

Sweet solutions for procedural pain in infants

A sweet solution, such as sucrose or glucose, can be used for analgesia for minor short term procedural pain, such as immunisation, in infants up to 12 months of age. The sweet solution is given orally and provides short term analgesia. It has National Health and Medical Research Council (NHMRC) Level I evidence of efficacy and no serious adverse effects have been reported. This article is part of a series on non drug treatments summarising indications, considerations, evidence and where clinicians and patients can get further information.

The condition

One of the common causes of procedural pain in infants up to 12 months of age is immunisations. Other painful procedures in infants include blood tests, suture removal, dressings and adhesive tape removal.

The intervention

A sweet solution given directly to the tongue causes an orally mediated increase in endogenous opioids. A sucrose or glucose solution can be given, as long as it has sufficient sweetness, which is at least 24% sucrose or 30% glucose.

How to administer the sweet solution

While optimal doses have not been identified, the recommended maximum dose of sweet solution is:

- Babies 0–1 months: 0.2–1 mL per procedure (up to 5 mL in 24 hours)
- Infants 1–18 months: 1–2 mL per procedure (up to 5 mL in 24 hours).

For multiple immunisations, the total dose of solution should be given prior to, and throughout, the procedure to ensure sustained effects.

It is important to get the sweet solution directly on to the tongue. The steps are to:

- prepare the total amount of sucrose or glucose solution, using a syringe to measure the amount
- give approximately one-quarter of the total amount 2 minutes before starting the procedure
- offer a dummy if this is a normal part of the infant's care

- incrementally give the rest of the solution throughout the procedure, as needed.

The analgesic effects peak at 2 minutes after administration and last for approximately 3–5 minutes.

Availability

Pre-packaged 24% sucrose solutions are available from multiple manufacturers. A pharmacist may be able to order and supply a ready mixed bottle of an appropriate sweet solution that can be stored in the refrigerator. Some products are available in single use ampoules or small volume cups.

What else can I do?

In addition to sweet solution administration, distress may be reduced by:

- breast feeding or using a dummy
- full or partial swaddling
- holding and cuddling
- distraction.

What should I consider?

Contraindications

Sweet solutions are contraindicated in infants with known fructose or sucrose intolerance.

Precautions

Sweet solutions are not suitable for lengthy or significantly painful procedures as sucrose and glucose have mild analgesic effects. They are only suitable for decreasing short-term pain during minor procedures.

Infants of mothers who took methadone during pregnancy may have altered endogenous opioid systems.

Adverse effects

No serious adverse effects have been reported.

Evidence

National Health and Medical Research Council Level I evidence (systematic review of randomised controlled trials).

Resources

The Royal Children's Hospital Melbourne has produced clinical guidelines for sucrose (oral) for procedural pain management in infants, which are available at www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Sucrose_oral_for_procedural_pain_management_in_infants

The Comfort Kids Program (www.rch.org.au/comfortkids) at The Royal Children's Hospital Melbourne) has information for kids, parents and health professionals about minimising pain and distress during routine procedures. It also has details of one of the suppliers of a glucose solution.

Key references

- Harrison D, Stevens B, Bueno M, et al. Efficacy of sweet solutions for analgesia in infants between 1 and 12 months of age: a systematic review. *Arch Dis Child* 2010;95:406–13.
- Stevens B, Yamada J, Lee GY, Ohlsson A. Sucrose for analgesia in newborn infants undergoing painful procedures. *Cochrane Database Syst Rev* 2013;1:CD001069.

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Acknowledgements

Handbook of Non Drug Intervention (HANDI) Project Team members include Professor Paul Glasziou, Dr John Bennett, Dr Peter Greenberg, Professor Sally Green, Professor Jane Gunn, Associate Professor Tammy Hoffmann and Associate Professor Marie Pirota.

Competing interests: None.

HANDI is supported by a grant from the Jack Brockhoff Foundation.

Providence: Commissioned; not peer reviewed.

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