

TRIAGE DECISION TREES AND TRIAGE PROTOCOLS
CHANGING STRATEGIES FOR MEDICAL RESCUE
IN CIVILIAN MASS CASUALTY SITUATIONS

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SUMMARY

The objective of this study is to determine whether improvements can be made in the disaster rescue process in order to increase the survival of victims who now die. In addition to a review of the available literature on the triage decision process the investigation reviewed over one hundred disasters and attempted to "reconstruct" several disparate disasters from autopsy reports and other evidence.

The report includes a description of the state of the art of civilian disaster triage and medical rescue. Disaster medical procedures are contrasted with the much more advanced state of the art of trauma care in general.

The essential findings of the study are that:

- o there is a multidecade gap between the state of the art of civilian disaster medical rescue including triage formulae and present levels of trauma care in the United States;
- o there is evidence that a significant percentage of victims who die in disasters could be saved by improved medical rescue techniques and disaster management strategy;
- o a set of recommendations to close this gap are derived and presented herein.

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PREFACE

THE ETHICS OF TRIAGE Many decisions made in preparation for the response to disaster hold the potential for life and death of the victims. No node in the process so clearly requires the disaster manager to give the resources of life or withhold them as do those decisions subsumed in the "triage" process. The ethics of such decision making underlies all investigation into the process. Thomas J. O'Donnell, S.J. has explored the problem and concludes "the need for such sorting is ... indicated from the viewpoint of the exigencies of the Natural and Divine Positive Law. Current military and medical considerations are ... in accord with proper ethical and moral principles." (143)

PROJECT OBJECTIVES

To examine the relevant medical and disaster literature in order to determine the state of the art and particularly the triage node of the disaster response system. The literature and data base search was planned to establish a base line evaluation of medical rescue, to provide relevant information on a large number of disasters and to avoid the duplication in so far as possible of existing disaster procedure guidance documents.

To review from documentary sources a large number of disasters and disaster victims in an effort to determine the availability of demographic, physical, and forensic data in conventional disaster literature.

To obtain and examine in detail the autopsy records and accounts of physical evidence of fatalities in the light of present day optimum disaster management.

To determine the availability and quality of such records as a source of information from which to derive an analysis of the destructive and rescue process.

To "reconstruct" those disasters from truly evidentiary material in an effort to determine whether a present day and/or superior process would have resulted in a greater salvage of lives.

To determine, in effect, whether under model conditions all who died were doomed under any circumstances.

To consider what measures, decisional and otherwise, can be taken to save the potentially salvageable but currently unsalvaged victims.

METHODOLOGY

An extensive literature search was conducted through the mechanisms of the National Library of Medicine, the Library of Congress, the Federal Emergency Management Agency's collection of documents and audiovisual materials. The Medical and Main University Libraries of Georgetown University, George Washington University and the University of Arizona and their reference staffs assisted in the search for literature and documents.

Data base search was amplified by computer examination of Lockheed's Dialog data bases conducted by consultant Dr. M.A. Cremer.

The Italian literature in reference to contemporary Italian disasters and, particularly, the extensive print and electronic media coverage of the earthquake of 1980 was conducted and translated by Professor Gianni Spera of the Romance Language Department of the University of Arizona and Mrs. Claire Spera of the Arizona Press, Inc. and their staffs. Several hundred newspaper articles and transcriptions were examined and translated.

The librarians of the Washington Post and the Los Angeles Times provided reproductions of documents and information.

The facilities of the Georgetown University Center for Strategic and International Studies made possible numerous and lengthy interviews with experts on decision making and crisis management. The opportunity for the Principal Investigator to participate in Mr. James Woolsey's crisis management conferences provided access to an exchange of information on crisis decision making in areas of vulnerability in such areas as the military, energy, information systems, and transportation.

Face to face interviews were conducted with Dr. Franco Ferracuti, Professor of Criminology and Forensic Psychiatry of the University of Rome, Professor Carlo Manni, Professor of Surgery, Catholic University of Rome, Dr. William Gunn, Director of Emergency Service, World Health Organization, Dr. Nicholas de Feu, Professor of Emergency Medicine, Henri Mondor Medical

Division of the University of Paris supplied documentation regarding the curriculum of the School of Disaster Medicine, Dr. P. Hugonard, Professor and Head of Department of Anesthesiology and Reanimation and Head of the School of Disaster Medicine of the Henri Mondor Division of the University of Paris, Assistant Professor Patrick Laguedec of the Ecole Polytechnique provided over thirty-two documents dealing with disaster planning and management and several interviews. Dr. David Nancekievill of St. Bartholomew's Hospital in London contributed several days of interviews concerning his experience with and conduct of triage in close to 4000 major accidents and disasters. Dr. William Fahey of New Zealand, described his forensic experiences in the examination of Antarctic disaster sites. Dr. Victor Esch of the District of Columbia Police Fire Surgeons and Miss Myra Lee provided eye witness accounts of the Air Florida 90 crash and the Mount St. Helens eruption respectively.

Dr. Donald D. Trunkey, Chairman of the Committee on Trauma of the Amercian College of Surgeons and Professor of Surgery, University of California at San Francisco, not only contributed in several face to face interviews but obtained the interest and cooperation of the 25 members of that committee and the State Chairmen of the fifty states' Trauma Committees. Dr. Frank Mitchell, Professor of Surgery, University of Missouri and head of the Disaster committee of the ACS COT, provided his wisdom, his analytical thinking and his thoughts on the new Madrid earthquake to come. Dr. E. Ott and Dr. E. Martin described the Munich rescue vehicles and changes in their system occasioned by the Oktoberfest bombing.

Three very different mass casualty producing disasters in three culturally, geographically, and economically different areas of the United States were selected: an earthquake in the suburban sunbelt area of Southern California, a volcanic eruption in the mountainous, fog clouded area of the Northwest, and a rush hour air crash within the confines of a major East Coast city. Any, or all, of these disaster types is likely to recur within the near future somewhere in the United States.

Hospital and autopsy records were obtained for all but three of the victims. The individual records were analyzed for type(s) of injury, cause of death, and whether or not this patient might have survived given optimum care. The criteria for salvageability were those considered standard in emergency rooms and operating rooms in 1983. Medical records vary and in some cases the correct decision was not clear. In those cases we classified the death as unpreventable. Further analysis was made for patterns of injury and the potential for survival within each disaster. Definite trends have developed from the analysis of our data.

The analytic team consisted of a pathologist, forensic scientist, traumatologist, and critical care specialist.

As anticipated, obtaining actual autopsy records was a major task during the course of the study for many reasons, not the least of which was local agency reluctance to disclose these records on an anonymous research basis. In the long run the task would have been difficult, if not impossible, had not the Principal Investigator and Dr. Cornelius G. McWright, Former