PAIN ASSESSMENT AND MANAGEMENT

INTRODUCTION

- Discomfort, pain or stress can be associated with routine care and invasive procedures. Babies are unable to report pain; use observational skills and clinical judgment

Key recommendations

- Routine assessments to detect pain using a validated assessment tool
- Minimise number of painful procedures
- Prevent/reduce acute pain from invasive procedures using non-pharmacological and pharmacological methods
- Anticipate and treat post-operative pain

Types of pain

Acute pain	Skin-breaking procedures or tissue injury caused by diagnostic or therapeutic interventions
Established pain	Occurs after surgery, localised inflammatory conditions, birth-related trauma
Prolonged/chronic pain	Results from severe diseases e.g. necrotising enterocolitis (NEC), meningitis. Pathological pain state persisting beyond normal tissue healing time

Signs

- Lack of behavioural responses does not exclude pain

Physiological changes	Behavioural changes	Anatomical changes	Body movements
• Increase in: ◦ heart rate ◦ blood pressure ◦ respiratory rate ◦ oxygen consumption ◦ mean airway pressure ◦ muscle tone ◦ intracranial pressure ◦ skin blood flow • Decrease in: ◦ oxygen saturation and transcutaneous oxygen levels ◦ skin blood flow • Apnoea ◦ shallow breathing • Fixed heart rate	• Change in facial expression: ◦ grimace ◦ brow bulge ◦ eye squeeze ◦ deepening naso-labial furrow ◦ nasal flaring ◦ tongue curving or quivering • Crying • Whimpering • 'Silent' cry (intubated babies) • Decreased sleep • Heightened responses	• Dilated pupils • Sweating • Flushing • Pallor	• Fisting • Tremulousness • Thrashing limbs • Limb withdrawal • Writhing • Arching back • Head banging • Finger splaying • Cycling

- Sudden pain and distress may indicate acute deterioration e.g. bowel perforation
- Physiological changes cannot be sustained long-term

PAIN ASSESSMENT

- Assess within 1 hr of admission
- Frequency of further assessments will depend on baby's clinical condition, underlying diagnosis and pain score (see **Frequency of assessment**)

Pain assessment tools

- **Separate tools may be needed to assess acute and prolonged pain**
- Use validated pain assessment tools [Pain Assessment Tool (PAT) and Premature Infant Pain Profile (PIPP)]
- See **Abstinence syndrome** guideline for assessment of babies with neonatal abstinence syndrome

Pain assessment not indicated/unsuitable

Not indicated	Unsuitable
• Pharmacologically paralysed babies; provide appropriate pain relief	• Distress is expected but easily relieved (e.g. ventilated baby requiring suction) • For simple, routine procedures e.g. capillary blood sampling • second person (parent, nurse or healthcare practitioner to provide support and comfort baby)

Use of pain assessment tool
- Note gestational age
- Observe baby's behaviour for 15–30 sec then gently touch baby's limb to determine muscle tone/tension (can be done during routine handling)
- Note:
- physiological conditions that may influence score (in cyanotic heart disease, baby's colour may score normal unless there is a change in the intensity of the cyanosis or duskiness due to pain)
- medications that may affect behaviour or physiological responses
- environmental triggers (sudden bright lights, noise, activity) may cause a stress response
- Document on chart or in notes at time of score
- When score is above tool's recommended thresholds, initiate comfort measures or analgesia

Frequency of assessment
- **All** babies to have pain assessment within 1 hr of admission
- Minimum frequency of subsequent assessments depends on level of care
- **intensive care**: hourly with observations
- **high dependency**: 4-hrly
- **special care**: as condition dictates
- **post-operatively**: hourly for first 8 hr, then 4-hrly until 48 hr post-op (more frequently if signs of distress/discomfort)
- If baby shows signs of distress/discomfort perform additional assessments

PAIN MANAGEMENT

Indications
- Birth trauma
- Iatrogenic injury
- Before, during and after **any** painful procedure
- Severe illness e.g. NEC, meningitis
- To aid ventilation
- Preparation for transfer if ventilated
- Whilst undergoing therapeutic hypothermia
- Post-operatively
- End-of-life care
- Formal assessment indicates pain
- If non-pharmacological techniques are ineffective or not appropriate, progress to pharmacological agents (e.g. post-surgery, severe illness, major injury, congenital malformations and palliative care)

