CLINICAL GUIDELINE	
Neonatal Abstinence Syndrome (NAS)	
Scope (Staff):	Nursing and Medical Staff
Scope (Area):	NICU KEMH, NICU PCH, NETS WA

Child Safe Organisation Statement of Commitment

The Child and Adolescent Health Service (CAHS) commits to being a child safe organisation by meeting the National Child Safe Principles and National Child Safe Standards. This is a commitment to a strong culture supported by robust policies and procedures to ensure the safety and wellbeing of children at CAHS.

This document should be read in conjunction with this DISCLAIMER

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Background

Maternal drug use is a risk factor for adverse pregnancy and neonatal outcomes including preterm birth. Infants born to mothers using illicit drugs, apart from neonatal drug withdrawal, are at risk of adverse neonatal outcomes. All women using drugs are entitled to accurate information, and to be treated sensitively and in a non-judgmental manner.

Neonatal Abstinence Syndrome is a generalised disorder presenting a clinical picture of drug withdrawal in the infant. This includes CNS hyperirritability (tremors, high pitched cry, irritable, sleep disturbance), autonomic symptoms (sneezing, fever, yawning, sweating, mottling) and gastrointestinal dysfunction (excessive sucking, vomiting, posseting, loose/watery stools).

Withdrawal symptoms in the neonate may occur as a result of a variety of drugs including opiates, cocaine and derivatives, amphetamines, and alcohol. With less certainty, abnormal neurobehavioral patterns have also been reported in newborn infants of mothers with high intakes of marijuana, volatile substances, caffeine and the new SSRI antidepressants.

Diagnosis of NAS

A maternal history of substance use during pregnancy and subsequent neonatal symptoms of withdrawal often provide the basis of diagnosis. The severity of symptoms of NAS, are scored using an NAS score chart (a modified Finnegan Scoring System).

It is important to consider a differential diagnosis as the symptoms of NAS may also be present in other neonatal illnesses e.g. hypoglycaemia or sepsis. In all infants symptoms that may suggest NAS alternative diagnoses should be considered and appropriate investigations ordered for the clinical situation. In preterm infants with symptoms that may suggest NAS hypoglycaemia and infection must be specifically looked for with a minimum of pre-feed PGL, CRP and FBC. NAS scoring for a preterm baby with suspected NAS symptoms should not commence without these investigations in a preterm infant.

Opiates

Withdrawal symptoms from opiates include:

- **Central nervous system:** tremors, irritability, sleep disturbance.
- **Respiratory system:** tachypnoea, nasal flaring, chest recession.
- **Autonomic nervous system:** sneezing, yawning, fever, sweating.
- **Gastrointestinal system:** poor feeding, vomiting, diarrhoea.

Withdrawal from maternal opiate use is present in 40-90% of antenatally exposed infants.

A subacute withdrawal may persist for four to six months. Seizures have been documented in infants born to mothers on methadone or heroin use. The risk of Sudden Infant Death Syndrome (SIDS) is higher in babies of mothers who use opiates.

Heroin use during pregnancy is reported to result in withdrawal in exposed infants. Withdrawal symptoms appear early (within 12-24 hours of birth) due to the drug's shorter half-life. Withdrawal appears to be greater in infants born to mothers on higher doses of heroin.

Methadone is used to treat opiate dependence in adults and is associated with better pregnancy outcomes than illicit heroin use. Up to 90% of infants of mothers on methadone experience some withdrawal and 50-75% will require treatment. (These figures may be higher with the current high doses being administered in the community). Methadone can cause severe withdrawal symptoms and usually presents 1 to 7 days after birth. Published studies have conflicting results in their ability to relate methadone dose and severity of withdrawal. However, infant factors such as the infant's metabolism may be important. Withdrawal is less severe in infants of mothers taking less than 20 mg Methadone a day.

Methadone-exposed infants appear to be at a higher risk of SIDS compared to those of heroin-exposed infants.

Buprenorphine (Subutex®)

Like methadone, is used to treat opiate dependence. Infants exposed to buprenorphine in pregnancy may experience respiratory depression in the newborn period and/or NAS. Reports suggest that buprenorphine-related NAS is more likely to present earlier than methadone-related NAS, and a proportion of infants with buprenorphine-related NAS are likely to require pharmacological treatment.

