Fetal Alcohol Spectrum Disorders

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Disclosures

• Dr. Hill has a contract with IHS for neuropsychological assessment of children through her private practice.

• Dr. Sherwood has no financial relationships or conflicts of interest related to this presentation. She is not involved in any clinical drug trials.
Overview of FASD Series

• **Session 1:** Overview and Introduction

• **Session 2:** Screening and Diagnosis

• **Session 3:** Assessment of FASD

• **Session 4:** Therapeutic Interventions

• **Session 5:** FASD Over the Lifespan
Overview of Session 1

Goals/Objectives

• Define Fetal Alcohol Spectrum Disorder
• Describe Current Epidemiological Facts
• Identify Current Classifications
Fetal Alcohol Spectrum Disorders (FASD)

FASDs are a group of conditions that can occur in a person whose mother drank alcohol during pregnancy. These conditions can affect each person in different ways, and can range from mild to severe. They can include physical problems and problems with behavior and learning. (CDC)
History of FASD

- It has been known for centuries that alcohol causes problems for the fetus.

- Late 1800s mothers, who were inmates in the UK, were observed drinking and had poor pregnancy outcomes.

- Lemoine (France -1968): described 127 babies born to drinking mothers.

- Jones & Smith (1973): coined the term FAS.
Fetal Alcohol Spectrum Disorders

- Institute of Medicine – 4 categories
  - FAS – Fetal Alcohol Syndrome
  - pFAS – Partial Fetal Alcohol Syndrome
  - ARBD – Alcohol Related Birth Defects
  - ARND – Alcohol Related Neuro-developmental Disorder
Diagnostic Criteria for FAS

- Confirmed maternal alcohol consumption
  PLUS
- A. Evidence of a characteristic pattern of facial anomalies
- B. Evidence of growth retardation: low birth weight, decelerating weight over time not due to nutrition, disproportional low weight to height (<10\textsuperscript{th} percentile)
- C. Evidence of CNS neurodevelopmental abnormalities
- If A, B, and C present may diagnose without confirmed maternal alcohol consumption
FAS – only the tip of the iceberg

- PFAS – Partial Fetal Alcohol Syndrome
- Alcohol Related Birth Defects (ARBD)
- Alcohol Related Neurodevelopmental Disorders (ARND)
Diagnostic Criteria for pFAS

• Confirmed maternal alcohol consumption PLUS
• Evidence of some characteristic facial abnormalities AND
• Either:
  1) Evidence of growth retardation OR
  2) Evidence of CNS abnormalities OR
  3) Evidence of behavioral/cognitive abnormalities
Diagnostic Criteria for ARBD

• Confirmed maternal alcohol consumption AND
• Evidence of characteristic facial anomalies including at least two of the following:
  1) short palpebral fissures
  2) thin vermilion border on upper lip
  3) Smooth philtrum PLUS
• At least one congenital anomaly
Diagnostic Criteria for ARND

• Confirmed maternal alcohol consumption

PLUS

• Evidence of CNS neurodevelopmental abnormalities
### Fetal Development Chart

<table>
<thead>
<tr>
<th>Period of the Ovum</th>
<th>Period of the Embryo (in weeks)</th>
<th>Period of the Fetus (in weeks)</th>
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<tbody>
<tr>
<td>1-2</td>
<td>3</td>
<td>12</td>
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<tr>
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<td>4</td>
<td>16</td>
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<td>Leg</td>
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<td>CNS</td>
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<td>Teeth</td>
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<td>Palate</td>
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<tr>
<td>External Genitalia</td>
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</tbody>
</table>

Vulnerability of the fetus to defects during different periods of development. The dark blue portion of the bars represents the most sensitive periods of development, during which teratogenic effects on the sites listed would result in major structural abnormalities in the child. The light blue portion of the bars represents periods of development during which physiological defects and minor structural abnormalities would occur.

**Source:** Adapted from Moore 1993.

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**National Organization on Fetal Alcohol Syndrome**

Helping children & families by advocating for the prevention and intervention of Fetal Alcohol Spectrum Disorders, the leading known cause of mental retardation & birth defects in the United States.
Epidemiology

Risk for Fetal Alcohol Spectrum Disorders

• Rates of alcohol use during childbearing years

Current Rates of FAS/FASD

• Different methods for surveillance of FAS/FASD
  1) CDC – population based surveillance in 3 states (AZ, CO, NY)
  2) Worldwide – Active Case Ascertainment
Alcohol Use Among Women Aged 18–44, 1991–2005*

*Behavioral Risk Factor Surveillance System (BRFSS) surveys, United States.
†Binge drinking is defined as having five or more drinks on at least one occasion in the past 30 days.
2011-2013 Rates of Alcohol Use among Women of Childbearing Age

• CDC 2015 Morbidity and Mortality Report

• Non-pregnant women
  • Any Alcohol Use = 54%
  • Binge Drinking (4 or more) = 18%

• Pregnant women
  • Any Alcohol Use = 10% (1 in 10 consuming etoh)
  • Binge drinking = 3% (1 in 33 binge drinking)

• Among Binge drinkers: Pregnant women have higher frequency of binge drinking than non-pregnant women

• Prevalence of alcohol use in pregnant women is higher for women with college degrees compared to less education
FASD Epidemiology

- It is not known what percentage of babies will be born with FASD if the mother drinks alcohol during pregnancy.

- FAS is likely underdiagnosed
  - Dysmorphic features can be less noticeable in newborns
  - CNS deficits may not be recognized until preschool age
  - Less consideration for prenatal alcohol use to be underlying factor in behavioral and learning disorders

- The CDC: up to 1.5 cases of FAS per 1000 births.
- Institute of Medicine: up to 3 cases of FAS per 1000 births.
- May et al. (2009): up to 9 cases of FAS per 1000 births.
Surveillance Case Definitions

CDC Surveillance on FAS – 3 major defining characteristics
- 1) Evidence of facial anomalies
- 2) Evidence of growth retardation
- 3) Evidence of CNS abnormalities

Worldwide Surveillance focus on FAS + PFAS (2 of 3 major defining characteristics)

May et al (2009)- Surveillance includes continuum of FASD
FASD Surveillance in US

- CDC – Surveillance for FAS in 3 states (AZ, CO, NY) among 7-9 year olds
  - Multiple Source methodology relying on passive reporting and active review
  - Rates ranged from 0.3 to 0.8 FAS cases per 1000 births
  - Highest among Native Americans: 2 FAS cases per 1000 births
  - Lowest among Hispanic: 0.2 cases per 1000 births
  - No differences in prevalence by age or sex
FASD Surveillance in US

  - Active Case Ascertainment – Tier I, II, III
  - Consenting families – Tier I
  - Small Stature Children – Tier II
  - Dysmorphology and/or Behavior – Tier III
  - Interview Mothers, then examiners review all cases for final diagnosis
  - Estimated Prevalence, using 3 methods
    - FAS: 6-9 per 1000
    - FAS + pFAS combined: 17-26 per 1000
    - Total FASD: 24-48 per 1000
FAS Can Happen to Any Child

Fetal Alcohol Syndrome in different races