



**CLINICAL PRACTICE GUIDELINE**

Guideline coverage includes NICU KEMH, NICU PMH and NETS WA

# Neonatal Abstinence Syndrome (NAS)

This document should be read in conjunction with the [Disclaimer](#)

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## Background

The incidence of illicit and polydrug use appears to be on the increase in Australia. Hepatitis C virus infection (anti-HCV positive) is almost universal in intravenous drug users (IVDU) and evidence of past hepatitis B infection (HepBcAb positive) is common. Pregnant women using illicit and licit drugs have the same anxieties and expectations as other pregnant women. All women using drugs are entitled to accurate information, and to be treated sensitively and in a non-judgmental manner. 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.

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, possetting, 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).

Infants scoring 3 consecutive NAS scores averaging > 8 (e.g. 9 / 7 / 9) or a score of 12 for 2 consecutive scores should be considered for treatment as detailed in this protocol. Infants withdrawing from non-opiates frequently display similar behaviours to those withdrawing from opiates.

Refer to [Safety Plan in the Event of Alcohol or Drug Use. Women and Newborn Drug and Alcohol Service \(WANDAS\)](#).

## 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 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 Sudden Infant Death Syndrome (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. There is currently insufficient data comparing the incidence, severity and duration of NAS in infants exposed antenatally to buprenorphine with those exposed to methadone. However, 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 cavitary lesions.

### **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.

## Non-Opiate CNS Depressant Withdrawal

If the mother has used non-opiate drugs during pregnancy (central nervous system depressants such as benzodiazepines, barbiturates, and alcohol) phenobarbitone is the drug of choice for management of NAS.

For barbiturate withdrawal, after scores fall below treatment level (i.e. < 8) for 48 hours the dose should be reduced by 2 mg per dose every 4th day or longer depending on scores. For non-barbiturate withdrawal (e.g. Benzodiazepines), the dose may be reduced more rapidly after withdrawal symptoms settle.

## 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.

Infants on the postnatal wards should be considered for transfer to the neonatal unit if the NAS score > 8 for 3 consecutive scores, or > 12 for 2 consecutive scores. Further scoring is usually appropriate to confirm that high scores are due to NAS. Infants should also be admitted if there is severe irritability. The infant can be transferred back to the postnatal wards/peripheral units when stabilised (i.e. scores < 8 for 24 hours). NAS can produce a major disruption to mother-infant attachment. Unnecessary separation of mother and infant should be avoided.

The scoring interval is the entire period between scores (i.e. 4 hours if the previous score was less than 8, or 2 hours if the previous score was greater than 8). Scores should therefore reflect all symptoms observed over the entire scoring interval rather than at one set point in time. The medical staff will use the NAS scores to determine if pharmacological treatment of infants with NAS is required.

If the infant is unsettled at the time of scoring, efforts should be made to settle the infant prior to scoring symptoms observed over the period of assessment. The

progression of NAS symptoms, and response to medication should always be documented.

