The Impact of Prenatal Substance Use on Child Development

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Presentation Objectives

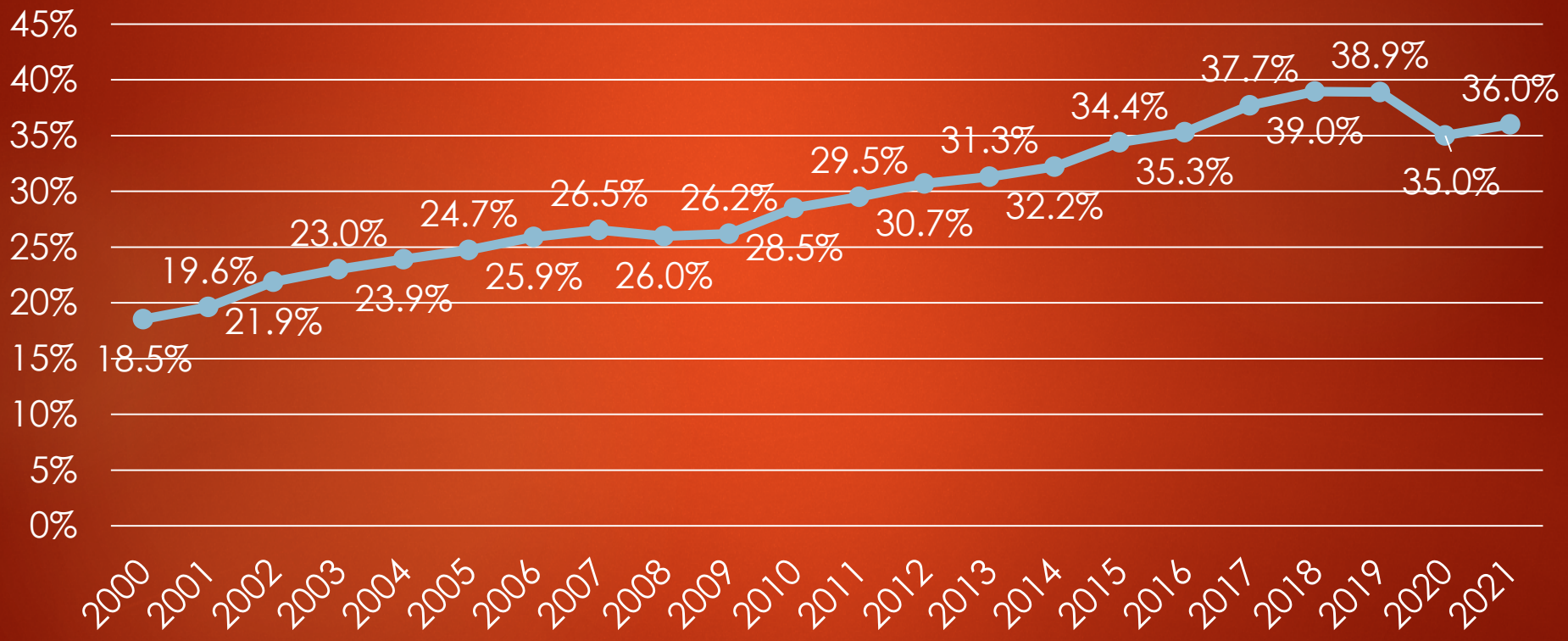
Participants will…

- Identify primary characteristics of prenatal and postnatal substance exposure to alcohol and other drugs
- Identify long-term effects of this exposure on the developmental spectrum for children
- Learn how prenatal substance abuse can impact child behavior and family relations
- Learn about evidence-based assessment and treatment strategies for children exposed to prenatal substance abuse

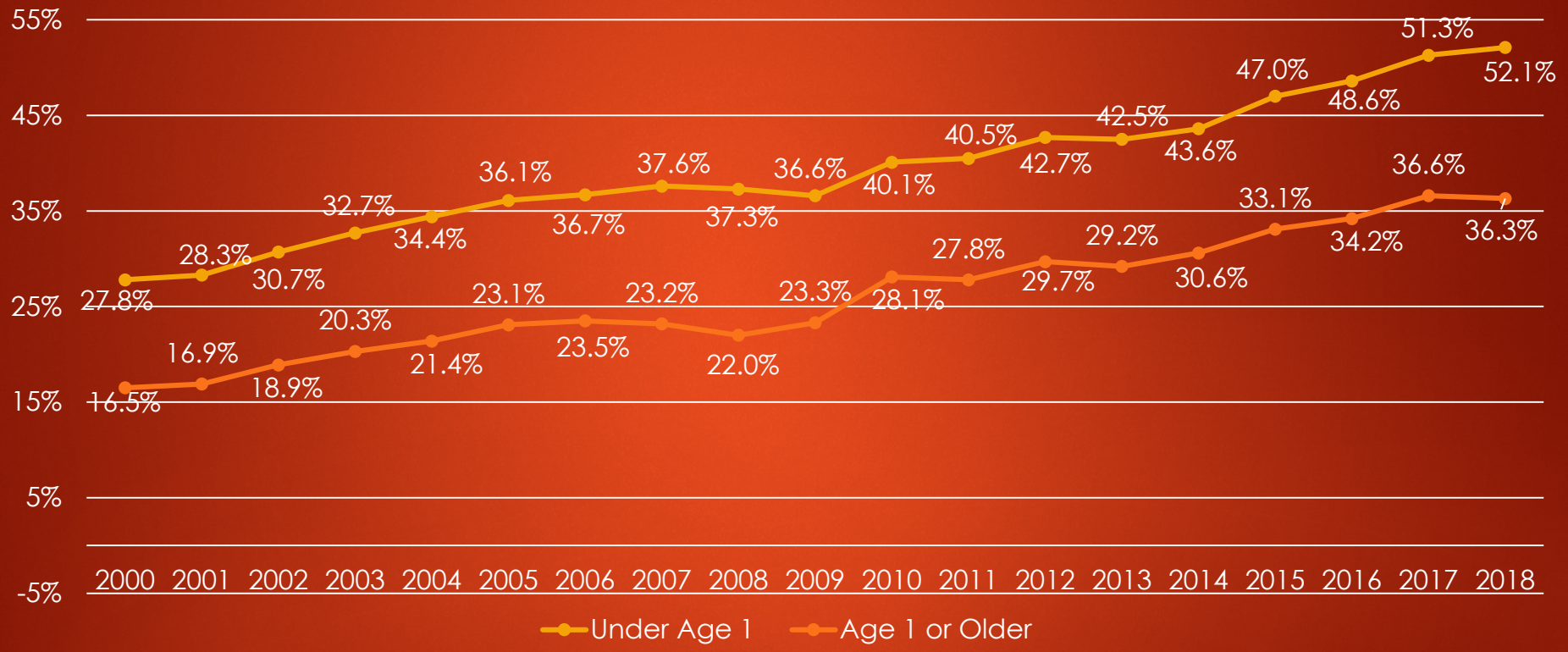
Why this work is urgent??

