

Health systems

Emergency-care systems

Report by the Secretariat

1. In resolution WHA56.24 on implementing the recommendations of the *World report on violence and health* and resolution WHA57.10 on road safety and health, the Health Assembly noted that violence was a leading worldwide public health concern and that road traffic injuries caused extensive and serious public health problems. Resolution WHA57.10 recommended Member States to strengthen emergency and rehabilitation services, and together these resolutions requested the Director-General to provide technical support for strengthening not only trauma and care services to survivors or victims of violence, but also systems of prehospital and trauma care for victims of road crash injuries. This report has been prepared in response to requests from two Member States for consideration by the Board of an item on emergency care.
2. Injury continues to grow as a cause of death and disability globally, accounting for more than five million deaths and over 100 million disabilities every year. The main causes of injuries are violence, road traffic crashes, falls, burns and drowning. The vast majority (90%) of these deaths and disabilities are in low- and middle-income countries, and occur because of not only higher rates of injury but also a higher chance of death or disability following injury.
3. Primary prevention remains one of the most important ways to reduce the burden of injuries, but it is increasingly recognized that many deaths and much long-term disability can also be prevented through strengthening trauma and emergency care. Research has shown that outcomes of severe injuries differ dramatically based on the level of income of a country. For example, a study comparing outcomes of severely injured patients in three countries at different economic levels showed that mortality among the seriously injured increased from 35% in the United States of America to 55% in Mexico to 63% in Ghana. These results show that similarly injured people are nearly twice as likely to die in a low-income setting as in a high-income setting.
4. Many injuries in low-income settings could be treated well, and economic constraints are only part of the reason for the disparities in trauma outcomes between countries at different economic levels. Much can be done to strengthen trauma and emergency care in all countries and optimize use of available resources through better organization and planning. Emergency care covers a spectrum of activities, including: prehospital care and transport; initial evaluation, diagnosis and resuscitation; and in-hospital care, including surgery, anaesthesia and subsequent management. Studies of the effect of improving organization and planning of trauma care in high-income countries have consistently shown survival gains of between 8% and 50%; steps taken include: designation and quality assurance of trauma centres, setting of criteria for prehospital care planning and triage, and formulation of protocols for transfer between facilities.

5. Strengthening trauma and emergency care could have an important public health benefit. Even under the conservative assumption of reducing mortality among all injured patients by only 8%, an estimated 400 000 lives could be saved each year. Even more lives would be saved by strengthening emergency care in low- and middle-income countries to a point where injury-related mortality approaches that observed in high-income settings.
6. A common misperception is that trauma and emergency care services are too costly. In fact, in numerous settings improvements have been made with low-cost interventions. In addition, cost-effectiveness studies have ranked many elements of trauma and emergency care as among the most cost-effective public health interventions. The Disease Control Priorities Project of the World Bank, WHO and the Fogarty International Center of the National Institutes of Health in the United States of America has identified strengthening of prehospital care through training of community-based paramedics and village first-aiders, use of staffed community ambulances, and provision of basic surgical care (including care of injuries) at district hospitals as interventions whose cost-effectiveness is less than US\$ 100 per disability-adjusted life year averted; on a scale ranging from US\$ 1 (most cost-effective) to US\$ 100 000 per life year averted (least cost-effective), these are considered to be extremely cost-effective interventions.
7. In addition, strengthening trauma and emergency care has been recognized as a prerequisite of better preparedness for mass-casualty incidents, and trauma and emergency care has been identified as an important priority, particularly in major emergencies of abrupt onset.
8. A difficulty for low- and middle-income countries is that most documented experience on strengthening systems of trauma and emergency care comes from high-income countries. To meet the needs of low- and middle-income countries, WHO and its partners worldwide have published guidance on surgical care, essential trauma care and prehospital trauma care systems¹ as well as issuing an e-learning tool kit on integrated management for emergency and essential surgical care.² These guidelines and instruments are intended for use in fixed facilities (hospitals and clinics) and in the strengthening of prehospital care. They focus explicitly on cost-effective, evidence-based and affordable strategies in order to assure provision of effective trauma and emergency care through, for instance, appropriate use of human resources, physical resources and suitable transport systems. Work is in hand to prepare normative guidance on the creation and strengthening of mass-casualty management systems.
9. Early experiences have demonstrated the utility of WHO's guidance in this area. A growing number of trauma and emergency care specialists are working with WHO. The trauma and emergency care systems advisory group and the WHO Expert Advisory Panel on Clinical Surgical Procedures includes experts from all regions of the world. In countries such as Ghana, India, Iran (Islamic Republic of), Mexico, Mozambique, Romania, South Africa, Sri Lanka, Thailand and Viet Nam the guidance has been used as a basis for needs assessments of trauma-care capabilities and to strengthen the local systems.

