

POST CRASH CARE: THE INDIAN SCENARIO

Amit Gupta

Trauma Surgery & Critical Care, J.P.N. Apex Trauma Centre,
All India Institute of Medical Sciences, New Delhi
amitguptaaiims@gmail.com

PROLOGUE

India is in transition from a largely agriculture based to an industry- and technology-focused economy. It is the largest country in the South-Asian region with a very high youth and middle-aged population, which given the changing economy, has largely adopted mechanized transport. Although in absence of hospital based data for trauma mortality, according to National Crimes Record Bureau 169,000 lives were lost on Indian roads in 2014. India has the highest Road crash mortality in the world. This spurt in vehicular density, however, has been so rapid that there has been little time spent by citizens and policy makers alike, on safety parameters associated with such high levels of mechanization. Traumatic injuries involving animals – horses, buffalo, cow, and bull – are almost exclusively seen in rural areas and on the associated highway networks. Multiplicity of road users competing for the same space on highways leads to frequent road crashes. The attitude of the public is devoid of a basic sense of safe driving, as exemplified by the high prevalence of driving without routine seatbelt use and drunken driving. The younger generation casually violates traffic laws and frequently disregards existing speed limits, a phenomenon especially common among the users of two-wheelers. Another disconcerting phenomenon is the widespread neglect for the use of protective gear such as helmets. This is accompanied by a staggering increase in the socioeconomic burden, depletion of human resources, as well as emotional and psychological trauma on caregivers. As a result, the already overtaxed healthcare delivery system is put under additional strain.

In the global estimates of 1998, injury accounted for 16% and road traffic injuries (RTIs) were the ninth leading cause of the burden of morbidity, fifth in the developed countries, whereas tenth in developing countries. Each year nearly 1.6 million people die as a result of a road traffic collision worldwide — more than 3000 deaths each day—and more than half of these people are the so called vulnerable road users (bicyclists and pedestrians). Twenty to fifty million more people sustain non-fatal injuries from a collision, and these injuries are an important cause of disability. Ninety per cent of road traffic deaths occur in low- and middle-income countries, which claim less than half the world's registered vehicle fleet. Road traffic injuries are among the three leading causes of death for people between 5 and 44 years of age, the most commonly affected group being men in the productive years of life. In India, more than three-fourths of all registered vehicles are motorized two - or three –wheelers in 2004 with four-wheelers in the minority. By 2020, RTIs are predicted to be the third leading cause of morbidity surpassing leading communicable diseases. As regards the disability adjusted life years (DALY's) Injury surpasses both Cancer and Cardiovascular diseases which are diseases of 5th and 6th decade of life.

The experts in this field have estimated a colossal economic cost up to 1.5 % of the gross national product in the low- and middle-income countries and 2% in the high-income countries; the cumulative global financial cost approximates US\$500 billion and in developing and transitional

countries about US\$60 billion per year. By and large, the overall economic cost to many of the families leads to post injury ruin, as the victims are usually the main or the only source of income. Furthermore, in the absence of any transparent policy of training and rehabilitation, there remains insecurity in having the ability to return to the victim's earlier job with income protection. Consequently, the injury thereby causes an enormous economic burden to individual and their family in terms of loss of income, which ultimately is reflected in the loss of GDP of the country. Additionally, the indirect costs are difficult to account for and include untold social and psychological consequences of trauma. Many families of trauma victims bear the financial burden of both acute and long-term medical care with the additive loss of wages of the disabled family members.

The Road traffic Injuries reflect only about 40-45 % of trauma burden on the country and represents the tip of the iceberg. The NCRB data shows about 400,000 injury related deaths last year. The other major causes of Injuries include unintentional falls (geriatric and pediatric population), assaults and interpersonal violence, intentional self-harm, railway track accidents, agricultural injuries, workplace injuries (especially construction sites, heavy industries etc.). In addition there is also a tremendous burden of natural and manmade disasters, terrorist attacks and low intensity internal conflicts. According to one study, every single mortality due to RTI corresponds to 30 times number of seriously injured victims, who will suffer varying degrees of disabilities post injury; every mortality also corresponds to 70 times number of so called minor injuries, which also can cause significant days of productive lives lost due to immobilization. Therefore, in India Injuries have become a major public health problem.

CAUSES OF INCREASED TRAUMA FATALITIES IN INDIA – THE CRITICAL GAPS

The important reasons of increased mortality in developing countries like India are non-availability of Trauma Systems in a given geographical areas, which include care from the injury site till rehabilitation. In a nutshell a trauma care system works towards “**getting the right patient in the right time to the right health care facility for the right care**”.

