

# LIGHTNING DATA CENTER MINUTES

May 12, 2017

ST. ANTHONY HOSPITAL WEST, LAKEWOOD, CO

[www.lightningdatacenter.org](http://www.lightningdatacenter.org)

“At every level, professionals coped with the challenges the patient suffered. From the immediate life-saving interventions started by friends and family at the dangerous scene and continued by EMS rescuers to the acute care hospitals and then to rehabilitation, no one gave up on this patient.”

Source: Unknown author, 2009. Patient Survives Direct Lightning Hit Thanks to EMS and Hospital.

*Journal of Emergency Medical Services*, July 21, 2009. Link:

<http://www.jems.com/articles/2009/07/patient-survives-direct-lightn.html>

1. Members Present: Clark, Stewart, Langford, Swanson, Yarnell, Nibbe, Wells, Claus, Elder, Olson, Moore, Johnson, Wachtel and a survivor. We also welcomed three new members: Dana and Rachel Chagnon and Kevin Schmidt, with West Metro Fire. Meeting began at 11:45 AM and ended at 1:50 PM.
2. Introductions were done and then the meeting was handed over to Sheryl Olson, a lightning educator and flight nurse with 18 years of experience in a helicopter. She gave an excellent presentation on lightning and lightning safety, with an emphasis directed towards the EMS/First Responder community. The presentation was recorded on video and the video will be posted to the LDC website after review by the LDC executive committee.

Sheryl started with some lightning myths and facts and then discussed the environmental conditions needed for lightning. Next, she gave an overview of the medical treatment of a lightning patient, starting briefly with treatment in the wilderness setting, followed by treatment by EMS. The treatment of the patient in the ER setting was discussed followed by basic guidelines to decide whether or not the patient should be admitted into the hospital. She showed some cases of injuries suffered by patients. Finally, she presented some lightning safety tips. What follows are a few random notes from her talk, along with some questions and answers.

There are an estimated 1.4 billion flashes per year and there are approximately 40,000 thunderstorms each day.

Mechanisms of injury from lightning include injury from: direct strikes, side flash or splash, contact, and step voltage or step current.

An electromagnetic wave, or an electrical field of energy, has been documented to cause headaches, migraines, cardiac arrest, and seizures. Blunt trauma can result from the victim being thrown to the ground from the energy field of a lightning strike.

Causes of death from lightning: Cardiac arrest – primary cause of immediate death, respiratory arrest with cardiac arrest subsequent to hypoxia, and burns (rarely).

Neurologic assessment is very important, as approximately 70% of lightning survivors will have some neurological impact from the strike.

In standard triage, in a group of injured people, the most seriously injured patients with the best chance of survival are treated first and persons not breathing or without a heart rate are the last to be treated. In a group of people struck by lightning, reverse triage is implemented, with those who appear to be unconscious, not breathing or without a heartbeat are treated first. The rationale is, since those who are conscious have already survived the strike, efforts need to be directed at those who are not conscious, as time is of the essence to minimize the effects of hypoxia.

An irritable heartbeat can exist for 24 hours post-strike with the most common dysrhythmia being premature ventricular contractions.

Family support. Family and friends of those struck by lightning should be advised resources are available to address any questions they have and contact the LDC or a lightning support group.

Cataracts can occur about 3 to 6 months following a strike.

Sheryl said first responders should wear a base layer of a natural fiber, She recommends either silk or wool, with cotton being a distant third because it retains moisture. She strongly recommends against synthetic clothing for people working in a prehospital environment where the risk of lightning is present. People who have been hit by lightning while wearing synthetic clothing have had second and third-degree burns as a result of such clothing melting onto the skin. Silk and wool will not melt when heated thereby providing better protection from burns caused by lightning. Examples of burns from synthetic clothing were presented.

Sheryl showed us an odd image. A lightning patient had EKG monitoring. Around where one of the pads had been placed on the skin, there were Lichtenberg ferning marks radiating away from the conductive gel on the center of the pad. Pads were placed on other parts of the patient's body and the phenomenon repeatedly occurred.

Sheryl noted golf is no longer the #1 sport for lightning injury. Nowadays, it is soccer.

## Q & A

Q: How do you feel about a person struck by lightning and he says he doesn't need care?

A: The statement is respected if the person is under control and does not appear to be on drugs or alcohol. He would be released with contact information should medical issues arise later on. If EMS personnel think he is under the influence of drugs or alcohol, law enforcement will need to be involved.

Several questions were asked about the effect of lightning on the heart and how to restore and maintain a normal heartbeat in a lightning patient. There was some discussion on this subtopic.

Q: How do you feel about adding notes suspecting lightning injury if it is suspected by EMS personnel, even if lightning was not directly observed/witnessed?

A: Sheryl said the incident history is very important and it will be based on what you observe, what others have observed and your knowledge. She stressed the importance of sticking to the facts, but was open to the idea of reporting lightning as a suspected cause, so long as it was made clear that it is a suspected cause as opposed to the definite cause, based upon available data. For that reason, it is important to carefully document the incident. Did it rain? Did you see lightning or hear thunder? What was the condition of the patient? What was the patient doing? What does the patient remember? Are there any witnesses and if so, what do they say? Etc.

Q: If you are hiking with metal hiking poles and are struck on the head or shoulders, could the poles provide a more direct path to ground with the current going through your arms and poles rather than through your chest and heart?

A: The grips on the poles are insulated, which will stop the electricity from going down through the poles. This led to further discussion about lightning and insulators.

3. Questions, comments, notification of errors, and critiques of these minutes are welcome. Please forward those to Steve Clark at: [sclarktoto@gmail.com](mailto: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.
4. 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 done so for purposes of discussion and analysis. The merit (or lack thereof) is open for the consideration and review by the entire membership.
5. Next meeting: Friday, June 9, 2017, from 11:45 to 1:00 PM at St. Anthony Hospital West. Room: Conference Rooms E & F. Roundtable format.

Respectfully Submitted,  
Steven E. Clark, Consulting Meteorologist

## 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.**

Zheng, S., 2017, Chinese Weather Anchorman Struck by Lightning Sparks While Filming. *South China Morning Post*. Link: <http://www.scmp.com/news/china/society/article/2090375/chinese-weather-anchorman-struck-lightning-sparks-while-filming>

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Rehwald, J., 2017: Lightning Strike Kills 32 Cows Near Cabool. *Springfield News-Leader*, May 1, 2017. Link: <http://www.news-leader.com/story/news/local/ozarks/2017/05/01/lightning-strike-kills-32-cows-near-cabool/101161336/>

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Stewart, M., 2017: Longmont Discontinuing Use of Tornado Sirens. *TheDenverChannel.com*. Link: <http://www.thedenverchannel.com/news/front-range/longmont/longmont-discontinuing-use-of-tornado-sirens>

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CBS 4 Denver, 2017: Woman, Horse Killed by Lightning Strike in Douglas County. *Denver.cbslocal.com*. Link: <http://denver.cbslocal.com/2017/05/07/woman-horse-killed-lightning-strike-douglas/>

Hickey, C., 2017: Woman Killed in Douglas County Lightning Strike Identified. *Kdvr.com*. Link: <http://kdvr.com/2017/05/08/woman-killed-in-douglas-county-lightning-strike-identified/>

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Web Staff, 2017: Lightning Strike During Youth Baseball Game Sends Woman to Hospital. *Kdvr.com*. Link: <http://kdvr.com/2017/05/06/woman-struck-by-lightning-at-park-in-highlands-ranch/>