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Commentary

Initial training in neurosurgery and risk management

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The training of a surgeon should no longer be limited to the theoretical and practical teaching of the treatment of diseases of the specialty, with the main focus being the surgical procedure.[3] Taking into account, the quality and safety of care is imperative. In addition to the decision-making capacity, the information given to patients as well as the risk management must be a new priority and must be integrated into the initial training.

The worldwide literature[3] on patient safety reveals the importance of medical risks in hospital structures with 350,000–460,000 serious events per year in France, of which 120,000–190,000 can be considered as available.[2] Data on 1,777,035 patients for the years 2006–2011 were acquired from the American College of Surgeons National Surgical Quality Improvement Program database. Neurosurgical cases were extracted by querying the data, for which the surgical specialty was listed as "neurological surgery." Over 38,000 neurosurgical cases were analyzed, with complications occurring in 14.3%.[6]

The human factor frequently appears as an immediate cause of adverse events.[4] Before 1990, the cultural approach in risk management was geared toward finding the responsibilities of the authors of errors. From 1990, Reason[5] develops a new approach to the risk by considering that human error is inevitable but "*Although we cannot change the human condition, we can change the conditions in which humans work... Human errors are perceived as consequences rather than causes.*"

Human errors develop in a context – root causes – favoring their occurrence. Leape[4] states that "*Human error is not avoidable but it is relatively predictable. If the magnitude of the medical error is enormous, it is because of the use of poorly designed systems and not the irresponsibility of staff.*" Berwick[1] reinforces this systemic approach to risk by demonstrating that only 2%–3% of clinical errors are due to incompetence, carelessness, sabotage, or negligence, revealing that 97%–98% of clinical errors are due to the health system hazards.

Recognized protocols are used in care systems to investigate and analyze incidents (Clinical Safety Research Unit, Imperial College London), Association of Litigation and Risk Management, from the identification of the causes of an event[7,8] The Human Factors Analysis and Classification System was originally proposed for the US Navy aviation and then modified to apply to a wide variety of other risks, including those related to care, to study and analyze the human contribution to accidents and incidents. It takes into account individual, environmental, governance, and organizational factors, for example, action or omission in the care process, slip of the tongue, misjudgment, forgetfulness, unsafe gesture, improper or incomplete implementation

of a procedure, deliberate failure to practice safe practices, procedures or standards, search for root causes, contributing factors to the occurrence of these errors to correct them by installing defenses or barriers, to create a safer environment. In this context, at the individual level, the most frequent contributions were errors in judgment, inadequate risk assessment, or lack of critical reflection. Communication and coordination, mainly due to inadequate or ineffective communication, have been often implicated. Half of the reports have blamed complex interactions in a sociotechnical environment. These methodologies are useful. Exploited carefully, they must guide our mitigation and response strategies better than simple assumptions and opinions.

It is time to create a database that could be used in the neurosurgical career development by creating a specific training module for managing risks and complications.

This teaching that we should organized must be focused to the practical implementation and the study of scenarios thanks to workshops in small groups, exercises in simulation based on real scenarios. To create this bank of scenarios close to the field, teams of experts must be involved: neurotraumatology, cerebrovascular, tumors, spine, functional neurosurgery, neuropediatrics, and peripheral nerves. A syllabus of skills – knowledge, know-how and skills – taking into account the aspect of the mastery of illness is essential, but a critical analysis of the environment will optimize access to neurosurgical clinical performance.

The change of practice and culture goes through initial training.

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Conflicts of interest

There are no conflicts of interest.

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