CONDITION

Neonatal abstinence syndrome

Neonatal abstinence syndrome is withdrawal that can affect a newborn after exposure to certain substances before birth.

WHAT IT IS
Newborn withdrawal after substance exposure before birth

BODY SYSTEM
Nervous system, digestion, breathing, and feeding

MAIN SYMPTOMS
Trembling, irritability, feeding trouble, loose stools

WHAT CAUSES IT
Withdrawal from opioids or other substances after birth

HOW IT IS DIAGNOSED
Clinical assessment, exposure history, and sometimes toxicology testing

MAIN TREATMENT
Supportive newborn care, sometimes withdrawal medication

CAN IT BE CURED?
Yes - symptoms resolve after exposure ends

IS IT AN EMERGENCY?
Sometimes - breathing problems, seizures, or severe dehydration

LONG-TERM OUTLOOK
Most infants recover; development needs ongoing monitoring

Overview

Neonatal abstinence syndrome, or NAS, is a group of withdrawal symptoms in a newborn. It happens when a baby was exposed to certain substances during pregnancy and that exposure suddenly stops at birth.

Opioids like oxycodone or morphine are the most common cause. These include heroin, fentanyl, prescription opioid pain medicines, and medicines used to treat opioid use disorder, such as methadone or buprenorphine. Some other medicines and substances can cause similar newborn symptoms.

The term neonatal opioid withdrawal syndrome , or NOWS, is often used when opioids are the cause. NAS is the broader term.

NAS does not mean that a baby is "addicted." Addiction involves patterns of behavior and control that cannot apply to a newborn. The baby's body has become physically used to a substance and must adjust after the supply stops.

Symptoms may affect feeding, sleep, digestion, movement, and breathing. Many babies improve with quiet, supportive care. Some need medication and a longer hospital stay. Care also focuses on helping parents and babies stay together whenever this can be done safely.

Symptoms

Symptoms usually begin during the first few days after birth. The timing depends partly on the substance, when it was last used, and how the baby's body processes it. Some symptoms may start after the baby has left the hospital.

A baby with NAS may have:

Not every exposed baby develops withdrawal. Symptoms also range from mild to more serious. A baby may show some signs without having NAS because low blood sugar, infection, pain, or other newborn conditions can look similar.

Seizures can occur but are uncommon. Repeated jerking that does not stop when the limb is gently held, unusual eye movements, or loss of responsiveness needs immediate medical assessment.

- Trembling, jitteriness, stiff muscles, or unusually active reflexes
- Irritability, frequent crying, or difficulty settling
- Short periods of sleep
- Trouble sucking, feeding, or coordinating sucking with breathing
- Vomiting, loose stools, or slow weight gain
- Sweating, sneezing, yawning, or a stuffy nose
- Fast breathing or changes in body temperature
- Skin irritation from repeated movement or loose stools

Causes and risk factors

During pregnancy, substances in the pregnant person's bloodstream may cross the placenta and reach the fetus. With repeated exposure, the fetus can become physically dependent. After birth, the substance supply stops, and the newborn's nervous system must adjust.

Opioids are strongly linked with NAS. Exposure can come from prescribed pain treatment, treatment for opioid use disorder, or non-prescribed drug use. Having NAS does not show why a substance was used or whether it was prescribed.

Other medicines, including some sedatives, may cause withdrawal. Certain antidepressants like sertraline or fluoxetine can cause short-term newborn adaptation symptoms that resemble NAS, although these are not always classified in the same way.

The chance and severity of withdrawal are influenced by several factors, including:

It is not possible to predict symptoms from the pregnant person's medication dose alone. A higher dose of methadone or buprenorphine does not reliably predict how severe a baby's withdrawal will be.

Pregnant people taking opioids should not stop them suddenly without medical support. Abrupt withdrawal can cause relapse and other risks. Methadone and buprenorphine are established treatments for opioid use disorder during pregnancy, even though newborn monitoring for withdrawal may be needed.

