

The Pediatric Population and EMLA Cream

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The Pediatric Population and EMLA Cream

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Background

- Pediatric patient intravenous (IV) insertion with pain control to reduce stress and anxiety for the patient during hospitalization
- Needs to be a systematic approach by all healthcare workers when pediatric patient enters hospital and requires IV insertion
- May enhance patient and family satisfaction of care with reduction of pain
- EMLA Cream is a medication, requires physician order

PICO QUESTION

- In pediatric patients under the age of 14, does a doctor's order for the use of EMLA cream for IV insertions compared to no order increase nursing compliance in the use of EMLA cream prior to IV insertion?
- P - Pediatric patients requiring IV access
- I - Part of the physician order; evidence that EMLA works
- C - No physician order
- O - Compliance of RNs applying EMLA prior to IV insertion (by education and experience)

TRIGGER?

- Knowledge v. Problem
 - Problem trigger: Utilization of EMLA cream for IV insertions.
 - Knowledge trigger: Education and knowledge of staff on effectiveness of EMLA cream and requirement of physician order for application of EMLA cream

EVIDENCE

- Search Engines Utilized: CINAHL, Medline, Google Scholar
- Key Words: EMLA cream, pediatrics, IV insertion, venipuncture, pain management, pain control

EVIDENCE

STUDY (Author, Study Name, Journal, Year)	METHODS	SETTING/ POPULATION	INTERVENTION	OUTCOME MEASURES	FINDINGS
Baxter, A., Ewing, P., Young, G., Ware, A., Evans, N., and Manworren, R. "EMLA Application Exceeding Two hours improves Pediatric Emergency Department Venipuncture Success" Advanced Emergency Nursing Journal, 2013	Randomized nonblinded study involving a convenience sample of children up to age 18. Triage nurses estimated children who had a 50% likelihood of needing a venipuncture based on their clinical judgment and those charts were flagged with an orange data sheet.	Urban free standing children's hospital with an ED volume of greater than 100,000 pediatric visits per year.	The control group had no intervention placed as opposed to a placebo cream. Days of the week were chosen by ED volume. Nurses then chose two sites they felt would be successful for IV insertion and applied EMLA and occlusive dressing in triage.	After the IV had been placed, children's pain score was documented as well as a survey by the caretaker on how satisfied they were with the staff's concern for their child's pain. Venipuncture success was identified as achieving the blood draw or IV with one needle and in one attempt.	Of the recorded 154 venipuncture attempts, 72% were achieved successfully in one attempt. By analysis in this article, success in the EMLA group was 78% compared to 67% in those without EMLA. The median duration for the EMLA application was 130 minutes.
Zempsky, W. "Pharmacologic Approaches for Reducing Venous Access Pain in Children" Official Journal of the American Academy of Pediatrics, 2014	An overview of various trials utilizing EMLA cream as well as other methods for pain reduction. (A meta-analysis and a randomized trial)	This article explains and overview of different experiments.	1. The use of EMLA cream versus the use of a placebo cream 2. The amount of EMLA cream utilized, 2.0 ml versus 0.5 ml	Pain relief in the children receiving the EMLA cream	1. This study showed that 85% of patients receiving EMLA exhibited a significant analgesic benefit 2. This study found that the thicker layer of EMLA proved to be more effective in the reduction of pain.
Papa, A., and Zempsky, W. "Nurse Perceptions of the Impact of Pediatric Peripheral Venous Access Pain on Nurse and Patient Satisfaction" Advanced Emergency Nursing Journal, 2010	An electronic survey of 19 questions was sent to members of 3 nursing societies. The societies included Emergency Nurses Association, The Infusion Nurses Society, and the Society of Pediatric Nurses. The members received an email invitation to participate, and the survey was open for 32 days.	Electronically based, only included members of the three societies listed. A total of 2,187 nurses completed the surveys.	No intervention included	A 5 point Likert scale was used, ranging from 1 (complete disagreement) to 5 (complete agreement). ANOVA analysis used on results.	Nurses stated that nonpharmacological techniques are not as effective for pain management. They said pharmacological techniques are much more effective but are utilized less often because they are associated with a slow onset of action, vasoconstriction, the need for physician authorization, and treatment delays. 92% of nurses stated that fast acting topical anesthetics would benefit pediatric patients and families.

