**MANAGEMENT OF THE INFANT WITH NEONATAL ABSTINENCE SYNDROME (NAS) – LITERATURE REVIEW**

**BACKGROUND**

Neonatal Abstinence Syndrome (NAS) is a syndrome of drug withdrawal observed in infants of mothers physically dependent on drugs and is characterised by non-specific signs and symptoms as a result of in utero or postnatal exposure to opioids and other illicit drugs. Symptoms of withdrawal are generally divided into three main categories: overstimulation or hyperirritability of the central nervous system, gastrointestinal dysfunction, respiratory distress and autonomic dysregulation or sympathetic hyperactivity. NAS is more common in infants born to opioid-dependent women than in infants born to women dependent on other drugs or alcohol. Postnatal or iatrogenic NAS may also occur as a result of the abrupt withdrawal of opioids following prolonged exposure to analgesia. Table 1 lists a number of drugs that are known to be associated with neonatal withdrawal problems.

<table>
<thead>
<tr>
<th>Opioids</th>
<th>Barbiturates</th>
<th>Benzodiazepines</th>
<th>Miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buprenorphine</td>
<td>Butalbital</td>
<td>Alprazolam</td>
<td>Alcohol</td>
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<tr>
<td>Codeine</td>
<td>Phenobarbital</td>
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<td>Amphetamines</td>
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<tr>
<td>Heroin</td>
<td>Secobarbital</td>
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<td>Chlordiazepoxide</td>
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<tr>
<td>Meperidine</td>
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<td></td>
<td>Clomipramine</td>
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<tr>
<td>Methadone</td>
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<td></td>
<td>Cocaine</td>
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<tr>
<td>Morphine</td>
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<td></td>
<td>Desmethyliampramine</td>
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<tr>
<td>Pentazocine</td>
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<td></td>
<td>Diazepam</td>
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<tr>
<td>Propoxyphene</td>
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<td></td>
<td>Diphenhydramine</td>
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<td></td>
<td>Ethchlorvynol</td>
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<td></td>
<td></td>
<td></td>
<td>Gamma-Hydroxybutyrate</td>
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<td>GHB</td>
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<td></td>
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<td>Glutethimide</td>
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<td></td>
<td></td>
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<td>Hydroxyzine</td>
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<td></td>
<td></td>
<td></td>
<td>Inhalants and Solvents</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Meprobamate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Phenycyclidine</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>SSRI's</td>
</tr>
</tbody>
</table>

**EARLY RECOGNITION**

Early identification of infants likely to require clinical or pharmacologic interventions for NAS can help to reduce the incidence of mortality and morbidity. An accurate history of maternal drug use in the antenatal period is a potentially sensitive means of detecting drug use that can assist in the early identification of newborns that are at risk. However, the documented rate of illicit drug use through self-reporting tends to underestimate the actual level of drug use as compared to identification through drug screening tests. The outcome of infants at risk from NAS depends in part on the quality of antenatal care the women receive during pregnancy. The assessment and preparation of a care plan as part of the coordinated antenatal management of the pregnant woman and her family have a positive impact on neonatal outcomes. Late presentations are associated with inadequate antenatal care which may potentially have a negative impact on the neonate.

**DIAGNOSIS OF NEONATAL WITHDRAWAL SYMPTOMS**

The signs and symptoms of withdrawal include both physiologic and behavioural responses which are similar to those also observed in cases of hypoglycaemia, hypocalcaemia, hyperthyroidism, intracranial haemorrhage, hypoxic-ischaemic encephalopathy, hyperviscosity and sepsis. Fetal exposure to narcotics commonly results in decreased birth weight, increased weight loss during the early neonatal period and increased length of hospital stay. A maternal history of substance use during pregnancy often forms the basis for diagnosis of subsequent symptoms of neonatal withdrawal. Use of a NAS score chart, such as the Modified Finnegan Scoring System is frequently used to monitor the infant and exclude other possible causes for jitteriness and irritability (hypoglycaemia, hypocalcaemia, sepsis, etc.). The weighted numeric score is then used in conjunction with
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Supportive or pharmacologic treatment guidelines to monitor the infant’s clinical response and provide a comprehensive and objective way of assessing the onset, progression and diminution of symptoms of abstinence.8

