

# The Great Outdoors!

## Dealing with Mother Nature

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# The Great Outdoors!

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**Speaker Disclosure:** Peter Kreckel has no actual or potential conflicts of interest in relation to this program



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## Accreditation:

Pharmacists- 798-000-09-019-L01-P

Pharmacy Technicians- 798-000-09-019-L01-T

CE Credits: 1.0 Continuing education credit  
or 0.1 CEU for pharmacists/technicians

Target Audience: Pharmacists & Technicians

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**Program Overview:** Have you ever had a customer come in and say: “My kids are outside all summer. We deal with bug bites, bee stings, poison ivy, sunburn — you name it, we seem to get it! Can you tell me any precautions I can take against summer’s most common nuisances? I’d love to know!” With the great outdoors as the backdrop, pharmacists deal with a variety of common challenges: bug bites, bee stings, poison ivy, sunburn — you name it. This program identifies the precautions one can take against summer’s most common nuisances and more importantly, provides options and recommendations for patients when the environment causes harm. .

## Objectives:

- Outline an increased understanding in the identification, treatment, and prevention of the following outdoor maladies: Sunburn treatment & prevention, poison ivy, Lyme disease, insect stings & bug bites, blisters, and dehydration.
- State the composition of a functional outdoor First Aid Kit.
- Describe the role of the Pharmacist's expertise in the education of outdoor enthusiasts.

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# Treatment and Prevention of Outdoor Conditions

- Sunburn Treatment and Prevention
- Poison Ivy
- Lyme Disease
- Insect stings and bug bites
- Dehydration
- Blisters
- Basic First Aid Kit



# The Heat is ON!

## Sunburn Treatment and Prevention

- Skin Protection Factor (SPF) : how the efficacy of a sunscreen is expressed. It is a ratio of the time required to produce minimal erythema with a sunscreen, to the time to produce minimal erythema without a sunscreen. An SPF of 15 will allow a person to remain in the sun without burning 15 times longer, than if the skin was unprotected.
- Minimal Erythema Dose (MED): is the amount of solar radiation to produce minimal skin redness. MED times SPF = Safe Duration of Exposure

# Examples of MED and Exposure time.

The MED is not a standard amount of exposure. It varies from person to person. Dark skinned individuals demonstrate higher MED. Fair skinned individuals have lower MED.

- Example: Steven: MED of approximately 10 minutes. With an SPF of 15 he could remain in the sun 150 minutes (2.5 hours) before erythema occurs.
- Example: Elizabeth: MED of approximately 30 minutes: She could stay out in the sun for 450 minutes (7.5 hours) before erythema.

# Skin Types

(source: FDA, American Academy of Dermatology)

TYPE	HISTORY	EXAMPLES
I	Always burns easily, never tans, extremely sensitive skin	Always burns easily, never tans, extremely sensitive skin
II	Always burns easily, tans minimally, very sensitive skin	Fair-skinned, fair-haired, blue-eyed Caucasians
III	Sometimes burns, tans gradually to light brown, sun-sensitive skin	Average-skinned Caucasians, light-skinned Asians

# Skin Types

(source: FDA, American Academy of Dermatology)

TYPE	HISTORY	EXAMPLES
IV	Burns minimally, always tans to moderate brown, minimally sun-sensitive	Mediterranean-type Caucasians
V	Rarely burns, tans well, sun-insensitive skin	Middle Easterners, some Hispanics, some African-Americans
VI	Middle Easterners, some Hispanics, some African-Americans	African-Americans

# Tips for Sunburn Prevention:

- Avoid long term exposure during peak hours (10am-4pm)
- Apply sunscreen 30 minutes before exposure
- Sunglasses: make sure they are UV protected. With dark glasses , pupil dilates allowing more harmful UV rays to damage retina.

# How do Sunscreens work?

- Chemically: absorb a specific portion of the spectrum thus preventing harmful rays from hitting the skins surface.  
Examples: PABA, Cinnamates, Ethylhexylsalicylates, Benzopheones.
- Most sunscreens contain combinations of 2 or 3 of the classes.
- Physically: provide a physical barrier to UV radiation and scatter or reflect the harmful rays.  
Examples: Zinc oxide, red petrolatum, Titanium dioxide.

# Cover up!!



- DONT FORGET: Hats, long sleeve shirts, and long lightweight pants. A typical summer shirt has an SPF of 5 to 9.
- Baseball caps leave the ears, neck and lower face unprotected.
- Any summer outfit should include sunglasses, to prevent cataracts.



