



# Supporting Infants with Neonatal Abstinence Syndrome (NAS) and Their Caregivers

NH Association for Infant Mental Health  
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# Session Objectives: To increase understanding of...

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- The opioid crisis and impact on newborns born with neonatal abstinence syndrome (NAS)
- Diagnosis, characteristics, assessment and identification of NAS;
- Evidence-based practices in the NICU/hospital and post discharge for infants and young children with NAS and their caregivers; a multi-faceted, family-centered approach
- Red flags in infant social-emotional development, sensory processing, and other developmental areas for children with NAS or similar exposures; early identification and treatment
- Working with and supporting families affected by substance use disorders



# What is the opioid crisis?

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- Opioids are a class of drugs that include the illegal drug heroin, synthetic opioids such as fentanyl, and pain relievers available legally by prescription, such as oxycodone (OxyContin<sup>®</sup>), hydrocodone (Vicodin<sup>®</sup>), codeine, morphine, and many others.

<https://nida.nih.gov/drug-topics/opioids>

- The crisis refers to the trends in prescribed and illicit opioid use, overuse, and misuse that have resulted in significant family, community and societal problems and dysfunction.

- It is a serious national crisis that affects public health, social and economic welfare in our country.



# Consequences of the Opioid Epidemic, The Crisis

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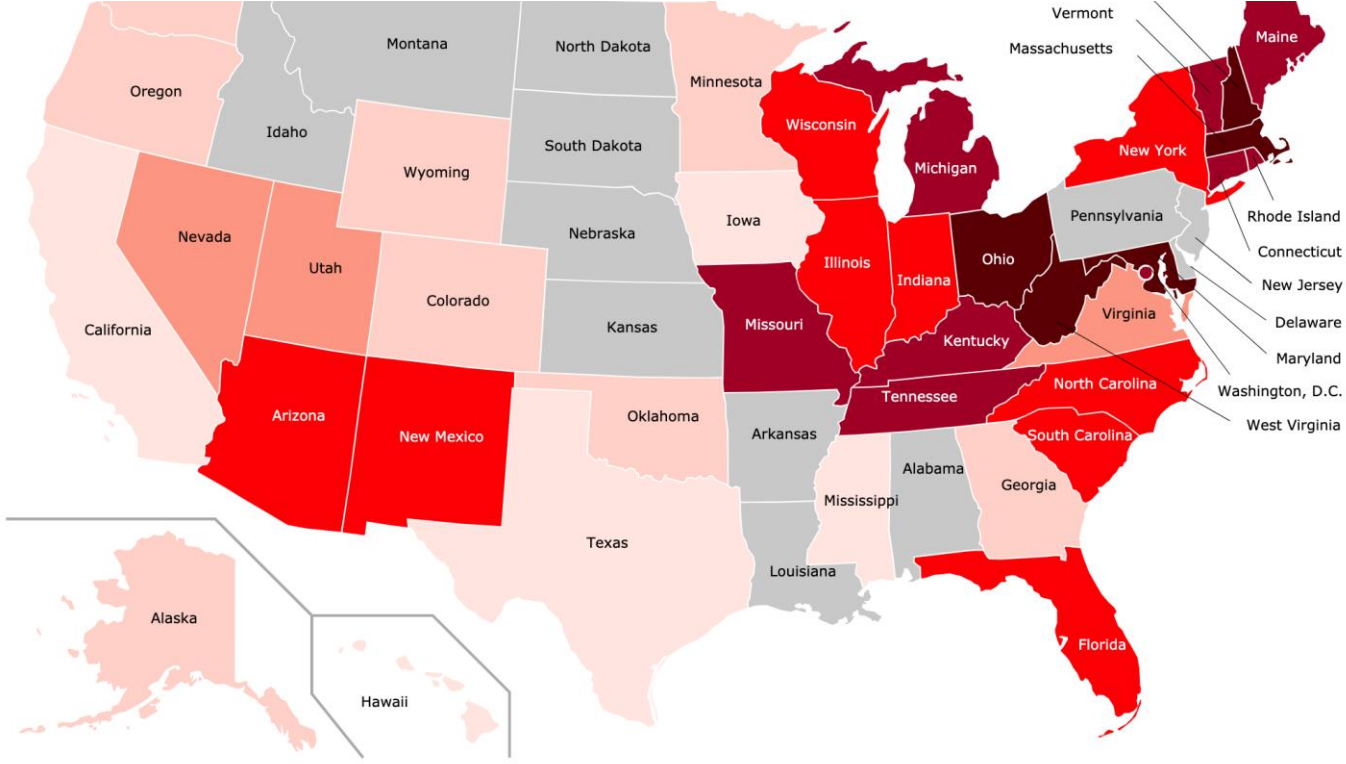
- Individuals with mental and physical health problems, disorders of addiction, death
- Affected newborns and children; negative impact on the family unit, and other relationships
- Increase cost and burden on health care systems, child welfare, law enforcement, public health
- Need for specialized care, and surveillance; increase supports and services across sectors (DCYF, Judicial, FCESS, Behavioral and Mental Health Services, Crisis intervention, Law enforcement)
- Unsafe communities