Onset of NAS Symptoms

It is estimated that between 40-94% of infants born to substance using mothers will develop signs and symptoms of NAS.3, 8, 10 The onset, duration and severity of the syndrome is extremely varied.11 Symptoms usually begin to appear during the first 24 to 72 hours of life, with acute and subacute phases lasting for up to six months.3, 8, 12

Onset of symptoms varies according to the drug used by the mother, the quantity, frequency, and duration of intrauterine exposure, the timing of the last dose of the drug before delivery, maternal metabolism, physiochemical properties and half-life of the drug and maturity of the neonate/infant.7, 8, 11 The onset and severity may be transient, mild, delayed or characterised by intermittent phases of symptoms. If a week or more has elapsed between last maternal drug use and delivery, the incidence of neonatal withdrawal will be relatively low. Symptoms of withdrawal from methadone tend to appear later than symptoms of withdrawal from heroin because of the longer half-life, and in both cases the newborn appears normal at birth, both physically and behaviourally.8

The effects of prenatal drug exposure and possible neonatal sequelae can be found in the Common Signs of Neonatal Withdrawal, Intoxication or Neonatal Exposure chart. Newborn infants may or may not exhibit any or all of these signs.

At birth the newborn infant may display signs related to the substance used by their mother and will need time to process and clear any free or stored illicit drugs from their system, especially if the mother has been taking large amounts of drugs for a long time. Withdrawal may be mild and transient, delayed in onset, have a stepwise increase in severity, be intermittently present or have a biphasic course which includes acute neonatal withdrawal followed by improvement and then the onset of acute withdrawal. Recovery from the abstinence syndrome is gradual and occurs as the infant's metabolism is re-programmed to adjust to the absence of the dependence-producing agent.13, 14

Diagnostic Tools

All babies born to substance using mothers should receive routine postnatal care and monitoring in addition to the specific assessment of NAS.8 The American Academy of Pediatrics (AAP) recommends the use of an validated objective abstinence scoring method to measure the severity of withdrawal.8 Of the tools that are available, the Finnegan or Modified Finnegan Scoring System is used predominately in the United States and is the recommended scoring tool for use in Australia8 for assessing the infant for potentially life-threatening signs, such as vomiting, diarrhoea, weight loss, irritability, tremors, and tachypnoea. This tool assigns a cumulative score that is based on the interval observations of items related to the signs of neonatal withdrawal.8 The tool should also be used for the assessment of withdrawal from other drugs such as benzodiazepines and alcohol and if indicated by the perinatal history, to assess for stimulant intoxication in the neonatal period.8

Treatment – Factors to be Considered

A number of factors need to be considered when planning the care of drug-exposed neonates and infants:

- Maternal history of drug use during pregnancy
- Maternal history of drug use in the seven days prior to birth
- Drug use during labour and birth
- Quality and quantity of antenatal care
- Level of withdrawal symptoms
- Competence of staff re: NAS Assessment and use of the appropriate tool
- Birth into a Supportive Environment
- Supportive therapies implemented by parents and staff
- Pharmacotherapy, if required
- Interdisciplinary health care team and parents planning for discharge and follow-up
MANAGEMENT OF NEONATAL WITHDRAWAL SYMPTOMS

Once diagnosed, initial treatment for neonatal withdrawal should be primarily supportive since medical interventions may prolong hospitalisation and subject the infant to drugs that may not be necessary.4, 8, 11, 12 NAS can be a major disruption to mother-infant attachment and unnecessary separation of mother and infant should be avoided if at all possible.4 Parents should be provided with information regarding the use of supportive therapy and encouraged to use it as an ongoing part of the infant’s care.

