Neonatal Opioid Withdrawal Syndrome: Recognition and Management

Clinical Presentation and Diagnosis

Neonatal opioid withdrawal syndrome (NOWS), sometimes used interchangeably with the term neonatal abstinence syndrome (NAS), results from prenatal opioid exposure. Withdrawal symptoms typically surface anywhere from 72 hours to seven days post-birth, and though typically not fatal, NOWS is distressing and can lead to prolonged hospitalization of both the infant and the mother. NOWS severity is measured by the Finnegan Neonatal Abstinence Scoring System.

Symptoms include:

- Poor and fragmented sleep
- Tremors
- Sweating
- Congestion
- Fever
- Yawning
- Mottled skin
- Irritability
- High-pitched crying
- Gassiness, vomiting, diarrhea
- Poor feeding

Management and Treatment

Before delivery

- Educate your pregnant patients with substance use disorders about the risks of NOWS and the importance of prenatal care and substance use treatment.
- A risk of NOWS is not a reason to wean pregnant patients off medication for opioid use disorder (MOUD). In fact, keeping pregnant patients on MOUD reduces risks of preterm labor, illicit opioid use, and a host of infant adverse outcomes (Krans EE et al, *Addiction* 2021;116(12):3504–3514).
- Methadone and buprenorphine are both effective MOUDs during pregnancy, though methadone is associated with more severe NOWS.

Non-pharmacological interventions

- Rooming-in and parental involvement: Promotes bonding and early NOWS symptom recognition.
- Swaddling, skin-to-skin contact, and breastfeeding: Calms infant, strengthens bonding, and reduces NOWS severity.

Pharmacological interventions

The aim of pharmacological treatment is symptom reduction, enabling the infant to feed, regulate movements, and interact with caregivers. Severity is tracked every 3–4 hours using the Finnegan scoring system, and medication doses are given if a threshold is met, usually two consecutive scores ≥12 or three consecutive scores ≥8 (Kockerlakota P, *Pediatrics* 2014 Aug;134(2):e547–e561). Various modifications of the Finnegan scoring system are out there, and most institutions will have their own preferred version. See the example below (see page 74) for a typical scoring system.

First-line medications:

- *Morphine:* Typical dosing is 0.04–0.16 mg/kg PO every three to four hours. Adjust dose based on infant weight and symptom severity. Taper the dose by 10%–20% every 48–72 hours as tolerated.
- *Methadone:* Initial dosing is 0.05–0.1 mg/kg PO every six to eight hours. Taper the dose by 10% every two to three days, depending on infant response and symptom severity.
- Buprenorphine is typically not used because of challenges with sublingual administration and the possibility of precipitated withdrawal.

Second-line medications:

- *Clonidine:* Alpha-2 adrenergic agonist used alongside morphine or methadone. Initial dose is 0.5–0.75 mcg/kg every three hours and can be increased to 1 mcg/kg every three hours. Taper dose by 10% every one to two days.
- *Phenobarbital:* Barbiturates can be used in severe NOWS or benzodiazepine exposure. Loading dose is 10–20 mg/kg ×1 dose, followed by 2.5 mg/kg twice daily. Dose is tapered by 10%–15% every two to three days depending on infant response.