

LIGHTNING DATA CENTER MINUTES
May 8, 2015
ST. ANTHONY HOSPITAL WEST, LAKEWOOD, CO

Monthly Quote: "It kind of hit off to the right side, the passenger side of the truck. and [sic] it immediately made the inside just bright white and the truck actually died for 2 or 3 seconds," [sic] EMT Justin Walsch describing a nearby lightning flash while transporting a patient. WBIR-TV, Knoxville, TN.

1. Meeting began at 11:50 AM and adjourned at 1:30 PM, with discussion continuing until 2:00 PM: Members Present: Clark, Swanson, Yarnell, Johnson, Patrick, Stewart, Gift, Wachtel, Langford, Rossie and Bedow.
2. This was a special invitational meeting aimed at the EMS/First Responder communities. We had 8 attendees via teleconference, representing 7 EMS entities from Colorado and 1 EMS entity in New Mexico. At the hospital, we had 8 attendees, 7 representing 7 EMS entities and 1 from the Colorado Department of Public Health & Environment (CDPHE). Initial feedback indicates the meeting was successful for a first effort at reaching out to health providers.
3. Steve Clark introduced the Executive Officers and gave a quick overview of the LDC. Next, Ken Langford gave a talk entitled: "Lightning & EMS". Here, I can only summarize some of the high points of his talk, as there was quite a bit of information presented in a short amount of time.

Ken asked the EMTs if they had ever treated a lightning patient. One man said he participated in a morning rescue of a man who had been struck the evening before while hiking in the mountains.

From the presentation, Colorado ranked 2nd in the nation in lightning fatalities from 2001 to 2010 and 3rd in the nation from 2005-2014. Colorado averages approximately 17 to 25 injuries per year from lightning. Seventeen fatalities have been reported from 2005 through 2014, inclusive.

Ken posed a question on one of his slides: "Why is lightning safety ignored?" Some of the answers were: the perceived odds of being struck, the inconvenience of lightning safety, and the relatively small numbers of people struck. First, Ken explained most people think the odds of them being hit by lightning are remote. Per the National Weather Service, the odds of an American being hit by lightning is 1 in 10,000 over an 80-year lifespan. Also, the Harvard School of Public Health says the chance of death is 1 in 3 million. Second, Ken said lightning safety is inconvenient because people do not want to wait to go outside. Third, in developed nations, lightning strikes rarely affect large groups.

Approximately 30% of lightning strike survivors have long-term effects from the strike.

Ken went over the mechanisms of lightning injury, gave general lightning safety guidelines, and safety tips specific to EMS providers. Ken noted EMS providers should, if they can, carefully document the initial assessment, so that the record would reflect a lightning strike/possible lightning strike for the consideration of physicians seeing the patient later on.

Ken went over a few of the signs of lightning injury, some of which are: ruptured eardrums, confusion, burn marks, ferning patterns, and shredded clothing. Ken said some people may refuse treatment after being hit and should receive a standard mental status exam, as they may not be competent to make their own decisions.

Finally, Ken noted that the collection of data on lightning injury is difficult because lightning strike injury is rare, and because the data are still under-reported. These same factors result in an often misunderstood patient population.

A short lightning bibliography prepared by Ken is attached to these minutes.

4. It was asked if EMTs had ever been lightning victims while responding to a call. Greg Stewart recalled an incident in California where first responders were struck. Link: <http://www.firerehab.com/news/1122995/>
5. An informal survey of those in attendance suggests most EMS agencies do not have a formal protocol regarding lightning safety while on a call; however, most EMTs do have a high awareness of lightning because they are around it. EMTs will tend to help injured parties, even in dangerous conditions; although some EMTs will wait until conditions improve. Howard Wachtel recommended EMTs use protective suits similar to those used by electrical linemen. Several responders said that is not financially feasible.
6. When asked about lightning education, attendees responded that most providers usually have some kind of refresher on lightning once each year. One problem mentioned was that the information presented appears to be old and outdated. Another problem was the inconsistency of the lightning safety message. For example, one EMS attendee noted the trainer advocated the “lightning crouch”, when there is mounting evidence within the broader lightning safety community that it is no longer recommended. Yet, it is still advocated by some instructors. In another instance, some trainees have been told it is safe to seek shelter inside an old log cabin or in a cave. One attendee suggested having representatives from NOAA, NOLS, and other relevant entities collaborate toward eliminating inconsistencies in the lightning safety message.

Greg Stewart commented that the National Weather Service's Lightning Safety Awareness Week, coming up June 21-27, 2015, is a great opportunity for providers to interface with the public on lightning safety education.

