World Health Organization

ECOSOC/UNESCWA/WHO Western Asia Ministerial Meeting
"Addressing noncommunicable diseases and injuries:
major challenges to sustainable development in the 21st century"
(Hosted in Doha by the Government of Qatar, 10-11 May 2009)

Discussion Paper
"The challenge of lowering the burden of injury globally and
in the WHO Eastern Mediterranean Region "
5 May 2009

1 Situation analysis

1.1 Injury has become a leading cause of death and disability worldwide. It is estimated that 5.8 million people die annually from road traffic crashes, burns, falls, other types of unintentional injury, violence, and suicide. Injury accounts for 10% of the world's deaths. This is more than HIV/AIDS, TB, and malaria combined (4.5 million deaths annually). Millions more are disabled, temporarily or permanently, from injury. Additionally, violence - in particular child maltreatment and intimate partner violence - lead to a wide range of health risk behaviours (including unsafe sex, smoking, drug and alcohol abuse), and via these sharply increase the risks of adult psychiatric disorders and suicidal behaviour, and some of the major forms of adult illness, including cancer, heart disease and chronic lung disease. If nothing is done, it is projected that injury will increase in both absolute and relative terms. For example, road traffic injuries alone are projected to rise from 2.2% of all deaths (9th place in ranking) in 2004 to 3.6% of all deaths (5th place in ranking) in 2030. Similar increases are anticipated for violence and self-inflicted injuries. More details are in Annex 1.

1.2 Low- and middle-income countries (LMICs) are disproportionately affected by injury. The vast majority (90%) of all injury deaths are in LMICs. Overall injury mortality rates globally are 90 deaths/100,000 persons/year. However, in LMICs the rates are higher at 97 deaths/100,000/year, which is considerably higher than the rate of 52 deaths/100,000/year in high-income countries (HICs). That is, rates of death from injury are almost twice as high in LMICs as in HICs. In addition, there is an enormous burden of temporary and permanent disability from non-fatal injuries. There are estimated to be 50,000,000 non-fatal injuries from road traffic injuries alone, with many more from other types of injuries. Violence, including violence against women and child maltreatment, although often non-fatal, results a huge burden of suffering and long-term disability.

1.3 In addition to deaths and disabilities, there is a very significant economic loss from injury, both from treatment costs as well as lost wages and economic productivity. These costs are especially severe as many of those injured are working aged adults. In LMICs, the economic cost of road traffic injuries alone has been estimated at nearly US$100 billion, which is twice the sum of all development assistance. Most countries lose 1 - 2% of their GDP in injury related consequences from road traffic crashes. As some examples of percent GDP loss from road traffic injuries: Bangladesh 1.6%, Uganda 2.3%, USA 2.3%, 11 HICs (excluding USA) 1.4%, and Malawi 5%. In China, it is estimated that road traffic injuries cost $12.5 billion, which is four times the total public health budget. In countries where their economic costs have been assessed, injuries and lost productivity due to interpersonal violence and suicide account for a very similar proportions of lost GDP.

1.4 In addition to these macroeconomic costs, there is an enormous toll of economic hardships on the part of injured persons and their families. This is especially severe in LMICs. For example, one study from Africa showed that:

- 41% of families of injury victims had a decline in family income as a result of the injury.

- 22% of these families went into debt, paying for treatment or making up for lost wages.
- 33% of rural families of injury victims reported a decline in food production.
- 24% of families of injury victims reported a decline in food consumption as a result of the injury.

These figures also demonstrate that a severe illness or injury is often the event that sinks a family living on the margin into deeper poverty.

1.5 In all countries, it is those from lower socio-economic groups who face the highest burden of injury. In part, this is because they have the highest exposure to unsafe environments and are the least empowered to remove risk factors, even when they are known. Examples include dangerous high speed roads passing through slum areas, whose occupants must cross these roads many times per day, and occupational injuries from jobs undertaken in unsafe conditions. In part also, the higher burden of injury on the poor arises from limited access to trauma care services, partly because of physical barriers in rural areas and partly because of difficulties with financial accessibility in all areas. Even when care is accessed, the poor run the risk of medical impoverishment, as noted in Section 1.4. In similar fashion, a study from Bangladesh showed that poor families were more likely to lose their head of household (32% of road traffic deaths to poor families) than families that were better off (21%). Over 70% of households reported declines in household income and food consumption after the death of a family member from a road traffic crash. Poor families were more likely to report a decline in their living standards (75%) than were those who were better off (58%).

