

with established effectiveness in preventing or alleviating post-traumatic stress disorder (PTSD). The basic principles of CBT applied to disaster/terrorism situations will be described and compared with other treatment strategies for those experiencing traumatic events. Treatment outcome research on different types of short-term psychological treatment will be presented, using efforts following the 1988 earthquake in Armenia as an example. The mental health needs/problems of disaster responders, and the local population at different stages following a disaster will also be examined.

**Keywords:** cognitive behavior therapy (CBT); disaster; critical incident stress debriefing (CISD); efficacy; mental health; needs; psychosocial; support; terrorism

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### Theory and Practice in Acute Care of Psychological Trauma

*Rob Gordon, PhD*

Consultant Psychologist, Victorian State Recovery Unit, Victoria, Australia

There is debate about whether debriefing or trauma counseling is advisable in the immediate aftermath of a traumatic experience, or whether victims should be left to their own support systems. Experience in various traumatic events in Victoria over the last 20 years has provided a number of lessons about early care of victims. This presentation reviews a number of incidents to delineate basic principles underlying the neurological and psychosocial impact of trauma. A method of early support will be outlined, using principles of psychological first aid, education, and preventive treatment. This method is analogous to physical first aid, which includes stopping further deterioration, stabilising the situation, and initiating recovery processes. The most effective techniques often are simple interventions supported by clear understanding of the potential psychosocial damage likely to result from trauma. There are good theoretical reasons why more complex interventions may be counterproductive in the immediate aftermath without a preparatory intervention. However, experience shows that victims often do not get appropriate assistance, resulting in complication of their difficulties. Some examples of its application in recent events will be described.

**Keywords:** counseling; debriefing; impact; interventions; neurological; psychosocial; recovery; support; trauma

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## Symposium: Prehospital and Emergency Medicine — Trauma Systems

*Chair: Professor Peter Cameron*

Monash University, Melbourne, Australia

### Trials and Tribulations of Establishing a Trauma Registry

*P. Cameron,<sup>1</sup> C. Finch,<sup>2</sup> J. McNeil,<sup>2</sup> K. Smith<sup>2</sup>*

1. Chinese University of Hong Kong, Hong Kong

2. Monash University, Melbourne, Australia

**Background:** The establishment of a statewide trauma registry (VSTORM), was recommended as part of a review of trauma and emergency services in Victoria in 1999.

**Aim:** To describe barriers to implementation and issues arising from the first year of VSTORM data collection.

**Methods:** VSTORM data entry commenced 01/07/01,1999, with the aim of collecting all major/potentially major trauma cases. The definition of major trauma included intensive care unit stay, urgent operation, death, and ISS >15. Ethical approval and hospital board approval was sought from each hospital before data collection commenced. An Access database was established.

**Results:** Approximately 1,700 major trauma cases occur each year in Victoria. The VSTORM database currently is collecting data for more than 70% of these cases. Initial problems with implementation included:

- Multiple Ethics Committee approvals and lack of understanding of privacy legislation by Ethics Boards;
- Payment, coordination, and training of hospital-based data collectors;
- Database construction and data field definition;
- Coordinating multiple stakeholders from multidisciplinary backgrounds;
- Developing valid outcome measures other than death;
- Confidentiality — access to the database and publication of interim results.

**Discussion:** The full implementation of this well-funded, broadly supported initiative has been delayed because of problems that were predictable, in hindsight. Centralisation of ethics approval processes would help systems-based research. Validated, efficiently collected outcome variables should be developed. Relating funding and accountability for accurate data provision also will help. The lessons learnt from this project should assist others setting up trauma/disease registries.

**Keywords:** barriers; data; outcome; registry; research, systems-based; trauma

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### Prehospital Predictors of Major Injury

*P. Cameron,<sup>1</sup> B. Gabbe,<sup>2</sup> C. Finch,<sup>2</sup> J. McNeil,<sup>2</sup> K. Smith;*

*R. Wolfe<sup>2</sup>*

1. Chinese University of Hong Kong, Hong Kong

2. Monash University, Melbourne, Australia

**Introduction:** As part of the system of trauma care, it is essential that accurate predictive models are developed to triage patients from the scene of injury to the appropriate hospital. Various models have been proposed, usually based on physiologic, anatomic or mechanistic data. Given time and resource constraints in the prehospital arena, a compromise must occur between accuracy and simplicity in developing these models.

**Methods:** Data from the Royal Melbourne Hospital (major trauma service) database were used to develop predictive models for the outcomes of ICU admission and

death using prehospital data for major injury. Multivariate, logistic regression, recursive partitioning, and artificial neural network modeling were used to establish potential predictive models with the aim of producing both the simplest useful model and the most accurate model. Each potential model was evaluated for its predictive ability using 12 months of data from the Victorian State Trauma Registry (VSTORM).

