NEONATAL MANAGEMENT FOR EXISTING MATERNAL CONDITIONS

7. MATERNAL MEDICATION / SUBSTANCE USE

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7. Neonatal exposure to Medication / Substance Use
Neonatal Postnatal
Clinical Guidelines
King Edward Memorial Hospital
Perth Western Australia

KEY POINTS

1. All women and their neonates with a history of drug and/or alcohol use, or who are receiving opioid replacement therapy during pregnancy are expected to stay in hospital for 5 days (or more if required) to allow assessment for neonatal abstinence syndrome (NAS). Neonates of mothers in whom benzodiazepine abuse may be a possibility may require a longer duration of stay with the literature recommending hospital stays up to 7 days.
2. Naloxone is contra-indicated for use in neonates of opiate-dependent mothers or mothers suspected of opioid misuse. It may precipitate rapid withdrawal and seizures.
3. All neonates at risk for drug or alcohol withdrawal shall be commenced on an MR495 'Neonatal Abstinence Scoring System' chart within 2 hours of birth.
4. All neonates shall have a daily weight performed.
5. Neonates should receive Hepatitis B vaccination prior to discharge.
6. Encourage women to arrange hepatitis B vaccination prior to discharge.
7. Women should be given written and verbal information about NAS and safety planning for care and feeding of the neonate in the event of drug or alcohol use.
8. Discuss with the mother strategies to prevent Sudden Infant Death Syndrome (SIDS) and provide written information prior to discharge.
9. Neonates shall not be discharged home with their mothers without consultation with the Women's and Newborn Drug and Alcohol Service (WANDAS) team.

EXAMPLES OF SUBSTANCES THAT ARE USED OR MISUSED

Refer to ***Appendix 1*** in this document.

NEONATAL ABSTINENCE SYNDROME – SCREENING AND MANAGEMENT

> The use of opioid antagonistic drugs such as Naloxone should be avoided during resuscitation or in the neonatal period if the neonate is born to a mother has opioid use during pregnancy or is suspected of using opioids.[1]

Commence the neonate on the MR495 NAS chart within 2 hours of birth if the mother has a history of illicit substance use, prescribed medication abuse or who is receiving medically supervised opioid replacement therapy (e.g. Buprenorphine (Subutex), Methadone, etc) during pregnancy.

See Neonatal Postnatal Clinical Quick Reference Guideline 7.1 on how to perform NAS screening and management of the neonate experiencing withdrawal symptoms.

Infants exposed to maternal nicotine, alcohol, cannabinoid use in utero

Infants exposed to maternal alcohol, nicotine and cannabinoids (e.g. marijuana) during pregnancy rarely demonstrate withdrawal symptoms and routine commencement of NAS screening after birth is not indicated. The possibility of poly-substance abuse should always be considered, and NAS screening should be commenced if symptoms suggestive of withdrawal are noted.

Infants of mothers receiving opioid agonists / antagonists (e.g. Methadone, Buprenorphine)

Methadone is a long-acting opioid agonist and 60-90% of neonates can be expected to exhibit some degree of withdrawal symptoms if the mother is on maintenance treatment. A significant proportion of these infants will require oral morphine for a variable duration of time, frequently ranging from several weeks to several months or longer.

Buprenorphine (Subutex) is a mixed (partial) opioid agonist / antagonist which is being increasingly prescribed to mothers with a history of opioid addiction. Buprenorphine crosses the placenta and whilst withdrawal symptoms may be observed in the neonate, they are frequently relatively mild and rarely require active medical management, other than reassurance and provision of supportive strategies. Symptoms tend to appear relatively early (~12-24 hours), peaking at ~72 hours. Symptoms frequently improve slowly over the first 1-2 weeks of age.

The use of either of these medications does not represent a contraindication to breastfeeding.

