Clinical Policy: Neonatal Abstinence Syndrome Guidelines

Description
Maternal drug use and intrauterine exposure of the fetus during pregnancy can lead to drug withdrawal in the infant after delivery. Clinically important neonatal withdrawal most commonly results from intrauterine opioid exposure. However, maternal use of central nervous system depressants (e.g., benzodiazepines, barbiturates and alcohol) and other drugs also result in signs of neonatal symptoms/withdrawal in exposed infants. Neonatal opioid withdrawal syndrome (NOWS), describes opioid-only withdrawal symptoms while Neonatal Abstinence Syndrome (NAS) describes neonates who are at-risk for exposure to other substances, with or without opioids. The term NAS will be used here for exposures related to opioids and/or other substances.

Signs of withdrawal will develop in 55 - 94% of neonates exposed to opioids in utero. Fetal methadone exposure results in a 60-80% risk of NAS, whereas the risk from buprenorphine exposure is 30-40%. Typical signs of withdrawal from specific drugs occur based on the half-lives of elimination of the drug. Maternal use of multiple drugs during pregnancy will also have an impact on the onset and severity of NAS. In general, if one week has elapsed between the last maternal opioid use and delivery, the incidence of NAS is relatively low.

Mothers who are prescribed methadone or buprenorphine should continue to take them and not stop them prior to delivery. The same is true for mothers prescribed antidepressant medications such as fluoxetine (Prozac), and Selective Serotonin Reuptake Inhibitors (SSRI) such as, sertraline, citalopram (Zoloft, Celexa). A mother can still breastfeed if taking methadone, buprenorphine, fluoxetine, and SSRI’s as prescribed. Marijuana is contraindicated in pregnancy as it can cause stillbirth, preterm birth, NICU admission, and affect growth and development. The half-life of marijuana’s tetrahydrocannabinol (THC) is ~67 days. Thus, it will take 3-6 months for THC to be completely eliminated. The Centers for Disease Control and Prevention (CDC) advise against mothers using marijuana and marijuana products containing cannabidiol (CBD) if breastfeeding. Table 1 below lists common drugs abused along with the typical onset of NAS symptoms.

<table>
<thead>
<tr>
<th>Drug</th>
<th>Typical onset</th>
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<tbody>
<tr>
<td>Heroin</td>
<td>Within 24 hrs with delay up to 5-7 days or later</td>
</tr>
<tr>
<td>Methadone</td>
<td>24-72 hrs with delay up to 5-7 days later</td>
</tr>
<tr>
<td>Morphine &amp; Hydrocodone</td>
<td>Within 3 days</td>
</tr>
<tr>
<td>Buprenorphine</td>
<td>Within 40 hrs</td>
</tr>
<tr>
<td>Ethanol</td>
<td>3-12 hrs</td>
</tr>
<tr>
<td>Barbiturate</td>
<td>4-7 days with delay up to 14 days</td>
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<tr>
<td>Diazepam</td>
<td>12 days</td>
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</tbody>
</table>
### Neonatal Abstinence Syndrome Guidelines

<table>
<thead>
<tr>
<th>Drug</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlordiazepoxide</td>
<td>21 days</td>
</tr>
<tr>
<td>Cocaine</td>
<td>48-72 hours</td>
</tr>
<tr>
<td>Selective Serotonin Reuptake Inhibitors</td>
<td>Hours to weeks</td>
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</tbody>
</table>

### Policy/Criteria

#### I. It is the policy of health plans affiliated with Centene Corporation® that the management of neonatal abstinence syndrome is medically necessary at the indicated level of care for the following circumstances:

##### A. Asymptomatic infants at risk for NAS due to maternal drug history are appropriate in one of the following:

1. Transitional level or level 1 nursery for four to seven days for observation using the modified Finnegan’s Neonatal Abstinence Scoring Tool, with duration of observation for symptoms dependent on the drugs used during pregnancy (see Table 1 above);
2. Level 2 nursery for four to seven days when assessed and treated using the Eat, Sleep, Console (ESC) approach, depending on the drugs used during pregnancy (see Table 1 above);

##### B. Level of care for symptomatic infants should be managed using the appropriate nationally recognized clinical decision support tools if assessed and treated per modified Finnegan’s scoring, or are appropriate in Level 2 nursery if assessed and treated by ESC.

