



Vapocoolant spray significantly decreased peripheral intravenous cannulation pain in adults versus placebo spray and was well tolerated with minor adverse effects that resolved quickly” Mace (2017).

Abstract:

OBJECTIVES: Painful diagnostic and therapeutic procedures are common in the health care setting. Eliminating, or at least, minimizing the pain associated with various procedures should be a priority. Although there are many benefits of providing local/topical anesthesia prior to performing painful procedures, ranging from greater patient/family satisfaction to increased procedural success rates; local/topical anesthetics are frequently not used. Reasons include the need for a needlestick to administer local anesthetics such as lidocaine and the long onset for topical anesthetics. Vapocoolants eliminate the risks associated with needlesticks, avoids the tissue distortion with intradermal local anesthetics, eliminates needlestick pain, have a quick almost instantaneous onset, are easy to apply, require no skills or devices to apply, are convenient, and inexpensive. The aims of this study were to ascertain if peripheral intravenous (PIV) cannulation pain would be significantly decreased by using a vapocoolant (V) versus sterile water placebo (S) spray, as determined by a reduction of at least  $\geq 1.8$  points on numerical rating scale (NRS) after vapocoolant versus placebo spray, the side effects and incidence of side effects from a vapocoolant spray; and whether there were any long term visible skin abnormalities associated with the use of a vapocoolant

spray.

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**MATERIALS AND METHODS:** Prospective, randomized, double-blind controlled trial of 300 adults (ages 18-80) requiring PIV placement in a hospital ED, randomized to S (N=150) or V (N=150) prior to PIV. Efficacy outcome was the difference in PIV pain: NRS from 0 (none) to worst (10). Safety outcomes included a skin checklist for local adverse effects (i.e., redness, blanching, edema, ecchymosis, itching, changes in skin pigmentation), vital sign (VS) changes, and before/after photographs of the PIV site.

**RESULTS:** Patient demographics (age, gender, race), comorbidity, medications, and vital signs; and PIV procedure variables (e.g., IV needle size, location, number of IV attempts, type and experience of healthcare provider performing the IV) were not significantly different for the two groups. Median (interquartile range) PIV pain was 4 (2, 7) (S) and 2 (0, 4) (V) ( $P<0.001$ ). Skin checklist revealed minimal erythema: S 0% (N=0/150), V: 2.7% (4/150), which resolved within 5min, and no blanching, skin pigmentation changes, itching, edema, or ecchymosis. Photographs at 5-10min revealed no visible skin changes in any patient (N=300), vapocoolant (N=150) or placebo groups (N=150). Complaints (N=26) were coolness/cold feeling S 8.7% (N=13), V 7.3% (N=11), coolness/numbness S 0% (N=0), V 0.7% (N=1), and burning S 0.7% (N=1), V 0 (0%). Patient acceptance of the vapocoolant spray was high: 82% (123/150) of the patients stated they would use the spray in the future, while only 40.7% (61/150) of the placebo group stated they would use the placebo spray in the future.

**CONCLUSIONS AND IMPLICATIONS:** Vapocoolant spray significantly decreased peripheral intravenous cannulation pain in adults versus placebo spray and was well tolerated with minor adverse effects that resolved quickly. There were no significant differences in vital signs and no visible skin changes documented by photographs taken within 5-10min postspray/PIV.

Reference:



Mace, S.E. (2017) Prospective, double blind, randomized, controlled trial comparing vapocoolant spray versus placebo spray in adults undergoing intravenous cannulation. Scandinavian Journal of Pain. July 10th. .

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