1.6 The WHO Eastern Mediterranean Region has been especially hard hit. Overall rates of injury related death are at 93/100,000/year, which is significantly higher than the rate in HICs and higher than the global rate. There are estimated to be a total of 485,000 injury related deaths in the region annually. The leading mechanism is road traffic crashes, which accounts for 146,000 deaths, or 30% of all injury related deaths. Other leading causes of injury related death in the region are shown in Annex 2. The significance of the injury problem is projected to rise in the region. Currently, injury related causes account for 11% of all deaths in the region. This proportion is projected to rise to 13% in 2015 and to 14% in 2030.

2. Opportunities for improvement

2.1 The toll from injury is LMICs and in the WHO Eastern Mediterranean Region is unacceptably high and all that much more tragic because it is so avoidable. There are a wide range of proven strategies for lowering the rates of death and disability from injury. These involve the spectrum of injury control, including surveillance and data systems (to better understand the extent of the problem and to be able to monitor trends), injury and violence prevention, and strengthening of trauma care (including prehospital, acute hospital care, and longer term rehabilitation).

2.2 Application of proven, scientific and effective methods from across the spectrum of injury control has resulted in significant and sustained improvements in many HICs. As just a few examples: childhood injury deaths in Sweden have been reduced from 17 deaths/100,000/year in the 1960's to the current 4 deaths/100,000/year. Road traffic crash deaths in the United States have been decreased from a high of 30 deaths/100,000/year in the 1930's to the current 15/100,000 per year. Most HICs have reduced their road traffic death rates even lower (e.g. Sweden 5.2, United Kingdom 5.3, Netherlands 6.2).

2.3 Some of the methods used to achieve such successes are location-specific and not transferable to the circumstances in LMICs. However, many are. For example, most of the methods for promotion of road safety, such as speed reduction through law enforcement and traffic calming infrastructure and efforts to decrease impaired driving, are eminently applicable in any location. In some cases there is a need for location adaptation, such as for defining the most effective methods for social marketing of safety practices.

2.4 Many of the methods for lowering injury rates are very cost-effective. Recently, the Disease Control Priorities Project (DCPP) ranked many health related interventions as to their cost-effectiveness. Interventions needed to promote safety and to strengthen care of the injured were identified as having cost-effectiveness ratios of below 100 (US $ 100 per disability-adjusted life year averted): vehicle speed reduction through improved enforcement and traffic calming infrastructure; strengthening of prehospital care through

training of community-based paramedics and village lay-first responders; community ambulances; and basic surgical care (including care of injuries) at district hospitals. Thus, these interventions are considered extremely cost-effective when considered a scale ranging from 1 (most cost-effective) to 100 000 (least cost-effective).

2.5 Investment in many specific injury prevention interventions can result in considerable savings to society by decreasing costs of treatment and lost wages and productivity on the part of the injured. For example, investing €1 in smoke detector promotion can result in €69 in savings from prevention of burns. Other similar cost-effective injury interventions include: universal licensing of handguns (€79 saved for each €1 invested), promotion of child safety seats in motor vehicles (€32 saved), bicycle helmet promotion (€29 saved), removal of roadside obstacles (€19 saved), motorcycle helmet promotion (€19 saved), and upgrading of pedestrian crossings (€14 saved). More complete lists of cost-effective injury control interventions are contained in Annex 3.

2.6 The above cost-effective interventions and many others like them are feasible to implement in LMICs, including those in the WHO Eastern Mediterranean Region. The question becomes how to promote such known, effective interventions better. In part, failure to do so thus far is due to inertia, both globally and at the country level. We are, however, beginning to see a change in this inertia, with increased political momentum towards improved injury control, encompassing both prevention and treatment.

2.7 In terms of global governance, there have been several World Health Assembly (WHA) Resolutions that have addressed injury issues.

