

**Substance Use Guideline 4B  
PERINATAL OPIOID EXPOSURE,  
CARE OF THE NEWBORN**

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***INTRODUCTION***

During the antenatal period, the opportunity exists for the primary care giver and other involved team members to establish a relationship of trust with the woman. With the birth of the infant, consistency of approach with the mother / newborn pair is mandatory. A case manager should be identified, and team roles and tasks should be clearly defined and articulated.

***INITIAL ASSESSMENT (AT TIME OF BIRTH)***

- 1) Review Prenatal History.
- 2) Complete physical exam – See Newborn Record. Specific attention should be given to tone and neurological state.
- 3) Assess intoxication and withdrawal signs and symptoms.
- 4) Consider other causes of abnormal / unstable CNS status, which includes:
  - sepsis / meningitis
  - hypoglycemia
  - hypocalcemia
  - CNS haemorrhage
- 5) Initiate laboratory and radiologic investigations as clinically indicated.
- 6) Assess HIV, HCV, HBV status. Consider retesting mother if serology obtained early in pregnancy and high risk behaviors present during pregnancy (only if unobtainable from mother, or if mother is positive & followup of newborn's serostatus is required).
- 7) Options for drug screening include urine, meconium, or hair analysis. Hair analysis and meconium are useful drug screens to detect longitudinal exposure in pregnancy, but are not usually readily available. Urine drug screens can detect recent exposure just prior to delivery and are readily available in most centres in the province. It is important to note on the urine drug screen that methadone appears as methadone and **not** as an "opiate". Heroin and codeine both are seen as "opiates" and breakdown to codeine and morphine. Drug screening may be indicated in some cases where the clinical picture of substance use is unclear. Informed consent from the mother is required. However, if the pediatrician/family physician deems that a neonatal drug screen is necessary for management, it can be obtained without maternal consent.

## **MANAGEMENT OF OPIOID WITHDRAWAL**

Not all infants exposed to opioids have withdrawal. If withdrawal is present the onset depends on the half life and the amount of substance used during pregnancy and when the last maternal dose was taken. In addition, the state of the neonatal liver plays a role in withdrawal onset. For example, infants usually begin heroin withdrawal within 1-3 days, whereas methadone withdrawal can take over a week to manifest. Thus when opioid use has occurred, the infant needs to be observed for 7-9 days prior to discharge (Wagner et al., 1998). If withdrawal is observed, then the neonate needs to stay in hospital for management.

### **I ACUTE PHASE OF WITHDRAWAL**

#### **A. Initial Assessment**

- 1) Review maternal health status during pregnancy.
- 2) Consider the need for treatment of the newborn.
- 3) Use of a standardized withdrawal scoring sheet such as the Neonatal Withdrawal Observation Sheet (See Appendix A) can be useful both initially and for daily observation of response to treatment.
- 4) Consider where the newborn will be cared for e.g. Special Care Nursery, Neonatal Care Nursery, or Rooming in with the mother? (Usually a Level II nursery is appropriate) As much as is possible, maintain maternal-infant bond.

#### **B. Nonpharmacological Management**

- 1) Begin with a quiet, darkened environment and then increase stimulation as tolerated. Typically, this would not begin until there has been a period of appropriate behavior e.g. good feeding and weight gain. Titrate intervention to newborn's signs and symptoms.
- 2) Breastfeeding should be encouraged unless contraindicated. For breastfeeding information please see Substance Use Guideline 4A: Perinatal Opioid Use, Care of the Mother, page 10.
- 3) Consider use of higher cal (24 cal/oz) formula if poor weight gain is demonstrated.

#### **C. Pharmacological Management**

Opiates are the drug of choice to manage neonatal withdrawal (American Academy of Pediatrics, 1998; Theis et al., 1997). Morphine solution is readily available and easily titrated. Clinical management recommendations using morphine solution are indicated below. Despite their mothers being on opioids during pregnancy, some newborns do not require morphine at all. Thus they should only be given morphine if their symptoms indicate. The decision to start morphine should be based on a constellation of physical signs and general behaviors, and should be considered based on clinical judgment. Treatment of Neonatal Withdrawal should be considered, having ruled out other medical

conditions, when there is a constellation of the following signs and symptoms

**unresponsive** to environmental control:

- 1) Convulsions.
- 2) Inconsolability / crying continuously for 3 hours.
- 3) Persistent tremors / jitteriness when **undisturbed**
- 4) Continuous central nervous system irritability including hyperactive Moro reflex, tremors / jitteriness, increased muscle tone and unprovoked muscle jerks.
- 5) Persistent vomiting or projectile vomiting over a 12 hour period.
- 6) Explosive diarrhea for 2-3 consecutive episodes.