# The Opioid Crisis

Drug overdose data comes from the [CDC WONDER](https://www.cdc.gov/wonder/) site. Available data is currently from 2018 with 2019 data being released in early 2021, at which time, these pages will be updated.

## 2018 Opioid-Involved Overdose Death Rates (per 100,000 people)<sup>1</sup>



National Institute on Drug Abuse, retrieved from <https://www.drugabuse.gov/drug-topics/opioids/opioid-summaries-by-state>

# Opioid Crisis, Trends and Statistics

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- 21 to 29% of patients prescribed opioids for chronic pain misuse them and 8-12% percent develop an opioid use disorder; 80 % of people who use heroin first misused prescription opioids
- Opiate related emergency department visits/data in 2016, **NH data** showed there were 2632 female visits, most prevalent among 20–39-year-olds.
- In 2019, nearly 50,000 people in the United States died from opioid-involved overdoses. Opioid use and addiction is a serious public health crisis affecting social and economic welfare in the US. There is a substantial difference in incidence between states, and urban versus rural settings.
- While opioid use and addiction began to decline 2017- 2019, drug-related overdoses began to rise again in 2020 possibly influenced by the COVID-19 pandemic.



# American Society of Addiction Medicine

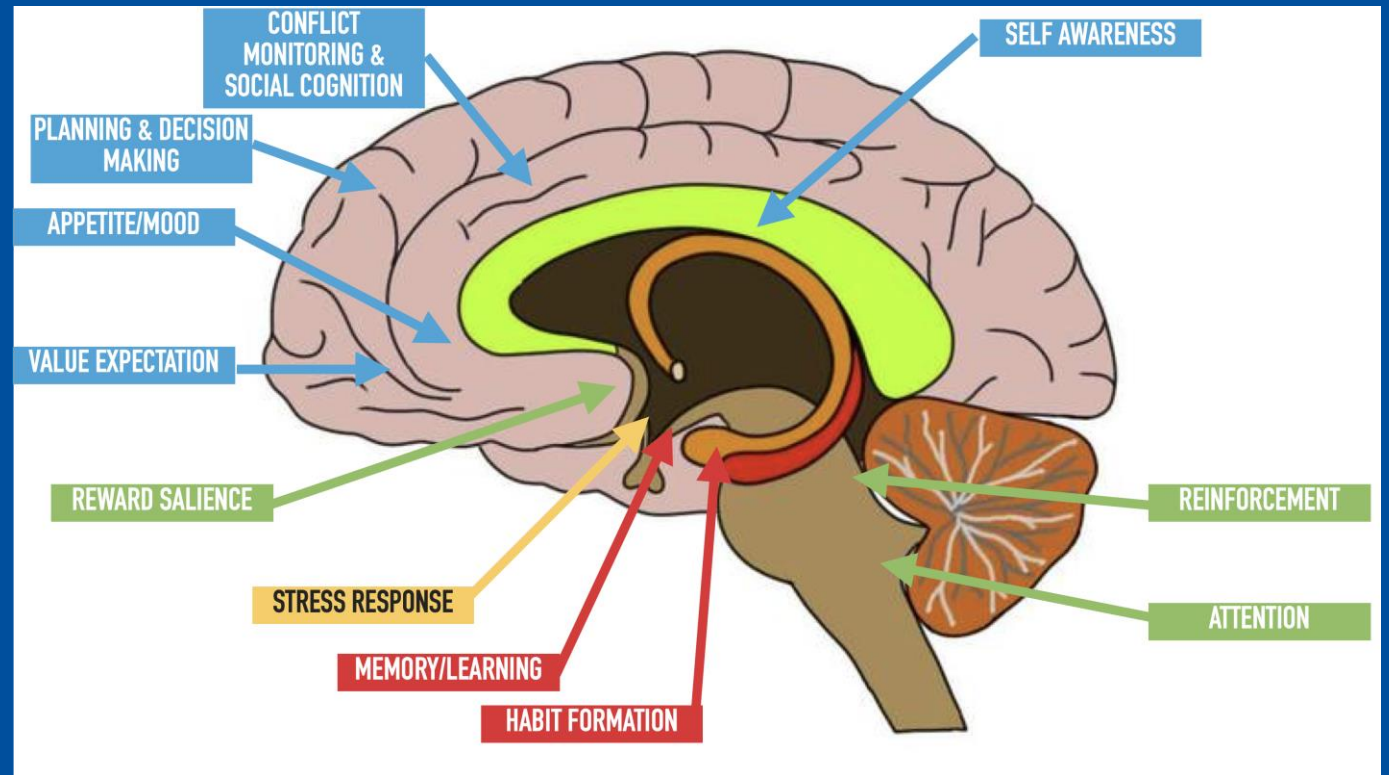
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- Addiction is a primary, chronic, progressive biopsychosociospiritual brain disease of reward, memory, motivation and related circuitry characterized by:
