HOW LIGHTNING HURTS US
A lightning strike in a crowded stadium is hazardous out to roughly 50 feet from the strike point, with one or two fatalities and dozens of injuries. People are occasionally injured 100 feet away from a strike. This is roughly equivalent to the kill radius and injury radius of a hand grenade. The mechanisms that hurt us are the millions of volts of electricity, the heat, and the thunderous blast from the rapidly expanding air.

Ground current occurs with each strike. You can minimize your exposure to ground current by keeping your feet close together, especially avoiding lying flat on the ground. Ground current contributes to half of lightning fatalities (Fig. 1). This is the primary mechanism where we can easily reduce lightning risks.

Side flash jumps from tall objects like trees when they are struck by lightning, so don’t seek shelter near tall trees, other tall objects, or tall vertical surfaces.

Contact is from touching long conductors like railings, cables, and fences. Conduct a web search for dead cow lightning to see modeled images of contact and sideflash.

Upward leaders emanate from high ground and tall objects when downward leaders approach the ground: even if they don’t connect with a downward leader, they can be fatal.

Direct strikes cause about 3-5 percent of lightning fatalities. Avoid high places and open ground to decrease risk of a direct strike. The explosive force of lightning can cause blunt trauma resulting in fractures or soft tissue injuries.

We should primarily focus our efforts on avoiding ground current and side flash.

HOW LIGHTNING KILLS

The mechanisms that hurt us are electricity, heat, and the air blast. These cause many different kinds of neurological problems, burns, and trauma.

TREATMENT PRINCIPLES

Scene Safety: Avoid further injuries. It may be safer to wait for the storm to pass before treating victims in extremely hazardous locations.

Basic Life Support: Be prepared to provide rescue breathing.

Triage: Unlike normal triage protocols, attend first to those who are in cardiac or respiratory arrest without obvious lethal injury.

Assessment: All patients require a complete body survey and careful evaluation for head, spinal, long bone, or cardiac injuries. Assess peripheral pulses, and sensory and motor status. Check the skin for small hidden burns.

Monitor for cardiovascular, respiratory, and neurological problems.

Evacuate anyone obviously injured by lightning. Be alert for lingering issues that need further evaluation and treatment. Survivors could be disoriented or confused. Their decision-making ability (including judgment, direction finding, and planning) could be dangerously impaired.

FIRST AID FOR LIGHTNING VICTIMS

No place outside is safe from lightning. Frontcountry includes outdoor settings that are within a 30 minute walk of modern buildings or vehicles. This is where most lightning injuries occur because this is where people spend more time outdoors.

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FIRST AID FOR LIGHTNING VICTIMS
BACKCOUNTRY LIGHTNING RISK MANAGEMENT

No place outdoors is safe from lightning. Lightning is an objective hazard. Your behavior can reduce the risk of that hazard harming you.

REDUCING LIGHTNING RISK IN THE BACKCOUNTRY

1. TIME YOUR VISITS TO HIGH-RISK AREAS WITH LOCAL WEATHER PATTERNS.

Timing activities with safe weather requires knowledge of both typical and recent local weather patterns. There is no such thing as a surefire or freak storm. You must set turnarounds times that will get you off of exposed terrain before storms arrive. You need to observe the changing weather and discuss its status with your group. If you have logistical delays, you may need to change your plan rather than summiting a peak or crossing open ground during a thunderstorm. Begin your turnaround if you hear thunder (which means lightning is less than 10 miles away).

2. FIND SAFER TERRAIN IF YOU HEAR THUNDER.

Safer terrain in the backcountry can decrease your chances of being struck. Lightning tends to hit high points and the surrounding terrain. Avoid peaks, ridges, and significantly higher ground during an electrical storm. If you have a choice, descend a mountain on the side that has no clouds over it. You need to be off-exposed terrain before storms arrive. You need to observe the changing weather and discuss its status with your group. If you have logistical delays, you may need to change your plan rather than summiting a peak or crossing open ground during a thunderstorm. Begin your turnaround if you hear thunder (which means lightning is less than 10 miles away).

3. AVOID TREES AND LONG CONDUCTORS ONCE LIGHTNING GETS CLOSE.

Wide open ground offers high exposure to lightning. Avoid trees and bushes that rise above others, since the highest objects tend to generate upward leaders. Your best bet is to look for an obvious ravine or depression before the storm arrives, then spread out your group at 20 foot (7m) intervals to reduce the risk of multiple injuries. Assume the lightning position.

4. GET IN THE LIGHTNING POSITION IF LIGHTNING IS STRIKING NEARBY AND YOU CAN’T GET TO SAFER TERRAIN.

The lightning position (Fig. 4) is for waiting out storms in stationary situations when it is impractical to move to a safer location. It is important to reduce your overall footprint on the ground (Fig.1).

Get inside a modern building if you avoid metal conductors. Getting inside an ungrounded metal-topped vehicle can avoid many lightning hazards.