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The Trauma Centre: What it should mean

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Four decades ago accidental death and disability was described as the "neglected disease of modern society". In the intervening period, increased motorization and violent civic strife has forced trauma onto centre stage of the global public health agenda and is now more often referred as "the silent epidemic".¹ The burden of disease has been manifest most overtly in developing nations such as Pakistan where it is estimated 6.16 million unintentional injuries occur annually amongst persons of over five years of age.² In a nationally representative household interview survey, the overall incidence of injury was 41 per 1000 per year for road traffic injuries.³ This is where the increasing burden is coming from and the ongoing Karachi Road Injury Surveillance study has recorded 35,607 victims in the calendar year 2007. These injuries from road accidents reported to the five major emergency departments of the City and the victims were largely males (90%). The road users involved were mainly motorcycle riders (65.3%) and pedestrians (21%) and 892 (2.3%) of the victims expired.⁴

The rational response to this public health crises should be enhanced preventive efforts, taking cue from the developed nations where, effective road injury preventive strategies, some simple such as seat belt and crash helmet wearing and other sophisticated ones as traffic and vehicle engineering, have effectively controlled the human toll from road crashes. However, the current Health Policy of Pakistan⁵, makes no mention of injury prevention and control and the thrust of our health planners is on provision of acute hospital care. A lot of talk has of late been forthcoming of trauma centres being built in chains along motorways and in urban areas but there is little consideration of Trauma Systems with an integrated continuum of prevention, prehospital evacuation of injured, hospital care and rehabilitation. This manuscript argues that the modern Trauma Centre should be more about a system of injury management rather than a structure or an establishment.

Analysis of deaths following trauma have consistently pointed to the need for rapid transfer of severely injured patients to hospitals appropriate to their needs, concentrating expertise with direct involvement of senior clinicians in all phases of care and a

multidisciplinary approach.⁶ The excellent Rescue 1122 service of Lahore often experiences the mismatch between a well-honed prehospital emergency service and a lethargic general hospital emergency set up. The much touted 7 minute response time of the ambulance service becomes meaningless when the receiving facility is not geared to fast-tracking the definitive care of the injured. On the other hand, one of Pakistan's better hospital-based emergency services in an audit of their trauma experience reported that they had an "unacceptably high" percentage of preventable deaths and attributed this to inadequate and inappropriate prehospital care. No care provider properly trained to secure the airway and control the cervical spine was involved in the first response and arrival at the hospital was not pre-notified. Delays in the emergency room and indecision on the part of the admitting teams, often bereft of a senior clinician, were also identified.⁷ The essence of the Trauma Centre is the 24-hour availability and activation at short notice of the Trauma Team. This is a group of healthcare professionals with specific training in resuscitative trauma management and incorporating physicians, nurses and paramedical personnel. A qualified consultant-level anaesthetist and a trauma surgeon should be present in-house and one would function as the team leader. The analogy must be to the medical team of a combat military hospital: specialists ready round the clock to minister to critical patients with complex injuries. The team would have immediate access to experienced doctors from orthopaedics, neurosurgery, general and vascular surgery, plastic and thoracic surgery able to make decisions and intervene surgically as required. The deployment of such a team is not possible without the trauma centre having a large pool of such specialists willing and paid to be present in-house or available at short notice at all hours, in shifts, to the exclusion of private commitments. Preventable posttraumatic death and disability owes to inadequate resuscitation and delay in proper surgical care and these can be reduced by the system care of the trauma team rather than the infrastructure of the well constructed trauma centre.

The investigative and therapeutic infrastructure of the modern Trauma Centre typically has at least 6 to 12 resuscitation bays each having complete facilities for

intubation with anaesthetic machines and ventilators. A 24 hour CT scanning facility on-site is essential along with portable X-rays and ultrasonography and all with appropriate staffing and immediate reporting facilities. Dedicated trauma operating rooms should be available and staffed at all times and these must be backed by intensive care beds. Such a trauma centre is organized and geared to the purpose of immediate life-saving interventions for the victim, by experienced personnel, to secure and protect the airway, ensure adequate breathing, stabilize the circulation and minimize disability by protecting the spinal cord from an unstable spinal column and the brain from an expanding haematoma. That is the ABCD of the Trauma Centre.

Developed nations have responded with integrated Trauma Systems comprising of four elements that are all functionally linked in a continuum: a) a communication net to provide access to the system b) organized transport by a prehospital emergency system c) hospital services which are configured to provide immediate resuscitation by a Trauma Team and definitive interventions by available specialists and d) rehabilitation services. The Trauma

Centre is the crown jewel of this system and represents the apogee of a network of professionals deployed 24 hours a day, 7 days a week and devoted to ameliorating the effects of severe injury by systemic, timely and expert intervention. It is these systems and networks that we need to evolve and construct as a necessary prerequisite to the commissioning of the physical structure.

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