

## Wilderness Medicine

**Location:** Kaweah Delta Medical Center/Sierra Nevada Mountains    **Revised** 03/9/23

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**Clerkship Director:**

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**EM Faculty:**

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**PREREQUISITE:** Kaweah Delta Clearance

**DURATION:** 2 weeks

**DATES OFFERED:**

Winter Dates:	2/26/24-3/8/24
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**COURSE OBJECTIVES:**

Wilderness medicine encompasses diagnosis and improvised treatment of patients with routine or exotic illnesses or trauma in an austere environment.

Wilderness medicine also encompasses field triage, assessment, treatment, stabilization, and evacuation.

Wilderness medicine also deals with multiple terrains, environments and seasons. The primary goal of the wilderness medicine rotation is to allow the rotating medical students to effectively identify, evaluate, and manage such emergencies in a resource-limited environment.

**SUPERVISION:**

Dr. Jing Liu

**NUMBER OF STUDENTS:** Maximum of 10 students

**VISITING STUDENTS:** Yes

**ADDITIONAL INFORMATION:** Fee: Additional \$110 to fund cost of campsite and meals in Sierra Nevada Range

Rotating students will receive list of needed equipment for rotation.

**DESCRIPTION:**

**BASIC SCHEDULE FORMAT**

This rotation is 2 weeks long, starting on Monday and ending on Sunday. Daily schedule runs 8am – 4pm, M-F. The first week will be spent in classroom instruction and simulation in the simulation lab. The second week will be spent at a campsite in the Sierra Nevada Mountains. The site and date to be announced by the instructors. The medical students will attend EM conference on Thursday mornings, and will report for simulation during the first week of the rotation. Rotations scheduled during winter months will have an additional focus on cold-weather conditions and snow rescue.

**Wilderness Medicine Overview**

- Understand what Wilderness Medicine does and does not encompass
- Describe the practice of medicine in an austere environment
- Scene awareness and then victim assessment and management
- For further learning: Wilderness Medicine Society, Tulare County Search and Rescue, Community Regional Medical Wilderness Medicine journal club, and other venues

**Trip Preparation and Planning**

- Describe how to prepare for various trips: backpacking, water sports, climbing, snow sports, mountain climbing, and international travel
- Selection of gear and clothing
- Meal planning and preparation
- Build a medical kit – what's important and what's not

## **Environmental illnesses**

### **Cold and heat injuries**

- Identify normal, critically low and high body temperatures
- List common predisposing factors associated with heat and cold disorders
- Describe measures to prevent thermal injuries
- Identify symptoms of hyper and hypothermia and frostbite
- List measures to manage cold and heat injuries

### **Lightening**

- Describe lightening physiology and how it is different from A/C injuries
- Discuss how to avoid lightening exposure
- Discuss immediate life threats of lightning strikes and the treatment
- After effects of lightning strike

### **High Altitude Illnesses**

- Describe the signs and symptoms of high-altitude illnesses
- Describe the physiology and treatments for HACE, HAPE, and HAFE
- Recognize when immediate descent is required
- Describe other modalities for prophylaxis, treatment, and management of altitude illnesses (medications and portable hyperbaric chambers)

## **Traumatic injuries**

### **Triage**

- Describe the key elements of disaster triage
- Understand the basic principles of Mass Casualty Triage (START)
- Apply the principles of disaster triage
- Understand the concept of reverse triage

### **Musculoskeletal**

- Distinguish between unstable and stable musculoskeletal injuries
- Describe treatment of both unstable and stable musculoskeletal injuries
- Describe restoring alignment and splinting techniques for deformed injuries as well as sprained extremities
- Assessment of spinal injuries, immobilization, and transport

### **Head and facial trauma**

- Mechanism and assessment of head trauma
- Describe facial and dental injuries and treatments
- Describe eye injuries and treatments

### **Thorax and abdominal trauma**

- Describe injury patterns encountered in the field: blunt and penetrating
- Describe how to treat pneumothorax in the field
- Describe how to manage blunt and penetrating abdominal trauma

### **Eye**

- Describe how to identify and treat solar keratitis
- Describe how to build makeshift glasses

### **Wounds & Burns**

- State the common etiologies and characteristics of different types of wounds and burns
- Describe the treatment of wounds and burns in an austere environment
- Describe the role of debridement (mechanical) in wound management
- Describe and practice the methods of hemorrhage control

