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Introduction: Beyond survival: guidelines and outcomes in neurooncology

Many forces in and around current medical practice have focused attention on the process and outcomes of treatment. These include advances in technology and their attendant expense, consumerism in the marketplace and competition for healthcare dollars, and an overall desire for quality in care delivery. These forces have given rise to the development of practice parameters (or "guidelines") in an attempt to diminish practice variation and reflect the scientific foundation of medical practice. Linked to this is a necessary interest in measurement of treatment success in the form of outcome measures (or "outcomes"). In each instance, the driving force is the desire to reach an effective resolution of a healthcare problem, serving each patient's best interest. There are three orientations brought to bear in this endeavor: the patient's, the healthcare provider's, and the payer's. Ideally, these should overlap substantially, but there is little research demonstrating that this is happening.

Crude measures of effectiveness that are readily available from hospital or office records are regularly used in practice review. These include mortality rates, average lengths of hospital stay, unplanned return to the operating room, readmission to the hospital within thirty days of discharge, and complications of treatment. Hospital administrations use these data in a variety of ways, including review of specific physician practice, as well as an overall indication of quality in healthcare delivery. Clinical researchers use these measures as indicators of general treatment success or failure and in comparing various treatment approaches to the same problem. However, as treatment has become safer and more effective, these statistical measures (beyond mortality) have taken a lesser role in measuring outcome in general.

Clinicians have measured their treatment success by looking at mortality and morbidity rates, just as those interested in systems have. Time to survival is the most common measure used in assessing neurooncology patients, in whom brain malignancy is almost invariably lethal. An example of this is given in this issue's paper by Friehs, et al., on gamma knife treatment of malignant melanoma metastasis, suggesting that this is a viable treatment option.

Beyond survival, there is also measurement of various aspects of a patient's condition after treatment that can be objectively visualized in some way using, for example, radiographs, clinical examination, pathological assessment, and so forth. In neurooncology, these might be exemplified by reduction of tumor volume, presence or absence of neurological deficit, and tumor grade. These measures would have varying priorities to patients, providers, and payers, and are relatively crude, although usually easily obtainable. Voster and colleagues suggest a grading system for brain tumors that would help in determining prognosis, and Chen, et al., report on pathological examination using immunofluorescence assay to predict tumor response to chemotherapy. In the paper by Glantz, et al., on neoplastic meningitis, the use of the presence of cells in cerebrospinal fluid--the typical outcome measure used in trials of

therapy for this condition--is evaluated for its use in the literature and compared to functional outcome for concordance.

Certainly a patient's function as a result of his or her clinical condition is of prime importance and affects quality of life. In Rosenberg's essay on clinical follow up of patients with brain tumor, an appeal is made to consider routine collection of functional data using a simple scale such as the Karnofsky score. More sophisticated questions being asked about the quality of life for patients suffering brain malignancy are addressed in Bampoe and coworkers' paper, and the paper by Bunston, et al., explores issues of psychosocial needs and impact on quality of life.

In order to properly evaluate treatment outcomes, the data have to be collected in a prospective and detailed manner. Anderson describes the Gliomas Outcomes Project, an effort by all specialties interested in the treatment effectiveness of therapy for glial tumors to establish a national database to collect outcomes information, and Perry raises probing study design questions about research exploring the therapeutic effectiveness of neurooncology treatments.

Once categorization of outcome has been decided upon and studied, those providing, accepting, and funding treatment are interested in what works best. This is the question being tackled by the development of practice parameters or "guidelines." In an evidence-based approach, the literature is collected, evaluated, and categorized by degree of scientific validity. Recommendations are then made based on the evidence, according to the strength of the evidence and the degree of certainty reflected by it. In this paradigm, practice standards (reflecting a high degree of clinical certainty) are supported by well-designed randomized controlled trials, practice guidelines (reflecting a moderate degree of clinical certainty) are supported by less robust comparative studies such as nonrandomized cohort or case-control studies, and practice options (reflecting clinical uncertainty) are derived from literature ranging from case series to expert opinion. Two papers in this issue provide guidelines for the treatment of brain tumors: in the first, a multidisciplinary task force reviews the available literature on the treatment of low-grade gliomas, and in the second, Soultz and colleagues make recommendations on the role of reoperation in high-grade gliomas.

As technological advances in brain tumor management evolve, we owe a duty to ourselves as clinicians, to our patients, and to society to categorize, measure, and emphasize outcomes of our treatments, and formulate treatment recommendations based on the highest quality of clinical research available.