



## Neonatal Abstinence Syndrome (NAS)/Drug Exposed Infant Guideline

### Document Table of Contents

- [Policy Statement](#)
- [Purpose Statement](#)
- [Personnel Performing](#)
- [Procedure](#)
- [Documentation](#)

**POLICY STATEMENT:** This guideline is a patient and family centered interdisciplinary plan of care for babies born to women who have suspected or documented drug (illicit substance) use or abuse during pregnancy.

**PURPOSE STATEMENT:** In 2003, Congress enacted the ‘Keeping Children and Family Safe Act’ which requires each state, as a condition of federal funds under the ‘Child Abuse Prevention and Treatment Act’, to develop policies and procedures to “address the needs of infants born and identified as being affected by illegal substance abuse or withdrawal symptoms resulting from prenatal drug exposure”. This guideline links DHMC inpatient and outpatient care with community based care in compliance with state and local regulations.

**PERSONNEL PERFORMING:** Physicians, nurse practitioners, nurses, social workers, case workers, clinical resource coordinators, perinatal care technicians, and patient care technicians

### SECTION HEADINGS:

- Background
- Drug of Abuse Screening in Newborns
- Mandated Reporting Guidelines
- Clinical Care Coordination
- Monitoring for Signs of Substance Withdrawal and/or Toxicity
- Support of Babies and Families
- Breastfeeding Guidelines for Mothers with a History of Substance Abuse
- Criteria for Transfer for Further Management and/or Monitoring
- Discharge Criteria
- Appendix A: Guideline for Care of the Known or Suspected Drug Exposed Pregnancy
- Appendix B: Background Information on Drug of Abuse Screening
- Appendix C: Neonatal Abstinence Syndrome Scoring Chart
- Appendix D: Neonatal Abstinence Syndrome Treatment Protocol
- Appendix E: Outpatient Newborn Nursery/Pediatrics Consultation CIS Template
- Appendix F: Evaluation and Support of Feeding in the Drug-exposed Infant

## **Background**

In 2003, Congress enacted the ‘Keeping Children and Family Safe Act’ which requires each state, as a condition of federal funds under the ‘Child Abuse Prevention and Treatment Act’, to develop policies and procedures to “address the needs of infants born and identified as being affected by illegal substance abuse or withdrawal symptoms resulting from prenatal drug exposure”. This act requires that health care providers involved in the delivery or care of infants notify Child Protective Services (CPS) of substance-exposed newborns, and develop a plan of safe care for the infant including referrals to appropriate services (e.g., community organizations, voluntary preventive services). This federal law specifies that reports of prenatal substance exposure shall not be construed to be child abuse or require prosecution for any illegal action.

NH Law 169-C: 29 mandates that all health care providers including physicians, nurses, nurse practitioners, and social workers report *suspicions* of child abuse or neglect to DCYF. Additionally, CHaD interprets this mandate to include reporting for newborns at *imminent* risk of abuse or neglect. Both the NH-DCYF and VT-DCF define “neonates with possible harm from prenatal maternal substance use” as mandating a report, though each agency may respond differently from the other and on a case-to-case basis. A referral to a CPS agency should never be punitive, but should have the aim of evaluating circumstances, protecting the child, and providing services to maintain the family unit if at all possible.

Care of the newborn with suspected or known substance (drug) exposure begins prenatally. Screening for exposure to substances in cases where there are “reasonable indications of exposure” is part of good medical care provision. Please refer to Appendix A for “Guideline for Care of the Known or Suspected Drug Exposed Pregnancy” for recommended prenatal screening and education including drug of abuse screening guidelines for pregnant women.

## **Drug of Abuse Screening in Newborns**

### **Guidelines for Meconium Drug of Abuse Screening**

- Mother with history of substance use/abuse\* within *one year* of pregnancy but *prior to* discovering pregnancy with *negative screening* at first prenatal visit and during third trimester
- Mother with history of substance use/abuse\* and *compliant* with treatment program<sup>#</sup>

### **Guidelines for Meconium Drug of Abuse Screening *AND* Urine Drug of Abuse Screening\*\***

- Mother with substance use/abuse\* *after* discovering pregnancy (includes self-report of use, positive urine drug screening)
- Mother with history of substance use/abuse\* within *one year* of pregnancy but *prior to* discovering pregnancy with *incomplete screening* at first prenatal visit *and/or* during third trimester
- Mother with history of substance use/abuse\* *and* noncompliant with treatment program
- Mother with history of erratic prenatal care and *any* history of substance use/abuse\*
- Unusual behavior on the part of the mother that potentially affects the infant’s care:
  - Altered mental status in the mother without other explanation
  - Unexplained absences from the unit
  - Erratic behavior (e.g., severe mood swings)
  - Mothers who present with perinatal complications possibly associated with substance use *and* who have a history *and/or* concerns for substance use/abuse\* by behavior or history
    - Placental abruption
    - Precipitous labor

- Previous unexplained fetal demise or repeated spontaneous abortions
- Unexplained fetal growth restriction or premature birth
- Unexplained hypertensive episodes or other cardiovascular events in mother or neonate (e.g., cerebrovascular accident, myocardial infarction)
- Signs of Neonatal Abstinence Syndrome in baby as evidenced by positive NAS scoring in the newborn
- Signs of Fetal Alcohol Syndrome in the newborn\*\*

\* Substance use/abuse includes use of alcohol, illegal substance and/or controlled substance not prescribed to the mother

\*\* Urine should be sent for alcohol screening (ETOH) if there is a history or concern of alcohol abuse

# If mother has been in recovery for several years without relapses, screening is not necessary

### Consent for Drug of Abuse Screening

- Parents are to be notified of the need for drug of abuse screening in their baby.
- Parental permission is not required for newborn drug screening, but is recommended. The care agreement signed on admission serves as consent to testing.
- If a parent refuses drug screening for their infant, it is recommended that:
  - A formal consultation is requested of the CAPP team. The Attending Physician and the CAPP Clinician document in the infant's medical record that both clinicians agreed that drug screening was clinically indicated *and* in the best interest of the child. Alternatively, if another Newborn Attending or Fellow is available, consultation could be requested of that Clinician with documentation as above.
  - The parent's refusal is documented in the infant's medical record.
  - The parent's refusal of drug screening is reported to the state Child Protective Services (CPS) agency as being *potentially* "neglectful".

### Instructions for Drug of Abuse Screening

See Appendix B for "Background Information on Drug of Abuse Screening"

#### Urine Drug of Abuse Screening

- Place urine bag on baby as soon as possible after birth.
- Send urine to lab for urine drug of abuse (DAU) screen (minimum volume = 1 mL). Indicate on lab slip "DAU", specimen "Urine".
- Obtain results of DAU from CIS lab results and report results to infant's parents.
- If DAU has a *presumptive positive*, place another urine bag on baby to obtain additional urine to make up a minimum total volume of 10 mL (30 mL preferred). Send additional urine to lab for confirmatory testing. Indicate on miscellaneous requisition slip "UDRUGA", specimen "Urine", "Please add to DAU sample".
  - If unable to collect 10 mL in one sample, refrigerate urine and pool with subsequent samples. Full sample must be collected within a 24 hour time period.
  - If < 10 mL urine is available and only single substance confirmation is necessary, order testing for specific substance (e.g., "THC confirmation", specimen "Urine"). See Appendix B for "Required Minimum Volumes for Confirmatory Testing of a Single Substance".
  - If testing for buprenorphine is desired (e.g., suspected exposure to buprenorphine not prescribed to the mother), send an additional miscellaneous lab slip labeled "Buprenorphine Confirmation", specimen "Urine" (min. volume = 1 mL).
- Any positive screen should be viewed as a *presumptive positive* due to the possibility of cross reactivity with another substance. See Appendix B for "Substances That Give False-Positives Results by Initial

Testing” or refer to the DHMC Drug of Abuse (DOA) specificity table available at:  
<http://labhandbook.hitchcock.org/pdfs/DOASpecificityTable.pdf>.