# APPLICATION and GENERAL INFORMATION

- Cover all exposed areas evenly and liberally. Figure 1 oz per adult application in a swim suit.
- Optimally apply 30 minutes (2 hours for PABA) BEFORE sun exposure for penetration and binding.
- Water resistant: the formula retains SPF after 40 minutes of activity in water, sweating or perspiring.
- VERY Water resistant: the formula retains SPF after 80 minutes of activity in water, sweating or perspiring.

# So, what SPF is right???

- An SPF of at least 15 is recommended for most people by the Skin Cancer Foundation. HOWEVER...
- Products with SPF over 30 only block UVB slightly more than those of SPF=30. The higher concentration of chemicals increases potential for adverse effects, such as skin rashes. SPF over 30 are labeled as “SPF 30 plus”. An SPF of 30 blocks 97% of the UVB rays. An SPF of 15 blocks 93% of UVB rays.
- By bumping the SPF from 15 to 30, it may offer an extra margin of safety to consumers who do not apply a sunscreen as frequently as indicated.

# Treatment of Sunburn



- Most sunburn is self treatable. Most are usually first or second degree burns. Use local anesthetics or analgesics. Apply cool compresses; frequent cool baths or showers. Pat skin dry with towel. Do not rub.
- Minor burns can be treated with protectants which reduce dryness of skin, and prevent friction damage.
- No remedy will stop the underlying burn process, or stop the formation of blisters.

# Treatment of Sunburn



- Dermoplast® spray: Benzocaine 20%. Benzocaine 20% is the most effective topical anesthetic, don't use a lower percentage.
- Analgesics: Ibuprofen is the best choice.
- Prostaglandins are most commonly implicated in the delayed erythema reactions that follow within 14-20 hours after exposure and persists for 1 to 3 days.

# Consult a clinician when

- If more than 10% of body surface of a child is sunburned, a physician should be consulted.
- Fever, headache, confusion, nausea, vomiting chills.
- Secondary infection may develop leading to scarring. Infection is hard to treat because dead skin is an excellent medium for microbial growth. Signs of infection include increased pain, swelling, redness drainage or pus from blisters.

# What about Vitamin-D deficiency?

- Effective use of a sunscreen blocks the synthesis of Vitamin-D in the dermis. Middle aged and elderly persons who use sunscreens daily have significantly lower concentrations of 25-Hydroxyvitamin D3.
- However the benefits of using a sunscreen, far outweigh the disadvantages of a decrease in Vitamin-D
- “Easier to treat Vitamin-D deficiency than skin cancer”

# Poison Ivy

- The *Toxicodendron* genus of plants causes more contact dermatitis than all other causes combined. Ten to fifty million Americans develop allergic contact dermatitis to a *Toxicodendron* annually. In one study 10% of all occupational injuries among seasonal farm, workers in PA and NY were due to poison ivy contact.
- Allergic Contact Dermatitis (ACD) has 2 distinct phases:
  - A sensitization phase where a specific hypersensitivity to the allergen is acquired.
  - An elicitation phase during which dermatological response is visible.

# “Leaflets three let them be”



# Pathogenesis of Poison Ivy

- Urushiol (which is an oleoresin (lacquer) ) oozes from the broken leaf and stems. It can be transmitted to the patient by contact with the plant, or pets, tools, gloves, shoes and clothing for months. Washing clothes in regular laundry detergent will decontaminate fabrics. Poison Ivy should NEVER be burned.
- The characteristic wheals and blisters of poison ivy contain serum, and NOT the urushiol. It is not spread by patient to patient contact (unless by the oil itself).

# TREATMENT of POISON IVY

- Avoid the plant. Teach identification to all patients that work and play outside.
- “Leaflets of three let them be”
- Immediately wash hands with hot soapy water when in contact with plants. Remove all clothes, and launder them with regular detergent, and hot water. Scrub all tools, sports equipment, shoes, gloves etc.

# Refer to clinician when--

- Over 25% of body surface area is contaminated
- Limited but disabling involvement (hands, face, periocular, perioral or genitals)
- If patient has history of severe reactions

## Rx :TREATMENT of POISON IVY

- Oral prednisone: 0.5 to 2mg/ kg / day tapered over 14 to 21 day period.
- Sterapred DS-10mg begins with a 60mg dose, and is tapered over 12 days is acceptable.
- Medrol dosepak (6 day therapy) is **not** long enough of duration.