*Note:* The dosing interval for morphine should be no longer than every four hours to avoid subtherapeutic levels prior to the next dose. **Home-based withdrawal therapy** may be considered if no more than two modified Finnegan’s scores are ≥ 8 or 1 score is ≥ 10 in the prior 48 hours and all of the discharge criteria in section I.C. are met. The home environment, caregiver, and support team must be taken into consideration.

If treated with pharmacologic therapy using ESC, discharge should be consistent with ESC recommendations.

#### C. Discharge Criteria

Prior to discharge home with home health, all of the following must be met:

1. Infant is clinically stable and meets all of the following criteria:
   a. Infant is taking oral feeds and gaining weight satisfactorily;
   b. Infant is physiologically stable with normal vital signs including blood pressure;
2. Infant is showing neurobehavioral recovery evidenced by reaching full alert state, responding to social stimuli, and being consoled with appropriate measures 24-48 hours after the last dose of morphine prior to discharge, based on gestational age.

*Note:* The half-life of morphine in term infants (37 0/7 weeks and older) is estimated to be 6.5 +/- 2.8 hours. The half-life of morphine in pre-term infants (less than 37 0/7 weeks) is estimated to be 9.0 +/- 3.4 hours. It takes three to five half-lives to be sure morphine is out of the baby’s system and there are no symptoms of withdrawal afterwards.

1. Home situation is assessed and deemed adequate;
2. Parent or caretaker is agreeable with the plan of care;
5. Appropriate transportation is available for follow up appointments;
6. Home care services are arranged for nursing assessments;
7. The responsible physician (neonatologist, primary care pediatrician) and back-up health care facility (NICU, community hospital) should be clarified to the family and home care agency prior to discharge.

II. It is the policy of health plans affiliated with Centene Corporation® that if the infant is clinically stable but remains in the nursery due to social issues, these days are considered not medically necessary unless there is a benefit coverage requiring such days.

Background
The diagnosis and management of NAS is briefly described below. The presentation of NAS is widely variable in the onset of symptoms and types and severity of clinical manifestations. Universal screening and subsequent close observation of high risk neonates is essential for timely diagnosis and treatment of the neonate.

A. Screening – the following screening steps should be taken
1. Universal screening for maternal drug abuse
2. Maternal toxicology testing in known or suspected cases of NAS based on any of the following characteristics: (note – legal implications of testing and need for consent from the mother may vary among states)
   a. Known history of maternal substance abuse
   b. Maternal engagement in high-risk behaviors
   c. Disclosure of recent substance abuse
   d. Acting in an intoxicated manner on admission or during office visits
   e. Previously unexplained late fetal demise, repeated spontaneous abortion
   f. Precipitous labor, placental abruption, hypertensive episodes, severe mood swings
   g. Cerebrovascular accidents, myocardial infarction
3. Newborn urine and/or meconium screening and/or umbilical cord testing can be performed for recent substance abuse.
   a. False negatives may occur more commonly with urine testing due to urinary excretion of most drugs being relatively short
   b. Meconium screening and umbilical cord testing both have a window of detection up to 20 weeks prior to delivery

B. Observation location/Assessment tool/Level of Care
1. If the hospital uses the Eat, Sleep, Console (ESC) assessment tool for infants at risk for NAS, the infant may remain in the room with the primary caregiver to provide intensive comfort care measures and to promote caregiver bonding and maternal breastfeeding. This is considered Level II care with or without the need for medications. The baby does not have to be transferred away from his/her caregiver to NICU for Level II care to be authorized so long as the ESC assessment tool is being used and followed.
2. If the hospital uses the older modified Finnegan’s Neonatal Abstinence Scoring Tool, infants at risk for NAS should be observed in the neonatal nursery for signs/symptoms of neonatal withdrawal. Level II care is appropriate under the modified Finnegan Neonatal Abstinence Scoring Tool if medications are given and/or if the baby is transferred to the neonatal intensive care unit (NICU). A copy of the modified Finnegan Neonatal
Abstinence Scoring tool is available at http://www.academyofneonatalnursing.org/NAS/FinneganNASTool.pdf

3. Timing and severity of withdrawal symptoms depends upon the maternal drug(s) used and last time of use. Duration of neonatal nursery observation should be dependent on the half-life of the drug based on maternal drug use history.
   a. For example, maternal use of a drug with a short half-life of 4 hours (e.g. hydrocodone) indicates an infant may be safely discharged if there are no signs of withdrawal by three days of age.
   b. Maternal use of a drug with a prolonged half-life (e.g. methadone) indicates an infant should be observed for a minimum of five to seven days.
   c. Polysubstance abuse and/or unknown substance abuse should be observed for a minimum of five to seven days.