EMERGING DATA REGARDING INFANTS WITH PRENATAL SUBSTANCE EXPOSURE AND THEIR FAMILIES

Prevalence of Parental Alcohol or Drug Abuse as an Identified Condition of Removal in the United States, 2000 to 2021



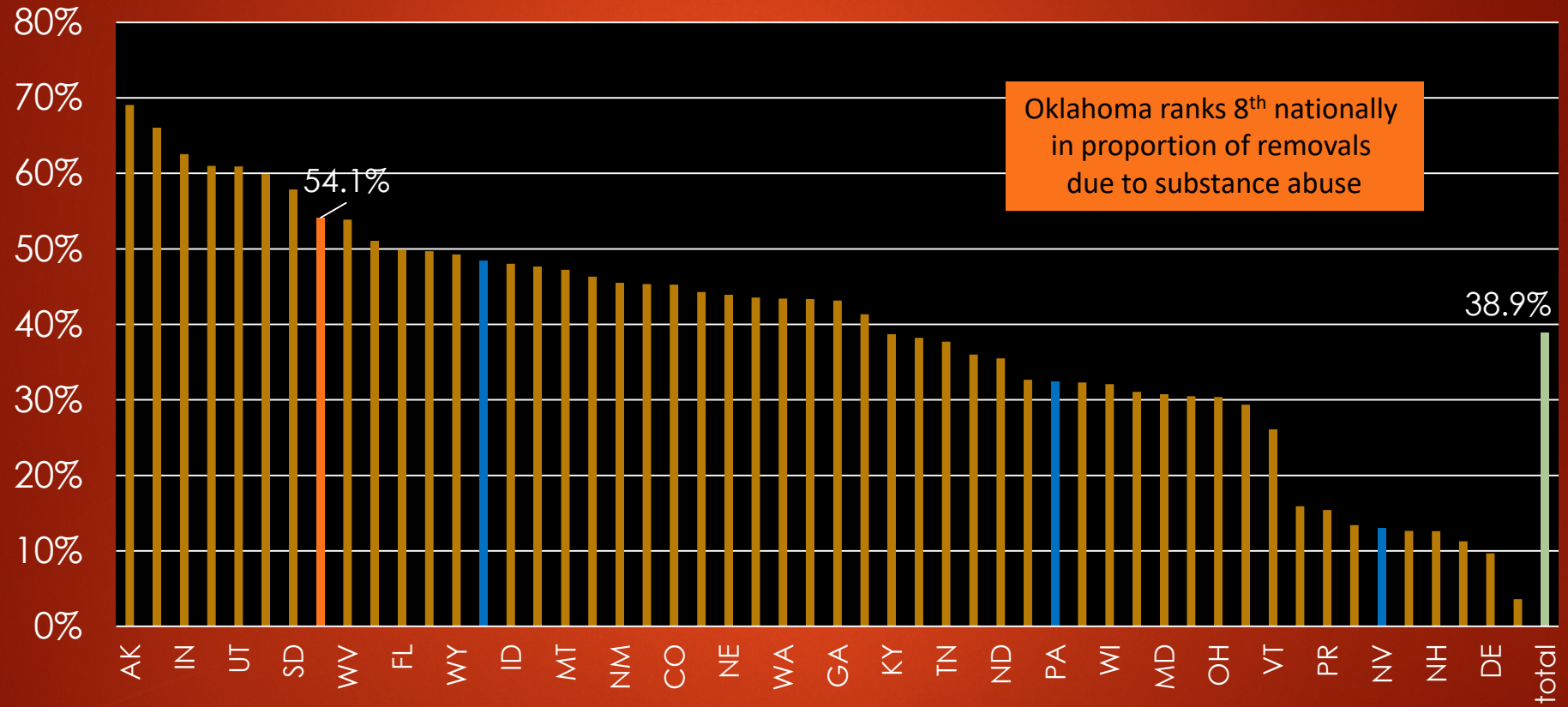
Incidence of Parental Alcohol or Drug Abuse as an Identified Condition of Removal in the United States By Age, 2000 to 2018



*Note: Estimates based on **children who entered out of home care** during Fiscal Year*