Amphetamines

Abnormalities have not been observed in infants born to mothers using low dose therapeutic amphetamines. Intravenous amphetamine use however appears to be on the increase, and adverse effects have been noted. Decreased head circumference, length, birth weight, increased rates of abruption, preterm birth and growth restriction have been reported in pregnancies of mothers using intravenous amphetamines. In utero amphetamine exposure may lead to intracranial lesions including haemorrhage, infarction and cavitatory lesions. A significant withdrawal syndrome is not generally seen and Finnegan scoring is not necessary routinely used.

Cocaine and Derivatives

Adverse pregnancy and neonatal outcomes have been reported in mothers using cocaine during pregnancy and their infants. However, a meta-analysis of studies examining the effect of cocaine use in pregnancy on pregnancy outcomes found that the independent effect of cocaine on adverse outcomes of cocaine was small, and that similar effects were seen in polydrug users whether or not they used cocaine.

Marijuana

The use of marijuana in pregnancy does not appear to increase the risks of obstetric complications. It has been associated with reduced birth length and low birth weight. No consistent morphological abnormality has been found in infants of mothers who use marijuana. Subtle neurobehavioural abnormalities have been described in infants whose mothers are heavy users of marijuana although the relationship remains unproven.

Alcohol, Inhalants, Tranquilizers and Sedatives

This group of non-opioid depressants can cause withdrawal symptoms that are not dissimilar to those of opioid withdrawal. They are often taken along with stimulants.

Polydrug Use

Users of illicit drugs frequently use more than one drug, polydrug use is now the norm rather than the exception. Meta-analysis of studies suggests that polydrug users have an increased risk of abnormal pregnancy outcomes and the infants of polydrug users also have an increased risk of SIDS.

Urine Testing of Newborns

The testing of pregnant mothers and their newborn infants should be weighed against the rights of the patient to privacy and autonomy, as well as the potential for adverse effects on employment, insurance coverage and personal relationships if confidentiality of the results is lost. In general, a sensitive and thorough history is the mainstay of diagnosis.

Testing of infants should rarely, if ever, be performed without the consent of the mother, and should only take place following consultation with the neonatal consultant.

Assessment and Care after Birth

Infant Resuscitation

Naloxone is not to be used in infants of opiate-dependent mothers as it has the potential to cause withdrawal symptoms including seizures. Initially the infant may be observed in the postnatal ward. Mothers need to be forewarned, if this has not already been addressed antenatally, that the infant will need to be in hospital for at least five to seven days and the infant's stay can sometimes be as long as several weeks.

NAS is likely to be more severe in infants that have been antenatally exposed to methadone, heroin or multiple substances. Therefore, these infants should be regularly assessed for symptoms of NAS from birth to the fourth day of life.

