This information is being provided to help hospitals improve care to babies identified with Neonatal Opioid Withdrawal Syndrome (NOWS) formerly known as Neonatal Abstinence Syndrome (NAS). The information should be helpful in exploring various resources and best practices to develop practices best suited to your hospital and its patients. Nothing herein is meant to be legal advice or advice on a standard of care.

Using Pharmacologic Protocols for NOWS

Prior to considering pharmacologic interventions, nonpharmacologic interventions should first be implemented, as these interventions may reduce the need for pharmacologic treatment.\(^1,2\) These interventions are further described in a different section of this toolkit. If started on pharmacologic therapy, the use of pharmacologic protocols may reduce the length of treatment and hospital stay.\(^3\)

Choice of Pharmacologic Agent:

There is currently no consensus as to the optimal pharmacologic agent to prescribe for infants with NOWS;\(^4\) however, morphine is the most commonly used treatment followed by methadone.\(^5\) Morphine has a shorter half-life and requires more frequent dosing compared to methadone. Additionally, infants receiving methadone may have a shorter length of treatment and hospital stay.\(^6\)

Choice of Weaning Protocol

As no randomized trials comparing different methods of starting, weaning, and discontinuing pharmacologic therapy have been conducted, there is limited data on the optimal dose at which to start, wean, and discontinue therapy, which has resulted in significant practice variation (e.g. the starting dose for methadone ranges from 0.1 mg/kg/day to 0.2 mg/kg/day to 0.4 mg/kg/day). Below are suggested options for weaning of pharmacologic therapy based on pharmacokinetic data and weaning protocols generated by other perinatal collaboratives.\(^3,7\)
Examples of Weaning Protocols from Other Institutions:

- UAB Methadone Weaning Calculator (Excel) - Listed [HERE](#) for download & use
- Northern New England PQC (Yale, Boston Medical, Dartmouth)
- Boston University
- Ohio Perinatal Quality Collaborative

People to involve in this effort

Involvement of a hospital pharmacist and a member of information technology may help facilitate the integration of the following pharmacotherapeutic guidelines into clinical care.

**Stages of Pharmacologic Management:**

a. **Initiation:** Prescribe either methadone or morphine if infants score:
   - a. ≥8 THREE consecutive times
   - b. ≥12 TWO consecutive times
   - c. If scores remain elevated, dosage may need to be further increased using protocol

b. **Weaning:** After initiation, wean medication every 24h as further described below

c. **Discontinuation and Observation:** Upon stopping therapy, monitor for 48h before discharge
Methadone Weaning Protocol

If after optimizing nonpharmacologic interventions, scores are:
- ≥8 for THREE consecutive scores
- OR
- ≥12 for TWO consecutive scores

Start methadone at 0.20 mg/kg/day divided every 8h

Are scores on average <8 for following 24h?

Yes
- Wean methadone by 10% of maximum dose

No
- a. Optimize nonpharmacologic interventions
- b. If no improvement, increase dose by 0.20 mg/kg

Is current dose ≤0.04 mg/kg or 20% of max dose?

Yes
- 1. Discontinue therapy
- 2. Do scores remain on average <8 for following 48h?

No
- Restart therapy at previous dose and continue therapy until scores <8 for 24h

Discharge Home
NOWS Toolkit: Pharmacologic Management

Morphine Weaning Protocol

If after optimizing nonpharmacologic interventions, scores are:
≥8 for THREE consecutive scores
OR
≥12 for TWO consecutive scores

Start morphine at 0.05 mg/kg/dose every 3h

Are scores on average <8 for following 24h?

Yes

a. Optimize nonpharmacologic interventions
b. If no improvement, increase dose by 0.02 mg/kg

No

Wean morphine by 10% of maximum dose

Is current dose ≤0.02 mg/kg or 20% of max dose?

Yes

1. Discontinue therapy
2. Do scores remain on average <8 for following 48h?

Yes

No

Discharge Home

No

Restart therapy at previous dose and continue therapy until scores <8 for 24h
Other Pharmacologic Considerations:

Consider adding phenobarbital as a secondary agent if any of the following:
1) on 0.8 mg/kg/day of methadone or 0.3 mg/kg/dose of morphine
2) has not weaned by day 7 of treatment
3) maternal polypharmacy

Dose: 20 mg/kg loading dose and 5 mg/kg/day maintenance dose weaning by 20% per week

References