



PHAR:8251 Integrated Pharmacotherapy: Dermatology

Part 1 – Assessment and Care of Burns in the Community

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Learning Objectives

- ❁ **Understand the pathophysiology of burns and resulting changes.**
- ❁ **Know how to triage a patient who comes into your pharmacy with a burn.**
- ❁ **Discuss appropriate over-the-counter treatments of minor burns.**



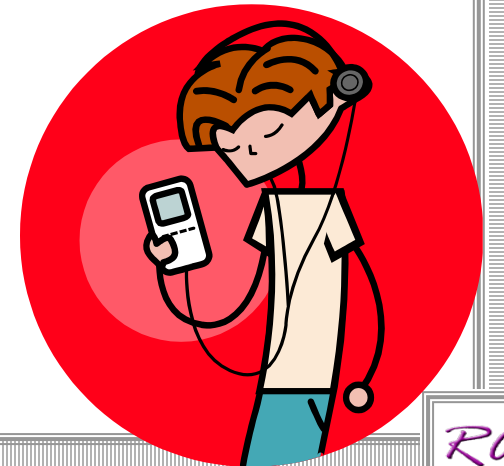
Readings

- ❁ **Required:** Chapter 41, Minor Burns, Sunburns and Wounds in the *Handbook of Nonprescription Drugs*, 19th edition available from: <https://pharmacylibrary-com.proxy.lib.uiowa.edu/doi/full/10.21019/9781582122656.ch41>
- ❁ **Recommended Resource:**
 - * ISBI Practice Guidelines Committee. ISBI Practice Guidelines for Burn Care. Burns. 2016 Aug;42(5):953-1021. doi: 10.1016/j.burns.2016.05.013. PubMed PMID: 27542292.
 - * ISBI Practice Guidelines Committee. ISBI Practice Guidelines for Burn Care, Part 2. Burns. 2018 Nov;44(7):1617-1706. doi: 10.1016/j.burns.2018.09.012. Epub 2018 Oct 19. PubMed PMID: 30343831.
- ❁ **Suggested: (Powerpoint examples of burn prevention and treatment.)**
 - * <http://ameriburn.org/quality-care/disaster-response/burn-care-and-prevention/>
 - * <http://ameriburn.org/wp-content/uploads/2019/08/first-aid-fact-sheet-2.pdf>
 - * Sponsored by the American Burn Association



Incidence - Burns

- ❁ **Second to MVA in accidental death.**
- ❁ **2/3's Home & 1/3 work place, while traveling or during recreation.**
- ❁ **41% of all burns occur in people under 19 years of age.**
- ❁ **Burns are over twice as common in males, than in females.**



Incidence - Burns

❁ Thermal Injury

✦ Flame

➤ 43% are due to flame/fire injury.

✦ Scald

➤ Scalding (34%) is most common in children under 3 years of age.

✦ Frostbite

❁ Electrical Burns (4%)

❁ Chemical Burns (3%)

Frostbite



Patients at risk

- * Homeless, alcohol or illicit drug consumption, psychiatric illness.



Classification

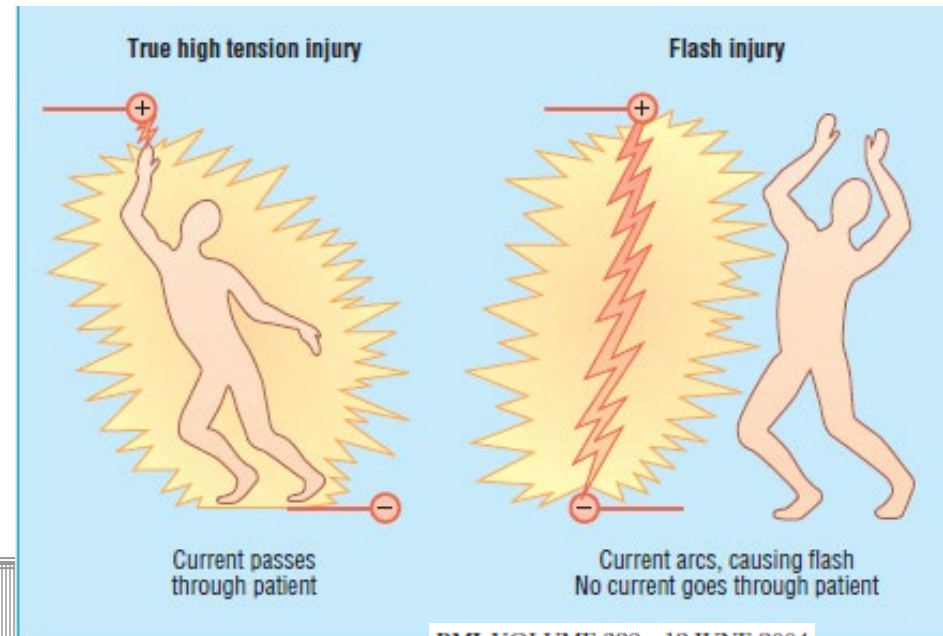
- * **First Degree** –
 - Numb, central white plaque with surrounding edema.
- * **Second Degree**
 - Blisters form with surrounding edema and erythema.
- * **Third Degree**
 - Hemorrhagic blisters that results in a hard, black eschar about 2 weeks later.
- * **Fourth Degree**
 - Complete necrosis and tissue loss.