NAS Scoring

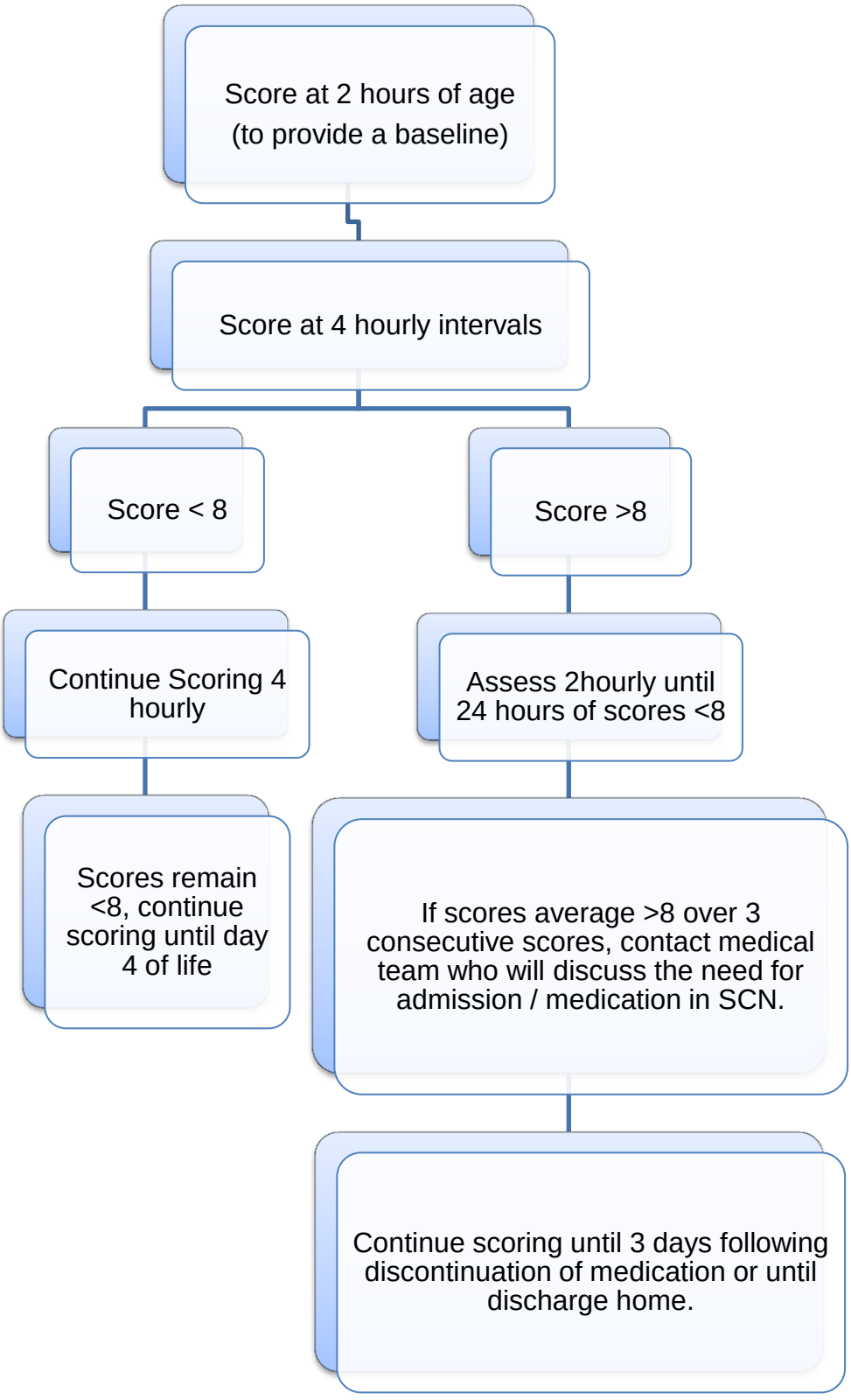
Given the vagueness of NAS symptoms in infants, it may be difficult to determine when they are in need of treatment. For this reason the **Neonatal Abstinence Scoring System** devised by Finnegan is used. Read NEONATAL ABSTINENCE SCORING CHART (MR 495) in conjunction with this guideline. The NAS scoring system is a guide and not a precise measure of the infant's clinical course. It is recommended for infants at high risk of withdrawal (maternal opiate use or polydrug use) **link postnatal ward QRG**

Assessment Using NAS Chart MR 495

- The scoring interval is the entire period between when you are scoring the infant and when the last score was assigned (i.e. 4 hours if the previous score was less than 8 or 2 hours if the previous score was greater than 8). Document all scores.
- The NAS scoring system is dynamic rather than static. That is, scores should reflect all symptoms observed over the entire scoring interval, rather than at one set point in time.
- If the infant is unsettled at the time of scoring, efforts should be made to settle the infant prior to scoring symptoms observed during the scoring interval.
- Do not wake a sleeping infant for the purpose of assessment. Instead, schedule assessments to occur after feeding at 2-4 hourly intervals.
- Parents are to be familiarised with the scoring tool and be encouraged to participate in scoring of their infants.

Refer to NAS Scoring Instructions Guide below

NAS Scoring Schedule



Non-Pharmacological Interventions

Non-pharmacological interventions can assist in settling and may reduce symptoms in infants with NAS.

High Pitched/Excessive Cry

- Soothe infant with swaddling, talk quietly, hold infant firmly to body, rock gently.
- Reduce environmental stimuli (slow movements, reduce lighting and noise level, cover head end of cot).

Sleeplessness

- Reduce environmental stimuli. Swaddle infant, minimise handling, rock gently and encourage skin-to-skin cuddles.

Excoriation

- Place a sheepskin under sheet. Apply protective skin barriers (e.g. Comfeel) to affected areas.

Hyperthermia

- Dress in light clothing and use lightweight, soft fabric to swaddle. Nurse in an open cot with adequate ventilation. Avoid using a Perspex cot.

Nasal Flaring/Tachypnoea

- Refer to Medical staff. Avoid swaddling so that respiratory rate can be closely observed.

Excessive Sucking Of Fists

- Apply mittens, keep hands clean, and consult with parents about the use of a dummy.

