

Clinical Guideline



HNEkidshealth
Children, Young People & Families



Health
Hunter New England
Local Health District

Maternity and Newborn - Neonatal Abstinence Syndrome (NAS) Management

Sites where Clinical Guideline applies	JHCH NICU, Special Care Nurseries & Maternity services in HNELHD, including postnatal wards
This Clinical Guideline applies to:	
1. Adults	Yes
2. Children up to 16 years	Yes - Potential for all maternity care guidelines to apply to girls under 16 years
3. Neonates – less than 29 days	Yes
Target audience	Medical Officers, GP's, allied health, and nurses and midwives caring for newborns at risk of NAS.
Description	This guideline has been written to provide guidance for the care of the newborn infant at risk of NAS and their family.

[Hyperlink to Guideline](#)

Keywords	Substance Abuse, NAS, Modified Finnegan's scoring chart, newborn, neonatal, maternity, abstinence
Document registration number	
Related Legislation, Australian Standard, NSW Ministry of Health Policy Directive or Guideline, National Safety and Quality Health Service Standard (NSQHSS) and/or other, HNE Health Document, Professional Guideline, Code of Practice or Ethics:	
	<ul style="list-style-type: none"> • NSW Health Guideline GL2013_008 Neonatal Abstinence Syndrome Guidelines • NSW Health Policy Directive PD2014_036 Clinical Procedure Safety • JHCH NICU Local Guideline HIV exposed infant management JHCH NICU 11.02 • NSW Health Policy Directive PD2013_007 Child Wellbeing and Child Protection Policies and Procedures for NSW Health • GL2010_004 SAFE START Guidelines: Improving Mental Health Outcomes for Parents & Infants • NSW Health Policy Directive PD2006_084 Domestic Violence – Identifying and Responding
Position responsible for Clinical Guideline Governance and authorised by	Director of Children's Young People and Families Network - Professor Trish Davidson / Network Leader , Women's Health & Maternity Clinical --- Dr Henry Murray
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Date authorised	
This document contains advice on therapeutics	Yes - Approval gained from HNE Quality Use of Medicines Committee on 14 June 2016
Issue date	10 th February 2017
Review date	February 2020
TRIM number	

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GLOSSARY

Acronym or Term	Definition
NAS	Neonatal Abstinence Syndrome
Neonatal Abstinence Score	This tool provides a numerical score based on the signs and symptoms of NAS. The chart used is based on a modified Finnegan scoring system

GUIDELINE

While not requiring mandatory compliance, staff must have sound reasons for not implementing standards or practices set out within guidelines issued by HNE Health, or for measuring consistent variance in practice.

Risk Statement:

This clinical guideline and procedure has been developed to provide instruction to the healthcare worker and to ensure that the risks of harm to the patient associated with neonatal abstinence syndrome are identified and managed.

Any unplanned event resulting in, or with the potential for, injury, damage or other loss to the patient as a result of this clinical procedure must be reported through the Incident Information Management System. This would include unintended patient injury or complication from treatment that results in disability, death or prolonged hospital stay and is caused by health care management.

Open Disclosure procedures must be commenced to ensure the concerns of the patient are identified and managed in accordance with Ministry of Health Policy Directives. The Policy Directives and Guidelines for managing complaints and concerns about clinicians should be used in conjunction with other relevant NSW Health Policy Directives that govern the behaviour and actions of all staff.

The Hunter New England Local Health District operates within a tiered network of maternity and newborn services which helps to ensure that women and their babies have the appropriate access to higher levels of maternity and newborn care when risk factors are identified beyond the designated role dilatation of the local service. Clinicians should make the decision as to the most appropriate facility for care based on the baby's individual needs.

Risk Category: *Clinical Care & Patient Safety*

Staff Preparation

It is mandatory for staff to follow:

- “Five moments of hand hygiene”,
- Infection control,
- Moving safely/safe manual handling,
- Documentation practices and HAIDET for patient/carer communication:
Hand hygiene, Acknowledge, Introduce, Duration, Explanation, Thank you or closing comment.

Neonatal Abstinence Syndrome guideline

Introduction

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The following guideline covers the care of babies who are being managed for risk of, or actual Neonatal Abstinence Syndrome (NAS).

Aim

The document aims to maintain and improve care for this group of infants and their parents by standardising management of babies being managed for neonatal abstinence syndrome. It provides a guide for those who are caring for these babies infrequently. The guidelines are not intended as strict rules that must be followed under all circumstances. No set of rules can replace good clinical judgment in all circumstances. No guideline can substitute for experience and common sense.

