The Coming Changes in Neurosurgical Practice

The Continuum of Neurosurgical Care: Increasing the Neurosurgeon’s Role and Responsibility

The Health Care Reform Act has fostered a shift toward capitation and shared risk among providers to improve quality and reduce the escalating costs of healthcare. Like all physicians, neurosurgeons are increasingly being incentivized to participate in efforts to streamline care through the use of surgical pathways to reduce hospital length of stay and prevent readmissions. These changes have expanded the role of the neurosurgeon along the continuum of care for the neurosurgery patient. This paper predicts and advocates for a further broadening of neurosurgery participation from programs that reward physicians for helping to prevent a high-risk patient’s need for surgery to management of postacute rehabilitation. It also introduces the concept of risk reduction more generally at the community level through collaborative interventions that improve health through changes to the built environment, innovations in transportation, and improved access to healthy food and recreation opportunities.

KEY WORDS: Continuum of Care, Health Care Reform, Patient Satisfaction, Reimbursement

Healthcare reform measures have potentially profound effects on neurosurgery, one of the most expensive areas in medicine. The US Centers for Disease Control and Prevention reports that there were approximately 1.2 million neurosurgical procedures performed in 2010; lumbar laminectomies alone exceeded $2 billion, and spinal fusions cost $12.8 billion nationwide in 2011.

With healthcare reform has come a greater emphasis on capitation of payments for care and risk sharing among the stakeholders. That has forced health systems, hospitals, and clinicians to identify opportunities along the continuum of care to lower costs and keep patients from being readmitted to the hospital. These efforts include standardized protocols, drug formularies, and safety checklists, all of which may be most efficiently coordinated and implemented when physicians are financially or contractually aligned with the health systems implementing them.

The shift toward quality and cost-effective care, including prevention of hospital readmissions, is being driven by government healthcare reforms aimed at reducing healthcare inflation. The Patient Protection and Affordable Care Act is the most profound reform legislation passed since 1965, when the Social Security Act was amended to include Medicare and Medicaid. Healthcare reform measures were designed to improve access and quality while also reducing the cost of providing care.

In today’s healthcare environment, the role of the neurosurgeon along the continuum of care of patients must expand. Already within fee-for-service payment structures, neurosurgeons are assuming more responsibility for ensuring quality prior to a procedure, as well as after hospital discharge. As pressure mounts for health systems and payers to further contain costs and improve patient outcomes, neurosurgeons will no longer be permitted to simply show up, operate, and move to the next case. Their performance on aspects of care that go beyond the operating room will increasingly determine financial success. Indeed, as models of care evolve, neurosurgeons should eventually be rewarded for helping prevent a patient’s need for surgery altogether. This paper defines the concept of continuum of care and explores how neurosurgery is, can, and should be integrated. The Continuum of Care for a Neurosurgery Patient is illustrated in Figure.

ABBREVIATIONS: LTAC, long-term acute care; EHR, electronic health record; LOS, length of stay; ASC, ambulatory surgery center; ACO, accountable care organization
The Continuum of Care for a Neurosurgery Patient

**THE ROLE OF THE NEUROSURGEON ALONG THE CONTINUUM IN TRADITIONAL FEE-FOR-SERVICE CARE**

Historically, a neurosurgeon who works within a fee-for-service system is not employed by the hospital or health system, but operates within those facilities as a matter of privilege. Neurosurgeons collect fees from the patient and their insurer for services delivered based on a predetermined rate. This model may incentivize neurosurgeons to focus on quantity of procedures, especially those that are potentially more lucrative. In this system, the neurosurgeon enters the continuum of care in the middle, at the time a patient presents for an episode of care. For elective cases, this may be only after a referral from a primary care physician who may have exhausted less invasive or seemingly less costly approaches to a patient’s condition such as physical therapy and pain management. In this model, a patient’s failure to adopt a healthier lifestyle—attaining and maintaining a healthy weight, for example, is inconsequential, and the lack of a patient’s involvement in preventive health measures may in fact present opportunities for subsequent surgery. In the past few years, the implementation of the Affordable Care Act has led to re-evaluation of the role of the neurosurgeon within the traditional fee-for-service model.