Any decision to treat should be based on data obtained with an objective scoring device. Infants with confirmed exposure and NO SIGNS of withdrawal do not necessarily need to be treated. Intravenous fluids and replacement electrolytes may be necessary to stabilise the infant’s condition in the acute phase without the need for pharmacologic intervention.8 Non-pharmacological measures such as the use of supportive therapy8 has been shown to reduce the effects of withdrawal in neonates and should be implemented as soon as possible following birth. Infants with mild symptoms can be cared for using supportive therapy alone, the main components of which are outlined in Tables 2 and 3.

Pharmacologic intervention is indicated for evidence of acute withdrawal, such as seizures, and may be indicated if: 3 consecutive NAS scores are ≥ 8, or the average of three consecutive scores is ≥ 8, or if 2 consecutive NAS scores are ≥ 12, or the average of 2 consecutive scores is ≥ 12. Scoring should be applied in a consistent manner by experienced personnel, using a four-hourly scoring interval until the infant has been stabilised.4

SUPPORTIVE ENVIRONMENT15,16

- Place the infant in a quiet environment with dim lighting and reduced stimulation
- Closely wrap or swaddle infant to decrease sensory stimulation
- Handle infant gently
- Hold newborn infant firmly and close to the body
- Promote cuddling, skin to skin contact with mother and use of infant sling
- Massage infant or try relaxation baths
- Rock gently, talk, sing or hum softly
- Play heartbeat audiotapes
- Decrease stimulation at first signs of distress
- Feed on demand (frequent small feeds with rests between sucking)
- Give frequent small feeds of hypercaloric formula to supply additional caloric requirements
- Assess coordination of suck/swallow reflex – support cheeks and jaw if necessary
- Consult with mother on the use of a pacifier for excessive sucking
- Use mittens to prevent trauma to fingers and wrists
- Use short-haired sheepskin with soft cotton sheet
- Change nappy frequently, use barrier cream to protect skin/prevent damage
- Use gentle suction if nasal secretions cause obstruction to ensure adequate respiratory function
- Monitor sleeping habits, temperature stability, weight gain or loss, and any other changes in clinical status that might suggest another disease process
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### Table 2: Supportive therapy for care of the infant with NAS (aligned with Modified Finnegan Scoring System – only symptoms that respond to supportive therapy are included)

<table>
<thead>
<tr>
<th>Signs and Symptom</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excessive or high-pitched crying</td>
<td><strong>Reduce environmental stimuli.</strong> Hold newborn infant firmly and close to the body, gentle rocking, talking/singing/humming, and use of infant sling.</td>
</tr>
<tr>
<td>Sleeplessness</td>
<td>Wrap or swaddle infant, minimise handling, skin to skin contact, and use of infant sling.</td>
</tr>
<tr>
<td>Myoclonic jerks, tremors, jitteriness, irritability</td>
<td>Prepare everything prior to disturbing the infant to minimise handling. Slow movements, reduced lighting, reduced noise levels, soft music, massage, and relaxation baths.</td>
</tr>
<tr>
<td>Excoriation (chin, knees, elbow, toes, nose)</td>
<td>Apply barrier creams to affected areas to protect skin and prevent damage. Bedding - short haired sheepskin covered with a soft cotton sheet.</td>
</tr>
<tr>
<td>Sweating</td>
<td>Clean skin regularly, dry clean clothing and bedding to prevent skin infection.</td>
</tr>
<tr>
<td>Hyperthermia – temperature &gt; 37.2°C</td>
<td>Ensure adequate hydration and reduce environmental temperature. Avoid heavy bedding and use of Perspex cot. Dress or swaddle in loose light fabrics, skin to skin contact with mother.</td>
</tr>
<tr>
<td>Nasal flaring / tachypnoea</td>
<td>Avoid swaddling so that respiration can be observed. Refer to medical staff if cyanosis or mottling observed. Nurse in supine position unless continuously monitored.</td>
</tr>
<tr>
<td>Nasal stuffiness / excessive nasal secretions</td>
<td>Use gentle suction if nasal secretions cause obstruction to ensure adequate respiratory function.</td>
</tr>
<tr>
<td>Excessive sucking – fists, fingers, thumbs</td>
<td>Apply mittens, keep hands clean, consult with mother re use of pacifier (dummy) for non-nutritive sucking to provide comfort and prevent trauma to fingers and fists.</td>
</tr>
<tr>
<td>Poor feeding (infrequent/uncoordinated suck)</td>
<td>Feed on demand. Reduce environmental stimuli during feeding. Frequent small feeds with rest between sucking. Weigh and assess hydration daily. Assess coordination of suck/swallow reflex – support cheeks and jaw if necessary. If insufficient fluid intake refer to medical staff.</td>
</tr>
<tr>
<td>Regurgitation / vomiting</td>
<td>Burp or wind when infant stops sucking and at end of feed.</td>
</tr>
<tr>
<td>Loose stools / diarrhoea</td>
<td>Frequent nappy changes using barrier creams Occasional skin exposure to allow buttocks to dry.</td>
</tr>
</tbody>
</table>
PHARMACOLOGICAL TREATMENT OF NEONATAL WITHDRAWAL SYMPTOMS

