

Lightning Data Center
November 9, 2001
Minutes
St. Anthony Hospital, Denver

Quote of the Month:

"Times change and people change, but human nature remains the same. What was true for the ethical needs of human nature then and there is equally true here and now. Human nature, knowingly or not, has always sought a set of ethical ideals by which to be governed. The ethical integrity demanded by the act of oath-taking supports trusting relationships between physician and patient, physician and fellow physician, and physician and the science of medicine. These elements of the oath establish a tradition of medicine to which all those in the field of medicine, in the broadest sense, can subscribe. Hippocrates' oath is as fitting an ideal today as it was 2500 years ago."

Lycurgus M Davey, MD, Neurosurgery 2001

1. Meeting began at 11:30 am and adjourned at 1:15 pm.

2. Members present: Becker, Bergschneider, Breed, Burrows, Cherington, Collier, Hodge, Hoehn, Langford, Larson, Lines, Mains, McDonough, Molen, Olson, Staelin, Wachtel, Wallace, Yarnell, Zajac

3. I brought the following articles (abstracted in part here):

a. Elsom DM. Deaths and injuries caused by lightning in the United Kingdom: analyses of two databases. Atmos Res. 2001;56:325-334.

"With a UK population of around 58.2 million the risk of being struck by lightning...is one person in 1.2 million and the risk of being struck and killed by lightning is one person in 19 million."

b. Cazabon S, Dabbs TR. Lightning-induced cataract. Eye 2000;14:903

"Lightning-induced ocular injury can be caused by several different mechanisms....lightning bolt discharges..can produce tissue damage by direct electrolysis, resistance-induced heat or mechanical disruption by the associated shock waves."

c. Thomas PC, Kumar P. High tension electrical injury from a telephone receiver. Burns 2001;27:502-503

"A 28 year old man sustained high voltage electrical injury while receiving a telephone call...He had sustained 15% deep burns..along with a completely charred left thumb...The left thumb was amputated...injuries occurred due to arcing of the current from a high tension overhead electric cable..which was lying close (6 inches) to unguarded telephone cables at 2 km from the site of the accident.

4. Bard Zajac brought the following article that is a nice addition to the talk that he and John Weaver gave last month;

a. Zajac BA, Weaver JF. Lightning meteorology I: An introductory course on forecasting with lightning data. Symp Adv Weather Pro Sys (AWIPS) 2002.

5. Gene Lines brought the following sections from National Electric Code 2002:

- a. Lightning protection systems.
- b. Surge arrestors
- c. Transient voltage surge suppressors

Gene spoke about the controversies regarding changing old and new standards for lightning protection systems. Jeff Sellon spoke on this subject to our group in the past.

6. Ken Langford brought the following article:

- a. Williams ER. Sprites, elves, and glow discharge tubes. Physics Today. November 2001:41-47.

7. Rich Collier has been in contact with Timothy Eastman of the Coalition for Plasma Science. Any members interested in this topic should let Rich know.

8. Phil Yarnell gave us an update regarding the patient who was struck by "ball lightning" while speaking on a cordless phone. Members wanted to know how far she was from the base. Phil reports that she was 7 feet away from the phone base. George Hodge raised the possibility that the patient was contacted by a side flash.

9. Sheryl Olson gave an outstanding presentation entitled: Lightning and Aircraft: Flight Crew Air and Scene Safety. I cannot do justice to her presentation by writing a summary here. I shall transcribe the following notes that I took during the presentation:

- a. The earliest reported airline-lightning incident occurred in July 9, 1945 in Maine. All four propellers stopped.
- b. Apollo 12 spaceship was struck by lightning at 6000 feet on November 19, 1969. There were no serious injuries.
- c. In 2000 there were 50 planes damaged by lightning (some on the ground). Half of all weather mishaps with damage to airplanes involve lightning. Airplanes often trigger lightning because of the static buildup on the plane.
- d. Airplanes used to be metallic. Now composite materials are used. Fuselage - wire mesh is imbedded into composite material in modern planes.
- e. Devices have been built to dissipate electrical charges - e.g. bond straps on leading edges.
- f. Airplanes have been hit as far as 50 nautical miles from the cloud where the lightning originates.
- h. Pilots should deviate away from the anvil side of clouds.
- i. Flight crew might decide to travel to another hospital if persistent thunderstorm makes landing on hospital pad too hazardous to crew and patients
- j. After the helicopter has been struck by lightning, a thorough inspection is required looking for damage to the fuselage, avionics, etc.

10. These minutes do not represent official positions of the Lightning Data Center. They reflect the comments of members present at the meeting.

11. Next meeting will be held at 11:30 am on Friday, December 14, 2001 in the Birch Room at St. Anthony Central Hospital.

NOTE: The room change for the month of December only: Birch Room is on the Ground floor of the Hospital.

Happy Thanksgiving, everyone,

Michael Cherington, MD