### **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**

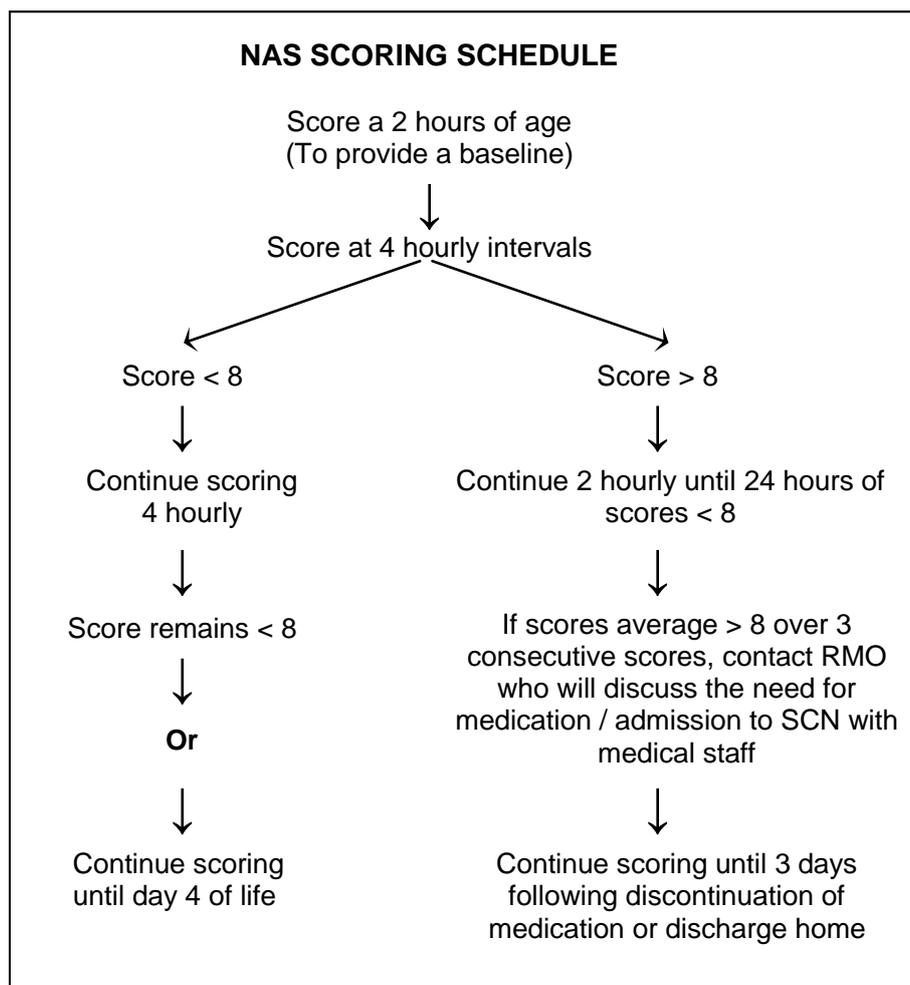
- Mothers' are to be given the option of keeping the scoring sheet at the infant's bedside, or held in the nursing coordinators handover file (so as not to compromise the confidentiality of the mother's substance use). NAS scores should be documented in consultation with the mother and father if appropriate.
- 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.

### **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.



### Suggested Non-Pharmalogical Supportive Measures:

- **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 light weight, 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. Nurse supine unless continuously monitored in SCN.
- **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 Consultation as required. Weigh and assess hydration daily and refer to Medical staff if infant does not 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 nappy with every feed. Discuss the use of appropriate barrier creams, it may be necessary to initiate a nappy care plan.

## 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)

Phenobarbitone and/or morphine may be used to manage symptoms of NAS. The choice of pharmacological treatment should be decided in consultation with a neonatal consultant. Infants with more severe symptoms of NAS that do not respond adequately to phenobarbitone may be managed on the morphine regime (as outlined below). Infants with severe NAS may initially require both phenobarbitone and morphine until their symptoms are adequately managed i.e. NAS score consistently < 8.

### Morphine Regimen

Pharmacy dispenses oral morphine as a 1000 mcg/mL (1 mg/mL) aqueous solution. Morphine has been shown in a RCT to be better than phenobarbitone in preventing seizures in infants with opiate withdrawal although it does increase the time that the infant requires treatment. 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 500 mcg/kg/day (oral) in 4 divided doses |
| If score persists > 8 despite morphine 500 mcg/kg/day | Morphine 700 mcg/kg/day (oral) in 4 divided doses |
| If score persists > 8 despite morphine 700 mcg/kg/day | Morphine 900 mcg/kg/day (oral) in 4 divided doses |
| When infants are on > 900 mcg/kg/day                  | Continuous SaO <sub>2</sub> monitoring*           |

\*Opiates in high dose are powerful respiratory depressants

### Weaning Regimen

There is very little in the literature on how to wean morphine in these babies, so all decisions are empirical. After 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 4 days or longer, 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.

### 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).

### Phenobarbitone Regimen

| NAS Score   | Dose/Action   |
|---|---|
| Score averages > 8 for 3 consecutive scores             | <b>LOADING DOSE</b><br>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.<br><b>MAINTENANCE DOSE</b><br>Phenobarbitone 6 mg/kg/day (oral) in 2 divided doses. |
| If score persists > 8 despite Phenobarbitone 6mg/kg/day | Phenobarbitone 8 mg/kg/day (oral) in 2 divided doses.   |
| If score persists > 8 despite Phenobarbitone 8mg/kg/day | Phenobarbitone 10 mg/kg/day (oral) in 2 divided doses.  |

### Use of Phenobarbitone in Combination with Morphine

Phenobarbitone 10 mg/kg may be prescribed as a loading dose when Phenobarbitone is to be used in combination with Morphine to manage severe NAS. Upon achieving adequate control of symptoms, one of these medications may be weaned.

### Pharmacological Management

#### 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.

Outpatient scripts should be provided on a Narcotic Prescription form. (Available from pharmacy - consider storing a pad of Narcotic Prescription forms in the DD cupboard).

