

The science of neurosurgical practice

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The January 2013 issue of *Neurosurgical Focus* is dedicated to the science of neurosurgical practice and is edited by Drs. Anthony L. Asher (Carolina Neurosurgery and Spine Associates & Carolinas Medical Center, Charlotte, NC), Paul C. McCormick (Columbia University College of Physicians and Surgeons, New York, NY), and Douglas Kondziolka (New York University, New York, NY).

In this issue, eight papers tackle a new era in neurosurgical practice, in which there is a shift in health-care priorities (and what drives patterns of medical practice) from medical discoveries and technological innovations to relationships between patient safety and outcomes, quality of care, and the economic implications of keeping people healthy. In their Introduction, the editors speak of a parallel shift from an era in which medical knowledge was generated by a small percentage of researcher-physicians to a time in which most physicians will actively participate in the collection of new facts, their interpretation, and the generation of new knowledge. This activity will be made possible by physicians' ability to deposit, access, and compare clinical data in huge long-term prospective databases of medical disorders and treatments.

In the field of neurosurgery, several professional societies have joined together to advance the quality of patient care and to serve the research needs of neurosurgeons and other health-care stakeholders. To this end a national practice data collection, analysis, and reporting platform, the National Neurosurgery Quality and Outcomes Database (N²QOD), has been initiated. This issue of *Neurosurgical Focus* contains articles describing N²QOD as well as the overall new trend in professional

neurosurgery—what the editors term the "science of neurosurgical practice"—from its beginnings to its projected future.

Specific topics in the January issue of *Neurosurgical Focus* include the following:

Health care reform, as exemplified in the Patient Protection and Affordable Care Act, according to Rachel Groman and Koryn Rubin, "aims to change the US health care system from one that rewards quantity to one that rewards better value through the use of performance measurement." The authors discuss current barriers to this shift toward better care as well as initiatives created by both the federal government and physician societies in ensuring accountability and delivery of high-quality care to patients.

Drs. Peter Angevine and Paul McCormick discuss the science and methods used to measure clinical practice. They also speak of the benefits accrued from physicians' ease of access to the extensive outcomes research contained in clinical registries.

In 1987 the Gamma Knife® first became available in North America, at the University of Pittsburgh, ushering in the practice of radiosurgery. Since that time Pitt has documented the techniques of this procedure and outcomes in patients who have undergone Gamma Knife surgery at that institution. Dr. Oren Berkowitz and colleagues review how the Pitt clinical registry evolved and how it has facilitated publication of numerous works on the Pitt experience, advancing knowledge of the techniques and outcomes of radiosurgery.

Dr. Matthew McGirt and colleagues describe an overview of their experience at the Vanderbilt Spine Center (Vanderbilt University Medical Center). Here outcomes data have been collected during routine spine care and recorded in a prospective fashion in a longitudinal

registry. These data are used for learning and quality improvement; documentation of safety and effectiveness of care; and research into the comparative effectiveness of different procedures.

In March 2012, the National Neurosurgery Quality and Outcomes Database (N²QOD), sponsored by the American Association of Neurological Surgeons in cooperation with the Congress of Neurological Surgeons, Society of Neurological Surgeons, and American Board of Neurological Surgery, began enrolling patients in its pilot project, an Internet-based database of cases of lumbar spine disorders. When fully functional, the N²QOD will expand its coverage to all facets of neurosurgery and serve as a longitudinal outcomes registry that will provide neurosurgeons with "a quality measurement and feedback system that utilizes meaningful patient-centered data. . . . Providers will have the opportunity to learn which diseases, which patient groups, and which treatments are most effectively treated with surgery and identify areas for improving the quality of neurosurgical and spine care." Articles in this issue by Drs. Anthony Asher, Paul McCormick, and Matthew McGirt with their colleagues describe the development and overall purpose of the N²QOD, the pilot project, and regulatory considerations for prospective registries such as the N²QOD.

Dr. Nathan Selden and coworkers discuss the future of neurosurgical practice-based science as it relates to neurosurgical training and practice as well as to improvements in patient care delivery and compliance with regulatory mandates.

According to Dr. Asher, "Our specialty is now engaged in an unprecedented cooperative effort that aims to create a new integrative culture of neurosurgical practice for the purpose of improving care. Tremendous scientific and economic potential resides untapped within our routine clinical activities. The methods to realize that potential now exist. The promise of those methods can only be realized through

concerted effort and organized action."

Asher adds: "If neurosurgeons choose to embrace practice science as an essential feature of modern neurosurgical practice, we will help meet the challenges of creating a sustainable healthcare system, and we will also define the relevance of [neurosurgery](#) within the broader realm of medicine and society."

More information: All papers are published online January 1, 2013 online in Neurosurgical Focus, Volume 34, Number 1 (thejns.org/toc/foc/34/1). Papers in *Neurosurgical Focus* are free to the public.

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