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### Management of Multiple Injuries in a Disaster

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#### I. Statistics of Disaster Medicine

- A. Traffic Accidents:** In recent years, worldwide, there have been 700,000 people killed and 1,500,000 injured annually. In the last five years in China, 1,253,768 persons suffered traffic accidents; of those, 264,933 died.
- B. Other Disasters in China in Recent Years:**
  1. The economic loss caused by calamities is about \$18,800 per square meter of coastal area.
  2. Earthquake: From 1950 to 1990, there were 22 earthquakes. In 1976, the shock of Tang Shan Earthquake was 7.8 magnitude, with 242,000 persons killed by the quake.
  3. Flood: Rainstorms have caused serious floods in the low-lying areas. The China Reduced Disaster Newspaper showed that floods caused economic losses of about \$228 million annually.
  4. Typhoon: In 1982-1990, 4,167 persons were killed, 2,550,189 houses were damaged, and 14,345 ships were overturned by typhoons.

II. Disasters in China have increased year by year. In Guangdong Province, the harvested fields were damaged: 181,424 hectares by floods and/or typhoons and/or dry spells in 1960s.

III. There are three main Groups for Deaths of the Multiple Wounded by Time Post-event.

1. 50% die in a few seconds or few minutes of the trauma. The cause of these deaths are injuries to the heart, aorta, major vessels, and/or lacerations of the brain, brainstem, and spinal cord, etc.
2. 30% of the wounded die within 2-3 hours, of subdural hematoma, hemothorax, hepatic and/or splenic rupture, open femoral fracture combined with multiple injuries, etc.
3. The 20% of patients with multiple injuries die within a few days or few weeks after the injuries; the main cause is infection.

IV. Management of Patients with Multiple Injuries in Disaster

1. Establishing the Unity Emergency Alarm Number
2. Establishing a modern communication system
3. Triage and first aid for the casualties in the calamitous area
4. Management of the mass multiple-wounded

**Keywords:** causes; characteristics; China; costs; deaths; disasters; drought; earthquakes; events; floods; injuries; management; rain storms; statistics; typhoons  
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### Treatment of Critical Multiple Traumatic Wounds Complicated with MOF, Septic OPSI

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Owing to improvement of prehospital first aid, 1,446 sorties of ambulances were made, and 110,889 persons requiring first aid were transported to the Shanghai First Aid Central Station (SFACS) during 1999. The number of persons wounded by traffic accidents and other events was 26,681 (24% of total). Within the past year, the intensive care unit (ICU) received 15 of the patients with multiple traumatic wounds; among these were 11 cases with wounds to three organs. Of the 15, 11 persons recovered and 4 died. The curative care of the wounded consisted of early careful physical examination and ICU monitoring.

1. Hemodynamic monitoring — can reflect the cardiac function, to distinguish the character of pulmonary edema and continuously display cardiac functions associated with septic shock. The monitor can connect with the ventilator to show the parameter of lung function.
2. Acute renal failure — continuous arterial-venous filtration that is effective in removing overhydration and medium small molecule substances from the blood.
3. Anticoagulant therapy — The multiple trauma and the MOF-wounded usually receive massive transfusions and suffer from disseminated intravascular coagulopathy (DIC) with the result of blood coagulation disturbance. Then it is necessary to examine the mechanisms of blood coagulation and DIC. If it is found to have delayed prothrombin time and trombin time, a prothrombin complex must be used; delayed KPTT, then cryoprecipitate and FEP must be used. If the diagnosis of DIC is proved, heparin and other antihemolytic substance can be used.
4. Overwhelming Post-Splenectomy Infection — The new problem about immunology. If it is possible, the wounded must be examined for some immunodeficiency and receive relative treatment.
5. Establish ICU — To manage the critical multiple injuries that not only decrease the mortality, but also can represent the level to traumatic treatment.

**Keywords:** anticoagulants; disseminated intravascular coagulopathy (DIC); immunology; infection; intensive care unit (ICU); mortality; multiple injuries; prehospital; trauma; treatment

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### One Year Georgian Experience of Nitrous Oxide Usage in Prehospital Care and Analgesia during Transportation

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The mixture of oxygen and nitrous oxide was used in 29 patients transported by the Center of Disaster and Emergency Medicine during emergencies and disasters in 2001. In all 29 patients, the pain was controlled: 10 had cardiogenic shock, eight had intracranial injuries, seven suffered gunshot wounds, and 4 had burns of different degrees. The Center of Disaster and Emergency Medicine participated in the medical response to four disasters in