4. Some hospitals may continue to assess using modified Finnegan scoring along with ESC scoring. However, only the scoring system used to direct care decisions should inform medical necessity for the requested level of care.

C. Diagnosis
   1. Withdrawal symptoms such as seizures, fever, irritability, and poor feeding can all be signs of other conditions. Appropriate assessment and diagnostic tests are necessitated to differentiate NAS from other diagnoses.
   2. Clinical diagnosis is made based on maternal history of drug use and neonatal screening, observation, and assessment findings.

D. Treatment
   1. Nonpharmacologic
      a. Infants showing early signs of withdrawal should have treatment directed at minimizing environmental stimuli. This includes placing the infant in a dark, quiet environment, careful positioning and comfort techniques such as swaddling, responding early to an infant’s signals, and breastfeeding or formula feeding as indicated. Rooming-in (i.e., the co-location of maternal and infant care after delivery and beyond), has been shown to reduce NAS severity.
      b. Careful observation for signs of fever, dehydration or weight loss.
      c. Ensure adequate sleep and caloric intake.
      d. Additional supportive care such as IV fluids, electrolyte replacement and gavage feedings may be indicated to stabilize the infant in the acute phase and obviate the need for pharmacologic intervention.
      e. Breastfeeding has been associated with less severe NAS and should be encouraged in mothers who are adherent to a supervised drug treatment program including methadone or buprenorphine.
   2. Pharmacologic
      a. Pharmacologic therapy should be reserved for the infants with moderate to severe signs of NAS, and to relieve complications of such, when nonpharmacologic support is ineffective. Drug withdrawal may be life-threatening, but it is ultimately a self-limited process and unnecessary pharmacologic treatment prolongs exposure to harmful drugs. Studies have only shown clear benefits of pharmacologic therapy for the short-term amelioration of clinical signs of NAS. Long term benefits or harm have not been clearly studied.
b. The optimal screening modified Finnegan’s score for the initiation of pharmacologic therapy is not clearly defined. However, pharmacologic therapy is generally started for the neonate who has 3 or more consecutive scores above eight or two consecutive scores averaging 12 or greater despite adequate supportive care.

c. The ESC method is a functional scoring approach, considering whether the baby can:
   i. Breastfeed well or greater than 1oz (30 ml)
   ii. Sleep undisturbed for greater than or equal to one hour
   iii. Be consoled within 10 minutes

   If the baby is able to do these things, then his/her NAS is being treated adequately. If not, intensive comfort care measures involving the caregiver are utilized first. After which, opioid medication, usually morphine, can be given to lessen the withdrawal so the baby can eat, sleep, or be consoled. Once started, opioid medication, usually morphine, does not have to be continued or increased unless the baby fails to eat, sleep, or be consoled.

d. When nonpharmacologic treatment fails, the recommended first drug of choice is an opioid, either morphine or methadone. Clonidine and phenobarbital are second line drugs to be used in addition to an opioid to treat NAS. Phenobarbital is an anti-seizure medicine that can help calm an infant. Clonidine is a centrally acting alpha-adrenergic receptor agonist that helps lower blood pressure and heart rate. It helps relieve neuromotor symptoms such as hypertonia, jitteriness, and agitation. Paregoric and diazepam are no longer recommended.

e. The general course of opioid therapy is determined by the response of the infant based on abstinence scoring. If the infant remains symptomatic based on abstinence scoring, an increased dose is indicated. Once the infant responds to therapy with a decrease in scoring and weight gain is established, weaning of the medication can begin. Metabolic demands need to be considered as part of the weaning process. The rate of wean is dependent on the infant’s clinical status with use of the abstinence score facilitating this process.

f. Weaning of morphine may occur every 24 to 48 hours for infants on single drug regimens and no more frequently than every 48 hours for infants on multiple drug regimens or those who have recently failed a wean. Morphine may be discontinued after reaching 0.02 mg/kg/dose every three to four hours. Morphine should not be spaced out further than every three to four hours to avoid subtherapeutic levels of morphine before the next dose. Clinical judgment is vital in the management of pharmacotherapy.

g. Weaning of clonidine may occur every 24 hours by 0.25 to 0.5 mcg/kg/dose as tolerated. Blood pressure and vital signs must be monitored every two hours for 12 hours after clonidine is completely weaned to prevent rebound hypertension or tachycardia.

h. Weaning of phenobarbital may occur every 48 hours by decreasing the dose by 20%. Alternatively, the baby can be discharged home on phenobarbital and be allowed to outgrow the dose within two to three weeks before stopping it.

