Sucrose Oral Liquid for Analgesia in Neonates and Infants

BRIEF ADMINISTRATION GUIDE

For detailed information refer to the full guideline on the following pages or for NICU also see The Australasian Neonatal Medicines Formulary (ANMF) Sucrose guideline

Note: Shaded text indicates where Health NZ Waikato practice differs from ANMF

Indications

Analgesia for painful or invasive minor neonatal procedures

Note: As sucrose is being used for a therapeutic purpose (i.e. analgesia) it must be prescribed on the national medication chart.

Route and Presentation

Oral

- Supplied as sucrose 25% oral liquid (manufactured by Biomed), 25 mL

Dose

Administer each dose in small increments e.g. 0.1 mL (at approximately 2 minute intervals)

Gestational Age (weeks)	Dose	Daily maximum
< 32	0.2 mL	1 mL
32 - 40	0.2 – 0.5 mL	2.5 mL
40 -44	0.2 – 1 mL	5 mL
Infants 1-18 months postnatal age	1 – 2 mL	5 mL

Preparation and Administration

- Draw up dose in an oral syringe
- Administer to the anterior part of the tongue, 2 minutes prior to painful procedure (not effective nasogastrically / swallowed)
  Alternatively a pacifier can have drops applied from the syringe and offered 2 minutes prior
- Repeat dose every 2 minutes as required
- Encourage non-nutritive sucking as it may increase the pain relief effect e.g. offer a pacifier immediately after sucrose administration (if consented for)

Monitoring

- Assess pain / discomfort with suitable assessment tool, as appropriate e.g. N-PASS
- Monitor for signs of gagging and choking

Storage and Stability

- Store sucrose oral liquid at room temperature, from 15 to 25 °C
- Once opened discard after 7 days if used in NICU, and 14 days for other areas

Competency for Administration

This procedure is carried out by, or under, the direct supervision of a registered nurse/registered midwife who holds current Health NZ Waikato district Generic Medicine Administration skills verification.

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1. Purpose and Scope

To facilitate appropriate administration of sucrose oral liquid to decrease pain in neonates and young infants under 18 months of age undergoing minor procedures at Health NZ Waikato district hospitals.

Note: *Prior to any procedure consideration should be given on how to minimise any resulting pain through the use of pharmacological and non-pharmacological measures.*

Non pharmacological measures include ensuring, where possible, that the baby is calm, relaxed, warm, fed, the parents are well informed and where possible assisting in calming and holding the child.

Once non-pharmacological measures have been implemented, oral sucrose analgesia may be administered. Oral sucrose will not always eliminate all crying or pain, but is known to reduce the physiological stress of pain.

2. Medicine

2.1. Medicine Name:

Sucrose oral liquid 25%

2.2. Mechanism of action:

Sucrose mediates an increase in endogenous opiate release.

The time to maximal effect is approximately 2 minutes and the duration of effect is approximately 5 to 10 minutes

2.3. Indications:

Any procedural pain: heel stick, blood sampling, venepuncture, IV insertion, lumbar puncture, dressing changes, adhesive tape removal, immunisations, suture removal, urinary catheter insertion, nasogastric tube insertion, etc.

Sucrose is primarily used in babies **up to 3 months of age**. It may be considered up to 18 months of age but should not be used as a sole form of analgesia in older infants.

2.4. Presentation:

Sucrose 25% oral liquid,

- supplied in 25 mL bottles

2.5. Route:

Oral, onto the anterior part of the tongue

2.6. Dose:

Administer each dose in small increments e.g. 0.1 mL (at approximately 2 minute intervals)

Gestational Age (weeks)	Dose	Daily maximum
< 32	0.2 mL	1 mL
32 - 40	0.2 – 0.5 mL	2.5 mL
40 -44	0.2 – 1 mL	5 mL
Infants 1-18 months postnatal age	1 – 2 mL	5 mL

Note:

- *Smaller doses e.g. 0.1mL have been as effective as larger doses e.g. 0.5mL or 1mL, in reducing pain intensity scores*
- *Repeat doses: One RCT found that 3 doses of 0.05 mL of sucrose at 2 minute intervals before and during the heel stick procedure in preterm neonates were more effective in reducing pain scores than a single dose prior to procedure.*
- *There are no studies to provide evidence on the maximum number of doses that can be given in a day, therefore the suggested maximums in this guideline are recommendations only.*

2.7. Contraindications:

- Neonates with known sucrose or fructose intolerance
- Glucose-galactose malabsorption or sucrase-isomaltase deficiency
- Age > 18 months
- Parental refusal

2.8. Precautions:

- Oesophageal atresia or tracheal oesophageal fistula
- Suspected or proven necrotising enterocolitis
- Altered gag/swallow reflexes
- Pre-op sedated patients due to risk of aspiration
- Intubated infants

2.9. Adverse effects:

Sucrose is generally well tolerated. Administration may be associated with transient hyperglycaemia, minor oxygen desaturation, choking, bradycardia and brief apnoeas.

3. Administration

3.1. Competency for administration:

This procedure is carried out by, or under, the direct supervision of a registered nurse / registered midwife who has Health NZ Waikato Generic Medicine Administration verification.

3.2. Preparation and administration:

Administer sucrose oral liquid with a 1mL oral syringe directly onto the front of the tongue 2 minutes prior to the painful procedure

Offer a pacifier immediately after sucrose administration if part of the infants care (non-nutritive sucking is beneficial as it may increase analgesic effect). Alternatively a pacifier may have sucrose dose / drops applied and offered 2 minutes prior to the procedure.

3.3. Observations and management:

- Assess for signs of pain and discomfort
- Monitor for signs of gagging and choking

3.4. Special considerations (audit, funding, storage):

- Efficacy as a pain reliever appears to decrease with increasing age and maturation (first 6 months of life) with greatest benefit seen in infants up to 3 months of age
- Store at room temperature (15 to 25 ^{o}C). Once opened discard after 7 days if used in NICU, and 14 days for other areas
- Other methods prior to cannulation or lumbar puncture include use of vapo-coolant spray or topical local anaesthetic (e.g. Ametop)
- Sucrose 24% has an osmolarity of about 1000 mOsm/L
- Sucrose is only effective when given orally and is ineffective if given directly into the stomach i.e. via nasogastric tube

3.5. Rescue medication:

- Not applicable

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4. References

- Australasian Neonatal Medicines Formulary. Sucrose Drug Guideline. 2021. Available from www.anmfonline.org/wp-content/uploads/2022/08/Sucrose_ANMFv2.0_20210715-1.pdf
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- UpToDate. Sucrose Pediatric Drug Information. Accessed on 16th January 2024 via https://www.uptodate.com/contents/sucrose-pediatric-drug-information?source=search_result&search=sucrose%20and%20pain&selectedTitle=3~150
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Document Ownership

Document Authoriser:	John Barnard	Chair Medicines & Therapeutics Committee
Document Authoriser:	Jutta van den Boom	Clinical Director Neonatal Intensive Care Unit
Document Facilitator:	Kerrie Knox	Pharmacist