NEONATAL ABSTINENCE SYNDROME: NON-PHARMACOLOGICAL AND PHARMACOLOGICAL MANAGEMENT, ASSESSMENT AND DISCHARGE

OBJECTIVES

- To promote best practice in the assessment and management of the newborn at risk for neonatal abstinence syndrome (NAS).
- To provide guidance for nonpharmacological and pharmacological management of NAS.

PRINCIPLES

This Guideline should be followed in the spirit of, and with a commitment to, the following principles:

Patient and Family-Centered Care: Patients and families are integral members of the health care team. Health care providers shall adopt a patient, and family centered approach to the care and services provided and include the family, as appropriate, in a respectful, non-judgmental manner;

Parent/Guardian and Newborn Well-Being: Health care providers should aim to promote the well-being and health of newborns and parents/guardians, based on the best available evidence, and subject to the preferences and values of parents/guardians. Newborns at risk of developing NAS should be assessed in hospital so that appropriate interventions may be provided in order to maximize their well-being and minimize harm;

Equity: Empowering two patients to meet the same desired outcome may require two very different investments of health care resources. Parents/guardians of newborns at risk of NAS may require additional supports in order to be treated equitably. Patients who use psychoactive substances have the right to receive equitable, nonjudgmental, and evidence-based health care services regardless of whether the substances they use are legal or illegal;
Promote Continuity of Care: The duty to provide care continues past the hospital admission and includes planning and preparation with community and other resources to ensure safe, effective transition to community and the continuity of interventions, support, and education, as required. Preparation of parents/guardians caring for these newborns both in hospital and after discharge is an essential part of antenatal, in hospital, and post-natal education;

Engage Families to Promote Shared Understanding: For many, our relationships with loved ones and family can contribute greatly to our well-being. Newborns are particularly dependent on their parents/guardians. Decisions regarding the treatment and care of the newborn with NAS will necessarily involve the parents/guardians and family. We aim to preserve families and respect the diversity of families that are encountered in Alberta Health Services (AHS); and

Compassion: Parents whose newborns develop NAS may feel especially distressed and vulnerable, and health care providers in these situations may struggle with their own feelings of anger or protective concern for the newborns. It is crucial for the well-being of both newborns and parents that health care providers cultivate self-awareness and role model the calmness and supportive approach they recommend. Maintaining calm and cultivating understanding and empathy can help to promote therapeutic relationships and long-term recovery. A parent’s experience of stigma or discrimination may exacerbate existing challenges.

APPLICABILITY

Compliance with this document is required by all Alberta Health Services employees, members of the medical and midwifery staffs, Students, Volunteers, and other persons acting on behalf of Alberta Health Services (including contracted service providers as necessary).

ELEMENTS

1. Points of Emphasis

1.1 It is essential that parents/guardians are involved in the decision-making and care of their newborn and that every effort is undertaken to establish a caring, communicative, and collaborative approach to the care.

1.2 Health care providers shall engage in respectful conversation with patients regarding their gender identity as a critical part of providing safe and appropriate care. AHS is committed to respecting the rights of all people, including transgender, gender non-binary, and intersex people, for whom the Guideline may apply.

1.3 This Guideline applies to all newborns at risk of NAS, whose birth parents have disclosed prenatal opioid use.

1.4 This Guideline is intended for use at sites with the resources and supports necessary to provide the care as outlined in this document.

1.5 Any newborn may present with atypical responses that are consistent with NAS during a newborn assessment and may be considered for NAS assessments,
monitoring, and treatment. These decisions are to be made by the most responsible health practitioner (MRHP) based on clinical judgement and on a case-by-case basis.

1.6 Newborns exposed to other types of medications or substances in utero may present with similar signs and symptoms as those exposed to prenatal opioids.

1.7 All newborns at risk of NAS can be managed with the non-pharmacologic strategies outlined within this Guideline, however, only newborns who have been exposed to opioids in utero shall be treated with opioids in accordance with Sections 10, 11 and 12 of this Guideline.

1.8 The identification and management of NAS requires consistent objective assessment of withdrawal symptoms. Newborns at risk of developing NAS should be assessed in a hospital setting for at least 72 hours following birth for symptoms of withdrawal. In the case of prenatal methadone and buprenorphine exposure an extended observation period of up to five (5) days or more may be required.

1.9 An extended postpartum stay that keeps the parent-newborn dyad intact and in the same room with feeding and parenting support may improve breastfeeding success, minimize withdrawal symptoms for the newborn, and decrease the need for an NICU admission and pharmacological intervention.

1.10 Preparation of parents/guardians caring for these newborns both in hospital and after discharge is an essential part of antenatal, in hospital, and post-natal education.

1.11 Discharge planning to support safe effective transition of the newborn from hospital to home is essential.

2. Parents/Guardians as Partners in Care

2.1 Health care providers shall:

a) engage in conversations with parents/guardians to ensure that they are involved in the decision-making and care of their newborn; and

b) ensure that they use a caring, communicative, and collaborative approach.