- The substance or combination of substances involved
- How recently and how often exposure occurred
- The baby's maturity, metabolism, and general health
- Exposure to nicotine, alcohol, sedatives, or other drugs
- Genetic differences that affect how substances are processed

Diagnosis

There is no single blood test that confirms NAS. Diagnosis is based mainly on the baby's symptoms, physical examination, and known or possible exposure during pregnancy.

Hospital staff may observe how well the baby eats, sleeps, settles, gains weight, and maintains stable breathing and temperature. Two broad assessment approaches are commonly used.

Traditional scoring tools record the number and severity of withdrawal signs. Another approach, often called Eat, Sleep, Console , focuses on whether the baby can eat enough, sleep for a reasonable period, and be comforted.

Urine, meconium-the baby's first bowel movements-or umbilical cord tissue may be tested in some circumstances. These tests can provide evidence of exposure, but they do not show exactly when a substance was used or predict the severity of withdrawal. A negative result does not always rule out exposure.

The care team may also check for other explanations. Depending on the symptoms, this could include testing for low blood sugar, infection, electrolyte problems, or neurological conditions.

Open information about prescribed medicines and other substance use can help the baby receive appropriate monitoring. Testing and reporting rules differ by location and healthcare setting.

Treatment and management

Treatment begins with supportive care. The goal is to reduce stress, support feeding and sleep, and keep the baby comfortable while withdrawal improves.

Helpful measures may include:

Breastfeeding can reduce withdrawal symptoms and support bonding in many situations. It is often encouraged when the parent is stable on prescribed methadone or buprenorphine and there are no other safety concerns. The decision should take account of current substance use, medicines, infections, and feeding goals.

If supportive care is not enough, medication may be used to control withdrawal. Morphine or methadone is commonly used for opioid withdrawal. Some hospitals use other medicines or add a second medicine when symptoms remain difficult to control.

The medicine is adjusted according to the baby's response and then reduced gradually. This process may take days or weeks. Medication does not mean supportive care has failed; it is another way to protect feeding, sleep, growth, and comfort.

Before discharge, the baby should be feeding adequately, maintaining a safe weight pattern, and remaining stable without worsening withdrawal. Parents should receive a follow-up plan and safe-sleep guidance. Babies should sleep on their backs on a firm, flat surface without pillows, loose blankets, or soft objects.

- A quiet room with dim lighting and limited stimulation
- Gentle swaddling and skin-to-skin contact with an alert adult
- Prompt, calm responses when the baby becomes unsettled
- Small, frequent feeds and feeding support
- Careful tracking of weight, wet diapers, and bowel movements
- Keeping the baby in the same room as a parent when safe

Complications

Most complications are related to difficulty feeding, sleeping, or staying physically settled. A baby who feeds poorly or has frequent vomiting or diarrhea may become dehydrated or fail to gain enough weight.

Severe, untreated withdrawal may lead to major feeding problems, unstable temperature, skin breakdown, or seizures. Breathing problems and seizures require urgent assessment because they may also point to another newborn condition.

NAS can lengthen the hospital stay and make early caregiving demanding. Parents may need help with sleep, transportation, feeding, mental health, substance use treatment, or a safe home environment. Support should be practical and non-judgmental.

Researchers continue to study long-term development after prenatal opioid exposure. Some studies find higher rates of developmental, learning, vision, or behavior concerns. However, it is difficult to separate the effects of withdrawal from premature birth, other substance exposures, health conditions, stress, and access to stable care.

NAS itself does not determine a child's future. Regular developmental checks can identify concerns early, when support may be most useful.

Prevention

NAS can sometimes be prevented by avoiding unnecessary exposure to substances that cause physical dependence during pregnancy. However, not every exposure is avoidable, and some medicines are needed to protect the health of the pregnant person.

Do not stop an opioid, sedative, antidepressant, methadone, or buprenorphine suddenly because of concern about NAS. Sudden changes can be harmful. Medication decisions during pregnancy should balance the pregnant person's health, fetal health, and the risks of untreated illness or relapse.

