Neonatal Intensive Care Unit
Clinical Guideline

Abstinence and Withdrawal in Neonates

Background

Neonatal Abstinence Syndrome (NAS) is a combination of behavioural and physiological signs and symptoms that occur in newborn babies going through withdrawal as a result of the mother's dependency on drugs during pregnancy. Addiction or tolerance in the infant is due to the passage of the drugs across the placental barrier. This occurs in varying degrees depending on the pharmacokinetic properties of the individual drug. Approximately 6000 babies (1% of all UK deliveries) are born to mothers who abuse drugs each year

NAS is a multisystem disorder that involves the central nervous, gastrointestinal, autonomic and respiratory systems. The manifestations in the infant depend on various factors including the drug used, its dose, frequency of use and the infant's own metabolism and excretion of the active compound(s).The longer the drugs half-life, the later the onset of withdrawal.

Drugs frequently associated with NAS include:

Opioids (Heroin, Methadone, Subutex)
Cocaine
Morphine
Benzodiazepines
Methadone is currently the drug of choice for women on heroin or other opiates.
Buprenorphine (trade name Subutex) a partial agonist is sometimes preferred to Methadone

Others less frequently associated with NAS are

Codeine
Fentanyl
Diazepam and lorazepam
Barbiturates
Marijuana
SSRI e.g. Prozac

Table 1: Time of onset of symptoms

Drug	Onset of symptoms	Comments
Methadone	24-48 hours	Can be up to 4 weeks
Heroin	24-72 hours	
Cocaine	48 -72 hours	May be earlier
Barbiturates	4-7 days	Can be 1-14 days
Benzodiazepines	Can be > 10days	

MANAGEMENT

Not all these babies are born at term and some may present with other neonatal problems that are not related to drug withdrawal.

The aim should be to try and keep mother and baby together to encourage bonding. This may not always be possible for social/medical reasons

ANTENATAL

Most mothers with substance abuse attend antenatal care and useful information can be obtained from their notes

Document details of the following in the baby's notes

Maternal drug use:	Name of drug, dose, time of last dose and duration of abuse
Serology results:	Hepatitis B, Hepatitis C and HIV and other STD status
Social set up:	Evidence of social services already involved; contact details; other children and who they are living with; information given to mother regarding current pregnancy

Parent(s) should be told as soon as possible of the post-delivery plan including admission to Transitional Care Unit or the Neonatal Unit (depending on the degree of withdrawal), possible fostering/adoption, early maternal discharge etc.)

DELIVERY

It is <u>not</u> necessary for a paediatrician to attend the delivery if uncomplicated but they need to be made aware when the baby has been born

Naloxone **should not** be administered to babies whose mothers are known or suspected to be *addicted* to opioids. However, in the absence of a specific history of opioid abuse in a mother who has recently received narcotics, naloxone treatment remains a reasonable option if the infant continues to demonstrate respiratory depression after positive pressure ventilation has restored normal heart rate and color.

POSTNATAL

General care

Aim to keep mother and baby together unless a care plan states otherwise
Medication should be used as a 'last resort'.

- *Swaddling and cuddling is the mainstay of management.*
- Consider nursing in a side room (discuss with midwife or nurse in charge)
- Reduce the degree of ambient light exposure, minimize excessive noise, avoid unnecessary handling and abrupt changes to the infant's environment
- Use pacifiers
- Frequent demand feeds may be required. High calorie formulas may be given to infants who have poor weight gain or excessive (>10 percent birth weight) weight loss

Imaging

Cocaine-exposed preterm infants, infants whose head circumference falls below the 10th percentile on standardized fetal growth curves, and infants with abnormal neurologic signs, or seizure activity should have Cranial Ultrasound scans done looking for intracranial and intraventricular hemorrhage, cerebral atrophy or cysts in the cerebral cortex

Breast feeding

Breastfeeding is encouraged unless there is substantial evidence or consensus that the drug taken will be harmful or if there is a risk of disease transmission

Relative contraindications to breast feeding include

- Using cocaine, crack or a high dose of benzodiazepines
- HIV positive or if HIV status is unknown
- Hepatitis C positive mothers who have cracked bleeding nipples

Breast feeding should ideally not be abruptly discontinued as this could precipitate withdrawal symptoms

Scoring (see separate chart)

Scoring should start within 2 hours of birth
Repeat every 4 hours (30-60 minutes post feed)
If scoring ≥6, go to 2 hourly observations
Start medication if score is ≥ 8 on 2 consecutive occasions 4 hours apart