2.2 Should health care providers develop reasonable and probable grounds to believe that a newborn’s wellbeing (e.g., physical, social, emotional and psychological), protection and safety is endangered, they are required to report such concerns.

a) Health care providers shall inform the MRHP and Social Work of these concerns.
3. **Assessment of the Newborn for Symptoms of Opioid Withdrawal: Postpartum Unit**

3.1 The health care providers shall assess the newborn whose birth parent has disclosed prenatal opioid use for indications of opioid withdrawal within two (2) hours of birth.

   a) Assessment shall occur every two (2) to four (4) hours, and continue for a minimum of 72 hours.

   b) Assessment of newborns with methadone or buprenorphine exposure shall continue at this frequency for up to five (5) days.

3.2 Health care providers should use a standardized NAS scoring tool such as the AHS Finnegan Neonatal Abstinence Scoring Tool (FNAST) Form.

3.3 If the AHS Finnegan Neonatal Abstinence Scoring Tool (FNAST) Form is not used, the assessment should include, but is not limited to:

   a) respiratory rate and pattern;

   b) heart rate;

   c) temperature stability;

   d) muscle tone, reflexes, jitteriness or tremor;

   e) irritability, crying patterns and ability to console;

   f) feeding: ability to initiate, coordinate suck/swallow and complete feeds; and

   g) sleep patterns.

3.4 The newborn should not be woken up to do scoring.

3.5 The health care provider shall notify the MRHP of any variations from normal assessment findings, as indicated in the AHS Resource Postpartum and Newborn Clinical Pathway.

3.6 The MRHP shall examine the newborn. In consultation with pediatrician or neonatologist and local nursing leadership the MRHP shall determine the need for transfer to a higher level of care.
3.7 The health care provider should consider all of the following in their decision to provide care with the parent/newborn dyad on the postpartum/newborn unit:

a) The newborn’s initial and ongoing clinical assessment findings.

b) Parent(s)’ agreement to participate in the extended post-partum stay.

c) The post-partum/newborn unit’s ability to provide necessary support for parent/newborn rooming-in, assessment and care as outlined in this guideline, for a minimum length of stay of 72 hours (or five [5] days with methadone or buprenorphine exposure).

4. Assessment of the Newborn for Symptoms of Opioid Withdrawal: Neonatal Intensive Care Unit (NICU)

4.1 The health care providers shall assess the newborn for indications of opioid withdrawal within two (2) hours of admission.

a) Assessment shall occur every two (2) to four (4) hours, and continue for a minimum of 72 hours as determined by the MRHP.

4.2 Health care providers should use the AHS Finnegan Neonatal Abstinence Scoring Tool (FNAST) Form.

4.3 A newborn should not be woken up to do scoring.

4.4 Research, evaluation and quality improvement initiatives in the areas of NAS assessment are welcome.

5. Keeping Parents/Guardians and Newborns Together

5.1 Rooming-in is the best strategy for keeping the parents and their newborn together. 24 hour rooming-in of all parent-newborn dyads should be facilitated by the health care providers. See Appendix A for more information.

5.2 The health care providers shall teach parents/guardians and any alternative caregivers all non-pharmacological strategies including how to hold and cuddle newborns, to settle them, and encourage skin-to-skin care as much as possible.

5.3 Health care providers should encourage appropriate supports and care for the newborn from family members, friends, volunteers, and cultural or spiritual support workers.

6. Environment

6.1 The health care team and parents/guardians shall work together to create a quiet environment with minimal stimulation, including but not limited to:

a) minimizing harsh lighting;
b) limiting visitors as required;  
c) provide a single room away from the unit activity when possible;  
d) consider posting “Do Not Disturb” signs at the door to the newborn’s room or crib;  
e) provide care around newborn’s sleep patterns; and  
f) avoid waking a sleeping newborn who demonstrates withdrawal symptoms.

7. Soothing Behaviours and Positional Support

7.1 Minimal handling, respect of newborn’s sleep state and utilization of techniques to reduce stimulation helps with neonatal behavioural state regulation and the transition between states.  

Note: Skin-to-skin care is not considered handling.

7.2 These strategies, though appropriate for all newborns, are especially important for newborns with NAS, and may include, but are not limited to:  

a) skin-to-skin contact with family members;  
b) positioning to promote hand to-mouth reflex. If not possible, pacifiers may be considered. Pacifier use, and parental consent for their use, should follow local zone or site practices;  
c) gentle handling, touch, and newborn massage;  
d) warm baths while being gently swaddled in a light blanket;  
e) using a soft soothing voice;  
f) playing soft music, or humming to newborn;  
g) gentle holding to prevent self-startling; and  
h) gentle vertical rocking.

7.3 Health care providers shall choose the strategies which reduce stimulation and decrease crying times. This selection is done using ongoing assessments of strategies used.

7.4 Health care providers shall provide family members and alternate care providers with education about strategies for comforting newborns before excessive crying, poor feeding, and lack of sleep sets in.
8. **Breastfeeding, Providing Breastmilk, or Alternatives**

8.1 Any contraindications to breastfeeding should be identified by the health care providers in consultation with parents, and the breastfeeding parent’s MRHP.

8.2 If breastfeeding is not contraindicated, health care providers should encourage breastfeeding parents on either prescribed or proscribed opioids to breastfeed. Newborns who are breastfed have fewer symptoms of NAS and require shorter pharmacotherapy than those who are not breastfed.