7. Carl Swanson reported there are 69 EMS departments in Colorado that will be reporting lightning injury and fatality statistics starting this year. He also reports the United Kingdom has reported similar numbers in the under-reporting of lightning injuries and fatalities.
8. One of the other problems cited by attendees in the under-reporting of lightning injury/fatality data is within the software used to capture the data. There are 22 software vendors with markets in Colorado. Some software products have pull-down menus with “lightning” as a mechanism of injury and some do not. Some software allows lightning to be mentioned only in a narrative section, which is oftentimes not keyword searchable.
9. Carl also noted there is a misconception among a relatively small percentage (~3-5%) of doctors, registered nurses, and physician assistants. They tell patients they could not have been hit by lightning because if they were, they would be dead. Carl also reports this misconception is present in the UK.
10. Carl also said if no one witnesses a person being injured, then it falls upon the EMT to determine the most likely mechanism of injury. That mechanism will follow the patient through the medical system. Another attendee noted more can be done in assessing signs and symptoms that will allow the EMT to “connect the dots” to more accurately determine if lightning was the cause of injury.
11. One EMT asked if the LDC was on social media, and at this time we are not. Suggestions for getting out the safety message included short, concise safety tips corresponding to Lightning Safety Awareness week; lightning safety tips on fast food packaging; a public educational contest sponsored by some organization, a Facebook page, and messages posted any place where people have to wait in line.
12. Some EMS-related meetings are forthcoming in Colorado. They are:

Emergency Medical Services Association of Colorado 2015 Colorado State EMS Conference, November 5-8, 2015. Keystone Resort & Conference Center.
Website: <http://emsac.org/conference/>

Rocky Mountain Trauma & Emergency Medicine Conference, June 17-20, 2015. Vail Cascade Resort & Conference Center. Announcement via Denver Health: <http://www.denverhealth.org/for-professionals/clinical-specialties/trauma-center/education-and-training/trauma-and-emergency-medicine-conference>

National Search & Rescue Conference (SARCON) 2015, June 4-8, 2015, Estes Park YMCA, 2515 Tunnel Rd., Estes Park, CO. Presented by Larimer County SAR. Link: <http://www.coloradosarboard.org/SARCON.shtml>

13. In closing these minutes, I want to say there were several individuals whose efforts made this a worthwhile meeting. They are:

Carl Swanson, III: Outreach to the EMS/First Responder communities.

Ken Langford: An excellent presentation with contributions from other members.

Greg Stewart: Meeting preparation and media links.

Kym Morrissey & Devin Walter: Hospital administrative support.

There may be some other folks out there who assisted with this meeting whose names I have missed. Rest assured, their contributions are greatly appreciated.

To everyone involved, a very heartfelt “Thank you”.

14. Questions, comments, notification of errors, and critiques of these minutes are welcome. Please forward those to Steve Clark at: sclarktoto@gmail.com. Please keep your communications professional and respectful. Communications will be forwarded to the appropriate author(s) of the minutes and addressed accordingly.

15. LDC Disclaimer: These minutes do not represent official positions of the LDC or its members. They simply reflect the comments made at the meeting. Furthermore, the LDC does not implicitly or explicitly recommend or endorse any product or service. Any product or service presented in these minutes is for the purpose of discussion and analysis. The merit (or lack thereof) is open for the consideration and review by the entire membership.

16. Next meeting: Friday, June 12, 2015 at 11:45 AM at St. Anthony Hospital West. Conference Room TBA.

Respectfully Submitted,
Steven E. Clark, Consulting Meteorologist

A Short Lightning Website Bibliography

For Safety

National Weather Service's (NWS) Lightning Safety homepage
<http://www.lightningsafety.noaa.gov/>

For Survivors

Lightning Strike & Electric Shock Survivors International, Inc.
<https://www.lightning-strike.org/DesktopDefault.aspx>

For Medical Professionals

Lightning Injury Research Program Website: <https://www.uic.edu/labs/lightninginjury/>

NWS Medical Aspects of Lightning: <http://www.lightningsafety.noaa.gov/medical.shtml>

Mary Ann Cooper's Lightning Bibliography:
<https://www.uic.edu/labs/lightninginjury/pubs.htm>

Specific Papers

Cooper, M.A, R. Parkes, M. Mayer, et.al., 1995: Treatment of Lightning Injury. Lightning Injury: Electrical Medical and Legal Aspects. CRC Press, pp. 117-139.
<https://www.uic.edu/labs/lightninginjury/TreatLTNinj.pdf>