Medication

Morphine Sulphate (for opioid related abuse i.e. heroin, methadone, Subutex) – see flow chart

If vomiting occurs:

Within minutes of dosing - repeat the dose
10 - 30 minutes after the dose – give half the dose
>30minutes after the dose – do not repeat

Phenobarbitone
Can be used for seizures or along with morphine if the baby does not respond to the maximum dose of morphine (Consultant decision) and/or if the mother was using opioid and non-opioid drugs in pregnancy, especially benzodiazepines
Loading dose – 10-20mg/kg
Maintenance dose 3-5mg/kg daily.
If used with morphine, increase dose by 10% if symptoms are not controlled
Once controlled for 48 hours, wean by decreasing the dose by 2mg daily every 4th day until the baby is on less than 2mg/kg/day and then stop
Assay of Phenobarbitone should be performed if baby is on a high dose of greater than 5mg/kg/day or if clinically indicated

Investigations

With all safeguarding cases an Alert is distributed to all involved parties clearly highlighting a plan following delivery. If toxicology screening is necessary it is clearly documented and the parents are always informed.

Urine toxicology must not be performed until it has been discussed with the attending neonatal Consultant. It is normal to obtain parental consent for all toxicology testing and this must be documented. Nursing staff and junior doctors/nurses should not send urine for toxicology without attending consultant approval.

Urine toxicology
Samples should be obtained as soon as possible post-delivery, so long as parental consent has been obtained and the indication is relevant

- Cocaine, heroin can be detected in the urine for as long as 48-72 hours
- Heroin and morphine up to 48 hours
- Amphetamines 48 hours
- Cannabinoids can be detected for weeks

Table 2: Length of time Urine will remain positive

Drug	**Length of time urine will be positive after last dose**	
	Adult	**Infant**
Methadone		Up to 10 days
Cocaine	24-48 hours	72-96 hours
Heroin	24 hours	24-48 hours
Marijuana	7d – 1 month	72-96 hours

Discharge

If after 48 hours there are no signs of drug withdrawal, the baby can be discharged with a care plan in place. A discharge planning meeting may be required for more complicated cases.
Out-patient follow up should be arranged

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Neonatal Abstinence Scoring Sheet

Name:
Hospital number:
Date of birth:
Birth weight:

1 Assess and score baby ½ - 1 hour post feed
2 If symptoms are present, score 2. If not, score 0 (There is no need to score 1)
3 Repeat every 4 hours if scoring <6
Repeat every 2 hours if scoring ≥ 6
4 Inform Dr if 2 consecutive are scores ≥ 8

Start new scoring sheet each calendar day Date:……

Signs and Symptoms	Score	Time	Time	Time	Time	Time	Time	Time	Time	Time	Time	Time	Time
HYPERTONIA Increased muscle tone	0 or 2												
HIGH PITCHED CRY Inconsolable > 5min	0 or 2												
MODERATE OR SEVERE JITTERINESS/TREMOR (When disturbed)	0 or 2												
MODERATE OR SEVERE JITTERINESS/TREMOR (When undisturbed)	0 or 2												
SLEEP/WAKE PATTERN Sleeps for < 1 hour post a good feed	0 or 2												
PYREXIA ≥ 38^{0}C	0 or 2												
RESPIRATORY SYMP. Tachypnoea (Rate >60)+/- recession, nasal flaring	0 or 2												
POOR FEEDING	0 or 2												
VOMITING	0 or 2												
LOOSE STOOLS At least ½ is liquid	0 or 2												
GENERALISED SEIZURE	8												
TOTAL SCORE													
Initial													
Morphine dose													

Appendix 2: Scoring explanation

Hypertonia
Observe posture while lying supine.
Extend and release infants' arms and legs and observe for recoil.
Grasp arms by the wrist and gently lift to check for head lag
Score 2 a) if there is no head lag or arms and legs won't straighten
b) If lying in a persistent hypertonic posture

High Pitched Cry
Excessive or persistent high pitched cry that is not resolved by the reduction of stimuli, swaddling or cuddling from nun or staff after more than 5 minutes of trying

Jitteriness/ tremors
Involuntary rhythmical movements
Moderate – Severe: Involves arms or legs and lasts more than 5 seconds
Do not confuse this with normal myoclonic jerks. If uncertain, ask for a second opinion