  - Inability to consistently ABSTAIN
  - Impairment in BEHAVIOURAL CONTROL
  - CRAVING
  - DIMINISHED RECOGNITION of problems with one's behavior and interpersonal relationships
  - Dysfunctional EMOTIONAL RESPONSE



# Addiction is a disorder of the following:

1. Choice (motivation, insight)
  - Orbitofrontal Cortex
  - Anterior Cingulate Cortex
  - Pre-frontal Cortex
  - Insular Cortex
2. Stress (anti-reward system)
  - HPA axis
3. Memory (habits, cues)
  - Glutamate
  - Synaptic Remodeling
4. Reward (incentive salience)
  - Dopamine
  - Dopamine Receptors
5. Genes (vulnerability)
  - Polymorphisms, Epigenetic Changes, COMT gene (VAL-158-MET)





# What is Neonatal Abstinence Syndrome (NAS)?

- **NAS:** A group of conditions caused when a baby withdraws from certain drugs that were exposed to them in utero through the mother
- **Neonatal Opioid Withdrawal Syndrome (NOWS)**-the abrupt cessation of opioid exposure after birth leading to significant decreases in norepinephrine affecting the infants' CNS functioning, and results in withdrawal responses
- Infants often begin to exhibit symptoms of NAS 12-72 hours after birth. Signs of heroin exposure begin as early as 12 hours after birth; Signs of methadone exposure begin around 48 to 72 hours after birth.
- When symptoms of withdrawal reach a significant threshold NAS is diagnosed. Diagnosis is confirmed through verification of the presence of drugs using blood testing, and urine analysis of mother and infant