**WHAT IS CONTINUUM OF CARE?**

Continuum of care is defined as “a concept involving a system that guides and tracks patients over time through a comprehensive array of health services spanning all levels and intensity of care.” It can include an array of healthcare services, including acute care services, emergency and hospital services, physician practices, rehabilitation centers, skilled nursing, long-term and palliative care, and hospice. The continuum of care can also include public health and wellness services that aim to prevent disease. Capitated healthcare systems and all other healthcare stakeholders increasingly recognize that healthcare expenditures are lowest for healthy people and that healthy habits begin at home and in the community, long before people become patients. As a result, the health sector is increasingly partnering with nonprofit organizations on interventions that engage urban planners, designers, the public sector, transportation and food system managers, and public health, to improve community health.
Continuum of Care: Neurosurgeons Begin Involvement

In some fee-for-service systems, neurosurgeons are called upon to help determine neurosurgery referral protocols, but generally have no direct incentives to participate in other aspects of the patient's care because this model does not reward the neurosurgeon to do so. For example, neurosurgeons are rarely involved in decisions around utilization of staff and facilities. Physician engagement in these types of integrated pathways has increased, however, and Medical Directorship contracts, which provide payment to neurosurgeons for administrative work and program development, are an incentive to participate. These kinds of financial alignments have helped bring neurosurgery representation “to the table” to work jointly with hospital leadership to lower costs of care, including decreasing costs for implants and hardware, but incorporation of the surgeon may well be downstream from the initial presentation for a given episode of intervention. Health systems and third-party payers have heightened scrutiny of individual surgeons’ costs to provide care with collection of data on cost and time per case, as well as length of stay (LOS) during a specific episode of care. Aligned neurosurgeons are increasingly involved in discharge planning and confirming arrangements for patient follow-up once the patient is discharged. There remains, however, little connectivity between neurosurgeons and home health providers, acute rehabilitation facilities, long-term acute care (LTAC), and skilled nursing facilities.

At the same time, neurosurgeons are increasingly being held more accountable for patient care at more points along the continuum. Healthcare reform measures demand that neurosurgeons take a larger role in presurgery planning and education, care documentation using the electronic health record (EHR), and a host of other measures to reduce hospital LOS and the risk of readmission and to increase patient satisfaction scores.

Neurosurgeons are taking more responsibility for providing patients relevant information to streamline the episode of care. For elective procedures, the neurosurgeon ensures the patient and their care providers know what to expect and how to prepare for surgery. Through a preoperative class, educational video, and/or brochure, or through conversations with the surgeon and staff, neurosurgeons set postoperative expectations and engage patients in their own care. At David Geffen School of Medicine at UCLA, for example, patients preparing for microvascular decompression surgery are provided the expected goals of hydration and nutrition, mobilization, elimination, and pain and nausea control to demystify the postoperative setting and establish shared expectations. The neurosurgeon, nurse practitioner, or physician assistant colleagues are frequently providing postoperative instructions during the patient’s preoperative visit and writing postoperative medication prescriptions. Filled medication prescriptions can be double-checked for accuracy upon hospital discharge. Postoperative office visits also can be scheduled ahead of surgery.

This approach has recognized success in improving efficiency, managing patient expectations, and decreasing LOS. When patients know what to expect prior to neurosurgery, there are fewer calls back and forth from patient to physician. Patient satisfaction improves when patients follow an expected postoperative program, and when patients are satisfied, they are more likely to rate their care well on patient satisfaction surveys. Starting in fiscal year 2015, the federal government based 30 percent of a hospital’s performance score on patient satisfaction. Low scores on patient satisfaction can negatively affect a hospital’s Medicare reimbursement rate.

Patient satisfaction survey data is also made public, providing additional incentives to hospitals and clinicians to perform better. Among the survey’s measurements are how well the patient was informed about pain management and use of other medicines and whether they were given clear discharge instructions. By initiating discharge education preop, the neurosurgeon has the ability to assure this measured part of care has been performed as they direct. These carrot-and-stick approaches are slowly pushing neurosurgeons and health systems to align with the continuum of care of our patients.