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 | 400 mcg/kg/day oral morphine mixture 1 mg/mL in four divided doses |
| Week 2 | 300 mcg/kg/day oral morphine mixture 1 mg/mL in four divided doses |
| Week 3 | 200 mcg/kg/day oral morphine mixture 1 mg/mL in four divided doses |
| Week 4 | 100 mcg/kg/day oral morphine mixture 1 mg/mL in four divided doses |

However, 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:

- Weekly dispensing (i.e. Parent/guardian to attend outpatient pharmacy weekly to obtain medication).
- Maximum volume to be dispensed is  $\chi$  mL (weekly volume) + 3 mL wastage.

- 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.
- Refer parent to prescribing medical officer if parent's request differs from that ordered.
- Second weekly scripts with weekly dispensing allows 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.

## 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 (DCP) to apprehend infant prior to discharge:
  - In these cases the Social Worker Services 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.
- Infants of mothers on high doses of methadone or other drugs should be discouraged from early discharge, as their infants could withdraw at home.

## 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 NCCU Consultant/Senior Registrar Clinic and to the Home Visiting Nurse/HiTH for in-home support, and monitoring of weight gain and NAS symptoms.

Refer to [Neonatal Abstinence Syndrome: Home Management Program](#) - Parent Information.

Refer to [WNHS Information Booklet for Mum & Baby - Women and Newborn Drug and Alcohol Service \(WANDAS\)](#).

### **Outpatient Follow-Up**

- The infant and parent/s are to be seen by a Consultant Paediatrician or senior registrar at a scheduled clinic appointment within a week of discharge, and then weekly or fortnightly as required at the Wednesday afternoon WANDAS/NICU paediatric outpatient clinic. WANDAS will follow in the postnatal clinic for up to three months after birth.

**Note:** This WANDAS/NICU clinic runs every 2<sup>nd</sup> week, if an infant needs to be seen every week arrange a Tuesday or Thursday SR Clinic appointment for the other week.

- To promote compliance and consistency in assessment, it is preferable that the family is seen by a medical officer known to them at each clinic appointment.
- Failure to meet the requirements of the home management program (eg. non-attendance at outpatient appointments, loss or inappropriate use of medication) may result in readmission to the neonatal unit at Princess Margaret Hospital for ongoing management of NAS.
- If the parent/s and infant do not attend the outpatient appointment, they are to be phoned at home to negotiate another appointment; contact the appropriate social worker.

### **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 NCCU 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               | <ul style="list-style-type: none"> <li>◆ Cries intermittently or continuously for <b>up to 5 minutes</b> despite caregiver intervention.</li> <li>◆ Infant is unable to decrease crying within a 15 sec Period using self-consoling measures.</li> </ul>  |
|                                     | Continuous high pitched cry              | <ul style="list-style-type: none"> <li>◆ Infant cries intermittently or continuously for <b>greater than 5 minutes</b> despite caregiver intervention.</li> <li>◆ <b>NB:</b> Since an infant's cry may vary in pitch, this <b>should not be scored</b> if high-pitched crying is not accompanied by other signs described above.</li> </ul>   |
|                                     | Sleep                                    | <ul style="list-style-type: none"> <li>◆ Scores based on the <b>longest period of sleep</b> within the entire scoring interval.</li> <li>◆ Include light <b>and</b> deep sleep (Deep- regular breathing, eyes closed, no spontaneous activity; Light - irregular breathing, brief opening of eyes at intervals, some sucking movements).</li> </ul>   |
|                                     | Hyperactive Moro Reflex                  | <p>(Moro Reflex: Lift the infant slightly off the bed by the wrists or arms and allow the infant to fall back on the bed. <b>NB:</b> should not be performed when infant is crying or irritable)</p> <ul style="list-style-type: none"> <li>◆ Infant exhibits pronounced jitteriness of the hands during, or at the end of, the Moro Reflex.</li> </ul>   |
|                                     | Markedly hyperactive Moro Reflex         | <ul style="list-style-type: none"> <li>◆ Infant exhibits jitteriness and repetitive jerks of the hands and arms during, or at the end of, the Moro Reflex.</li> </ul>   |
|                                     | Mild tremors when disturbed              | <ul style="list-style-type: none"> <li>◆ Infant exhibits observable tremors of the hands or feet whilst being handled.</li> </ul>   |
|                                     | Moderate-severe tremors when disturbed   | <ul style="list-style-type: none"> <li>◆ Infant exhibits observable tremors of the arm/s or leg/s, with or without tremors of the hands or feet, whilst being handled.</li> </ul>   |
|                                     | Mild tremors when undisturbed            | <p>(Undisturbed tremors should be assessed by observing the infant for at least 2 one-minute undisturbed periods)</p> <ul style="list-style-type: none"> <li>◆ Infant exhibits observable tremors of the hands or feet whilst not being handled.</li> </ul>   |
|                                     | Moderate-severe tremors when undisturbed | <ul style="list-style-type: none"> <li>◆ Infant exhibits observable tremors of the arm/s or leg/s, with or without tremors of the hands or feet, whilst not being handled.</li> </ul>   |
|                                     | Increased Muscle Tone                    | <ul style="list-style-type: none"> <li>◆ Should be assessed when infant awake but not crying.</li> <li>◆ There is <b>tight flexion</b> of the infants arms and legs (unable to slightly extend the arms or legs).</li> </ul>  |
|                                     | Excoriation                              | <ul style="list-style-type: none"> <li>◆ If occurs on <b>chin, knees, cheeks, elbow, toes or nose</b>.</li> <li>◆ Does not include excoriated nappy area caused by loose stools.</li> </ul>   |
|                                     | Myoclonic jerks                          | <ul style="list-style-type: none"> <li>◆ The infant exhibits <b>twitching movements</b> of the muscles of the face or extremities, or if jerking movements of the arms or legs are observed.</li> </ul>   |
|                                     | Generalised convulsions                  | <ul style="list-style-type: none"> <li>◆ 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.</li> <li>◆ Generalised jitteriness of extremities is observed. Hold or flex the limbs, if the jitteriness does not stop, it is a seizure.</li> <li>◆ If <b>subtle seizures</b> are present (eye staring, rapid eye movements, chewing, fist clenching, back arching, cycling motion of limbs +/-autonomic changes) then they <b>should be scored</b> in this category.</li> </ul> |