### Meconium Drug of Abuse Screening

- Send at least 5 grams of meconium for drug of abuse screening, as soon as possible after birth. Indicate on lab slip: “DRUG SCREEN”, specimen “Meconium”. Indicate on lab slip request for specific confirmatory testing for any *presumptive positives* identified on the DAU and/or for any suspected exposure(s).
- If DAU screen results become available after meconium has been sent to lab, and any *presumptive positive* noted, call lab to request confirmatory testing for specific substance(s) detected.

### TCA (Tricyclic Antidepressants) Serum Screen

- If urine is *presumptive positive* for TCA and *concerns for exposure exist*, collect 1 mL blood in red top tube and send for “Semi-quantitative serum TCA level (Emergent Tricyclic Antidepressant)”. Min. volume = 0.5 mL.

## **Mandated Reporting Guidelines**

### **Mandated Reporting Criteria**

*Reports to the state CPS agency (e.g., NH-DCYF, VT-DCF) should be made in the following circumstances:*

- Baby born to a mother continuing to use *any* of the following substances during the pregnancy, subsequent to documented teaching on the potential dangers of that substance and documentation of resources offered for cessation:
  - Alcohol
  - Illegal substance
  - Controlled medication *not* prescribed to the mother
- Baby born to mother who, on admission, admits to prenatal use of an illegal substance or controlled medication *not* prescribed to her *and* use not previously disclosed or known to prenatal providers
- Baby who tests positive for any of the substances referenced above
- Baby with evidence of adverse effects due to prenatal alcohol exposure

### **Process of Making a Mandated Report**

#### Background

- Parents are to be notified of need for mandated reporting to the state CPS agency, when indicated by above criteria.
- The Social Worker may consult and assist in cases of mandated reporting, but each health care team member maintains mandated reporter status.
- CAPP must be notified of all reports made to CPS agencies, including NH-DCYF and VT-DCF, according to DHMC policy (<http://policy.hitchcock.org/PolicyStore/911/CAPP%20Guidelines.doc>). When a family resides in another state (e.g., VT), a report to NH-DCYF is also required.
- As a report to the state CPS agency is often needed or advisable prior to receipt of confirmatory results, the report should be made in a timely way in anticipation of discharge in as much detail as available at the time.

#### Instructions for Making the Report

- The BP or ICN Social Worker is to complete a telephone report to the newborn's state CPS agency (see below for NH and VT numbers) followed by a faxed written report (e.g., CIS note of Social Worker). The Social Worker will fax the Infant Clinician's medical documentation to state CPS agency, when requested by state.
- District specific phone numbers and hours can be found in the online CAPP Guidelines if further communication is required after the initial report.
- If the Social Worker is not available, a report should be made by another Infant Provider (e.g., Physician, ARNP, RN).
- The telephone and written report should include the following information, when available:
  - Known risk factors (e.g., domestic violence, psychiatric disorder in parent, prior child not in mother's custody)
  - Concerning behaviors of parents (e.g., unexplained absences off unit, refusal of drug of abuse screening)
  - Parent and family strengths including observed positive parent and family interactions
  - Known existing community supports
  - Status of lab results (e.g., preliminary vs. definitive)
  - Interpretation of medical findings and health risks to infant
- The Reporting Provider's CIS note, noting mandated report, should be forwarded to Deb Pullin (Assistant Medical Director, CAPP) and Jennifer Bell (Clinical Secretary, CAPP). Following notification of the report, CAPP will enter the information into a database of reports, as required by the state, and file the report to NH-DCYF when the report was made to another state (e.g., VT, NY, ME).
- If there is a strong concern about the infant's safety and the Social Worker, or other Infant Provider making the report, is uncertain about the CPS agency's response to the initial report, the Attending-of-Record should call and make an additional report. In this report, the Attending should communicate all medical and psychosocial concerns, and explain how these risk factors may impact/threaten the health and safety of the child.
- The Social Worker is to update the baby's state CPS agency of status of drug of abuse testing and any additional relevant information, in as much detail as is available, at the time of discharge.

#### **Mandating reporting to NH-DCYF**

- *Weekdays:*
  - Days: Call central intake office at 1-800-894-5533, fax report to 1-603-271-6565
  - Nights: Fax report to 1-603-271-6565; call office next morning
- *Weekends:* Fax report to 1-603-271-6565; call office Monday morning
  - For NH babies delivered after hours on Friday or weekends, if it is felt unsafe for baby to be discharged home, delay discharge until Monday morning when a verbal report can be made

#### **Mandating reporting to VT-DCF**

- *Weekday/nights/weekends:*
  - Call central intake office at 1-800-649-5285 (24 hr staff availability), fax report to 1-802-241-3301

### **Clinical Care Coordination**

#### **Care Management Consultation**

- Infant Provider (Physician, ARNP, RN, CRC) is to consult the BP or ICN Social Worker *weekdays* to perform initial assessment of mother and newborn, and assistance in identifying and arranging postnatal supports. The On-Call Social Worker is to be consulted for *nights* and *weekends*.

- Infant Provider (Physician, ARNP, RN, SW) is to consult the CRC to request assistance in identifying and arranging postnatal supports (e.g., VNA, Good Beginnings, breastpump rental) in collaboration with the Social Worker.
- Infant Provider (Physician, ARNP, RN, CRC, SW) is to contact Michele Dion, RN, MFM Nurse Coordinator/Case Manager (pager 9054) *weekdays*, when available, to review prenatal evaluation and management, as well as community supports in place and/or needed.

### **Child Advocacy and Protection Program (CAPP) Consultation**

- A formal CAPP consultation is available, but not necessary in most cases.
  - It is recognized that providers vary with respect to comfort with both pharmacologic and psychosocial issues presented by any given family situation. Moreover, some providers may be less comfortable with potential legal issues and logistics. A formal CAPP consultation may help bridge these possible gaps.
  - Involvement of a Consulting (non-treating) Clinician may be useful in dealing with families around concerns of abuse or neglect, since it allows the Treating Clinicians to maintain what may be perceived as a more neutral or supportive position with the family.
  - Formal consultation will allow for additional support of the CAPP Social Worker, if this is needed.
  - CAPP consultation is generally more useful and smoothly accomplished if initiated early in the admission.
- If formal consultation is desired, consultation should be requested as early as possible and *at least 24 hours* prior to discharge. Infant Provider (e.g., Physician, ARNP, RN, SW) should page the CAPP team (pager 9335) to request consultation to speak directly with the CAPP Provider on-call. If consultation is sought within 24 hours of discharge, the Requesting Clinician (e.g., Physician, ARNP) is asked to speak directly with the CAPP Provider on-call.
- Parents are to be notified of consultation with the CAPP team, when to be performed.
- If a formal CAPP consult has been placed, the CAPP Provider may file the report but this should be determined on a case-to-case basis following discussion with the consulting CAPP Provider, Social Worker and Attending-of-Record.

### **Infant Medical Provider Documentation**

- The Infant Medical Provider will provide interpretation of medical and lab findings, known psychosocial risk factors, and health risks to the infant in their medical documentation.
- The Nursery Attending will forward the baby's signed admission note to the On-Service and On-Call ICN and Pediatric Attendings to alert them of the baby's risk for NAS and potential future need for prolonged monitoring or management.

### **Monitoring for Signs of Substance Withdrawal and/or Toxicity**

*Newborns with potential for withdrawal and/or toxicity warrant close monitoring.*

#### **Recommended Minimum Monitoring Duration**

- 2 days for cocaine (most often symptoms are of toxicity)
- 2 days for short-acting narcotics or opioids (e.g., morphine, oxycodone, Percocet)
- 4 days for barbiturates
- 4 days for heroin
- 4 days for long-acting opioids (e.g., methadone, subutex, suboxone)

*For other substances, please review literature for most appropriate length of monitoring.*

## **NAS Monitoring**

- For newborns at risk for opioid withdrawal, begin monitoring with NAS scoring and full assessments within 2 hours of birth. Refer to Appendix C for the “Neonatal Abstinence Syndrome (NAS) Scoring Chart”
  - Assess infants for signs of withdrawal every 3 to 4 hours.
  - Score all symptoms within the preceding 3 to 4 hour interval, not only symptoms that occur during assessment.
  - Score baby when awake to elicit reflexes and specified behaviors. Infants should not be awakened unless they have been asleep for more than three hours.
  - Feed infant before scoring.
  - If fussy, calm infant prior to assessing muscle tone and respiratory rate.
- If at any time a score is  $\geq 8$ , perform scoring every 2 hours until scores  $< 7$  x 24 hr.
  - When at this scoring frequency, score newborn behaviors (e.g., tremors, myoclonic jerks) while the baby is asleep. If significant withdrawal is present, babies will likely demonstrate positive behaviors during sleep. Providing babies who are experiencing withdrawal symptoms with periods of uninterrupted sleep allows “organized rest”.