Infants of mothers receiving Selective Serotonin Reuptake Inhibitors (SSRIs)

Selective serotonin reuptake inhibitors (SSRIs) represent a first line treatment strategy for maternal depressive illness and some anxiety disorders. Increasing numbers of women using these medications during pregnancy are being seen at KEMH. Approximately 30%[15,16,17] of infants exposed to SSRIs *in utero* can be expected to exhibit symptoms including tremor, sleep disturbance, hypertonicity and high-pitched cry[17]. Less commonly, respiratory distress and gastro-intestinal disturbance may occur. Maximum severity of symptoms should be expected to occur shortly after birth[4]. Careful observation of behaviour and feeding should occur, however formal NAS monitoring using the Finnegan score is not necessary. Early discharge (i.e. <24 hours) should be avoided where possible[14,17], in order to monitor symptoms and their resolution, and to assist in the establishment of feeding. Symptoms resolve over 1 – 2 weeks in most cases[18]. Breastfeeding is not contra-indicated and should be encouraged where this is the mother's preference.

Consideration of differential diagnoses in infants symptomatic of withdrawal

Symptoms typically seen in withdrawal are non-specific, variable in timing and severity and are non-diagnostic of the underlying cause. Infants presenting with jitteriness/tremor, poor feeding, irritability, lethargy, hypo/hypertonia or temperature instability MUST be examined with intent to exclude other treatable causes. Potentially life threatening conditions such as sepsis, hypoglycaemia, viral/herpetic encephalitis, metabolic disease, pneumonia and colitis may also present with similar symptomatology and must be considered with appropriate clinical examination and investigation if suspected. Infants in whom the diagnosis is unclear should be discussed with the paediatric consultant / senior registrar on call, and in general such infants should be admitted to SCN for monitoring and management pending clarification of the clinical picture.

MANAGEMENT OF BEHAVIOURAL PATTERNS WITH NAS SYMPTOMS

Provide the 'Neonatal Abstinence Syndrome (NAS)' booklet to parents which give suggestions for 'calming techniques' that may be used for the neonate experiencing NAS symptoms.

See ***Appendix 2*** in this guideline for calming suggestions for NAS symptoms.

WITHDRAWAL SYMPTOMS IN THE NEONATE

Note: timing of symptoms may be variable in the setting of polysubstance use.

DRUG / ALCOHOL	COMMON NEONATAL WITHDRAWAL SYMPTOMS	ADDITIONAL INFORMATION
CNS depressants		
Marijuana	Mild deficits in visual functioning[2], heightened tremors[2, 3], startling[2, 3], jitteriness, hypotonia, lethargy, decreased arousal[4],and increased hand-to-mouth movements.[3]	
Alcohol	Jitteriness, irritability, seizures, opisthotonus, abdominal distension, excessive mouthing movements, and reflex abnormalities.[2]	Neonates are at increased risk for hypoglycaemia, decreased milk intake, impaired motor development and changes in sleep patterns.[5]
CNS stimulants		
Amphetamines	Decreased arousal, increased stress and poor quality of movement.[3]	Congenital anomalies associated include risk to the central nervous system, cardiovascular, oral clefts, and limbs.[3]
Methamphetamines	Decreased arousal, increased stress, poor quality of movement.[2]	Neonates are more likely to be small for gestational age.[6] Animal studies have shown alterations in the central nervous system including learning impairment, behavioural deficits, increased motor activity, and postural motor movements.[6]
Cocaine	Jitteriness and tremors, high-pitched cry, irritability, excessive suck, hyperalertness, autonomic instability, hypertonicity and excitability.[2]	Congenital anomalies associated with cocaine use includes increased risk for of genitourinary malformations, and lower birth weights, length and head circumferences.[3]
Nicotine	Impairment of arousal, irritability and hyperexcitability, hypertonicity and tremors.[2]	Increased risk of perinatal mortality and Sudden Infant Death Syndrome (SIDS).[3]
Phencyclidine (PCP)	Decreased attention, high-pitched cry, poor visual tracking, coarse flapping tremors, lethargy, nystagmus/roving eye movements, poor feeding and altered newborn reflexes.[2]	

