



**TITLE: Use of Lidocaine on Adults with Open Wounds: A Review of the Safety**

**DATE:** 25 June 2009

**CONTEXT AND POLICY ISSUES:**

Lidocaine can be used as a local anesthetic and is available in a variety of forms including jelly, cream, patch, and liquid.<sup>1</sup> Lidocaine jelly can be used topically for a variety of indications including cuts and abrasions of the skin.<sup>1</sup> Lidocaine jelly can be used to numb the skin to prevent or minimize pain during a procedure like suturing as well as to relieve pain from chronic conditions or skin irritations.<sup>2</sup>

In some jurisdictions, health care staff apply lidocaine to open wounds in clinics and in patients' homes. The safety of this practice has been questioned, and this report will review the evidence for the safety of using lidocaine jelly in open wounds.

**RESEARCH QUESTIONS:**

1. What is the evidence for the safety of using lidocaine jelly on adults with open wounds?
2. What is the evidence for the safety of using lidocaine 1% liquid mixed with saline for vacuum assisted closure for wounds?

**METHODS:**

A limited literature search was conducted on key health technology assessment resources, including Medline, Embase (Ovid platform), and CINAHL. The Cochrane Library (Issue 2, 2009), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI, EuroScan, international health technology agencies, and a focused Internet search. The search was limited to English language articles published between 2004 and June, 2009. No filters were applied to limit the retrieval by study type.

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

For the first research question regarding lidocaine jelly and open wounds, no HTAs, systematic reviews, meta-analyses, RCTs, controlled clinical trials, or observational studies were identified. Two advisories<sup>3,4</sup> and one guideline<sup>5</sup> were identified.

For the second question regarding lidocaine liquid and vacuum assisted closure for wounds, no HTAs, systematic reviews, meta-analyses, RCTs, controlled clinical trials, or observational studies were identified. One guideline<sup>6</sup> was identified that mentioned safety of lidocaine liquid mixed with saline for vacuum assisted closure for wounds. One Canadian guideline concerning vacuum assisted closure for wounds was retrieved but was outside the search parameters as it was published in 2003. It can be found in the Appendix.

### **SUMMARY OF FINDINGS:**

No HTAs, systematic reviews, meta-analyses, RCTs, controlled clinical trials, or observational studies were identified.

#### **Advisories**

In 2009, the US Food and Drug Administration<sup>3</sup> issued a letter regarding the potential harm associated with improper use of topical anesthetics such as lidocaine gel in patients undergoing mammography. The reported adverse events were a result of excessive absorption of the anesthetic into the blood stream. The adverse events noted were death and life-threatening events like breathing difficulties, coma, seizures, and irregular heartbeat. Four examples of improper use were provided: applying too much of the anesthetic, applying to a large area of skin, applying to irritated or broken skin, applying a wrap or heating pad to the area covered with the anesthetic.

In 2006, Health Canada endorsed safety information provided by AstraZeneca that stated Xylocaine 2% jelly in single plastic syringes (10 mL) should not be given to patients for use in the home.<sup>4</sup> This was because of plastic fragments were entering into the jelly from improper syringe opening. There was no mention of open wound care.

#### **Guidelines and recommendations**

Health Canada issued clinical practice guidelines on skin wounds.<sup>5</sup> For nurses suturing wounds, the most commonly used local anesthetic was lidocaine (Xylocaine) and it was suggested that a first choice anesthetic for suturing should be lidocaine 1% without epinephrine. It was stated that lidocaine with epinephrine should never be used on the ears, nose, fingers, toes, or penis. There was no information specific to using lidocaine for open wounds outside of the hospital. Neither the methodology of the guidelines nor the evidence supporting the guidelines was reported.

A manufacturer published recommendations<sup>6</sup> on the use vacuum assisted closure for wounds (specifically, the Vacuum Assisted Closure Therapy System). The use of 1% lidocaine injectable solution was mentioned throughout the guideline as an option for relieving pain or discomfort in patients. It was stated that contraindications for use include presence of anticoagulation therapy

or infections, hepatic disease, and cardiovascular disease. It was also stated that toxic absorption levels can occur and can result in cardiac electrocardiogram changes. The authors did not report the methods or evidence considered when preparing the recommendations.

### **Limitations**

No high quality, recent evidence exists for safety of using topical lidocaine jelly on adults with open wounds or for the safety of using lidocaine 1% liquid mixed with saline for vacuum assisted wound closure.

Most of the studies identified in the literature search on lidocaine were about its use in pediatrics in the hospital, its use in combination with epinephrine or epinephrine and tetracaine for various in-hospital procedures, or its use for in-hospital procedures such as intraurethral procedures.

### **CONCLUSIONS AND IMPLICATIONS FOR DECISION OR POLICY MAKING:**

One advisory stated that in association with mammography preparation, lidocaine should not be applied to broken skin. A guideline suggested that lidocaine 1% should be the first choice for nurses when suturing wounds.

One guideline stated that 1% lidocaine injectable solution can be an option for relieving pain or discomfort in patients undergoing vacuum assisted closure for wounds but that there are contraindications and possible safety issues resulting from toxic absorption levels.

While health care staff may be applying lidocaine jelly to open wounds, no evidence for this practice was identified in this literature search. This lack of information should be considered when determining whether to use lidocaine in open wounds for patients in the community.

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**APPENDIX 1: Additional Information**

One Canadian guideline was identified regarding the use of lidocaine 1% liquid mixed with saline down the tube of a wound vacuum assisted closure. However, it is outside of the search limits and does not focus on safety.<sup>7</sup>