



## **RAPID RIVERMED COURSE**

### **Expedition Medicine in Whitewater and Remote Rivers**

#### **MODULE I**

##### **River-Specific Physiology and Pathology**

- Drowning and submersion: Modern pathophysiology, airway management in water, and post-resuscitation care.
- Accidental hypothermia: Clinical classification in the field, active rewarming techniques on shore, and "collapse after rescue."
- Exposure-related pathologies: Trench foot, severe sunburn, and waterborne diseases (leptospirosis, giardiasis).

#### **MODULE II**

##### **Trauma in Whitewater Environments**

- Kinematics of river trauma: Impacts against rocks, limb entrapment, and high-pressure injuries.
- Spinal management in water: When is cervical motion restriction a priority over buoyancy?
- Hemorrhage control in wet environments: Use of tourniquets and hemostatic agents in the rain or on rafts.

## **MODULE III**

### **Technical Rescue for Medical Personnel (Swiftwater Rescue)**

- Basic hydrodynamics: Reading rivers, current forces, and low-pressure zones.
- Rescuer safety: Specific personal protective equipment (PPE) for medical personnel.
- Extraction techniques: Freeing feet, using rescue bags, and mechanical advantage systems (pulley systems) for stretchers.

## **MODULE IV**

### **Logistics and Pharmacology in Remote Operations**

- The river expedition first aid kit: Extreme waterproofing, organization by urgency levels, and stock management.
- "River box" pharmacology: Multimodal analgesia, broad-spectrum antibiotics, and cold chain management.
- Evacuation protocols (MEDEVAC): Satellite communication, helipad marking in canyons, and "Stay or Go" criteria.

## **MODULE V**

### **Integrated Clinical Simulation (LUA - Low Utility Areas)**

- Triage in confined shores: Management of multiple victims on sandy beaches or rocky shores.

- Field surgery and minor procedures: Suturing, dislocation reductions, and infection management in non-sterile conditions.
- Survival psychology: Stress management for the medical team and leadership in critical situations.

## **MODULE VI**

### **The 24-Hour Crucible (Total Immersion Simulation)**

- Scenario: Commercial expedition in a Class III-IV canyon with multiple casualties following a raft capsize in an area with no radio/cell phone coverage. (Variable time model)
- Phase 1: The Incident (2:00 PM - 6:00 PM) The Event: A loud crash and screams. The students find an overturned raft and 3 victims with critical injuries (TBI, open femur fracture with hemorrhage, and a Grade 4 drowning). Medical Objective: Rapid triage on a rocky shore, hemorrhage control with tourniquets, and airway stabilization. Logistical Challenge: Waterproofing equipment after the "accident" (some medical kits will be wet to test preparedness).
- Phase 2: Stabilization and Forced Bivouac (6:00 PM - 10:00 PM) The Scenario: The sun sets. No air evacuation is possible due to simulated weather conditions or the canyon's topography. Medical Objective: Set up a "Riverside Care Unit." Pain management (analgesia) and prevention of the death triad (hypothermia, acidosis, coagulopathy). Environmental Management: Construction of thermal shelters using materials from the rafts and preparation of hot meals for the victims.

- Phase 3: The Night Evacuation "Dark Water" (10:00 PM - 3:00 AM)  
Situation: A satellite alert is received (simulated): a rescue team is waiting 3 km downstream in an extraction zone. Transport must be by water and a technical trail. Tactical Operation: Night navigation using headlamps and chemical signals (glow sticks). Stretcher crossing via a "zip line" or rope system over a rapid to avoid impact. Constant monitoring of the patient on the raft/stretcher in total darkness.
- Phase 4: The Extraction Point (3:00 - 8:00) The Scenario: Arrival at a helipad or 4x4 ambulance. Medical Objective: Patient handover under pressure. The student must submit a flawless ATMIST report after 15 hours of fatigue. Mission Closure: Management of medical waste and equipment reconditioning.
- Phase 5: Psychological Debriefing (8:00 - 14:00) Clinical Analysis: Review of medical decisions made. Human Factor Management: Analysis of leadership, crisis communication, and management of medical team burnout.

**END OF COURSE**