


Fetal Alcohol Spectrum Disorder

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I have nothing to disclose

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Fetal Alcohol Syndrome

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Why is this important?

- Prenatal alcohol exposure and Fetal Alcohol Spectrum Disorders are considered the leading cause of preventable developmental disabilities in the world

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Objectives

- Review how alcohol impacts fetal development
- Understand the different labels that make up Fetal Alcohol Spectrum Disorder
- Discuss how to screen for in-utero alcohol exposure and when to consider FASD as a diagnosis
- Where to access diagnosis
- What support services exist for children and families with Fetal Alcohol Spectrum Disorders

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History

- First modern scientifically published articles on prenatal alcohol effects came from
 - Lemoine, et. al. published observations of 127 infants of alcoholic parents in 1968
 - Jones, et al in 1973 coined the term Fetal Alcohol Syndrome based on their research
- But the link between maternal alcoholism and abnormal child development had been reported for many years

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Report from the newly formed (at the time) National
Institute on Alcohol Abuse and Alcoholism

**“Recent research reports indicate that heavy use
of alcohol... during pregnancy may result in... The
Fetal Alcohol Syndrome.”**
**“Given the... evidence available... pregnant
women should be particularly conscious of the
extent of their drinking. While safe limits are not
known... risk is established... above 6 drinks per
day....”**


Recommended not more than 2 drinks per day.
June 1, 1977

**“The Surgeon General advises women who are
pregnant (or considering pregnancy) not to drink
alcoholic beverages and to be aware of the alcoholic
contents of food and drugs....” May 1981**

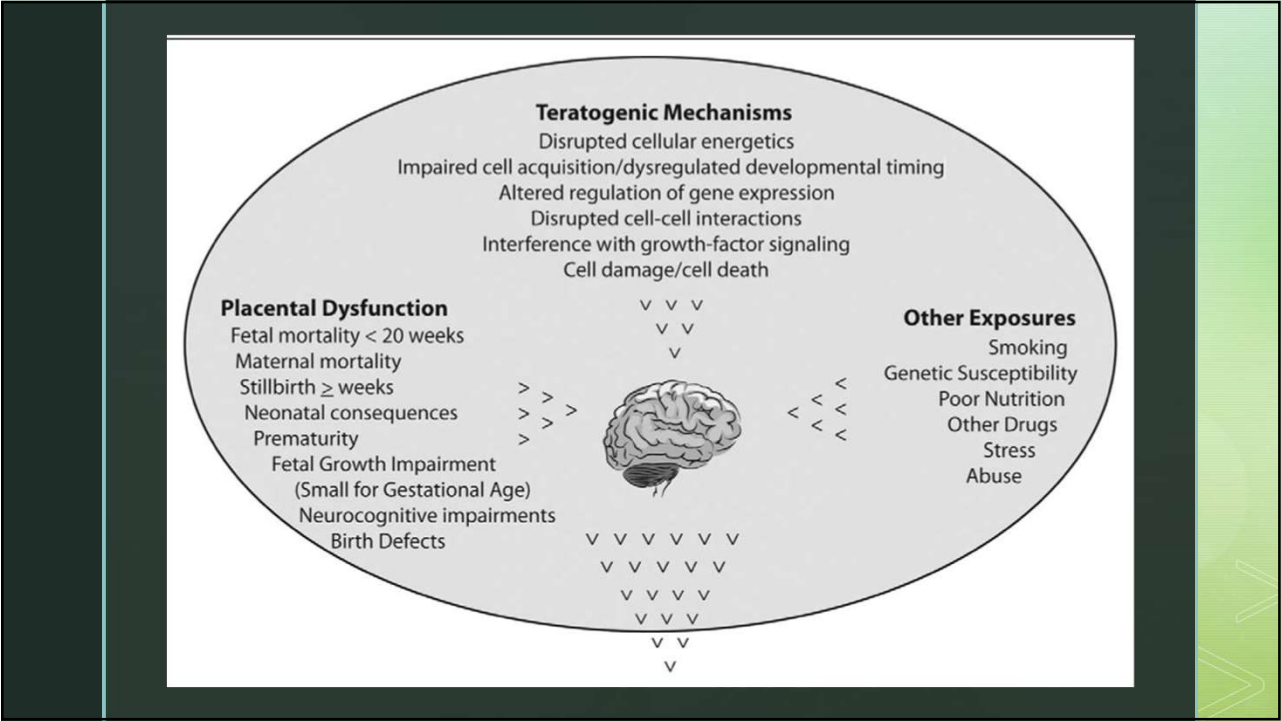
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**American Academy
of Pediatric Policy**