Assessment

The patient group targeted is newborns at risk of or being managed for NAS in HNELHD maternity and newborn services.

Management

Continuum of care

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Managing a baby at risk of developing an abstinence syndrome is a multidisciplinary team effort. Ideally, care begins before pregnancy but should at least begin in pregnancy from the first antenatal visit or as soon as drug use (prescribed or un-prescribed) with potential to cause fetal compromise or a withdrawal or intoxication syndrome (hereafter called at risk drugs) is identified. Early identification and engagement of women taking at risk drugs during pregnancy is important in achieving the best outcome for mother and baby. Continuity of care through the pregnancy, labour and birthing, postnatal care and follow up is needed to achieve best outcomes. At times women taking at risk drugs in pregnancy have minimal antenatal care and their first presentation may be for birthing.

Ideally women using opioids are stabilised on methadone or buprenorphine prior to or during pregnancy by drug and alcohol staff and the obstetric teams. Stabilisation can be commenced during the pregnancy during a hospital admission. Best outcomes for mother and baby are achieved by such therapy. The long acting opioids methadone and buprenorphine are safe during pregnancy but carry a significant risk of Neonatal Abstinence Syndrome (NAS) after birth.

Preferably other at risk drugs are ceased or weaned to reduce the risk of harm to the fetus.

HNELHD Resource

A specialist team of midwives, social workers, obstetricians, drug and alcohol workers, neonatologists and other staff operate at John Hunter Hospital and John Hunter Children's Hospital. This team can be consulted for advice on managing the pregnant women or babies after birth.

'At Risk' Drugs'

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Many drugs both prescribed and not prescribed carry risks to the fetus including NAS. In this document all such drugs are called 'At Risk' drugs. All who take at risk drugs during pregnancy should have appropriate plans made in the antenatal period for management immediately after birth and follow up. A list of common drugs causing neonatal abstinence syndrome or neonatal intoxication is listed below

Drug Group	Risk of NAS	Other risks in newborn period
Opioids	High	growth restriction, respiratory depression
Sedatives (e.g. Benzodiazepines)	Low	Hypothermia, sedation, lethargy, respiratory problems, hypotonia, poor feeding, settling difficulties
Stimulants (cocaine, amphetamines)	Low	Intoxication – agitation, overactivity. NAS possible but unusual, growth restriction, ischaemic lesions
SSRIs, SNRIs	Low	Toxicity causing serotonergic syndrome more likely– mimics withdrawal syndrome

Cigarette smoking	Low	Intra-uterine growth restriction
Alcohol	Low	Fetal alcohol syndrome rarely. Fetal alcohol effect. Hyper excitability, GI symptoms, seizures
Marijuana	Low	Growth restriction, sedation, feeding difficulties, hypotonia,
Caffeine	Low	NAS usually mild

Antenatal Visits

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- Women identified pre-pregnancy taking at risk drugs should be counselled re risks and benefits of drug use while pregnant.
- Women identified during pregnancy taking at risk drugs should be counselled re risks of in utero exposure to drugs, risk of withdrawal in utero and ex utero and the management of postnatal abstinence syndrome including options re treatment.
- At risk drug use and breastfeeding should also be discussed.

Medical Cover for Babies

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The care of babies at high risk of NAS should be the responsibility of experienced medical staff. Babies at lower risk of NAS can receive standard postnatal care under obstetric and midwifery staff.

Care at birth

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Resuscitation

Resuscitation should be conducted as for any newborn.

Naloxone (Narcan) may precipitate immediate severe withdrawal and possibly seizures and should not be administered to babies born to mothers on long acting opioids or frequently taking opioids e.g. methadone, buprenorphine, morphine, oxycodone, heroin, codeine etc.

This also applies in situations where such mothers have received opioids for pain relief during labour that is thought to have caused apnoea in the baby. These babies should be ventilated as required and transferred to a nursery for further management.

Routine Care after Birth

Vitamin K injection and Hepatitis B immunisation should be given after birth as per normal routine. Babies of mothers that are Hepatitis B carriers are recommended to receive Hepatitis B Immunoglobulin (HBIG) within 12 hours of birth as well. These injections must be given at different sites. The skin should be carefully washed prior to any intramuscular injection including Vitamin K. .

Admission to a nursery

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Newborn babies should be assessed and then admitted to a Special Care Nursery on an individual basis dependent on the newborn's condition and individual risk factors.

At risk drugs taken during the antenatal period is not a sole reason to admit a baby to a nursery. This may need to be modified on a unit by unit basis depending on local resources.

