



## Exclusive versus Inclusive Trauma System Model in High Volume Trauma Regions

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Trauma is the leading cause of death before age 45 years in developing countries. It has been shown that a sophisticated trauma system will reduce the mortality (up to 15%) and morbidity of the injured people [1-5]. Trauma system consists of an interconnected chain of care from prehospital and hospital management of injured individuals to proper rehabilitation and follow-up cares. Goals of implementing a trauma system are: increasing the likelihood of survival of the injured, reduce the probability of disability and, at the same time, reduce costs. To achieve these, all stakeholders in the chain should play their role, along with implementing regulation and comprehensive legislation by legal authorities [6].

The network of care in a trauma system can be an "Inclusive" or "Exclusive" system. The exclusive system is more relying on tertiary hospital and consider the "trauma" strictly as a surgical disease. So the main goal is to transfer the injured to full equipped trauma center by provision of specialized and exclusive services. At this center only trauma victims are treated. On the other hand, inclusive model tries to manage the injured trauma patients

by organizing the existing facilities in the region. In fact, trauma centers are installed within the existing hospitals in two forms. This trauma center may be a section in a separate part in a hospital or it may be a distinguished process and protocols in the existing diagnostic medical services that has more emphasis on the priority and the urgency of the conditions of the trauma victims at time of arrival.

Cole *et al.*, [7] showed that implementation of an interconnected regional trauma system will improve the overall quality of care for patients. Other studies also state that although exclusive models can improve trauma diagnosis and treatment indices, but they are costly and not a good model for developing countries [4, 8-10]. Even in developed countries with a high Acute Care Surgery service, they are switching to integrating trauma centers with other medical facilities to reduce costs. Besides, in some cases, for example, in Scandinavian countries, the incidence of trauma declined tremendously and trauma centers are switching to other medical specialties.

So it seems that implementing inclusive traumatic systems in developing countries, like Iran, is more logical. In this regard, the following steps are

recommended to achieve this goal:

- Identification and leveling the existing medical facilities at each region
- Specify the level of services provided in each center
- Develop a trauma specific triage model and referral system according to the leveling and

capacities of the centers in each region.

- Creating a regional guideline for nursing care and also treatment protocol according to different types of injury in different level of trauma system

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## References

1. Lansink KW, Leenen LP. Do designated trauma systems improve outcome? *Curr Opin Crit Care.* 2007;**13**(6):686-90.
2. Hill AD, Fowler RA, Nathens AB. Impact of interhospital transfer on outcomes for trauma patients: a systematic review. *J Trauma.* 2011;**71**(6):1885-900; discussion 901.
3. Rivara FP, Koepsell TD, Wang J, Nathens A, Jurkovich GA, Mackenzie EJ. Outcomes of trauma patients after transfer to a level I trauma center. *J Trauma.* 2008;**64**(6):1594-9.
4. Utter GH, Maier RV, Rivara FP, Mock CN, Jurkovich GJ, Nathens AB. Inclusive trauma systems: do they improve triage or outcomes of the severely injured? *J Trauma.* 2006;**60**(3):529-37.
5. Celso B, Tepas J, Langland-Orban B, Pracht E, Papa L, Lottenberg L, et al. A systematic review and meta-analysis comparing outcome of severely injured patients treated in trauma centers following the establishment of trauma systems. *J Trauma.* 2006;**60**(2):371-8; discussion 8.
6. Regional trauma systems: optimal elements, integration and assessment system consultation guide. American College of Surgeons: USA; 2008.
7. Cole E, Lecky F, West A, Smith N, Brohi K, Davenport R, et al. The Impact of a Pan-regional Inclusive Trauma System on Quality of Care. *Ann Surg.* 2016;**264**(1):188-94.
8. Demetriades D, Martin M, Salim A, Rhee P, Brown C, Chan L. The effect of trauma center designation and trauma volume on outcome in specific severe injuries. *Ann Surg.* 2005;**242**(4):512-7; discussion 7-9.
9. Nathens AB, Jurkovich GJ, Maier RV, Grossman DC, MacKenzie EJ, Moore M, et al. Relationship between trauma center volume and outcomes. *JAMA.* 2001;**285**(9):1164-71.
10. Cudnik MT, Newgard CD, Sayre MR, Steinberg SM. Level I versus Level II trauma centers: an outcomes-based assessment. *J Trauma.* 2009;**66**(5):1321-6.

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