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Effect of Building Type on Risk of Death Following the 1992 Earthquake in Turkey

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Introduction: During the earthquake (EQ) that struck Erzincan, Turkey in March 1992, many mid-rise masonry and concrete buildings (MRB) collapsed. An important reason for the collapse was the frequent use of the first story for commercial stores, causing an open, "soft" story. Engineering reports hypothesized that, in particular, such building collapses were lethal. In view of the increasing use of such buildings in urban areas, a further examination was conducted of the relation between building type and lethality following the EQ.
Methods: Geophysical and structural information was gathered from official records, independent engineering reports, and visual inspection. The site of victim deaths was determined from official records. Further information was collected for a sample of deaths through stratified, random interviews of eye witnesses. Of this sample, the subset who died in MRB (n = 23) was compared to a randomized control group who survived MRB (n = 28) collapse.
Results: Though all building types were subjected to similar seismic intensity (Mercalli IX), MRB and one-story adobe structures appeared most vulnerable to collapse. Of the 466 people who died in the city, 456 were indoors with most (418) dying in MRB collapses. Building occupancy rates could not be determined accurately. In this sample, deaths in MRB collapses occurred more likely on the first story ($p < .02$). The study was unable to determine whether the victims' position within the room or his/her behavior influenced outcome.
Conclusion: Though fatality rates could not be determined, MRB collapse appears to be associated with an inappropriately high number of fatalities in comparison with other building types. A "soft" first story especially appears to be lethal. Deaths might be prevented by enforcing building codes which should include the design of first stories.

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Emergency Medical Treatment in the "Billiards Crash" Accident on the Superhighway in Japan

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Objective: To investigate controversial points and countermeasures of emergency medical treatment in the large-scale accident on the superhighway in Japan.
Incident: The large-scale accident involving as many as 186 vehicles occurred on the superhighway. Two persons died and 108 were injured. Personnel were transported to the scene by helicopter and, for the first time, landed on the superhighway to provide emergency medical assistance.
Discussion: Controversial points include: 1) lack of recognition of the importance of emergency medical measures; 2) delay of information to medical institutions; 3) no participation of physicians in the triage process despite the seriousness of the accident; and 4) no cars or helicopters for physicians.

Counter-measures include: 1) creation of emergency manuals to prepare physicians for participation in emergency medical procedures; 2) triage conducted by physicians; 3) cars or helicopters available for physicians; and 4) joint practices involving all concerned parties.
Conclusions: Emergency medical treatment, including quick response time, must be planned for by creating manuals and determining practices for disaster prevention in Japan.

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Cause of Death, Seat Position, and Outcome in Victims of the Clapham Rail Disaster

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Objective: To describe the effects of a major rail disaster on the passengers involved in terms of the types of injury, the cause of death, and the influence of seat position on patient outcome.
Methods: Retrospective study of the Clapham Rail Disaster with 300 of 1,450 passengers injured and 35 killed. Injury Severity Score categorized injured passengers and Signed Rank testing to establish significance. Use of hospital and post-mortem records in cases of fatality.
Results: In most cases (63%), cause of death was due to severe head injury, 26% due to multiple injury, and four deaths were due to traumatic asphyxia, and thus potentially were preventable. Facing travel resulted in more severe injuries, and a seat position on the left also conferred greater risk.
Discussion: Injuries among survivors mirrored those of unrestrained vehicle passengers. Therefore, there is an argument for the use of rearward facing seats and lapstraps. Lessons learned in dealing with this accident are of interest to anyone planning for or dealing with major rail and other accidents.

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Fog-Related Motorway Disasters: An Epidemiologic Study

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Objective: This study deals with a group of mass accidents on the A-4 motorway "Serenissima" (from Brescia to Padua, Northern Italy) during foggy conditions. Risk factors, epidemiology, and rescue techniques and troubles were analyzed.
Methods: All fog-related accidents with 10 vehicles or more, and at least five casualties, were selected in the period ranging from January 1983 through December 1992. Data regarding time and weather, site of the accident, kind of vehicles, casual-