New Challenges in Continuum of Care: Hospitalists and Emergency Care

For trauma and hospital-based neurosurgeons, there may be even less engagement in continuum of care of the patient. Patients may have no history with the hospital to which they are being taken or with the neurosurgeon on call who will perform their emergency intervention. With the success of the American College of Surgeons Trauma System, patients are triaged not to the closest hospital but the hospital with the appropriate level of neurosurgical care, which may be a high-level trauma center several hours away with an available neurosurgeon. This approach, which employs best practices, surgical protocols, and surgical checklists, improves patient outcomes, allowing hospitals to provide the appropriate level of care and staffing for patients of a given acuity.

This shift, however, has resulted in a change to the continuum of care for emergency neurosurgery patients. Unlike in the past, when the attending neurosurgeon at the closest hospital would continue to follow that patient through the course of the hospital stay and through follow-up clinic appointments, patients with neurosurgical emergencies now are typically returned to their local physicians and facilities for follow-up care. The patient may never again see the neurosurgeon who operated on them, thereby placing new challenges on the postacute continuum of care. In this emergency care model, the neurosurgeon has served as a consultant, and the patient is not a single physician’s responsibility but that of the neurosurgical, intensive care, or trauma service.

During hospital stays, trauma surgeons, critical care teams, and hospitalists oversee patient care, a practice that has been touted for reducing medical errors but may further fragment care. The change to hospital-based teams of doctors, including the critical
Thirty-day readmission rates are a significant concern in healthcare. An increasing body of research has led to the scrutiny of these rates, as they are preventable and occur at predictable time intervals. In neurosurgery, readmission rates are among the most costly, at nearly $30,000 per readmission, and unlike other types of surgery, have not yet decreased. The scrutiny has led to the development of prediction models to allow targeted interventions to lower readmission rates among high-risk patients to reduce costs and patient morbidity.

**Continuum of Care: LOS**

In addition to meaningful use of EHR and analysis of readmission and complication rate reductions, healthcare payers also are judging clinicians and hospitals on patient hospital LOS. Because shorter hospital stays can result in more readmissions due to unresolved or unanticipated postoperative complications, meeting both patient-quality and cost-control goals can create conflicts. Within neurosurgery, same-day surgery is replacing an overnight stay in the hospital for a number of procedures. Patients undergoing more complex surgeries have discharges after even shorter LOS. Studies demonstrate that these approaches can be both good for patients and for lowering costs of care. Annual cost savings of $140 million have been reported for specific outpatient spine surgeries. A retrospective study of 1000 patients who had anterior cervical discectomy and fusion either in the hospital or in an outpatient ambulatory surgery center (ASC) demonstrated that complication rates were low and easily diagnosed and managed without compromising surgical safety within the ASC.

To succeed, such changes require patients and staff to have additional education and training to successfully move from inpatient to outpatient neurosurgical care. To avoid the initial negative feedback from patients regarding the earlier discharges, neurosurgeons and their hospitals are preparing patients better about expectations upon discharge, as well as offering classes and other tools to help them in their recovery at home. Earlier hospital discharges also have led to a growing home healthcare industry, which enlists nurses and other providers such as occupational and physical therapists to help patients rehabilitate at home. A thorough cost analysis on a systems basis has yet to be completed.

**ACCOUNTABLE CARE ORGANIZATIONS: Prototype of Current Risk Models**

As pressures under healthcare reform grow, so have opportunities for new value-based models of care delivery and physician reimbursement designed to change the incentives for both providers and patients, based on what has been termed “value of care.” These value-based care arrangements are implemented in a variety of ways by and among physician groups, hospitals and health systems. Certain systems’ implementation of value-based care alters the rules that govern provider reimbursement so that income depends on quality and safety measures, provision of recommended care, and avoidance of wasteful care, beyond...
For most of these systems, a multifaceted physician alignment strategy is a necessary ingredient for success. Among the growing value-based models are accountable care organizations (ACOs), authorized by the Affordable Care Act, in which groups of physicians and other partners such as hospitals take responsibility for the cost and quality of care for a set of Medicare patients and share in the savings if total costs are reduced below the benchmarked, expected costs. ACOs are designed to motivate healthcare providers to decrease the preventable episodes of care for a given patient through increased care coordination. ACOs employ a range of payment models, which may include capitation or fee-for-service in how they remunerate neurosurgeons, but unlike traditional fee-for-service systems, in which each episode of care is reimbursed by private or government payers, each episode of care in an ACO model is viewed as a cost to the system.

