

ROYAL HOSPITAL FOR WOMEN

LOCAL OPERATING PROCEDURES

Approved by

Quality & Patient Safety Committee

CLINICAL POLICIES, PROCEDURES & GUIDELINES MANUAL 17/2/11**NEONATAL ABSTINENCE SYNDROME (NAS) - MANAGEMENT****1. BACKGROUND**

- Exposure to drugs of dependency during pregnancy is an increasing global problem
- Newborn infants can be affected in two ways – withdrawal (the neonatal abstinence syndrome) or intoxication, depending on the drug of exposure
- Infants with withdrawal symptoms behave normally initially and then start to become irritable, feed and sleep poorly within a day or so. The exact onset of NAS depends on the half-life (T_{1/2}) of the drug – the longer acting the drug e.g. methadone and buprenorphine, the later the onset). Methadone babies usually start withdrawing about 24-48 hours and the peak of NAS occurs about 72 hours (Abdel-Latif)
- Intoxicated infants manifest symptoms very quickly after birth, again dependent on the type of drug exposure. Amphetamine exposure soon before birth, for example, may result in a very sleepy baby that feeds poorly (Oei 2010). SSRI or SnRI (Selective Serotonin Reuptake Inhibitors/Selective Norepinephrine Reuptake Inhibitors) may cause infant seizures soon after birth.

2. CLINICAL PRACTICE

- **DO NOT give Narcan at delivery. If infant is apnoeic, intubate.** Narcan may cause acute withdrawal in infant chronically exposed to antenatal opiates.
- A well and full-term drug-exposed infant without child-at-risk issues may be admitted to postnatal ward with his mother
- Request urine and meconium drug screening as soon as possible on the advice of neonatal consultant and Chemical Use in Pregnancy Service (CUPS) team
- Commence symptomatic treatment (swaddling, nursing in quiet environment, small suck feeds etc).
- Commence NAS scoring 4 hrly ½ to 1 hour **after** feed.
- Admit baby to Newborn Care Centre (NCC) under attending paediatrician if an infant experiences:
 - An average of three consecutive scores of 8 or higher (e.g. 9-7-9), or
 - A score of 10 or greater on the NAS score chart.
- Commence pharmacological treatment if infant has:
 - 3 consecutive scores averaging more than 8 (eg 9-7-9), or
 - ≥ 12 for 2 scores
 - Treatment may be commenced at a lower threshold at the discretion of the neonatologist/paediatrician

Pharmacological management

- Determine if maternal drug is predominantly opiate or non-opiate based. Urine and meconium drug screen also will provide a clue.
- Drugs of choice:
 - For opiate-based drug exposure(e.g. methadone, heroin etc.) – Morphine
 - For non-opiate based drug exposure(e.g. benzodiazepines, cocaine, amphetamines, ecstasy, antiepileptics, SSRIs, Zoloft, Effexor, Prozac, venlafaxine, alcohol, depressants etc.) – Pheonobarbitone

Morphine (strength 0.5mg/ml)

- **First line of drug for opiate based drug exposure**
- Starting dose: *0.5 mg/ kg /day* in 4 divided doses po. Give intravenous (IV) if excessive vomiting.
- Increase by 0.2 mg/kg/day if scores persistently > 8.
- Once 0.9 mg/kg/day is reached – Commence cardiorespiratory monitoring and discuss with neonatologist/paediatrician.
- Notify neonatologist/paediatrician if anytime scores >11 – medications may need to be increased more quickly.
- If NAS scores on morphine of 0.9mg/kg/day are still >8 – Add phenobarbitone at 2.5 mg/kg/dose twice a day. Loading dose is not necessary when phenobarbitone is added to morphine regime.

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NEONATAL ABSTINENCE SYNDROME (NAS) – MANAGEMENT cont'd**Phenobarbitone (strength 10mg/ml)**

- **First line of drug for non-opiate based drug exposure.**
- When phenobarbitone is the first line of drug, give a loading dose of 10 mg/kg followed 24 hrs later by a maintenance dose of 2.5mg/kg/dose twice a day.

