

LIGHTNING DATA CENTER MINUTES
December 13, 2013
ST. ANTHONY HOSPITAL WEST, LAKEWOOD, CO
On the Web at: www.stanthonyhosp.org/ldc

HAPPY HOLIDAYS TO ALL

Monthly Quote: On the naming of Santa's eight reindeer "In [An American Anthology, 1787-1900](#), Edmund Clarence Stedman reprints the 1844 Clement Clarke Moore version of the poem, including the German spelling of "Donder and Blitzen" rather than the 1823 version using the Dutch spelling, "Dunder and Blixem". Both phrases translate as "Thunder and Lightning" in English, though German for thunder is now spelled *Donner*, and the Dutch words would nowadays be spelled *Donder* and *Bliksem*." On the web at: http://en.wikipedia.org/wiki/Santa_Claus's_reindeer

1. The meeting began at 11:50 AM and adjourned at 1:05 PM. Members Present: Clark, Collier, Yarnell, Elder, Swanson, Langford, Wells, Wachtel (Howard & Clara), Nibbe, Schoessen, and Gift. Langford moderated the meeting.
2. Carl Swanson presented a case of a lightning strike in Lakewood, Colorado on October 14, 2013 at around 8:30 PM. The lightning hit a tree in front of a house, went into the ground and ruined the laundry room of the house and broke the sprinkler system. The lightning also broke a city water line in front of the house. A man inside the house said there were three strikes hitting the ground. The strike also resulted in a fire in the upstairs part of the house – possibly the attic.

Carl also asked if any lightning or electric shock survivors have used magnets for treatment. Phil was not aware of any such efforts.

3. In last month's meeting, Dr. Cherington noted some papers written by Dr. Karl Neuberger, a physician based here at Denver's Rose Medical Center back in the 1940s and 1950s. Many of his papers dealt with brain injuries associated with sports – especially boxing. See the Lightning Links section for two citations to abstracts. Dr. Cherington has corresponded with Dr. Lawrence Zeidman, with the University of Chicago, who was able to cite some of Dr. Neuberger's work. Apparently, Dr. Neuberger had emigrated to the U.S. from Nazi Europe, along with several other physicians. Dr. Neuberger has authored a book discussing what resisters, collaborators, emigrants, and victims faced while in Nazi Europe – especially historical and ethical issues.
4. Ken Langford presented two videos showing what appears to be ball lightning: a lightning strike to a Quanta Airlines plane back in September 2004 and a storm chase video which shows a white flash moving towards the ground. At 00:50 to 01:00. Links are below in the Lightning Links section.

5. Karen Wells brought in a paper titled: “The Pathophysiology of Concussions in Youth”, written by three physicians at UCLA. The paper discusses the impact of mild traumatic brain injury on the developing or immature brain of youths. It also addresses the accumulation of damage with repeated exposure. A link to the abstract can be found in the Lightning Links section.
6. Attached to the end of these minutes is an old 2-page Lightning Incident Report, designed by Ken Langford and Ron Holle in 1992. As noted in last month’s minutes, Carl Swanson was seeking to get lightning case histories from the Lightning Strike Survivors List (LSSL) and ultimately have some of the survivors present their cases to the LDC. We envision this form serving as an initial source of information prior to hearing any case histories. We are considering using this form as a web portal within the LDC website. Not only could LSSL members submit their cases, but so too could members of the public. With the above in mind, is this form satisfactory as is, or should changes be made? If changes are needed, what changes do you recommend? Please e-mail your thoughts to me at sclarktoto@eml.cc.
7. Phil came with four items to discuss.

First, repairs to the kitchen were being done in a home. The repair people left for the day and apparently failed to fully shut off the water AND to shut off live electrical wires connected to a dishwasher. As a result, the floor was damp with live electricity present. In the middle of the night, a woman living at the house stepped onto the kitchen floor and went to steady herself with her hand on a doorjamb and was shocked. She reacted by grabbing the doorjamb and pulling herself away from the kitchen. Within 24 hours, she reported her right hand and arms were hurting and that her brain was feeling slowed. Phil wanted to know how she came to be shocked. Ken Langford suggested doing resistance measurements in the kitchen. Steve Clark wondered if there could be a step-voltage through her legs, similar to lightning strikes on animals.