Source: AFCARS Data, 2000-2018

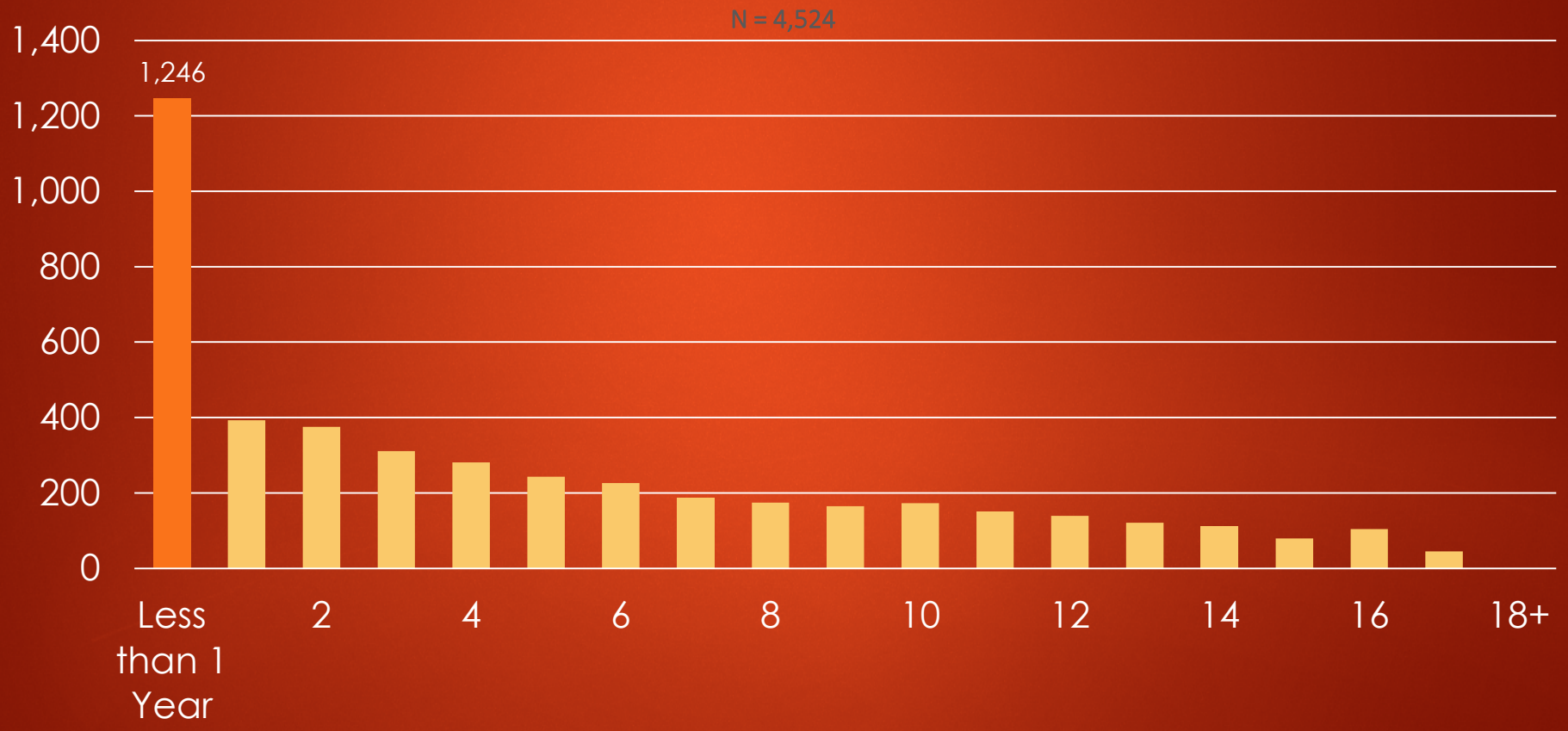
Prevalence of Parental Alcohol or Drug Abuse as an Identified Condition of Removal in the United States, 2019



*Note: Estimates based on **all children in out of home care at some point** during Fiscal Year*

Source: AFCARS Data, 2019 v1

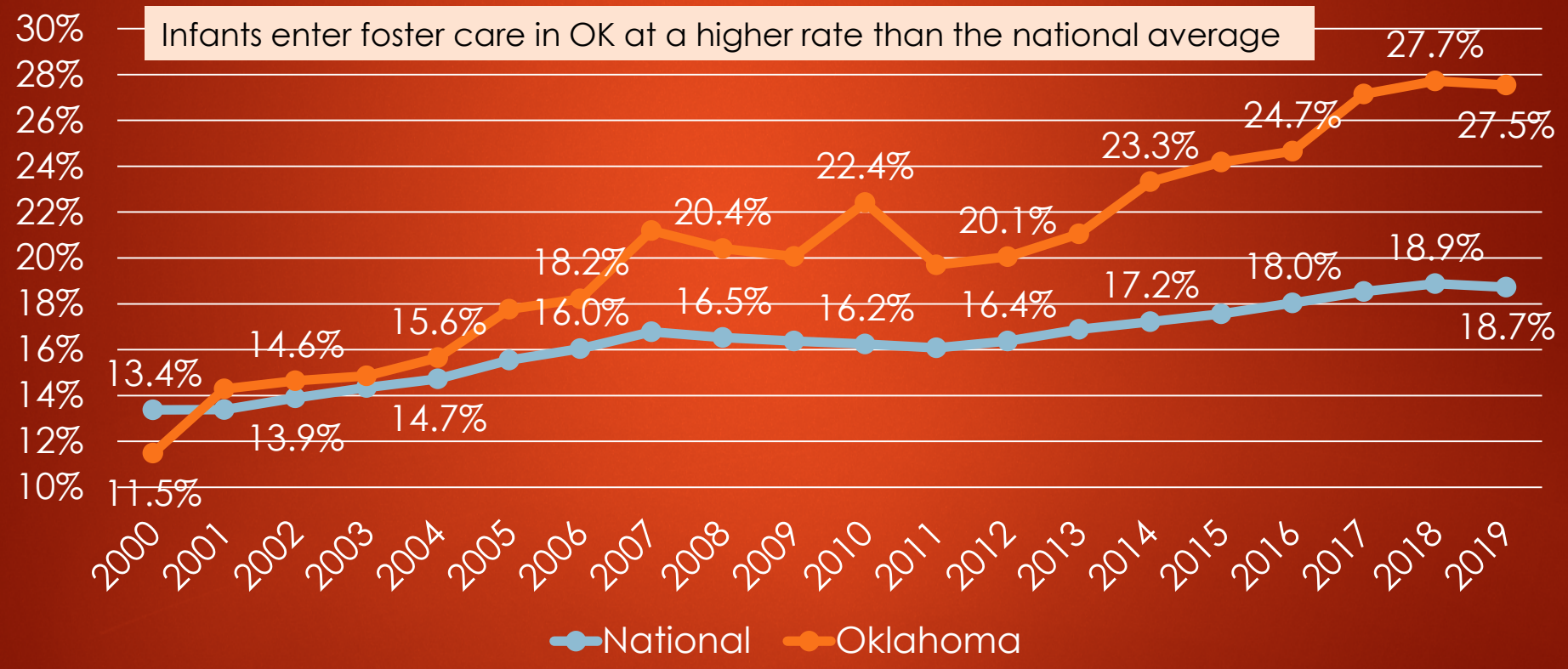
Number of Children who Entered Out of Home Care, by Age at Removal in Oklahoma, 2019



*Note: Estimates based on **children who entered out of home care** during Fiscal Year*

Source: AFCARS Data, 2019 v1

Percent of Children Under Age 1 who Entered Out of Home Care in the United States and Oklahoma, 2000 to 2019



*Note: Estimates based on **children who entered out of home care** during Fiscal Year*

Source: AFCARS Data, 2000-2019

Prenatal Substance Exposure

Neonatal Abstinence Syndrome (NAS) Neonatal Opioid Withdrawal Syndrome (NOWS)&

Fetal Alcohol Syndrome (FAS)

Neonatal Abstinence Syndrome (NAS)

- Opioids used during pregnancy can cause withdrawal symptoms in the infant

- NAS is a term for a group of problems a baby experiences when withdrawing from being exposed to narcotics during pregnancy.