**Results:** Consistent with previous studies in this area, physiologic data (blood pressure, pulse rate, Glasgow Coma Score [GCS]) were found to be predictors of the likelihood of death and severe injury requiring intensive care. The motor score of the GCS dichotomised to normal (score of 5) or abnormal (<5) appeared to be the most predictive single component of total GCS. Other factors such as respiratory rate, insurance status, age, and injury mechanism added to predictive ability. However, the increase in sensitivity was offset by increasing complexity in the modeling.

**Conclusion:** Simple, easy to collect predictors with a sensitivity of >85% and an over-triage rate of <50% are the ideal. Early results from this statistical modeling would suggest that a useful predictive model is possible.

**Keywords:** death; intensive care; model; predictive; prehospital; trauma  
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### Advanced Technology Does Not Work by Itself

Ahmed Ammar

General Director, El Salam Hospital, Cairo, Egypt

El Salam Hospital is located in a very critical area just outside Cairo, where there are busy highways with daily road traffic accidents. It is located very near to the industrial districts and is just a five-minute drive from the airport. Therefore, it was important to establish a well-equipped trauma center supported with several well-equipped ambulances including an Intensive Care ambulance, a Surgical Unit Ambulance in which surgery can be performed, and a Cardiac Intensive Care Ambulance in addition to the regular ambulance service cars. A disaster plan and special medical and surgical teams were prepared. A very well-functioning network of communications was established by the Ministry of Health that connects the Hospital with all the ambulance service cars and the communication center in the Ministry Hospital. During the last year, the disaster plan was not activated. However, the Surgical Ambulance Car was called 32 times, mainly to the sites of traffic accidents. A total of 52 surgical operations (mostly minor surgeries) were performed in the Surgical Ambulance. Three cases of severe head trauma required performance of burr hole explorations and drainage, and closure of open cranial defects. Several problems were encountered:

1. In a country in which the medical staff is dependent upon income obtained from their private practice, it was very difficult to get good surgeons *motivated* and *committed* enough to be available and agreeable to work at any time. The alternative was to use a medical staff of lesser quality, who have not been able to find a place in private practice. However, this group seemed resistant to being re-educated.
2. Awareness of the people about the traffic rules and the

hazards, and even more importantly, what to do at the time of accidents.

3. *Trust* between the people at large, especially the victims, and the medical ambulance staff.
4. The *confidence* of the ambulance staff to use the modern equipment. The Continuing Medical Education program and the motivation of the medical staff to update their medical knowledge.

**Keywords:** ambulances; barriers; cardiac intensive care ambulance; disaster; intensive care ambulance; plan; surgical ambulance car; trust  
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### Management of Mass Casualties from Traffic Accidents in China

Zhang Hong-Qi (Professor); Zhang Yu-Zhen (Chief Nurse)

World Disaster Medicine Editorial Committee, Shanghai, People's Republic of China

According to the statistics of the World Health Organization (WHO), since the advent of the automobile, >32 million persons have died from traffic accidents, and an average of 700,000 persons die annually. Based on the data of the WHO, the number of annual deaths due to traffic accidents is more than the number who have died from earthquakes, floods, typhoons, and all other natural disasters.

China is the biggest developing country: it has 2.2% of the total number of motor drivers in the world, but the automobile accident has increased to 9%. China has 14,350,000 kilometers of highways, and an average of 1,131 of traffic accidents that occur daily, killing an average of and 229 persons.

Shanghai is one of the biggest cities in the world, with a population of 13,000,000 inhabitants. The average density of the population is >1,000 persons per square kilometer. Statistics of the past five years showed that the traffic accidents exceeded the past records by 60,000 cases with two persons killed daily (in the whole China, one person is killed by accidents every six minutes).

**Numbers of traffic accidents, persons injured, number of persons killed in China 1987-1993**

Year	Accident	Wounded	Dead
1987	298,147	187,399	53,439
1988	276,071	170,598	54,814
1989	258,030	159,002	50,441
1990	250,297	155,072	49,271
1991	264,817	162,019	53,292
1992	222,878	144,264	58,729
1993	242,343	142,251	63,508
Total	1,612,583	1,120,605	383,494

From the above data, several characteristics were noted:

1. Of all the persons killed in traffic accidents, 85% were below the age of 40 years;
2. Prehospital mortality of traffic accident victims is 66%;
3. 60% of traffic accidents involve bicyclists in the cities;

The First-Aid Central Station (SFACS) of Shanghai possesses 173 ambulances and 517 specialists. The facilities of the new resuscitation ambulances, so-called "Movable ICU", contain a cardiopulmonary monitor, ventilator, emergency drugs, and other resuscitative equipment. In the ambulance, there also is excellent communication equip-