If pregnancy is planned, a healthcare professional can review medicines before conception. During pregnancy, prenatal care offers a chance to discuss all prescribed medicines, non-prescribed drugs, alcohol, nicotine, and supplements without judgment.

For opioid use disorder, consistent treatment with methadone or buprenorphine is safer than repeated cycles of opioid use and withdrawal. NAS remains possible, but that risk should not prevent effective treatment.

Living with it and what to expect

The most noticeable withdrawal symptoms usually improve over days to weeks as the baby's body adjusts. The exact course cannot be predicted. Some babies need only observation and supportive care, while others remain in hospital for medication and monitoring.

After discharge, a baby may still be easily startled, difficult to settle, or sensitive to light and noise. Feeding and sleep patterns may take time to become more regular. Caregivers may find that a calm routine, close contact, and avoiding overstimulation help.

Follow-up usually includes weight and feeding checks soon after discharge. The baby should also attend routine health visits, vaccinations, hearing and vision checks, and developmental screening. Some babies qualify for early intervention services, which provide support with movement, communication, feeding, or learning.

Over months and years, many children who had NAS grow and take part in ordinary family, school, and community life. Some need extra developmental or educational support. A stable caregiving environment and reliable access to healthcare can make an important difference, but no individual outcome can be promised.

Caring for a newborn with withdrawal can be exhausting. Asking trusted people to help with meals, transport, or supervised caregiving can give parents time to rest. Parents receiving treatment for substance use disorder should continue their own care after the baby is born, when overdose and relapse risks may remain high.

When to get medical help

After leaving the hospital, keep all planned newborn and follow-up appointments. Contact the baby's healthcare service promptly if feeding, sleep, crying, vomiting, diarrhea, or tremors are getting worse rather than gradually improving.

Seek urgent same-day medical advice if the baby:

A temperature of 38°C (100.4°F) or higher in a baby younger than 3 months needs immediate medical assessment. Do not assume fever is caused by withdrawal.

Call emergency services or go to an emergency department now if the baby:

- Repeatedly refuses feeds or cannot keep feeds down
- Has noticeably fewer wet diapers
- Has frequent watery stools or signs of dehydration
- Is much sleepier than usual or difficult to wake for feeding

- Has worsening tremors, stiffness, or nonstop crying
- Is not gaining weight as expected
- Has trouble breathing, pauses in breathing, or blue or grey skin
- Has a seizure
- Becomes limp, unresponsive, or cannot be woken
- Shows severe dehydration, such as no urine and very low responsiveness

Common questions

Is neonatal abstinence syndrome the same as being born addicted?

No. A newborn can be physically dependent and experience withdrawal, but addiction involves behaviors such as compulsive use despite harm. Those behaviors do not apply to a baby.

How long does neonatal abstinence syndrome last?

Acute symptoms often improve over days to weeks. The timing depends on the substance, the baby's health, and whether medication is needed. Feeding, sleep, or settling difficulties may continue after the strongest withdrawal signs have passed.

Can a baby with NAS breastfeed?

Often, yes. Breastfeeding may ease symptoms and support bonding. Whether it is appropriate depends on current substance exposure, prescribed medicines, infections, and other safety factors. A feeding plan should be made before discharge.

Will my baby have long-term problems?

NAS alone cannot predict later development. Some exposed children have developmental or learning concerns, while many do well. Regular screening helps find problems early and connect the child with support.

Can prescribed medicine cause NAS?

Yes. Opioid pain medicines, methadone, buprenorphine, and some other medicines can cause newborn withdrawal or adaptation symptoms. This does not mean the medicine was used incorrectly. Needed treatment should not be stopped suddenly.

Will another baby also have NAS?

Another baby may be at risk if exposed to a substance that can cause withdrawal, but symptoms and severity cannot be predicted from a previous pregnancy. Treatment and newborn monitoring can be planned during prenatal care.

Sources

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