1. Provision of Essential Emergency Trauma Care Universally

a. Pre-hospital Care

- i. Absent in many states, and in some states very primitive without the state of the art ambulances, trained manpower and proper organization in a definite geographical area. Some states have adopted the Universal Emergency Number 108 for Ambulance/ Police and Fire. The current systems run on GPS/ GPRS Systems, but are not backed by proper legislative and regulatory control over manpower training and organizational aspects.

b. In-Hospital Trauma Care

- i. ***Infrastructure:*** The secondary (CHC/ District Hospitals) and tertiary (University/ Teaching Hospitals) health care infrastructure presently cannot cater to the needs of multiply injured patients. There is a lack of well-equipped Emergency departments across the country. The well-

equipped ED's of private hospitals do not provide holistic care to all due to economic constraints of the injured patients.

- ii. Trained Manpower: There is lack of trained manpower that can effectively cater to the seriously injured patient at all the levels of health care (Primary, Secondary and Tertiary). The concept of a Trauma Team is non-existent and often the persons taking care of the patients are not adequately trained/ skilled in life saving protocols and procedures.
 1. Lack of trained doctors and nurses in emergency departments (CMO's and GDMO's)
 2. Absence of Trauma Surgeons/ trained surgical specialists in trauma
 3. Insufficient numbers of super specialists in various fields, taking care of an injured patient (neurosurgeons, trauma intensive care etc.)
 4. Insufficient numbers of rehabilitation professionals in hospitals

2. EMS Legislation

In India except for the state of Gujarat there is no state which has enacted the Emergency Medical Services Act. This provides the legal framework for all aspects of emergency care including the Ambulance design standards, pre-hospital and in hospital protocols, Standards for manpower training and provision of Paramedical Council etc. Such draft act for the Central Govt. is ready and is pending approval of the Hon'ble Parliament of India.

3. Lack of Good Data collection and Trauma related research

- a. Data management systems giving information not only about the mortality related data of the road traffic injury victim, but also about the crash related information (Injury Surveillance) and provision of care till the patient arrives in the hospital.
- b. The injury related data management systems inside the hospitals are not present. Lack of outcome based data from hospitals treating the trauma patients.

4. Facilities for Rehabilitation

- a. A good trauma system includes rehabilitation care hospitals which are integrated to the Trauma Centres.
- b. Although some big hospitals have departments of Physical rehabilitation (Physiotherapists/ Occupational therapists), dedicated PMR experts are not present to give a holistic rehabilitation including neuro-rehabilitation, psychological rehabilitation etc.

5. Injury Prevention related activities:

- a. The Hospitals are currently not mandated to engage in Injury prevention related activities like public awareness campaigns and road user behaviour modifications.

INTERNATIONAL THRUST TO INJURY AND TRAUMA CARE

The World Health Organization

The World Health Day in 2004 focused on road safety with the slogan *Road Safety is No Accident* to emphasize the role of public health in the prevention of RTIs with six recommendations for action on road safety at a national level; which were outlined as follows:

- Identify a lead agency in the government to guide the National Road Safety Effort
- Assess the problem, policies and institutional settings relating to RTI and the capacity for RTI Prevention in each country
- Prepare a national road safety strategy and plan of action
- Allocate financial and human resources to address the problem
- Implement specific actions to prevent road traffic crashes, minimize injuries and their consequences, and evaluate the impact of these actions
- Support the development of national capacity and international cooperation.

Millennium Development Goals

One of the Millennium Development Goals (MDG) aimed to reduce extreme poverty. We cannot overlook the well acceptable tell-tale truth that deaths and disabilities on road due to RTI have roles to play in increased global poverty as 70 million people are dragged below the poverty line as a result of injury on road. The proponents of MDG could have vision and mission on this glaring truth to prevent millions of unnecessary deaths and downstream poverty.

UN decade of action for road safety 2011–2020

The United Nations (UN) recognized the hazard of the RTI crisis, announcing a *Decade of Action for Road Safety 2011–2020* with a 100 governments working to limit road deaths by 2020 to prevent a projected five million deaths. Until RTIs are recognized as a global killer comparable to HIV/AIDS, tuberculosis or malaria, the issue will remain debated, ignored and underfunded. The change toward recognition is empowering the movement and resources allocated to prevent RTIs.