- No amount of alcohol intake can be considered safe during pregnancy
- There is no safe trimester to drink alcohol
- All forms of alcohol pose similar risk
- Binge drinking poses a dose-related risk to the fetus

A photograph of two glasses of beer on a wooden tray. The glass on the left contains a dark beer, and the glass on the right contains a light beer with a thick head of foam. The tray is resting on a wooden surface.

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Teratogenicity of Alcohol and the Vulnerability of the Fetal Brain

- Disrupts neuronal migration of cerebral cortex
- Changes the shape of corpus callosum
- Kills neurons in:
 - Hippocampus
 - Cerebellum

(a) Sagittal view of a fetal brain showing the corpus callosum (blue) and the cerebellum (yellow).

(b) Coronal view of a fetal brain showing the hippocampus (red) and the cerebellum (yellow).


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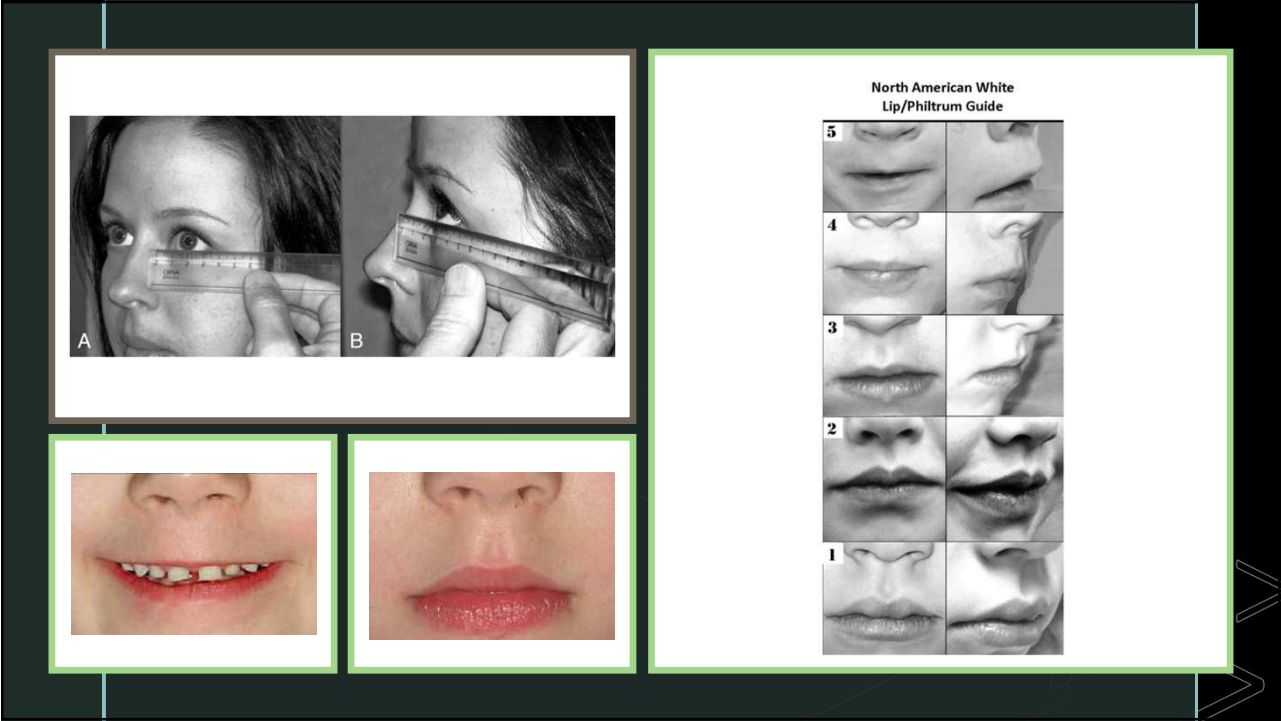
The Fetal Alcohol Syndrome