- WHA Resolution 56.24 (2003): "Implementing the Recommendations of the *World report on violence and health*". This Resolution recognized that urgent action by governments was needed to prevent all forms of violence. It encouraged Member States to appoint focal points for violence prevention in ministries of health and to prepare national reports on violence prevention.
- WHA Resolution 57.10 (2004): "Road Safety and Health." This resolution's recommendations broadly reflect those of the *World report on road traffic injury prevention*, including those related to the designation of a lead agency for road safety, preparation and implementation of national strategies for road safety, and putting in place of specific prevention measures.
- WHA Resolution 60.22 (2007): "Health systems: emergency-care systems." This resolution addressed strengthening care for injuries and other types of medical emergencies. It called upon governments to take specific actions such as identifying a core set of trauma and emergency-care services, and developing methods for assuring and documenting that such services are provided to all who need them.

2.8 Likewise, the United Nations General Assembly has adopted several resolutions to specifically confront road traffic injury and violence against children, including:

- A/RES/58/9 (2003): Global road safety crisis
- A/RES/58/289 (2004): Improving global road safety
- A/RES/60/5 (2005). Improving global road safety
- A/RES/62/141 (2007). Promotion and protection of the rights of children
- A/RES/62/244 (2008). Improving global road safety

The UN General Assembly resolutions called for a high-level ministerial meeting to address road safety. This First Global Ministerial Conference on Road Safety being held in Moscow in November 2009.

2.9 The United Nations General Assembly has also adopted a resolution highlighting the connection between violence and development:

- A/RES/23/63 (2008): Promoting development through the reduction and prevention of armed violence

This resolution requested the Secretary-General to seek the views of Member States on the interrelation between armed violence and development and to submit a report to the General Assembly at its sixty-fourth session.

2.10 These developments in global health governance have been accompanied by other developments that create opportunities to promote improvements in the spectrum of injury control globally. These include a number of WHO guidance documents that are now available to assist countries in their technical implementation of a wide range of injury control activities, including, among others: injury surveillance, community based research on injury, violence prevention methods (both in general and specifically on child maltreatment), road safety methods (both in general and for several specific, high-yield methods including helmet promotion, decreasing impaired driving, and speed control), emergency trauma care (both prehospital and hospital based), and long-term rehabilitation of injured survivors back to active life. All of these guidance documents have been put to use in many countries worldwide and considerable experience in their usage has now been accumulated.

2.11 WHO has also developed technical assistance packages to assist countries with road safety implementation. These have led to considerable improvements in the road safety scenario in Mexico and Viet Nam. These packages are eminently amenable to use in other countries, if suitable funding is made available. WHO road safety efforts have also encompassed assessing the road safety scenario in over 100 Member States. The resulting Global Road Safety Status Report is to be released in June, 2009. This will establish a baseline against which future improvements can be monitored.

3. Recommendations

3.1 The above-noted World Health Assembly and United Nations Resolutions provide a firm basis for recommendations. Some of the major recommendations for Member States can be summarized as follows.

3.2 **Road safety:**

- Integrate prevention of traffic injuries into public health programmes.
- Prepare and implement a national strategy on prevention of road traffic injury and appropriate action plans.
- Establish government leadership in road safety, including by designating a single agency or focal point for road safety or through another effective mechanisms according to the national context.
- Facilitate multisectoral collaboration between different ministries and sectors, including private transportation companies, communities and civil society.
- Promote the use of known, effective road safety interventions such as seatbelts and crash helmets.
- Explore possibilities to increase financing for road safety, including through the creation of a fund.

3.3 **Violence:**

- Appoint within the ministry of health a focal point for the prevention of violence.
- Create, implement and monitor a national action plan for violence prevention.
- Integrate violence prevention into social and educational policies, and thereby promote gender and social equality.

- Prepare a report on violence and prevention that describes the magnitude of the problem, the risk factors, current efforts to prevent violence, and future action to encourage a multi-sectoral response.

- 3.4 **Trauma and emergency care services:**
  - Ensure involvement of the ministry of health in, and an intersectoral coordination mechanism for, review and strengthening of the provision of trauma and emergency care.
  - Identify a core set of trauma and emergency-care services (as in Section 2).
  - Ensure that appropriate core competencies for trauma and emergency care are part of relevant health curricula and promote continuing education for providers of trauma and emergency care.
  - Review and update relevant legislation, including, where necessary, financial mechanisms and management aspects, to assure that a core set of trauma and emergency-care services are accessible to all people who need them.

