

**Consensus Guidelines for Management of Neonatal Abstinence Syndrome & Drug-Exposed Infants:  
UCSF Northern California Neonatal Consortium**

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# Consensus Guidelines for Management of Neonatal Abstinence Syndrome & Drug-Exposed Infants:

## UCSF Northern California Neonatal Consortium

### CONSENSUS SUMMARY

- **Screening**
  - Identify high-risk mothers (collaboration with OB): h/o substance use prior to or during pregnancy, no/limited prenatal care, multiple changes in provider/location of prenatal care, maternal characteristics associated with substance abuse (e.g. intoxication, track marks, etc)
    - Obtain thorough documentation of maternal substance use
    - Obtain urine toxicology screening in L&D prior to administration of labor medications
    - Pediatrician, neonatologist, OB or MSW discussion with family re: neonatal expectations
  - Identify high-risk neonates: maternal +tox screen during pregnancy, high-risk mother without tox screen available, symptoms of NAS
    - Obtain toxicology screen as soon as possible after birth using available method
- **Management of Neonatal Abstinence Syndrome (Opiate Withdrawal)**
  - **Scoring / Evaluation**
    - Standard scoring tool: Finnegan
    - Scoring frequency: every 3-4 hours, clustered with feeds/care, consistently assessed
    - Threshold for pharmacologic treatment: one score >13 or three scores >10
    - Minimum neonatal observation (without symptoms): 4-5 days
  - **Pharmacologic Treatment**
    - **First-line Treatment: Morphine**
      - Initiation dose: 0.05 mg/kg
      - Titration: increase by 0.025 mg/kg if same/increased scores after 2 doses
      - Suggested maximum dose: 0.2 mg/kg (higher doses per provider discretion)
      - Wean: decrease by 10% of infant's highest dose if scores remain <10
      - Discontinue: after 0.04 mg / dose
    - **Adjunctive Pharmacologic Treatment**
      - Indications for use: persistent NAS symptoms at max morphine dose, inability to wean morphine due to persistent symptoms
      - Drug of choice: Phenobarbital
        - Starting dose: 10-15 mg/kg PO load, then 5 mg/kg/day divided BID
        - Wean: slowly over weeks
    - **Treatment of Opiate Withdrawal Seizure**
      - Drug of choice: Morphine 0.1 – 0.2 mg/kg IV or IM
  - **Non-pharmacologic Therapies / Supportive Care**
    - Maintain consistency of care providers & maximize non-pharmacologic interventions for NAS symptoms (see complete chart)
    - Educate staff, families in supportive care measures for NAS
  - **Breastfeeding Policy**
    - Case-by-case determination of whether breastfeeding is safe / advisable
    - Strict contraindications: active maternal use of illegal opiates, poly-substance abuse, or infectious risks (e.g. HIV)
- **Adjunctive Care**
  - Engage social services with family early IF: documented maternal history of substance use or other high-risk situation (see above), neonatal +tox screen
  - Refer to CFS IF: high-risk family with substance abuse history (see section on adjunctive care)
  - Refer all drug-exposed neonates to early intervention programs

- Management of Other Drug Exposures

SUBSTANCE	Cord Blood Screen	Neonate Tox Screen	NAS Scoring	Supportive Care	Breastfeeding
Suboxone / Buprenorphine		✓	✓	✓	+/-
Methamphetamine		✓		✓	
Cocaine		✓		✓	
Benzodiazepines		✓	+/- (consider)	✓	✓ (counseling)
SSRIs				✓	✓ (if approved SSRI)
Marijuana					✓ (counseling)
EtOH	✓			(monitor glucose)	✓ (counseling)
Poly-Substance		✓	+/- (consider, per above)	✓	

\*\*See complete guideline for more detailed information\*\*

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# Complete Consensus Clinical Guidelines for Management of Neonatal Abstinence Syndrome & Drug-Exposed Infants:

UCSF Northern California Neonatal Consortium

Consensus Topic
Site-by-site Variant Practices

## COMPLETE CONSENSUS CLINICAL GUIDELINES

### SECTION 1: SCREENING

#### • *Prenatal Considerations*

- Identification of high-risk mothers prior to labor:
  - Documented maternal h/o drug use prior to pregnancy (within 5 years) or during current pregnancy (reported history or +tox screen)
  - Prenatal care red flags:
    - No or limited prenatal care (<= 3 visits)
    - Presentation from outside usual geographic delivery area or multiple changes in providers / location of care
  - +/- Maternal behavior indicative of substance abuse (e.g. intoxicated, markedly inappropriate, track marks, etc.)
- Discussion w/ OBs re: documentation of maternal drug use and tox screening in labor & delivery for high risk mothers (see “collaborative practice with obstetricians” below)
- Discussion with parents & education by OB, MSW or pediatrician/neonatologist re: what to expect for neonate after birth

#### • *Collaborative Practice with Obstetricians*

- Discuss maternal pain management over the short and long term – intentional choices re: type, timing, amount of pain meds prescribed
- Request documentation re: specifics of maternal substance use in maternal H&P (e.g. drug, dose, duration of use, prescribing MD, drug treatment program, etc.)
- Request urine toxicology screening on all high-risk mothers (see criteria above) PRIOR to administration of labor medications
  - Mother can exercise her right to refuse to provide a specimen; however, refusal to comply with screening protocol may pose added risks during subsequent MSW/CFS evaluation
- Suggest discussion between pediatrician/neonatologist, MSW & parents re: what to expect in neonate prior to delivery
- Consider involvement of psychiatry in select cases

#### • *Neonatal Toxicology Screening Considerations / Tools*

- Infant screening criteria:
  - Maternal +tox screen (at any time during current pregnancy)
  - High-risk mother with no tox screen available
  - +/- Maternal behavior indicative of substance abuse
  - Infant displaying symptoms of NAS
- Inform parent re: infant tox screening; consent not required
- Obtain infant tox screening as soon as possible after birth by available method
- Infant Tox Screening Methods:

- Urine Tox screen (most commonly used – mother & infant):
  - (-) Need to wait for first infant void
  - (-) Poor sensitivity
  - (-) Long time to result / difficult to collect (bag specimen)
  - (-) Opiate confirmatory testing = send out, long turn around time
- Meconium screening:
  - (-) Long length of time to collect, long turn-around time
- Umbilical cord screening (used at ValleyCare):
  - (+) Easy to collect, quick turn around time
  - (+) Confirmatory opiate testing not needed
  - ?? Cost comparison

## SECTION 2: MANAGEMENT OF NEONATAL ABSTINENCE SYNDROME (OPIATE WITHDRAWAL)

### • *Scoring / Evaluation Tools*

- Minimum neonatal observation: 4-5 days without symptoms / scores suggesting potential need for pharmacologic treatment
  - Room in vs. in nursery on monitors to be determined by physician / care team after assessment of maternal care capacity and potential flight risk
- Scoring tool: Finnegan Scoring Tool = standard of care @ all institutions
  - Problems with scoring tool:
    - Inter-rater variability
    - Difficult to use reliably in older infant on long-term / weaning treatment (e.g. 4-6wk old)
  - Suggestions:
    - Evaluate infant @ same time each day and same time relative to feeding schedule for treatment decisions
    - Maintain consistency of care provider (RN, MD, NP) to maximize reliability / consistency of assessment
    - Possibility of parental scoring (not currently used @ any institution or validated in literature)
- Scoring frequency:
  - Every 3-4 hrs, clustered with feeds/care, starting within 6 hrs of birth
  - Continue scoring x 48hrs after pharmacologic treatment discontinued

- Thresholds for pharmacologic treatment:
  - One score >13 or three scores >10 (goal scores = <8-10)
  - Emphasis placed on certain “objective” measures:
    - Poor weight gain
    - Diarrhea with or without decreased oral intake
    - Other significant threats to weight gain (fever/sweating)
    - Severe CNS symptoms (hypertonia, hyperreflexia, inconsolability, insomnia)
    - Seizure