|  |                     |  |
|--|---------------------|--|
| Metabolic / Vasomotor / Respiratory Disturbances | Sweating            | <ul style="list-style-type: none"> <li>◆ If perspiration felt on forehead, upper lip or back of neck.</li> <li>◆ <b>Do not score</b> if sweating due to overheating (i.e. cuddling, swaddling).</li> </ul>   |
|  | Fever               | ◆ Values as outlined on MR495.   |
|  | Frequent yawning    | ◆ The infant yawns <b>greater than 3 times</b> within scoring interval.  |
|  | Mottling            | ◆ Mottling is present on chest, trunk, arms or legs.   |
|  | Nasal stuffiness    | ◆ The infant exhibits <b>noisy respirations</b> due to presence of exudate +/-runny nose.  |
|  | Sneezing            | <ul style="list-style-type: none"> <li>◆ The infant sneezed <b>more than 3 times</b> in the scoring interval.</li> <li>◆ May occur as individual episodes or may occur serially.</li> </ul>  |
|  | Nasal Flaring       | ◆ Present <b>at any time</b> during the scoring interval.  |
|  | Respiration rate    | ◆ <b>NB:</b> 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 <b>or</b> after a feed.  |
|  | Poor feeding        | <ul style="list-style-type: none"> <li>◆ The infant demonstrates excessive sucking prior to a feed, yet sucks infrequently during feeding, taking small amounts, and/or demonstrates an uncoordinated sucking reflex.</li> <li>◆ Also score if infant continuously gulps the milk, and stops frequently to breathe.</li> </ul> |
|  | Regurgitation       | ◆ Regurgitation, <b>not associated with burping</b> , occurs <b>2 or more</b> times during the feed.   |
|  | Projectile vomiting | ◆ <b>1 or more</b> projectile vomiting episodes occurs either during or immediately after a feed.  |
|  | Loose stools        | <ul style="list-style-type: none"> <li>◆ Scored if stool, which may or may not be explosive, is curdy or seedy in appearance.</li> <li>◆ A liquid stool, <b>without a water ring on the nappy</b>, should also be scored as loose.</li> </ul>  |
|  | Watery stools       | ◆ The infant has soft, mushy, liquid or hard stools that are accompanied by a <b>water ring</b> on the nappy.  |

## References

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## Related WNHS policies, procedures and guidelines

[Safety Plan in the Event of Alcohol or Drug Use. Women and Newborn Drug and Alcohol Service \(WANDAS\)](#)

[Hepatitis C and Breastfeeding - Parent Information Sheet](#)

[Neonatal Abstinence Syndrome: Home Management Program](#)

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

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