EFFORTS TOWARDS IMPROVING TRAUMA CARE IN INDIA

Both the Union Ministry of Health and Family welfare (MoHFW) and the Ministry of Road Transport and highways (MoRTH), have been engaged in achieving the target of road death reduction in a big way. Although health is a state subject, the union government is planning to hand hold the states by giving them adequate infrastructure facilities for trauma care.

Establishment of the Apex Trauma Centre at AIIMS, New Delhi (2006-07)

The Govt. of India has planned this organization in an Apex to base format the establishment of J.P.N. Apex Trauma Center at AIIMS is a step forward in providing an apex institution for quality trauma patient care facilities, has a mandate to act as a role model to other trauma centers of the country. More than providing best patient care facilities the role of this apex trauma center has been

envisaged as an apex research and training institution which will help the nation's administrators to formulate policies regarding organization of trauma care facilities throughout the country.

The Apex Trauma Centre has all the specialties needed for trauma care with dedicated faculty and residents working 24 hours. Currently it receives about 60,000 patients annually with over 6000 major surgical procedures being performed. Currently having around 190 beds, 37 ICU beds, 6 OT's and 35 bedded ED and Triage, it is being expanded to have 260 beds with added 16 ICU beds, 3 OT's, 30 bedded ED and Triage, addition of Private wards and Patient attendant hostel with helipad is also progressing swiftly. There is further plan to increase the capacity of this Apex Trauma Centre to 750 beds in the next 5-6 years, plans for which are already underway.

Establishment and up-gradation of Trauma Care facilities at big University Hospitals (PMSSY Scheme)

It should be once again emphasized that establishment of innumerable Trauma Centers with heavy financial burden is not the goal of policy makers. Instead, up gradation of existing hospital infrastructure to treat severely injured patients has been undertaken. In this regard the Govt. of India plans to and is in the process of establishing about 27 Level I (presence of all specialties involved in trauma care with teaching training and research), 127 Level II Centers, 260 Level III Centre's all over the country. Many of these centers are already established and have started functioning.

In addition the establishment of 12 more AIIMS like institutions all over the country with fully developed Emergency and Trauma Care facilities will add to the capacity for trauma care in the country.

Efforts of Ministry of Road Transport and Highways (MoRTH)

The Ministry of Road Transport and highway is developing about 34000 kms of national highways under the golden quadrilateral and north south east west highway projects. The ministry has decided to develop ambulance services on the national highways. The ambulances (level IV Trauma facilities) will be available at every 50 kms. These ambulances will be linked to pre identified hospitals along the highways for primary/definitive Trauma Care.

The MoRTH has also come out with the "Cashless treatment scheme for road traffic victims". Under the scheme the treatment for first 48 hours and up to rupees 30,000 would be borne by the government of India through various insurance companies. This project has already being successfully pilot tested on three major national highway segments and is waiting its national launch.

The MoRTC has also finalized a new motor vehicle Act which contains radical changes in terms of vehicular design, vehicular up keep and maintenance, vehicle licenses, driver licenses, penalty for road trauma valance and also a common fund through various sources for improving Trauma Care Facilities and subsidizing emergency care for trauma care victim on highways.

Improving Pre Hospital Care Systems

There have been sincere efforts at establishing ambulance networks in some parts of India, especially in states covered by the 108 network infrastructure. The concept of public-private

partnership (PPP) blends best of both worlds, where government and private enterprises successfully work together for primary health care delivery in India. Emergency Management and Research Institute (EMRI), a PPP model, provides pre-hospital emergency care free of cost with the creation of a single emergency toll free number, '108' with a network of hospitals that are cooperating to stabilize the patient free of charge. Furthermore, there is a provision of emergency management training for first responders, the first of its kind in India, the establishment of standards for EMS staff, equipment and a training model.

The system was initially operational in only two states in India, Andhra Pradesh and Gujarat. Now this model has been adopted by more than 14 states under the National Rural Health Mission which was initially meant for transporting pregnant females for hospital deliveries (to reduce maternal and infant mortality) but the scope has now been expanded to all emergency conditions.

Developing Injury Surveillance and Trauma Registry

Many concurrent efforts are taking place in India to establish Institutional and state wide Injury surveillance registries. The JPN Apex Trauma Centre at AIIMS, New Delhi was the first centre to introduce the Hospital based injury surveillance and trauma registry in 2008-09. The centre is currently involved in active scientific research along with NTRI (National Trauma Research Institute, Melbourne, Australia) under the Australia-India Trauma Systems Collaboration Project (AITSC) to develop the minimal dataset for a national trauma registry. This is a multi-centric project including centre's from Mumbai and Ahmedabad. The centre is also involved in active research on Trauma Registries along with Tata Institute of Social Sciences in TITCO India project.

