

Effectiveness and safety of sucrose for heel lance procedures in neonates

Mariana Bueno^a, Janet Yamada^b, Lucia Santos^c, Sarah Haliburton^a, Marsha Campbell-Yeod^d, Bonnie Stevens^{a,c}

a The Hospital for Sick Children, Canada; b Ryerson University, Canada; c University of Toronto, Canada, d Dalhousie University, Canada

Background and Aims

Sucrose is the most frequent strategy used to relieve pain from heel lance in neonates. We aimed to determine (a) the effectiveness of sucrose for heel lance and (b) adverse events.

Methods

Systematic review, based on the Cochrane Collaboration standards, included RCTs with sucrose administered during single or repeated heel lances. Comparison groups were no intervention, water, placebo, and/or other analgesic interventions. Pain intensity was the primary outcome assessed using a validated pain measure.

Results

53 RCTs (n=6,074 term and preterm neonates) focusing on heel lance were included. There were lower pain scores (Premature Infant Pain Profile-PIPP) 30sec after lancing for sucrose vs control [MD -1.74 (95%CI -2.11, 1.37), $p < 0.0001$, 7 studies, n=547]. Similar PIPP scores 30sec after lancing were observed for sucrose vs breastfeeding [MD 0.70, (95%CI -0.49, 1.88), $p = 0.25$, 2 studies, n=148]. Shorter crying time occurred for sucrose vs control [MD -30.74 (95%CI -40.73, 20.74), $p < 0.00001$, 4 studies, n=222]. Adverse events were monitored in 19 studies and occurred in 8 studies, reported as minor and self-resolved.

Current evidence support the effectiveness and safety of sucrose for single heel lances. Future studies should focus on sucrose for repeated procedures and on comparison of sucrose to other analgesic interventions