### • *Pharmacologic Treatment*

- Morphine = first-line drug of choice @ all institutions
- Morphine Dilution:
  - Standard 2 mg/mL oral morphine concentration
  - Dilution factor (no standard between institutions):
    - UCSF does not allow concentrations/dilutions that are a 10-fold dilution to prevent 10-fold dosing error (e.g. cannot use 0.2 mg/mL concentration)

- Currently used dilutions @ different institutions:
  - SFGH, MGH – 0.4 mg/mL (same as DTO)
  - SRMH – 0.1 mg/mL

- Dosing frequency:
  - Q 3 hr, typically to match feeding
  - May adjust frequency (Q 4-6 hr) if needed during dose titration or weaning
- Initiation dose:
  - 0.05 mg/kg
  - Consider 0.1 mg/kg if “severe” symptoms / high NAS scores
- Titration:
  - Increase by 0.025 mg/kg
    - Increase ~Q 6 hrs if same or increased scores after 2 doses

- Suggested maximum dose:
  - 0.2 mg/kg
  - May consider higher dosing in specific cases per provider discretion

- Weaning:
  - Start wean after stable dose with scores <10 x 24 – 48hrs + adequate growth pattern
  - Wean by 0.02 mg or ~10% of infant’s highest dose
  - Wean ~Q 48 hrs if scores remain <10 + adequate growth
  - Discontinue after 0.04 mg/dose
  - Consider weaning frequency (Q 3hr → Q 4hr → Q 6hr) after dose is minimized under certain circumstances; NOTE: this may prolong treatment course

- IV morphine – if infant too sick to tolerate PO morphine
- Comparison to alternative opiates used historically:
  - Methadone
    - (-) Long half-life → long wean; infant discharged w/ opiate Rx
    - (-) Requires careful assessment of family as candidates for outpatient Rx
    - (-) Needs healthcare provider in community comfortable w/ weaning opiate Rx + following NAS infant
    - Not currently used @ any institution in collaboration (except UCSF Fresno)
  - DTO
    - (-) High alcohol concentration, other opioids
    - (-) Dilution 1:25 = 0.4 mg/mL morphine concentration
    - No longer used @ any institution

- **Adjunctive Pharmacologic Treatment**

- Indications / Uses:
  - Persistent severe symptoms / high scores @ maximum dose of morphine
  - Inability to wean morphine due to persistent high scores / symptoms
  - Use as supplemental treatment in addition to Morphine
  - Consultation with UCSF specialists recommended for dosing

- Pharmacologic Options:
  - Phenobarbital = first-line drug of choice @ all institutions
    - Dosing: 10-15 mg/kg PO load, then 5 mg/kg/day PO divided BID

- Wean:
  - May be done as outpatient
  - Regimen to consider: BID x 2wk, Q Day x 1wk
  - Alternative regimens: “titrate to patient symptoms”, “outgrow dose”; may require longer duration wean (e.g. months)

- Other adjunctive agents to be considered in specific circumstances:
  - Diazepam:

- 0.1 mg/kg PO x 1 (PRN doses)
- Clonidine:
  - 0.5 – 1 mcg/kg Load
  - 0.5 – 1.25 mcg/kg PO Q 4-6 hr
  - Problems: need to compound from injection solution; not available @ all institutions (e.g. SFGH)

- **Treatment of Opiate Withdrawal Seizure**

- Morphine = first-line drug of choice @ all institutions
  - 0.1 – 0.2 mg/kg IV or IM
  - Increase maintenance PO Morphine dose once seizure controlled
- Phenobarbital = alternative, second-line
  - 20 mg/kg IV load

- **Non-Pharmacologic Therapies / Supportive Care**

- Staff (RN, MD, NP) require training in supportive care
- Maintain consistency of care providers with infant as much as possible
- Educate families re: NAS symptoms and strategies to help care for infant
  - Monitor mother interaction with infant to determine if there is a flight risk or a “falls risk” (e.g. mother dropping or accidentally smothering infant) due to maternal somnolence or altered behaviors

- **Rooming in:**

- Determination based on unit policy and within parameters established by MSW, CFS, and medical team (case-by-case basis)
- Criteria for consideration:
  - Medically stable infant
  - Weaning or discontinued pharmacologic therapy