8.3 The health care providers shall provide breastfeeding, hand expression, and breast pumping support to help the breastfeeding parent maintain milk supply.

8.4 Frequent and smaller volume, hyper-caloric feeds may be needed by those newborns who have poor weight gain.

8.5 Dietitian consultation is recommended as indicated and available to support strategies aimed at increasing energy intake and monitoring growth.

8.6 Consider Lactation Consultant support as indicated and available.

8.7 If the parent’s breastmilk is unavailable or contraindicated:

   a) The health care providers should discuss alternative types of milk that can be offered to the newborn with the parent/guardian. Their preference and circumstances should be considered when choosing an alternative to breastmilk.

   b) Breastmilk alternatives that should be considered include, but are not limited to:

      i) screened, pasteurized donor human milk (DHM) (see AHS site/Zone DHM policies for eligibility requirements); or

      ii) commercial infant formula.

9. **Skincare**

9.1 The health care providers should assess for diaper rash and use a barrier cream to prevent skin breakdown during withdrawal.

10. **Initiation of Pharmacologic Therapy**

10.1 The MRHP should consider pharmacologic therapy for in-utero opioid exposure when the newborn has FNAST scores of:

    a) eight (8) or greater for three (3) consecutive readings;

    b) 12 or greater for two (2) consecutive readings;
c) the average of three (3) consecutive readings is eight (8) or greater; or
d) the average of two (2) consecutive readings is 12 or greater.

10.2 Newborns experiencing symptoms of non-opioid exposures should not be treated with pharmacologic therapy with opioids, rather they should be treated with non-pharmacologic management.

10.3 Appendix D below provides a NAS treatment flowchart to guide decision-making.

10.4 The MRHP should consider the following medications when initiating pharmacologic therapy:

a) Morphine
   (i) Morphine is the preferred pharmacological agent for newborns with antenatal opioid exposure.
   (ii) For details on dosage recommendations for morphine, see Appendix B.

b) Methadone
   (i) Methadone has been occasionally used for newborns with antenatal opioid exposure, however it is not routinely used in AHS settings.
      • Prior to the initiation of methadone in hospital, a prescriber shall be identified in the newborn’s home community.
      • It may take several days to reach full therapeutic effect once administration has initiated.
   (ii) For details on dosage recommendations for methadone, see Appendix B.

11. Initiation of Adjunct Therapy

11.1 If NAS scores remain elevated on a dose of one (1) mg/kg/day of oral morphine or methadone, the MRHP may add adjunct agents.

11.2 The following adjunct agents may be used:

a) Clonidine
   (i) This is the recommended first line adjunct.
   (ii) An alpha-2-agonist that blocks sympathetic outflow, which reduces many symptoms of withdrawal.
(iii) Blood pressure and heart rate monitoring shall be completed with each dose for at least 48 hours while titrating clonidine.

(iv) For details on dosage recommendations for clonidine, see Appendix B below.

b) Phenobarbital

(i) Possible useful agent in cases of multi-agent antenatal exposure.

(ii) Known negative neurodevelopmental effects when given for seizures and so is not a preferred agent for long-term use.

(iii) For details on dosage recommendations for phenobarbital, see Appendix B below.

12. Weaning of Pharmacologic Therapy

12.1 Weaning may occur in post-partum units, pediatric units, NICUs, or in community.

12.2 Once NAS scores have remained lower than eight (8) for at least 48 hours, the MRHP should wean the newborn off opioids and adjuncts. The order of weaning may depend upon the opioid and adjunct used, although ideally the opioid should be weaned first to minimize exposure.

12.3 Health care providers should maintain NAS scoring during weaning and for 48 hours afterwards, as long as the newborn is admitted. The duration of the length of stay depends on the newborn’s condition, the home environment, and the MRHP preference.

12.4 Regardless of the agent being weaned, if there are two (2) or more consecutive NAS scores of eight (8) or greater, return to the previously tolerated dose for 24-48 hours before attempting to wean again.

12.5 Following the establishment of the initial dose, weaning should follow the schedule as outlined in Appendix C: Medication Weaning Template below.

13. Discharge Planning

13.1 See Appendix E below provides a checklist for discharge planning.

13.2 Family Conferencing

a) Three (3) days prior to discharge, the health care providers, following consultation with the parents/guardians, should consider the need for a pre-discharge family conference. This is highly recommended for newborns being discharged on NAS medications.
b) Health care providers shall communicate to parents/guardians that the intent of the meeting is to be collaborative and centered on including them as team members. Health care providers can help prepare parents so that they do not feel overwhelmed by the number of health care providers and the amount of information shared.

c) The family conference should include anyone that may be involved in the care of the parents or newborn:

(i) discharging and receiving Physician/Nurse Practitioner (NP)/Midwife;

(ii) bedside Nurse;

(iii) Public Health Nurse or on-reserve Health Centre Nurse;

(iv) parents/guardians and other family members as appropriate;

(v) Social Worker from the discharge unit;

(vi) **community support workers**;

(vii) cultural or spiritual support workers; and/or

(viii) government agencies (e.g., Children’s Services).