does not require documented alcohol exposure



- Characteristic pattern of minor facial anomalies (short palpebral fissure, thin vermilion border, smooth philtrum)
- Prenatal or postnatal growth deficiency (height and/or weight below 10%ile)
- Deficiency of brain growth, abnormal morphogenesis, or abnormal neurophysiology (microcephaly, structural brain abnormalities, recurrent nonfebrile seizures)
- Neurobehavioral Impairment

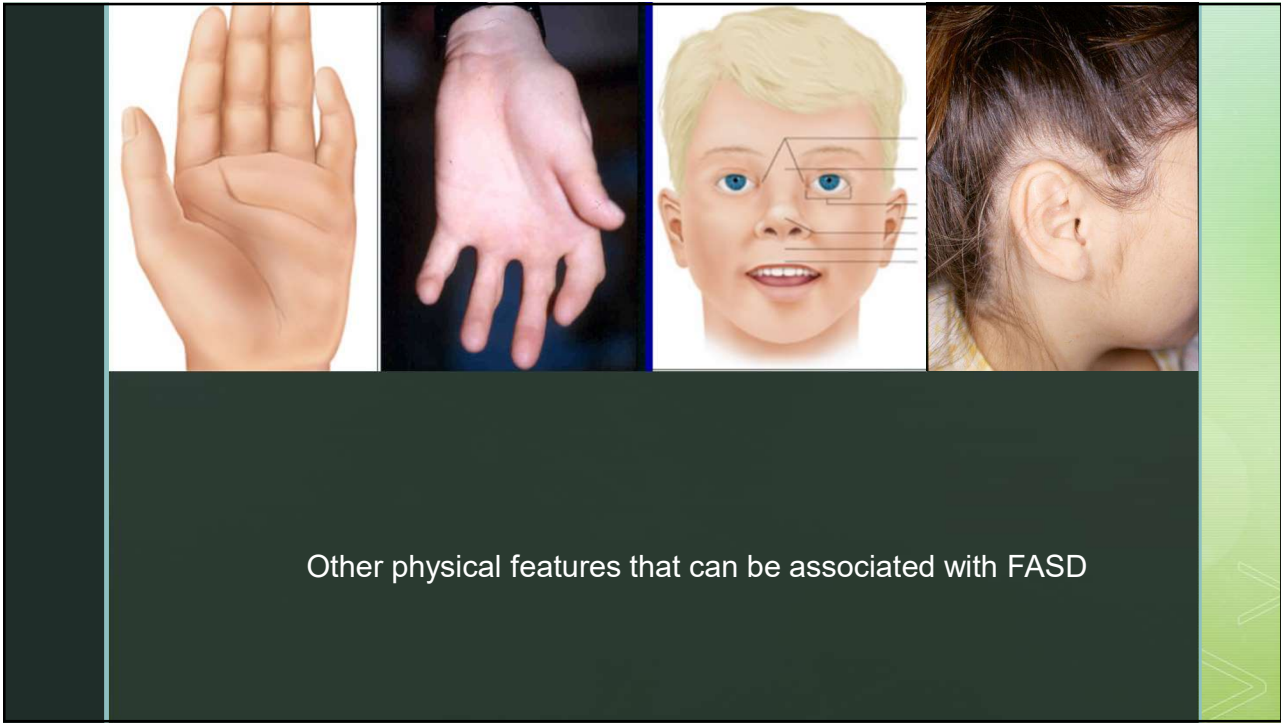
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The Fetal Alcohol Syndrome – Neurobehavioral Impairment