- Suggested non-pharmacologic interventions for symptoms (collected from current institutional protocols):

Signs and Symptoms	Intervention
Excessive or high-pitched crying	Decrease environmental stimuli (dim lights, reduce noise levels). Partially cover bassinet or incubator. Swaddle and hold infant firmly and close to body. Gentle rocking, talking, singing, humming.
Sleeplessness	Decrease environmental stimuli. Swaddle infant. Minimize handling. Encourage skin-to-skin contact with mother. May use rocker bed or swing if available.
Myoclonic jerks, tremors, jitteriness, irritability	Prepare everything for infant care prior to disturbing infant to minimize handling. Cluster care. Decrease environmental stimuli. Soft music, relaxing baths.
Excoriation (chin, knees, elbow, toes, nose)	Apply barrier creams to affected areas. Apply duoderm or tegaderm to knees to protect skin if needed. Consider sheepskin pad to decrease pressure points/skin abrasion.
Sweating	Clean skin regularly. Ensure dry, clean clothing and

	bedding.
Hyperthermia – temperature > 37.5°C	Ensure adequate hydration and reduce environmental temperature. Avoid heavy bedding. Dress or swaddle in loose, light fabrics. Skin-to-skin contact with mother.
Nasal flaring / tachypnea	If concerned, avoid swaddling so that respiration can be observed.
Nasal stuffiness / excessive nasal secretions	Use gentle suction if nasal secretions cause obstruction to ensure adequate respiratory function. Positioning.
Excessive sucking – fists, fingers, thumbs	Keep hands clean and monitor for skin damage. Consult with mother about use of pacifier for non-nutritive sucking to provide comfort.
Poor feeding (infrequent/uncoordinated suck)	Feed on demand but avoid over-feeding in response to frequent crying. Decrease environmental stimuli during feeding (minimize talking, eye contact). Frequent small feeds with rest between sucking. Weigh and assess hydration daily. Assess coordination of suck/swallow reflex – support cheeks and jaw during feeds if necessary.
Regurgitation / vomiting	Burp when infant stops sucking and at end of feed.
Loose stools / diarrhea	Frequent diaper changes using barrier creams.  Occasional skin exposure to allow buttocks to dry.

### SECTION 3: MANAGEMENT OF OTHER DRUG EXPOSURES

- **Suboxone / Buprenorphine:**
  - Infant tox screening? – Yes
  - NAS scoring? – Yes
  - Observation? – Yes, in nursery until disposition determined (MSW, CFS)
  - Potential sx – Same as opiate withdrawal (NAS)
  - Treatment – NAS pharmacologic & non-pharmacologic treatments per above guidelines
  - Involve social services early; refer infant to early intervention programs
  - NOTE: these medications may provoke less withdrawal in infants leading to shorter hospital stay, less need for pharmacologic treatment; literature not as robust compared to opiates
- **Methamphetamine:**
  - Infant tox screening? – Yes
  - NAS scoring? – No
  - Observation? – Yes, in nursery until disposition determined (MSW, CFS)
  - Potential sx – Jitteriness, hypertonia / hyperreflexia, irritability
  - Treatment – Supportive care
  - Involve social services early; refer infant to early intervention programs
- **Cocaine:**
  - Infant tox screening? – Yes
  - NAS scoring? – No
  - Observation? – Yes, in nursery until disposition determined (MSW, CFS)