DRUG / ALCOHOL	COMMON NEONATAL WITHDRAWAL SYMPTOMS	ADDITIONAL INFORMATION
Opioids		
Opioids	Tonal problems, tachypnoea, feeding and sleeping problems, fever, seizures,[2] sweating, hyperirritability, posturing, exaggerated startle response, tachycardia, hiccupping, sneezing, and a poor sucking action.[7]	Neonates may have poor feeding patterns, slow weight gain, electrolyte imbalances, diarrhoea and dehydration.[7] Maternal heroin use leads to increased perinatal mortality rates. Neonates may exhibit symptoms within 24 hours of birth.[3] Withdrawal symptoms depend on the half-life of the opioid – the longer the half-life the later withdrawal symptoms occur.[3]
Buprenorphine	Respiratory distress, increased tone, tremors, seizures, poor feeding, vomiting, regurgitation, diarrhoea, and sweating.[3]	Partial opioid agonist. It is transferred to the neonate via the placenta. NAS is apparent in only a few exposed neonates, and symptoms are usually mild and require no treatment. Symptoms usually appear at 12 hours, peak at about 72 hours and alleviate at 120 hours after the last dose of Buprenorphine.[8]
Naltrexone		Opioid antagonist. Limited data is available about the impact of oral or implanted Naltrexone on fetal-maternal complications. However, data from limited cases in Western Australia indicate that neonatal and obstetric outcomes were unremarkable.[8]
Methadone	Respiratory distress, increased tone, tremors, seizures, poor feeding, vomiting, regurgitation, diarrhoea, and sweating.[3] Stabismus[3]	60-90% of neonates experience some form of NAS if the mother is on a methadone maintenance treatment.[8] Withdrawal symptoms for methadone-maintained neonates have a delayed presentation generally after 24 hours, and usually within 48 - 72 hours following birth, but can last up to 4 weeks of age.[3] Neonates tend to be smaller but show a 'catch-up' growth rate by 12 months of age.[3] Other effects include reduced postnatal weight gains, head circumference, and height, and there is an increased risk for mortality, strabismus and behaviour effects e.g.

		mood, attention and cognitive effects.[8]
DRUG / ALCOHOL	**COMMON NEONATAL WITHDRAWAL SYMPTOMS**	**ADDITIONAL INFORMATION**
Benzodiazepines	Hypoventilation, irritability, hypertonicity, and "floppy infant syndrome".[2]	Often seen as licit drugs and symptoms can be unrecognised by mothers and staff if not revealed by the maternal medication history.[2] Symptoms can often appear within a few days of birth to 3 weeks after birth and they may last for several months.[2] It is recommended that benzodiazepine neonates should be observed for up to 7 days in hospital.[1]
Hallucinogens		
Inhalants	Characteristic odour (pulmonary excretion), excessive and high-pitched cry, hyperactive Moro reflex, sleeplessness, tremors, hypotonia and poor feeding.[1]	Congenital anomalies can include cardiovascular defects or medullary sponge kidney.[3] Inhalants use is associated with low birth weight neonates, birth defects, and SIDS.[9]

WEIGHT MONITORING

Neonates of mothers with drug or alcohol problems are at increased risk of preterm birth, low birth weight, infection and hypoglycaemia.[1]

Weigh all neonates **daily**.

BREASTFEEDING

See Clinical Guidelines Section B 6.3 Substance use management postpartum for information and advice regarding individual drug and alcohol effects and breastfeeding. Information is also available about management should a women intend to use drugs or alcohol while breastfeeding.

IMMUNISATION

Immunisation of the neonate for Hepatitis B should be performed prior to discharge.
See:

- Clinical Guidelines Section B10.4.3 Neonatal Hepatitis B Vaccination
- Clinical Guidelines Section B10.4.4 Neonatal Hepatitis B Immunoglobulin – give to the neonate if the mother is known to be hepatitis B surface antigen positive.