- Age > 3 years
 - With cognitive impairment (>1.5 SD below mean)
 - Global impairment in IQ (performance, verbal, spatial or GAC)
 - OR
 - Cognitive deficit in at least 1 neurobehavioral domain (executive functioning, specific learning impairment, visual spatial impairment, memory impairment)
 - With behavior impairment without cognitive impairment
 - Evidence of deficit in at least 1 domain in self-regulation (mood or behavioral regulation impairment, attention deficit or Impulse control)
- Age < 3 years
 - Evidence of developmental delay

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Partial Fetal Alcohol Syndrome

- If documented prenatal alcohol exposure:
 - Facial anomalies (short palpebral fissures, thin vermillion border, smooth philtrum)
 - Neurobehavioral impairment
- If no documented prenatal alcohol exposure:
 - In addition to above, also need documented growth deficiency or deficient brain growth

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What is considered documented alcohol exposure?

6 or more drinks per week for more than 2 weeks during pregnancy	3 or more drinks per occasion on more than 2 occasions during pregnancy
Documented alcohol-related social or legal problems in proximity to the pregnancy	Documentation of intoxication during pregnancy (blood, breath, urine testing)
Positive testing with established alcohol biomarker during pregnancy or at birth	Increased risk based on validated screening tool for drinking

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Alcohol-Related Birth Defects


documented alcohol exposure

- One or more specific major malformations that are demonstrated to be the result of prenatal alcohol exposure (in animal or human studies)
 - Cardiac
 - Skeletal
 - Renal
 - Eyes
 - Ears

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Alcohol-Related
Neurodevelopmental
Disorder

 Documented prenatal
alcohol exposure

 Neurobehavioral
impairment

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Impaired neurocognitive functioning

- Global intellectual performance less than 1.5 SD below mean (i.e., IQ of 78 or below, or a standard score of 78 or below on a comprehensive developmental assessment)
- Executive functioning (e.g., poor planning and organization; inflexibility; difficulty with behavioral inhibition)
- Learning (e.g., lower academic achievement than expected for intellectual level; specific learning disability)
- Memory (e.g., problems remembering information learned recently; repeatedly making the same mistakes; difficulty remembering lengthy verbal instructions)
- Visual-spatial reasoning (e.g., disorganized or poorly planned drawings or constructions; problems differentiating left from right)

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Impaired self regulation

- Mood or behavioral regulation (e.g., mood lability; negative affect or irritability; frequent behavioral outbursts)
- Attention (e.g., difficulty shifting attention; difficulty sustaining mental effort)
- Impulse control (e.g., difficulty waiting turn; difficulty complying with rules)

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Neurobehavior

- Teratogenic effects on neurobehavior through impact on the central nervous system likely the most important
- In the absence of physical features, they may be overlooked or attributed to other causes
- Hard to identify the non-dysmorphic, alcohol-affected children
- But how to diagnose in clinical settings when knowledge about alcohol exposure may be lacking and there are confounding factors

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Understanding ARND

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Characterizing Alcohol-Related Neurodevelopmental Disorder (ARND): Prenatal Alcohol Exposure and the Spectrum of Outcomes

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Characterizing ARND

- 3397 children recruited from 4 sites across the country (Midwest, Southeast, Southwest and Smokey Mountains)
- 1842 included in analysis because there was information about alcohol use in pregnancy
- 635 (34%) had any alcohol use reported, 198 (10.7%) had levels consistent with risky alcohol use
- Of those with risky alcohol use, 140 included (excluded were those who met criteria for another FASD)
- Of those, 49 did not have FASD, 47 had ARND/B, 44 had ARND/C

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Neurodevelopmental Disorder due to Prenatal Alcohol Exposure (ND-PAE)

- New diagnosis described in DSM-V (2013)
- Proposed a set of criteria for further study
- Must meet 4 criteria
 - Cognitive deficit
 - Impaired self-regulation
 - Impairment in 2 areas of adaptive functioning
 - More than a minimal exposure to alcohol during gestation
- Can be diagnosed with FAS/pFAS (compared with ARND which cannot)

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A photograph of a young girl with light-colored hair and blue eyes. She has several dark, circular spots on her face, resembling mud or paint. She is wearing a pink and white jacket with dark paint splatters on it. She is standing on a dark, textured surface, possibly dirt or gravel.