EVIDENCE

- EMLA cream is a topical local anesthetic comprised of Lidocaine and Prilocaine which provides analgesic properties to the dermal and epidermal layers of the skin (Zempsky, 2014).
- EMLA cream is proven to have analgesic properties and limited the pain felt in the pediatric population when utilized for a minimum of 1 hour prior to IV insertion (Baxter, et al. 2013).
- In this study, 72% of venipuncture's were achieved in one attempt with the use of EMLA cream prior to insertion (Baxter, et al. 2013).
- A significant analgesic benefit was seen in the pediatric population when EMLA cream was applied as opposed to not used at all (Zempsky, 2014).
- In the study by Papa, A. and Zempsky, W. (2014), nurses stated that pharmacological techniques for reduction of pain are more effective than nonpharmacological methods. However, they also stated they are used less frequently due to the time associated with the onset of the analgesic properties.

Current Practice at LVHN

- LVHN has a current policy for the application of EMLA cream in the Pediatric/Neonatal Patient Care Manual.
- The policy states the maximum dose of EMLA cream based on the child's weight, as well as the absorption time of one hour.
- The policy states that a written order must be obtained from a physician prior to the application of the cream.

IMPLEMENTATION

1. Process Indicators and Outcomes

- Indicators - HCAPS scores, patient reaction of invasive procedure
- Outcome - Patient pain reduction, minimal attempts for IV insertion

2. Baseline Data

- Pre-survey to nursing staff on 4B and 4C on EMLA cream usage, benefits/deterrents

3. Design (EBP) Guideline(s)/Process

- PHASE 1: Background research on effectiveness of EMLA cream and its utilization. Creation of survey for pediatric nurses on 4B and 4C
- PHASE 2: Collection of data from completed surveys. Editing current EMLA cream policy in the Pediatric Patient Care Manual. Gaining support from staff for use of EMLA cream.
- PHASE 3: Development of TLC education for health care staff. Meeting with the Pediatric Performance Committee and discussing project. Altering order set for IV insertions to allow use of EMLA as standing order.

4. Implemented EBP on Pilot Units

- EMLA cream as a physician's standing order has not yet been implemented
- Pilot Units would include Pediatric Units 4B and 4C; potentially Pediatric ICU and Children's Emergency Department

5. Evaluation (Post data) of Process & Outcomes

- Post survey to nursing staff on 4B and 4C on EMLA cream usage; HCAPS score for pain management

6. Modifications to the Practice Guideline

- Update current EMLA cream policy and procedure @ LVHN to include EMLA cream as physician standing order prior to intravenous insertion

7. Network Implementation

- Practice change for physicians and nursing staff; standing order and increased usage

Practice Change

- Incorporating a standing physician order for EMLA cream whenever any IV insertion order is placed.
- Education to all nursing staff regarding the correct timing and application of the EMLA cream to improve its analgesic properties.

RESULTS

- There is a lack of education in the nursing population regarding the effectiveness that EMLA cream has on the reduction of pain from invasive procedure.
- Some side effects exist that may inhibit the effectiveness of EMLA cream in reduction of pain. For example, one side effect is vasoconstriction, which may lead to multiple attempts for IV insertion.
- Based on a survey distributed to the nursing staff on the pediatric floor at LVHN, nurses would be more likely to utilize EMLA cream if a standing order from the physician was present.

Next Steps

- Creating education for nursing staff and physicians on benefits of standing order for EMLA cream
- Monitoring compliance of the usage of EMLA cream prior to intravenous insertion

Implications for LVHN

- Increased patient and family satisfaction during intravenous insertion
- Decreased pain during procedure for venipuncture
- Decreased puncture attempts
- Promotion of patient cooperation during hospitalization

Strategic Dissemination of Results

- Use of TLC for healthcare staff education
- Discussion of use of EMLA cream during staff meetings
- Educational bulletin on Pediatric Unit

Lessons Learned

- Nursing staff requires additional education on the benefits of EMLA cream usage
- Physician standing order of EMLA cream may increase usage
- Time requirements for EMLA application is major deterrent for its use; however, benefits outweigh time factor
- Patient and family expectation for pain management need to be top priority

References

- Baxter, A., Ewing, P., Young, G., Ware, A., Evans, N., and Manworren, R. “EMLA Application Exceeding Two hours improves Pediatric Emergency Department Venipuncture Success” *Advanced Emergency Nursing Journal*, 2013
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Make It Happen

- Questions/Comments

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