Poor Feeding

- Feed to demand, offer small frequent feeds, and allow to rest between sucking.
- Reduce environmental stimuli during feeds and assess coordination of suck swallow reflex. Refer to Lactation Consultant as required. Weigh and assess hydration daily and refer to Medical staff if infant doesn't achieve required fluid intake or has excessive weight loss.

Vomiting

- Wind infant regularly when he/she stops sucking and at the end of the feed.

Peri-Anal Excoriation Due To Loose Stools/Diarrhoea

- Change infants' nappy with every feed. Discuss the use of appropriate barrier creams with medical staff, and it may be necessary to expose the buttocks to air to dry.

Parent Education

- Mothers' are to be given the option of keeping the scoring sheet at the infant's bedside, or held in the nursing coordinators handover file (so as not to compromise the confidentiality of the mother's substance use). NAS scores should be documented in consultation with the mother and father if appropriate.
- Parents are to be familiarised with the scoring tool and be encouraged to participate in scoring of their infants. Daily assessment of withdrawal symptoms, adequacy of

feeding, adequacy of weight gain (or severity of weight loss) and non-pharmacological interventions. This will enable recognition and appropriate response to NAS symptoms and assist in the ongoing management.

- Encourage breastfeeding if the mother is stable on methadone. Harm minimisation in relation to breastfeeding should be discussed if the mother is on heroin or other sedatives and stimulants.
- Liaise between medical, nursing and social work/WANDAS team concerning the family's social situation, parenting skills/abilities, visiting schedules and whether there are any indications for involvement of Department of Child Protection/DCP.
- Hepatitis B vaccine before discharge, or Hepatitis B vaccine and immunoglobulin within 72 hours of birth if HepBsAg positive. Hepatitis C is not a contraindication to breast- feeding (Refer to Hepatitis C and Breastfeeding - Parent Information Sheet) and women with Hepatitis B may breast feed once their infant is vaccinated and given immunoglobulin.

Pharmacological Treatment

If an infant at risk of NAS has 3 consecutive abstinence **scores** averaging > 8, or > 12 for 2 consecutive scores, treatment is usually indicated. The scoring interval should be 2 hourly while scores are > 8, and then 4 hourly until the infant has been stabilised.

Opiate Withdrawal (Methadone, Buprenorphine, Heroin, Pethidine)

Morphine is generally used first line to manage symptoms of opiate NAS. Infants with severe NAS may initially require an adjunct to morphine until their symptoms are adequately managed i.e. NAS score consistently < 8. If adjunct therapy is needed clonidine may be a preferable to phenobarbitone due to the concerns regarding long term phenobarbitone use and adverse developmental outcomes[1]. Clonidine should be weaned off as an inpatient. Phenobarbitone has traditionally been weaned slowly however concerns about prolonged use on neurodevelopmental outcome mean a faster wean may be optimal. If the infant has a safe discharge plan then outpatient morphine can be given after the infant has had period of stabilisation and is tolerating weaning.

Morphine Regimen (Round all doses to nearest 50 micrograms)

Pharmacy dispenses oral morphine as a 1000 mcg/mL (1 mg/mL) aqueous solution. In some cases where control of symptoms is difficult it can be useful to prescribe the morphine daily dose in 6 divided doses rather than 4.

NAS Score	Dose/Action
Score averages > 8 for 3 consecutive scores	Morphine 125 microgram/kg/dose every 6 hours Maximum of 500micrograms/kg in 24 hours
If score persists > 8 despite morphine 500 mcg/kg/day	Morphine 175 microgram/kg/dose every 6 hours OR 110 microgram/kg/dose every 4 hours ALTERNATIVE 100-175 micrograms/kg/dose every 4- 6 hours Maximum of 700micrograms/kg in 24 hours
If score persists > 8 despite morphine 700 mcg/kg/day	Morphine 225 microgram/kg/dose every 6 hours OR 150 micrograms/kg/dose every 4 hours

	ALTERNATIVE 150-200micrograms/kg/dose every 4-6 hours Maximum of 900micrograms/kg in 24 hours **REQUIRES CONTINUOUS 02 SATS MONITORING***

*Opiates in high dose are powerful respiratory depressants

Morphine Dosing of the Vomiting Infant

Ensure that the infant is not being overfed and that the infant is being appropriately postured during and after feeding. Give the morphine dose before the feed.