# NAS Prevalence Rates

- Rates of NAS have increased 5X between the years 2000 and 2013 (1.19 births per 1000 to 5.63 per 1000); As of 2012, there was an average of one infant born with NAS every 25 minutes in the US.
- Between 2004 and 2013, incidence of NAS per 1000 hospital births increased from 1.2 to 7.5 among rural infants and from 1.4-4.8 among urban infants; E.g. 2016, in rural east Tennessee, the rate of NAS per 1000 infants was 26.2, while it was only 5.6 in urban Nashville highlighting geographical/setting influences.
- **Number of infants diagnosed with NAS in NH**
  - 2005 = 52 babies      2015 = 269 babies

**Prevalence of NAS in NH is about 5 times higher than the national average** of about 0.6% with New Hampshire average of 2.4%

(As Opioid Use Climbs, Neonatal Abstinence Syndrome Rises in New Hampshire, 2018)

# Typical Signs and Symptoms

- Fussiness/irritability
- Excessive crying and/or a high-pitched cry
- Inability to self soothe
- Breathing problems
- Stuffy nose or sneezing
- Gastrointestinal disturbances
- Reduced quality and duration of sleep/ trouble sleeping
- Slow weight gain
- Diarrhea or throwing up
- Body shakes (tremors)
- Seizures (convulsions)
- Overactive reflexes (twitching)
- Increased/tight muscle tone
- Fever, sweating or blotchy skin
- Poor feeding or sucking

[https://www.youtube.com/watch?v=ERmHN\\_tU8\\_o](https://www.youtube.com/watch?v=ERmHN_tU8_o)



# NAS Assessment and Intervention Post-natal While Hospitalized

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## Primary Diagnostic Evaluation Methods

- Review prenatal history
- Observe for Signs
- Modified Finnegan Neonatal Abstinence Score
- Test for presence of narcotics in the newborn and mother; Meconium test, urine test, umbilical cord blood test, or maternal plasma test
- Apply the Eat Sleep Console Model

(Jansen, Velez, Harrow, 2009)



# Modified Finnegan NAS Evaluation Tool

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- Considers 21 symptoms that are most frequently observed in opiate-exposed infants. Each symptom and degree of severity are assigned a score and the total abstinence score is determined by summing the scores assigned over the scoring period.
- Often begins 2 hours after the child is born and rates the infant's behavior and then rated every 3-4 hrs throughout the child's hospital stay
- Scores help to guide the course of treatment

**CNS Signs:** cry, sleep reflexes, muscle tone, tremors, seizures

**Metabolic, Respiratory Signs:** sweating, yawning, nasal stuffiness, RR

**Gastrointestinal Signs:** poor feeding, vomiting, diarrhea



# Eat Sleep Console (ESC) Model of Care

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- Simplified holistic approach to assessing and caring for infants and families coping with NAS;
- Transition from using the Finnegan assessment tool to the ESC assessment tool
- ESC assessment tool focuses on infant feeding/intake, ability to sleep undisturbed for at least 1 hour in between feeds, and ability to console within 10 minutes if distressed.



# Eat Sleep Console (ESC) Model of Care

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- Access to vital **collaborative services**: psychiatry, SW, OT, case management and frequent team collaboration
- Emphasize **functional care** using **nonpharmacological treatment**, breastfeeding support, and caregiver-centered education and social support;
- Caregivers provide continuous care at the newborn's bedside; Maximize “room in” care





# Eat Sleep Console (ESC) Model of Care (cont.)

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## OUTCOMES

- Reduction in average Length of Stay (LOS) and pharmacologic intervention;
- Increase in breastfeeding rates
- Supportive, quiet and nurturing environment provided
- Opioid use disorder stigma softened with the parent being the primary care provider for the infant;
- Allowed for a therapeutic, trustful relationship to develop between the hospital staff and the caregiver.