Second, Phil sent to most of the members, an e-mail describing the Chicago Electrical Trauma Research Institute (CETRI). CETRI is a group of doctors in the Chicago area dedicated to improving the treatment of electrically shocked patients, through research and communication of findings. Carl has communicated with CETRI and found they have worked with some lightning-strike survivors, but the vast majority of people they see are electrically shocked patients.

Third, Phil noted a lawsuit has been filed against the Boy Scouts of America associated with a lightning-related incident in Utah. Phil said the attorneys are looking for an expert witness to evaluate the adequacy of the BSA’s lightning safety guidelines, among other things. If you think you can help, please notify Phil directly.

Fourth, you may recall the patient whose case was presented by Phil during the July 2013 meeting. He had been cleaning landscaping with a gas-powered water hose when he was hit by lightning. He came to this month's meeting with his mother, with some updated information, added here in no particular order:

- Patient was positioned about 20 feet away from the washer compressor, which was away from the strike point. He was between the washer and the strike point.
- Lightning struck about 5 to 10 feet away from the patient, evidenced by visible marks on the pavement.
- Patient's brother was about 20 to 40 feet away from the flash and was wearing "shock-proof" boots, which are heavily insulated to allow him to dig near electrified power lines.
- He is able to open and close his hand pretty well, but his "thought-response" sequence is backwards. When he wants to open his hand, he must think to close his hand. Conversely, when he wants to close his hand, he must think to open his hand. Also, when he rapidly opens and closes both hands, the left hand is faster than the right hand.
- The mechanism for injury is thought to be either a "splash current" or an induced current rather than a direct strike.
- After the strike, both patient and his brother were "deaf" for 30 minutes, which resolved without any treatment. The brother was otherwise uninjured.
- Patient had a period of "missing memory" for 20 minutes after the strike and immediately appeared to be dazed and confused.
- As of this meeting, patient still has a small mark on his hand and a mark on the bottom of his foot, which suggests the current flowed from his right hand, through his right arm, down the right leg, and out the right foot.
- The first medical facility the patient went to did not know how to treat his condition, so the patient was referred to a burn care facility.
- On his second visit to the burn center, patient received a nerve block, which gave good results, but the usage was discontinued because the nerve block is not commonly used in the U.S. and because there was no "Level 1 evidence" to support its use. The pain specialist who administered the nerve block was relieved of the duties as a pain specialist. Now, patient is receiving nerve blocks on a weekly basis, which keeps the pain completely away for 2-5 days. With each treatment, the block lasts a little longer, which is encouraging.
- If he does not maintain a regular dosage of pain meds, the burning sensation from his fingertips to his elbow will return.
- At times, he experiences involuntary contraction, where his hand will form a claw and his arm will pull in against his body.
- The sensation of internal temperature is not the same in both hands. His right hand is unable to properly sense temperature; thus, he is prone to burning his right hand on heat sources.
- Two months following the strike, patient visited a chiropractor to treat the injured part of his arm using ultrasound. The outcome was adverse, as his arm became contracted with a great deal of pain.

- His ability to write was initially diminished, but has improved with time.
- If there is a lapse in physical therapy, the arm will begin to tense up.
- Patient reported pain in his right elbow. Bone scans indicated less bone in the elbow. Patient also reports reflex sympathetic dystrophy in the same area. Phil thinks this may be Complex Regional Pain Syndrome.
- His right leg will occasionally go to sleep (numb, tingly sensation). Patient says the right knee is hard to bend when bearing weight and sometimes feels like it might give out, resulting in a fall.
- During the recent sub-freezing cold snap here in the Denver area, his arm would contract when subjected to the cold, but would relax upon warming.
- Patient reports a voltage reading of 5-6 volts DC when holding the probes of a digital voltmeter. There is no reversal of polarity when the probes are switched.
- Patient reports a touch lamp in his sister's bedroom comes on when he walks into her bedroom. Ken Langford suggested spraying a very light dusting of fabric softener on the floor of the room to minimize static discharge, thinking that might be the culprit. Langford advised caution to not spray too much, due to possible traction issues with his leg.
- Patient reports discomfort in his skin if someone walks by or brushes against him.
- Patient's sleep patterns have been uneven.
- Patient estimates he is at 65% of his former capacity before the strike. This comes six months post-strike.
- Patient advises the majority of his symptoms have been treated adequately, which is good news.