If baby has a **large** vomit after being given morphine:

- If vomits within 10 minutes of dose, re-dose.
- If vomits after 10 minutes, give ½ dose.
- If infant vomits after feed, do not give further morphine (always err on side of caution).

Clonidine Regimen (as adjunct to morphine OR primary agent in non-opiate withdrawal)

For infants>35 weeks CGA

NAS scores	Dose/action
Score averages > 8 for 3 consecutive scores despite morphine dosing >800mcg/kg/day	0.5-1micrograms /kg/dose every 6 hours
If scores persist >8	Increase dose according to response by increments of 25-50% Maximum of 12 micrograms/kg/ in 24 hours

Clonidine requires HR and BP monitoring:

Monitor heart rate and blood pressure every 4 hours the first 2 days of therapy and every 12 hours thereafter; monitor blood pressure closely (4 hourly) for 48 hours after discontinuing clonidine to access for rebound hypertension.

Weaning every 1-2 days by 25% if score </=8

Clonidine is to be discontinued pre-discharge.

Phenobarbitone Regimen as Adjunct to Morphine

NAS score	Action
Score averages > 8 for 3 consecutive scores despite 900microg/kg/day morphine	LOADING dose 10mg/kg Maintenance dose 1.5-2.5mg/kg/dose every 12 hours

Weaning Regimen

A **stringent** weaning regimen has been reported to be associated with decreased opiate days and decreased length of stay [2,3]. There is very little in the literature on how to wean morphine in these babies, so all decisions are empirical.
After AVERAGE scores fall below treatment level (i.e. score </= 8) for 48 hours, the dose should be reduced. A suggested rate of weaning is to decrease the dose by 0.05 mL (0.05mg) per dose every 2-3 days, depending on the scores. Given the half-life of morphine, it is more appropriate to reduce the dose rather than the frequency. Weaning whilst in hospital can often be accomplished faster than out of hospital; however there are significant social costs with prolonged hospitalisation. The length of morphine treatment may vary from one to several months.
If weaning fails after 2 attempts consider adjunct therapy (clonidine or phenobarbitone). If there are concerns of significant polysubstance abuse in the infants' maternal history consider early adjunct therapy.

Non-Opiate Withdrawal

Non-opiate withdrawal is rare so Finnegan scoring should only be commenced if there is clinical concern regarding withdrawal. If treatment is deemed necessary then clonidine or phenobarbitone should be used as first line agents. Clonidine should be weaned as an inpatient.

Phenobarbitone Regimen for Primary Treatment of Non-Opiate Withdrawal

NAS Score	Dose/Action
Score averages > 8 for 3 consecutive scores	LOADING DOSE Phenobarbitone 15 mg/kg oral or IMI stat. Medical staff are to review the infant within 12-24 hours of the loading dose to determine whether a maintenance dose is required. MAINTENANCE DOSE Oral Phenobarbitone 3mg/kg every 12 hours.
If score persists > 8 despite Phenobarbitone 6mg/kg/day	Oral Phenobarbitone 4 mg/kg/dose every 12 hours
If score persists > 8 despite Phenobarbitone 8mg/kg/day	Oral Phenobarbitone 5mg/kg/dose every 12 hours

Discharge Planning

Absolute:

- Before day 5 of life if the mother known to have been on opiates or the infant is symptomatic. As the neonatal effects of other maternal substances (e.g. alcohol, Benzodiazepines, antidepressants) are very variable any monitoring, treatment and suitability for discharge should be discussed with the paediatrician on call.
- High risk of infant neglect or abuse (as communicated by social worker). High risk of home violence (as communicated by social worker).
- Social worker communicated intention of statutory agency (CPFS) to apprehend infant prior to discharge:

- In these cases the Social Worker will investigate alternative strategies for managing the care, feeding and safety of the infant to avoid admission to the NICU.

Relative:

- Excessive weight loss (> 10% of birth weight) - discuss with consultant.
- Inadequate home support or acceptance of assistance from external agencies.
- Inadequate parenting skills e.g. Failure to consistently demonstrate ability to feed and provide appropriate care for infant during hospitalisation.
- Inability to participate in required paediatric follow-up program.