# Typical Course of NAS; Prognosis

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- Signs and symptoms of NAS vary for each baby, most begin within 72 hours of birth; Some may occur directly after birth, while for others symptoms can take as long as a few weeks after birth
- Prognosis variable: What drug the mother used during pregnancy; How much, and for how long; If the baby was born premature or with coexisting neurodevelopmental or other conditions
- Significant symptoms of NAS **typically resolve** in 2-4 weeks; some symptoms may last for up to 6 months after birth
- child remains at higher risk for developmental/learning and behavioral challenges later on (motor and speech delays, sensory and behavior regulation problems)



# Caring for an Infant with NAS

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- Handle, wake gently; only wake when necessary
- Softly speak ; Use frequent swaddling, pacifiers/non-nutritive sucking, slow rhythmical vertical rocking
- Reduce environmental stimuli- low light, low sound
- Developmental monitoring: behavior, cognition, communication, social, motor, vision



# Other Considerations and Common Coexisting conditions

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- Mothers using drugs during pregnancy may be less likely to access adequate prenatal care which increases risk for their babies in general
- Poor intrauterine growth, low birth weight, and/or prematurity due to alcohol use, smoking, poor nutrition
- Increased risk for Sudden Infant Death Syndrome (SIDS)
- Need for discharge planning and Plan of Safe Care



# Intervention in Hospital

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- Care is multidisciplinary, collaborative (MD, Nursing, OT, PT, SW)
- Individualized based on the identified needs of the mother-infant dyad; the care of the infant should not occur in isolation of the mother; Room in preferred
- Medical interventions for children with NAS reflect the specific signs and behaviors that individual child is exhibiting and managing any coexisting medical conditions
- **Non-pharmacological treatment methods:**
  - Developmental, supportive, family-centered care
  - Stimulation reduction: sound, lighting, touch, movement, optimal positioning
  - Swaddling, letting the infant sleep, holding- skin to skin (Kangaroo care)
  - Parent support and education, letting go of potential biases, encouraging and non-judgmental
  - Feeding Interventions



# Pharmacologic al Therapies

Used to treat/manage withdrawal symptoms: Common medicines include liquid methadone, morphine, buprenorphine

Use of these methods have resulted in decreased lengths of hospital stays and as well as a drop in the percentage of infants requiring pharmacotherapy

# Supporting Caregivers and Mothers, and Fathers

- Help develop skills and confidence with reading cues, caretaking tasks. calming, feeding/nursing, positioning, play; facilitating healthy attachment and bonding, promoting development
- DCYF/Child Protective services evaluate all cases of NAS and need to develop a Plan of Safe Care; Ensure a safe stable secure living environment, adequate nutrition and other health promoting behaviors
- Coordination of health provider appointments with primary care/pediatrician, home visitation follow up, referral for early intervention services; Peer support services for post partum women with substance use disorders;
- As appropriate, recommend ongoing substance use/misuse treatment programs that not only support abstinence and that also address parenting skills, and emotional health

# Protective Factors Supporting the Health of Babies with NAS

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- Parental resiliency; feeling respected, nonjudgmental care
- Child's social and emotional competence
- Social connections, and relationships
- Concrete support in times of need
- Knowledge of sound parenting practices and child development
- Secure, stable, safe housing, consistent care, basic needs being met





# Supporting Infant and Caregiver Needs Post-discharge

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## Infant Challenges

Central nervous system

GI system

Autonomic nervous system

Behavior regulation, calming, eating  
sleeping, neurodevelopmental risk

## Caregiver Challenges

Managing Substance

Use Disorder

Attending Support and  
Services

Parenting, Caregiving



# Supporting Families: It takes a team

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- Follow-up
- Family centered Early Supports and Services

For children in out of home placements:

- Understanding legal implications for children who have been removed for neglect, in foster families or kinship placements
- roles of the court-appointed advocate (CASA-GAL), and child welfare (Division of Child, Youth and Families)
- *Whenever possible reunification with the biological parent(s) is the goal when the child is removed from the home for findings of neglect or abuse, with the goal of permanency within 12 months*



# Strength –Based Approach

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- De-emphasize deficits while promoting goals and abilities
- Recognize that community is a basis of strength and the foundation of a solid support system; increase access
- Community connections promote access to resources; help clients learn, grow and thrive
- Families learn and realize they are the experts regarding how to live their own lives; Empower; Gain insight into what has been successful in the past



Bolger, A (2014) 'The assessment is in the chat': Analyzing conversations in community care.