If an infant does not respond to nonpharmacological support and measures, then the introduction of drug therapy is indicated in order to alleviate NAS signs and symptoms and prevent any potential complications. The American Academy of Pediatrics states that the “only clearly defined benefit of pharmacological treatment is the short term amelioration of clinical signs”. Unwarranted pharmacological intervention not only increases the duration to which the infant is exposed to drugs, but will increase the time the infant spends in hospital and potentially impact upon the bonding between the mother and newborn. If pharmacologic management is necessary, the American Academy of Pediatrics recommends use of drug-specific therapy, preferably with a drug from the same class as that causing withdrawal.

The most commonly documented pharmacological treatments used for the management of NAS are opioids (tincture of opium, neonatal morphine solution, methadone), barbiturates (phenobarbital), benzodiazepines (diazepam, lorazepam), clonidine and phenothiazine’s (chlorpromazine). Recent surveys however indicate that 94% of UK and 83% of US practitioners use an opioid (morphine or methadone) as the drug of first choice, with phenobarbitol as the second line drug if the opiate is not adequately relieving withdrawal symptoms in the infant.

OPIOID WITHDRAWAL

The American Academy of Pediatrics recommends that drug selection should match the type of agent causing withdrawal. Morphine is the drug of choice for managing withdrawal in infants of mothers who have used opioids such as methadone, heroin and pethidine during pregnancy. Morphine has been shown to be superior to phenobarbitone for management of symptomatic NAS when maternal opioid use is prevalent. In addition the shorter treatment duration and lower requirement for higher intensity nursing, morphine may have significant cost advantages.

In Australia an opioid should be used as the initial treatment for infants with NAS symptoms resulting from opioid withdrawal and the opioid of choice is morphine. If other drugs have been used concurrently in pregnancy, particularly benzodiazepines, and symptoms of NAS are not adequately suppressed by an opioid alone, phenobarbitone may be indicated as an additional therapy, however, the benefits of using phenobarbitone in addition to an opioid for infants with opioid-related NAS are unclear. If an infant has signs of NAS and the types of drugs used by the mother are unknown, a full assessment of maternal drug use should be made by an experienced clinician. In addition, infant urine and meconium may be used for toxicological analysis.

It is recommended the following regimen for opioid withdrawal, using Morphine hydrochloride that is prepared as a 1.0mg/ml aqueous solution, be given orally to the infant. It is also suggested that where the control of symptoms is difficult the morphine daily dose should be administered in 6 divided doses rather than 4.