## **Support of Babies and Families**

*Any neonate with the potential for withdrawal and/or toxicity deserves close follow-up, a plan of safe care and a network of support following discharge, at least until the potential for withdrawal symptoms has resolved.*

- Teach family how to assess baby for problems with withdrawal and/or toxicity. If baby is at risk for NAS, teach family how to assess baby for symptoms of NAS, and score baby alongside each other, observing for:
  - Poor feeding
  - Fussiness
  - Inability to console
  - Excessive jitteriness
  - Excessive sneezing
  - Increased tone in arms and legs
- Teach family ways to keep baby’s environment calm and ways to help baby if experiencing difficulties.
  - For infant at risk for NAS, provide the “Neonatal Abstinence Syndrome – What You Need to Know” parent education booklet and review with parents.
  - Encourage family to room-in with baby at *all* times.
  - Encourage family to provide quiet, calm environment including, but not limited to:
    - Swaddling baby
    - Skin-to-skin contact
    - Dim lights in room
    - TV and voices down low
    - Limiting visitors
    - Avoiding “excessive handling” of baby
  - Teach family importance of responding to baby’s cues of hunger and/or stress early.
  - Teach family ways to calm baby when fussy or experiencing difficulties (e.g., swaddling, gentle rocking/swaying, making ‘shooshing’ noises, sucking on a finger or pacifier).
- Consult Developmental OT/PT service to provide assessment of baby's state organization, motor status, self-calming behaviors and feeding abilities as well as provide education for the baby's family on how to understand their baby's behavior, soothe their baby and best support their baby's development.
- All Maternal-Infant Care Providers should “bundle” care as much as possible to limit disruptions to and stimulation of the baby.

- As babies at-risk for opioid withdrawal may experience significant feeding difficulties, please refer to Appendix F for Evaluation and Support of Feeding in the Drug-exposed Infant.

## **Breastfeeding Guidelines for Mothers with a History of Substance Abuse**

### **Baseline Criteria for Breastfeeding**

*For mothers who wish to breastfeed, the following criteria must be met:*

1. Mother has been compliant with standard of care prenatal visits for at least the third trimester of pregnancy (10 weeks prior to birth) *AND*
2. Mother has had negative drug of abuse screening for at least the third trimester of pregnancy (including upon admission to the BP for mothers with substance use during known pregnancy) *AND*
3. Mother has been compliant in a drug addiction treatment program for at least the third trimester of pregnancy (10 weeks prior to birth).
  - If a drug addiction treatment program is not available, mother must meet strict criteria above.
  - A drug addiction treatment program is not mandatory if the mother is in an established recovery period and there are no concerns for substance use during pregnancy (compliant with standard prenatal visits, negative drug of abuse screening per screening guidelines).

### **Breastfeeding Guidance and Support**

#### Mothers With History of Substance Abuse and Currently In Recovery

##### ***Guidelines***

- Support mother's decision to breastfeed her infant if she meets baseline criteria above. Stress importance of not exposing baby to any illegal substances during breastfeeding. If mother feels she is likely to use an illegal substance (including controlled medication not prescribed to the mother), *breastfeeding is not recommended*.
- Request formal Lactation consultation.
- For mothers on methadone and/or buprenorphine maintenance treatment, review relative safety of medications in breastfeeding as long as mother does not abruptly cease treatment.
  - Review that breastmilk *may* help lessen the severity of NAS and *potentially* the need for pharmacologic treatment but *may also* delay the onset of symptoms of NAS.
  - Mothers should decrease prescribed dose of medication postpartum *only* under supervision of a medical provider.
  - Stress importance of not exposing baby to other medications unless prescribed by, and under direct supervision of, a medical provider who is knowledgeable about effects of medications in lactation. Refer provider to Thomas Hale's *Medications and Mother's Milk* or NIH's *Lactmed* via <http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?LACT>.
- If mother's drug of abuse screening is *presumptive positive* for a drug of abuse or a controlled medication not prescribed to the mother:
  - Withhold breastfeeding until confirmatory testing returns. Exceptions to this recommendation include *presumptive positives* with a high likelihood of false positives (e.g., barbiturates, tricyclic antidepressants) unless exposure is suspected.
  - Encourage mother to pump her breastmilk while waiting for confirmatory testing. The mother may store her breastmilk until confirmatory testing is available. Breastmilk should be discarded if UDRUGA or meconium screening confirms presence of an illegal substance.
  - If GC/MS does not confirm presence of an illegal substance, encourage mother to breastfeed and feed expressed breastmilk to her baby.



## Mothers With Current or High Risk of Substance Use/Abuse

### ***Inclusion criteria***

Mothers who, during their last trimester of pregnancy (within 10 weeks of birth), have:

- Positive urine drug of abuse screening confirmed by UDRUGA
- Self-report of an illegal substance, including use of controlled substance not prescribed to the mother

### ***Guidelines***

- Formula feeding is recommended.
- Advise mother that drugs of abuse can readily enter breastmilk, and that infant is at risk for adverse effects of sedation, apnea and possibly death. For these reasons, *breastfeeding is not recommended* with the possible exception of marijuana though caution should be recommended even in this circumstance.
- Lactation service will not be consulted, and a breastpump will not be provided.
- If mother insists on breastfeeding, inform mother that this is against medical advice due to medical concerns for safety of illegal substance in breastmilk. Document medical discussion in the infant's electronic medical record and inform Social Worker. Social Worker will communicate concerns with the state CPS agency.
- If at any time there is concern for the safety of the infant, mother and infant may be separated by Attending order. Inform Social worker if this is felt to be necessary.

### **Drugs of Abuse identified as having potential adverse effects on infants during breastfeeding**

<b>Drug of Abuse</b>	<b>Potential adverse effects</b>
Alcohol	May reduce milk production or milk ejection; with large amounts, drowsiness, diaphoresis, deep sleep, decrease in linear growth, abnormal weight gain
Amphetamines	Irritability, poor sleeping pattern; drug concentrated in human milk
Cocaine	Cocaine intoxication, irritability, vomiting, diarrhea, tremulousness, seizures
Demerol	Neonatal sedation, neurobehavioral delay in neonates
Heroin	Tremors, restlessness, poor feeding, vomiting
Marijuana	Sedation; very long half-life of some components; may suppress prolactin and/or milk supply; infant will be drug-screen positive for long periods
PCP	Potent hallucinogen

*Source:* Adapted from Hale and Ilett (2002) and AAP Committee on Drugs (2001)

### **Criteria for Transfer for Further Management and/or Monitoring**

#### **Criteria for Transfer from Birthing Pavilion to Intensive Care Nursery (ICN)**

- Babies who demonstrate the following criteria should be transferred to the ICN for initial stabilization (“capture phase”) with pharmacologic management of withdrawal symptoms.
  - 3 consecutive NAS scores  $\geq 8$  or average of any 3 consecutive scores  $\geq 8$
  - 2 consecutive NAS scores  $\geq 12$  or average of any 2 consecutive scores  $\geq 12$
  - Seizures
  - Apnea
  - Inability to orally feed despite demonstration of feeding cues or after initial 24 -36 hr if no feeding cues demonstrated. If baby does not meet scoring criteria for pharmacologic management as above, management may be supportive only.