Home Medication Management Program

- The infant requiring ongoing pharmacological management of withdrawal from opiates may continue management in the home environment, providing that the family has access to appropriate support and follow-up.
- Home management of the infant will prevent prolonged disruption to the mother-infant relationship, and provide health care professionals with opportunities to observe the family's ability to provide adequate care for their infant. All NAS infants discharged home on medication are to be referred to the WANDAS clinic for weekly to fortnightly appointments. Social work support is available during the clinic for ongoing concerns/DNA etc. And can give consideration for Home Visiting Nurse/HiTH for in-home support, and monitoring of weight gain and NAS symptoms.
- Refer to WNHS Information Booklet for Mum & Baby - Women and Newborn Drug and Alcohol Service (WANDAS).

Pharmacological Management for Discharge

Oral Morphine doses are to be rounded to the nearest 50 microgram.

Parents are to be instructed in administration of medication in the week prior to discharge.

A weaning program is recommended over a period of several weeks, with reducing doses based on the infant's discharge weight. The following four week weaning program is provided as an example.

Week 1	100 microgram/kg/dose every 6 hours
Week 2	75 microgram/kg/dose every 6 hours
Week 3	50 microgram/kg/doe every 6 hours
Week 4	25 microgram/kg/dose every 6 hours

Note: Point 2 for volume calculation

1. Maximum volume to be dispensed is [(Dose (mL) x Number of times per day) +0.5mL excess per day]x Number of Days required
2. For a dose of 200microgram every 6hours for 1 week

   200microgram = 0.2mL

   [(0.2mL x 4) +0.5] x 7 = (0.8mL +0.5) x 7 = 9.1mL

The length of the weaning program may vary from a few weeks to several months, depending on the infant's discharge dose and tolerance of weaning. Given the half-life of

morphine it is more appropriate to reduce the dose rather than the frequency. The script may be written for fortnightly periods, with the medical officer indicating the dispensing intervals and total amount to be dispensed. For example:

1. Weekly dispensing (i.e. Parent/guardian to attend outpatient pharmacy weekly to obtain medication).
2. Maximum volume to be dispensed is χ mL (weekly volume) + 3 mL wastage.
3. An additional bottle containing 3 mL is to be prescribed to provide spare doses in the event of loss or spillage of the bottle. This additional bottle must be presented to pharmacy when the parent attends to receive the next script.
4. Refer parent to prescribing medical officer if parent's request differs from that ordered.
5. Second weekly scripts with weekly dispensing allow the medical officer to adjust the dose as indicated with each medical review in the outpatients' clinics. It is considered safe to dispense weekly volumes, as the amount of narcotic prescribed for an infant in one week's volume is unlikely to have an effect on the opioid dependent adult. The prescription of morphine mixture is limited to a 60 day period.

Community Support

- The allocated hospital Social Worker is to be kept informed of, and involved in plans for discharge.
- The family's General Practitioner is to be provided with a copy of the infant's discharge medication schedule along with the neonatal discharge summary.
- The family's local Child Health Nurse is to be provided with a copy of the infant's discharge medication schedule and informed of the infant's discharge from the neonatal nurseries.

NAS Scoring Instructions Guide

System	Symptom	**Description** Should Be Scored If:
Central Nervous System Disturbances	Excessive high pitched cry	♦ Cries intermittently or continuously for **up to 5 minutes** despite caregiver intervention. ♦ Infant is unable to decrease crying within a 15 sec period using self-consoling measures.
	Continuous high pitched cry	♦ Infant cries intermittently or continuously for **greater than 5 minutes** despite caregiver intervention. ♦ **NB:** Since an infant's cry may vary in pitch, this **should not be scored** if high-pitched crying is not accompanied by other signs described above.
	Sleep	♦ Scores based on the **longest period of sleep** within the entire scoring interval. ♦ Include light **and** deep sleep (Deep- regular breathing, eyes closed, no spontaneous activity; Light - irregular breathing, brief opening of eyes at intervals, some sucking movements).
	Hyperactive Moro Reflex	Moro Reflex: Lift the infant slightly off the bed by the wrists or arms and allow the infant to fall back on the bed. **NB:** should not be performed when infant is crying or irritable. ♦ Infant exhibits pronounced jitteriness of the hands during, or at the end of, the Moro Reflex.
	Markedly hyperactive Moro Reflex	♦ Infant exhibits jitteriness and repetitive jerks of the hands and arms during, or at the end of, the Moro Reflex.
	Mild tremors when disturbed	♦ Infant exhibits observable tremors of the hands or feet whilst being handled.
	Moderate-severe tremors when disturbed	♦ Infant exhibits observable tremors of the arm/s or leg/s, with or without tremors of the hands or feet, whilst being handled.
	Mild tremors when undisturbed	Undisturbed tremors should be assessed by observing the infant for at least 2 one-minute undisturbed periods. ♦ Infant exhibits observable tremors of the hands or feet whilst not being handled.
	Moderate-severe tremors when undisturbed	♦ Infant exhibits observable tremors of the arm/s or leg/s, with or without tremors of the hands or feet, whilst not being handled.
	Increased Muscle Tone	♦ Should be assessed when infant awake but not crying. ♦ There is **tight flexion** of the infant's arms and legs (unable to slightly extend the arms or legs).
	Excoriation	♦ If occurs on **chin, knees, cheeks, elbow, toes or nose.** ♦ Does not include excoriated nappy area caused by loose stools.
	Myoclonic jerks	♦ The infant exhibits **twitching movements** of the muscles of the face or extremities, or if jerking movements of the arms or legs are observed.