Oklahoma babies

- In Oklahoma, an infant is born with NAS/NOWS every 25 minutes.
- The number of pregnant women with Substance Use Disorder (SUD) at delivery more than quadrupled between 2000-2014, increasing from 1.5 to 6.5 cases per 1000 hospital deliveries.
- In 2016, the overall incidence rate of NAS/NOWS was 6.7 per 1000 in hospital births and the total overall hospitalization costs were $527.7 million.

Symptoms will vary in severity depending on drug, dosage, and age of the baby at delivery.

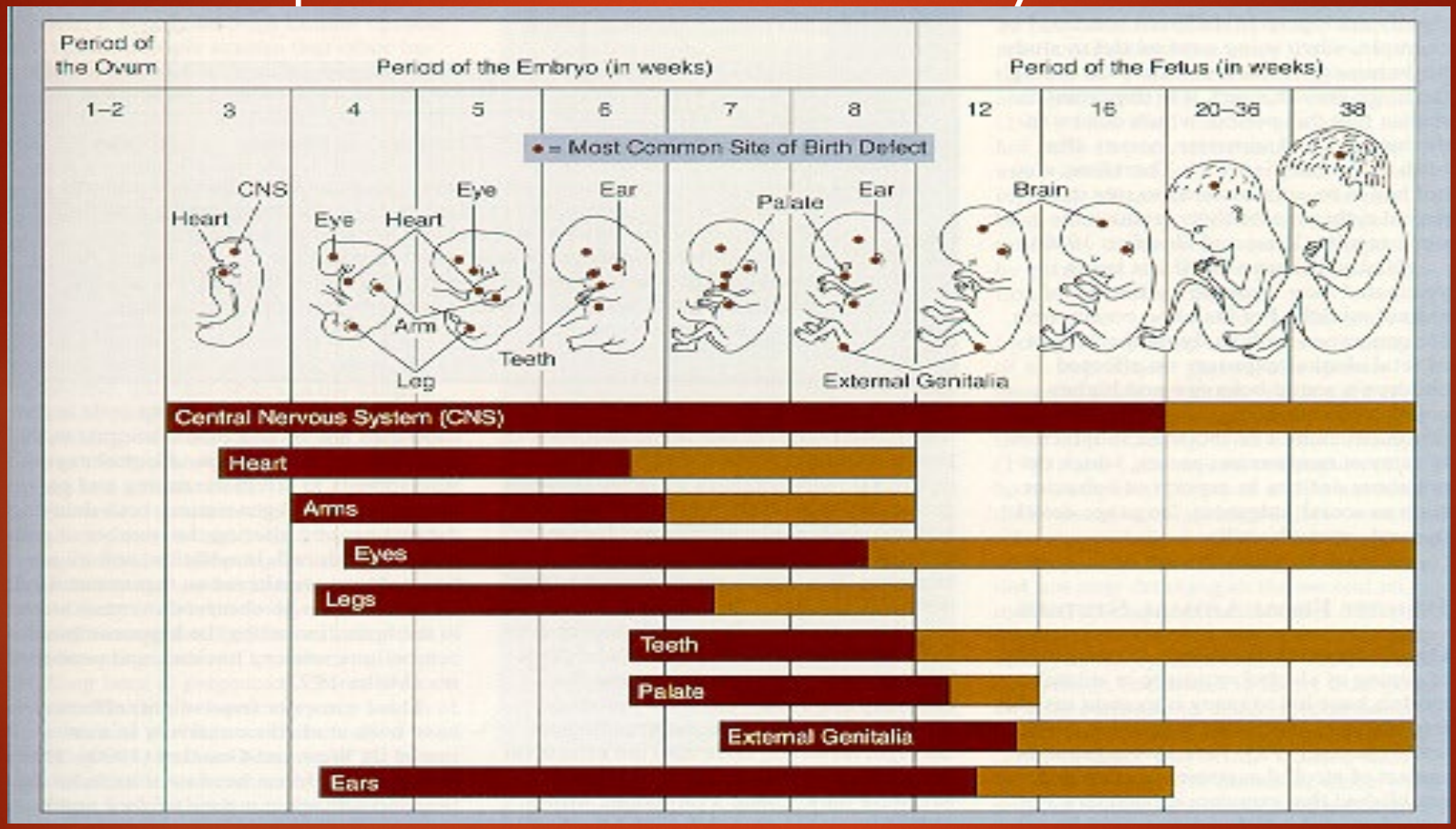
- Seizures
- Yawning, stuffy nose, and sneezing
- Poor feeding and sucking
- Vomiting
- Diarrhea
- Dehydration
- Excessive/High-pitched crying
- Trembling
- Difficulty sleeping
- Tight muscle tone
- Hyperactive reflexes
- Sweating
- Fever or unstable temperature

Eat, Sleep, Console

- The baby might require an extended hospital stay.
- Comfort with dim lights, a quiet room, minimal stimulation, and other techniques such as swaddling and skin-to-skin that provide a soothing environment.
- Breastfeeding can be a safe option with some medications.
- In some cases, medication for child may be warranted.

What substance can cause the most harm to the growing fetus?

