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facts on

Neonatal Abstinence Syndrome (NAS)

What is Neonatal Abstinence Syndrome (NAS)?

NAS is a condition whereby infants who are exposed to particular substances in the womb (prescription, licit, or illicit) experience a variety of withdrawal symptoms shortly after they are born. Exposure to substances like caffeine, nicotine, selective serotonin reuptake inhibitors (SSRIs), and opioids can result in varying degrees of withdrawal symptoms.

Signs and Symptoms of NAS

The primary signs and symptoms of NAS include a combination of:

- decreased sleep
- tremors
- seizures
- increased muscle tone
- sweating, fever
- irritability
- loose/watery stools
- vomiting
- high pitched crying
- inability to be consoled
- hyperactive Moro reflex
- skin picking
- frequent yawning
- blotchy skin colouring
- nasal stuffiness
- sneezing
- nasal flaring
- increased breathing rate
- excessive sucking
- reduced brain volume
- increased risk of sudden infant death syndrome

The presentation of withdrawal symptoms is thought to depend on the type of substance exposure; the frequency, dose, and timing of last exposure; gestational age; maternal metabolism; and maternal use of multiple substances. Symptoms may be present within 24 to 75 hours after birth, but often do not appear until 5 to 7 days after birth. Infants who are showing signs of NAS should receive medical attention.

Secondary conditions associated with NAS include:

- tachypnea (abnormal, rapid breathing)
- meconium aspiration (feces breathed into the lungs)
- respiratory distress (fluid in the lungs)
- jaundice (yellowing of skin and whites of eyes from liver issues)
- sepsis (imbalanced responses to chemicals that fight infection in the body)

It is thought that withdrawal symptoms can last from weeks to months depending on the timing, duration, and type of substance exposure in the womb. Exposure to substances like nicotine and SSRIs often present as milder symptoms, and polysubstance exposure generally leads to greater withdrawal symptoms. Prolonged exposure in the womb to opioids, specifically, can lead to more severe symptoms including:

- nystagmus (involuntary eye movement)
- strabismus (abnormal alignment of the eyes)
- reduced visual acuity/clarity

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- delayed visual maturation
- impaired voluntary eye movements
- absent binocular vision
- premature birth
- lower birth weight

NAS Treatment

The Canadian Paediatric Society recommends that newborns with opioid-related NAS be monitored for a minimum of 72 hours in hospital. Length of stay in hospital depends on the type of substance(s) exposure, severity of withdrawal, symptoms of withdrawal, treatment plan, and home/family circumstances.

In some cases of opioid-related NAS, medications such as morphine, methadone, phenobarbital, clonidine, and buprenorphine may be given to the infant to reduce symptoms. In general, there is uncertainty regarding the best medication for treatment of NAS. Some medical professionals and researchers suggest that there should be a balance between providing the least amount of medication while also improving an infant's weight gain and ability to be consoled.

Some evidence suggests that treating opioid -related NAS with medications can prolong length of hospital stay and disrupt mother-infant attachment. As such, non-medication treatment interventions are recommended, such as:

- skin-to-skin contact
- safe swaddling (secure, not too tight)
- soothing
- gentle waking
- quiet environment with minimal stimulation
- lower lighting
- developmental positioning (keeping head and body aligned)
- music therapy
- massage therapy
- keeping families together (rooming-in)
- breastfeeding when not contraindicated (e.g., maternal HIV infection, active tuberculosis)

NAS Outcomes

Much of the current research specifically focuses on the longer-term outcomes of opioid-related NAS. There is evidence that children born with opioid-related NAS are at risk for having:

- lower cognitive performance scores
- lower motor performance scores
- developmental delays
- speech/language disorders
- more negative emotions
- lower self-regulation
- less interest in activities
- less involvement with others
- higher sensation-seeking behaviours

At-Home Care Recommendations

Parents and caregivers of infants with NAS can use many of the recommended in-hospital non-medication treatments such as skin-to-skin contact, safe swaddling, soothing, rooming-in, breastfeeding, and providing a quiet environment with minimal stimulation. It is also important for parents and caregivers to get support if they are feeling overwhelmed. Taking breaks, resting, and going for walks can also be helpful.

Caring for an infant with NAS after hospital discharge should include:

- follow-up with a family/primary healthcare practitioner
- connecting with nutritional and family supportive resources
- undergoing an infant neurodevelopmental assessment
- maintaining a supportive and safe home environment
- utilizing community resources such as community support workers and parenting support groups

Preventing NAS

Prevention of NAS largely requires infants not to be exposed to substances like opioids in the womb. However, for individuals with substance use issues and dependency, there are a variety of treatment options. For individuals with opioid-dependence, detoxification or medically assisted withdrawal is recommended. For individuals with chronic conditions like pain, opioids are commonly prescribed. It is important for women who are pregnant or planning to become pregnant to speak with their healthcare providers about medication use during pregnancy. Women should also speak with their healthcare provider in cases where they may have used substances before they knew they were pregnant.

Select References

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