Postnatal care

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The parents of all babies should be treated with respect and dignity and all information should be treated with confidentiality.

Postnatal care offers a period to assess;

- The baby for signs of NAS
- Wellbeing of the mother
- Maternal bonding and behaviour
- Parenting skills of the parents
- Any concerns re child protection, and
- To make appropriate plans for follow up.

The following minimum postnatal stay is recommended:

- 7 Days for mothers on long acting opioids, as newborn withdrawal can first present late in the first week.
- 5 Days for mothers who have taken illicit drugs in the antenatal period
- 3 - days for mothers taking SSRI or SNRI antidepressant therapy in the third trimester. If the Serotonergic syndrome is going to occur it will usually be apparent within 72 hours.

Breast Feeding

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Breastfeeding is recommended for all babies unless there are absolute contraindications for doing so. All drugs are present in breast milk. Concentrations in breast milk will vary according to the drug and may be so small as to be insignificant and considered safe. Other drugs may be present in significant concentrations and considered unsafe so that a period of expressing and discarding milk is necessary after each use or not breast feeding is recommended. The balance of benefit of breast feeding versus the safety of drug exposure should be considered when making recommendations around breast feeding.

Prescribed Medications. Please refer to standard texts or online sources such as Micromedex (available through CIAP at <http://www.micromedexsolutions.com.acs.hcn.com.au/micromedex2/librarian>) for advice on safety of breast feeding on the medication.

Methadone, Buprenorphine, Oxycodone and other opioids. Small amounts of these drugs are present in breast milk so mothers receiving these medications will transfer small amounts of the drug to the baby. These amounts may help the baby have less withdrawal, and are not so large those sudden cessations of breast feeding will cause withdrawal later on.

Benzodiazepines. Potential risks should be weighed up against benefits of breastfeeding. If a woman taking benzodiazepines wishes to breastfeed, she should be advised that she should not stop taking the benzodiazepines abruptly, but should undergo supervised gradual withdrawal if she wishes to cease use. Women on short-acting benzodiazepines should be advised not to breastfeed immediately after taking a dose because of the dual risk of her falling asleep, potentially smothering the infant, and of the infant receiving a maximum dose and becoming excessively drowsy.

Amphetamines, Ecstasy, Cocaine. Express and discard the breast milk after the drug use, don't simply stop breastfeeding. Do not breast feed for 24 hours and continue expressing and discarding milk during that period. Ongoing use of cocaine is a contraindication to breastfeeding.

Cannabis. Information not available re breast feeding. Smoke away from infant, out of house and not in car.

Alcohol. Australian Alcohol Guidelines recommend a prudent approach to breastfeeding if alcohol is consumed. No alcohol while breast feeding is safe, no safe level of alcohol intakes exists. Alcohol reduces breast milk production so no alcohol in the first month is advised so that breast feeding is well established. If

a breastfeeding mother wants to drink alcohol, it is suggested that she breastfeed before drinking alcohol, then wait a minimum of three to four hours after the *last* drink before breastfeeding again, (maximum 2 standard drinks per day). If she exceeds the recommended levels of drinking (i.e. more than 2 standard drinks), it is suggested that she wait approximately three hours per standard drink (10 gm alcohol) consumed before breastfeeding again. Consider expressing and storing breastmilk prior to drinking.

Tobacco. Minimal amounts of nicotine are present in breast milk and absorbed in the infant gut. Smoking tobacco reduces milk supply and makes breast feeding less likely and shorter in duration. The effects of other chemicals from smoking that may be present in breast milk are unknown.

HIV. In developed countries such as Australia where formula feeding is safe, *breastfeeding is not recommended in HIV infected women.*

http://intranet.hne.health.nsw.gov.au/_data/assets/pdf_file/0009/133983/GNAH_0531_Maternity_HIV_management.pdf

Hepatitis C is not a contraindication to breastfeeding; however breastfeeding should be suspended when there are cracked and bleeding nipples. Expressing and discarding breast milk is recommended to maintain milk supply until healing has occurred and breast feeding can resume.

Scoring for NAS

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The NSW Health “Neonatal Abstinence Score” sheet (see Appendix 1) should be used to record NAS scores. Scores should be attended at least QID and after feeds. See *Monitoring for NAS* below.

Drug Screens

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Routine screening for drugs in urine or meconium is not recommended but local guidelines will apply. There is a significant risk of false positive and false negative results. Mothers are often given opioids for pain relief in labour or post caesarean section and those prescribed methadone or buprenorphine will test positive. Amphetamines wash out in about 3 days; marijuana washes out in about a month. So timing of drug taking and sampling are critical in interpreting results.