Impact of alcohol on development of the embryo



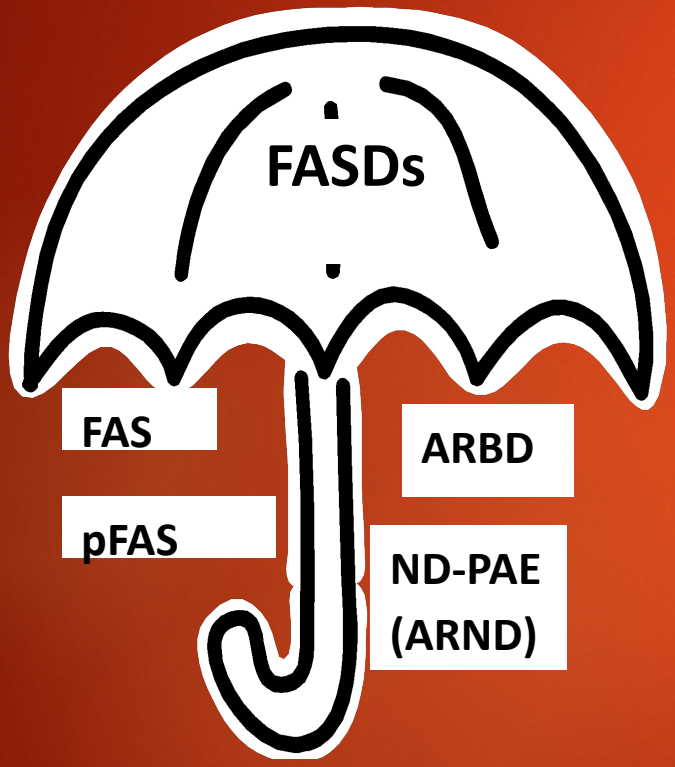
- The amount and timing of maternal alcohol use determine the type and extent of resulting birth defects
- Evidence for a dose-response association

What do we know about alcohol effects on fetal development?

"Prenatal alcohol exposure is a leading preventable cause of developmental disabilities worldwide," says NIAAA Director Dr. George F. Koob. "Estimating the prevalence of FASD in the United States has been complex due to the challenges in identifying prenatally exposed children."

(AAP, 2014)

Fetal Alcohol Spectrum Disorders FASDs



- **Fetal Alcohol Syndrome (FAS)**
- **Partial fetal alcohol syndrome (pFAS)**
- **Alcohol-related birth defects (ARBD)**
- ~~**Alcohol-related neurodevelopmental disorders (ARND)**~~
- **Neurobehavioral disorder associated with prenatal alcohol exposure (ND-PAE)**:
  - Reflects impairment in three domains:
    - 1) neurocognition,
    - 2) self-regulation, and
    - 3) adaptive functioning
  - Diagnosing requires "*more than minimal*" alcohol exposure (minimal=1 to 13 drinks per month and no more than 2 drinks per occasion)

(AAP, 2014)

How Fetal Alcohol Syndrome is diagnosed?

Three areas

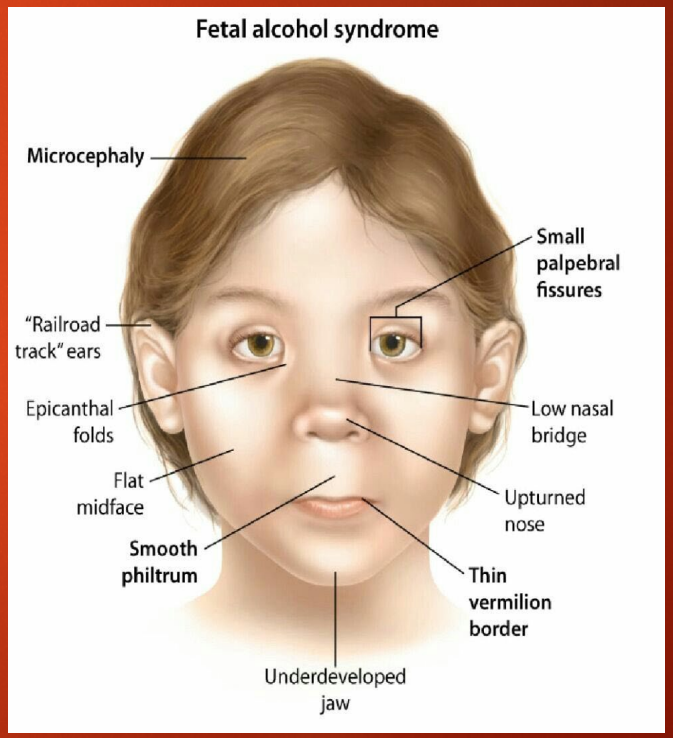
- Pre- and/or postnatal growth deficiency
- Specific pattern of facial features
- Evidence of central nervous system damage

Fetal Alcohol Exposure – maternal consumption during pregnancy

- Confirmed alcohol exposure
- Unknown alcohol exposure

Fetal Alcohol Syndrome

- FASD is estimated in 1.50% - 5.00% per 1,000 live births (CDC, 1993; 1995; 1997; 2002; 2010)
- FAS is estimated between 2,000 and 8,000 babies per year (May & Gossage, 2009)
  - *FAS can only be diagnosed by a physician*



FASDs prevalence

- 2 - 5% in school children in the U.S. and some Western European countries (May et al., 2009)
- Higher prevalence among American Indians and Alaska natives, children in foster care, and in adopted children
- The FAS annual cost in the U.S. is estimated $4 billion
- The lifetime cost for each child with FAS > $2 million (SAMSA, 2003)

When we get upset at someone with Fetal Alcohol (because we do) focus your anger on the brain damage, not the person affected by it. They didn't choose this brain, they were born with it.