- Baby's Care Plan Checklist is updated for all Nursery care provided and accompanies baby's bedside chart to ICN.
- Initiation and weaning of pharmacologic management should follow guidelines outlined in Appendix D - "Neonatal Abstinence Syndrome: Treatment Protocol". (online hotlink to protocol)

### **Criteria for Transfer from Birthing Pavilion or ICN to Pediatrics**

- Babies who demonstrate the following criteria should be transferred to the Pediatrics floor for continued observation and/or weaning from pharmacologic management, when indicated.
  - From Birthing Pavilion: Baby requires transfer due to limited bed space on the BP ( $\geq 48$  hours for vaginal delivery,  $\geq 72$  hours for Cesarean delivery) and baby is demonstrating no concerning signs of withdrawal that may require pharmacologic treatment. *The aim is to keep the baby and mother together on the BP for entire observation period.*
  - From ICN: Baby has begun the weaning phase of pharmacologic management and is demonstrating physiologic stability, and requires transfer for pharmacologic tapering and further discharge teaching.
- Family should be informed of transfer. *Rooming-in* with the baby is *strongly encouraged* for the mother so as to facilitate a calm, secure environment for the baby and to assist in discharge teaching.
- Baby's Care Plan Checklist is updated for all care provided to date and accompanies baby's bedside chart to Pediatrics.
- Initiation and weaning of pharmacologic management should follow guidelines outlined in Appendix D - "Neonatal Abstinence Syndrome: Treatment Protocol", when clinically indicated.

### **Discharge Criteria**

*Discharge may be considered when the following criteria have been met:*

- Baby has completed appropriate observation for particular substance exposure, as per "Recommended Minimum Monitoring Duration" under "Monitoring for Signs of Substance Withdrawal and/or Toxicity".
- If baby is at risk for narcotic withdrawal:
  - Baby has completed appropriate observation as per "Recommended Minimum Monitoring Duration" *AND*
  - No active concerns for significant NAS exist:
    - Scores have been stable in last 24 hours and remain below criteria for pharmacologic treatment *OR*
    - Baby is stable off morphine for 48 hours if pharmacologic treatment was initiated and NAS scores remain below treatment threshold without an uptrend in scores
- \* *Please refer to Appendix D if infant is being discharged home on Phenobarbital*
- Feeding without difficulties with appropriate weight pattern.
- Able to maintain stable vital signs, including temperature.
- Absence of apnea or respiratory compromise (with exception of babies being discharged with respiratory support needs due to prematurity).
- Parents have demonstrated appropriate response to and care of baby.
- Discussion about home environment and existing community resources has occurred with family.
- Referrals to appropriate community supports have been made, identifying known family challenges (including domestic violence, mental health issues, family lacking in supportive shelter) and strengths (including informal supports). Appointments are documented in Care Plan, as applicable.
- State CPS agency is aware of any issues in the home which may pose risk for the baby and has been updated on known family challenges and strengths (as above), results of drug of abuse screening available at the time of discharge, and community supports recommended to the family.
- All health care maintenance has been completed (i.e., hearing screen, newborn metabolic screen, hepatitis B vaccination) and documented in Care Plan.

- Newborn's Primary Care Provider contacted and updated about the baby's medical course, social issues, and community resources offered; follow-up appointment made and documented in Care Plan.
- Attending-of-Record at discharge assumes responsibility for follow-up of outstanding drug of abuse lab testing (e.g., UDRUGA or meconium confirmatory testing), with communication to Social Worker-of-Record and baby's PCP when results available.
- Social Worker-of-Record at discharge assumes responsibility for follow-up of outstanding drug of abuse lab testing with baby's state CPS agency, when results are available through CIS or results are communicated by Attending-of-Record.

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**DOCUMENTATION:**

Inpatient Newborn CIS Templates

Care Plan Checklist for the Known or Suspected Drug Exposed Newborn

Newborn Nursery Flow sheet

Newborn Nursery Parents Education Flowsheet

Feeding Plan for Baby with Actual or Potential NAS

Outpatient Newborn Nursery/Pediatrics Consultation CIS Template

Please send comments or feedback related to this policy to Bonny Whalen, MD

**ID#: XX0000.PP**

Written by: Bonny Whalen, MD and members of the Multi-disciplinary Committee for Care of the Drug-exposed Pregnancy and Newborn.

Approved by: CHaD Policy and Procedure Committee

Reviewed:

Revised: 5/7/2009

## APPENDIX A: Guideline for Care of the Known or Suspected Drug Exposed Pregnancy

### Prenatal Screening and Education

- Women should be screened by history for substance use/abuse at prenatal visits. See “Screening Guidelines for Pregnant Women” below for lab screening indications.
- When substance use is identified, a referral to substance abuse counseling and treatment, and for training in parenting skills should occur.
- For pregnancies with suspected or known substance exposure, obstetrical health care providers will provide and document counseling for pregnant women regarding the:
  - potential harm of substance exposure(s) for the fetus and newborn
  - need for drug of abuse screening in the mother during pregnancy and upon admission for labor
  - need and method of collection for urine and/or meconium drug of abuse screening in the newborn
  - requirements for mandated reporting to Child Protective Services (see “Mandated Reporting Guidelines”)
  - involvement of Social Worker and Clinical Resource Coordinator before and after delivery
- For pregnancies with known risk for Neonatal Abstinence Syndrome (NAS) the following should occur:
  - Provision of “Neonatal Abstinence Syndrome – What You Need to Know” parent education booklet
  - Prenatal consultation with Newborn Nursery team
    - Education and counseling to include that noted above and review of parent education booklet
  - Encourage parents to be active participants in care during the pregnancy and after delivery

### Drug of Abuse Screening Guidelines for Pregnant Women

1. Urine drug of abuse (DAU) screening\*, with confirmatory (UDrugA) testing for *presumptive* positive(s), should be performed **at times noted below** for the following:
  - Substance use/abuse\*\* *during* known pregnancy *OR* history of substance use/abuse\*\* *with* erratic prenatal care
    - First prenatal visit
    - Random time in third trimester (e.g., 36 weeks)
    - As clinically indicated
    - Admission
  - History of substance use/abuse\*\* within *one year* of pregnancy but *prior to* discovering pregnancy *OR* history of substance use/abuse\*\* *and* late entry to prenatal care
    - First prenatal visit
    - As clinically indicated
    - Random time in third trimester (e.g., 36 weeks)
2. Urine drug of abuse (DAU) screening\*, with confirmatory (UDrugA) testing for *presumptive* positive(s), should be performed **at first prenatal visit and as clinically indicated** for the following:
  - Late entry to prenatal care
  - Erratic prenatal care
3. Urine drug of abuse (DAU) screening\*, with confirmatory (UDrugA) testing for *presumptive* positive(s), should also be performed **on admission** for the following:
  - No prenatal care
  - Incomplete screening for clinical indications and recommended times noted above
  - History of substance use/abuse\*\* and undergoing drug screening in treatment program
    - Unusual behavior on the part of the mother that potentially affects the infant’s care:
      - Altered mental status without other explanation
      - Unexplained absences from the unit
      - Erratic behavior (e.g., severe mood swings)
  - Women who present with perinatal complications possibly associated with substance use *AND* who have a history of substance use/abuse\*\* *OR* concerns by behavior or history:
    - Placental abruption
    - Precipitous labor
    - Previous unexplained fetal demise or repeated spontaneous abortions

- Unexplained fetal growth restriction or premature birth
- Unexplained hypertensive episodes or other cardiovascular events in mother or neonate (e.g., cerebrovascular accident, myocardial infarction)
- Signs of Neonatal Abstinence Syndrome as evidenced by positive NAS scoring in the newborn

\* Urine should be sent for ETOH if there is a history or concern of alcohol abuse

\*\* Substance use/abuse includes use of alcohol, illegal substance and/or controlled substance not prescribed to the mother

### **Consent for Drug of Abuse Screening**

- Women must consent prior to their own drug testing.

### **Key References**

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## APPENDIX B: Background Information on Drug of Abuse Screening

### Timing of sample

- Obtaining urine and meconium screening specimens within 24 - 48 hr of delivery is optimal to assist in the anticipation of timing and type of withdrawal symptoms and in informing the state CPS agency, if clinically indicated.
- Though specimens are most accurate if obtained within 24 - 48 hr after birth, they may be obtained up to 3 days after delivery, particularly for infants with delayed meconium passage.