<table>
<thead>
<tr>
<th>NAS score (score every 4 hours)</th>
<th>Dose / Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score averages ≥ 8 for 3 scores</td>
<td>Morphine 0.5 mg/kg/day in 4 divided doses orally</td>
</tr>
<tr>
<td>If score persists ≥ 8 despite morphine 0.5 mg/kg/day</td>
<td>Morphine 0.7 mg/kg/day in 4 divided doses orally</td>
</tr>
<tr>
<td>If score persists ≥ 8 despite morphine 0.7 mg/kg/day</td>
<td>Morphine 0.9 mg/kg/day in 4 divided doses orally</td>
</tr>
<tr>
<td>If score persists ≥ 8 despite morphine 0.9 mg/kg/day</td>
<td>Morphine 0.9 mg/kg/day in 4 divided doses orally</td>
</tr>
<tr>
<td></td>
<td>Consider the introduction of phenobarbitone³⁶</td>
</tr>
<tr>
<td></td>
<td>Monitor cardiorespiratory function³⁶</td>
</tr>
</tbody>
</table>

After scores consecutively fall below treatment level (score ≤ 8) for 48-72hrs, the weaning process should be instigated and modified accordingly to NAS scores and the clinical response of the infant. It is suggested that the morphine dose should be decreased 0.05 mg every 48-72 hours until the dose reaches 0.2 mg/kg/day (based on a 4 hourly dosing regimen). The dosage schedule should then be increased from 4 to 6 hourly and discontinued when the daily dosage is 0.10-0.12 mg/kg/day.

³ opioids and phenobarbitone in high doses are powerful respiratory depressants
Management of the vomiting baby

To diminish the risk of the infant vomiting the morphine dose it is important to administer the morphine prior to feeding the infant, ensure that the baby is not being overfed and is being correctly postured during and after feeding.1,3,35,36

If after being administered morphine:
- the infant vomits within 5-10 minutes of dose, re-dose1,35,36
- the infant vomits after 10-30 minutes, give ½ dose1,35
- the infant vomits 30mins after feed, do not give further morphine, wait until next dose 1,35

NON-OPIOID RELATED WITHDRAWAL

The administration of phenobarbitone is the preferred treatment for non-opioid related NAS (when the signs of NAS reach treatment threshold) or when the drugs that the mother has used are unknown. Phenobarbitone should also be used as an additional treatment if the mother has used both opioid and non-opioid drugs during pregnancy such as alcohol, benzodiazepines, and barbiturates. If given as a loading dose, phenobarbitone is more likely to rapidly control symptoms in the infant.1–36 The following phenobarbitone regimen is recommended:

<table>
<thead>
<tr>
<th>NAS score (score every 4 hours)</th>
<th>Dose / Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score averages ≥ 8 for 3 scores or 2 consecutive scores of 12 or more</td>
<td>Loading dose of 10-15 mg/kg oral/parentally if unable to tolerate orally1,36</td>
</tr>
<tr>
<td>Then 5 mg/kg/day in 2 divided doses orally (maintenance dose)36</td>
<td>Then 6 mg/kg/day in 2 divided doses orally (maintenance dose)1,35</td>
</tr>
<tr>
<td>If score persists ≥ 8 despite phenobarbitone 5 mg/kg/day36</td>
<td>Phenobarbitone 8 mg/kg/day in 2 divided doses1,35,36</td>
</tr>
<tr>
<td>If score persists ≥ 8 despite phenobarbitone 8 mg/kg/day36</td>
<td>Phenobarbitone 10 mg/kg/day in 2 divided doses35,36</td>
</tr>
<tr>
<td>When infants are on 10 mg/kg/day</td>
<td>Monitor cardiorespiratory function*</td>
</tr>
</tbody>
</table>

After scores consecutively fall below treatment level (score ≤ 8) for 48hrs, the weaning process should be instigated and modified accordingly to NAS scores and the clinical response of the infant. It is suggested that the phenobarbitone dose should be decreased 2mg per dose every 4 days (or longer) until the dosage reaches less than 2mg/kg/day.1

