The Assessment of Technical Skills in Neurosurgery: The development of the Global Assessment of Intraoperative Neurosurgical Skills (GAINS) scale

Gelinas-Phaneuf, Nicholas; Choudhury, Nushi; Del Maestro, Rolando; Okrainec, Allan; Fried, Gerald M.

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Presentation Style: Poster
Presenter: Nicholas Gelinas-Phaneuf
Co-Authors: Rolando Del Maestro, Allan Okrainec, Gerald M Fried, Nusrat Choudhury

Title: ***The Assessment of Technical Skills in Neurosurgery: The development of the Global Assessment of Intraoperative Neurosurgical Skills (GAINS) scale***

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Rationale/Background

Background and Purpose: Proficiency in technical skills is an essential component of a surgeon's competency. There is currently no tool to objectively evaluate a neurosurgeon's technical performance. We report the development process for such a scale.

Methodology: A five-point Likert scale with eight categories was developed. It is based on the previously published OSATS and GOALS global rating scales used for open and laparoscopic general surgery. In order to increase the face validity of the scale, neurosurgeons and general surgeons with an interest in the topic were surveyed. The evaluated categories and the anchors for each score were assessed to achieve maximum validity. The final draft of the scale was again revised and test piloted to ensure adequate validity. Staffs and residents who used the scale completed a survey to evaluate the scale.

Results: The final GAINS scale is presented. Surgeons are evaluated on performance in eight domains yielding a total score between 8-40 Students, residents and staffs can be formatively evaluated with it. The results of the survey showed good face validity and usefulness as a formative tool. Users agreed that it

can be used for self-evaluation, peer-evaluation or in-training evaluation.

Conclusions and Discussion: The GAINS scale represents the first tool developed to assess the technical skills of neurosurgeons. It can be applied to measure performance in actual or simulated neurosurgical procedures. The GAINS scale has adequate face validity and can be used as a formative tool in practice. Further studies will verify its construct validity and reliability when used for evaluation.