### Meconium Drug of Abuse Screening

- Includes ELISA testing for: amphetamines, barbiturates, benzodiazepines, cannabinoids, cocaine/metabolites, methadone, opiates, phencyclidine (PCP), and propoxyphene (Darvon).
  - Meconium screening obtained on weekends will not be sent out until Monday morning as lab courier is available Monday-Friday only.
  - If initial testing is positive, Gas Chromatography/Mass Spectrometry confirmation is performed and final results will be delayed further.
- As the routine testing method may not identify substances present at low levels, specific confirmatory testing for any *presumptive positives* identified on the mom's or baby's urine DAU should be requested, or for any suspected exposures.

### Urine Drug of Abuse Screening (DAU)

- The DAU screen is a qualitative test intended for acute toxicological assessment, however it may serve as an initial screening method for the potentially drug-exposed mother and infant.
- The DAU screens for: amphetamine/methamphetamine, barbiturates, benzodiazepines, cocaine, methadone, opiates, THC (marijuana), and TCAs (tricyclic antidepressants).
- Results should be available within ~ 1 hour of lab receipt of sample.
- *False negatives* may occur in the following circumstances:
  - Drug concentration is below DAU cutoff level (e.g., does not detect oxycodone (Oxycontin/Roxicodone), meperidine (Demerol), clonazepam (Klonopin), flunitrazepam (Rohypnol), or triazolam (Halcion) unless at very high concentrations). See below for DAU cutoff levels
  - A specific drug is not detected by the particular antibody (e.g., fentanyl)
  - Urine has been adulterated by dilution or bleaching
  - Very dilute urine

#### Urine Drug of Abuse (DAU) Positive Cutoff Levels

Amphetamines	1000 ng/ml d-amphetamine
Methamphetamines	1000 ng/ml d-methamphetamine
Opiates	300 ng/ml morphine
Cocaine metabolites	300 ng/ml benzoylecognine
Marijuana metabolites	50 ng/ml 11-nor-9-THC-COOH
Benzodiazepines	300 ng/ml nordiazepam
Barbiturates	300 ng/ml secobarbital
Methadone	300 ng/ml methadone
Tricyclic antidepressants	1000 ng/ml desipramine

### Urine Confirmatory Testing (UDrugA)

- The UDrugA includes:
  - Immunoassay testing for: amphetamine/methamphetamine, barbiturates, benzodiazepines, cocaine, ethanol, MDMA (Ecstasy), methadone, opiates, phencyclidine (PCP), propoxyphene (Darvon), and THC (marijuana). Gas Chromatography/Mass Spectrometry (GC/MS) confirmation is performed for positives.
  - GC/MS Opiates Profile for: codeine, hydrocodone, hydromorphone, morphine, oxycodone, oxymorphone.
- As the UDrugA is sent out to an outside lab, confirmatory testing will take several days to a week.



## Required Minimum Volumes for Confirmatory Testing of a Single Substance

<u>Test name</u>	<u>Min. volume</u>
Amphetamines	5 mL
Barbiturates	5 mL
Benzodiazepines	10 mL
Cocaine	5 mL
Ethanol	0.5 mL
Methadone	5 mL
MDMA (Ecstasy)	2 mL
Opiates	5 mL
PCP	5 mL
Propoxyphene	5 mL
THC (marijuana)	5 mL

## Detectability of Drugs of Abuse in Urine

Drug Name	Biological Half-Life (hours)	Estimated window of detection
<b>Amphetamine</b>	4 - 15	1.5 - 3 days
<b>Barbiturates</b>		
Secobarbital (fast-acting)	8 - 15	2 - 3 days
Phenobarbital (slow-acting)	80	5 - 15 days
<b>Benzodiazepines</b>		
Alprazolam (short-acting)	4 - 8	2 - 3 days
Chloriazepoxide (long-acting)	10 - 20	5 days
Diazepam (long-acting)	20 - 30	7 - 10 days
<b>Benzoylgonine (Cocaine)</b>	12 - 15	3 - 4 days
<b>Cocaine</b>	2 - 3	1 day
<b>Ethanol</b>	2 - 3	1 day
<b>Heroin</b>	4 - 7	2 - 3 days
<b>Marijuana (THC)</b>	0.33	3 hours
<b>THC Carboxylic Acid (THC metabolite)</b>	48	10 - 45 days
<b>Methadone</b>	15 - 20	3 - 4 days
<b>Methamphetamine</b>	4 - 6	1.5 - 2 days
<b>Morphine</b>	4 - 7	2 - 3 days
<b>Phencyclidine (PCP)</b>	10 - 20	2 - 3 days
<b>Propoxyphene (Darvon)</b>	8 - 12	2 days

## Substances That May Give False-Positives Results by Initial Testing

The following medications and substances may trigger a false positive response by the qualitative urine drug screen (DAU) for categories underlined below. This presumptive positive result becomes a false positive if, on confirmatory testing by the UDrugA (Gas Chromatography/Mass Spectrometry), the presence of this medication or substance is not confirmed. This list is not exhaustive; please refer to the DHMC Drug of Abuse (DOA) specificity table available at:

<http://labhandbook.hitchcock.org/pdfs/DOASpecificityTable.pdf>

### Amphetamines (methamphetamine and amphetamine)

- Ephedrine
- Pseudoephedrine
- MDMA (Ecstasy)
- Phentermine (Fastin, Adipex-P)
- Fenfluramine (Pondimin)
- Diethylpropion (Tenuate)
- Phenylpropanolamine
- Dexfenfluramine (Redux)
- Terbutaline (Brethaire)
- Selegiline (Deprenyl)

### Barbiturates

- Aminoglutethimide (Cytraden)
- Bromisovalum (Somnurol)
- Carbromal (Carbital)
- Phenytoin (Dilantin)
- Ethosuximide (Zarontin)
- Thiopental (Pentothal)

## Benzodiazepines

- Oxaprozin (Daypro)
- Phenyltoloxamine (Poly-hystin)
- Tolfenamic acid (Tolfedine)

## Cocaine

- None to date

## Marijuana (THC)

- NSAIDs (after high dose and rare)
- Pantoprazole (Protonix)

## Opiates (Heroin, Morphine, Codeine)

- Dihydrocodeine (paracodin)
- Hydrocodone (Hycodan)
- Hydromorphone (Dilaudid)
- Levorphanol (Levo-Dromoran)
- Ofloxacin (Floxin)
- Oxycodone (Percodan)
- Oxymorphone (Numorphan)
- Dextromethrophan

## Phencyclidine (PCP)

- Dextromethrophan
- Ibuprofen
- Venlafaxine (Effexor)
- Diphenhydramine

## TCA (Tricyclic Antidepressants)

- Carbamazepine (Tegretol)
- Cyclobenzaprine (Flexiril)
- Cyproheptadine (Periactin)
- Diphenhydramine
- Orphenadrine (Norflex)

## **Substances that give False-Positives Results by Initial and Confirmatory Testing**

### Amphetamines (methamphetamine and amphetamine)

*Prescription medications that contain either D-amphetamine or racemic D,L-amphetamine include the following:*

- Adderall
- Bensedrine
- Biphenamine
- Dexedrine
- Durophet
- Obetrol

*Prescription medications that contain D-methamphetamine*

- Desoxyn (Gradumet)

*Nonprescription medications that contain L-methamphetamine include the following:*

- Vicks inhaler

*Substances known to be metabolized to methamphetamine and amphetamine include the following:*

- Benzphetamine (Didrex)
- Dimethylamphetamine
- Famprofazone
- Fencamine
- Furfenorex
- Selegiline (Deprenyl, Eldepryl)

*Substances known to be metabolized to amphetamine include the following:*

- Anphetaminil
- Clobenzorex (Dinintel, Finedal)
- Ethylamphetamine
- Fenethylline (Captagon)
- Fenproporex (Tegisec)
- Mefenorex (Pondinil)
- Mesocarb
- Phenylamine

## Cocaine

*There are no prescription medications that contain cocaine. The combination of tetracaine, epinephrine, and cocaine (TAC) is frequently used in emergency departments. Cocaine hydrochloride is used for ear, nose and throat procedures. Other topical*

analgesics, such as Novocain, Xylocaine (lidocaine), and benzocaine bear no structural similarity to cocaine or its metabolite (benzoylecgonine) and will not test positive.

