

Treatment Guidelines for Neonatal Abstinence Syndrome

Provider quick tips and orders:

When admitting an NAS baby, the order for “scoring” using the ESC approach should be entered as a “Notify Provider” order as follows:

“Please notify provider if infant is unable to: A. Eat at least 1 ounce per feed or breastfeed well; B. Sleep for at least 1 hour undisturbed; or C. Be consoled within 10 minutes.”

- If these parameters are not met, Resident will assess baby
- Possible interventions:
 - o 1. Increase non-pharmacologic therapy
 - o 2. Consider PRN dose morphine 0.03 mg/kg (x1 or Q4 PRN)
 - o 3. Consider scheduled morphine if requiring multiple PRN doses

Do not place NAS/Finnegan scoring order. If present from NBN, discontinue this order.

Vital signs per routine, q8 hours

Place miscellaneous nursing order:

“Do not wake infant for vital signs. BP once per day unless abnormal”

Background

Neonates exposed to opiates in utero are at risk for developing neonatal abstinence syndrome (NAS). Neonates with NAS may display, jitteriness, poor sleeping, difficulty eating, weight loss, tremors, hypertonia, diarrhea and, in rare cases, seizures. The incidence of NAS in the United States has increased from 1.2 per 1000 births in 2000 to 5.8 per 1000 births in 2012.¹

Therapy

The goal of therapy for neonates with NAS should be to allow the child to function as a normal neonate. When well-managed, neonates experiencing NAS should be able to feed well, sleep well and be easily consoled.

Evaluation

NAS neonates should be monitored using the ESC (Eat, Sleep, Console) approach. The ESC approach evaluates whether an infant is:

- a. Able to eat at least 1 ounce per feed or breastfeed well
- b. Able to sleep for at least 1 hour undisturbed
- c. Able to be consoled within 10 minutes

¹ Patrick SW, Davis MM, Lehman CU, Cooper WO. Increasing incidence and geographic distribution of neonatal abstinence syndrome: United States 2009 to 2012. J Perinatol. 2015; 1-6

If the neonate is not able to do any of the elements, then he/she should be evaluated by the medical staff and supportive, non-pharmacologic treatment should be increased or optimized. If supportive care is maximized without improvement, then pharmacologic treatment should be started. The ESC is not a scoring tool: orders should be placed in the medical record as a “Notify Provider” order when Admission orders are placed. As with all neonates, monitoring of appropriate weight gain and stooling should be considered when addressing infants with potential withdrawal.

Supportive Management

The American Academy of Pediatrics Clinical Report on neonatal drug withdrawal (2012) recommends supportive care as the first-line treatment for NAS.² Interventions that interfere with the delivery of non-pharmacologic care (Finnegan Scoring, frequent blood pressure checks, etc.) should be limited.

1. Neonates with NAS should be kept with their mothers whenever possible and rooming-in should be strongly encouraged.
 - a. Neonates should be managed in the well-baby nursery to allow for rooming-in unless:
 - i. The neonate has another medical issue requiring direct admission or transfer to the NICU
 - ii. The neonate’s mother is discharged (at which point the neonate should be transferred to the general unit with the mother)
2. Parents/family should be delivering most of the non-pharmacologic care and should be coached through supportive care such as:
 - a. Swaddling
 - b. Holding
 - c. Rocking
 - d. Immediate intervention when crying (including feeding)
 - e. Use of pacifiers
3. A low-stimulation environment should be created, whenever possible.
 - a. Dim lights
 - b. Minimal noise
 - c. No disruptions when sleeping
4. Breastfeeding should be highly encouraged unless contraindicated for any reason (e.g. mom is HIV positive, current/recent illicit drug use, etc.). A lactation consultation should be obtained for any mother of an infant with NAS interested in breastfeeding
5. NAS neonates should be fed on demand (feeding should be attempted as a consoling technique) and will often have caloric requirements

² Hudak ML, Tan RC, et al. Neonatal Drug Withdrawal. Pediatrics. 2012; 129:e540-e560

¹⁰ Patrick SW, Kaplan HC, Passarella M, et al. Variation in treatment of neonatal abstinence syndrome in US Children's Hospitals, 2004-2011. J Perinatol. 2014;34(11):867-72

- significantly above the average neonate.
- a. Consider speech therapy (ST) consult if feeding difficulty appears to be related to mechanical factors.
 - b. High-calorie formulas should be considered early in the course for formula-fed infants or those with indicated supplement.
6. If a child is not taking at least 1 ounce per feed or is not breastfeeding well and the low volume of intake appears to be related to sleepiness, an NG tube should be considered rather than pharmacologic intervention.

Pharmacologic Management

If the neonate is not eating well, sleeping well or is difficult to console and supportive care can no longer be increased, pharmacologic therapy should be initiated.