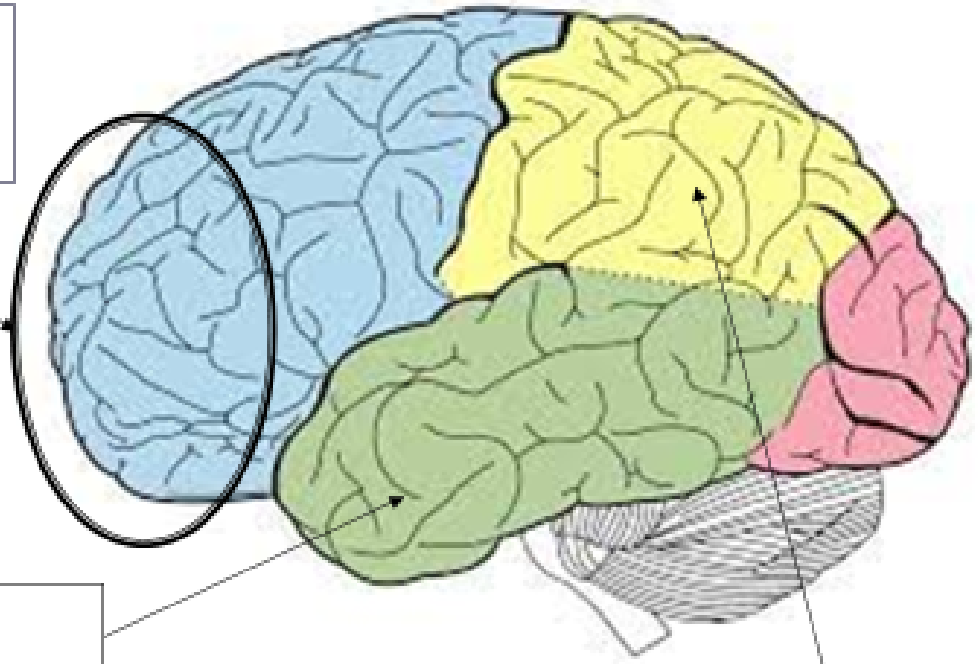
Jeff Noble *– Soundbytes and Sanity Savers*

Neurological Outcomes

- Overall cortical dysfunction
- Cerebellar Dysfunction
- Immaturity of the limbic system
- Temporal lobe dysfunction
- Parietal lobe dysfunction
- Poor development and connections to the pre-frontal cortex
- Demyelination of sensory pathway
- Underdeveloped dorsal motor cortex
- Involute corpus callosum

Other Areas Affected (cont'd)

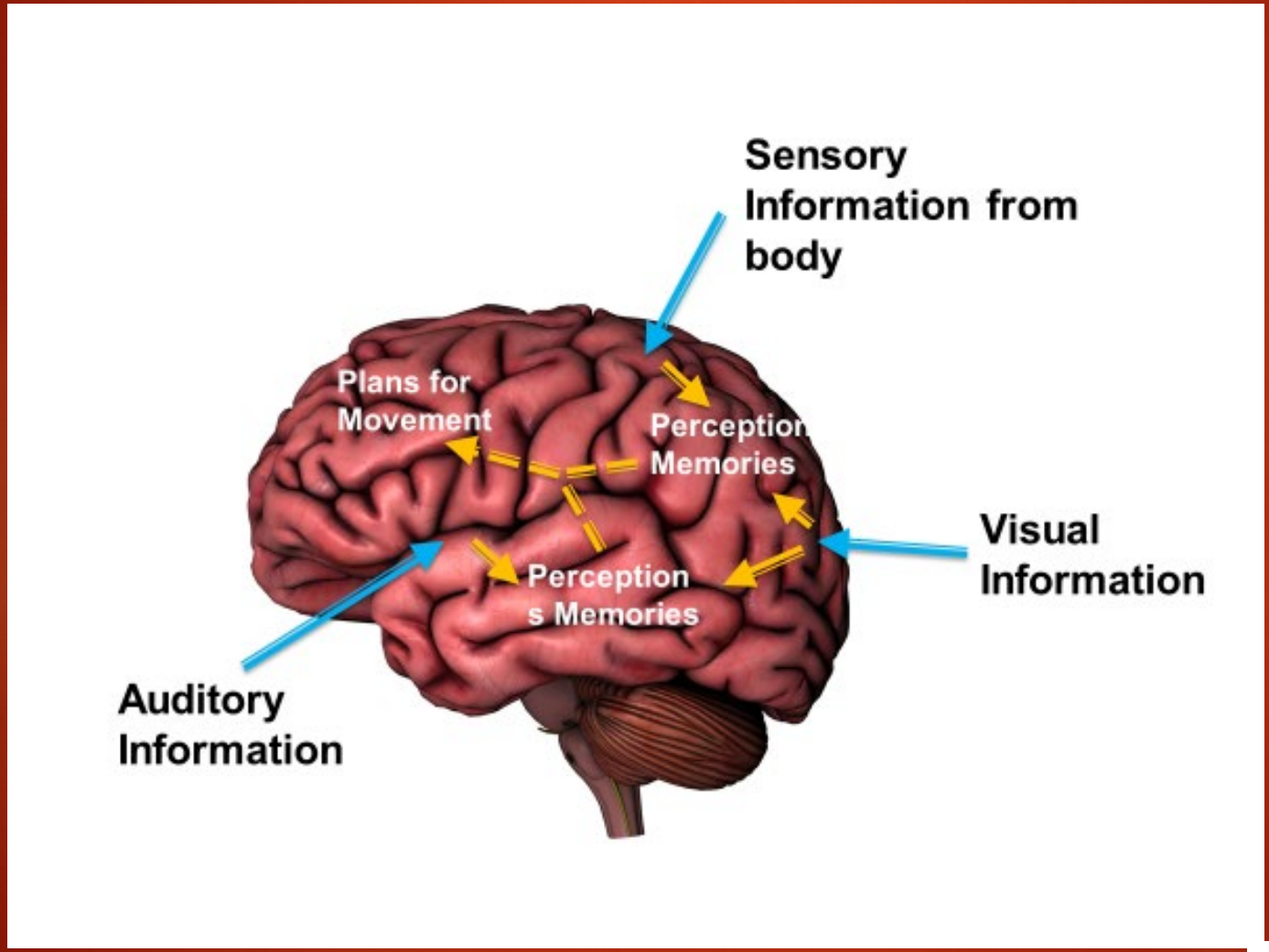
Prefrontal Cortex:
- Executive Functioning
- Attention Regulation



Temporal Lobe:
- Sleep Regulation
- Sensory Processing
- Auditory Processing
- Language Processing
- Working Memory
- Social/pragmatic language

Parietal Lobe:
- Long Term Memory
- Gestural Communication
- Visual-Spatial
- Social Communication

A Child with FASD Needs to Cross the Street



Behavioral Concerns Caused by Substance Exposure

- Newborns:
  - Easily startled
  - Difficult to comfort
- Early Childhood:
  - Poor habituation
  - Poor visual focus
  - Mild developmental delays
  - Distractibility and hyperactivity
  - Difficulty adapting to change
  - Difficulty following directions

Cont.