### Marijuana (THC)

*Prescription medications that contain delta-9-tetrahydrocannabinol (THC) include the following:*

- Dronabinol (marinol)

*Food items that contain THC include the following:*

- Hemp seeds

### Opiates (Heroin, Morphine, Codeine)

*Prescription medications that contain morphine include the following:*

- Astramorph PF
- Duramorph
- MSIR
- MS Contin tablets
- Infumorph
- Oramorph

*Prescription medications that contain codeine include the following:*

- Actifed with Codeine Cough syrup
- Codimol PH
- Deconsal
- Dimetane-DC Cough syrup
- Empirin w/ Codeine
- Fiorinal w/ Codeine
- Phenaphen w/ Codeine
- Phenergan
- Robitussin A-C
- Triaminic Expectorant w/ Codeine
- Tylenol w/ Codeine
- Tussar-2

*Substances that metabolize to morphine include the following:*

- Heroin

*Food items that contain morphine include the following:*

- Poppy seeds

### Phencyclidine (PCP)

*There are no prescription medications that contain PCP. There are no legal medical uses of PCP or any other substance that can be misidentified as PCP.*

## APPENDIX C: Neonatal Abstinence Syndrome (NAS) Scoring Chart

### Infants at risk of narcotic withdrawal:

- should be assessed for signs of withdrawal every 3 to 4 hours
- should have all symptoms scored within the preceding 3 to 4 hour interval, not just symptoms that occur during assessment
- should not be awakened unless they have been asleep for more than 3 hours
- should be fed before they are scored, and calmed prior to assessing muscle tone and respiratory rate

The scoring chart, adapted from L.P. Finnegan (1986), is designed for term infants who are fed every 2 to 3 hours. Allowances must be made for infants who are preterm or beyond the initial newborn period.

Infants should receive only one score from options in categories: Cry, Sleep, Moro, Tremors, Stools, Fever, RR			Date															
System	SIGNS AND SYMPTOMS	Score	Time															
CENTRAL NERVOUS SYSTEM DISTURBANCES	Excessive High Pitched (or other) Cry	2																
	Continuous High Pitched (or other) Cry	3																
	Sleeps < 1 Hour After Feeding	3																
	Sleeps < 2 Hours After Feeding	2																
	Sleeps < 3 Hours After Feeding	1																
	Hyperactive Moro Reflex	2																
	Markedly Hyperactive Moro Reflex	3																
	Mild Tremors Disturbed	1																
	Moderate-Severe Tremors Disturbed	2																
	Mild Tremors Undisturbed	3																
	Moderate-Severe Tremors Undisturbed	4																
	Increased Muscle Tone	2																
	Excoriation (Specify Area): _____	1																
	Myoclonic Jerks	3																
Generalized Convulsions	5																	
METABOLIC/VASOMOTOR/ RESPIRATORY DISTURBANCES	Fever <101 (99 - 100.8 F/37.2 - 38.3 C)	1																
	Fever >101 (38.4 C and Higher)	2																
	Sweating	1																
	Frequent Yawning (≥ 3 Times/Interval)	1																
	Mottling	1																
	Nasal Stuffiness	1																
	Sneezing (≥ 3 Times/Interval)	1																
	Nasal Flaring	2																
	Respiratory Rate > 60/min	1																
	Respiratory Rate > 60/min with Retractions	2																
GASTRO- INTESTINAL DISTURBANCES	Excessive Sucking	1																
	Poor Feeding	2																
	Regurgitation	2																
	Projectile Vomiting	3																
	Loose Stools	2																
	Watery Stools	3																
	TOTAL SCORE																	
	*See back for further details of scoring	<i>INITIALS of SCORER</i>																
	Morphine (mg/kg dose)																	
	Phenobarbital (mg/kg dose)																	

## Instructions for NAS Scoring

<b>High-pitched Cry</b>	Score 2 if cry is excessive, score 3 if cry is continuous; Note in progress note if cry is alleviated by picking up infant or with feeding
<b>Sleep</b>	Do not awaken infant to score unless infant has been asleep for more than 3 hours; If infant is awakened for scoring sooner, do not score for diminished sleep
<b>Moro Reflex</b>	<u>Hyperactive Moro reflex</u> - Extension of arms/legs that lasts a few seconds, with pronounced jitteriness in the hands during or at the end of Moro reflex <u>Markedly hyperactive Moro reflex</u> - Marked and persistent extension of the arms/legs, accompanied by hyper-alert state and/or continued arm/leg tremors
<b>Tremors</b>	Assign only one score from one of the 4 categories; Score for increasing severity. “Undisturbed” refers to baby’s tremors occurring <i>during sleep</i> or when <i>at rest</i> in bassinette
<b>Muscle Tone</b>	Note degree of resistance when attempting to straighten baby’s arms and legs, baby should resist slightly but examiner should be able to move baby’s arms and legs against resistance; inability to do so indicates increased muscle tone Lack of head lag and/or baby’s ability to stand in ventral suspension indicates increased tone
<b>Excoriation</b>	Note location of excoriation; Score 1 when excoriation first presents; rescore only if excoriation site worsens or excoriation appears in another area. Buttocks should not be scored for excoriation unless stools are normal
<b>Myoclonic Jerks</b>	Myoclonus refers to a short quick contraction of a muscle or extremity (not jitteriness or quivering); Note location / muscle group
<b>Generalized Convulsions</b>	Score for any seizure (tonic / clonic) activity during the period; Immediate evaluation should be requested by infant’s covering medical provider
<b>Sweating</b>	Observe for beads of sweat or moist skin, do not score for environmental factors
<b>Fever</b>	Temperature parameters refer to <i>axillary</i> temperature readings. Follow unit guidelines for confirming elevated axillary temperatures with rectal temperatures
<b>Yawning</b>	Score for 3 or more yawns that occur during scoring interval
<b>Mottling</b>	Observe for skin mottling on the chest, trunk, and extremities
<b>Nasal Stuffiness</b>	Score for nasal congestion; Rhinorrhea may or may not be present
<b>Sneezing</b>	Score for 3 or more sneezes that occur during scoring interval
<b>Nasal Flaring</b>	Score if nasal flaring is present in absence of other evidence of airway disease
<b>Respiratory Rate</b>	Count respirations over a full minute, and observe for retractions
<b>Excessive Sucking</b>	Score for frantic rooting or sucking behaviors (e.g., sucking on fists, hands, pacifier or clothing), and/or if evidence of sucking blisters on fingertips or knuckles present
<b>Poor Feeding</b>	Score if baby is slow to feed or feeds inadequate amounts <i>unrelated</i> to prematurity. Score if baby demonstrates uncoordinated and ineffectual suck/swallow in presence of rooting and/or sucking behaviors
<b>Regurgitation</b>	Regurgitation = effortless return of gastric/esophageal contents from infant's mouth. Score only if regurgitation occurs more frequently than is usual for a newborn
<b>Projectile Vomiting</b>	Forceful ejection of stomach contents
<b>Loose Stools</b>	Score if stools are loose but lack surrounding water ring
<b>Watery Stool</b>	Score if stools are loose and have water ring present

<b>For any score <math>\geq 8</math></b>	<b>Initiate Q2 hr scoring for 24 hours and continue until scores are <math>&lt; 8</math> for 24 hours</b>
Pharmacologic therapy and transfer to the ICN should be considered for:	Three consecutive scores $\geq 8$
	Average of any three consecutive scores $\geq 8$
	Two consecutive scores $\geq 12$
	Average of any two consecutive scores $\geq 12$
	Severe symptoms (e.g., apnea, seizures)

## APPENDIX D: Neonatal Abstinence Syndrome Treatment Protocol

### Pharmacologic Intervention

Pharmacologic management for Neonatal Abstinence Syndrome should be initiated for infants with a suspected or known history of in-utero drug exposure and any of the following:

1. Three consecutive NAS scores  $\geq 8$  or average of any 3 consecutive scores  $\geq 8$
2. Two consecutive NAS scores  $\geq 12$  or average of any 2 consecutive scores  $\geq 12$
3. Seizures
4. Apnea

Please refer to the “Guideline for Care of the Known or Suspected Drug (Illicit Substance) Exposed Newborn” for more details on monitoring, testing, and non-pharmacologic measures.

