NCCU CLINICAL GUIDELINES
SECTION: 17

NEONATAL ABSTINENCE SYNDROME

Section: 17 Neonatal abstinence syndrome
Pharmacological treatment NAS
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Neonatology Clinical Guidelines
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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 1mg/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 0.5mg/kg/day (oral) in 4 divided doses
If score persists ≥ 8 despite morphine 0.5mg/kg/day	Morphine 0.7mg/kg/day (oral) in 4 divided doses
If score persists ≥8 despite morphine 0.7mg/kg/day	Morphine 0.9mg/kg/day (oral) in 4 divided doses
When infants are on ≥0.9 mg/kg/day	Continuous SaO_2 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 0.05ml (0.05 mg) 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	LOADING DOSE Phenobarbitone 15mg/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. MAINTENANCE DOSE Phenobarbitone 6mg/kg/day (oral) in 2 divided doses
If score persists ≥8 despite phenobarbitone 6mg/kg/day	Phenobarbitone 8mg/kg/day (oral) in 2 divided doses
If score persists ≥8 despite phenobarbitone 8mg/kg/day	Phenobarbitone 10mg/kg/day (oral) in 2 divided doses

USE OF PHENOBARBITONE IN COMBINATION WITH MORPHINE

Phenobarbitone 10mg/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 microg

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	400microg/kg/day oral morphine mixture 1mg/ml in four divided doses
Week 2	300microg/kg/day oral morphine mixture 1mg/ml in four divided

	doses
Week 3	200microgg/kg/day oral morphine mixture 1mg/ml in four divided doses
Week 4	100microgg/kg/day oral morphine mixture 1mg/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 e.g.

1. Weekly dispensing (i.e. parent / guardian to attend outpatient pharmacy weekly to obtain medication)
2. Maximum volume to be dispensed is χml (weekly volume) + 3 mL wastage
3. An additional bottle containing 2mL 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.
4. Refer parent to prescribing medical officer if parent's request differs from that ordered
5. 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.