DISCHARGE PLANNING

PARENTAL EDUCATION

1. Ensure the woman has been given verbal and written information (normally provided by the WANDAS team) about:
   - 'Neonatal Abstinence Syndrome (NAS)' – includes comforting techniques for the neonate
   - Breastfeeding – including advice regarding feeding management should the woman misuse drugs or alcohol when she is discharged
   - A 'Safety Plan in Event of Alcohol or Drug Use'

2. Discuss/offer demonstration of formula preparation to women who are not breastfeeding, or who would like information if they may be at risk for substance or alcohol use after discharge.

3. Offer parents of the neonate CPR training. Some neonates are at higher risk of SIDS.[10]

CRITERIA FOR DISCHARGE OF THE NEONATE

The paediatrician will determine if the neonate is suitable for discharge. However, **the mother and neonate shall not be discharged until the WANDAS Clinical Midwifery Consultant and the WANDAS team has determined that discharge for both is safe**. The WANDAS team will assess the psycho-social environment to ensure safety prior to discharge and ensure community supports are adequate.
Note: a woman with drug or alcohol use in pregnancy who has **not** attended the WANDAS clinic, and who is under the care of another obstetric team shall **not** be discharged with her baby until the woman's obstetric team and paediatrician consult with the WANDAS team.

- The neonate should be more than 5 days old (up to 7 days for benzodiazepines).
- The neonate is healthy, feeding well, and is appropriately gaining weight.
- The parent/s can safely provide care.
- The neonate is being discharged to a safe environment.
- There is no court order in place to prevent discharge home.

DISCHARGE AGAINST MEDICAL ADVICE

If a mother or father wish to take their baby home and medical concerns exist for the safety of the neonate refer to the Neonatal Clinical Care Guidelines Section 19 Discharge against medical advice for management. The on-call paediatrician should be notified as soon as possible, should this situation arise as there may be indication to initiate Section 40 orders under Duty of Care obligations, if it is considered that the infant is at serious risk if removed from the hospital. The oncall social worker, or Crisis Care should also be contacted as soon as possible, preferably to assist in de-escalating the situation and formulating an appropriate strategy for both the mother and medical/midwifery staff.

The ward co-ordinator, the WANDAS CMC, and the Hospital Clinical Manager should also be informed as soon as possible in such an event.

FOLLOW-UP

Neonates of all mothers who have been seen at WANDAS clinic antenatally, those who have been considered at risk for NAS, infants with birthweight <2500 gm should be discharged following discussion with the paediatric consultant / senior registrar, WANDAS or allocated social worker. Early follow-up of clinical progress, in particular to review symptoms, feeding and weight gain are necessary and should be undertaken by visiting midwifery staff, local child health nurse or GP. Infants considered at high risk should be arranged for formal paediatric review in neonatal outpatient clinic in consultation with the ward paediatric consultant or senior registrar

APPENDIX 1: SUBSTANCES USED OR MISUSED[11]