- Middle Childhood
  - Difficulty predicting and/or understanding consequences
  - Concrete thinking
  - Poor comprehension of social rules and/or expectations
  - Appearance of capability without actual ability to perform
  - Potential emerging discrepancy between comprehension skills and expressive language
  - Hyperactivity, impulsivity
  - Memory deficits

- Adolescence
  - Poor adaptive functioning
  - Lying and stealing
  - Faulty logic
  - Low self-image and motivation
  - Academic achievement lower than expected
  - Inappropriate sexual behavior
  - Lack of time awareness accentuated
  - Relationship difficulties
  - Unreliable with money
  - Mental health problems (e.g., depression, anxiety, etc.)

Behavioral Risks Attributable to Prenatal Drug Exposure

	Cocaine	Opiates	Alcohol	Marijuana	Meth
Dysregulated	X		X	X	X
Poor Interaction	X		X		
Low Frustration Tolerance	X		X	X	X
Excessive crying	X		X	X	X
Problems with sleeping	X		X	X	X
Disruptive behaviors	X	X	X		X

Health Risks Attributable to Prenatal Drug Exposure

	Cocaine	Opiates	Alcohol	Marijuana	Meth
Prematurity	X	X	X	X	X
Decreased Birth Rate	X	X	X	X	X
SIDS	X	X		X	X
Malformation of internal organs			X		
Growth Retardation	X	X	X		X

Developmental Delay Risks Attributable to Prenatal Drug Exposure

	Cocaine	Opiates	Alcohol	Marijuana	Meth
Cognitive		X	X	X	
Language			X		
Motor (sensory & visual)	X		X		X
Poor attention/ memory	X	X	X	X	X
Executive Functioning	X		X	X	

Impact of Prenatal Exposure

- Dependent on frequency, timing, and type of substances used by mother
- Can affect existing and developing structures
- Different systems are impacted at different stages of development.
- Damage due to alcohol exposure is SEMI-permanent.
- Discriminating effects of specific illicit substances is difficult given poly-substance use among users
  - Low socioeconomic status could also have impact
- Wells (2009); Smith et al., (2007); AIA (2012)

Substance Abuse and Child Maltreatment

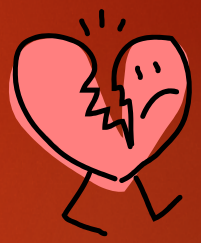
- Parental substance use is a concern in over 50% of child welfare families (U.S. Department of Health and Human Services, 2007)
- Most prevalent cause for child welfare involvement is parental neglect (includes use of drugs or alcohol that interferes with parenting abilities), with 64% of all cases citing this cause (USDHHS, 2007)
- Over 50% of the U.S. child-bearing age population report having used illicit drugs in their lifetime
- Estimated 31% - 60% of removal of children from parents documented parental substance use as reason for removal

Young et. Al, 2009; SAMSHA, 2007

Institute of Medicine and National Research Council, 2013

National Data Archive on Child Abuse and Neglect, 2012

Substance Abuse and Parenting



- Interferes with decision making
- Less sensitive and responsible
- Emotionally and physically unavailable
- Lowers threshold of aggression
- Interferes with the formation of secure attachments
  - Smith et al., (2007); Young, Boles, & Otero (2007)
- 2.7x greater risk for abuse
- 4.2x greater neglect

National Drug Court Initiative (2003)

Reasons for Children's Difficulties Vary Significantly

- Temperament
- Heredity (parent dx)
- Prematurity
- Attachment problems
- Poor parenting
- Child maltreatment
- Other trauma history
- Adverse childhood experiences

THEN ADD

- Prenatal exposure to alcohol/drugs

Difficult Child Behaviors May:

- Decrease bonding
- Decrease attachment
- Increase caregiver stress
- Increase risk for child neglect
- Increase risk for child abuse
- Increase risk for parental substance abuse relapse

EARLY INTERVENTION!!!

THE ***SOONER*** THE CHILD RECEIVES THE HELP S/HE NEEDS,
THE ***BETTER CHANCE***
FOR POSITIVE and SUSTAINABLE OUTCOMES.

Assessment of a Child with Prenatal Exposure to Substances

- Medical; possibly genetic testing
- Comprehensive developmental evaluation
  - Cognitive/IQ
  - Speech/language
  - Motor
  - Medical/physical development
  - Behavioral
  - Psychosocial via interview of caregiver

Common Co-Occurring Disorders and Misdiagnosis

- Attention-Deficit Hyperactive Disorder
- Oppositional Defiant Disorder
- Reactive Attachment Disorder
- Learning Disability
- Sensory Integration Disorders
- Conduct Disorder
- Speech and Language Disorders
- Autism Spectrum Disorders

You can't convince people with Fetal Alcohol that their thinking is off… because their thinking is off. Thinking is their disability. Save your energy for interventions not lectures.

Jeff Noble – *Soundbytes and Sanity Savers*

Principles of Clinical Management

Home Environment

Academic interventions

Medical Interventions

Clinical Interventions

The Home Environment

- Secure attachment and positive relationships can be promoted by:
  - Providing "special time" with the child every day
  - Assuring the child that this home is safe and stable
- Problem behaviors may be reduced by:
  - Increasing the predictability and structure of the home/school environment
  - Using visual prompts and sequences to simplify instructions
  - Developing behavior plans built on positive reinforcement and healthy discipline strategies
  - Simplifying the environment (eg, avoiding multistep commands, reducing distractions, increased adult supervision, and provide a buddy for helping the child in class)

Supporting Development - Home

- Functional Language Skills:
  - Reading/Telling Stories
  - Pretend Play
- Promoting self-care activities and adaptive skills:
  - Limiting Choices
  - Modeling Desired Behaviors
- Enhancing basic mathematic skills:
  - Examining volume/shapes through play
  - Using play money
- Developing social skills:
  - Using social stories to rehearse social scenarios
- Developing executive functioning skills:
  - Visual Schedules
  - Checklists
  - Small Steps!

