TITLE: Topical Skin Refrigerant Sprays to Support Pain Management during Minor Procedures: Clinical Effectiveness, Safety, and Guidelines

DATE: 29 August 2011

RESEARCH QUESTIONS

1. What is the clinical effectiveness of topical skin refrigerant sprays that do not contain ethyl chloride to support pain management during minor outpatient procedures?

2. What is the clinical evidence for the safety of topical skin refrigerant sprays to support pain management during minor outpatient procedures?

3. What are the evidence-based guidelines regarding the use of topical skin refrigerant sprays to support pain management during minor outpatient procedures?

KEY MESSAGE

Evidence suggests that non-ethyl chloride vapocoolant sprays are safe and effective for reducing pain during intravenous cannulation, but evidence is mixed regarding the effectiveness of these sprays for pain reduction during immunization.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2010, Issue 8), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2001 and August 15, 2011. Internet links were provided, where available.
The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials (RCTs), non-randomized studies, and evidence-based guidelines.

The literature search identified one systematic review, seven RCTs, one non-randomized study, and five evidence-based guidelines regarding topical skin refrigerant sprays to support pain management during minor outpatient procedures. No health technology assessments were identified. Additional information is provided in the appendix.

OVERALL SUMMARY OF FINDINGS

A systematic review¹ and two RCTs⁴,⁸ addressed the use of non-ethyl chloride vapocoolants for reducing pain during immunization. The systematic review¹ found insufficient evidence of pain reduction with the use of Fluori-Methane spray for adult immunization. An RCT⁸ found Fluori-Methane effective when used prior to immunization of adult patients in a travel clinic. The second RCT⁴ found a non-ethyl chloride vapocoolant spray to be as effective for pain relief as lidocaine or tactile stimulation during vaccination of adults.

One RCT² found that the use of an alkane vapocoolant spray for reducing pain during digital nerve block for ingrown nail surgery was not effective. Three RCTs³,⁵,⁷ investigated use of the spray during intravenous cannulation. All three studies found that non-ethyl chloride vapocoolant spray was safe and effective for reducing pain in adults³,⁵ and children⁷ undergoing this procedure.

One RCT⁶ and one non-randomized study⁹ evaluated the safety of vapocoolant sprays. The RCT⁶ found the vapocoolant spray (ingredients not specified) safe for patients receiving botulinum toxin type A treatments for glabellar indications. The non-randomized study⁹ found that ethyl chloride spray plus frozen ice packs were safe for use in patients receiving botulinum toxin injections of the hands and feet.

One guideline¹⁰ recommended the use of a vapocoolant spray prior to immunization of infants and children. Two other guidelines,¹²,¹³ however, found insufficient evidence for recommending routine use of a vapocoolant spray for this population and procedure. One guideline¹¹ found weak evidence that ethyl chloride vapocoolant spray reduced pain during intravenous catheterization of pediatric patients, but stronger evidence for the use of PainEase spray in the same patient population; guideline authors graded the evidence, based on a grading scheme. A guideline regarding acute pain management in older adults¹⁴ stated that vapocoolant sprays may be useful for this population.

To summarize, evidence suggests that non-ethyl chloride vapocoolant sprays are safe and effective for reducing pain during intravenous cannulation, but evidence was mixed regarding their effectiveness for pain reduction during immunization.
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses


Randomized Controlled Trials


Non-Randomized Studies


Guidelines and Recommendations


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APPENDIX – FURTHER INFORMATION:

Systematic Reviews and Meta-analyses (type of refrigerant spray not specified)


Randomized Controlled Trials (type of refrigerant spray not specified)


Non-Randomized Studies (type of refrigerant spray not specified)