	Generalised convulsions	♦ Generalised activity involving tonic (rigid) extensions of all limbs (but may be limited to just one limb), or manifested by tonic flexion of all limbs. ♦ Generalised jitteriness of extremities is observed. Hold or flex the limbs, if the jitteriness does not stop, it is a seizure. ♦ If **subtle seizures** are present (eye staring, rapid eye movements, chewing, fist clenching, back arching, and cycling motion of limbs +/- autonomic changes) then they **should be scored** in this category.
Metabolic / Vasomotor / Respiratory Disturbances	Sweating	♦ If perspiration felt on forehead, upper lip or back of neck. ♦ **Do not score** if sweating due to overheating (i.e. cuddling, swaddling).
	Fever	♦ Values as outlined on MR495.
	Frequent yawning	♦ The infant yawns **greater than 3 times** within scoring interval.
	Mottling	♦ Mottling is present on chest, trunk, arms or legs.
	Nasal stuffiness	♦ The infant exhibits **noisy respirations** due to presence of exudate +/-runny nose.
	Sneezing	♦ The infant sneezed **more than 3 times** in the scoring interval. ♦ May occur as individual episodes or may occur serially.
	Nasal Flaring	♦ Present **at any time** during the scoring interval.
	Respiration rate	♦ **NB:** Cannot be assessed while the infant is crying.
Gastrointestinal Disturbance	Excessive Sucking	♦ The infant shows increased (> 3 times) rooting (turns head to one side searching for food) while displaying rapid swiping movements of hand across mouth prior to **or** after a feed.
	Poor feeding	♦ The infant demonstrates excessive sucking prior to a feed, yet sucks infrequently during feeding, taking small amounts, and/or demonstrates an uncoordinated sucking reflex. ♦ Also score if infant continuously gulps the milk, and stops frequently to breathe.
	Regurgitation	♦ Regurgitation, **not associated with burping,** occurs **2 or more** times during the feed.
	Projectile vomiting	♦ **1 or more** projectile vomiting episodes occurs either during or immediately after a feed.
	Loose stools	♦ Scored if stool, which may or may not be explosive, is curdy or seedy in appearance. ♦ A liquid stool, **without a water ring on the nappy,** should also be scored as loose.
	Watery stools	♦ The infant has soft, mushy, liquid or hard stools that are accompanied by a **water ring** on the nappy.

References

1. Maitre, N. L., Smolinsky, C., Slaughter, J. C., & Stark, A. R. (2013). Adverse neurodevelopmental outcomes after exposure to phenobarbital and levetiracetam for the treatment of neonatal seizures. Journal of Perinatology : Official Journal of the California Perinatal Association, 33(11), 841–846. http://doi.org.kelibresources.health.wa.gov.au/10.1038/jp.2013.116
2. Tara Burnette, Lindsey Chernicky & Craig V. Towers (2018) The effect of standardizing treatment when managing neonatal abstinence syndrome, The Journal of Maternal-Fetal & Neonatal Medicine,DOI: 10.1080/14767058.2018.1465038
3. Hall ES, Wexelblatt SL, Crowley M et al; OCHNAS Consortium: Implementation of a neonatal abstinence syndrome weaning protocol: a multicentred study. Pediatrics 2015; 116(6):1221 DOI: 10.1016/j/jpeds.2015.09.038

Useful resources

Hepatitis C and Breastfeeding - Parent Information Sheet

Information Booklet for Mum & Baby - Women and Newborn Drug and Alcohol Service (WANDAS)

This document can be made available in alternative formats on request for a person with a disability.

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