### General Guidelines: Morphine

#### A. Capture Phase

1. Start at 0.04 mg/kg/dose every 4 hours administered orally. Use birth weight for calculations until infant is more than 10 days old or until he/she has surpassed birth weight, whichever comes first.
2. Follow initial progress/response carefully: if NAS scores increase or persist, increase the dose by 0.02 mg/kg/dose until symptoms are controlled. A bolus dose of 0.02 mg/kg may be administered 2 hours after the initial dose if the infant is not captured. If this occurs, the next dose should occur at the increased amount and four hours after the initial dose. (see Capture phase example below)
3. Recommended maximum total daily dose is 0.8 mg/kg/day or 0.12 mg/kg/dose every 4 hours.
4. Infants fed every three hours may have the same total daily dose divided for three hourly feedings.
5. The smallest dose that adequately controls the patient’s symptoms is the maintenance dose.
6. The goal of therapy is consistent NAS scores below 8.
7. Infant should be kept on cardiorespiratory monitoring throughout morphine treatment.

#### B. Maintenance Phase

1. The initial maintenance dose is the dose that controls the patient’s symptoms for a complete dosing interval at completion of the capture phase.
2. When scores have been less than eight for 48 hours, the weaning phase may begin.
3. If the patient shows lethargy (lack of awakening and decreased feeding), the dose should be held until scores again approach eight and then restarted at a lower dose.
4. If the infant has begins to experience escalating signs *consistent with withdrawal* or consistent scores at or above 8 resume the capture phase protocol above.
5. Over the course of treatment, there is no need to “weight-adjust” dosages.

#### C. Weaning Phase

1. Weaning can begin once
  - a. The infant has been stable at a maintenance dose for 48 hours;
  - b. NAS/Finnegan scores are consistently less than eight, and;
  - c. Clinically stable (no excessive stooling, weight loss, etc.).
2. On a daily basis, wean the maintenance dose by 10% of the maximum maintenance dose if the patient:
  - a. Has NAS/Finnegan scores consistently less than eight, and;
  - b. Is clinically stable (no excessive stooling, weight loss, etc.).
3. Discontinue pharmacologic treatment once the dose is less than 0.12 mg/kg/day (0.02 mg/kg/every 4 hours). The infant should be able to tolerate mild symptoms during weaning.
4. Infants weaned off morphine should be watched for signs of withdrawal for 48 hours following discontinuation. NAS scoring should continue every four hours during this time.

### Adjunct Treatment: Phenobarbital

Infants who are difficult to capture (escalating scores despite increasing doses of morphine) or who have been treated for 7 days with difficulty weaning should be considered for adjunct treatment with Phenobarbital. Under team discretion, Phenobarbital may be considered as an adjunct in any case as it has been demonstrated to reduce length of stay. Phenobarbital may be used as first line treatment with Morphine in cases of exposure to drugs from other drug classes.

#### A. Starting Dose

1. Load with 10 mg/kg/dose every 12 hours for 2 doses (total 20 mg/kg), administered orally.
2. Obtain baseline renal monitoring levels (BUN & creatinine) before starting phenobarbital.

#### B. Maintenance

1. Begin maintenance therapy 12 hours after last loading dose.

2. Maintenance dose is 5 mg/kg/day for infants of gestational age of 37 weeks or over. Infants less than 37 weeks should start with 4 mg/kg/day. The dose can be divided every 12 hours if volume is not tolerated.
3. Monitoring: Obtain a serum level no sooner than seven days after loading dose. Optimal level is 20 – 25 micrograms/ml (acceptable range is 18 to 30 micrograms/ml). If the level is too low, you may **consider** adjusting the maintenance dose (increase dose by 1% for every percentage below target level); however, be sure to assess infant's clinical status. **A maintenance dose adjustment should not be used to treat reemerging symptoms.**
4. If a maintenance dose adjustment is made, **consider** obtaining a Phenobarbital level no sooner than seven days after the adjustment. A level is not mandatory unless clinical concerns exist.
5. Always check levels if patient is symptomatic of toxicity.

### C. Weaning

1. Wean the patient off Morphine while on Phenobarbital.
2. Discontinue Phenobarbital 7 days after last dose of **morphine**. Phenobarbital will remain in the patient's system for up to 4 weeks after last dose and accomplish an "auto-wean."
3. Outpatient Phenobarbital management requires close contact with family's primary care provider.

## Addendum

### Capture phase example

- 1 PM      Start treatment with 0.04 mg/kg/dose every four hours.
- 3 PM:      The infant still exhibits symptoms and high scores.  
               Administer an additional dose of 0.02 mg/kg.  
               Resume the next scheduled dose at 5 pm with 0.06 mg/kg/dose every four hours.
- 5 PM:      If the infant's scores are escalated and a higher dose is warranted,  
               administer this dose as 0.08 mg/kg/dose every four hours

## APPENDIX E: Outpatient Newborn Nursery/Pediatrics Consultation

Date of service: []

Consult service: Newborn Nursery/Pediatrics

Place of service: MFM Clinic

Consulting Provider: Dr []

Supervising Attending: Dr. []

**Reason for Consult:** We are seeing [] at the request of Dr. [], of Obstetrics, to discuss management, expectations, and outcomes related to delivery of an infant exposed in-utero to [].

**Prenatal History:** [] is a [] year old G[]P[] woman, now at [] weeks, who has been managed in a [] Rx program at [] for [] abuse since []. Urine drug of abuse screens have been [] during pregnancy. Denies use of any other substances, non-prescribed medications or alcohol during this pregnancy. Other substances used in the past include []. Prenatal screening significant for []. Notable meds during pregnancy include []. Other pregnancy complications include [].

**Social History:** Parents []. [] works as [], FOB works as []. Family support available locally includes []. PCP for new baby will be [].

*We reviewed and discussed the following, and all mother's questions were answered:*

- **Potential harm of medication and substance exposure** for the fetus and newborn.
- **Importance of continued substance abstinence** during pregnancy.
- **Need for drug of abuse screening in the newborn** at birth, per protocol.
- **Mandated reporting to Child Protective Services when clinically indicated** by following:
  - Baby born to a mother continuing to use alcohol, illegal substance, or controlled medication not prescribed to the mother, subsequent to documented teaching on the potential dangers of that substance
  - Baby who tests positive for any of the substances referenced above
  - Baby with evidence of adverse effects due to prenatal alcohol exposure
- **Need for NAS monitoring to follow for signs of withdrawal**, starting soon after birth, and for minimum of 4 days if on buprenorphine or methadone. Mother informed that longer hospitalization may be required if baby shows signs of withdrawal in first few days of life, even if not requiring Rx.
- **Difficulty in predicting which babies will experience withdrawal** and/or how long her baby's length of stay would be, especially in the setting of signs of withdrawal.
- **Importance of rooming-in at all times and in providing calm environment** (e.g., dim lights, no excessive noise, limiting visitors), responding to infant feeding cues and signs of stress early, etc.
- **Importance of mother/care providers learning how to assess baby** for problems with withdrawal, and ways to help baby if experiencing difficulties.
- **Criteria for transfer to ICN** incl. signs of severe withdrawal (e.g., apnea, seizures), 3 consecutive NAS scores of 8 or more (or average of 8 or more), or 2 consecutive NAS scores of 12 or more (or average of 12 or more).
- **Indications for pharmacologic management of withdrawal** and use of morphine as treatment of choice at DHMC, with phenobarbital as possible adjunct therapy, if baby requires treatment.
- **Structural and staff organization of the BP, Intensive Care Nursery and Pediatrics Unit.** Reviewed possibility that baby may require transfer to the Pediatrics Unit if bed space is not available on the BP after 48 hr for vaginal delivery or 72 hr for c-section delivery. Stressed that *goal is to keep mom and baby together on the BP*. If transfer to Pediatrics is required, mom would be able to (and encouraged to) room-in with her baby.
- **Goal for care providers is to "bundle" care** as much as possible to limit disruptions to the baby.
- **Recommendation for consultation by Clinical Resource Coordinator (CRC) and Social Worker (SW)** during pregnancy, as well as consultation after birth, to assist in identification of community supports.
- **Importance of identifying infant PCP**, if not done yet.
- **Support provided for mother's decision to breastfeed her infant**, if desired. Discussed benefits of breastfeeding and known safety of maintenance medication when taken as prescribed and weaned slowly. Consultation with Lactation specialist offered and number given for BPCCC (603-650-6159). Discussed importance of abstaining from use of any non-prescribed medications or illegal substances. If mother is at high risk for drug use after birth of baby, including current or known use in last trimester of pregnancy (10 weeks week before), breastfeeding is not recommended and mother should plan to formula feed.