More details can be found in the full resolutions, which are referenced at the end of this paper. In addition, there are many feasible and cost-effective interventions that can be utilized to address other injury problems, such as burns, drowning, poisoning, falls and others (some of these have been discussed above in Section 2 and in Annex 3).

3.5 In addition to the above recommendations, several other cross-cutting recommendations can be made. These include:

- **Involvement of sectors outside health**. Probably more than any other health problem, the solution to injury requires involvement of other sectors, both for prevention and for treatment. For example, prevention of violence requires interaction with the criminal justice system and the education sector. Road safety requires interaction with the highway authorities, for both road safety infrastructure and for enforcement of safety related traffic laws. Care of injured persons, especially in the prehospital setting, requires interactions with fire service, police, and others involved in emergency response. Thus, there is a need for the health sector to interact with and develop collaborative action plans with a number of other stakeholders, including those in government, as well as non-government organizations and civil society.

- **Integration with other agendas, especially those of finance and planning**. It has been shown in Section 1 that injury is a significant health problem with considerable economic impact, at both the macroeconomic and family levels. It has also been shown that there are many existing interventions to lower the toll from injury and that these interventions are very cost-effective, with savings accruing to society from their implementation (as shown in Sections 2.4 and 2.5). **Given these factors, it can be seen that injury is indeed an economic and development issue.** Successfully addressing the injury problem will require more than the health sector, as so much of the response involves activities outside the health sector, such as activities encompassing transport, housing, occupational environment, criminal justice, and community emergency response. Thus, because of both the broad societal impact of injury and the need for a multi-sectoral approach, it is critical that injury control be incorporated into the agendas of those involved with planning, finance, poverty reduction, social and economic development, and achievement of Millennium Development Goals.

4. Operationalization

4.1 In order to operationalize the above recommendations, a variety of actions are needed at the national level. These also can be thought of as the tools with which governments can work to promote strengthened injury prevention and strengthened care of the injured.

4.2 **Capacity building.** There needs to be adequate individual and institutional capacity to conduct injury control activities. Institutionally, there is a need for a lead agency to promote road safety. Such an agency should have adequate resources and sufficient legal authority. Likewise, strengthening trauma care

would be aided by having a person or unit within the ministry of health tasked with this issue and who has both sufficient technical knowledge of trauma care as well as the public health approach. As noted in Section 3, WHO has urged countries to have focal points for injury control issues, including both road safety and violence. Depending on the structure of the ministry of health, such persons might or might also be the ones handling trauma care issues. In addition to the institutional capacity, there is a need for individuals with the requisite injury control skills. This includes a spectrum of skills, including among others, epidemiologist who can handle injury data and set up injury surveillance activities; public health practitioners, psychologists, and communications experts who can conduct effective road safety and other prevention activities; law enforcement personnel, lawyers, and others in the legislative and legal field who can design and implement safety related laws and assure their effective enforcement; and trauma care specialists who have a public health perspective. Thus countries need to address ways in which to promote appropriate training and retention of personnel who fill these roles.

4.3 **Policy.** A number of specific policies can be implemented to promote better injury control. For example, for road safety laws against speeding and impaired driving can be strengthened, as well as can the capacity of law enforcement to implement the laws. Similarly, in areas where there is a predominance of motorcycle transport, mandatory motorcycle helmet laws are a vital policy for decreasing head injuries, the most common fatal injury to motorcyclists. Similar policy issues pertain to prevention of other forms of unintentional injury (such as burns, falls, and drowning), as well as to prevention of intentional injuries (violence and suicide). Many successful injury control policies have been implemented one by one. However, developing a broader policy framework to promote overall injury control represents a way to make more comprehensive progress.

4.4 **Promote research, especially on the cost-effectiveness of interventions.** Many injury control interventions have been well established in HICs. Many of these interventions are eminently applicable to the circumstances of LMICs. However, details of how to maximize their implementation and to assure their cost-effectiveness still need to be worked out.