COMPLICATIONS, ADVANTAGES AND DISADVANTAGES OF PHARMACOTHERAPY

Complications of excessive pharmacotherapy:37

- Diminished or absent reflexes - Moro, sucking, swallowing, Galant, Perez, tonic neck, corneal, grasp (palmar or plantar)
- Truncal (central) or circumoral cyanosis or persistent mottling not associated with ambient temperature decreases
- Decreased muscle tone with passive resistance to extension of extremities or decreased neck or trunk tone
- Altered state of arousal (reduced reaction to stimuli or comatose)
- Diminished response to painful stimuli
- Inability to follow moving objects visually
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- Impaired thermoregulation, particularly hypothermia
- Altered respirations - irregular (periodic breathing in term infants), shallow (decreased air entry), decreased respiratory rate (< 20 per minute) and apnoea
- Cardiac changes - irregular heart rate, distant heart sounds with weak peripheral pulses, reduced heart rate (80 to 100 beats/minute), poor peripheral perfusion (pale, grey, mottled), cardiac arrest

Morphine – advantages: 37
- Reduces bowel motility and loose stools
- 20%-40% bioavailability when administered orally
- Facilitates feeding and interpersonal interaction
- Drug of choice for opioid exposure

Morphine – disadvantages: 37
- Respiratory depressant
- Hypotension
- Delayed gastric emptying
- Ileus or loss of bowel motility
- Urinary retention

Phenobarbitone – advantages: 37
- Drug of choice for polydrug use
- Controls irritability and insomnia
- Controls symptoms in 50% of infants regardless of the mother’s choice of drug

Phenobarbitone – disadvantages: 37
- Does not prevent loose stools
- Infant needs to be closely monitored (may need transfer to the Special Care Nursery)
- May mask the severity of NAS symptoms

Discharge Planning and Follow-up

Services need to be coordinated throughout the antenatal, perinatal and postnatal periods to ensure smooth transition for mother and baby. It is critical that services be maintained in the postnatal period following discharge from hospital, when infants may be at greatest risk. 38 Planning for post-discharge follow-up and parenting support is ideally initiated early in the pregnancy, and should consider the health status of both mother and infant, psychosocial issues and the care-giving environment. 4 Consistent standards of practice that engage whole families need to be established. An effective and well-coordinated discharge plan is an essential component of the continuum of care.

The timing of discharge may depend on a number of factors including family or social issues and treatment issues surrounding the mother. Involvement of the multidisciplinary care team is vital for helping the physician to assess the status of the home environment and whether it is safe to discharge the infant. The length of in-hospital observation should be determined on an individual basis. It is anticipated that infants exposed to both opioid and non-opioid drugs will be monitored in hospital for approximately 4-7 days 4, 8 with a few infants requiring longer periods of hospitalisation due to delayed withdrawal symptoms. 37 A non-judgmental and supportive atmosphere is likely to help ensure future compliance with paediatric follow-up. 39

Discharge planning and after-care case management should consider: 40
- Spelling out a process for discharge planning
- Identifying a case manager
- Identifying a schedule of visits
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- Specialised needs of the infant if indicated
- How long the woman and her family should be followed up after delivery
- Handover to future services for follow-up

At the time of discharge there must be a formal transfer of responsibilities from the hospital to the community services that will be continuing the delivery of care, and referrals and supports must be in place. The referring provider should actively follow-up with community services to ensure that the woman has engaged with the service. Where engagement has not occurred, the referring provider should follow-up with the woman or her family.  

Early discharge of the drug-exposed infant:

Mothers should be strongly discouraged from going home early where there is a high risk of infant withdrawal resulting from complex polydrug use or very high methadone intake, as onset of NAS is frequently delayed. If the mother insists on going home against medical advice, a community services (DoCS) notification should be considered.

Discharge before 48 hours is contraindicated in infants of mothers with a history of opioid use, even if there is no evidence of withdrawal symptoms, due to the possibility of delayed onset. Early discharge is not usually appropriate for drug dependent women. Opioid and sedative-dependent women should be prepared for a postnatal stay of five or more days to allow assessment of neonatal abstinence syndrome.

General discharge criteria for drug-exposed infants:

Prior to discharge a case conference should be convened by the multidisciplinary care team to formulate a discharge plan that defines clear responsibilities and timeframes. The discharge planning meeting should be attended by parents or carers and representatives of all organisations involved who will be involved in the provision and delivery of support and care.

All mothers and infants should be assessed adequately before discharge with respect to current drug use and psychological stability, parent-crafting abilities, social situation and the infant’s wellbeing.