Electrical Injury

- ❁ **“True” high tension injury**
 - ❁ 1000 V or greater voltage
 - ❁ Extensive tissue damage
 - ❁ Muscle damage → rhabdomyolysis

- ❁ **Flash injury**
 - ❁ Arc of current from high voltage source
 - ❁ Heat can cause superficial burns to exposed areas
 - ❁ Clothes can catch fire





Chemical Burns

❁ Common offending agents

- ❁ Calcium hydroxide
- ❁ Anhydrous ammonia
- ❁ Hydrofluoric acid
- ❁ Methamphetamine manufacturing
 - Anhydrous ammonia
 - Hydrochloric acid
 - Sodium hydroxide
 - Ethanol, Ethyl ether, Methyl alcohol (HEET)



❁ Initial treatment

- ❁ Decontaminate, thorough history



Triage - Where are burns treated?

❁ **American Burn Association has established criteria.**

❁ **You need to be aware of them.**

❁ **As patients come to you, you need to know:**

- **when you can advise,**
- **help treat OTC, and**
- **when and where you must refer.**





Triage – OTC Treatment

Minor Burns

❁ 1^o Burns





Triage - Outpatient Clinic

Minor Burns

✿ 2° Burns of < 2% BSA

We will talk in a minute about what a second degree burn is and how you can identify it and we will talk about how you can estimate the percent of body surface burned.



Triage - Community Hospital Moderate Burns

- * 2° or 3° Burns of < 10% BSA**
- * Except burns of face, hands, feet, or perineum.**



Triage - Referral Hospital Critical Burns

- ❁ **2° or 3° Burns in over 10% BSA**
- ❁ **Burns of face, hands, feet, over major joints or on the genitalia/perineum**
- ❁ **Electrical Burns including Lightning**
- ❁ **Burns complicated by:**
 - ❁ **Respiratory tract injury**
 - ❁ **Major soft tissue injury or Fractures**
 - ❁ **Social, emotional or long term rehabilitation.**
- ❁ **Hospitals w/o specialized equipment or care for children with burns.**