Local Guideline for Newcastle.

If Community Services request urine or meconium screening be done a sample can be provided so they can arrange analysis. These samples should not be sent to Pathology North HAPS by hospital staff at the request of Community Services.

Monitoring for NAS

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Neonatal Abstinence Syndrome (NAS) is characterised by signs and symptoms of central nervous system hyperirritability, gastrointestinal dysfunction and respiratory distress, and by vague autonomic symptoms that include yawning, sneezing, mottling and fever. The syndrome is most commonly seen with opioid withdrawal and some symptoms are more specific to opioids (e.g. diarrhoea). However the symptoms can be seen in other at risk drug withdrawals or intoxications. In opioid withdrawal the symptoms usually begin within 72 hours, but may appear up to two weeks after birth, (rarely after 7 days). All the symptoms and signs of withdrawal can be caused by other neonatal illnesses so it is important to consider common causes of symptoms and if necessary exclude those causes with appropriate investigations. E.g. hypoglycaemia causing jitteriness or infection causing fever.

Serotonergic Syndrome.

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This syndrome occurs after exposure to SSRI medication in the third trimester. The symptoms begin within 3 days of birth and usually settle within 10-14 days but symptoms may last up to a month. It is not thought to be an abstinence syndrome but overstimulation by serotonin. Serotonergic syndrome includes irritability, constant crying, hypertonia with jitteriness, tremor, and twitching, tachypnoea, tachycardia, overactive bowel with diarrhoea and feeding sleeping difficulties. It is unusually severe enough to require pharmacologic management. Only general supportive care (see section below on Non-Pharmacologic Management) is usually required.

Appendix 1: shows the NSW Health “Neonatal Abstinence Score” sheet. This is based on the Modified

Finnegan scoring system. On the reverse side (the following page in appendix 1) are instructions on scoring the individual items. The scoring system was originally developed for opioid withdrawal but can be used for other drugs and substances to score symptoms.

Scoring

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1. Scoring should be done on any baby whose mother is known to have taken methadone, heroin, amphetamines or other substances likely to cause withdrawal during the latter part of pregnancy.
2. Scoring can be started on *any* baby where the symptoms suggest that withdrawal may be a problem. This can occur with drugs such as nicotine, caffeine, alcohol and a number of psychotropic medications prescribed to the mother.
3. Scoring should be done after a feed if possible, as the score can be quite high on any baby who is very hungry. The score should reflect withdrawal not hunger.
4. Scoring should be done as often as necessary. Start at 6 hourly. If signs of withdrawal start to appear score 4 hourly or at each feed. If scores remain low for some days interval can be 8 hourly.
5. The baby scores one score only for each section between the black lines on the score sheet. If the baby does not meet the criteria then she/he scores a zero in that section (which can be left as a blank). Do not score less than or more than the score available in that section. E.g. nasal flaring is either present or not and therefore scores 2 or 0, it cannot be scored as a 1.
6. The scoring time and date should be recorded at the top of the scoring section.
7. The score should be totalled up at the bottom of the chart.
8. The chart should be initialled at the bottom of the page.

Deciding to treat

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The Finnegan score is used to help decide on appropriate treatment but is not the only criteria for deciding on pharmacologic therapy. Normal term newborns can score up to 8. When the Total Score averages more than 8 over 3 consecutive scores (e.g. 7, 10, 8) the baby is showing signs of significant withdrawal. A baby with a single score of 12 or over will usually need treatment. Between 8 and 12 the decision to treat is made by the attending doctor and is dependent on the drug taken by the mother, timing of withdrawal after birth, speed of onset of withdrawal, the particular clinical signs in the baby such as severe diarrhoea, inability to feed adequately or sleep, excessive weight loss and parental preferences about treating.

Management of NAS

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Babies at risk of or with NAS can usually be managed on a postnatal ward but this will be determined by local resources and guidelines.

The first line of managing NAS is *Non-Pharmacologic Techniques*, if these are insufficient and the baby needs *Pharmacotherapy* (see below) local guidelines will determine if this can be instituted and managed on a postnatal ward. Occasionally a baby will require admission to a nursery for NAS alone, particularly if very difficult to control.

Once pharmacological treatment is started and the baby is stabilized on a dose then the baby can be discharged home on medication provided the baby is at least 5 days post birth. Follow up weekly in clinic is organised to monitor withdrawal of drug therapy and provide ongoing supplies of medication.

A baby with signs of withdrawal should be weighed every second day (bare weights) as poor feeding, increased respiratory rate, fever and diarrhoea can all lead to significant dehydration and excessive weight loss. Notify medical staff if weight loss is greater than 10% of birth weight or greater than 5% in any 2 day period.