8. Next meeting: Friday, January 10, 2014 at 11:45 AM at St. Anthony Hospital West. Conference Room TBA.

Respectfully Submitted,
Steven E. Clark, Consulting Meteorologist

In Case You Missed It...Lightning Links

This is a monthly listing of periodicals, websites, and videos about lightning and allied areas as reported in the media. 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. Enjoy!

Karl Neuberger Article Abstracts

“Diffuse Traumatic Degeneration of the Cerebral Gray Matter” (Abstract)

http://journals.lww.com/jneuropath/Citation/1958/07000/Diffuse_Traumatic_Degeneration_of_the_Cerebral.5.aspx

“Cerebral Atrophy Associated with Boxing” (Partial Abstract)

<http://archneurpsyc.jamanetwork.com/article.aspx?articleid=652877>

“New Imaging Detecting Long-Term Brain Injury Effects”

<http://www.thedenverchannel.com/lifestyle/health/new-imaging-detecting-long-term-brain-injury-effects>

Chicago Electrical Trauma Research Institute

<http://cetri.org/>

Shrey, D.W., Greisbach, G.S., and Giza, C.C. (2011). “The Pathophysiology of Concussions in Youth”. *Physical Medicine and Rehabilitation Clinics of North America*, 22(4): 577-602. Abstract on the web at: <http://www.ncbi.nlm.nih.gov/pubmed/22050937>

YouTube Video: “Lightning Strikes Qantas Aeroplane”

<http://www.youtube.com/watch?v=036hpBvjoQw>

YouTube Video: “Show us what you are made off! Contains ball lightning!!”

<https://www.youtube.com/watch?v=qevVKCIAdwM>

“Lightning Hits Tree in Lakewood, Damages Green Mountain Home”

http://www.denverpost.com/breakingnews/ci_24306092/lightning-hits-tree-lakewood-damages-green-mountain-home

LIGHTNING INCIDENT REPORT

SOURCE OF INFORMATION

- | | | |
|---|--------------------------------------|------------------------------------|
| <input type="checkbox"/> Newspaper | <input type="checkbox"/> Television | <input type="checkbox"/> Radio |
| <input type="checkbox"/> Law enforcement | <input type="checkbox"/> Hospital | <input type="checkbox"/> Paramedic |
| <input type="checkbox"/> First-hand account | <input type="checkbox"/> Other _____ | |

DATA ABOUT INCIDENT

Location: State _____ County _____
Address _____ City _____
Immediate surroundings _____

Date _____ Time _____ Time zone _____

Number of people affected _____ Job site? _____

Activities of victim(s) at time of incident _____

Major details about the physical environment _____

	<i>Yes</i>	<i>No</i>	<i>Unknown</i>
Damage to structures and/or objects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aware of storm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Presence of nearby conductors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Danger anticipated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical warning signs (static, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shelter sought	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Damage or displacement of clothing _____

WEATHER DATA

	<i>Yes</i>	<i>No</i>	<i>Unknown</i>
Clouds overhead	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lightning in vicinity before strike?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wind	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clouds approaching?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clouds departing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other weather information for this incident _____

MEDICAL DATA

• **General**

These data are for person ____ of ____ persons affected in this incident.

Age _____ Sex _____

Treatment at scene _____

CPR? _____

Taken to hospital? _____ Admitted? _____

Length of hospitalization _____

• **Injuries**

Entrance wound site _____ Exit wound site _____

Skin burns? _____ Parts of body burned _____

Unusual burn pattern? _____

Loss of consciousness? _____ Duration _____

Weakness of arms? _____ Legs? _____ Duration _____

Pain? _____ Numbness _____ Duration _____

Loss of hearing? _____ Duration _____

Tympanic membrane injury? _____

Broken bones? _____ Which? _____

• **Outcome**

Cardiac symptoms? _____

Recovery: Total _____ Partial _____ None _____

Residual medical problems _____

Death _____ Date _____ Time _____

Cause _____

Other important medical information _____