1. Morphine should be initiated at 0.03 mg/kg/dose PO every 4 hours on an *as needed* basis. The infant should be continuously evaluated using the ESC approach and morphine can be given every 4 hours (with the potential for increasing doses) if the neonate continues to not eat well, sleep well or is continuing to be difficult to console. In some instances it is reasonable to schedule morphine every 4 hours.
 - a. See example schedule morphine dosing with wean below
 - b. Clonidine may be used as adjuvant therapy, also see below
2. Morphine doses may be increased by 10% every 12 hours until withdrawal symptoms are controlled. Morphine dosing should be titrated to the desired effect, with a typical maximum dose of 0.2 mg/kg every 4 hours.

Weaning of Medications

1. If on a scheduled dose of morphine, begin weaning morphine by 10% of the highest “stabilizing” dose, examples listed below.
2. Weaning should occur as frequently as tolerated and can occur as often as 3 times per day (every 8 hours). If supportive care is increased, pharmacologic care can often be decreased rapidly.
3. If scheduled morphine is not required (only PRN morphine used) and infant is eating well, sleeping well, and easily consoled, infant can be monitored for 24 hours after last PRN dose and discharged home.
4. If no morphine is required, infants are expected to be monitored a minimum of 72 hours prior to discharge home for developing withdrawal symptoms.

Vital Sign Monitoring

1. Continuous monitoring should be initiated for all patients started on medication.

2. For infants not on medication, vital signs should be performed once during every 8-hour shift.
 - a. Infants should not be awakened for vital sign checks.
 - b. Blood pressure measurements should be obtained no more than once daily unless abnormal.

Social Work

Social work should be consulted and will communicate with Horizons or DSS if indicated.

Discharge

All neonates exposed in utero to opioids should be monitored for signs of withdrawal, and can be cleared for discharge at 4-7 days of life if exposed prenatally to a long acting opioid such as methadone or buprenorphine or at 2-3 days of life if exposed to short-acting opioids such as oxycodone or heroin.

Neonates requiring pharmacologic treatment may be discharged after 24 hours of monitoring after the last dose of morphine is administered, provided no severe signs of NAS recur and the infant has been monitored for a sufficient amount of time based on their exposure.

Follow-up

Follow-up appointments should be made prior to discharge with the primary care provider.

UNC Children's Neonatal Abstinence Syndrome Pharmaceutical Guideline – 11/2017

Weaning Pharmacologic Treatment when scheduled morphine is initiated:

- Morphine dose when withdrawal is considered controlled defined as the "stabilizing dose"
- Standard wean is 24 hours between medication weans; can accelerate to every 8 hours in infants exhibiting minimal symptoms of withdrawal
- Do not change morphine dosing interval during wean. (Maintain at q4 hour interval)
- After discontinuing morphine, continue to perform ESC withdrawal assessments until discharge
 - If clinical symptoms of withdrawal evident on assessment, consider a "rescue dose" of morphine in addition to increased non-pharmacologic interventions
 - Dose given should be equal to the most recently discontinued dose
 - If infant needs several "rescue doses", consider resuming prior morphine schedule

Morphine Only (when scheduling due to multiple PRN doses)

- Standard starting dose should be 0.03 mg/kg PO q4h
- Once withdrawal assessments normal, standard wean recommends decreasing morphine dose by 10% of the stabilizing dose
- Discontinue morphine when infant has tolerated a dose of 0.12-0.16 mg/kg/day (0.02 mg/kg/dose) for 24 hours
- Most babies will require a wean similar to the following:
 - 0.03 mg/kg PO q4h ("stabilizing dose")
 - 0.027 mg/kg PO q4h (a decrease by 10% of "stabilizing dose")
 - 0.024 mg/kg PO q4h (a decrease by 20% of "stabilizing dose")
 - 0.021 mg/kg PO q4h (a decrease by 30% of "stabilizing dose")
 - Can wean one more time to get below 0.02 mg/kg/dose if deemed clinically necessary
- If stable x 24 hours, discontinue morphine
- If morphine doses are increased higher than beginning 0.03 mg/kg PO dose, the new higher dose will be called the "stabilizing dose"
 - Subsequent dosing will be completed by weaning 10% of the "stabilizing dose"

Morphine + Clonidine (if history of maternal OPIATE abuse)

- Consider adjuvant therapy if infant is requiring dose increases of morphine
- **Start Clonidine 1 mcg/kg/dose PO q6h**
- When NAS scores are stable, decrease morphine dose by 10% of the stabilizing dose once each day.
- When morphine has reached 0.05 mg/kg/dose, maintain dose and wean Clonidine as follows:
 - 0.75 mcg/kg PO q6h x 1 dose, 0.5 mcg/kg PO q6h x 1 dose, 0.25 mcg/kg PO q6h x 1 dose, then dc Clonidine
- Observe 24 hours
- If NAS scores remain stable, resume decreasing morphine dose 10% daily
- Discontinue morphine when infant has tolerated a dose of 0.12-0.16 mg/kg/day (0.02 mg/kg/dose) for 24 hours
- Can alternatively maintain clonidine dosing and wean off of morphine first, depending on social and discharge situation