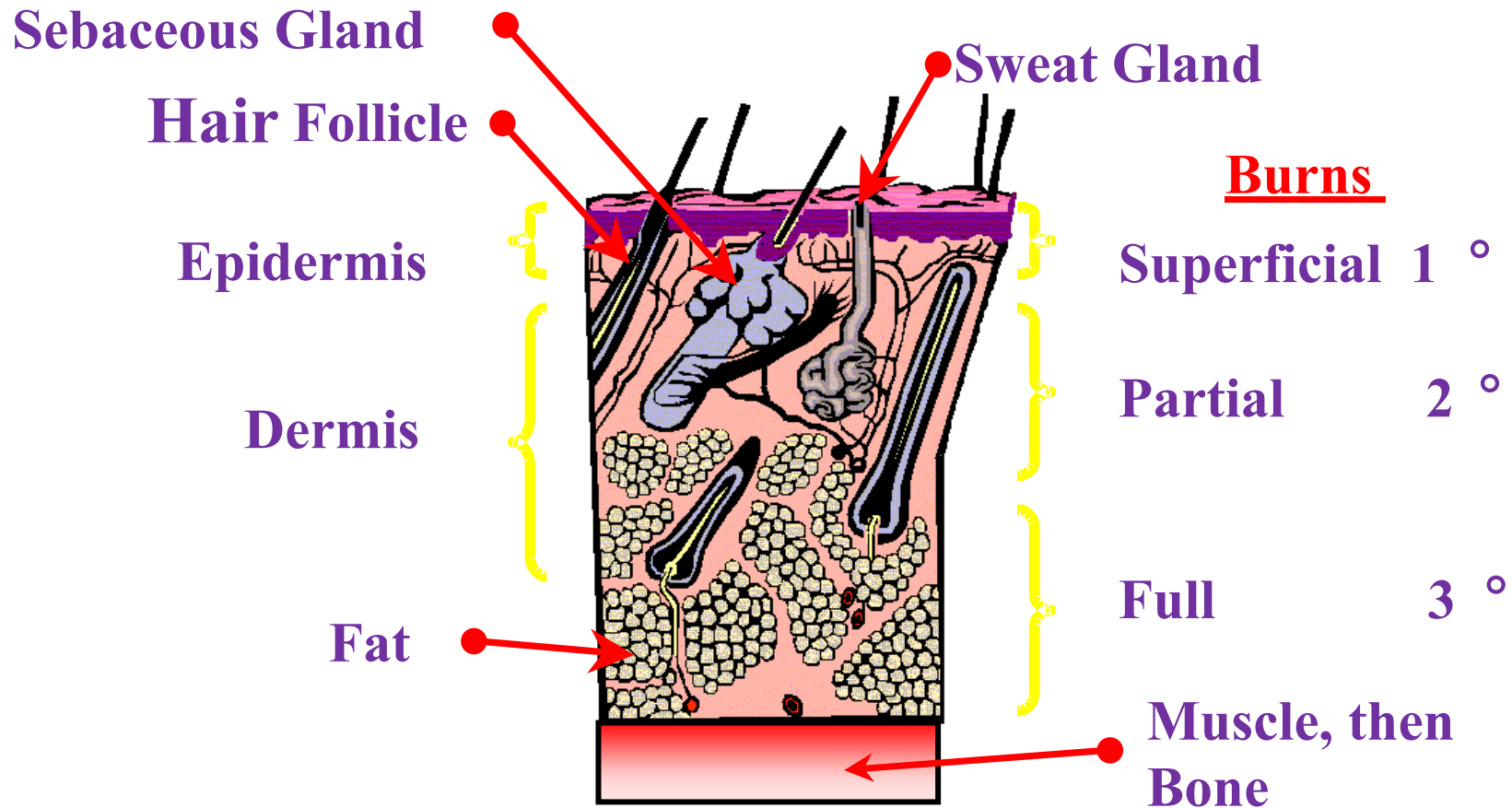


Skin - Function

- ❁ **Provide protection from injury and infection.**
- ❁ **Regulate transcutaneous fluid loss.**
- ❁ **Provide sensation.**
- ❁ **Regulate body temperature.**