Pyrexia
Of unknown origin i.e., exclude all other causes

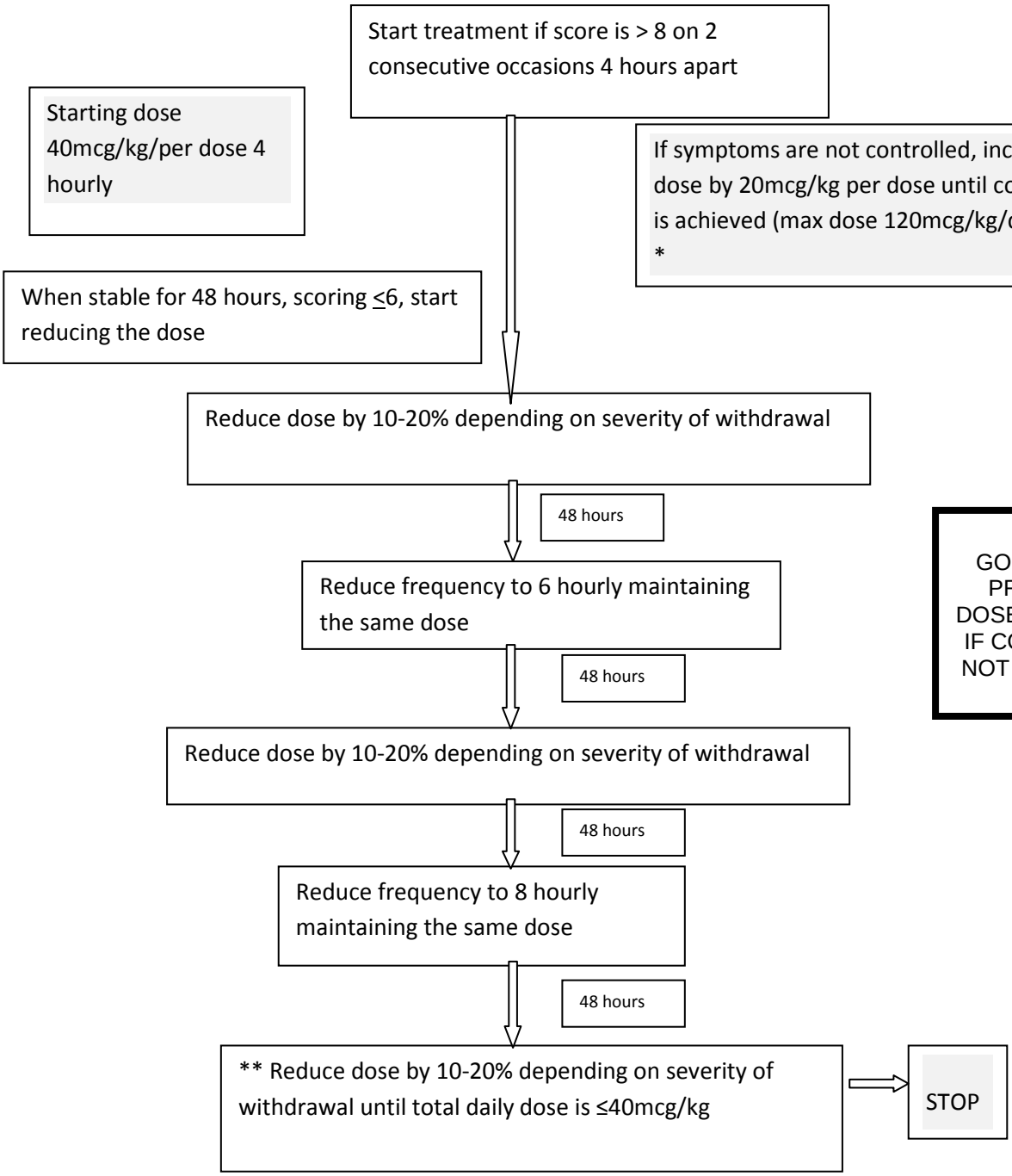
Poor feeding
Excessive sucking prior to feed but sucks infrequently while feeding
Uncoordinated sucking reflex (difficulty sucking and swallowing)
Gulps during feeds and stops frequently to breathe
Inability to close mouth around bottle/ breast
Feeding takes more than 20 minutes

Vomiting
Vomits whole feed or 2 or more times during a feed (not associated with burping)

Document other signs and symptoms and discuss with Dr e.g. SWEATING, YAWNING, SNEEZING, NASAL STUFFINESS

Sign/symptom	Date &Time	Description

FLOW CHART FOR ORAL MORPHINE USE



*Can go up to 200mcg/kg / dose BUT ONLY ON CONSULTANTS AUTHORISATION

** Reduce dose 24-48 hourly

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