Case Study - Alina

- 3 year old girl seen in KidSTART Clinic at Rady Children’s Hospital
- Behavior: Sudden outbursts, will throw herself down, head banging, screaming Triggers include being told “no”, transitions, things don’t go as planned. Meltdowns usually last 15-20 min but caregiver will hold her to help her calm down; otherwise may last longer
- First problematic about a year ago (2 years of age)

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Break Out #1

For biological parent, what are some ways to ask about prenatal alcohol exposure?



If foster parent who doesn't know about history, how can you find out about prenatal exposure?

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Case Study, continued

- 38 week gestation pregnancy. Birth weight 3kg (average)
- Pregnancy complicated by scant prenatal care, exposure to alcohol, tobacco, methamphetamine
- No delivery complications noted
- Released on DOL 4 to non-relative foster care
- 7 weeks of age moved to care of a relative who is an adoptive placement
- 4 months of age had a developmental evaluation with normal cognitive, communication and motor development

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Case Study, continued

- Reportedly relatively normal early development. Walking at 13 months, some question of speech difficulties but was putting words together by age 2
- Caregiver started to be concerned about behaviors at age 2
- Was quick to anger, aggressive toward caregiver in outbursts (hitting) and meltdowns would last 30+ minutes
- Living with relative caregiver but on and off visits with biological parents

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Break out #2

What resources might we
consider for this family?

Where should we refer for
further diagnosis?

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Case Study

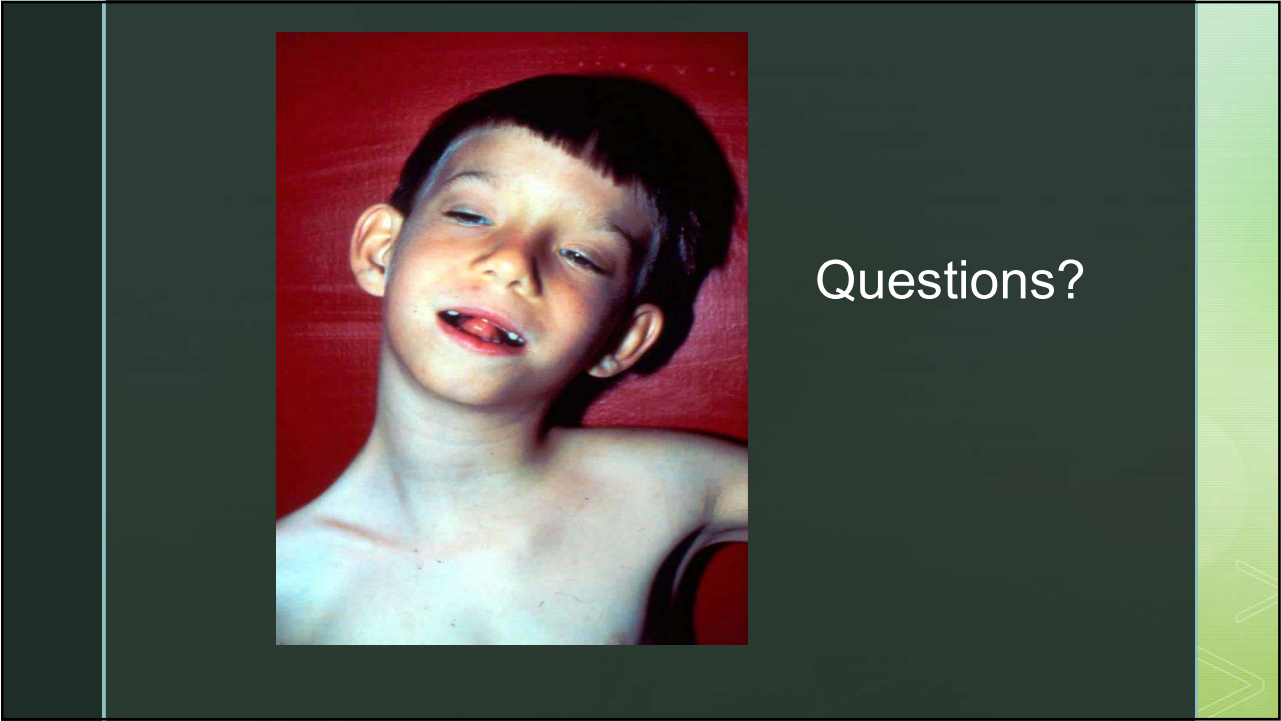
- Started with mental health therapy through Healthy Development Services
- Accessed Early Start services
- Seen by dysmorphology in Rady's/UCSD Fetal Alcohol Disorders Clinic
 - No physical features of fetal alcohol syndrome (normal growth, normal palpebral fissure size, normal lip and philtrum, etc)
- Referred to KidSTART