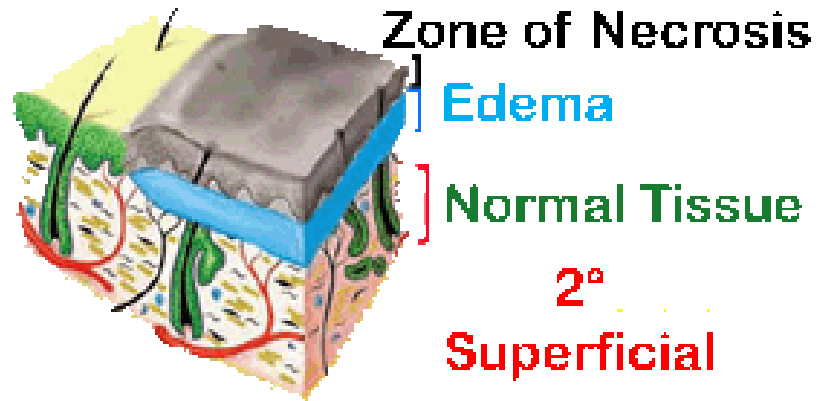


Skin - Structure



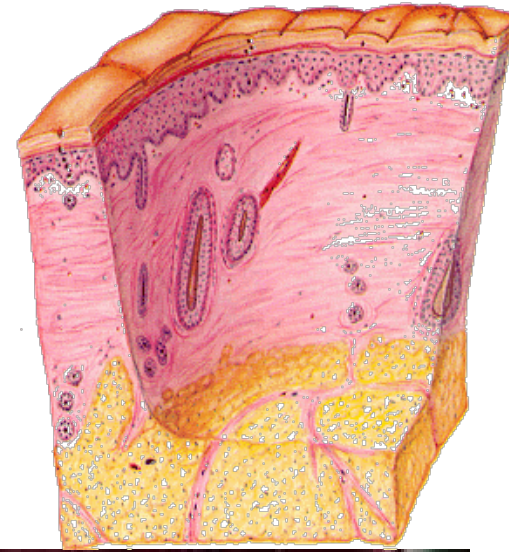


2° Burns



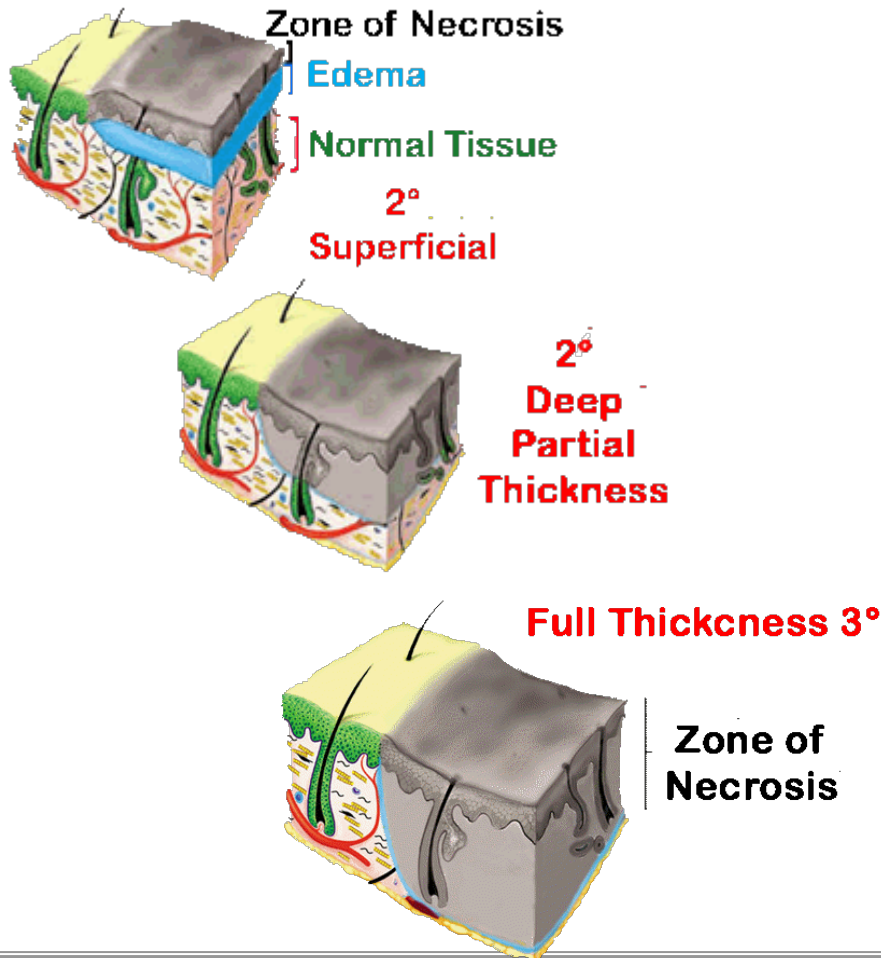


3° Burns





Cutaneous Injury



❁ Partial Thickness

- ❁ Varies in thickness (Superficial or Deep)
- ❁ Epidermal and dermal elements remain viable.

