Saskatoon Health Region	Policies & Procedures Title: **SUCROSE SOLUTION FOR INFANT AND PEDIATRIC PROCEDURAL PAIN MANAGEMENT** I.D. Number: **1102**
Authorization: [x] SHR Nursing Practice Committee	Source: Nursing Date Revised: November 2012 Date Effective: June 2011 Scope: **Saskatoon City Hospital** **Royal University Hospital** **St. Paul's Hospital**

1. PURPOSE

1.1 The administration of sucrose in conjunction with non-nutritive sucking and other comfort measures (swaddling, rocking, kangaroo care) has been demonstrated to be an effective non-pharmacologic intervention for relief of mild procedural pain and as an adjuvant to pharmacological pain management in infants up to 24 months of age.

2. POLICY

2.1 When breastfeeding is not possible, infants up to 24 months of age without contraindications may receive sucrose 24% solution for minor procedural pain and to relieve the distress experienced when restrained for diagnostic procedures (e.g. MRI), as ordered directly by physician or RN (NP) or per medical directive along with other non-pharmacological measures to help reduce distress.

2.1.1 Minor invasive procedures include:

- Arterial, venous, or capillary puncture
- Peripheral IV insertion
- Intramuscular, subcutaneous or intradermal injections including immunizations
- Urinary bladder catheterizations
- Nasogastric or nasojejunal tube placement
- Minor dressing changes
- Suctioning of artificial airway (tracheostomy or endo tracheal tube)
- Eye or ear examination
- Suture removal
- Adhesive tape removal
- Lumbar puncture

2.1.2 24% sucrose may be used as an adjunct therapy with pharmacological agents as ordered by physician or RN(NP) for more invasive procedures such as chest tube placement or removal, neonatal circumcision, lumbar puncture and PICC insertion.

2.2 Exclusionary Criteria: the following should not receive sucrose 24% solution:

- Patients less than 27 weeks gestation
- Patients with carbohydrate intolerance due to short bowel syndrome
- Patients with metabolic or endocrine dysfunction (e.g., hereditary fructose intolerance, sucrose or sorbitol intolerance, diabetes) unless approved by MRP
- Patients receiving a ketogenic diet
- Patients with oral surgery (unless approved by physician)
- Patients without intact airway protective reflexes (gag, cough, swallow) such as those receiving large doses of sedation/analgesic, neuromuscular blocking agents, anesthetic agents or those with CNS dysfunction, or severe illness. Use with caution for intubated patients.

2.3 Dosage: See Appendix A.

2.4 Sucrose may be administered by an RN/GN or LPN or nursing student with supervision. Parents/family caregivers may administer 24% sucrose in collaboration with RN or LPN.

2.5 Sucrose is effective only by absorption via the oral mucosa so should be administered as described in the procedure section. Gavage or bottle administration should not be used as sucrose is ineffective via these routes.

2.6 If parents request no sucrose be administered offer the option of using Breast milk or formula in place of sucrose. However, they should be informed that studies have shown the use of expressed breast milk or formula does not have as strong of a treatment effect as sucrose 24% solution in pain management.

2.7 Oral sucrose should not be used as an agent to calm a crying infant outside the realm of procedural pain management.

3. PROCEDURE

3.1 Obtain Patient History, screening for metabolic and endocrine disorders such as Hereditary Fructose Intolerance, glycogen storage diseases or diabetes.

3.2 Provide other non-pharmacological interventions for procedural pain as appropriate and administer pharmacological therapies as ordered (e.g.: topical anaesthetics). Non pharmacological interventions include:

- Position of comfort including holding or cuddling by parent or caregiver
- Full or partial bundling
- Distraction techniques for older infants (music, toys, bubbles)
- Reduction of noxious environmental stimuli such as noise, bright lights

3.3 For maximum effectiveness, sucrose 24% solution should be administered at least two minutes prior to the painful procedure (e.g. while warming a heel for lab draw). The effect lasts approximately five minutes after administration.

3.4 When no commercial product is available, a sucrose solution may be prepared by dissolving one package of sugar (approximately 3.5g) in 15 ml sterile water.

3.5 Position patient in a sitting, side-lying or prone position for administration of sucrose if possible. This reduces the risk of vomiting, aspiration, choking, transient oxygen desaturation, apnea,

tachycardia or bradycardia during administration which is more likely to occur with lower gestational age.

3.6 Place a drop of 24% sucrose solution on the anterior tongue or buccal surface or, moisten a pacifier, gloved finger, or cotton tipped applicator with the sucrose solution 2 minutes prior to start of procedure. Encourage the infant to suck throughout procedure.

3.7 Assess pain management during procedure and continue to provide the remainder of sucrose dose incrementally throughout the procedure in addition to other comfort measures.

3.8 Dispose of equipment and discard any remaining sucrose solution.

3.9 **Document**

3.9.1 On medication administration record: note the current weight, the total volume of sucrose 24% solution administered per dose or procedure, and the cumulative dose:

- NICU per shift
- Other areas per day

3.9.2 In Nursing Notes: procedure performed and pain assessment during procedure

4. REFERENCES

BC Women's and Children's Hospital. (May, 2010). Sucrose as a procedural analgesic for infants up to 12 months of age. Vancouver, BC, author.

CHEO. (Oct. 2010). 24% sucrose for procedural pain management. Ottawa, Ont., author.

Clark, M. & Cummingham J. (2009). Sucrose as effective pain management prior to immunizing young children: clinical effectiveness and guidelines. Canadian Agency for Drugs and technologies in Canada.

Harrison, D., Bueno, M., Yamada, J., Adams-Webber, T., & Stevens, B. (2010). Analgesic effects of sweet-tasting solutions for infants: current state of equipoise. Paediatrics, 126(5), 894-902.

Mokhanach, L, et al, (2010). NICU procedures are getting sweeter: development of a sucrose protocol for neonatal procedural pain, Neonatal Network. 29 (5), 271-279.

Natus Medical Incorporated. Tootsweet 24% Sucrose solution FAQs Frequently Asked Questions http://www.natus.com/documents/003416%20Rev_A%20-TS%20FAQs.pdf accessed November 30, 2012.

Appendix A

DOSING CHART

Administer sucrose 2 minutes prior to start of procedure

Repeat every few minutes to a maximum of 3 doses per procedure

Infants subjected to 6 or more procedures/day should be reviewed for more appropriate pain management before further doses are administered.

NICU Patients (Mokhnach et al, 2010)	
Preterm Neonates or Less Than 1500 g	Term Neonate Greater or equal to 1500 g
1 – 5 drops	1 – 10 drops

Infants and Children up to 24 months (Natus Medical)		
Birth to 1 month	1 – 24 months	If NPO
2 – 25 drops (usually 5 – 10 drops)/dose	25 – 50 drops (1 – 2 mL) /dose	5 drops/dose