### **Drowning**

- Describe water rescues
- Discuss how to manage the drowned patient and immediate life threats

## **Bites and Stings**

- Learn how to assess possible what wildlife are likely to cause injury in the area that the activity occurs
- Distinguish between a venomous bite versus a nonvenomous bite
- Identify wildlife including snakes, scorpions, animals, insects, marine life, etc.
- Determine when medical assistance is needed for bite or sting
- List the signs and symptoms of anaphylactic shock
- Describe and demonstrate immediate treatment for bites and stings.
- Demonstrate how to remove a tick

## **Poisonous Plants**

- Identify general clinical signs of plant poisoning.
- Identify geographic profiles, toxic characteristics and treatment options for important poisonous plants
- Discuss ways to prevent plant poisoning/ exposures.
- Explain when and how to remove oils
- Explain treatment options for contact dermatitis

## **Orienteering**

- Explain how to use a map and compass
- Take a heading without a map
- Take a bearing with and without a compass
- Use of GPS when in the wilderness (backpacking, off-piste skiing, etc.)
- Discuss how to signal for help

## **Wilderness Food Preparation**

- Discuss the importance and the steps involved in pre-trip planning
- Understanding the nutritional needs for a backpacker or camper under different weather conditions
- Describe the various types of cooking stoves and fuels and what conditions they are best suited for
- State how to store food while camping or backpacking
- Describe restrictions to the use of open fires and safety techniques
- Describe the correct ways of trash and waste disposal
- Discuss the various ways to acquire and treat water for safe drinking

## **Shelter**

- Describe the various styles and attributes of tents, tarps, and hammocks
- Explain the importance of and various styles of sleeping pads and bags.
- Describe how to build a shelter from local materials found in the area

## **Transport, Evacuation and Decision-making**

- List injuries or illnesses need immediate evacuation
- Describe the advantages and disadvantages of different transportation systems
- List the information needed to decide what method of transportation and immediacy of evacuation
- Describe helicopter rescue

## **Search and rescue**

- Define the different search and rescue incidents and their causes
- Identify the types of search and rescue resources that respond to an incident
- Compare the different levels of response to a search and rescue incident
- Recognize what level of training is needed to safely and effectively perform search and rescue operations

## **Global Travel**

- Identify infectious diseases that are common to certain geographical areas (CDC Yellow Book)
- Describe symptoms and characteristics of those diseases
- Describe how to prepare for foreign travel and what to take

- Know what vaccines are available for particular countries
- Describe treatment of infectious disease
- Describe regional hazards of foreign travel (violence, kidnapping, motor vehicle accidents, water availability and safety, etc.)

### **In-flight Emergencies**

- Be familiar with the contents of the standard medical kit found on airplanes
- Recognize the medical legal consequences of providing emergency medical care on a plane
- Confidently evaluate and manage common in-flight emergencies using the available resources
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### **TEACHING METHODS:**

1. Experiential learning: The medical students will learn by performing procedures under appropriate supervision and conditions. New procedures and examination skills from medical students' prior experience will first be observed and reviewed. Guidance and supervision will be provided on subsequent encounters with these skills. This will allow safe learning of new techniques and procedures.
2. Didactics: medical students will continue to attend Emergency medicine conference on Thursdays as well as all scheduled didactics and simulation sessions
3. Selective reading: Medical students will study materials relevant to wilderness medicine during this block.
4. Simulation and practice: The medical students will take part in patient scenarios during teaching sessions. Also, there will be a 3 – 4-day period of camping in which the medical students will learn the techniques of planning, camping, and treatment of emergencies in the wilderness

### **EVALUATION:**

1. Scores a 76% on the written end-of-rotation test and practical skills test

### **\*Selective Attendance and Illness Policy**

In order to insure adequate clinical exposure, no more than 3 days of excused absences, including interview days can be accepted during your rotation. While excused, these days must be made up. This policy does not imply that absences are guaranteed; absences may be excused at the discretion of the faculty. Absence due to illness must be reported to the Coordinator as well as the faculty or his/her designee as soon as possible. In case of extended absence (2 days or more), a note from a physician (who is not a relative) is required and the absence will be reported to the Office of Student Affairs. A physician note may be requested for any absence, at the discretion of the faculty. **Any planned absence must be registered with the coordinator prior to the first day of the rotation.** Further attendance requirements may be covered during the first day orientation.