*Qualitative Social Work*, Vol 13(3), 421-35

# Implementing a Strengths-based Approach

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- Demonstrate your belief in the clients' capacity to overcome challenges
- Show your willingness to help, to the extent that you are able
- Don't take ownership of the client's issues but support efforts to manage daily life and make progress towards goal achievement
- Value and nurture efforts
- Improve sense of control, build on resiliency and assets



# Having Difficult Conversations

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Conversations may be difficult because:

- They evoke feelings of guilt or perception of blame

- They involve sensitive subject matter; involves personal bias, strong feelings, stigma; may be a lack of trust

- They involving requesting a behavior change

- Held beliefs will be challenged, differences of opinion

- There exists a perceived or real imbalance of power

- The stakes are high; child custody, course of treatment, preservation of family relationships; child and family health

- A resolution is time sensitive



# General Tips and Guidelines

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- **Prepare and Anticipate:** determine goals, possibilities
- Aim to **understand your client better**; see things from their perspective; Encourage parent/guardian to share their stories; Listen
- Acknowledge their concern, love and desire to protect the child's best interests
- Acknowledge the conversation as challenging, sensitive, but important; clarify belief versus fact; **Communicate** the topic; clear compassionate communication;
- Separate child concerns, experiences from those of caregivers (although they are inter-connected); be patient and verbalize you understand that the family will make decisions at a comfortable pace



# Difficult Conversations: General Tips

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- Identify and emphasize common/shared goals
- Take responsibility and address conflict.
- Never a one-way conversation; solve problems together;
- Challenge your own beliefs, manage bias, and help client do the same; Use “I” statements; manage your own feelings of discomfort
- Build Trust; be supportive, build confidence, empower
- Acknowledge and celebrate successes
- Recognize and verbalize that you understand the family will make decisions about their child and a comfortable pace
- Listen, Actively Listen



# Supporting Infant Development: Consider Developmental Milestones

<https://www.cdc.gov/ncbddd/actearly/milestones/>

Physical Therapy

Occupational Therapy

Speech Language Pathologist

Social Work

Early Education Specialist

Infant Mental and Behavioral Health Providers





# Example 12 month old

**Motor:** Takes things out and puts into a container; Pokes, points with index finger; picks up tiny objects using pincer grasp; gets in and out of sitting, crawls; smoothly on hands and knees; Pulls up to stand using furniture; walks holding on to furniture (“cruising”) or without holding on;

**Language/Communication:** says first words, lots of babbling and imitation of simple motor movements and sounds; communicates needs

**Social-emotional:** initiates interaction, recognizes familiar people, enjoys being around others; calms self or calms when needs are met; regular routines for eating and sleeping, displays a variety of emotions, readily explores and likes novelty; health attachment behaviors

**Play:** functional play with objects; likes toys,



# Motor Development Red Flags

- Lack of independent sitting after 9 months
- Unable to bear weight through their feet or predominantly on tip-toes
- "Stiffness" with diaper changes, when placed in standing, or when trying to sit
- Unable to "creep" or crawl on hands and knees
- Lack of independent walking after 16 months
- Asymmetrical use of upper body – one side dominates
- Persistent hand fisting, interfering with grasping and release, exploring, feeding



# Children with NAS and Sensory Processing

## 5 SENSES



Eyes - Sight



Hand - Touch



Nose - Smell



Tongue - Taste



Ear - Hear



# VESTIBULAR


The sense that detects movement through sensory receptors in the inner ear.



The infographic features a central illustration of a young girl with her arms outstretched, standing in front of a large, multi-colored rainbow. Five circular callouts are connected to the rainbow by lines, each depicting a different activity: 'JUMPING ROPE', 'SWINGING', 'PLAYING WITH BALL', 'WHEELCHAIR', and 'WALKING'. The background is white with a dark blue header.