# Topical treatment of poison ivy:

- Oatmeal baths might be soothing but are not of much value.
- Calamine actually hinders treatment and is of minimal value for poison ivy. It will help with the itching. Hydrocortisone 1% OTC is of limited value—use only in mild cases.
- Burows solution: (aluminum acetate): dissolve 1 tablet (Domeboro® tablets or packets) in 1 pint of water, and apply as a wet dressing for 15-30 minutes 3 to 6 times daily. Greatly relieves itching.

# Lyme Disease

- Lyme disease is caused by the bacterium *Borrelia burgdorferi* and is transmitted to humans by the bite of infected blacklegged ticks.
- Typical symptoms include fever, headache, fatigue, and a characteristic skin rash called erythema migrans.

# The characteristic rash-

- The first sign of infection is usually a circular rash called erythema migrans or EM. This rash occurs in approximately 70-80% of infected persons and begins at the site of a tick bite after a delay of 3-30 days.
- A distinctive feature of the rash is that it gradually expands over a period of several days, reaching up to 12 inches (30 cm) across. The center of the rash may clear as it enlarges, resulting in a bull's-eye appearance. It may be warm but is not usually painful. Some patients develop additional EM lesions in other areas of the body

# “Bulls eye rash” –Lyme Disease



# Antibiotic Treatment

- Tick bite- endemic area: if nymph is partially engorged: Doxycycline 100mg (2) tablets daily. 1 dose with food.
- Early erythema migrans:
  - Doxycycline 100mg BID for 14-21 days
  - Amoxil 500mg TID for 14-21 days
  - Cefuroxime (Ceftin) 500mg BID for 14-21 days
  - Erythromycin 250mg QID for 14-21 days

Note: 10 days may be as effective as 20 days.

**Source: Sanford Guide-2008**

# Lyme prevention

- Use of DEET insect repellent
- Wear high socks, long pants and long sleeve lightweight shirts. Best if color is white or very light to spot ticks easier
- Checking for ticks: Check legs and feet frequently. Know how to spot and identify ticks. Nymphal ticks are as small as a poppyseed. Use bright light and magnifying glass. Check each other in hard to see areas, especially folds of skin.
- Pets : use a scheduled tick killing shampoo. Brush pet daily outside the house.

# HELP—I found a tick!



- **REMOVAL:** Removal with tweezers and magnifying glass. Wear gloves place tweezers on head of tick as near skin as possible.
- Pull slowly, steadily and upward. Don't twist, squeeze, jerk or crush tick. Save tick in jar or vial. Wash site of removal with soap and water.
- Do not use matches, petroleum jelly, gasoline, kerosene, nail polish remover.

# Mosquito bites



- lands on and cuts through the skin, then uses its proboscis to enter the cut and locate the blood vessel.
- When it finds a capillary it injects an anticoagulant and antigenic fluid from its saliva. This keeps the blood flowing leading to the itching & swelling that characterizes mosquito bites.

# Insect Repellants

- **DEET** (*N,N*-diethyl-3-methylbenzamide) can be used directly to the skin.
- The FDA advises that insect repellants **NOT** be used on babies - children: under 2 years of age
- The American Academy of Pediatrics Committee on Environmental Health says 10% DEET is safe for infants over 2 months of age.
- 10% DEET provides about 2 hours of protection. Use only once a day.

# Using DEET ages 2 to adult

## Children: age 2 to 12 years

- Products containing 10% or less DEET are recommended by CDC
- Children under age 10 should not apply DEET to themselves.

## Children over age 12, adults and pregnant women

- Products containing up to 50% DEET are appropriate
- Product duration is proportional to concentration.

# For treatment of clothing



- **Permethrin:** is available OTC as a solution for application to clothing.
- Once applied to clothing it remains effective for up to 6 weeks, even after several launderings. Good for clothes that are exposed to tick infested areas.
- Repel Permanone®

# Treatment of bug bites

- For any insect bites (especially bees, wasps and hornets) an icepack reduces itching and swelling.
- Topical hydrocortisone, oral antihistamines, and anesthetics may provide relief.

# Wasp and Hornet stings



Severe reactions to **wasp stings** may need to be treated with:

- Oral antihistamines: Benadryl OTC should be in everyone's outdoor first aid kit.
- Prednisone or other oral steroids
- Epi-Pen 0.3mg for adult use may need to be prescribed. Epinephrine is the drug of choice for the treatment of anaphylaxis.