Weaning

- Start weaning if clinically stable with scores persistently <8 for 48-72 hours
- Decrease phenobarbitone first (if dual treatment) by about 10% of dose q12-3 days. Morphine is usually decreased as an outpatient after phenobarbitone is ceased. Occasionally infants who are otherwise clinically stable but receiving both morphine and phenobarbitone, can be discharged home under close supervision of CUPS team. Always discuss this with attending neonatal team and CUPS before the discharge.

Discharge from hospital

- Methadone/buprenorphine exposed infants must stay in hospital for a minimum of 5-7 days to allow observations of NAS and social issues.
- Length of stay for infants exposed to other substances will be decided on an individual basis dependent on history of maternal use.
- No family may be discharged without a *discharge planning meeting with the medical, nursing, social work and CUPS team.*
- Infants may be discharged from RHW on NAS medications. These are prescribed WEEKLY and prescriptions must be rung up to the Pharmacy (Gary Gridneff or Inara Graudin, ext 26176). Only prescribe sufficient for the dose required until the next clinic appointment. Provide 1 day extra to cover spillage. Medications must be ordered on SEPARATE prescriptions for each medication and numbers must be also spelled out (as per S4 drug requirements).
- Infants who live in the local area are followed up by the CUPS team in the Sydney Children's Hospital Outpatients Department (level 0). Clinics are held every Monday and Thursday between 2-5 pm). Appointments are made through the CUPS team.
- CUPS will also assist in arranging follow up appointments for the infants discharged out of area.

3. EDUCATIONAL NOTES**Most common drugs used by drug-dependent women in Australia**

- Epidemiological studies estimate that between 1-1.5% of women are known to use drugs of dependency regularly during gestation (Burns). Recreational users are probably much more common.
- More than 50% of pregnant drug-using women also have co-existing psychiatric morbidity, most commonly depression, so the effects of psychotropic agents on the infant will also need to be taken into account (Oei 2009).
- Many (about 40-50%) known pregnant drug-users also use multiple classes of drugs i.e. drugs with different modes of action like opiates and stimulants and this will affect the picture of newborn NAS/Intoxication
- The types of drugs used by pregnant women may change with street trends (Pong).

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NEONATAL ABSTINENCE SYNDROME (NAS) – MANAGEMENT cont'd

Drug	Frequency of use in known drug users	Likelihood of effects on infant	Timing and Duration of Drug effects			Treatment
			Onset	Peak	Duration	
Opiates	80%					
Methadone	80%	75%	2-3d	3-4d	Up to 6 months	M
Heroin	60%	50%	<1-2d	2-3d	2-3w	M
Buprenorphine	20%	60-70%	2-3d	3-4d	Up to 6 months	M
Misc*	10%	30-40%	<1-2d	2-3d	2-3w	
Stimulants	?					
Amphetamines	40%	25%	1-2d	2-3d	1-2w	P
Cocaine	20%	25%	1-2d	2-3d	1-2w	P
Depressants			1-2d	2-3d	1-2w	
Alcohol	?	?	?	?	?	P
Benzodiazepines	50%	50-75%	End of 1 st week	1-2 weeks	Up to 6 months	P
Nicotine	?	?	?	?	?	P
Psychotropic medications (e.g. SSRI/Snri)#	30-40%	30-40%	<1 day	3-4d	Up to 7 days	P
Cannabinoids	75%	25%	2-3d	1 week	Up to 6 weeks	P

*Codeine/Pethidine/Morphine/Tramadol; M = morphine, P = Phenobarbitone

#SSRIs (Selective Serotonin Reuptake Inhibitors) include: Citalopram(Cipramil), Escitalopram, Fluoxetine(Prozac, Lovan), Fluvoxamine (Voxam, Luvox), sertraline(Zoloft, Zydep, Seprone) SNRIs(Serotonin-noradrenaline reuptake inhibitors) include venlafaxine(Efexor).