The neonatal withdrawal sheet should be used to assess overall withdrawal symptoms. While sneezing and jitteriness are signs of early withdrawal, they rarely need morphine. However, in combination with clinical signs such as tachycardia, tachypnea, water loss in stools, fever, or weight loss > 10%, morphine may be required. It is important that a differential diagnosis for the signs and symptoms be considered (See page 1).

### **Calculating Morphine Dose**

Concentration of Oral Morphine Solution is 1 mg/ml. Some institutions dilute this to 0.4 mg/ml, which may result in confusion. The recommendation is to use the standard 1 mg/ml. solution, and use 1:10 dilution if dilution is required (see tapering doses). All doses should be written as mg of morphine to prevent confusion when different dilutions are used.

For morphine doses, see Table I on page 4.

**TABLE I MORPHINE DOSE**

- **Starting Dose:** Morphine Solution 0.03 mg/kg/dose given orally every 3 hours. Round dose to the nearest 0.01 ml of morphine solution.
- **Prn Dose:** 50% of initial morphine dose may be administered between maintenance doses for breakthrough symptoms of withdrawal. Round dose to the nearest 0.01 ml morphine.
- **Calculating Ongoing Daily Dose:** Add total morphine received the day before (regular dose + prn doses). Divide into 8 equal doses and give every 3 hours as the new regular dose. Calculate the new prn dose as 50% of new regular dose.

**Note:** Morphine dose must be reviewed daily and recalculated based on daily weights and ongoing symptoms.

**Note:** The smallest volume that can be accurately measured in a 1 ml syringe is 0.05 ml. The volume delivered includes the dead space at the end of the syringe i.e. do not flush the syringe to get the full dose. If tubing is used, flush the drug through the tubing to ensure that the full dose is administered. Use a new syringe to flush the tubing, otherwise the morphine intended to stay in the dead space of the syringe is being administered.

The medical management of an infant with symptoms of withdrawal from prenatal drug exposure should be guided by the infant's vital signs and symptoms. As a result, dosages and weaning schedules should be individually titrated to the desired clinical effect e.g. behavior, weight gain, successful feedings, etc. Although other drugs such as phenobarbital and diazepam are used in some centers, opioids are considered the drugs of choice. Paregoric contains alcohol and camphor so instead we recommend morphine as the drug of choice when treating neonatal opioid withdrawal.

#### **D. Other Broader Social / Medical Issues**

- Encourage mothers and partners to be actively involved with the care of their infants as appropriate. When appropriate, have parents stay at the hospital to provide all aspects of care, with the exception of medication and nursing duties. Alternate units for mother not needing care but needing to be near her infant are ideal and should be utilized if available. This is key since bonding can be difficult for a variety of reasons.
- **Vaccinations:** If mother is Hepatitis B positive, the infant should receive Hepatitis B vaccine (e.g. Energix B) and Hepatitis B Immuno Globulin (HBIG) as per protocol. If mother is Hepatitis B negative, then the newborn should be considered high risk and should be initiated on a Hepatitis B vaccination series.

## II STABILIZATION AND RESOLUTION PHASE

Once the newborn is stable on morphine solution with minimum and/or declining symptoms of withdrawal for 3-5 days and the infant is gaining 20-30 gms per day, then tapering of morphine can begin.

**TABLE II TAPERING OF MORPHINE**

- Taper the stable morphine dose by 10% q2days. Round dose to the nearest 0.01 ml morphine oral solution.
- A prn dose may be considered for significant breakthrough symptoms that do not settle with interventions such as swaddling, holding, rocking, etc. If withdrawal symptoms occur give PRN doses (50% of last dose, no more frequently than q3h). Include prn doses in new effective dose.
- Once each dose reaches 0.05 mg, dilute morphine to 1:10 to make a solution of 0.1 mg/ml.
- Continue tapering until a dose of 0.02 mg every 3 hours is reached, then discontinue.

**Note:** Do not increase dose interval as a strategy to taper morphine. Similarly, to manage symptoms between regular doses, use a prn that is  $\frac{1}{2}$  of the regular dose, rather than decreasing the dose interval.