# INTEROCEPTION

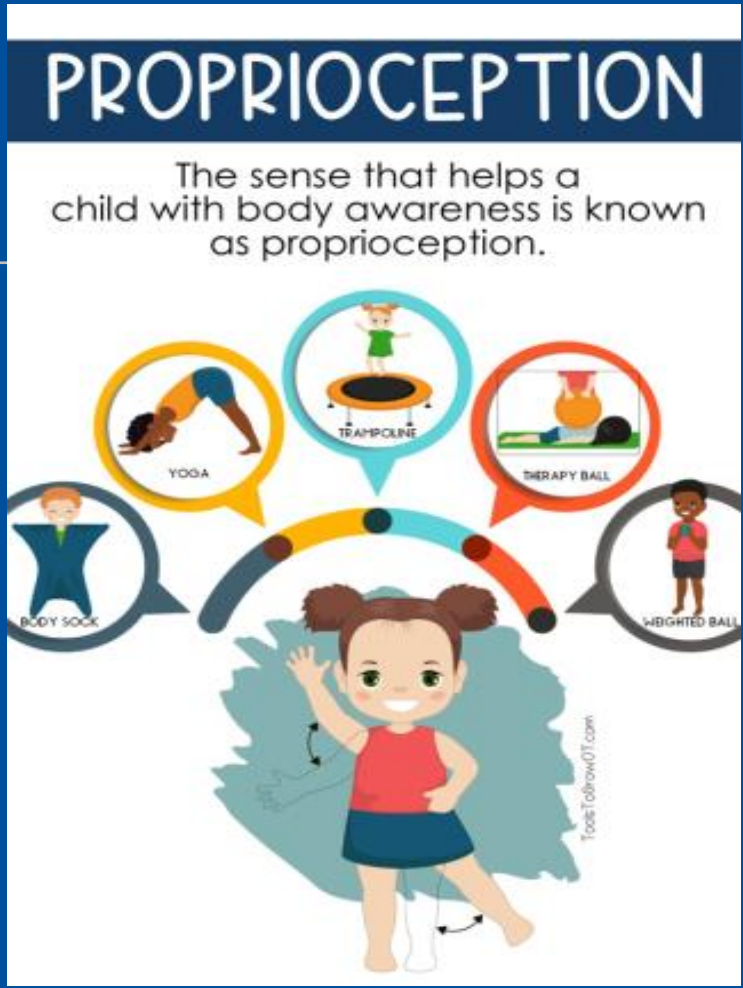
The Sense of Knowing what is going on *inside* your body.



The central graphic has a light blue background. At the top, the word 'INTEROCEPTION' is written in large, bold, yellow letters. Below it, the text 'The Sense of Knowing what is going on' is in a dark blue font, followed by the word 'inside' in a cursive, yellow font, and 'your body.' in a dark blue font. To the right of the text is a cartoon illustration of a young boy with brown hair, wearing a red t-shirt with a logo that says 'ADAM Our Shoes', blue shorts, and blue sneakers. He has his arms slightly raised.

# PROPRIOCEPTION

The sense that helps a child with body awareness is known as proprioception.



The infographic features a central illustration of a young girl with her hair in two buns, wearing a red tank top and a dark blue skirt. She is standing on a green shadow. A large, multi-colored rainbow arches over her. Six circular callouts are connected to the rainbow by lines, each depicting a different activity: 'YOGA', 'TRAMPOLINE', 'THERAPY BALL', 'BODY SOCK', and 'WEIGHTED BALL'. The background is white with a dark blue header.