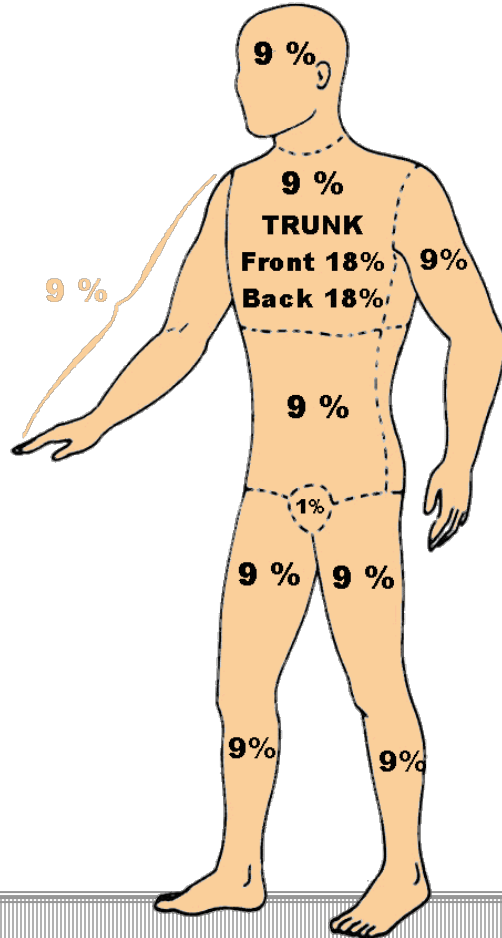
❁ Full Thickness

- ❁ Destruction of epidermal and dermal elements.

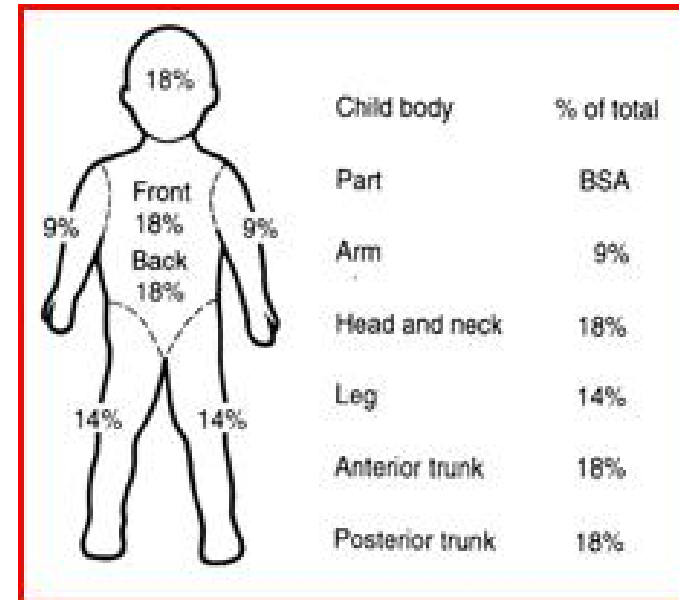


Body Surface Area Burned

Rule of Nines

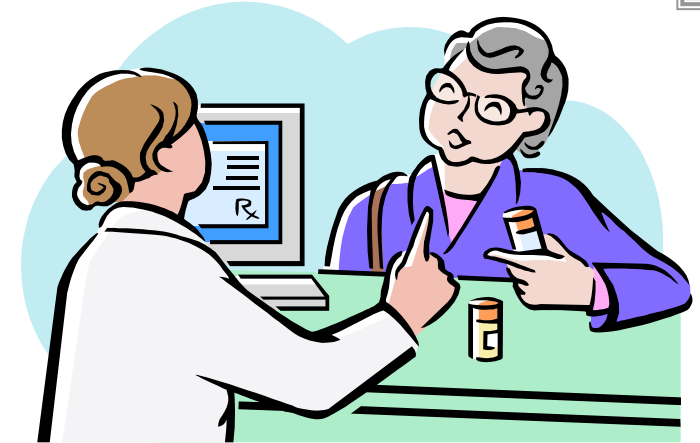


Pediatric





Prevention



❁ **As a pharmacist in your community, you will have a great deal of respect and trust from the community.**

❁ **Consider partnering with you local fire department to promote fire prevention.**





Treatment Goals for Minor Burns

- ❁ **Relieve symptoms.**
- ❁ **Minimize scarring.**
- ❁ **Promote healing by protecting the burn from infection and further trauma.**



First Step - Cleanse

- ❁ **Cleansing the damaged area.**
- ❁ **Selectively using topical antibiotics.**
 - ❁ **Bacitracin/neomycin/polymyxin**
- ❁ **Closing or covering with an appropriate dressing.**
 - ❁ **Gauze Dressing**
 - ❁ **Nonadherent Gauze-Type Dressing**

Next - Symptom Relief

❁ Pain Management

- ❁ Topical Anesthetics

- ❁ Systemic Analgesics

❁ Skin Protectants

- ❁ Moisturizers



Topical Anesthetics

- ❁ **The OTC Handbook (Table 41-3) has a list of possible agents.**
- ❁ **Important Considerations:**
 - ❁ **Relief is short lived: 15-45 minutes.**
 - ❁ **Apply to only small areas.**
 - ❁ **Product concentrations.**
 - ❁ **Hypersensitivities.**
 - ❁ **Delivery vehicle.**