How might surgical specialties fit into this emerging healthcare model? An analysis of 59 ACOs found that while surgeons account for significant care for an ACO’s patients, they have largely been unininvolved in ACO efforts, which have mostly focused on coordinating care for patients with chronic conditions such as congestive heart failure and diabetes, and reducing unnecessary hospital readmission and emergency department visits. This is likely an appropriate focus when global analysis of preventable cost is undertaken.

No doubt, over time, ACOs will integrate surgeons and other specialists into their organizational plans and hope to focus on coordination of care to further avoid wasted resources. Surveyed ACOs indicated that for this they prefer surgeons who provide high-quality care at low cost and are able to communicate well with primary care colleagues.

**Neurosurgery: Value of Care Efforts**

One way in which neurosurgeons are engaged at an earlier point in the continuum of care is development of a triage system to ensure patients receive the optimal level of care. Without well-established guidelines and other screening protocols, patients presenting with common and costly conditions such as back and neck pain, may receive too many and inappropriate interventions. This will include both under- and overtreatment for services such as costly imaging, physical therapy, pain management, and surgical evaluations. Working with other team members, including midlevel practitioners, pain management specialists and phsiatricians, for example, neurosurgeons can guide the decision-making process for care for patients who may or may not need surgery.

The role of neurosurgery in the ACO and similar models of healthcare delivery presents obvious challenges, since neurological care is among the most costly of all specialties. But organized neurosurgery already is actively working to address the ever-increasing costs of neurosurgical care. The specialty has embraced the Choosing Wisely campaign, launched by a consortium of medical societies and Consumer Reports, targeting 5 clinical tests and/or procedures to reduce wasteful use. It has responded to demands for value-based care by supplying data to better understand quality and cost. Additionally, hospitals are increasingly calling on neurosurgeons to help in the selection of equipment to reduce expenses and support other cost-saving measures. Other important initiatives for neurosurgery include data collection platforms such as NeuroPoint Alliance for national registry participation by all neurological surgeons in the US and the National Neurosurgery Quality and Outcomes Database. Both serve as the principal practice sciences infrastructure for each area of neurosurgical subspecialty practice.

In ACOs and in other risk models of care, neurosurgeons are working directly with hospital administrations and other stakeholders to devise clinical pathways for neurosurgical care that is driven by best practices. Establishment of neurosurgical pathways can be easier in an ACO setting than in a traditional fee-for-service system because physicians in ACOs have to be more accountable for quality of care they deliver and are incentivized to adhere to best practices. By the same token, they have less freedom to work independently from the health system or hospital, which has more oversight in how care is delivered. In contrast, in traditional fee-for-service systems, it is harder to roll out cost-saving best practices because independent physicians generally have the choice of their practice patterns; buy-in is more voluntary.

**Continuum of Care: UCLA Pioneering Efforts**

The neurosurgery program at University of California, Los Angeles Geffen School of Medicine, a system in which the physicians are employed by the health system, has documented its approach to improve the value of neurosurgical care through multifaceted and multidisciplinary efforts. These include performance processes prior to, during, and after surgery. Careful monitoring of the key processes facilitated improvement of the value of care delivered to patients. For example, an analysis of microvascular decompression surgeries before and after the program was implemented found that the processes led to “an improvement of global outcome with maintenance of a zero mortality rate and high degree of symptom resolution, reduction in the average preincision preparation time, decrease in the average total operating room time, decrease in the mean and median overall LOS, decrease in the mean LOS on the floor, and reduction of complications and the number of readmissions.”

**Continuum of Care: Other Initiatives**

Some countries’ healthcare systems already utilize broadly accepted neurosurgical pathways that specify evidence-based practices for all neurosurgical procedures. In England, for example, 25 neurosurgical units adhere to a single clinical pathway developed with aims to reduce the morbidity and mortality of neurosurgical conditions, minimize pain and disability, optimize functional recovery, and improve the quality of life of neurosurgical patients. To achieve the established aims,
the pathway states that “neurosurgical patients should receive the highest levels of patient-centered, multidisciplinary care in the most appropriate environment.”

