Editorial

Trauma registry — needs and challenges in developing countries

Amber Mehmood, Junaid Abdul Razzak
Department of Emergency Medicine, Aga Khan University, Karachi.

Injury is a leading cause of morbidity and mortality in both the developed and the developing world.[1,2] In Pakistan, injuries are the second leading cause of disability, 11th leading cause of premature death, and the fifth leading cause of healthy years of life lost per 1000 people.[3,4] Apart from motor vehicle injuries and homicides, reliable information on the event, type and nature of injuries and their outcomes is not available. Reasons for lack of information include absence of a comprehensive national trauma data base.[2,5,6]

Data for injuries in many countries including Pakistan are obtained from Police. These data underestimate injury burden and provide no information on the types of injury, short and long term outcomes and quality of trauma care.[2,5,7,] Surveys, another source of data while comprehensive in terms of injury burden estimates, are often costly and lack the "real-time" impact.[2,6] Facility or ambulance based surveillance on the other hand lack the depth of information required to effect quality of care improvements.[8]

One of the methods used to collect information on the quality of trauma care is through the use of Trauma Registry (TR).[7,9-11] TRs are an integral part of trauma systems data collection and outcome assessment methodology in most developed trauma systems.[12,13] Evidence supports an improved trauma care through the use of functionally active and well organized trauma registries.[12-16]

In simple terms, trauma registry is a system of data collection that serves as a source of information for the evaluation of trauma care for a specific set of injured patients meeting well defined inclusion criteria.[9,11,12] Primarily it consists of hospital based trauma data, and often contains information obtained from the Emergency Medical Services (EMS) and rehabilitation. Besides demographic information, A TR typically collects information on the type, cause and severity of injury; details of the care provided at various levels of care system (EMS, Emergency Department, Operating Room, ICU, Ward, Rehabilitation Units etc); outcome in terms of death and disability.[11,16] TR also estimate the probability of death of a given patient compared to a patients with similar severity of injuries in the larger database from multiple centers.[17] This information gives institutions an estimate of their performance compared to peer institutions. Data thus obtained is used for accreditation, verification and designation of trauma centers as well as the credentialing of health care providers.[11]

There are many challenges in implementing TR in developing countries though there is an interest in many developing countries such as Uganda, Ethiopia, Egypt and Haiti.[7,18] First, obtaining the registry software can be a daunting task. Developing one locally is possible though it can be time consuming and requires collaboration between health care professionals and software developers. Clarity is needed on the choice of essential variables, type of data repository capable of storage of large amount of information, coding system backup, and data processing and analysis tools. The success of the software also depends upon the operating system requirements, its functionality as standalone vs. web-based database, hardware requirement such as disk space, server and backup systems.[11]

Implementation is often a bigger challenge requiring planning, continuous commitment, training, monitoring and evaluation. Obtaining buy-in from all stakeholders is the first challenge in successful implementation. It requires high level of commitment to the quality for the institutions and individual providers to open themselves up to the possible undesirable quality indicators. Secondly, the training human resources in medical terminology, data extraction, ICD coding, injury severity scaling and survival probability is essential. The third challenge is designing a data collection strategy to access patients' confidential data while conforming to the institutional guidelines and policies. Fourthly, data validation for timeliness, completeness and accuracy is of paramount importance to ensure their utility in meaningful interventions. Cost which is often a source of concern for developing country institutions can be reduced by limiting collection of redundant information.[9]

In summary, TR could play a vital role in filling the gap of injury information for health related outcomes in Pakistan. It will also help enhance trauma care quality by identifying trauma system gaps and practice improvement opportunities. The data generated through the registry could also be used for public health surveillance, injury research, economic analysis, and public policy interventions. Buy-in from health care leadership, a cost-effective and practical

software solution and systems of obtaining data and using information for patient care improvements are some of the essential requirements if trauma registry is to be implemented in Pakistan.

References

1. Krug EG, Sharma GK, Lozano R. The global burden of injuries. Am J Public Health 2000; 90: 523-6.
2. Fatmi Z, Hadden WC, Razzak JA, Qureshi HI, Hyder AA, Pappas G. Incidence, patterns and severity of reported unintentional injuries in Pakistan for persons five years and older: results of the National Health Survey of Pakistan 1990-94. BMC Public Health 2007; 7:152.
3. Ali M, Miyoshi C, Ushijima H. Emergency medical services in Islamabad, Pakistan: a public-private partnership. Public Health 2006; 120: 50-7.
4. Hyder AA, Morrow RH. Applying burden of disease methods in developing countries: a case study from Pakistan. Am J Public Health 2000; 90: 1235-40.
5. Ghaffar A, Hyder AA, Mastoor MI, Shaikh I.Injuries in Pakistan: directions for future health policy. Health Policy Plan 1999; 14: 11-7.
6. Ghaffar A, Hyder AA, Masud TI. The burden of road traffic injuries in developing countries: the 1st national injury survey of Pakistan. Public Health 2004; 118: 211-7.
7. Kobusingye OC, Lett RR. Hospital-based trauma registries in Uganda. J Trauma 2000; 48: 498-502.
8. Razzak JA, Laflamme L. Limitations of secondary data sets for road traffic injury epidemiology: a study from Karachi, Pakistan. Prehosp Emerg Care 2005; 9: 355-60.
9. Rutledge R. The goals, development, and use of trauma registries and trauma data sources in decision making in injury. Surg Clin North Am 1995; 75: 305-26.
10. Pollock DM, Trauma registries and Public health surveillance; NCHS-International collaborative effort on Injury Statistics. (Online) 2009 (Cited 2009 July 7). Available from URL: http://www.cdc.gov/nchs/data/ice/ice95v1/c11.
11. Nwomeh BC, Lowell W, Kable R, Haley K, Ameh EA. History and development of trauma registry: lessons from developed to developing countries. World J Emerg Surg 2006; 1:32.
12. Moore L, Clark DE. The value of trauma registries. Injury 2008; 39: 686-95.
13. E.J. MacKenzie, F.P. Rivara and G.J. Jurkovich et al., A national evaluation of the effect of trauma-center care on mortality. N Engl J Med 2006; 354: 366-78.
14. Sampalis JS, Lavoie A, Boukas S, Tamim H, Nikolis A, Fréchette P, et al. Trauma center designation: initial impact on trauma-related mortality. J Trauma 1995; 39: 232-7.
15. Shackford SR, Hollingworth-Fridlund P, Cooper GF, Eastman AB. The effect of regionalization upon the quality of trauma care as assessed by concurrent audit before and after institution of a trauma system: a preliminary report. J Trauma 1986; 26: 812-20.
16. Lucas CE, Buechter KJ, Coscia RL, Hurst JM, Lane V, Meredith JW, et al. The effect of trauma program registry on reported mortality rates. J Trauma 2001; 51: 1122-7.
17. Zafar H, Rehmani R, Raja AJ, Ali A, Ahmed M. Registry based trauma outcome: perspective of a developing country. Emerg Med J 2002; 19: 391-4.
18. Schultz CR, Ford HR, Cassidy LD, Shultz BL, Blanc C, King-Schultz LW, et al. Development of a hospital-based trauma registry in Haiti: an approach for improving injury surveillance in developing and resource-poor settings. J Trauma 2007; 63: 1143-54.