Prematurity
Preterm infants have been found to be at lower risk of drug withdrawal with less severe and/or prolonged courses of NAS. Several possible causes of this effect include relation to
developmental immaturity of the CNS in preterm infants, lower total drug exposure, less fat deposits of the drug, or possibly that the severity of NAS is more difficult to determine in preterm infants due to scoring tools being developed for full-term infants.

**Opioids**
The clinical presentation of NAS is dependent on multiple variables, including opioid used; maternal drug use history; maternal, placental and infant metabolism; and other factors. Because opioid receptors focus in the central nervous system (CNS) and gastrointestinal (GI) tract, the majority of NAS symptoms reflect CNS irritability, autonomic over-reactivity, and GI tract dysfunction. Excess stimuli and hunger exacerbate the perceived severity of NAS.

**Cocaine and other CNS stimulants**
Neurobehavioral symptoms from intrauterine exposure to CNS stimulants such as cocaine and amphetamine frequently occur on the second or third day postnatal. Symptoms include irritability, hyperactivity, tremors, high-pitched cry, and excessive sucking. However, since cocaine and its metabolites can be detected in the neonatal urine for up to 3 days postnatal, symptoms may reflect drug effect rather than withdrawal. Pharmacological treatment of infants with neurobehavioral symptoms due to intrauterine cocaine exposure has not been carefully evaluated, thus no standard of care exists.

**Selective serotonin reuptake inhibitors**
Selective serotonin reuptake inhibitors (SSRIs) are the most common class of anti-depressants used to treat depression in the general population and during pregnancy. Studies have linked third trimester use of SSRIs to a group of symptoms including continuous crying, irritability, jitteriness, and/or restlessness, shivering, fever, tremors, hypertonia or rigidity, tachypnea or respiratory distress, feeding difficulty, sleep disturbance, hypoglycemia, and seizures. Onset of these symptoms generally begins several hours to several days after birth and subsides within 1 to 2 weeks. It is not clear if these symptoms are a reflection of serotonin syndrome or SSRI withdrawal. Clinicians should arrange for early follow up after hospital discharge for infants at risk from the effects of SSRI exposure in utero.