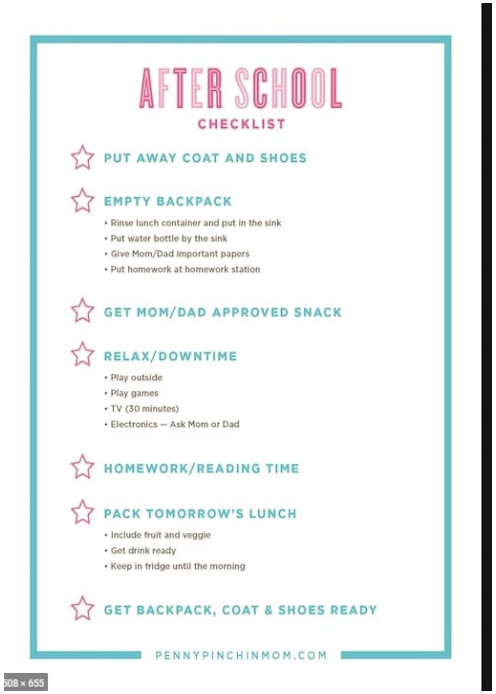
Eight Magic Keys

- Concrete - Young children with FAS and/or substance exposure do well when parents and educators talk in concrete terms. Don't use words with double meanings, idioms, etc. because their social-emotional understanding is far below their chronological age. It helps to "think younger" when providing assistance, giving instructions, etc.
- Consistency - Because of the difficulty young children with FAS and/or substance exposure experience trying to generalize learning from one situation to another, they do best in an environment with few changes. This includes language. Teachers and parents can coordinate with each other to use the same words for key phases and oral directions.
- Repetition - Young children with FAS and/or substance exposure may have chronic short-term memory problems; they forget things they want to remember as well as information that has been learned and retained for a period of time. In order for something to make it to long-term memory, it may simply need to be re-taught and re-taught.
- Routine - Stable routines that don't change from day to day will make it easier for young children with FAS and/or substance exposure to know what to expect next and decrease their anxiety, enabling them to learn.

Eight Magic Keys

- **Simplicity** - Remember to Keep it Short and Sweet (KISS method). Young children with FAS and/or substance exposure are easily over-stimulated, leading to "shutdown" at which point no more information can be assimilated. Therefore, a simple environment is the foundation for an effective school program.
- **Specific** - Say exactly what you mean. Remember that young children with FAS and/or substance exposure have difficulty with abstractions, generalization, and not being able to "fill in the blanks" when given a direction. Tell them step by step what to do, developing appropriate habit patterns.
- **Structure** - Structure is the "glue" that makes the world make sense for a student with FAS and/or substance exposure. If this glue is taken away, the walls fall down! Children achieve and are successful because their world provides the appropriate structure.
- **Supervision -** Because of their challenges, young children with FAS and/or substance exposure may bring a naivete to daily life situations. They need constant supervision, as with much younger children, to develop habit patterns of appropriate behavior.

Our Daily Routine



Academic Interventions

- Classroom Environment
  - Quiet zones, limited distractions
  - Clear rules for classroom
  - Organize materials
- Active Learning Strategies
  - Multi-sensory, multi-modality
  - Simple steps
  - Provide structure
- Establishing Routines
  - Daily schedule
  - Consistency
  - Plan for change, build in transitions
  - Visual and auditory cues

Medical Intervention

There is no cure but treatments are available to manage FASD symptoms.

- Recent research on **Choline** (2020)

  Supplement that supports health development, particularly of the nervous system

  - **Results:** Children who received choline had higher non-verbal intelligence, higher visual-spatial skill, higher working memory ability, better verbal memory, and fewer behavioral symptoms of attention deficit hyperactivity disorder than the placebo group. No differences were seen for verbal intelligence, visual memory, or other executive functions.

Wozniak, J.R.; Fink, B.A.; Fuglestad, A.J.; et al. Four-year follow-up of a randomized controlled trial of choline for neurodevelopment in fetal alcohol spectrum disorder. Journal of Neurodevelopmental Disorders 12(1):9, 2020.

No medications have been approved specifically to treat children with substance exposure. But, several medications can help improve some of the symptoms. For example, medication might help manage high energy levels, inability to focus, or depression. Following are some examples of medications used to treat symptoms:

- **Stimulants**
  This type of medication is used to treat symptoms such as hyperactivity, problems paying attention, and poor impulse control, as well as other behavior issues.
- **Antidepressants**
  This type of medication is used to treat symptoms such as sad mood, loss of interest, sleep problems, school disruption, negativity, irritability, aggression, and anti-social behaviors.
- **Neuroleptics**
  This type of medication is used to treat symptoms such as aggression, anxiety, and certain other behavior problems.
- **Anti-anxiety drugs**
  This type of medication is used to treat symptoms of anxiety.

FASDs: Treatments | CDC

Strategies for Children with Prenatal Substance Exposure

Behavior: Take Risks	Cause	Intervention
PSE	Does not perceive danger	Provide mentor, utilize repeated role playing
ADHD	Acts impulsively	Utilize behavioral approaches (e.g., count to 10)
ODD	Pushes limits	Behavioral therapy; parent training

Strategies for Children with Prenatal Substance Exposure

Behavior: Aggression	Cause	Intervention
PSE	Misinterprets others' actions	Educate about interpretation; one-on-one support
ADHD	Acts impulsively	Utilize behavioral approaches (e.g., count to 10)
ODD	Plans to hurt others; also may misinterpret cues	Behavioral therapy; parent training

Clinical Interventions

- Attachment and Biobehavioral Catchup Model (ABC-M)
- Parent Child Interaction Therapy (PCIT)
- Trauma Focused-Cognitive Behavioral Therapy (TF-CBT)
- Problematic Sexual Behavior-Cognitive Behavioral Therapy (PSB-CBT)
- Child-Parent Psychotherapy (CPP)
- Trust Based Relational Intervention (TBRI), Circle of Security, Coping skills therapy

A Better Chance (ABC) Clinic

- University of Oklahoma Child Study Center
- Provides early assessment and education to
  - Reduce the potential difficulties
  - Help children reach their full potential
- Evaluations for children with prenatal exposure:
  - Comprehensive developmental evaluations
  - Screening evaluations
  - Fetal Alcohol Syndrome evaluation
- Information and guidance to families who are caring for high-risk infants/children

To make A Better Chance (ABC) referral contact

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