13.3 Ensuring Follow-up Post Discharge

a) The health care provider shall book an appointment with the follow-up care provider (Physician/NP/Midwife) to occur within one (1) week from date of discharge. This date should be indicated on the Notice of Birth (NOB).

b) Nursing or social worker staff may need to assess parents’ ability to get to the follow-up appointment (e.g., transportation) and provide support as required.

13.4 Within three (3) days of birth, the name of the follow-up Physician/NP/Midwife should be determined and noted on the NOB.

a) The health care provider shall notify, if appropriate, any local, provincial, or federal community support worker to communicate that the parents and newborn are being discharged, provide brief background history and medication summary/plan.

b) The health care provider shall notify Public Health Postpartum Services or the on-reserve Health Centre staff that a high risk newborn is being discharged from hospital. The notification may be through:
(i) phone call;
(ii) family conferences; or
(iii) the NOB.

c) Determine a follow-up and back-up plan that includes who to call in the off-hours evenings/night-time/weekends. See Appendix G for a sample parent information pamphlet and back-up plan.

d) The health care providers shall document the discharge plan on the NOB and include:
(i) Medications;
(ii) name of follow-up Physician;
(iii) name of the community support worker involved;
(iv) date of first follow-up appointment;
(v) teaching done with parents;
(vi) the non-pharmacological methods that work for newborn;
(vii) the back-up plan (See Appendix G); and
(viii) the weaning schedule, if applicable.

13.5 Medication Management in the Community

a) If the newborn is discharged on NAS medication, the hospital Pharmacist/nursing staff shall confirm that NAS medication is in stock at the parent/guardian’s pharmacy of choice and provide name of follow-up health care providers.

b) The hospital Pharmacist/nursing staff shall fax the completed prescription (triplicate where applicable) and medication reconciliation to guardian’s community pharmacy of choice.

(i) Morphine requires an original, triplicate prescription, methadone requires an authorized prescriber.

(ii) Clonidine requires a special compounded recipe for measurability of small neonatal doses.

c) Hospital Pharmacist/nursing staff shall provide medication teaching with parents/guardians including:
(i) measurement of medication doses;
(ii) administration timing and technique; and
(iii) any weaning plans.

d) A calendar should be provided to parents/guardians, and the MRHP shall clarify the weaning schedule and include it with the NOB. See Appendix F below for a sample calendar.

e) The health care provider shall document on the NOB under “Consultations/Follow-up” the name of the follow-up Physician/NP/Midwife, and the date and time of follow-up appointment with the MRHP shall be provided.

f) If a newborn is on NAS medication, the health care provider shall document the following on the NOB under “Comments”:

(i) drug;
(ii) dose;
(iii) frequency;
(iv) Pharmacy;
(v) sending hospital contact; and
(vi) weaning plan.

13.6 Education

a) The health care provider should emphasize the importance of continuing non-pharmacologic treatment at home upon discharge. This includes soothing activities, breastfeeding (where appropriate), and other environmental management strategies.

b) The health care provider shall provide the following documents to parents/guardians: Discharge Summary, Signs of NAS, Who to Call for Help/Back-up Plan, Important Information to Disclose if you call Health Link, and Medication Administration (where applicable). While providing documents, assess parent understanding of medication administration and weaning.

c) The health care provider should provide information about additional services and supports that are available to parents/guardians in hospital and by Public Health Postpartum Services. See Appendix G.
14. Following Discharge from Hospital Care

14.1 Within seven (7) days of discharge from hospital:

a) The initial Public Health Postpartum Services newborn assessment shall occur according to the timelines within the AHS Newborn Assessment Manual. During the initial contact the nurse shall assess the newborn and parents’ health and support parental/guardian administration of medication, as required.

b) Public Health, on-reserve Health Centre nurses, and/or the MRHP should conduct newborn assessments in the community according to the AHS Newborn Assessment Manual.

c) Public Health Postpartum Services or on-reserve Health Centre staff should confirm that a follow-up appointment with a Physician/NP/Midwife is made for the newborn, parents/guardians are aware of the appointment, and that transportation is available.

d) Public Health Postpartum Services should confirm that a follow-up appointment for parents receiving Opioid Replacement Therapy (ORT) and/or newborns receiving NAS medications is arranged with a community Pharmacist in the timeframe requested by the MRHP. This appointment should typically occur within three (3) days after discharge or sooner depending on prescription carry boundaries and the newborn receiving NAS medication.

14.2 Within six (6) weeks of birth:

a) Follow-up in community shall be provided by the newborn’s MRHP.

b) Follow-up shall continue to be provided as needed by PHC/Community Clinics and on-reserve Health Centres.

c) If involved, a community support worker shall consult with parents/guardians to determine dates/times of follow up appointments and provide support for transportation as needed.

d) The MRHP should collaborate with the Community Pharmacist to provide ongoing support (monitoring, assessment, education) where applicable.

DEFINITIONS

Community support worker means an all-encompassing generic term to refer to local, provincial, or federal service providers or social workers that connect with parents in their home community. As each zone will have different types of supports that are connected to women and their newborns, this generic term is used throughout the document.
Guardian means, where applicable:
For a minor: a guardian as defined by the Family Law Act (Alberta), a divorced parent with custody of the minor, or a person appointed pursuant to a will, personal directive, court order, agreement or by authorization of legislation (e.g., Child, Youth and Family Enhancement Act [Alberta]).