There is a plan to develop the National Trauma Registry and Injury Surveillance Registry by the Govt. of India.

Advances in Manpower Training

The sudden increase in the Trauma Care infrastructure is putting considerable pressure to produce more and more trained manpower (Doctors, Nurses and Para-medics) in the field of Trauma Care and Emergency Medicine. Many concurrent efforts are already underway to bridge this gap.

Efforts at JPNA Trauma Centre

Short Term Courses:

Being the first Apex Body of the country with a mandate not only to provide state of art patient care but also to be the prime body for teaching training and research in the field of trauma care, the JPNATC has initiated many short term courses on its own as well as in collaboration with international partners. This Includes:

By-Standers and Lay People

- AIIMS Basic Emergency Care Course (AIIMS-BECC)
- AIIMS – Trauma First Responder Course

For Medical Professionals

- Advanced Trauma Life Support Course (ATLS)
- Advanced Trauma Care for Nurses (ATCN)
- Pre-Hospital Trauma Life Support Course (PHTLS)

- Rural Trauma team Development Course (RTTDC)
- AIIMS Trauma Assessment and Management Course (ATAM)
- AIIMS Ultrasound Trauma Life Support Course (AUTLS)
- AIIMS Management of Acute Wound in Emergency Course (AIIMS-MAWE)
- AIIMS Critical Care Course (ACCC)
- AIIMS Basic Plastic and Reconstructive Surgery Course (BPRS Course)

Long term training for In-service doctors and nurses (6weeks to 2 years)

- In-service doctors working in State government are sponsored for 1-2 years to undergo comprehensive training in Trauma Care.
- In-service doctors are being continuously sent by Armed forces for 1-2 years for training in Trauma Surgery.
- Nurses and paramedics are being sent by military and Para-military forces (CRPF, NDRF, CISF, SSB, etc. for both short and long term training)

Surgical Super-specialty Course

M.Ch. (Master of Chirurgery) – Trauma Surgery and Critical Care

AIIMS is the first institution in India to start a formal degree course for surgical specialist to be trained in trauma surgery.

Other Degree and Fellowship level courses planned

M.S. (Masters of Surgery) – Trauma and Emergency Surgery

D.M. (Doctorate in Medicine) – Trauma Critical Care

M.Ch./ Fellowships in Spine Surgery; Complex Pelvic Trauma/ Brachial Plexus Injuries etc.

Other National and State Efforts

The Medical Council of India (MCI) has recognized the specialty of Traumatology (Trauma Surgery) at the post-graduate M.S. level and currently efforts are underway to develop the curriculum of MS (Trauma Surgery).

The National Board of Examinations (NBE) is already running post MS Fellowship programs in Trauma Care at two hospitals in India. It is also planning Diplomate in National Board (DNB-MCh) in Trauma and Critical Care.

The Medical Council of India (MCI) has also recognized EM as a distinct specialty as of 2009. A number of medical colleges have planned to start a post-graduate (PG) program and are approaching the MCI for permission. Since the EM and Trauma Sciences are closely related, the growth of trauma sciences is acting as a stimulant to develop EM in India.

The Universal National Emergency Number

The Govt. of India recognizes that one single national emergency number is essential to fill in a vital gap in the trauma and emergency care systems, so it is planning to introduce a single National Emergency number (1033) across all states. This number will be common for all emergency calls requiring the help of Police, Fire/ HAZMAT and Emergency Medical Services. The call centre after receiving the call and confirming the incident redirect the call to respective departments whichever are needed. The prominent stakeholders in this effort are being the Ministry of Home, Ministry of Telecommunications, Ministry of Health and Family welfare, Ministry of Road Transport and Highways, Ministries of Home of various states (for police and fire services).

EPILOGUE

The national response to injury cannot and should not be different from other public health responses that require commitment from both governmental and professional organizations. There is already a commitment from the political leaders in many countries, and from policy makers in the CDC, WHO, World Bank, United Nations and other international organizations which have provided a platform on which we can work together. The Indian government has recognized traumatic injury as an important health and development issue and has intensified support for both prevention and system-wide response. National safety promotion and injury prevention requires an integrated and coordinated vision from all stakeholders, beginning with the concerned ministries and departments and ending with individual caregivers.

This East Asia Round-table has given us an opportunity to move forward in regional cooperation in the field of Trauma Care which is a major problem of the region.