogue of collective wisdom and things that make you go 'hmmm'* by Jeff Noble
- *The Way I am is Different: A Children's Book about a boy with Fetal Alcohol Spectrum Disorder* by Helen Simpson and Brandon Orcutt

Websites:

- nationalfasd.org.uk/
- www.nofasd.org.au/
- www.cdc.gov/ncbddd/fasd/
- adai.uw.edu/fasdtookit/parents.htm
- fasdcenter.org
- rffada.org
- fasdsuccess.com
- fascets.org
- fasdunited.org/circle-of-hope/

Podcasts:

- The FASD Success Show
- The FASD Elephant
- FASD Family Life
- FASD Hope
- Spotlight on FASD
- It's a Brain Thing



YouTube:

- There are many short and long videos about FASD on YouTube. The Russel Family Fetal Alcohol Disorders Association has quite a few 10-15 minute videos on common behaviors and issues associated with FASD.

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A decorative border made of watercolor brushstrokes in shades of orange, green, and blue, framing the central text.

THANK YOU!

Questions?