

# Analgesic Effects of EMLA Cream and Oral Sucrose During Venipuncture in Preterm Infants

**AUTHORS:** Valérie Biran, MD, PhD,<sup>1,2,3</sup> Elisabeth Courrier, MD,<sup>4</sup> Patricia Cimerman, RN,<sup>5</sup> Elizabeth Waller-Nicolet, MD,<sup>6</sup> Delphine Mitanchaz, MD, PhD,<sup>7</sup> and Ricardo Cartasjel, MD, PhD<sup>2,7</sup>

<sup>1</sup>Service de Néonatalogie, Hôpital Armand Trousseau, Assistance Publique-Hôpitaux de Paris, Paris, France; <sup>2</sup>Institut National de la Santé et de la Recherche Médicale, Paris, France; <sup>3</sup>Prémix, Paris, France; <sup>4</sup>Service de Néonatalogie, Centre Hospitalier de Meaux, Meaux, France; <sup>5</sup>Centre National de Ressources de Lutte Contre la Douleur, Hôpital Armand Trousseau, Assistance Publique-Hôpitaux de Paris, Paris, France; and <sup>6</sup>Service des Urgences Pédiatriques, Hôpital Armand Trousseau, Assistance Publique-Hôpitaux de Paris, Paris, France

## KEY WORDS

preterm, pain, PIPP, DAN, sucrose, EMLA, venipuncture

## ABBREVIATIONS

DAN—Douleur Aiguë Nouveau-né

PIPP—Premature Infant Pain Profile

This trial has been registered at [www.clinicaltrials.gov](http://www.clinicaltrials.gov) (identifier NCT00470080).

[www.pediatrics.org/cgi/doi/10.1542/peds.2010-1287](http://www.pediatrics.org/cgi/doi/10.1542/peds.2010-1287)

doi:10.1542/peds.2010-1287

Accepted for publication Mar 18, 2011

Address correspondence to Valérie Biran, MD, PhD, Service de Pédiatrie et Réanimation Néonatale, Hôpital Robert Debré, 48 Boulevard Sérurier, F-75019 Paris, France. E-mail: [valerie.biran@rds.aphp.fr](mailto:valerie.biran@rds.aphp.fr)

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4072).

Copyright © 2011 by the American Academy of Pediatrics

**FINANCIAL DISCLOSURE:** The authors have indicated they have no financial relationships relevant to this article to disclose.

**WHAT'S KNOWN ON THIS SUBJECT:** Venipunctures are painful in preterm neonates. Oral sucrose has a moderate effect on reducing venipuncture-induced pain in neonates. Sucrose should be combined with other analgesic methods to improve analgesia. Data on the analgesic efficacy of EMLA cream in neonates are conflicting.

**WHAT THIS STUDY ADDS:** The combination of sucrose plus EMLA cream was more effective than sucrose alone in reducing venipuncture-induced pain in preterm neonates. The use of this combination analgesic strategy will improve pain management of venipuncture in preterm neonates.

## abstract

**OBJECTIVE:** The goal of this study was to compare the analgesic effect of sucrose with that of the combination of sucrose and the local anesthetic cream EMLA during venipuncture in preterm neonates.

**METHODS:** This randomized, double-blind prospective study included infants younger than 37 weeks' gestational age during 1 routine venipuncture for blood sampling. Each child randomly received either sucrose plus application of a placebo cream (S group) or sucrose plus EMLA cream (S + E group) before venipuncture. Venipuncture-induced pain was assessed through videotapes of the procedures by using the Douleur Aiguë Nouveau-né (DAN) behavioral scale. Pain was assessed at 2 phases: during venipuncture (from needle introduction to its removal) and during the recovery period (30 seconds after needle removal). Pain scores over time and between treatments were compared by using repeated-measures analysis of variance.

**RESULTS:** The study included 76 children (37 in the S group, 39 in the S + E group). Mean (SD) DAN pain scores for the S group and the S + E group were 7.7 (2.1) and 6.4 (2.5), respectively, during venipuncture and 7.1 (2.8) and 5.7 (3.5) during the postinjection period. A significant time and treatment effect in favor of the S + E group was observed.

**CONCLUSION:** The combination of sucrose and EMLA cream revealed a higher analgesic effect than sucrose alone during venipuncture in these preterm infants. *Pediatrics* 2011;128:e65–e70