Infants should not be discharged from hospital without a formal discharge plan or:

- If there is excessive weight loss (> 10% of birth weight)
- Before the baby is five days old
- If there is suspected infant neglect or abuse (as communicated by social worker)
- If there is suspected home violence (as communicated by social worker)
- If a court order prevents the baby from being discharged home
- If further assessment for withdrawal is required

Additional contraindications to home discharge include:

- If there is excessive weight loss (> 10% of birth weight)
- Inadequate home support or acceptance of assistance from external agencies
- Inadequate housing or material goods
- Erratic behaviour or continued drug or polydrug use
- Inadequate parenting skills (such as failure to consistently demonstrate the ability to feed and provide appropriate care for the infant during hospitalisation
- Inability to participate in required paediatric follow-up program

There are insufficient data to determine the safety of discharge of infants on morphine. Before an infant is discharged home on morphine or phenobarbitone, the treatment team must be satisfied of the safety of the home environment and of the parents’ parenting abilities and ability to administer treatment. Careful and frequent supervision by the treatment team is required.

Discharge checklists are used by a number of organisations. These vary in content but normally include discharge planning meetings, paediatric assessment and follow-up, social work or child at risk assessment, drug health assessment, information on safe sleeping, storage of drugs in the home and referral to support services.
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The completed discharge plan assumes that:

- Both mother and baby have been appropriately stabilised and managed from a medical perspective
- The infant is at least five days old
- The infant is feeding well and gaining weight over two consecutive days
- The parent or carer is actively involved in caring for the infant
- There is no evidence of NAS
- There is a plan in place to address any child protection concerns
- Referrals to appropriate community support agencies have been made and are in place
- Continuing drug and alcohol management arrangements are in place for the mother following discharge
- Ongoing methadone treatment has been arranged and confirmed with the woman’s methadone prescriber or methadone clinic (for mothers on methadone maintenance)

Different hospitals have a range of discharge criteria that may need to be met prior to discharging the infant into the care of the parent or carer. Criteria that may be included in a discharge checklist include the following:

- Modified Finnegan Neonatal Abstinence score remains consistently below 8
- Respiratory or apnoea monitor (if used) has been removed for 48 hours and is no longer required
- Multidisciplinary care team agree to discharge care of the infant to the parent or carer
- Parent or carer has received information on Neonatal Abstinence Syndrome (NAS) and understands the possible timeframe that withdrawal symptoms may persist in the infant
- Parent or carer’s ability and confidence to care for the infant, and their competence to score NAS, has been demonstrated
- Parent or carer has agreed to attend scheduled Outpatient clinic appointments
- Parent or carer has completed the contact sheet and provided contact numbers and addresses
- Parent or carer understands when to seek medical assistance for the infant
- Parent or carer has been provided with emergency contact numbers
- Parent-crafting education on techniques such as swaddling, settling, massage, relaxation baths and dummies/pacifiers has been completed
- SIDS education has been completed
- Neonatal resuscitation education session has been attended by parent or carer
- Effective pharmacotherapy has commenced and a weaning program established
- Medication dispensing schedule has been explained to the parent or carer
- Parent or carer can demonstrate the ability to administer the infant’s medication
- Visiting Nurse/Child Health Nurse/Community Nurse visits arranged while on medication
- General Practitioner and Child Health Nurse have been provided with a copy of the infant’s discharge medication schedule and summary of care

Post-discharge management of infants discharged on medication

Infants requiring ongoing pharmacological management of opioid withdrawal may continue management in the home environment, providing that the family has access to appropriate support and follow-up. Home management of the infant helps to prevent prolonged disruption to the mother-infant relationship, and provides health care professionals with the opportunity to observe the family’s ability to provide adequate care for their infant.35
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References


40. NSW Department of Health, Intergovernmental Committee on Drugs, Ministerial Council on Drug Strategy. Background papers to the National Clinical Guidelines for the management of drug use during pregnancy, birth and the early development years of the newborn. Sydney: NSW Department of Health; 2006.