“BATTLE BLAZE MEDIC” COURSE

Advanced Medicine in Fire Interventions

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MODULE I

Fire Chemistry and Mechanics (Physical Foundations)

- The Fire Tetrahedron: Understanding the chain reaction. The role of the oxidizer (oxygen) and the fuel.

- Combustion Mechanics: Difference between slow combustion (oxidation), rapid combustion (fire), and detonating combustion (explosion).

- Heat Propagation: Conduction, convection, and radiation.

- Medical Importance: Predicting radiation burns at a distance without direct contact.

- Combustion Products: Smoke, gases, flames, and heat. Analysis of opacity and toxicity according to the material burned.

MODULE II

Fire Classification and Extinguishing Agents

- Fire Classes (UNE-EN 2 Standard): Class A: Solids (wood, paper). Class B: Flammable liquids (gasoline, oils). Class C: Gases. Class D: Metals (Magnesium, Sodium).

- Medical risk: Injuries from incandescent fragments. Class F: Cooking oils. Extinguishing agents: Water (jet vs. spray), dry chemical powder (ABC), CO_2, and foams.

- Medical note: Irritating effects of dry chemical powder on the patient's airway.

MODULE III

First Response Equipment (PPE)

- Portable Fire Extinguishers: Identification, effectiveness, and usage technique (PASS rule: Pull, Aim, Squeeze, Sweep).

- Hoses and Fire Hose Reels (FHRs): Basic handling for healthcare personnel in hospitals or health centers.

- Complementary Equipment: Fire blankets: Correct use for smothering people on fire (avoiding the chimney effect). Sand buckets: Use in chemical spills and metal fires.

MODULE IV

Fire Pathophysiology and the Hostile Environment

- Fire Dynamics for Medical Personnel: Understanding Flashover and Backdraft for Medical Team Safety.

- Combustion Toxicology: Beyond CO. Management of Hydrogen Cyanide (the "Silent Killer") and Irritant Particles.

- Tactical Zoning: Working in Hot, Warm, and Cold Zones (Extraction and Transfer).

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MODULE V

Airway Management and Trauma

- Thermal Inhalation Injury: Early Diagnosis of Glottic Edema and Bronchial Chemical Burns.

- Aggressive Airway Management: Indications for Immediate Intubation vs. Supraglottic Devices in the Fire Environment.

- Fluid Resuscitation: Updated Protocols (Modified Parkland Protocol) and the Danger of Over-Resuscitation in Burned Lungs.

MODULE VI

The Critically Ill Burn Patient

- Assessment of burn extent: Wallace's Rule of Nines and use of apps for calculating total body surface area (TBSA).

- Circumferential burns: Identifying the need for emergency escharotomies to save limbs or allow ventilation.

- Hypothermia management: Why burn patients die from exposure during a fire and how to prevent it.

MODULE VII

Firefighter Medical Pathology (Rehabilitation and Occupational Health)

- Heat stress and heat stroke: Monitoring core temperature and active cooling protocols.

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- On-scene rehabilitation (REHAB): Medical criteria for allowing a firefighter to re-enter the fire or be transferred to a hospital.

- Acute cardiovascular risk: Management of post-intervention myocardial infarction due to extreme exertion and dehydration.

MODULE VIII

Multiple Casualty Incidents (MCI) in Fires

- Adapted START and SALT Triage: Prioritization under zero or low visibility.

- Transport Logistics: Coordination with referral burn units and hyperbaric medicine centers.

- Handling of corpses and initial psychological support: Psychological first aid for responders and victims.

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MODULE IX

Culture of Prevention and Passive Safety

- Passive Protection: Fireproofing, fire doors, and photoluminescent signage. Detection and Alarm: Smoke detectors, rate-of-rise detectors, and manual call points.

- Maintenance: The importance of equipment inspection to prevent failures at a critical moment.

MODULE X

SEP PROTOCOL DRILL (Healthcare Emergency Self-Protection)

- 1. R - RESCUE (Immediate Rescue / Save) Priority 0: If the fire is in a patient's room, move them to the hallway immediately. Technical mobilization: If the patient cannot walk, use the sheet drag method (lower the mattress to the floor or pull the fitted sheet) to avoid smoke inhalation (fresh air is downstairs). Do not use elevators: Under no circumstances.

- 2. A - ALARM (Alert / Notify) Activate the Emergency Plan: Press the nearest alarm button. Internal communication: Notify the Nursing/Security Control indicating: Exact location, type of fire (electrical, gas, paper), and if there are any trapped patients. Quick headcount: Verify how many patients and colleagues are in the affected wing.

- 3. C - CONFINE (Confine/Isolate) Door Closure: Hospital fire doors withstand fire for 30 to 90 minutes. Closing the door to the room where the fire is located slows its spread. Medical Gas Management: If safe, shut off the oxygen and vacuum valves to the affected area. Oxygen is an extreme accelerant. Sealing: If trapped, place damp towels or sheets in door gaps to prevent smoke from entering.

- 4. E - EXTINGUISH/EVACUATE (Extinguish or Evacuate) Initial Attack: Only if the fire is a "small fire" (like a wastebasket) and you have a fire extinguisher on hand. If smoke obscures the ceiling, abandon the attempt. Horizontal Evacuation: In hospitals, evacuate first to the next compartmentalized area (beyond the fire doors on the same floor), not necessarily immediately to the street. Evacuation Triage: Ambulatory patients (able to walk). Patients in wheelchairs. Critically ill bedridden patients (require more staff). Clinical Considerations During Evacuation. Airway Protection: Do not use dry surgical masks (they do not filter toxic gases). If you do

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not have self-contained breathing apparatus, a moist compress over the nose and mouth helps filter particles and cool inhaled air. Panic Control: The physician should assume the role of "Evacuation Leader." Give short, clear, and firm orders. Medical Assembly Point: Establish a Rapid Triage area outside the danger zone to reassess evacuated patients (hemodynamic stability and smoke inhalation).

END OF COURSE

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