- Potential sx – Jitteriness, hypertonia / hyperreflexia, irritability
  - Infant may exhibit behavioral changes caused by CNS stimulation & peripheral sympathomimetic effects which can mimic opiate withdrawal
- Treatment – Supportive care / comfort measures
  - Patience with feeding, low stimulation environment, swaddling, vertical rocking, infant massage, +/- pacifier
  - Educate family re: infant poor interactive abilities (e.g. gaze aversion, arching, lack of response to cuddling)
- Involve social services early; refer infant to early intervention programs
- Benzodiazepines:
  - Infant tox screening? – Yes
  - NAS scoring? – Consider
  - Observation? – Yes, in nursery versus rooming in (dependent on circumstances)
  - Potential sx – Jitteriness, hypertonia / hyperreflexia, irritability
  - Treatment – Supportive care
- SSRIs:
  - Infant tox screening? – No
  - NAS scoring? – No
  - Observation? – Yes, in nursery versus rooming in (dependent on circumstances); duration based on drug-specific pharmacokinetics
    - If symptomatic, continue observation until symptoms consistently decreasing
  - Potential sx – Jitteriness, poor feeding
  - Treatment – Supportive care
- Marijuana:
  - Infant tox screening? – No (unless concern for poly-drug exposure)
  - NAS scoring? – No
  - Observation? – Yes, rooming in
  - Potential sx – Unknown
  - Treatment – None
  - Counsel family re: risks to infant (e.g. breastfeeding, parental altered state, smoke exposure)
- EtOH:
  - Infant tox screening? – Cord blood EtOH level
  - NAS scoring? – No
  - Observation? – Yes, rooming in
  - Potential sx – Symptomatic hypoglycemia
  - Treatment – Monitor & treat hypoglycemia as needed
  - Counsel family re: risks to infant (e.g. breastfeeding, parental altered state)
- Poly-Substance Exposure:
  - Infant tox screening? – Yes
  - NAS scoring – Yes
  - Observation? – Yes, in nursery until disposition determined (MSW, CFS)
    - Monitor for at least 3-5 days without symptoms prior to discharge
  - Potential sx – Varied
  - Treatment – Supportive care
  - Involve social services early; refer infant to early intervention programs

#### SECTION 4: BREASTFEEDING POLICIES

- Opiates:
  - Absolute contraindications: mother actively using heroin / illegal opiates, poly-substance abuse, HIV+ mother or other infection transmission risk
  - Potential contraindication: variable dose opiates; may permit breastfeeding in certain

circumstances based on risk/benefit assessment for specific mother-infant pair (provider / institution discretion)

- No contraindication to breastfeeding IF: mother on stable methadone dosing + established treatment program, regardless of methadone dose
  - Encourage plan for tapering / weaning methadone dose gradually
  - Educate mother re: risk of infant withdrawal if sudden cessation of breastfeeding
- Meeting between providers, parents & social services shortly after birth to determine if breastfeeding is safe / advisable; document decision in infant's chart

- Suboxone / Buprenorphine:

- See opiate guidelines above

- Methamphetamine:

- Breastfeeding not recommended if mother actively using

- Cocaine:

- Breastfeeding not recommended if mother actively using

- Benzodiazepine:

- No contraindication to breastfeeding but provide counseling

- SSRIs:

- No contraindication to breastfeeding if mother is taking an approved SSRI
- Recommend consultation with lactation specialist or lactation reference to confirm

- Marijuana:

- No contraindication to breastfeeding but provide counseling
- NOTE: breastfeeding "officially" not recommended if mother regularly using (L4 lactation designation), but mother may be counseled re: risks / benefits and option of pumping & dumping breast milk if using intermittently; consider complete social context

- Poly-Substance:

- Breastfeeding not recommended if mother actively using

## SECTION 5: ADJUNCTIVE CARE

- *Social Services*

- Engage social services with family early in L&D or nursery course
- Criteria for engagement of social services re: potential drug exposure:
  - Documented maternal h/o drug use during current pregnancy (reported or +tox screen)
  - Prenatal care red flags: no or limited prenatal care; late to prenatal care; multiple changes in provider / geographic location of care
  - +/- Maternal behavior (e.g. intoxicated, markedly inappropriate, track marks, etc)

- Criteria for referral to CFS (always per social services discretion):

- Maternal +tox screen at time of delivery
  - Exception: +marijuana only; +benzodiazepines if prescribed for appropriate indication / well-controlled
- Infant +tox screen in nursery
  - Exception: +marijuana only
- Infant receiving treatment for NAS in nursery
- Infant symptomatic with methamphetamine, cocaine, EtOH exposure
- Prior CFS involvement with family
- Other social / safety concerns per usual institutional protocols

- Refer all drug-exposed infants to early intervention programs