For an adult: an individual appointed by the Court in accordance with the Adult Guardianship and Trusteeship Act (Alberta) to make decisions on behalf of the adult patient when the adult patient lacks capacity.

Health care provider means any person who provides goods or services to a patient, inclusive of health care professionals, staff, students, volunteers and other persons acting on behalf of or in conjunction with Alberta Health Services.

Most responsible health practitioner (MRHP) means the health practitioner who has responsibility and accountability for the specific treatment/procedure(s) provided to a patient and who is authorized by AHS to perform the duties required to fulfill the delivery of such a treatment/procedure(s) within the scope of their practice.

Neonatal abstinence syndrome (NAS) means the signs and symptoms displayed by a Neonate experiencing withdrawal after in-utero substance exposure. These may include atypical neurological, gastrointestinal, and respiratory signs or symptoms.

Newborn means an infant up to 28 days of age.

Parent means the guardian of a child with the legal authority to make decisions on behalf of the minor in accordance with the Family Law Act (Alberta).

Prescribed medications means drugs that require a medical prescription to be dispensed.

Proscribed medications means drugs that are illegal or illicit and taken with a medical prescription.

Rooming-in means the practice of having parents and newborns sharing accommodations during their post-partum hospital stay, from delivery until discharge. It provides opportunities for the parent to care for their newborn day and night, similar to the experience that they would have in their home.

Skin-to-skin means placing newborns with their skin in contact with their parent’s skin so that the newborn can hear a heartbeat and smell their parent. Immediately following birth, a newborn should have uninterrupted skin-to-skin contact with their birth parent for at least an hour, or until completion of first feed, or as long as the parent wishes. Skin-to-skin contact can be continued throughout the first few weeks and months. Both parents can participate in skin-to skin.
REFERENCES

- Appendix A: Benefits of Rooming-in and Skin-to-Skin Care
- Appendix B: Dosages - Pharmacologic Therapy and Adjunct Therapy
- Appendix C: Prescriber NAS Medication Weaning Template
- Appendix D: NAS Treatment Flowchart
- Appendix E: NAS Discharge Checklist
- Appendix F: NAS Sample Weaning Calendar
- Appendix G: Parent Information and Back-up Plan
- Appendix H: References
- Alberta Health Services Forms:
  - Finnegan Neonatal Abstinence Scoring Tool (FNAST) Form (#00999)
- Alberta Health Services Resources:
  - Alberta Postpartum and Newborn Clinical Pathway
  - Newborn Assessment Manual
  - Practice Guidance for AHS Social Workers Working with Children’s Services
  - Public Health Postpartum Newborn Manual

VERSION HISTORY

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Benefits of Rooming-in and Skin-to-Skin Care

There are benefits of rooming-in for both newborns and parents. These include:

a) decreased need for pharmacologic management of NAS
b) less severe and shorter withdrawal symptoms
c) decreased NICU admissions and length of birth hospitalizations for the newborns, and an increase in the chance of a parent maintaining custody of her newborn after discharge

Skin-to-skin care has been shown to have the following effects:

a) reduced parental anxiety
b) improved parental-newborn bonding
c) increased confidence for parenting
d) newborn temperature stabilization
e) improved newborn sleep patterns
f) reduced newborn crying
g) lower newborn infection rates
h) improved newborn weight gain
i) newborn respiratory stability
j) increased milk production for the breastfeeding parent
k) more frequent newborn cues to feed, increasing milk production
l) longer breastfeeding duration
m) more frequent initiation of breastfeeding
APPENDIX B

Dosages: Pharmacologic Therapy and Adjunct Therapy

Initiating Pharmacologic Therapy:

Morphine:

- A starting dose of 0.05 mg/kg/dose of morphine given orally every three (3) hours is recommended.
  - Lower starting doses (0.03 mg/kg per dose) can be considered.
- After a minimum of six (6) hours on this dose, Morphine can be titrated up at 6 hour intervals, in 0.015 mg/kg/dose increments, each time NAS scores are eight (8) or greater for two (2) or more consecutive readings.
- The morphine dose can be titrated up to a maximum dose of 0.125 mg/kg/dose (or one [1] mg/kg/day divided into eight [8] doses per day).
- For newborns with intermittent elevated FNAST scores consider increasing or optimizing non-pharmacologic strategies.
- Additional consideration should be given to using one (1) or two (2) doses of morphine (0.05 mg/kg/dose) as needed every three (3) hours.
  - If the newborn requires more than two (2) doses proceed to regular morphine dosing as described above.