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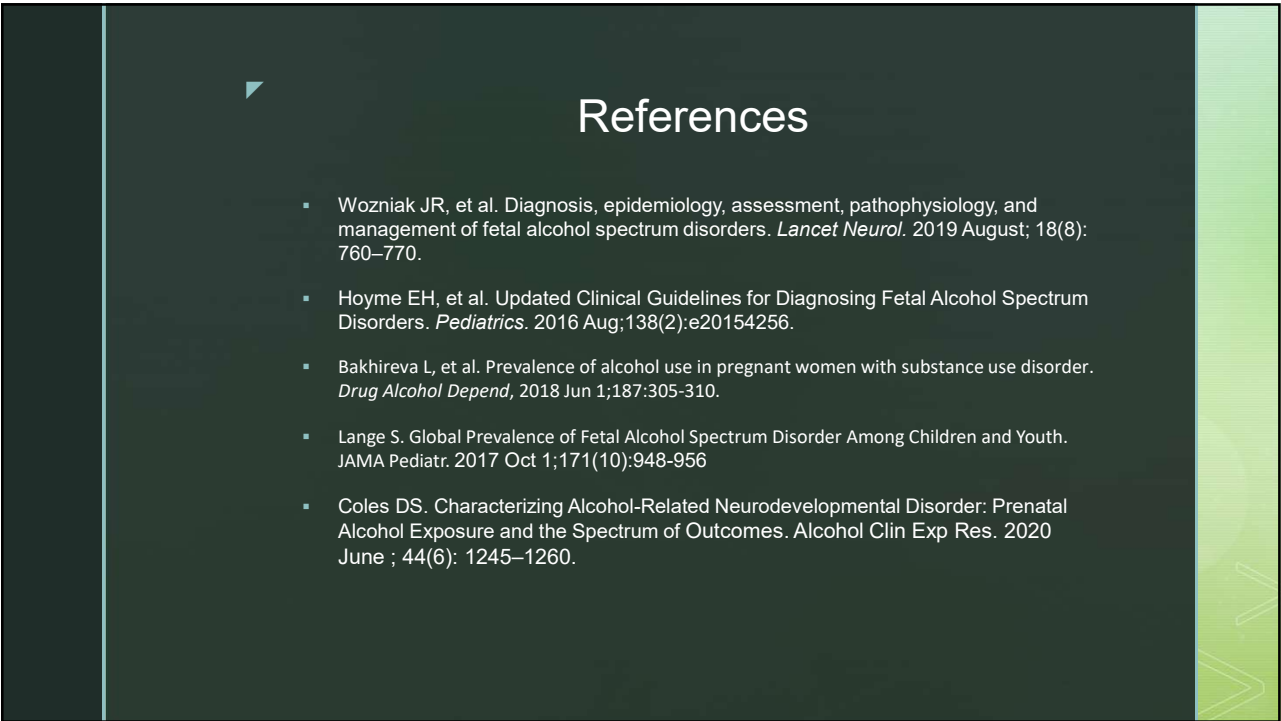
Case Study