¹ *Surgical care at the district hospital*. Geneva, World Health Organization, 2003; Mock C, Lormand JD, Goosen J, Joshipura M, Peden M. *Guidelines for essential trauma care*. Geneva, World Health Organization, 2004; and Sasser S, Varghese M, Kellermann A, Lormand JD. *Prehospital care systems*. Geneva, World Health Organization, 2005.

² <http://www.who.int/surgery/imeesc/en/index.html>.

RECOMMENDED ACTIVITIES

10. Activities that need to occur fall into four broad areas: contextual analysis and planning, intersectoral integration, system development, and future sustainability.

11. **Contextual analysis and planning.** Strengthening trauma and emergency care must begin with a situation analysis and needs assessment in order to describe the context. Steps to be taken include the following. The existence of informal prehospital services and private-sector assets such as ambulance services needs to be established. Potential locations for care improvements need to be identified in settings where the frequency of injuries is high, such as towns and major roadways, and consideration should be given to establishing formal prehospital trauma-care systems in such locations, where they would be cost-effective. Furthermore, plans should be considered to establish prehospital-care capabilities that draw on informal systems and community resources in areas where formal prehospital emergency medical systems are impractical. The availability of financial resources should also be determined.

12. Standardized tools and techniques need to be designed and proven for assessing needs of both prehospital and facility-based capabilities for trauma and emergency care. Techniques for reviewing legislation relating to these services need to be refined, and examples of good legislation should be identified and compiled for wider dissemination. Research needs to be encouraged into establishing and expanding the knowledge base underpinning these services. Collaboration is needed for setting up science-based policies and programmes for implementing proven methods of strengthening these systems. Health curricula in relevant institutions need to be reviewed for coverage of trauma and emergency care and the ability to provide continuing education for staff providing trauma and emergency care needs to be ensured. Incentives may need to be provided to support such training. Awareness needs to be raised and sustained about the existence of low-cost interventions that reduce mortality through improved organization and planning of trauma and emergency care, with regular meetings of experts for exchange of technical information and experience and for capacity building.

13. **Intersectoral integration.** Health ministries need to contribute to, and in some cases catalyse the creation of, intersectoral networks in order to strengthen trauma and emergency care. These networks should include partners in the public and private sectors in the areas of not only health but transport, telecommunications and rescue services. Coordination across sectors and in some instances national boundaries is a crucial factor in improving systems, especially in areas such as allocation of available transport assets and ensuring that the trauma and emergency care system can be expanded in response to mass-casualty incidents. In locations with formal prehospital emergency care services or where such systems are being developed, within countries and even across regions, universal-access telephone numbers should be introduced and widely publicized.

14. **System development.** Legislation related to trauma and emergency care needs to be drafted or updated, and examples of best practice shared. Within trauma and emergency care systems emphasis needs to be placed on identifying, and assuring the competent provision of, core services that should be available to all persons who need them. The essential human resources (both in terms of staffing and skills) and physical resources (equipment and supplies) that should be present at different levels of the health-care system need to be defined. Provisions need to be made for documenting the appropriate delivery of such services through means such as inspection of facilities and quality-improvement programmes, with relevant standards and techniques available. The organization of the system must ensure that a rational referral system is established that is appropriate for the setting and makes optimal use of human and financial resources.

15. Quality-improvement mechanisms need to be built into trauma and emergency care systems, and supported by academic and in-service training that takes account of the human resource-training needs at various levels of the health system.

16. **Future sustainability.** Further important activities for ensuring sustainability are the development and support of data-collection capabilities that allow for the continuing monitoring of the effectiveness of the trauma and emergency care system. Also, capacity-building needs, whether they are structural, related to the system or to human resources, have to be assessed, and responded to, on a continuing basis. Improvements to the emergency-care systems should be made within the context of the overall health care system, and seek to improve the working conditions of staff involved in the provision of emergency care. In settings with a formal system of emergency medical services, and where appropriate and feasible, a monitoring mechanism needs to be assured that promotes and ensures minimum standards for training, equipment, infrastructure and communication. All stakeholders, including governments, nongovernmental organizations and other interested parties, will need to collaborate to ensure the necessary capacity is available to conduct effective planning, organization, administration, financing and monitoring of the services.

17. The Executive Board reviewed the above report at its 120th session and noted the importance of strengthening the provision of trauma and emergency care.¹

ACTION BY THE HEALTH ASSEMBLY

18. The Health Assembly is invited to consider the draft resolution contained in resolution EB120.R4.

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¹ See document EB119/2006-EB120/2007/REC/2, summary record of the fifth meeting of the 120th session of the Board, and summary record of the ninth meeting of the 120th session, section 2.