# Epi-Pen®



- Used after sting and anaphylaxis seems inevitable
- Patients **MUST** be followed up in the Emergency Department
- Expires within 18 months, remind patient to check expiration date
- Patient **MUST** be instructed on its use **BEFORE** the need for use arises.

# Dehydration –signs and symptoms

- Thirst; dry, sticky mouth
- Sleepiness or tiredness
- Decreased urine output — eight hours or more without urination for older children and teens
- Few or no tears when crying
- Muscle weakness
- Headache
- Dizziness or lightheadedness

# Dehydration: signs and symptoms

- Thirst isn't reliable gauge of the body's need for water, especially younger kids and older adults.
- A better gauge is the color of your urine: clear or light-colored urine means you're well hydrated
- Dark yellow usually signals dehydration.
- Pinch up skin on top of hand. Should return, and not stay “pinched up”.

# Dehydration Increases When:

- Vigorous activity – increased sweating
- Climbing to higher altitudes- increase urination and faster breathing, causes water vapor loss and more lost moisture.
- Very young children and older patients are more susceptible
- Chronic disease- diabetes. Upper respiratory infection if patient isn't drinking a lot.



# Dehydration- complications

- Heat exhaustion
- Heat stroke
- Cerebral edema- due to sodium loss and osmosis, causing cells to swell
- Hypovolumic shock
- Renal failure
- Coma and death



# Treatment of Dehydration

- Pediatric Patients: oral hydration solutions (Pedialyte®)
- Emergency oral rehydration solution
  - 1/2 teaspoon salt
  - 1/2 teaspoon baking soda
  - 3 tablespoons sugar
  - 1 liter of safe drinking water.



# Treatment of Dehydration- Teens and Adults

- Drinking frequent sips of cool water
- Avoid caffeine containing beverages
- Sports drinks may be helpful
- Avoid salt tablets
- “Camel up” and carry water supply
- Remove excess clothing. Get to a shady area and begin treatment. Cool compresses.



# Blisters--CAUSES



- Friction caused by rubbing of shoes onto skin.
- Cover “hot spots” with moleskin. Cut to fit.
- New skin will form underneath the affected area and the fluid is simply absorbed.
- Do not puncture a blister unless it is large, painful, or likely to be further irritated. The fluid-filled blister keeps the underlying skin clean, which prevents infection and promotes healing.

# Blisters--TREATMENT

- **Use a sterilized needle (flame til red hot or alcohol)**
- **Use needle to make small hole and gently squeeze out the clear fluid.**
- **Apply a dab of an antibiotic ointment with polymixin B and/or bacitracin to help protect against infection. Avoid neomycin due to allergy.**
- **Do not remove the skin over a broken blister. The new skin underneath needs this protective cover.**
- **Look for signs of infection to develop--pus drainage, red or warm skin surrounding the blister, or red streaks.**

# Blister--PREVENTION

- **Break in new shoes gradually.**
- **Put petroleum jelly or an adhesive bandage on areas that take the rub -- before the blister happens. Duct tape in an emergency.**
- **Wear socks that have heels.**
- **Wear socks that wick away moisture. Polyester, acrylic or wool are low friction choices.**

# Be Prepared! Basic First Aid Kit

## Suggested Contents

- Bar of soap
- 2-inch roller bandage
- 1-inch roller bandage
- 1-inch adhesive
- 3-by-3-inch sterile pads
- Triangular bandage
- Assorted gauze pads
- Adhesive strips
- Clinical oral thermometer
- Scissors
- Tweezers
- Sunburn lotion
- Lip salve
- Poison-ivy lotion
- Small flashlight
- Absorbent cotton
- Water purification tablets (iodine)
- Safety pins
- Needles
- Paper cups
- Foot powder
- Instant ice packs



**Source: Boy Scouts of America**

# Additional First Aid Items

## Oral Medications

- Advil® (ibuprofen)
- Tylenol® (acetaminophen)
- Imodium® (loperamide)
- Benadryl® (diphenhydramine)
  - Anti-histamine (bug bites, wasp stings)
  - Anti-tussive for seasonal allergy
  - Motion sickness
  - Insomnia



# Role of the Pharmacist

**Share your expertise with**

- **Youth Groups**
- **Adult Leaders**

**You are the drug expert,  
share your expertise!**