Cooper, M.A. And R.F. Edlich, 2014: Lightning Injuries. Medscape.
<http://emedicine.medscape.com/article/770642-overview>

Davis, C., et.al., 2014: Wilderness Medical Society Practice Guidelines for the Prevention and Treatment of Lightning Injuries. Wilderness & Environmental Medicine, (23) 3, 260-269. <http://www.wemjournal.org/article/S1080-6032%2812%2900180-9/fulltext>

Price, T. and M.A. Cooper, 2006: Electrical and Lightning Injuries. Rosen's Emergency Medicine: Concepts and Clinical Practices, 6th Ed.
<https://www.uic.edu/labs/lightninginjury/Electr&Ltn.pdf>

Lightning Links

This is a monthly listing of periodicals, websites, and videos about lightning and allied areas from a variety of sources. A headline or description is listed, followed by the link. Please note that some of the links are perishable, which means you'll need to go to the source for the information.

The Associated Press, 2011: 3 Firefighters Injured in Calif. Lightning Strike. FireRehab News, September 14, 2011. Link: <http://www.firerehab.com/news/1122995/>

WBIR-TV, 2012: Lightning Strikes Near Ambulance With Crew Inside. Jan. 12, 2012. Link: <http://www.wbir.com/news/article/200011/2/Lightning-strikes-near-ambulance-with-crew-inside>

EMS1 Staff, 2014: Off-Duty EMT Helps Save Firefighter Struck By Lightning. EMS1.com, July 2, 2014. Link: <http://www.ems1.com/ems-news/1937650-off-duty-emt-helps-save-firefighter-struck-by-lightning/>

Fowke, M.L., 2015: Sneaky Weather and Scene Safety: How Do First Responders Know? Abstract, 10th Symposium on Societal Applications, Policy, Research and Practice, Amer. Meteor. Soc.
Link: <https://ams.confex.com/ams/95Annual/webprogram/Paper267540.html>

Bankhead, C., 2013: Add “Shrapnel” to Workup of Lightning Strike. MEDPAGE Today, September 20, 2013.
Link: <http://www.medpagetoday.com/EmergencyMedicine/EmergencyMedicine/41773>

Oglesbee, S., 2014: Considerations When Assessing & Treating Patients with Lightning Injuries. JEMS (FIND VOL, ETC). Link: <http://www.jems.com/articles/print/volume-39/issue-5/patient-care/considerations-when-assessing-treating-p.html>

Hamilton, M., 2015: Lightning Strikes Truck in Which 2 Teenagers Were Riding. KWTX-TV, May 8, 2015. Link: <http://www.kwtx.com/home/headlines/Lightning-Strikes-Truck-In-Which-2-Teenagers-Were-Riding-303136941.html>

Crabtree, A., 2006: Sebago Firefighter Struck by Lightning While Fighting E. Baldwin House Fire. Maine Farmhouse Journal, September 9, 2006.
Link: <http://www.crabcoll.com/journal/baldwin.html>

Clinton, P., 2011: Mo. Officer Struck By Lightning in Medically Induced Coma. Police: The Law Enforcement Magazine, May 6, 2011. Link: <http://www.policemag.com/channel/patrol/news/2011/05/26/mo-officer-in-medically-induced-coma.aspx>

Usatch, B., 2009: When Lightning Strikes: Bolting Down the Facts and Fiction. JEMS, 34(4)36-8. Link: <http://www.jems.com/articles/print/volume-34/issue-4/major->

[incidents/when-lightning-strikes-bolting.html](#)

Paul, J. and A. Cotton, 2015: Child Struck by Lightning in Aurora Taken to Area Hospital. The Denver Post, May 1, 2015. Link: http://www.denverpost.com/news/ci_28027633/child-struck-by-lightning-in-aurora-taken-to-area-hospital

Paul, J., 2015: Boy, 15, Hit by Lightning in Aurora Remains in Critical Condition. The Denver Post, May 4, 2015. Link: http://www.denverpost.com/news/ci_28045498/boy-15-hit-by-lightning-in-aurora-remains-in-critical-condition

29 Stories of Lightning and EMS from Michael Utley's website struckbylightning.org: https://www.google.com/?gws_rd=ssl#q=EMT+site:http:%2F%2Fwww.struckbylightning.org%2F

More lightning strike incidents from struckbylightning.org referencing EMS: https://www.google.com/?gws_rd=ssl#q=EMS+site:http:%2F%2Fwww.struckbylightning.org%2F