**BUT We Have 3 More Senses**





## **What is sensory processing and integration?**

- Normal developmental process;
- The ability to take in (registration), modulate (reactivity), discriminate, and integrate sensory input/information from the environment and from our own bodies, and use that information effectively for adapting, learning, and generating an appropriate behavioral response



# Sensory Processing Behaviors

<https://pathways.org/growth-development/>

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- **6 mos:** Uses hands, mouth to explore toys; Generally happy when not hungry or tired; Able to calm with rocking, touching, sucking, and gentle sounds; Is not upset by everyday sounds but startles easily with loud, unexpected stimuli; Enjoys a variety of movements;
- **10-14 mos:** enjoys listening to songs; Explores toys with hands, and mouth; Crawls, or walks to objects, people; Enjoys movement; A regular sleep schedule is emerging; Eats an increasing variety of foods; calms self when needs are met; displays a variety of emotions; likes a variety of toys;

<https://pathways.org/growth-development/10-12-months/milestones/>

**INTERACT PLAY LEARN COMFORT**



# What is Sensory Processing Disorder?

- Inefficient CNS processing of sensory information from the environment and one's own body
- Results in atypical responses that often hinders adaptive behavior and ability to engage in goal-directed behavior
- Sensory processing disorder (SPD) as its own diagnosis is controversial; Not present in the DSM-V; BUT it is in the DC:0–5™: Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood



# NAS: Signs of Sensory Processing Disorder

## **Sensory Over-responsivity**

Easily overwhelmed, irritable and difficult to console . Exaggerated startle reflex, feeding and sleeping disturbances

## **Sensory Under-responsivity**

High pain tolerance, lack of awareness , lack of responsiveness to environmental stimuli; seems lethargic, uninterested

## **Seeking/Craving**

“on the go”; difficult to settle; overly interested in certain types of sensory experiences

## **Sensory Discrimination**

Slow to develop color, size shape concepts; balance and coordination is poor; difficulty to respond to verbal instructions; lack of awareness; lots of tactile exploration

## **Sensory-based Motor**

Gross motor delays, poor motor imitation, poor postural control





# Addressing Sensory Processing Concerns

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## Comprehensive Evaluation:

Determine type of sensory processing concerns, and the sensory systems affected;

- Infant/Toddler Sensory Profile; Parent Questionnaire
- Observation; Interviews

## Treatment Approaches:

- Compensatory Strategies to Calm, Alert, Engage, Comfort, Organize
- Developmental Programming: be strategic through play and when carrying out daily caregiving activities and routines: challenge, provide opportunities to learn without overwhelming
- Parent/Caregiver support and education



# Addressing Sensory Concerns

- **CALM for HYPER-Responsivity:** Deep pressure touch; pair proprioception sensory input with vestibular input; dampen environmental stim. such as noise; slow rhythmic, linear vestibular input; Avoid type of stimulation that is aversive and build tolerance slowly through gentle, graded exposure
- **ALERT for HYPO-Responsivity:** Exaggerate emotions in vocal tone; quick vestibular/changes in direction, rough house play; provide intense input...louder sounds, bright colors; use toys of MOST interest; change it up/novelty works!! Pair proprioception with movement to enhance body awareness



# Case Study

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- David born with NAS to a 23 year old single mother, no known father
- Was hospitalized for 2 weeks after birth; needed a feeding tube; although he had significant withdrawal signs they were managed with non-pharmacological methods; mom left the hospital against medical advice for 3 days during which time DCYF became involved; DCYF filed court papers and there was a finding a neglect;
- David was discharged to the care of his maternal grandmother, and assigned a CASA GAL.
- Goal for permanency was reunification with mother who wished to parent him; mother was doing well and when David was 16 months of age he was placed in her care.
- After 6 months his mother relapsed and David was returned to the care of the maternal grandmother;
- David developmentally is doing well, although his speech has been slow in coming in. He was assessed for FCESS but services were not felt necessary. He is a bit stubborn, and timid.
- David is now 2.5 and there is an upcoming court hearing for terminal of parental rights with the permanency plan of adoption by the maternal grandmother and her husband. They have always provided a safe and nurturing home for him and are supportive of the daughter spending time with her son.



# Case Study Questions

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- What might have been potential signs of social-emotional concerns at 18 months of age?
- Now at 2.5 years of age, what if any supports and services might David and his family benefit from?
- What challenges might David face in the future with respect to his overall development and psycho-social-emotional well-being because of his difficult start in life?



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