

Preventing death and disability through the timely provision of prehospital trauma care

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Injury remains a major cause of death and disability worldwide, and places an enormous burden on countries with limited resources. The optimal way to reduce life-threatening injuries is through primary prevention efforts that decrease the incidence and severity of injuries. When prevention fails, however, it is often possible to minimize the consequences of injury through effective prehospital and hospital-based trauma care.

Unfortunately, much of the world's population does not have access to prehospital trauma care, particularly in low income countries. In many parts of the world, few victims receive treatment at the scene and fewer still receive safe transport to the hospital in an ambulance. Transport, when available, is usually provided by relatives, untrained bystanders, commercial drivers (minibus, taxi or truck drivers), or by public safety officers (police and firefighters).

Many high-income countries have developed technically complex and costly prehospital trauma care systems to provide care for acutely ill or injured patients. While these systems are impressive and they undoubtedly benefit some patients, there is little evidence that they are inherently superior to less costly systems that provide a more basic level of prehospital care. The start-up and maintenance costs of advanced life support systems place them out of the reach of all but a few countries, effectively eliminating them as a practical, sustainable option in many parts of the world. Expensive systems are not necessarily the best. With few exceptions, most advanced prehospital interventions have not been scientifically proven to be effective because the necessary randomized trials have not been conducted.

In fact, most of the benefits of prehospital trauma care can be readily realized if basic, vital interventions are

quickly and consistently applied, utilizing a country's existing resources and health-care infrastructure. Considerable good may be accomplished by ensuring that victims receive life-sustaining care within a few minutes of injury. Even in countries with limited resources, many lives may be saved and disabilities prevented by teaching individuals what to do at the scene of an injury. The foundations of an effective prehospital system can be laid by recruiting carefully selected volunteers and non-medical professionals, and providing them with training as well as the basic supplies and equipment they need to provide effective prehospital care. Most severely injured patients who die in the first few hours after injury succumb to airway compromise, respiratory failure or uncontrolled haemorrhage. All of these conditions can be treated using basic first aid measures.

The challenge, however, is to promote sustainable and affordable prehospital trauma care systems that provide services to everyone. To do this, each system must be defined by local needs and capacity and must be developed with due regard for local culture and health-care capacity. To facilitate the system's adoption, members of the community being served must be directly involved in developing and administering it, and initial infrastructure development should focus on identifying those responsible for administration, system design and legislative development, addressing political concerns and economic considerations. It is not easy to invest in and maintain a prehospital care system: competing priorities in budgets may make it difficult to secure adequate funding. Although prehospital systems that rely on volunteers are not unique, system planners may want to explore the provision of financial or other incentives for providers. Additionally, the absence of cost-recovery mechanisms

may further complicate the issue. Stakeholders may want to consider innovative strategies for generating resources, such as dedicating a proportion of highway budgets, allocating a portion of vehicle registration fees or traffic penalties, or levying a fuel tax.

Two WHO publications assist decision-makers faced with the challenge of developing trauma care systems in low and middle income countries. *Guidelines for essential trauma care*¹ addresses hospital-based trauma care, while *Prehospital trauma care systems*² focuses on injury care in the prehospital environment before the patient reaches the hospital, recognizing the role of simple, basic, cost-effective systems; it provides a global overview of system development and recommendations for countries with no prehospital care system in place, as well as mechanisms to strengthen care in countries with existing prehospital care systems.

The global burden of injury is immense. Policy-makers can reduce the human and economic toll of injuries by implementing basic, simple prehospital trauma care systems. Any prehospital care system, no matter how narrowly defined, will also be called upon to respond to all types of medical, obstetric and paediatric emergencies. When these prehospital care systems are linked to a country's existing public health and health-care infrastructure, they can substantially enhance access to care, augment a country's capacity to care for a wide range of emergency conditions, identify opportunities for prevention, and strengthen a country's disaster response capacity. ■

1. Mock C, Lormand JD, Goosen J, Joshipura M, Peden M. *Guidelines for essential trauma care*. Geneva: World Health Organization; 2004.
2. Sasser S, Varghese M, Kellermann A, Lormand JD. *Prehospital trauma care systems*. Geneva: World Health Organization; 2005.

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