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A comprehensive framework for glioma surgery by the PIONEER Consortium and RANO resect group, part 1: intraoperative recommendations for mapping, monitoring, and decision making

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Abstract

In adult patients with newly diagnosed or recurrent diffuse glioma, more extensive resection is associated with longer progression-free and overall survival. Intraoperative mapping techniques are used to safely increase the extent of resection by locating, monitoring, and preserving the function of potentially infiltrated brain during surgery. However, there is no consensus on the indications for intraoperative mapping, the optimal functional tests to be used intraoperatively, or intraoperative decision making. Furthermore, there are no consensus standardised neurological, language, and functional outcome assessments that should be applied pre-operatively and post-operatively. The Personalized Interventions and Outcomes in Neurosurgical Oncology Research (PIONEER) Consortium and the Response Assessment in Neuro-Oncology (RANO) resect group are collaborative, multidisciplinary efforts that aim to standardise and enhance research and clinical practices in surgical neuro-oncology. Here, both working groups review the evidence and provide recommendations in an effort to improve standardisation in intraoperative stimulation mapping, electrophysiological monitoring, and intraoperative decision making during glioma resections in adults. The Policy Review offers an intraoperative framework to reduce heterogeneity and improve the quality of clinical and scientific practice. In addition to standardising practices and improving individual patient outcomes, this Policy Review provides a foundation for better consistency between institutions and facilitates multicentre collaboration in surgical neuro-oncology. Ultimately, reducing heterogeneity might accelerate the development of personalised surgical care by enabling advanced computational modelling techniques.