Methadone:

- Suggested dosing of Methadone for management of NAS:
  - Starting dose of 0.05 mg/kg every six (6) hours is started as indicated by FNAST scores as indicated in 10.1.
  - After a minimum of 24 hours on the starting dose increase the interval dose by 0.05 mg/kg every 24 hours.
  - The dose should be increased to a maximum of one (1) mg/kg/day only if the FNAST scores remain eight (8) or greater for two (2) or more consecutive readings.
  - Once FNAST scores are eight (8) or less for two (2) consecutive measurements the dosing interval should be increased every 24 hours to a maintenance interval of every eight (8) hours.
Initiation of Adjunct Therapy

Clonidine:

- A starting oral dose of 0.5 mcg/kg/dose every four (4) - six (6) hours should be given for 24 hours, then the dose can be titrated up, at 12-24 hour intervals, up to a maximum dose of 1 mcg/kg/dose every four (4) hours.

Phenobarbital:

- Loading dose of 16 mg/kg, is recommended due to the long half-life.

- The loading dose should be followed 12 hours later by a maintenance dose of 2.5 mg/kg/dose given every 12 hours. This dose can be titrated up in 0.5 mg/kg/dose increments every 24 hours if NAS scores remain at eight (8) or greater for two (2) or more consecutive measurements, up to a usual maximum of eight (8) mg/kg/day.
Prescriber NAS Medication Weaning Template

Initiation and Up-titration:

Morphine ________ mg (0.05 mg/kg) PO q3h
Morphine ________ mg (0.05-0.125 mg/kg) PO q3h
Clonidine______ mcg (0.5 mcg/kg) PO q h (q4-6h)
Clonidine______ mcg (0.25-1 mcg/kg) PO q h (q4-6h) (maximum 6 mcg/kg/day)
Phenobarbital______ mg (16 mg/kg) PO once (loading dose)
Phenobarbital______ mg (2.5 mg/kg) PO BID
Phenobarbital______ mg (2.5-4 mg/kg) PO BID
Methadone______ mg (0.05 mg/kg) PO q6h
Methadone______ mg (0.05-0.25 mg/kg) PO q6h

Weaning and discontinuation

Reduce morphine dose by ____ mg (by 10% of the total daily dose that achieved target NAS scores) every____ day(s) as indicated below:
Morphine ____ mg (90% original dose) PO q3h x day(s), then
Morphine ____ mg (80% original dose) PO q3h x day(s), then
Morphine ____ mg (70% original dose) PO q3h x day(s), then
Morphine ____ mg (60% original dose) PO q3h x day(s), then
Morphine ____ mg (50% original dose) PO q3h x day(s), then
Morphine ____ mg (40% original dose) PO q3h x day(s), then
Morphine ____ mg (30% original dose) PO q3h x day(s), then
Morphine ____ mg (20% original dose) PO q3h x day(s), then
Morphine ____ mg (10% original dose) PO q3h x day(s), then stop.

Reduce clonidine dose by ___ mcg (by 25% of the total daily dose that achieved target NAS scores) every____ day(s) as indicated below:
Clonidine ___ mcg (75% original dose) PO q h x day(s), then
Clonidine ___ mcg (50% original dose) PO q h x day(s), then
Clonidine ___ mcg (25% original dose) PO q h x day(s), then stop.

OR

Extend clonidine dosing interval every ____ day(s) as indicated below:
Clonidine____mcg PO q h x day(s), then
Clonidine____mcg PO q h x day(s), then
Clonidine____mcg PO q h x day(s), then
Clonidine____mcg PO q24h x day(s), then stop.
Reduce phenobarbital dose by ____mg (by 20% of the total daily dose that achieved target NAS scores) every ___ day(s) as indicated below:

Phenobarbital ____mg (80% original dose) PO BID x ___ day(s), then
Phenobarbital ____mg (60% original dose) PO BID x ___ day(s), then
Phenobarbital ____mg (40% original dose) PO BID x ___ day(s), then
Phenobarbital ____mg (20% original dose) PO BID x ___ day(s), then stop.

Reduce methadone dose by ____mg (by 10% of the total daily dose that achieved target NAS scores) every ___ day(s) as indicated below:

Methadone ____ mg (90% original dose) PO q3h x ___ day(s), then
Methadone ____ mg (80% original dose) PO q3h x ___ day(s), then
Methadone ____ mg (70% original dose) PO q3h x ___ day(s), then
Methadone ____ mg (60% original dose) PO q3h x ___ day(s), then
Methadone ____ mg (50% original dose) PO q3h x ___ day(s), then
Methadone ____ mg (40% original dose) PO q3h x ___ day(s), then
Methadone ____ mg (30% original dose) PO q3h x ___ day(s), then
Methadone ____ mg (20% original dose) PO q3h x ___ day(s), then
Methadone ____ mg (10% original dose) PO q3h x ___ day(s), then stop.

OR

Extend methadone dosing interval every ____ day(s) as indicated below:

Methadone ____ mg PO q6h x ___ day(s), then
Methadone ____ mg PO q8h x ___ day(s), then
Methadone ____ mg PO q12h x ___ day(s), then
Methadone ____ mg PO q24h x ___ day(s), then stop.
NAS Treatment Flowchart

Confirmed birth parent opioid use during pregnancy (A1)

Beside nurse to begin NAS assessments within 2 hours of birth and every 2-4 hours prior to feeds

Infant assessments without significant concerns are managed by supportive measures. E.g., NAS assessments support baby’s transition to stable physiological status

Initiate NICU transfer and possible pharmacologic therapy if concerns with the infant assessments arise. E.g., NAS assessments consistently indicate concern with physiological status.

