Workers' Comp

Ask The Pharmacist: Topical vs. Systemic Pain Medication

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What are the advantages and limitations of topical vs. systemic pain medications?

Managing chronic pain with medications can be difficult for various reasons. Pain experiences and treatment effectiveness may differ among individuals and caregivers. There are many available analgesic (pain-relieving) medications with wide ranging indications for use, differing safety and efficacy profiles, a fast-changing regulatory environment, and overlapping disease conditions that contribute to the challenge of delivering safe and effective relief for those with chronic pain conditions. According to a pain study conducted in 2016 among adults in the United States, an estimated 20.4% (50 million) suffer with chronic pain and 8% (19.6 million) have high-impact chronic pain which frequently limits life or work activities.

Oral medications are a longstanding standard of care for the management of pain, but they also carry serious risks associated with “whole body” (systemic) exposure to drugs administered by this route. For example, Acetaminophen, nonsteroidal anti-inflammatory drugs (NSAIDs), and opioids all have risks when administered orally that are serious and well documented. On the promise of delivering equal or greater efficacy and reducing the risk of adverse events, alternate routes of drug delivery and formulations have been developed.

Topical administration of medication offers an alternative to oral drugs for a smaller number of approved uses. They are locally applied to an affected body area or joint on the skin surface and may be freer of side effects due to their limited distribution in the body.

The effectiveness of a topical medication depends on the penetration of the active ingredient through the dermal barrier. A variety of formulations for application to the surface of the skin or a mucus membrane are available. Prescription and over-the-counter (OTC) versions of creams, lotions, ointments, gels, suspensions, foams, powders and aerosols offer differences in the extent of dermal occlusion (penetration of the active ingredient) and cosmetic acceptability. Other patient and product factors may influence the amount of active ingredient

delivered across the skin, including skin thickness, skin barrier status, occlusion, active ingredient molecule size, fat solubility and concentration in the preparation.

Active ingredients commonly incorporated in topical products include local anesthetics (e.g., lidocaine), NSAIDs (e.g., diclofenac), and counterirritants (e.g., capsaicin, menthol, camphor, methyl salicylate and others). Some topicals incorporate carrier molecules like dimethylsulfoxide (DMSO), which increase skin penetration and resulting tissue concentrations.

In general, the advantages of topical analgesics might include:

- A lower risk of systemic adverse events, side effects and drug interactions
- A lower dose of active ingredient may be used to achieve a local effect
- Reduced potential for disruption of gut flora or function
- Ease of administration in pill averse, dysphagic, very elderly or young patients

The disadvantages would be:

- Potential for chemical or allergic irritation (contact dermatitis)
- Insufficient or variable penetration of active ingredient at affected area
- Systemic absorption and related side effects
- Messy, time consuming or inconvenient to apply

The Official Disability Guidelines (ODG) and other expert pain treatment guidelines recognize the appropriate use of some topical analgesics as an option in pain management, based on the targeted condition, body site, available evidence for effectiveness and duration of use. The cost of custom compounded or private-label topical products can be significantly greater than similar, competing OTC, or prescription topicals, and are the subject of regular formulary review and Price Opportunist List inclusion along with Smart Prior Authorization alerts and messaging for program participating clients.

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