

LIGHTNING DATA CENTER
JANUARY 10, 2003
MINUTES
ANTHONY HOSPITAL, DENVER, CO
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Quote of the Month:

“Humanistic care starts with technical competence.”

Timothy E. Quill, *Caring for Patients at the End of Life*, 2001

1. Meeting began at 11:30 am and adjourned at 1:30 pm.
2. Members present: Benson, Bradley, Cherington, Collier, Gartling, Gift, Hodanish, Keen, Kozak, Langford, McDonough, Middleton, Molsen, Olsen, Sanders, Toth, Yarnell.
3. Vicki Middleton is the Project Specialist for Medical Education at St. Anthony Hospital. She moved to Denver from Louisville, Ky where she was Director of Medical Education at the Heart and Lung Institute of Jewish Hospital. She has worked on organizing international conferences in the past.
4. Rich Collier spoke about the research being done by Seth Gutman and his colleagues. They are using global positioning satellites to measure water vapor from receivers on the ground. Their studies should be helpful in predicting pending lightning strikes. Rich brought the following article: Mzany, R, Businger S, Gutman SI. A lightning prediction index that utilizes GPS integrated precipitable water vapor. *Weather and Forecasting* 2002;17:1034-47.
5. Phil Yarnell described the details of a recent case. The patient, struck by lightning, had many post lightning strike symptoms including: fatigue, neck pain, and visual symptoms. Phil and Gil McDonough discussed the sense of frustration experienced by patients with these symptoms. Both Phil and Gil emphasized that this post-lightning syndrome is a real condition.
6. The following articles relate to issues of lightning, ear injuries, hearing deficits, and lesions of the retrolabyrinthine portions of VIII Cranial Nerve. (Abstracted in part here):
 - a. Gluncic I, Zeljka R. Gluncic V, Poljak K. Ear injuries caused by lightning: report of 18 cases. *J Laryng Otol*2001;115:4-8.

“The exact pathogenetic mechanism of central nervous and cochleovestibular lesions occurring in lightning survivors has not been fully elucidated. Possible explanations...passage of lightning through the temporal bone causing microhaemorrhages, microfractures, or more systemic mechanisms...and severe meningitis occurring in lightning victims affecting the retrolabyrinthine portion of the VIIth and VIIIth nerve.”

- b. Poulsen P, Kundstrup P. Lightning causing inner ear damage and intracranial haematoma. J Laryngol Otol 1986;1000:1067-70.
- c. Mora-Magana I, Collado-Corona JA, Toral-Martinon R, Cano A. Acoustic trauma caused by lightning. Int J Pediatr Otorhinolaryngol 1996;35:59-69.
- d. Qureshi NH. Indirect lightning strike via telephone wire. Injury 1995;26:629-30.

“A 27 year old woman was indirectly struck by lightning at her home while using the telephone during a thunderstorm...As the cochlea is surrounded by the bone of otic capsule (except medially), the entry point for the current could more easily be through the internal auditory meatus through cochlear neurons and low resistance cerebrospinal fluid.”

- e. Jones DT, Ogren FP, Roh LH, Moore GF. Lightning and its effects on the auditory system. Laryngoscope 1991;101;830-4.

“Patients struck by lightning can present with a wide variety of unusual otologic problems including burns to the external auditory canal. Tympanic membrane rupture, middle ear injury, and sensorineural hearing loss.”

- f. Ogren FP, Edmunds AL. Neuro-otologic findings in lightning-injure patient. Semin Neurol 1995;15:256-62.

“Two possible mechanisms of injury: direct effect and blast effect. Direct effect may have occurred when current traversed either the external or internal auditory canal...injury to the central nervous system (CNS) with transfer of electricity via the cerebrospinal fluid (CSF) through the internal auditory canal, with resultant injury to the facial nerve, superior vestibular nerve, and passage into the cochlea via the cribriform area of the internal auditory canal..Deafness following lightning injury may sometimes be caused by blunt trauma to the temporal bone.”

- g. Cankaya H, Egeli E, Evliyaoglu Z. Hearing loss caused by lightning strike:
Case report and review of the literature. J Otolaryng 2002;31:181-3.

“The most important symptom of lightning strike in the ear is hearing loss. The hearing loss is usually conductive, but, in most cases, sensorineural hearing loss at high frequencies is also present. In a postmortem temporal bone study by Young et al., in patients who had severe bilateral sensorineural hearing loss...strial degeneration, and a decrease in the spiral ganglion cell population were detected...Patients with vestibular symptoms should receive antivertiginous drugs...Conductive hearing loss resolves with spontaneous healing of the tympanic membrane...Sensorineural hearing loss does not have a high rate of resolution.”

7. Our speaker today: John Gartling of The ASU Group. John’s topic: “Catastrophes Weather or Not.” John gave an outstanding talk. I cannot give a written summary of his talk, but I did take a few notes that I can share:

- a. Odds of being killed by an earthquake = 1: 11 million
of being killed by a tornado = 1: 1 million
of being killed by lightning = 1: 600,000
of an accountant losing job in 1 year = 1: 40

- b. Largest Catastrophic Disasters (by Insurance Loss):
Sept. 11, 2001 Terrorist attack
1992 Hurricane Andrews

- c. Top states with covered insurance losses:
Florida, Texas, Louisiana, North Carolina, Mississippi,
Maine, South Carolina, Alabama, New York.

- d. Fujita winds damage scale is NOT a tornado intensity scale.

8. Bob Wallace and Beth Elland had prepared a Draft Outline entitled: Lightning Data Center – Plan to Develop a Business. This Draft Outline was distributed to the members. The outline includes the following sections: Mission; Vision; History; Organization and Management; Long-term Goals; Products and Services; Development Schedule.

Bob and Beth were unable to attend today’s meeting but they would very much like input from the members. Bob’s e-mail address is:
Bobwallace@centura.org

9. These minutes do not represent official positions of the Lightning Data Center members. They reflect the comments of members present at the meeting.
10. Next meeting: 11:30 am Friday, February 14, 2003 in the **Birch Room** of St. Anthony Central Hospital

NOTE: location of the February meeting: BIRCH ROOM on the ground floor of St. Anthony Central Hospital

Guest Speaker: Stephen Hodanish of the National Weather Service.

Respectfully submitted,

Michael Cherington, MD