INITIATION PHASE: Transferred newborn to NICU or higher level nursery or request formal FNAST assessment(s).

If in the FNAST assessment you have:
- 3 consecutive scores of 8 or greater,
- Average of 2 consecutive scores is 12 or greater

Start oral morphine 0.05 mg/kg/dose q8H, continue NAS scoring and begin cardiorespiratory monitoring.
(Consider one or two doses of morphine (0.05 mg/kg/dose as needed every three hours. If requiring more than two doses proceed to regular morphine dosing as described above.)

Newborn has been on morphine for 12 hours and continues to have 2 or more consecutive FNAST scores greater than or equal to 8

ESCALATION PHASE:
Increase dose by 0.015 mg/kg/dose at 6 hour intervals until scores less than 8. Keep dose frequency q8H.

NOTE: If morphine total daily dose is greater than 1 mg/kg/day and scores remain over 8 consider adding an adjunctive treatment (A2)

STABILIZATION PHASE: All scores remain less than 8 for 48 hours while on morphine therapy

WEANING PHASE:
Once stabilized on some dose for 48 hours, use this dose as starting point of wean. Wean the dose by 10% of the total daily amount of the stabilization dose. Do not make dose changes more frequently than every 24-72 hours as tolerated.

If newborn is on morphine and an adjunct, wean off morphine first.

If scores consistently less than 8, continue to decrease dose by 10% of the total daily amount of the stabilization dose. Consider extending dosing interval to every 4 hours depending on newborn’s feeding schedule.

If newborn has 2 consecutive scores greater than 8, go back to previous dose at which newborn was stable. If unable to keep scores less than 8 despite changing to previous dose, go back to escalation phase.

Discontinue morphine when scores are less than 8 at 0.02 mg/kg/dose. Continue NAS scoring for 48 hours after discontinuation.

Newborn requires oral morphine for discharge (weaning will happen as an outpatient). See discharge checklist (A5)
### APPENDIX E

#### NAS Discharge Checklist

**Unit Clerk or Charge nurse or Patient’s Nurse**
- Identify family’s follow-up Physician/Nurse Practitioner (NP)/Midwife
- Book a follow-up appointment with follow-up physician/NP/Midwife 1 week from date of NICU/hospital discharge
- Notify Public Health Postpartum Services or on-reserve Health Centre by phone, NOB or in-person conference that a newborn with NAS is being discharged. Provide additional information and documentation if the newborn is being discharged on oral morphine.
- Notify any involved community support workers that mom and newborn are being discharged, provide brief background history and medication summary/plan.
- Fax completed triplicate prescription to parent’s community pharmacy of choice

**Patient’s Nurse**
- Consider pre-discharge family conference including sending and receiving Physician/NP/Midwife, Public Health Nurse or on-reserve Health Centre staff, parents, Social Workers, any involved community support worker
- On the PNOB, document in consultation/follow-up section: Name of the follow-up physician/NP/Midwife, date and time of follow-up appointment. In comments section, document “Newborn on oral morphine for NAS.” Attach additional information on weaning schedule, education provided to client, medication dosage, and back-up plan
- Notify Public Health Postpartum Services or on-reserve Health Centre staff that newborn is being discharged on oral morphine, weaning plan, follow-up appointment
- Fax completed triplicate prescription to parent’s community pharmacy of choice
- Assess parent’s ability to get to follow up appointment and include social work if necessary. (e.g. transportation)
- With parents determine Back-Up Plan (who to call in the off hours evenings/night-time/weekends)
- Provide written documents to parents: Summary, Signs of NAS, Who to call for help/Back-up plan, important information to disclose if you call Health Link, and where applicable medication administration

**Neonatologist**
- Complete triplicate prescription for oral morphine
- Provide clinical handover to follow-up physician.

**Pharmacist/Patient’s Nurse**
- Verify that parent’s community pharmacy of choice has morphine liquid 1mg/mL in stock.
- Perform teaching on discharge medication(s) with parent(s). A calendar should be provided to parents to clarify the weaning schedule. A copy should be sent to Public Health Postpartum Services and community pharmacy.
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<td>1</td>
<td>Drug A 4 mcg = 0.4 mL every FOUR hours</td>
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<td>15</td>
<td>Drug A 2 mcg = 0.2 mL every EIGHT hours</td>
<td>STOP Drug A</td>
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Parent Information and Back-up Plan

Please use the following information sheet and back-up plan to provide additional information to parents. There is additional information at myhealth.alberta.ca under Neonatal Abstinence Syndrome including parenting videos and addiction treatment numbers.

Neonatal Abstinence Syndrome (NAS) Patient Information

What is Neonatal Abstinence Syndrome (NAS)?

Neonatal Abstinence Syndrome (NAS) is a term that refers to withdrawal of the baby from substances the mom has taken during pregnancy. The withdrawal behaviours to watch for in your baby include:

- not eating well or having difficulty sucking;
- not sleeping well or waking frequently; and
- not settling well, crying for long periods of time, and being fussy.

These are withdrawal behaviours that we can help you and your baby cope with. The goal is for your baby to be kept comfortable while withdrawing.