Non-Pharmacologic Management

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Carer Education

Behavioural and parent craft cares are the first line of treatment of neonatal withdrawal. As drug therapy is being reduced or after it has been stopped, the parents have to rely on the parent craft skills learnt in hospital to settle the baby. This makes teaching these techniques to the parents an important part of their education while in hospital.

Environment

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Infants who are suffering from withdrawal are experiencing an excess of stimuli that they cannot cope with. Measures to reduce this excessive input can help the baby with withdrawal. A single room for mother and baby can greatly assist to reduce stimulation.

Babies often seem to 'startle' themselves with the excessive movement associated with their increased tone and jitteriness. Swaddling firmly in a blanket (or sheet if too hot) with the hands up to the face helps limit jitteriness and excessive movement.

Noise is alarming and therefore a quiet room, no radio, no television, with soft soothing talk can be calming.

Bright lights are also a source of stimuli and therefore semi darkness can help.

For the above reasons this makes a nursing station or a nursery often one of the worst environments in which to care for these infants, even for relatively short periods.

In accordance with Maternity - Safer Sleeping Practices for Babies in NSW Public Health Organisations http://www0.health.nsw.gov.au/policies/pd/2012/pdf/PD2012_062.pdf and the NSW SIDS Guidelines babies are:

- To sleep on their back with baby's head and face uncovered
- Encourage mothers to keep their baby smoke free before and after birth.
- Due to the increased incidence of sleep accidents in babies whose mothers are drug affected babies are not to co-bed and co-sleep with the mother

Interaction

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While the baby has an excess of stimuli, it also doesn't have anything to focus attention on and therefore being face to face with the carer can help the baby overcome the excess of extraneous stimuli and engage the carer to help establish good bonding.

Feeding and Dummies

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Babies of mothers who have been prescribed methadone in particular, but often babies experiencing withdrawal like to suck. It is important that this does not lead to excessive feeding, because too much milk intake may lead to abdominal bloating and pain ("colic") and worsen diarrhoea. Use of a dummy is encouraged for these babies to meet the need to suck without the possible effects of excessive milk intake.

Similarly, small frequent feedings may be better than large infrequent feedings as this gives the baby a focus, satisfies hunger frequently and has a soothing effect.

Drug therapy is used if these non-drug measures are inadequate to control the symptoms and NAS scores.

Pharmacologic Management

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Morphine is the medication of choice in the management of opioid dependent babies. This includes babies with seizures due to opioid withdrawal. If morphine alone is inadequate to control NAS a second drug can be used. Clonidine or Phenobarbitone, are useful in opioid withdrawal, added to morphine when the dose of morphine is at maximum recommended and there are still signs of significant withdrawal.

Phenobarbitone is the drug of choice in withdrawal from non-opioid drugs of addiction and is particularly indicated when abstinence symptoms include convulsions. Phenobarbitone is the drug of choice in mothers' who have relied on more than one drug of dependency unless the primary reason for withdrawal is thought to be an opioid withdrawal, and then morphine should be used as a first line and Phenobarbitone added if necessary.

Caffeine can be used if it is thought the baby is withdrawing from excessive maternal caffeine intake. The baby of a mother on 2 litres per day of Coca Cola, 7 cups of instant coffee or 4 cups of brewed Coffee a day may have withdrawal.

Length of treatment

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The duration of the withdrawal of treatment is usually several weeks but may take many months. The emphasis is on alleviating or treating symptoms of abstinence rather than rapid cessation of treatment.

Morphine

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Prescription

Morphine should be prescribed by the medical officer experienced in caring for the neonate suffering from NAS. Always prescribe 'Morphine oral solution 1mg/1mL'. Higher concentrations may lead to inaccurate dosing at the low doses required.

Dose

Start the baby on a total of 0.5 mg/kg/day orally, divided into 4 doses (give at 6-hourly intervals). Rarely this may be inadequate and a short period of 4 hourly dosing may be necessary at the same total daily dose i.e. 6 doses at 4-hourly intervals.

If the scores remains high after 24 hours of treatment increase to a total dose of 0.7 mg/kg/day. Very rarely a total dose of 0.9 mg/kg/day will be required to achieve control.

Do not use a total dose higher than 1 mg/kg/day. If additional treatment is necessary, add Phenobarbitone or Clonidine to the Morphine treatment.

Discharge on morphine

When NAS scores and treatment dose is stable for ~48 hours the baby can be discharged home on therapy for follow up within 1 week in clinic.

