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## A novel needle-free powder lidocaine delivery system for rapid local analgesia.

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### Abstract

**OBJECTIVE:** To determine the analgesic effect and tolerability of a novel needle-free powder lidocaine delivery system in children undergoing venipuncture.

**STUDY DESIGN:** In this double-blind, placebo-controlled, single-center trial, 306 children age 3 to 18 years were randomized to receive a needle-free powder lidocaine delivery system or matching sham placebo at the back of the hand 2 to 3 minutes before venipuncture. Venipuncture pain was self-reported using the Wong-Baker FACES scale (in 3- to 12-year-olds) and a 100-mm visual analog scale (in 8- to 18-year-olds). Safety was assessed by adverse events, investigator skin site assessments, and children's self-report of the administration comfort of study treatments. Effect sizes were compared by 2-sample t test and Glass's Delta approach.

**RESULTS:** Subjects receiving the needle-free powder lidocaine delivery system exhibited mean pain reductions (effect size) of 33% to 46% relative to sham placebo. Pain reductions were statistically significant for all ages combined and also for the youngest and oldest age strata. Self-reported administration comfort levels were similar in the active system and sham placebo groups. Incidences of adverse events and dermal reactions were low; the most common dermal reaction was mild erythema.

**CONCLUSIONS:** The needle-free powder lidocaine delivery system was well tolerated and provided effective local analgesia when administered 2 to 3 minutes before venipuncture.

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