## III BEFORE DISCHARGE, CONTINUE TO ASSESS

- 1) Infant growth and development: a weight gain of 20-30 grams/day (may be lower if mother is breastfeeding) is the ideal or target.
- 2) Feeding – the baby should be receiving high caloric formula for 3-5 days prior to discharge if the mother is not breastfeeding.
- 3) Assess handling and state regulation – (sleeping, cry, behavior).
- 4) Assess environmental adaptation – return to normal light conditions 3-5 days prior to discharge.
- 5) Assess for other medical concerns.

**REFERENCES**

American Academy of Pediatrics committee on Drugs. (1998). Neonatal drug withdrawal. Pediatrics (101). NO.6, 1079-1088.

Theis, J., Selby, P., Ikizler, Y. & Koren, G. (1997). Current management of the neonatal abstinence syndrome: A critical analysis of the evidence. Biol Neonate ( 71). 345-356.

Wagner, C., Katikaneni, L., Cox, J., & Ryan, R. (1998). The impact of prenatal drug exposure on the neonate. Obstetrical and Gynecological Clinics of North America (25). No.1, 169-194.



APPENDIX A

BC WOMEN'S

NEONATAL WITHDRAWAL OBSERVATION SHEET

Gestational Age at Birth: \_\_\_\_\_

Birth Weight: \_\_\_\_\_

	SIGNS AND SYMPTOMS ✓ = present 0 = not present	INTERVAL OF OBSERVATION								COMMENTS (Date and Time)
		Age								
		Date								
		Time								
METABOLIC/VASOMOTOR/ RESPIRATORY	Temperature									
	Heart Rate									
	Respiratory Rate									
	Sweating									
	Frequent yawning > 3 - 4 times/interval									
	Mottling									
	Nasal stuffiness									
	Sneezing (> 3 - 4 times/interval)									
	Nasal flaring									
CENTRAL NERVOUS SYSTEM	Cry - High pitched									
	Cry - Inconsolable									
	Sleeps < 1 hour after feeding									
	Sleeps < 2 hours after feeding									
	Sleeps < 3 hours after feeding									
	Hyperactive Moro reflex									
	Tremors/jitteriness when disturbed									
	Tremors/ jitteriness undisturbed									
	Abnormal muscle tone (↑ or ↓)									
	Unprovoked muscle jerks									
	Convulsions									
	Incoordinate sucking/swallowing									
G.I.	Regurgitation or vomiting (amount)									
	Projectile vomiting (amount)									
	Loose, watery or explosive stools (L/W/E)									
	Seedy, pasty or formed (S/P/F)									
OTHER	Feeding: Weak or absent suck (W/A)									
	Feeding: Duration (minutes)									
	Excoriation/abrasions (specify area)									
	Weight									
	Pediatric Opium solution: Dosage									
OBSERVER'S INITIALS										

## **GUIDELINES FOR USE OF THE NEONATAL WITHDRAWAL OBSERVATION SHEET**

**PURPOSE:** Is as a observation sheet for recording behavioural and medical symptoms of neonatal withdrawal and will be used on all infants of substance using mother's.

### **RESPONSIBILITIES:**

The nurse will:

- document observations on the symptomatic newborn at three or four hourly intervals which includes:
  - The first 96 hours of life
  - After the onset of signs and symptoms of withdrawal
  - With vomiting and diarrhoea
  - When opium is started, altered or discontinued
- document observations on the asymptomatic newborn each shift, after 96 hours of age.

### **DOCUMENTATION:**

1. On each day's sheet, the baby's gestational age and birth weight are recorded in the corresponding space at the top of the sheet.
2. The observation sheet lists the signs and symptoms of drug withdrawal most commonly seen in the infant. The grey shading in the far left column highlights the three main categories of observations.
3. The second column from the left, next to the categories of observations, lists the possible signs and symptoms of withdrawal for each category.
4. The third column is for observations. This column is subdivided into eight columns, one for each of the eight possible observation periods if recordings are done every three hours.
5. In the space under **Interval of Observation** shaded in grey, record the date, the baby's age (in days since birth), and the period of time the recordings in the corresponding column take place. The recording of signs and symptoms should include all observations within that time frame, i.e. if you are recording at 1100, include all your observations of the baby from 0700 at the beginning of your shift.
6. The fourth column, on the far right is for comments. This could include activities that correlate with changes in symptoms, environmental changes, such as alterations in light and noise and starting, altering or discontinuing opium.
7. The bottom row, shaded in grey, is for the **Observer's Initials**.