

**FAST FACTS AND CONCEPTS #148**  
**THE LIDOCAINE PATCH****Drew A Rosielle MD**

**Background** The Lidocaine Patch 5% is a topical analgesic developed to treat peripherally generated neuropathic pain. It is approved in the US for treating post-herpetic neuralgia (PHN). This *Fast Fact* reviews its mechanism of action, research data, and dosage information.

**Mechanism of Action** The lidocaine patch is believed to provide analgesia by reducing aberrant firing of sodium channels on damaged pain fibers directly under the patch. Less than 5% of the lidocaine is absorbed, an insufficient dose to cause systemic effects or local anesthesia (patients do not feel numb under the patch) (1,2). It was initially expected that only superficial pain qualities would be affected by the patch; however there is evidence that non-superficial qualities of pain (e.g. “dull” or “deep” pain) are also diminished by the patch (3,4). Nociceptive pain generation (such as sensitivity to pinprick, or hot or cold painful stimuli) is not affected. Tachyphylaxis has not been formally investigated; case reports have indicated some individuals have used the patch successfully for over a decade.

**Research Data** Most of the research using the lidocaine patch, and all of the randomized, placebo-controlled trials, have been in neuropathic pain syndromes. It has shown modest (10-20 mm decrease in pain on the 100 mm visual analog scale) but significant efficacy in PHN in randomized, placebo-controlled trials (1). Several controlled, blinded studies evaluating the efficacy of the patch for acute pain syndromes (surgical/incisional pain, acute rib fractures) have not shown the patch to be superior to placebo for these syndromes (5,6,7). Due to its ease of use and lack of toxicity or drug interactions, it is being used much more widely than PHN. Multiple case-reports, open-label studies, and unpublished anecdotal reports have found the patch efficacious for a range of neuropathic conditions (e.g. diabetic neuropathy, post-surgical neuralgia), chronic low back pain, osteoarthritis, bony metastases, vertebral compression fractures, and on open decubitus ulcer beds (8,9). **Note:** this latter practice is directly warned against by the manufacturer and there are no published data as to the patch’s safety when used on open wounds. Great caution is necessary in interpreting results of non-blinded, non-controlled clinical reports due to the high likelihood of a placebo effect (10).

**Administration/Toxicity** The lidocaine patch comes as a 10x14 cm adhesive patch containing 700 mg of lidocaine. A box of 30 patches costs approximately \$300 USD (priced August 2015 at [www.drugs.com](http://www.drugs.com)). One to three patches, or only a portion of a patch, can be placed directly over painful areas. Due to concerns about systemic lidocaine toxicity, up to a maximum of 3 patches applied simultaneously for 12 hours a day has been approved. Onset of analgesia is within a few hours and patients should be able to determine whether the patch is helpful within a week. Some patients find that pain worsens when the patch is off for 12 hours or if it is left on for more than 18 hours, therefore extended dosing has been investigated. Several pharmacokinetic studies have shown that systemic lidocaine levels remain well within the safe range with doses of up to 4 patches on for 24 hours (11). Adverse reactions are rare, mild, and mostly topical (rash). The patch is contraindicated in advanced liver failure due to decreased clearance of lidocaine.

**Summary** The lidocaine patch 5% is an expensive, safe, and modestly effective topical analgesic for post-herpetic neuralgia. It has not been proven to be effective for other pain syndromes, and clinicians should strongly consider reports of its efficacy to be related to placebo mechanisms.

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