Systemic Analgesics

❁ **Preferred agent: Acetaminophen**

❁ **Adults 325-650 mg Q4H prn**

❁ **Children 10-15 mg/Kg Q4H prn**

❁ **Aspirin & other NSAIDs**

❁ **Effective, but**

❁ **Important precaution (platelet aggregation).**



Skin Protectants

- ❁ **Skin emollients – help the newly forming dermal and epidermal layers of the skin maintain moisture.**
 - ❁ **Vitamin A&D Ointment**
 - ❁ **Vaseline (petrolatum)**
 - ❁ **Lanolin**
 - ❁ **Cocoa butter**
 - ❁ **Aloe (allantoin)**

See Table 41-2



Case Study #1

30 Y.O. WM comes into the pharmacy and wants a salve to treat his hands. While cleaning auto parts with gasoline his cigarette ignited his cleaning rag and both hands were burned. The hands are red, swollen and there are numerous vesiculations. How would you recommend the wounds be treated?



Case Study #1

- ❁ **Have the patient carefully wash the hands (do not scrub them).**
- ❁ **Then wrap the hands in Saran wrap (to provide an occlusive dressing).**
- ❁ **Then refer either directly (or through their local physician) to a burn treatment center (because the burn involves the hands).**

Case Study #2

- ❁ **A farmer was using a cutting torch to cut up some old farm machinery to sell the scrap metal. After cutting through a large section he slipped and the torch went across his left thigh.**
- ❁ **The area affected is a little more than both hands together. He limps into your pharmacy and wants to know what he can use to treat this burn. He says that it doesn't hurt much, but that it looks nasty. Upon inspection you see that there is some blanching around the edges, but most of the area is yellow, does not blanch and is not painful to touch.**
 - ❁ **How would you recommend this wound be treated?**

Case Study #2

- ❁ **Have the patient cover the wound if it is clean. Use an antimicrobial agent if you need to redress the wound.**
- ❁ **Then refer to a local hospital for care because it is a third degree burn (< 10% BSAB) that will likely require debridement and skin grafting because of the depth of the injury.**



Case Study #3

- ❁ **A patient comes into the pharmacy and shows you her forearms and they are bright red and very painful.**
 - ✦ **She thinks she has had an allergic reaction to a cleaning solution. You question her further and she explains that her elderly father just passed away and they spent the day yesterday cleaning his filthy trailer and she used a strong commercial cleaning solution that was at her place of employment.**
 - ✦ **You examine the container and notice that it contains ammonium hydroxide. You also notice that the forearms above the top of where rubber gloves reached were red, slightly swollen, painful, there are numerous small blisters that have formed and the areas blanch when a finger is pressed into the wound.**
- ❁ **How would you assess this wound and what would you recommend?**

Case Study #3

- ✿ **This is a second degree chemical burn, <10% BSAB and doesn't cover any major joints, therefore it could be treated locally.**
- ✿ **Recommend rinsing the wounds with large amounts of water to remove the base that caused the burn if the injury was recent.**

Case Study #3

- ❁ **Keep the skin well moisturized. If there are breaks in the skin, then cover them with OTC triple antibiotic ointment. Also instruct her to watch for signs of infection (advancing redness, fever) and if she sees this or blister formation, to go to her local MD.**

Case Study #4

- ❁ A patient comes into the pharmacy with her 9 year old son. He was playing with bottle rockets and held one too long.
- ❁ He has an area on his right forearm that is smaller than his hand that is bright red, but blanches when you press your finger into the wound and there are no blisters.
 - ❁ How would you recommend this wound be treated?

Case Study #4

- ❁ **This is a first degree burn that is about 1%, so the mother should be able to care for the wound.**
- ❁ **Recommend cleaning the wound with an antiseptic soap. If there are breaks in the skin apply a triple antibiotic ointment and then cover either with gauze or a non-adherent telfa pad. Also instruct her to watch for signs of infection (advancing redness, fever) and if she sees this or blister formation, to go to her local MD.**

Case Study #4

- ❁ **If the child has discomfort recommend acetaminophen tablets or syrup at a dose of 10-15 mg/Kg every four hours if needed.**
- ❁ **As the wound begins to heal in several days encourage the use of skin moisturizers to keep newly healing skin from drying and cracking.**