Non-pharmacological pain relief
- Gently repositioning baby
- Light swaddling (blanket/nest), prolonged restrictive swaddling may be associated with increased risk of developmental hip dysplasia
- Comfort/containment holding
- Reducing light, noise, and activity around baby
- Soothing voice
- Nappy change
- Non-nutritive sucking (NNS) (dummy or gloved finger) [see **Non-nutritive sucking (NNS)** guideline]
- Kangaroo care (see **Kangaroo care** guideline)
- Breastfeed (see **Breastfeeding** guideline)
- Sucrose
- Mother's expressed breast milk (MEBM) – no additives

Reassess after 30 min

- If pain score in upper range, institute comfort measures and administer prescribed analgesia/seek medical review
- If score continues to rise, consider increasing dose of analgesia and reassess after 30 min
- if clinical concerns – medical review
- If score constantly below baseline and analgesia maintained, reduce dosage
- Record effectiveness of pain management in care plan

Sucrose

- Sucrose 24% solution and breast milk provide a quick, short-term analgesic effect (given orally)
- NNS increases effectiveness
- Use in conjunction with environmental and behavioural measures to relieve pain (e.g. positioning, swaddling, containment holding, kangaroo care)
- may be given to ventilated babies with care

Contraindications to sucrose

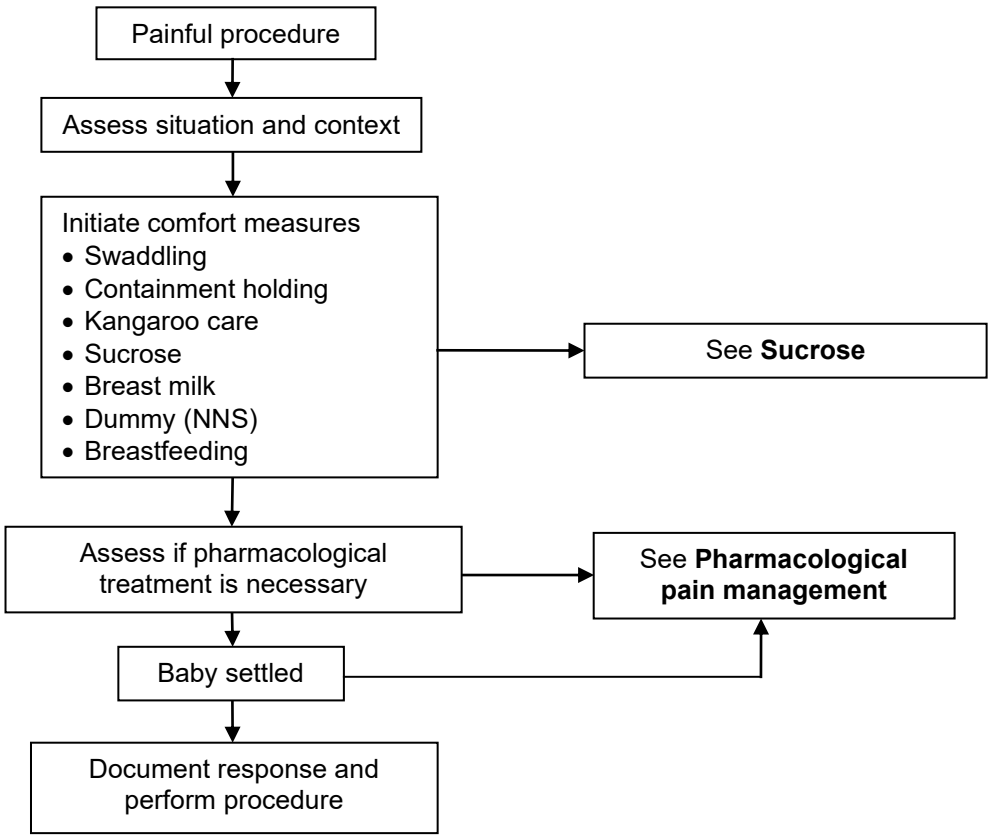
Do not use	May not be effective
• <28 weeks' gestation – use MEBM • High risk of NEC – use MEBM • Nil-by-mouth (if due to surgical problem, sucrose may be appropriate, discuss with surgeon) • Sedated or on other pain medications • Diabetic mother (until blood glucose stabilised) • Known carbohydrate malabsorption or enzyme deficiency	• Baby with neonatal abstinence syndrome • Baby just been fed • Exposed to chronic in-utero stress • >6 months