Weaning morphine

Weaning the baby off morphine should preferably be done in the home if it is safe to do so. During withdrawal, mild symptoms may occur after a dose reduction of morphine and usually settle in around 24 hours. Some babies remain mildly irritable for weeks or months. This alone is not a reason to continue morphine treatment. In opioid withdrawal treated with morphine it often takes 1 to 2 months to wean off the morphine completely (example above ~30 days of weaning). During this time a normal increase in total daily crying time may occur (and can be exaggerated in colic). Care should be taken to avoid continuing morphine to treat symptoms interpreted as withdrawal, which is in fact Colic.

In hospital (not preferred)

When scores are stable below treatment levels for 48 hours, dose reduction can begin with the aim of total withdrawal of morphine. Reduce the dose by 0.05 mg/dose every 2-3 days provided the score remains below 8 and the baby is otherwise well. At lower doses the total daily dose is reduced by increasing the interval between doses e.g. from 0.3mg 4 times a day to 0.3 mg 3 times a day and eventually to twice a day.

Stop morphine when the baby has been on 0.1 mg/dose twice a day for 2 or 3 days.

At Home (preferred)

Reduce the dose of morphine by 0.05 mg/dose every 3 days. At lower doses the total daily dose is reduced by increasing the interval between doses e.g. from 0.3mg 4 times a day to 0.3 mg 3 times a day and eventually to twice a day. Stop morphine when the baby has been on 0.1 mg/dose twice a day for 3 days. Occasionally babies cannot tolerate a dose reduction every 3 days and need to be weaned more slowly. E.g. every 4 or 5 days.

Example of a weaning regime

Dose	Frequency	Duration
0.45 mg/dose	4 times a day	For 3 days
0.40 mg/dose	4 times a day	For 3 days
0.35 mg/dose	4 times a day	For 3 days
0.30 mg/dose	4 times a day	For 3 days
0.30 mg/dose	3 times a day	For 3 days
0.25 mg/dose	3 times a day	For 3 days
0.20 mg/dose	3 times a day	For 3 days
0.20 mg/dose	2 times a day	For 3 days
0.15 mg/dose	2 times a day	For 3 days
0.10 mg/dose	2 times a day	For 3 days

Stop

Administration of morphine

Use only a 1 ml syringe to measure the dose (which will always be less than 1 mg (1 ml)).

The timing of doses is not critical but should be within an hour of (before or after) the prescribed times. This allows some flexibility of dosing to allow for sleep and feeding pattern without risking having 2 doses too close together or too far apart.

Repeat the dose if the baby has a large vomit within 5 to 10 minutes of administration.

If an infant appears to be unusually sedated urgent review is required before a dose is given as omitting dose(s) and/or dose reduction may be required. If the baby is unusually irritable review is required to consider a dose increase.

Phenobarbitone

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Dose

Start treatment with a loading dose of 15 mg/kg IMI

Continue with 6 mg/kg/day in 2 12 hourly doses orally.

If symptoms are not controlled within 24-48 hours increase the dose to 8 mg/kg/day q12h.

Very rarely a dose of 10 mg/kg/day q12h may be required to control symptoms.

Levels

Measuring therapeutic levels is not required. Published therapeutic levels are for seizure control and are not appropriate for control of withdrawal symptoms. Levels required to control withdrawal may be higher than used to control seizures.

Dosing

Repeat the dose if the baby has a large vomit within 5 to 10 minutes of administration.

Weaning

If score falls below the treatment levels for 48 hours and the baby is stable then withdrawal of the medication can start by reducing the dose by 2 mg per dose (10-20%), once or twice a week. The half-life of Phenobarbitone is long and it will take over a week to reach a new steady state. The dose must not be reduced more often than every 72 hours.

Caffeine

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Standard doses of caffeine for neonatal apnoea are usually adequate to control withdrawal from caffeine.

Dose

The standard dose of Caffeine Base is 10 mg/kg oral loading dose and 5 mg/kg/day oral maintenance dose. The standard dose of Caffeine Citrate is 20 mg/kg oral loading dose and 10 mg/kg/day oral maintenance.

Clonidine

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If Morphine alone is inadequate to control opioid withdrawal clonidine can be used as an additional agent to control the signs and symptoms. There is limited information about clonidine use for NAS however.

Dose

The standard dose range of Clonidine is 3-6 micrograms/kg/day orally divided into 4 to 6 hourly doses. Start at 3 microgram/kg/day divided into 4 6 hourly doses (see monitoring below). Increase dose by 1 microgram /kg/day every 24 hours if blood pressure remains normal and Finnegan scores remain greater than 8. Maximum dose is 6 micrograms/kg/day.