Of note, it is also common for babies with withdrawal to have other symptoms, such as tremors, increased stiffness, yawning, nasal stuffiness, sneezing, spit ups, loose poops and wanting to suck frequently. These are not behaviors to be concerned about but please talk to your nurse or doctor about them. They will go away on their own over the next several days to weeks.

If your baby has trouble breathing, gasps for air, or turns blue, CALL 911 or go to the Emergency Department.

How is NAS managed?

- The treatment will depend on the substances your baby has been exposed to during pregnancy.
- In all cases it is important to tend to your baby's needs: helping her/him eat, sleep and settle.
- Sometimes medications may be required to treat withdrawal in your baby.
- Your baby may have to be transferred to the Neonatal Intensive Care Unit (NICU). It is just as important for you to stay in the NICU with your baby to provide care.
What can you do to help your baby?

- We believe you are the treatment to help your baby. This means that you are the most important person in the care of your baby, not just for withdrawal, but for all your baby’s needs.
- All babies like quiet, calm environments. Holding your baby skin-to-skin is very helpful for calming. Your nurse can show you how to do this safely.
- Handling your baby slowly and gently and taking in a quiet voice may help your baby feel secure.
- Breast or breast milk feeding is important to the health of your baby. We do understand that you may have medical or personal reasons for not wanting to provide breast milk to your baby. Please discuss these with your nurse, doctor and/or unit Social Worker.

Signs your baby is ready to go home

- When your baby is eating well, sleeping and settling well between feeds, then your baby may be ready to go home.
- When your baby has not lost too much weight or is gaining weight.
- When your baby is able to maintain a healthy temperature, heart rate, and breathing.
- When your baby has an appointment made with a Public Health nurse and primary care provider (PCP) in the few days after discharge.

Safety measures in hospital and at home

- It is normal for your baby to lose weight in the first few days after birth, and may not get back to birthweight before leaving the hospital. We expect that your baby will get back to birthweight by 2 weeks of life. Your baby’s health nurse and doctor will monitor your baby’s weight so it is very important that you take your baby to scheduled appointments.
- Jaundice, or yellowing of the skin color, is a common condition in newborn babies. This should get better over the first couple of weeks. It is important that your baby is eating well to help the jaundice go away. Take your baby to a doctor if you think the jaundice is getting worse: the skin color is more yellow or becoming orange, the whites of your baby's eyes are turning yellow, or your baby is sleepy and not eating well.
- Newborn babies are at high risk for falling. It is important that when you are holding your baby that you be awake to keep your baby from falling from your arms or sliding into the surface you are sitting on. If you are sleepy, the safest place for your baby is in her/his crib or cot. Staying awake is just as important for any other person holding your baby.
- Babies are at risk for sudden unexpected deaths related to unsafe sleep conditions. It is important that babies are placed safely to sleep: sleeping on their backs, sleeping by themselves in their own safe crib, cradle, or bassinet in the same room as their parent/s, not bundled or covered, and no loose bedding. Adult beds, sofas and chairs are not safe places to lay your baby to sleep. It is not safe to have your baby sleep with you or another person, including other children. It is also important to keep spaces smoke-free.
• Sometimes babies are sent home on medications to manage their withdrawal. Your baby's NICU Doctor, Nurse Practitioner or Pharmacist will speak with you about this before your baby goes home. It is important that you follow the medication plan closely and that you take your baby to all scheduled appointments.

• Newborn babies poop a lot. It is common for withdrawing babies to have loose watery poops. These will get better over time. The loose watery poops may cause your baby's bum to get red or even have areas where the skin is open. If this happens, change their diapers more often, use warm water and a clean cloth to gently clean and dry the area. Put on a thin layer of barrier cream before putting on a diaper. Make sure to wash your hands before and after each diaper change. If a store-bought cream is not helping, talk to your baby's doctor about getting a prescription cream.

What happens if I need help?
• We know that when your baby is going through withdrawal, it can be a hard time. We are here for you and your baby.

Follow-up and Backup Plan
My baby’s doctor/midwife/Primary Care Network/Nurse Practitioner (NP) is__________________________ and phone number__________________.
My baby’s doctor/midwife/Primary Care Network/NP appointment is on_________________________ at________________________ in the morning or evening.
My Public Health Centre address__________________________ and phone number______________________.
My baby’s Public Health appointment is on__________________________ at________________________ in the morning or evening.
If your baby shows signs of getting worse or if you need more help please call your doctor/midwife/Primary Care Network/NP.
For general health concerns and information call AHS Health Link at 811 or MyHealth.Alberta.ca
**If your baby has trouble breathing, gasps for air, or turns blue, CALL 911 or go to the Emergency Department.**
For more parenting tips please visit www.healthyparentshealthychildren.ca
For help with opioid addiction and treatment call the Virtual Opioid Dependency Program (VODP) at 1-844-383-7688 or www.vodp.ca
**APPENDIX H**

**References**


Agthe AG et al. Clonidine as an Adjunct Therapy to Opioids for Neonatal Abstinence Syndrome: A Randomized, Controlled Trial. Pediatrics 2009, 123(5).