Diagnosis of drug exposure

- Most (>80%) of drug using women who deliver in RHW are known antenatally to the CUPS team. This is a group of two clinical consultants who provide drug and alcohol management for pregnancy and the newborn period. The current CUPS team consists of: Ms Sara Clews (page 22303) and Ms Janet Falconer (page 22287).
- Detailed and non-punitive drug and alcohol history during the antenatal period is more indicative of drug use than maternal or newborn toxicology (Oei 2001).
- Toxicology can be performed on newborn urine (Max 2-3days of age) and meconium (prior to the development of transitional stools). Verbal consent from the parent/carer is recommended. Please indicate on the pathology form the types of drugs needed to be screened. The pathology drug screen request should request the following:
- 6 Acetyl Morphine, Amphetamines, Cocaine, Benzodiazepines, Cannabis,
- Note: Opiate screens do not cover methadone or buprenorphine. Other types of testing (e.g. hair, nails, amniotic fluid etc) remain experimental.

Onset of Withdrawal

- Onset of withdrawal symptoms varies and is dependent on the dose, half life and timing of last drug dose prior to birth.
- Heroin withdrawal may be clinically apparent within 24 hours from birth but is usually observed between 24 and 72 hours.
- Methadone/Buprenorphine may be delayed until 3-7 days after birth, or beyond.

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NEONATAL ABSTINENCE SYNDROME (NAS) – MANAGEMENT cont'd**Symptoms of intoxication**

- Stimulants such as amphetamine –like substances may cause intoxication instead of withdrawal. Infants may be very sleepy and feed poorly rather than exhibit the symptoms typical of opiate withdrawal (Chomchai 2005).
- SSRI/SNRI cause symptoms indicative of serotonin toxicity such as poor neonatal adaptation (respiratory distress, temperature instability), seizures and somnolence. Onset is variable but usually starts within 6-12 hours (or even less) of birth. Symptoms are usually self limited and resolves within 2-3 days but may last up to 2 weeks (Moses-Kolko 2005). Infants may need support e.g. phenobarbitone for seizures, mechanical ventilation for respiratory distress and pulmonary hypertension, gavage feeding for poor suck and swallow mechanisms (Pakalapati 2006). It is recommended that infants stay in hospital at least 2-3 days to allow monitoring of possible SSRI/SNRI effects (if there are no other substances involved) and be followed up by a medical practitioner after discharge from hospital within two weeks of age.

Monitoring of drug withdrawal

- The most commonly used tools to monitor drug withdrawal are the Finnegan and Modified Finnegan Scores. . Finnegan score has been validated only for term/near term infants and opiate exposure. However, due to lack of any other methods, the Finnegan's scale is often used to monitor both preterm and non-opiate exposed infants. Caution: amphetamine infants may have falsely low scores on the Finnegan's scale.
- RHW uses the SESIAHS Neonatal Abstinence Score Sheet. The Finnegan's scale (see attached) is administered to the infant ½ to 1 hr after a feed. See above for management details.

Signs of NAS

- NAS is sympathomimetic hyperexcitability. These include:
 - *CNS signs:*
 1. Hyperirritability and hyperactivity
 2. Increased muscle tone
 3. Exaggerated reflexes
 4. Tremors, myoclonic jerks (convulsions rare from narcotic withdrawal, frequent in nonnarcotic withdrawal)
 5. Disturbed sleep
 6. Abnormal EEG (high frequency dysynchronous activity)
 - *Respiratory signs:*
 1. Tachypnoea, irregular respirations (may be alkalotic)
 2. Stuffy nose, sneezes
 - *Gastrointestinal signs:*
 1. Disorganised suck and swallow
 2. Vomiting and diarrhoea (dehydration, electrolyte imbalance, buttock excoriation)
 3. Hyperphagia – this usually starts after a week and settles in about 3-4 weeks.

4. RELATED POLICIES/ PROCEDURES/CLINICAL PRACTICE GUIDELINES

- NSW Health. Neonatal Abstinence Syndrome Guidelines. PD2005_494

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NEONATAL ABSTINENCE SYNDROME (NAS) – MANAGEMENT cont'd**5. REFERENCES**

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