Monitoring

Clonidine can cause hypotension. Monitor blood pressure every 4 hours for first 48 hours.

Weaning

As there is limited information about clonidine use for NAS, wean off clonidine treatment first then opioid treatment. (Some treatment trials have reversed this order of weaning but there is very limited data on clonidine use in NAS and extensive data and experience with the safety of morphine)

Discharge Planning

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Discharging a baby on Morphine or Phenobarbitone minimises time spent in hospital. A multidisciplinary decision is made in conjunction with the parents regarding discharge home on pharmacological treatment. Consideration is given to the control of the infant's withdrawal symptoms, feeding, baby's wellbeing, weight gain, the parent's ability to administer the medication and the home environment.

Medication on discharge

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At discharge a prescription for ~7-10 day supply of the medication should be provided. It is essential to counsel the parents carefully about dose measurement and ensuring that other children cannot access the medication. Parents will need to be supplied with oral syringes to measure and administer the doses.

Follow up

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A follow up appointment is made with a treating doctor for approximately 1 week after discharge. Decisions re further follow up appointments and dose reductions are made in clinic at the discretion of the treating physician. Repeat prescriptions will usually be required to complete the course of medication.

IMPLEMENTATION PLAN

The clinical guideline will be:

- Circulated to General Managers and Cluster Managers
- Circulated to the clinicians via the Children', Families and Young Person Network and the Women's Health and Maternity Network
- Available on the intranet and Kaleidoscope website
- Presented at facility units meeting and tabled for staff to read the guideline

MONITORING AND AUDITING PLAN

- The person or leadership team who has approved the clinical guideline is responsible for ensuring timely and effective review of the guideline.
- Evaluation will require a review of the most current evidence as well as a consideration of the experience of HNE LHD staff in the implementation of the clinical guideline.
- Data derived from monitoring and evaluation should inform the review of the clinical guideline either as required or scheduled.
- Amendments to the guideline will be ratified by the Clinical Director of the WHaM Network prior to final sign off by the Children's, Young Peoples and Families Network

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- HNE Maternity & Newborn Services Steering Committee
- Children, Young People and Families Network
- Women's Health and Maternity Clinical Network

REVIEWED BY:

Jo-Ann Davis, Acting CNC for Newborn Services JHCH

Approved NICU: 17th September 2016

APPENDICES

- **Appendix One - NSW Health Neonatal Abstinence Scoring chart**
- **Appendix Two – Clinical Audit Tool**

REFERENCES

NSW Health Guideline GL2013_008 Neonatal Abstinence Syndrome Guidelines
http://www0.health.nsw.gov.au/policies/gl/2013/pdf/GL2013_008.pdf

NSW Health PD2005_494 Neonatal Abstinence Syndrome Guidelines Feb 2005
http://www0.health.nsw.gov.au/policies/pd/2005/pdf/PD2005_494.pdf

Management of the newborn infant affected by maternal opiates and other drugs of dependency. Julee Oei,

Kei Lui. Article first published online: 3 Jan 2007

<http://onlinelibrary.wiley.com/doi/10.1111/j.1440-1754.2007.00994.x/full>

Clinical practice guideline for babies at risk of neonatal abstinence syndrome (NAS). The Royal Women's Hospital Victoria

<http://www.thewomens.org.au/uploads/downloads/HealthProfessionals/CPGs/NASCPG16.pdf>

eNeonatal Review Vol 8 Issue 11: Neonatal Abstinence Syndrome

<http://www.hopkinscme.edu/ofp/eneonatalreview/Newsletters/2011/0411.pdf>

National clinical guidelines for the management of drug use during pregnancy, birth and the early development years of the newborn. Commissioned by the Ministerial Council on Drug Strategy under the Cost Shared Funding Model

http://www0.health.nsw.gov.au/pubs/2006/pdf/ncg_druguse.pdf

NSW Health Review of Substance Use in Pregnancy Services Mental Health and Drug and Alcohol Office

http://www0.health.nsw.gov.au/pubs/2010/pdf/review_of_substance.pdf

Clonidine as an Adjunct Therapy to Opioids for Neonatal Abstinence Syndrome: A Randomized, Controlled Trial. Alexander G. Agthe, MDa,b, George R. Kim, MDa, Kay B. Mathias, NNPC, Craig W. Hendrix, MDd, Raul Chavez-Valdez, MDa, Lauren Jansson, MDa,e, Tamorah R. Lewis, MDa, Myron Yaster, MDa,f, Estelle B. Gauda, MDa,c,e Pediatrics Volume 123:5, e849. May 2009

FEEDBACK

Any feedback on this document should be sent to the Contact Officer listed on the front page.

