cases abstracted were limited strictly to victims whose injuries were directly related to the Ji Ji Earthquake, and those who died but whose death was not related directly to the Earthquake were excluded. Geographic and seismographic information, time of origin, location of epicenter, and the depth and magnitude of the Earthquake were obtained from Central Weather Bureau. Department of General Budget, Accounting and Statistics (DGBAS) provided the data for economic loss due to the Ji Ji Earthquake.

Result: There were 2,347 deaths and 11,305 persons were injured in this disaster. Based on the summary of deaths in the stricken areas, Taichung had highest number of deaths (1,777) followed by Nantou (824) and Taipei (132). The epicenter was located, within Nantou county whereas Taichung had the highest number of death. Total economic loss from this disaster has been estimated at US$11.5 billion, including US$8.4 billion in asset loss. The asset loss consists of US$7.9 billion in buildings and equipment and US$0.5 billion in transportation infrastructure. The remaining US$3.1 billion was due to the loss of potential revenues includes US$0.1 billion in agriculture, US$2.3 billion in industry and US$0.7 billion in service.

Conclusion: Traumatic death, the 3rd leading cause of death in Taiwan from 1967 to 1997, was dropped to the fourth place in 1998 due to the implementation of motorcyclists' helmet use law effective on 01 June, 1997. However, the casualties of the Ji Ji Earthquake made trauma the second leading cause of death in Taiwan, only second to cancer in 1999. The data suggest the importance of disaster prevention, which also is a crucial public health issue.

Keywords: cost analysis; disaster; injury, Ji Ji earthquake; Taiwan
Prehosp Disast Med 2002;17:s14-15.

Morbidity Following Chi-Chi Earthquake in Taiwan

Wan-Ching Lien, MD; Fuh-Yuan Shih, MD;
Matthew H-M Ma, MD, PhD; Wen-Jone Chen, MD, PhD
Department of Emergency Medicine, National Taiwan University Hospital, Taipei, Taiwan

Objective: To observe the characteristics of victims at different areas following Chi-Chi earthquake and provide a view for disaster preparedness in the future.

Methods: A retrospective study of 6,970 victims was conducted during the first three days after Chi-Chi earthquake that caused 8,722 injuries. Medical records were reviewed from the local hospitals, and the characteristics of the victims, visiting day, and diagnoses were collected and analyzed. Additional information was obtained from the government, local Health Bureau, and field hospitals.

Results: On the day of earthquake, there was a sharp increase in the number of the patients (odds ratio = 2.65), most for head injuries (odds ratio = 3.5), and then, declined dramatically on the following days. 80% of patients were clustered around epicenter, Chi-Chi in Nan-tou, but the critics occurred more in Taipei (odds ratio = 1.12), less in Nan-tou (odds ratio = 0.22), the location of epicenter. The elderly were more susceptible to severe injury (odds ratio =

1.67), but not the children. Victims with head injury were more frequent in Taipei (odds ratio = 1.5) and less in Nantou (odds ratio = 0.21). Burn patients occurred mostly on the day of earthquake (odds ratio = 1.41), and the children were hurt more (odds ratio = 4.77).

Conclusion: The medical needs following a mass-disaster were recognized. New proposals should be made that will improve patient care in future catastrophes.

Keywords: Chi-Chi earthquake; children; elderly; injuries; odds ratio
Prehosp Disast Med 2002;17:s15.

Prediction of the Devastating Effects of a Typhoon— A Prediction Model Based on Logistic Regression

Fuh-Yuan Shih, MD; Matthew H-M Ma, MD, PhD;
Kuang-Jui Chang, MD; Wen-Jone Chen, MD, PhD
Department of Emergency Medicine, National Taiwan University Hospital, Taipei, Taiwan

Objective: Typhoons are the most common natural disaster-producing event in Taiwan. Accurate alarm systems play a pivotal role in mitigation of the damage produced. A statistical model was devised to predict the impact of typhoons.

Methods: The climate characteristics of the typhoons in recent 40 years were collected from the Central Weather Bureau. Their health effects were derived from the official reports of the Department of Interiors. Logistic regression with forward variables selection method was used to build a prediction model for the odds ratio (OR) of a typhoon to cause great loss.

Results: From 1958 to 2000, 205 typhoons were analyzed. A steady decline trend in severity was noted (OR = 0.94). When typhoons approach terrain, great damage ensured (OR = 4.49). Other risk factors included the duration of >48 hours (OR = 4.20) and diameter (OR = 1.007 km). They also contributed to predicting property damage. Other factors including the seasons, categories of intensity, route, and atmospheric depression were not contributory statistically. A prediction model with acceptable sensitivity and specificity was proposed.

Conclusion: Through this proposal, it was possible to predict the impact before attack. More people could be evacuated in time and disaster response resources could be activated and properly allocated. The devastating effects could be alleviated.

Keywords: tropical cyclone; typhoon; logistic regression; prediction model
Prehosp Disast Med 2002;17:s15.

Dissater Response/Evaluation
What Have We Learned, So Far?

Marvin L. Birnbaum, MD, PhD
Professor of Medicine and Physiology, University of Wisconsin
Editor-in-Chief, Prehospital and Disaster Medicine

Prior to the last decade, reports pertaining to Disaster Medicine were a series of anecdotes and descriptions.