*A tour of the Neonatal units was offered and is to be arranged by the OB clinic RN, if desired by the mother.*

*Parent education booklet on Neonatal Abstinence Syndrome was provided to the mother.*

[] minutes were spent in consultation with > 50% time spent in face-to-face discussion and/or counseling with patient.



**APPENDIX F: Evaluation and Support of Feeding in the Drug-exposed Infant**



Addressograph

Nursing Diagnosis	Plan/Interventions/Actions	History/Progress
<p><b>Altered Nutrition: Potential for Feeding Difficulties r/t Neonatal Abstinence Syndrome</b>                      Date activated: __                       Date resolved: __</p>	<p><b>Day One</b></p> <ul style="list-style-type: none"> <li>Review Plan of Care for NAS baby with parents</li> <li>Place consult for Developmental OT/PT assessment and education</li> </ul> <p>For Bottle fed babies:</p> <ul style="list-style-type: none"> <li>Initiate early, small, frequent bottle feedings.</li> <li>Note volume consumed at each feed.</li> <li>Document stooling and voiding</li> </ul> <p>For Breastfed babies:</p> <ul style="list-style-type: none"> <li>Facilitate breastfeeding with early attachment.</li> <li>Position infant carefully at breast in extension and teach mother the principles of asymmetric latch.</li> <li>Teach mother how to express her breasts with her hand while baby is feeding to maximize milk/colostrum transfer.</li> <li>Teach mother how to assess baby's performance at breast: depth of latch, sustained suckling, and audible swallowing.</li> <li>Assist mother to begin keeping feeding log</li> <li>If baby does not establish effective feeding within 12 hours, mother should initiate pumping every 3 hours and hand expression.</li> <li>Mother should view the video at this website.  <a href="http://newborns.stanford.edu/Breastfeeding/HandExpression.html">http://newborns.stanford.edu/Breastfeeding/HandExpression.html</a></li> <li>By 12 hours, begin supplementing breastfed baby with expressed colostrum on a spoon if he/she is not latching well or sustaining suck at breast</li> </ul> <p><b>Day Two</b></p> <ul style="list-style-type: none"> <li>Evaluate baby's feeding progress, voiding and stooling pattern,</li> </ul>	<p>Maternal feeding preference:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Breast</li> <li><input type="checkbox"/> Bottle</li> </ul> <p>Previous experience:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Yes</li> <li><input type="checkbox"/> No</li> </ul> <p>Prenatal concerns other than NAS</p> <p>_____</p> <p>Birthweight _____ Grams</p> <p>Pumping Kit &amp; Instructions given                      Date: _____</p> <p>➤ Pump every 2 – 3 hours or 8 times/24 hours</p>

and weight loss as a percentage of birthweight. Babies who lose > 8% of birthweight on day one should begin supplementation with infant formula as well as expressed colostrum in volume sufficient to prevent further weight loss.

- If baby requires supplementation even if it appears he/she is feeding well at breast, mother should begin pumping and hand expressing every three hours.
- Refer to Lactation Consultant

### Day Three

- Evaluate baby's feeding progress, voiding and stooling pattern, and weight loss as a percentage of birthweight.
- Babies who lose > 10% of birthweight on day two should begin supplementation with infant formula and/or expressed breastmilk in volumes sufficient to prevent further weight loss.
- If the baby is not losing weight, and is meeting voiding and stooling goals, there is no need for an aggressive supplemental feeding plan.
- Evaluate NAS scores and the effect of symptoms on feeding with mother.
- Amend feeding plan as needed to prevent weight loss and conserve energy. Babies who cannot consume a minimum volume of food sufficient to prevent weight loss >10% by bottle may require OG/NG feeding.
- When baby is feeding at breast, recommend that mother use a two handed technique, one hand on baby, one on breast, and hold baby's upper body in extension to attain asymmetric latch.
- Instruct mother to assess baby's vigor throughout feed, and to hand express the breast to direct milk into baby's mouth and keep him/her feeding when he/she slows down.
- After baby breastfeeds for 15-20 minutes if he/she is doing well, or less if not, baby who has lost > 10% of birthweight should be fed a bottle of expressed breastmilk and/or formula.
- The infant who is not feeding well at breast should be supplemented with a bottle.
- The bottle will provoke his palatal sucking reflex and induce baby

➤ Record pumping frequency on feeding log

Initial Lactation Consultation

Date: \_\_\_\_\_

Weight Day Two \_\_\_\_\_ Grams

% under birthweight \_\_\_\_\_

Maximum expressed volume in one pumping:  
Day Three

\_\_\_\_\_ cc

Weight Day Three \_\_\_\_\_ Grams

% under birthweight \_\_\_\_\_ %

to take larger volumes.

- Baby should be fed as much as he'll drink at least every three hours and more frequently if he shows feeding cues.

- Mother should pump after each breastfeeding or breastfeeding attempt.

- Note expressed volumes.

**Day 4 and beyond**

- Continue with aggressive feeding plan to minimize weight loss and provide increased calories to meet the increased caloric needs of the NAS baby.

- Support abundant milk supply

- As baby improves NAS scores and vigor, he/she may take supplemental feeds with an SNS.

- Goal should be to provide optimal nutrition, ideally with breastmilk in volumes sufficient for growth.

Maximum expressed volume in one pumping:  
Day Four

\_\_\_\_\_ cc

Weight Day Four

\_\_\_\_\_ Grams

% below birthweight \_\_\_\_\_%

Addressograph

**FAMILY TEACHING RECORD FOR INFANT FEEDING PLAN**

Desired Outcome at Discharge to Home	Date Met Initials	Family will demonstrate that they are comfortable & competent with the care of their infant by stating:	Discussed with Caregiver(s) RN initials/date	Caregiver(s) Achieved RN initials/date	Family Initials/date
<ul style="list-style-type: none"> <li>• Infant will demonstrate ability to nipple or breast feed all feeds and gain 15-20 gm/kg/day</li> <li>• Infant will tolerate full feeds</li> <li>• 6-8 wet diapers/day and normal stooling pattern</li> </ul>	<p>_____</p> <p>_____</p> <p>_____</p>	<ul style="list-style-type: none"> <li>• If my infant chokes, or has suck/swallow/breathing dis-coordination or color changes, I know to stop the feeding, how to tip him/her forward and stimulate breathing if necessary</li> <li>• I know what, how often and how much to feed my infant</li> <li>• I recognize signs that indicate when my baby is hungry and when he has had enough to eat</li> <li>• I know how to provoke my baby to eat enough at each feed to prevent weight loss.</li> <li>• I am aware that my infant should have at least 6-8 wet diapers/24 hours</li> <li>• I am aware of my infant's usual stooling pattern</li> <li>• I know how to prepare my infant's formula</li> <li><u>For breast feeding infants:</u></li> <li>• I am aware of guidelines for safe handling of expressed milk: containers, storage times (refrigerator/freezer), thawing</li> <li>• I know what and how much to eat and drink while I am pumping and/or nursing.</li> </ul> <p>I have obtained the following breast feeding booklets:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Breast feeding: A Good Start</li> <li><input type="checkbox"/> The Key to Successful Breastfeeding</li> <li><input type="checkbox"/> Other _____</li> </ul>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>

[Back to Top](#)