Administration

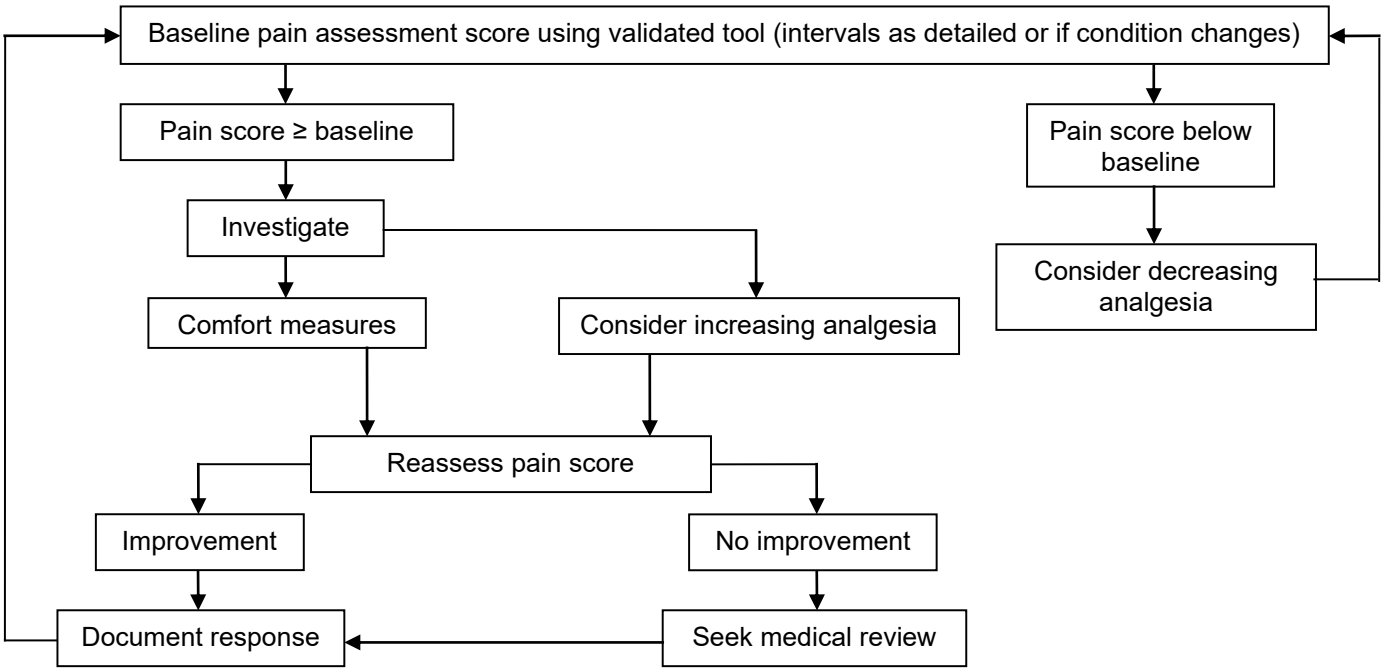
- Use commercially available sucrose 24% solution and follow manufacturer's guidelines regarding storage and use
- Maximum 8 doses in 24 hr
- Avoid risk of choking/aspiration – ensure baby is awake
- Drop dose onto tongue, buccal membrane, or dummy and **wait 2 min** before starting procedure
- For procedures lasting >5 min, repeat dose (maximum 2 further doses)
- Continue environmental and behavioural management strategies during procedure
- Observe baby's cues and allow 'time-out' to recover
- Document administration of sucrose as per local policy

Gestation	Dose of sucrose 24%
28^{+0}–30^{+6} weeks	0.1 mL (max 0.3 mL per procedure)
≥31^{+0} weeks and 1000–2000 g	0.2 mL (max 0.6 mL per procedure)
>2000 g	0.5 mL (max 1.5 mL per procedure)

Management of procedural pain



Management of prolonged or chronic pain



Pharmacological pain management

- Give medication in conjunction with non-pharmacological measures
- The following drugs may be useful:
  - fentanyl
  - morphine
  - paracetamol
- Details of these drugs can be found in the **Neonatal Formulary**

Suggested medication for procedures
Specific situations

Non-urgent endotracheal intubation	Mechanical ventilation	Chest drain insertion	CT/MR imaging	Laser therapy for ROP	Therapeutic hypothermia
• Fentanyl IV • Atropine IV • Suxamethonium IV	• Morphine/ continuous IV infusion	• Morphine IV • Lidocaine SC	• Sedation may be unnecessary if baby fed and swaddled • Chloral hydrate - oral or rectal • Midazolam IV/buccal/oral/ intranasal	• Morphine continuous IV infusion	

Simple surgical procedures

Abdominal drain insertion	Broviac line removal	Wound dressing/drain removal	Application of silo bag for gastroschisis
• Morphine continuous IV infusion • Lidocaine SC	• Paracetamol oral/rectal • Lidocaine SC • Sucrose oral	• Paracetamol oral/rectal • Sucrose oral	• Paracetamol rectal