**Eat, Sleep, Console Assessment Approach**
The Finnegan scoring system, the most widely adopted scoring system, and modified versions of this tool are designed for use in term infants. Other assessment tools have been developed including the Eat, Sleep, Console (ESC) assessment approach that evaluates the neonate's ability to eat, sleep, and be consoled. The ESC method’s approach is for the treatment of the infant (both non-pharmacologic and pharmacologic treatment) should be based on infant function and comfort, rather than reducing signs and symptoms of withdrawal. The use of this tool emphasizes maternal/caregiver involvement with a goal of reducing opioid therapy and length of birth hospitalization. The effectiveness of the ESC method has been validated by quality improvement initiatives and reviews. The Eat, Sleep, Console functional assessment and family centered treatment methodology is slowly replacing the modified Finnegan scoring system for the assessment and treatment of neonatal abstinence syndrome.
<table>
<thead>
<tr>
<th>Reviews, Revisions, and Approvals</th>
<th>Revision Date</th>
<th>Approval Date</th>
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<tbody>
<tr>
<td>Policy created; reviewed by Neonatologist</td>
<td>10/13</td>
<td>10/13</td>
</tr>
<tr>
<td>Changed Policy/Criteria from Episode Days to Asymptomatic and Symptomatic infants criteria. Updated criteria for symptomatic infants to refer to decision support tool criteria. Updated Asymptomatic infants criteria to allow for observation in nursery according to maternal drug history. Reviewed by Neonatologist.</td>
<td>10/14</td>
<td>10/14</td>
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<tr>
<td>Converted into new template. Clarified language in Policy/Criteria section I.B.2. Added short explanatory paragraph at beginning of Background section.</td>
<td>10/15</td>
<td>10/15</td>
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<tr>
<td>References reviewed and updated. Reviewed by neonatologist.</td>
<td>09/16</td>
<td>10/16</td>
</tr>
<tr>
<td>Changed minimum days of observation to 4 in 1.A, to reflect the half-life of common drugs contributing to NAS. References reviewed and updated.</td>
<td>10/17</td>
<td>10/17</td>
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<tr>
<td>References reviewed and updated.</td>
<td>09/18</td>
<td>09/18</td>
</tr>
<tr>
<td>Condensed language in sections I.A and I.B with no clinical significance. Moved statement that infants with particular Finnegan scores may be managed appropriately at home from criteria to a note.</td>
<td>05/19</td>
<td></td>
</tr>
<tr>
<td>References reviewed and updated. Updated description regarding NAS and NOWS. Updated background information regarding rooming-in and Eat, Sleep, Console. Reviewed by Neonatologist.</td>
<td>09/19</td>
<td>09/19</td>
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<tr>
<td>In asymptomatic infants section: specified that transitional care or newborn level 1 is appropriate if being assessed with modified Finnegan’s scoring; added an alternative option for Level 2 nursery if being assessed and treated using ESC. Updated background relating to ESC. References reviewed and updated. Reviewed by neonatologists. Replaced “members” with “members/enrollees” in all instances.</td>
<td>09/20</td>
<td>09/20</td>
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<tr>
<td>Annual review. References reviewed, updated and reformatted. Changed “Last Review Date” in header to “Date of Last Revision” and changed “Date” in Revision log to “Revision Date.” Website for Modified Finnegan scoring added to the background under B.1. Clarifying edits added to I.A.1 regarding “duration of observation for symptoms.” Clarifying edits added to Note in I.B regarding “medications to treat withdrawal symptoms.”</td>
<td>09/21</td>
<td>09/21</td>
</tr>
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<td>Annual review. Description updated. Added cocaine and SSRIs, to the NAS symptom onset table. In I.B, replaced portion of note reflecting a 6 hour dosing interval with a 4 hour morphine dosing interval. Added requirement in I.C.2 discharge criteria that infant is consolable with appropriate measures 24-48 hours after the last dose of morphine prior to discharge, based on gestational age, with note about morphine half-lives applicable to a range of gestational ages. Noted in background section A.3.b regarding screening that meconium and umbilical blood reflect drug use for 20 weeks of gestation and later. Background: Changed background heading “Observation/Assessment” to “B. Observation location/Assessment tool/Level of Care,” and in that section: expanded</td>
<td>02/22</td>
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information regarding LOC for Finnegan scoring, and added section for LOC for ESC scoring; in 3.c, added that polysubstance use should correspond to observation for 5-7 days, and added note that when more than 1 scoring system is used, LOC should be determined according to the scoring system driving the care decisions. In nonpharmacologic treatment section, changed recommendation from frequent feedings of calorie dense formula or fortified breastmilk to “breastfeeding or formula feeding as indicated.” Added c under pharmacologic treatment regarding ESC assessment categories. Added details regarding morphine, clonidine, and phenobarbital weaning. Added additional background to “ESC Assessment Approach.” References reviewed and updated.

References

**Important Reminder**
This clinical policy has been developed by appropriately experienced and licensed health care professionals based on a review and consideration of currently available generally accepted standards of medical practice; peer-reviewed medical literature; government agency/program approval status; evidence-based guidelines and positions of leading national health professional organizations; views of physicians practicing in relevant clinical areas affected by this clinical policy; and other available clinical information. The Health Plan makes no representations and accepts no liability with respect to the content of any external information used or relied upon in developing this clinical policy. This clinical policy is consistent with standards of medical practice current at the time that this clinical policy was approved. “Health Plan” means a health plan that has adopted this clinical policy and that is operated or administered, in whole or in part, by Centene Management Company, LLC, or any of such health plan’s affiliates, as applicable.

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**Note: For Medicaid members/enrollees**, when state Medicaid coverage provisions conflict with the coverage provisions in this clinical policy, state Medicaid coverage provisions take precedence. Please refer to the state Medicaid manual for any coverage provisions pertaining to this clinical policy.

**Note: For Medicare members/enrollees**, to ensure consistency with the Medicare National Coverage Determinations (NCD) and Local Coverage Determinations (LCD), all applicable NCDs, LCDs, and Medicare Coverage Articles should be reviewed prior to applying the criteria set forth in this clinical policy. Refer to the CMS website at [http://www.cms.gov](http://www.cms.gov) for additional information.

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