Opiods	CNS Stimulants	CNS Depressants	Hallucinogens
Agonists Codeine Fentanyl Heroin (Diacetyl morphine) Hydromorphone Morphine Methadone Meperidine Oxycodone Propoxyphene **Antagonists** Naltrexone **Mixed agonist-antagonist** Buprenorphine (Subutex) Butorphanol Nalbuphine Pentazocine	**Amphetamines** Amphetamine Dextroamphetamine Methamphetamine **Amphetamine-related** Benzphetamine Diethylpropion Ephedrine Fenfluramine Mazindol Methcathinone Methylphenidate (Ritalin) Pemoline Phentermine Phenylpropanolamine **Caffeine** **Cocaine** **Nicotine** **Dissociative anaesthetics** Phenylcyclidine (PCP) Ketamine **Selective serotonin reuptake inhibitors (SSRIs)** Citalopram (Cipramil, Celapram, Talam) Escitalopram oxalate (Lexapro, Esipram) Fluoxetine (Prozac, Lovan) Fluoxamine maleate (Luvox, Voxam) Sertraline (Zoloft, Zydep, Septrone) **Serotonin-noradrenaline reuptake inhibitors (SNRIs)** Venalafaxine hydrochloride (Efexor)	**Alcohol** **Barbiturates** **Benzodiazepines** Alprazolam Clonazepam Diazepam Flunitrazepam Oxazepam Tamazepam **Cannabinoids** Cannabis/marijuana Hashish	**Alkaloids** Lysergic acid diethylamide (LSD Psilocin Psilocybin Dimethyltryptamine (DMT) Diethyltryptamine (DET) **Inhalants** [1] **Solvents and aerosols** (glues, gasoline, paint thinner, cleaning solutions, nail polish remover, freon) **Phenylethylamines** Mescaline Peyote **Stimulant with hallucinogenic properties** Methylenedioxyamphetamine (MDA) 3-methoxy-4,5-Methyenedioxyamphetamine (MMDA) 3,4-methylene dioxyamphetamine (MDMA) (Ecstacy) 3,4methyl-enedioxyamphetamine (MDEA) **Nitrates** **Nitrous oxide**

APPENDIX 2: N.A.S. - BEHAVIOURAL PATTERNS AND CALMING TECHNIQUES

BEHAVIOUR	CALMING SUGGESTIONS
Prolonged crying (may be high pitched)	• Hold the neonate close to the body, perhaps wrapped in a sheet[12] • Decreased environmental stimulus e.g. decrease loud noises, bright lights, excessive handling etc[12, 13] • Humming, gentle rocking[12] • Avoid rocking beds which may increase symptoms[13] • Quiet, soothing speaking voice[13] • Gentle slow handing of the baby[13] • Warm soothing baths • Carrying the baby in a sling • Pacifier (if parental choice)
Sleeplessness	• Reduce noise, bright lights, patting or touching the baby[12] • Soft, gentle rocking/music[12] • Clean nappy/dry bottom – check for rashes or skin irritation. Apply rash creams or zinc cream as required[12] • Feed baby on demand[12] • Avoid interruption of the baby's sleep state - wake only if feeding is needed[13]
Difficult or poor feeding	• Small frequent feeds[12, 13] • Feed in a quiet, calm environment with minimal noise or stimulus[12, 13] • Allow time for resting between sucking[12]
Sneezing, stuffy nose or breathing troubles	• Keep the baby's nose and mouth clean[12] • Avoid overdressing or wrapping the baby too tightly[12] • Feed the baby slowly, allowing rest periods between feeds[12] • Smaller, frequent feeds[12] • Keep baby in a semi-sitting position, well-supported and supervised[12] • Place baby on back to sleep – avoid the prone position[12] • If **breathing difficulties continue or worsen,** advise the parents to immediately contact the GP or PMH (on (08) 93408222) 24 hours a day and they will be put the call through to the Emergency Department.[12]

BEHAVIOUR	CALMING SUGGESTIONS
Regurgitation and/or vomiting	• Burp the baby each time he/she stops sucking and after each feed[12] • Support the baby's cheeks and lower jaw to enhance the sucking/swallowing efforts[12] • Keep the baby and the bedding clean from vomit and the smell may increase the problem and irritate the baby's skin[12]
Excessive sucking of fists	• Cover hands with gloves or mittens if the skin becomes damaged[12, 13] • Keep damaged skin clean. Avoid lotions/creams as the baby may suck them[12]
Hyperactivity	• Use a soft flannel blanket or a short haired sheep skin covered with a cotton sheet for comfort[12]
Trembling	• Keep the baby in a warm quiet room[12] • Avoid excessive handling[12]
Fever (Temperature over 37°)	• Keep clothing to a minimal[12] • Avoid excessive bedclothes[12] • Advise parents to seek medical advice if temperature stays elevated for more than 4 hours or if symptoms develop.[12]

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