- Picture of emerging ADHD symptoms (impulsivity, hyperactivity, poor attention)
- Significant problems with self regulation: hitting teachers, tantrums lasting 30-60 minutes
- Finishing up KidSTART Clinic mental health services, CASS
- Starting KidSTART Center services (OT, behavior)
- Significant sleep disruption (melatonin)
- Working on accessing behavior therapy such as ABA
- Discussing medication options

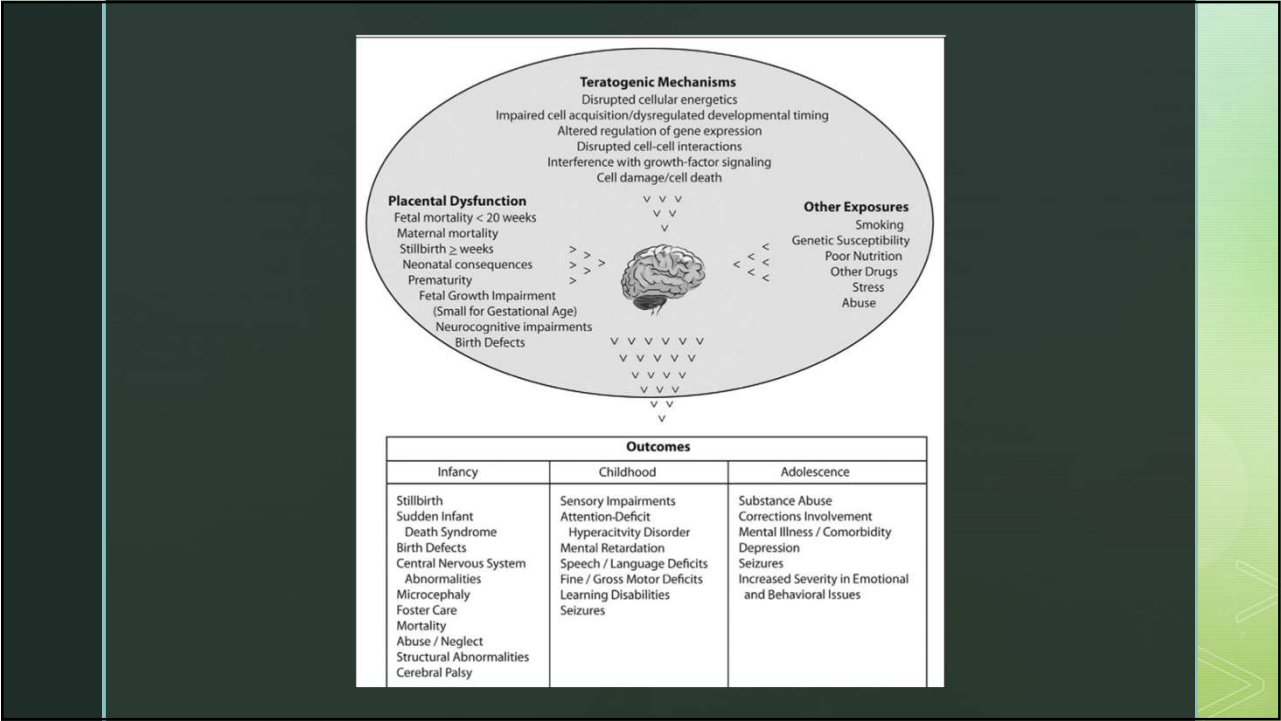
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