



Competency-Based Medical Education in Neurotrauma and Neurocritical Care

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Training at the level of undergraduate and postgraduate (including fellowship) in neurotrauma and neurointensive care has been gaining more relevance. A key factor for this trend is the fact that traumatic brain injury is a public health problem.¹ One of the new paradigms in education is the incorporation of the concept of medical education based on competencies.² Medical education requires the development of multiple skills on the part of the trainee that will result in benefit to address this public health problem.^{3,4}

The competency-based medical training center is the key for trainees and the learning requirements. In contrast, when the development of competencies is established, the training and evaluation processes are individualized to achieve training objectives. Here the question arises about what is the model for competency-based training? Competence can be staged as the performance of an individual in a certain activity that is the product of the learning process. This requires the integration of knowledge, skills, and attitudes adapted to the social context where it operates. The next question to address is if a training model based on competencies in neurotrauma and neurointensive care is valid? Competency-based education has been considered for training in critical care, in this way we believe that given the complexity of medical care in neurotrauma and neurointensive care, this learning model encompasses all the care processes of the neurotrauma patient. From pre-hospital care, emergency management, transfer to hospitalization, neurointensive care, neurorehabilitation, and follow-up can be adapted to the competency-based learning model.

We still need to address what strategies can be established to implement a competency-based training model in neurotrauma and neurointensive care. Among the strategies that can be used are medical simulation, clinical case simulation in neurotrauma, and repeated evaluation. These strategies will increase interest and focus among the trainee in the management of patients with traumatic brain injury. The simulation of neurosurgical procedures and/or interventions in neurotrauma and simulation of procedures such as central line insertion are a few examples to be utilized for different trainees based upon the field of training they belong to. The data gathered from neurointensive care especially neurotrauma has to be utilized in real-time for the education, testing, simulation, and publication by the trainee (► **Fig. 1**).

Periodic feedback should also include noncognitive elements such as student motivation, strengthening learning styles, and individualized aspects of each student. Also, human training stimulates ethical considerations of patient management and makes the resident and specialist a respectful, analytical, and prudent human being.

In conclusion, medical education in neurotrauma and neurointensive care is a multidisciplinary process. There are multiple key players in the process and all of them need to work in an integrated way to produce top-notch clinicians for the future. These trainees will go on to maintain and develop programs, some of these replacing key players to continue the process of education and training for the future trainees.

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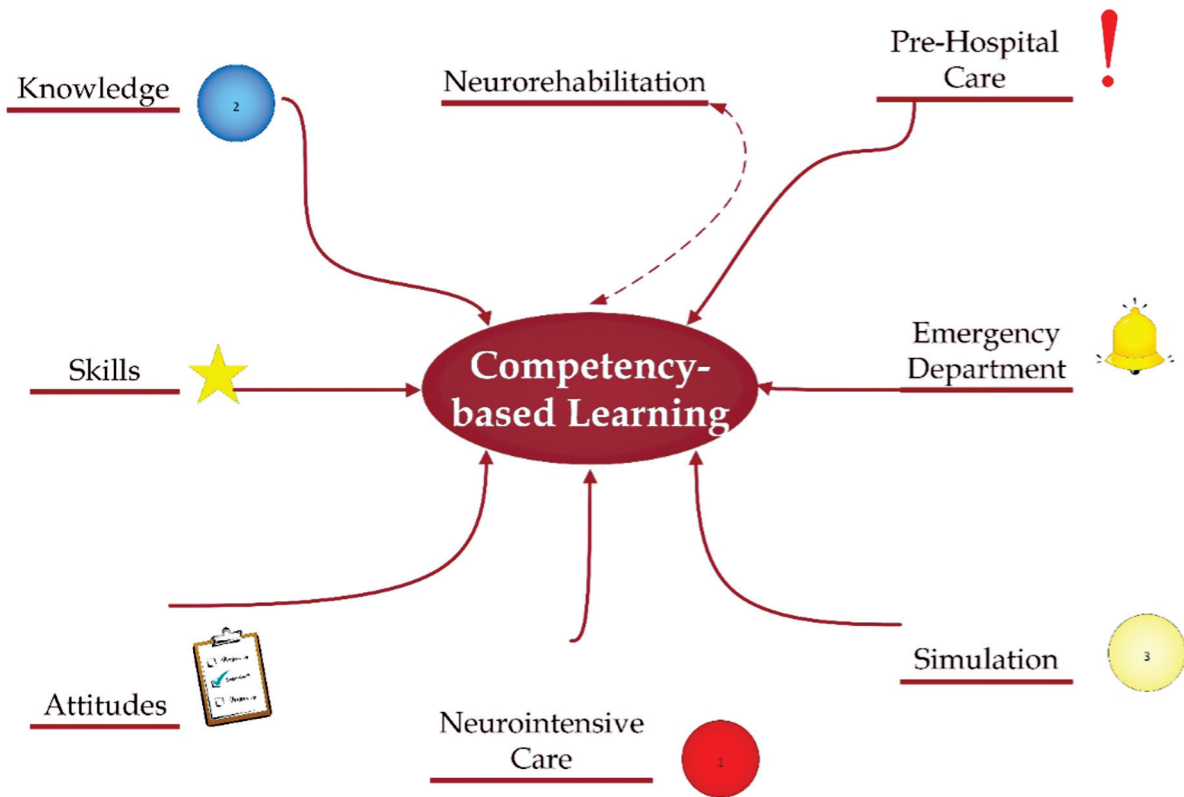


Fig. 1 Different aspects of competency-based learning/training in neurotrauma and neurocritical care.

Conflict of Interest
None declared.

References

1 Faul M, Coronado V. Epidemiology of traumatic brain injury. *Handb Clin Neurol* 2015;127:3–13. Doi: 10.1016/B978-0-444-52892-6.00001-5

2 Shah N, Desai C, Jorwekar G, Badyal D, Singh T. Competency-based medical education: An overview and application in pharmacology. *Indian J Pharmacol* 2016;48(Suppl 1):S5–S9. Doi: 10.4103/0253-7613.193312

3 Guragai M, Mandal D. Five skills medical students should have. *JNMA J Nepal Med Assoc* 2020;58(224):269–271. Doi: 10.31729/jnma.4878

4 Scheele F. The art of medical education. *Facts Views Vis ObGyn* 2012;4(04):266–269