

**LIGHTNING DATA CENTER
MINUTES
August 12, 2005
St. Anthony Hospital, Denver, CO
www.Stanthonyldc.org**

Quote of the Month:

“As they made their way to the thirteenth tee, a bolt of lightning struck the tenth fairway less than forty yards to their right. Jones felt an ominous tingle surge through his metal spikes.”

Mark Frost in The Grand Slam, 2004 Hyperion, NY

1. Meeting began and 11:30 am and adjourned at 1:45 pm.
2. Members present: Ahmed, Cherington, Clark, Collier, R Gift, Y Gift, Kithil, McDonough, Moore, Nibbe, Poulton, Olsen, Olson, Ortiz, Studebaker, Wachtel, Wells, Wermuth, Yarnell.
3. I brought the following article (abstracted in part here):
 - a. Calver P, et al. The big chill: Improving the odds after cardiac arrest. RN 2005; 68:58-62.

“Cardiac arrest kills more than 90% of its victims before they reach the hospital, causing more than 300,000 deaths in the United States each year. Its onset is sudden and dramatic, typically related to ventricular tachycardia (VT), ventricular fibrillation (V fib), or both. Brain death can occur in four to six minutes. Induced hypothermia is a promising method to save lives. However, despite strong data supporting its use, many more questions remain to be answered including how to best cool patients and how long they should be chilled.”
 - b. Gaskill M. Nursing in the wilderness. Nurse Week August 1, 2005;8-9.

“Clinics in national parks typically provide primary care for park employees about 3,000 people in the case of Grand Canyon National Park, as well as walk-in care for the public. Sheryl Olson, RN, BSN CCRN, is a Flight For Life nurse at Penrose Hospital in Colorado Springs, Colo., who also teaches courses on wilderness medicine .Providing medical care in the wilderness means you are without a lab, X-ray, casting materials and so forth. You have to learn how to evacuate people, but also how to stabilize and take care of them while waiting for that evacuation.” (A photo of Sheryl Olson and a Flight for Life helicopter are on the cover the magazine.)
4. Dan Breed’s brother, Gary Breed, is Editorial Director of the one-line journal, High Frequency Electronics, In the July 2005 issue there is an comprehensive review entitled: Electromagnetic Radiation and Human Health: A Review of Sources and Effects by A. Zamanian and C. Hardiman. The issue also contains an editorial on the subject by Gary Breed.

5. Ken Langford, Lightning Photographer, has an art show opening on Friday, August 26 from 7 pm to 10 pm at Top of the World Gallery, 618 East 1st Avenue. Ken will be there to greet guests.
6. Rich Kithil sent an email from a person who wrote about a telephone-related lightning strike at work. The phone was melted; computers were damaged. The patient reports going into “shock and started” hyperventilating.
7. Rich Kithil introduced Dr. Munir Ahmed. Dr. Ahmed is affiliated with Technological Assistance for Rural Advancement (TARA) of Bangladesh. He told us that recently there was a lightning strike responsible for seven fatalities. The two months with peak lightning strike densities are May and October.
8. Phil Yarnell presented a lightning-strike patient. She was struck in the right occipital area. Her examination revealed a left hemiparesis and left visual field defect. CT scans showed bilateral basal ganglia hemorrhages (right greater than left).
9. Al Nibbe started a discussion with the question: What temperature must an object be to produce a burn? He cited Air Force data on temperatures of materials used in airplanes. Six materials were used (from good conductors to good insulators). Howard Wachtel and Rich Collier joined the discussion. The answer to Al’s question depends on several factors including: material, temperature, duration of contact. Howard pointed out that another factor was the ability of an object to transfer heat. As an example, he mentioned hot coal walkers who did not burn their feet.
10. Sheryl Olson asked: Do lightning patients with wet skin have a better prognosis (from current flashover) than patients with dry skin? No one could answer with any certainty. Sheryl stated from her unique experience as a Flight for Life nurse, wet patients tended to have less severe injuries. We suggested she review her data. It might be worth reporting. I pointed out that Ron Holle’s data revealed that more lightning casualties happen at the beginning of a thunderstorm as compared to during the middle of a downpour.
11. Our guest speaker today was Rich Collier. Rich is a charter member of LDC. He received his PhD in mathematics at the University of Colorado. The title of his talk: Mathematic Modeling of Lightning Environments. Rich gave an elegant presentation. I cannot do justice to his presentation in these minutes. I will convey lines from my notepad.
 - a. Lightning at the Kennedy Space Launch Pad. Catenary wire takes many hits.
 - b. Rocket triggered lightning. 2/3 attempts were successful in producing lightning.
 - c. Lightning threats can be divided into two groups:
 - Direct hazards to equipment, explosives, people.
 - Indirect hazards: Induced currents by electric and magnetic fields.

- d. Conductivity is reciprocal of resistivity.
 - e. Lightning: Characterized by fast rise times of both magnetic field changes and induced electric fields
 - f. The induced threats happen during the rise time.
12. Sheryl, Howard, and Rich Kithil lead a discussion on the “last resort” crouched position. All agreed that very few people could maintain that position for any length of time. They suggested a more comfortable and practical alternative: sit on the ground and then pull legs and feet off the ground. We all agreed that this recommendation is definitely a “last resort” measure. Many of us quoted Ron Holle’s position that “there isn’t any outdoor lightning safety.” And many suggested that one should be armed with information on how to lower one’s risks when caught in storm. Rich Collier said: “some places are safer than others.”
- On another lightning “safety” matter, Rich Collier stated that another indoor danger was standing or sitting near a wall that contained steel girders. I mentioned that there are many reports of indoor lightning casualties involving telephone use, bathtub and shower use, etc., but I could not recall a report of a lightning casualty to one standing near an interior wall of a major structure. Rich suggested that some of these casualties might be attributed to “heart attack.” More issues to ponder.
13. These minutes do not represent official positions of LDC or its members. They simply reflect comments made by the members.
14. Next meeting: Friday, September 9, 2005 at 11:30 am in the Main Auditorium of St. Anthony Central Hospital.

Speaker: Mike Foley

Topic: High and low voltage electrical damage; forensic issues.

Respectfully submitted,

Michael Cherington, MD