Appendix One - NSW Health Neonatal Abstinence Scoring chart



NSW Health

FAMILY NAME MRN

GIVEN NAME MALE FEMALE

D.O.B. ____/____/____ M.O.

ADDRESS

LOCATION / WARD

COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE



SMR110400

Holes Punched as per AS2828.1: 2012

BINDING MARGIN - NO WRITING

NH605586 301213

NEONATAL ABSTINENCE SCORE

Frequency: _____ **Date and time in 24 hour clock** _____

SYSTEM	SIGNS & SYMPTOMS	SCORE											
CENTRAL NERVOUS SYSTEM DISTURBANCES	High pitched cry	2											
	Continuous high pitched cry	3											
	Sleeps < 1hr between feeds	3											
	Sleeps < 2 hrs between feeds	2											
	Sleeps < 3 hrs between feeds	1											
	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											
	Generalised convulsions	5											
METABOLIC/VASOMOTOR RESPIRATORY DISTURBANCES	Fever (37.3 – 39.3°C)	1											
	Fever (39.4°C & higher)	2											
	Frequent yawning (>3-4 times in ½hr)	1											
	Nasal stuffiness	1											
	Sneezing (3-4 times in ½hr)	1											
	Nasal Flaring	2											
	Respiratory rate > 60/min	1											
GASTROINTESTINAL DISTURBANCES	Excessive sucking	1											
	Poor feeding	2											
	Regurgitation	2											
	Projectile vomiting	3											
	Loose stools	2											
	Watery stools	3											
TOTAL SCORE:													
SCORER'S INITIALS:													
SCORER'S SIGNATURE:													

SMR110.400

NO WRITING

Page 1 of 2



Health

Facility:

FAMILY NAME		MRN
GIVEN NAME		<input type="checkbox"/> MALE <input type="checkbox"/> FEMALE
D.O.B. ____/____/____	M.O.	
ADDRESS		
LOCATION / WARD		
COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE		

NEONATAL ABSTINENCE SCORE

Neonatal Abstinence Scoring Information Sheet

SIGNS & SYMPTOMS

- High pitched cry:* Score 2 if a cry is high pitched in its peak.
Score 3 if a cry is high pitched throughout.
- Sleep:* Consider total amount of time baby was asleep between feeds.
- Section on Tremors:* This is a scale of increasing severity and babies should only get one score from the four categories. Undisturbed means when a baby is asleep or at rest in cot.
- Increased Muscle Tone:* Score if has generalised muscle tone greater than the upper limit of normal.
- Excoriations:** **Score only when excoriations first appear, increase in severity or appear in a new area.**
- Yawning and Sneezing:* Score if occurs more than 3 to 4 times in 30 minutes.
- Nasal flaring - Respiratory rate:** **Score if present without other evidence of airways disease.**
- Excessive sucking:* Score if more than that of the average hungry baby.
- Poor feeding:* Score if baby is very slow to feed or takes inadequate amounts.
- Regurgitation:* Score only if occurs more frequently than usual in newborn.

MODIFICATIONS FOR PREMATURITY

Mainly necessary in the sections on sleeping, eg; *a baby who needs 3 hourly feeds can only sleep at most 2½ hours between them.* Scoring should be:

- 1) if baby sleeps less than 2 hours
- 2) if baby sleeps less than one hour, and
- 3) if does not sleep between feeds;

Many premature babies require tube feeding. Babies should not be scored for poor feeding if tube feeding is customary for their period of gestation.

The content of this form is based on the modified Finnegan's score

Holes Punched as per AS2828-1: 2012
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Clinical Audit Tool –

(National Standard 1: 1.7.2 The use of agreed clinical guidelines by the clinical workforce is monitored)

Criterion no.	Criterion	Exceptions	Definition of terms and/or general guidance	Data source	Frequency	Position Responsible
1	Percentage of infants admitted to a SCN/NICU for management of NAS.		It is recommended that Mothers and babies should be admitted to the postnatal ward after birth. Maternal use of at risk drugs is not seen as a sole reason to admit a baby to a nursery but this will need to be decided on a unit by unit basis depending on local resources		12 monthly	
2						
3						
4						
5						

Reference: *Electronic audit tool - National Institute for Health and Clinical Excellence (NICE):* <http://www.nice.org.uk/about/what-we-do/into-practice/audit-and-service-improvement/audit-tools>