



Carel's Pharmacy & Compounding Center

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WOUNDS

A wound is a break in the skin (the outer layer of skin is called the epidermis). Wounds are usually caused by pressure, cuts or scrapes. Different kinds of wounds may be treated differently from one another, depending upon how they happened and how serious they are.

Healing is a response to the injury that sets into motion a sequence of events. With the exception of bone, all tissues heal with some scarring. The object of proper care is to minimize the possibility of infection and scarring.

There are basically 4 phases to the healing process:

- **Inflammatory phase:** The inflammatory phase begins with the injury itself. Here you have bleeding, immediate narrowing of the blood vessels, clot formation, and release of various chemical substances into the wound that will begin the healing process. Specialized cells clear the wound of debris over the course of several days.
- **Proliferative phase:** Next is the proliferative phase in which a matrix or latticework of cells forms. On this matrix, new skin cells and blood vessels will form. It is the new small blood vessels (known as capillaries) that give a healing wound its pink or purple-red appearance. These new blood vessels will supply the rebuilding cells with oxygen and nutrients to sustain the growth of the new cells and support the production of proteins (primarily collagen). The collagen acts as the framework upon which the new tissues build. Collagen is the dominant substance in the final scar.
- **Remodeling phase:** This begins after 2-3 weeks. The framework (collagen) becomes more organized making the tissue stronger. The blood vessel density becomes less, and the wound begins to lose its pinkish color. Over the course of 6 months, the area increases in strength, eventually reaching 70% of the strength of uninjured skin.
- **Epithelialization:** This is the process of laying down new skin, or epithelial, cells. The skin forms a protective barrier between the outer environment and the body. Its primary purpose is to protect against excessive water loss and bacteria. Reconstruction of this layer begins within a few hours of the injury and is complete within 24-48 hours in a clean, sutured (stitched) wound. Open wounds may take 7-10 days because the inflammatory process is prolonged, which contributes to scarring. Scarring occurs when the injury extends beyond the deep layer of the skin (into the dermis).

TREATMENT OF WOUNDS

There are many different types of wound treatments available including oral and topical treatments that are anti-infective, reduce odor or pain in the wound, or speed the wound healing process. Topical wound treatment is the preferred method by many providers due to the ability to create custom combinations based on the type and severity of the wound. Using topical formulations for treatment has the advantage that adverse effects associated with systemic medications or potential drug-drug interactions can largely be avoided.

This month's featured compounds are **Misoprostol 0.0024%/ Phenytoin 5%/Gentamicin 0.2%/Tetracaine 4% Topical Gel** and **Nifedipine 6% Transdermal Gel**.

Misoprostol 0.0024%/ Phenytoin 5%/Gentamicin 0.2%/Tetracaine 4% Topical Gel is a prescription compound treatment for wounds. The combination of ingredients work together to promote healing of the wound. Misoprostol is a protective prostaglandin analogue used to accelerate the healing rate of the wound by increasing regranulation of the ulcer bed. Phenytoin helps to promote proliferation of the wound tissue by stimulating collagen synthesis. Gentamicin is an anti-bacterial used to reduce infection in the wound. Tetracaine is a local anesthetic used to reduce wound pain. Misoprostol 0.0024%/ Phenytoin 5%/Gentamicin 0.2%/ Tetracaine 4% Topical Gel is applied each time of dressing change after debriding and flushing the wound.

Nifedipine 6% Transdermal Gel is a prescription compound for wound treatment. Nifedipine increases blood flow and vascularization of the treated area. Nifedipine 6% Transdermal Gel is applied each time of dressing change after debriding and flushing the wound.

Please visit our website at www.carelspharmacy.com If you have any questions regarding these therapies or any other medication related problems, please call our specially trained compounding pharmacist and staff at (580) 355-4540.