4.5 **Multisectoral framework and partnerships.** The need for the involvement of multiple sectors in addition to health has been stressed above. Thus, policy development and implementation needs to be approached from a multisectoral framework, engaging all relevant stakeholders, especially including those involved with planning, finance, and other broad, society-wide work. In addition to the need for solicitation of technical input and viewpoints, the implementation of injury control activities often calls for formation of partnerships, involving not only different branches of government, but also NGOs and civil society.

4.6 **Priority and political commitment.** Internationally and nationally, in countries at all economic levels, insufficient attention has been devoted to injury control. The resources devoted to injury control, whether for prevention or treatment, are miniscule in comparison to resources devoted to other health problems and especially in comparison to the magnitude of the injury problem. Increased political commitment to increase the priority of injury within the health sector and within all other relevant sectors is especially needed.

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ANNEX 1

MORTALITY BURDEN OF INJURY GLOBALLY, CURRENT AND PROJECTED

LEADING CAUSES OF DEATH, 2004 AND 2030 COMPARED					
2004					**2030**
Disease or injury	**Deaths (%)**	**Rank**	**Rank**	**Deaths (%)**	**Disease or injury**
Ischaemic heart disease	12.2	1	1	14.2	Ischaemic heart disease
Cerebrovascular disease	9.7	2	2	12.1	Cerebrovascular disease
Lower respiratory infections	7.0	3	3	8.6	COPD
COPD	5.1	4	4	3.8	Lower respiratory infections
Diarrhoeal diseases	3.6	5	**5**	3.6	**Road traffic injuries**
HIV/AIDS	3.5	6	6	3.4	Trachea, bronchus, lung cancers
TB	2.5	7	7	3.3	Diabetes mellitus
Trachea, bronchus, lung cancers	2.3	8	8	2.1	Hypertensive heart disease
Road traffic injuries	2.2	**9**	9	1.9	Stomach cancer
Premature and low birth weight	2.0	10	10	1.8	HIV/AIDS
			12	1.5	**Self-inflicted injuries**
Self-inflicted injuries	1.4	**16**			
			16	1.2	**Violence**
Violence	1.0	**22**			

ANNEX 2

INJURY RELATED DEATHS IN EASTERN MEDITERRANEAN REGION IN 2004

Mechanisms	Numbers of deaths	Percentage of all injury deaths
Road traffic accidents	146,000	30%
Poisoning	17,000	4%
Falls	24,000	5%
Fires	29,000	6%
Drowning	30,000	6%
Other unintentional injuries	76,000	16%
Total Unintentional Injuries	**321,000**	**66%**
Self-inflicted	36,000	7%
Violence	25,000	5%
War and civil conflict	99,000	20%
Total Intentional Injuries	**163,000**	**34%**
TOTAL INJURIES	**485,000**	**100%**

ANNEX 3

COST-EFFECTIVENESS OF INJURY CONTROL INTERVENTIONS: FINANCIAL SAVINGS TO SOCIETY FROM SELECTED INJURY CONTROL INTERVENTIONS

Expenditure of € 1 each on:	**Savings in €**
Universal licensing of handguns	79
Smoke alarms	69
Child safety seats	32
Bicycle helmets	29
Road design: removal of roadside obstacles	19
Home visits and parent education against child abuse	19
Motorcycle helmets	16
Road design: upgrading marked pedestrian crossings	14
Injury prevention counselling by paediatricians	10
Road design: guard rails	10
Area-wide speed and traffic management	10
Poison control services	7

Sources:

Sethi D et al. Injuies and violence in Europe: why they matter and what can be done. Copenhagen, WHO Regional Office for Europe, 2006.

Sethi et al. Youth and road safety in Europe: policy briefing. Copenhagen, WHO Regional Office for Europe, 2007.

Acknowledgements

This Discussion Paper has been compiled with the input, support and assistance of WHO staff.

References

The WHA Resolutions referred to above can be found at:

- WHA 56.24 Implementing the Recommendations of the *World report on violence and health*
  http://ftp.who.int/gb/archive/pdf_files/WHA56/ea56r24.pdf
- WHA57.10 Road safety and health
  http://wwwstage.who.int/gb/ebwha/pdf_files/WHA57/A57_R10-en.pdf
- WHA60.22 Health systems: emergency-care systems
  http://www.who.int/gb/ebwha/pdf_files/WHASSA_WHA60-Rec1/E/reso-60-en.pdf