A Canadian study reported that a coordinated, multidisciplinary pathway with a stratified approach to low-back pain assessment and care provided may allow surgeons to restrict their practices to patients who are more likely to benefit from their services, thereby reducing wait times and potentially reducing costs.

Clinical pathways are not always embraced by physicians, who may see them as a cookie-cutter approach to patient care that leaves little room for practice of the art of medicine. Even with adherence to a clinical pathway, the clinician should tailor care management to the individual patient or risk ordering unnecessary tests or treatments.

Continuum of Care: After Hospitalization

Still largely overlooked in continuum of care, efforts are posthospital interventions and patient management. Few value-based systems integrate postacute care, thus limiting incentives to ensure patients are placed in an appropriate setting after surgery to optimize their recovery and reduce 30-day readmission rates. Such settings might be rehabilitation centers, skilled nursing facilities, LTACs, or home care.

Several problems in coordinating postacute care for patients have been identified. Among them are poor information sharing, difficult and unsatisfactory care transitions, and misaligned financial incentives.

However, ACOs that have a formal relationship with a postacute provider are more likely to have advanced transition management, end-of-life planning, readmission prevention, and care management capabilities.

Integration of postacute services in ACOs and other systems is not well established, but some health systems view integration as an opportunity. Ascension Health, the nation’s largest nonprofit health system, with 70 general acute care hospitals in 20 states and the District of Columbia, has taken on postacute care for its patients through a reorganization aimed at reducing 30-day readmission rates.

Ascension has 34 senior-care facilities across the country. The nonprofit system reported that after just 1 year, the nonprofit saved $42 million on the provision of acute care as a result of decreased patient LOS in acute care facilities—faster throughput through the costly acute phase of the care continuum.

THE NEXT ITERATION? NEUROSURGEONS AS CARE ADVOCATES THROUGHOUT THE CONTINUUM OF CARE

In this era, when health systems, physician groups, and hospitals experiment with various integrated healthcare delivery models with physician alignment and reimbursement schemes deliver value-based care, neurosurgeons not only have an opportunity to make an impact but also have an imperative. Neurosurgeons are experts in surgical interventions for complex spine and brain conditions, but their expertise could have greater impact if it is also used to promote prevention of serious neurological events. To assure the highest quality of neurosurgical triage and decision making, neurosurgeons do have a role in making sure that patients who need surgery or a higher level of care are properly evaluated for tumor, myelopathy, or spinal instability, but also deciding when surgery is not appropriate. In those instances, neurosurgeons may be uniquely effective in motivating patients to take charge of their health through weight loss, core strengthening, smoking cessation, or other noninvasive steps.

Later in the continuum of spine care, neurosurgeons are key to supporting effective postoperative care and rehabilitations so that more patients may go on to live healthy, productive lives without the need for hospital readmission or future spine surgery procedures.

Once again, Ascension Health, has made significant strides to initiate a comprehensive and integrated prevention program that maximizes reward and minimizes risk. They are doing it through integration of services. They understand that involvement of physicians—including specialists—is critical to its success, and their leaders view provider efforts to prevent illness as key to fulfilling their mission.

“In an ideal world—hopefully within ten years—groups of clinically integrated healthcare providers will be evaluated and incentivized on the basis of how healthy they keep their patients,” said Peter M. Leibold, Ascension Health’s chief advocacy officer. David B. Pryor, MD, executive vice president and chief clinical officer of the company, echoed his colleague: “I see a model in which patients are supported beyond the service provided to reduce future interventions and complications. Ideally, we would go even further, by supporting care for individuals who do not yet need interventions, thus preventing or delaying the onset of chronic diseases and managing overall healthcare and cost of care beyond a single-year horizon.”

With the right incentives in place, new healthcare models can address increasing costs of care and high hospital readmission rates associated with chronic illness. In neurosurgery, for example, opportunities exist to develop and manage programs that help patients reduce their risk for stroke and the need for spine surgery through weight loss, nutrition, and exercise/physical activity. Integration of disease prevention programs could also improve quality of care and patient satisfaction measures, which result in better Medicare reimbursement rates.

Attracting and engaging physicians and specialists to take part in the continuum of care require a variety of health system—physician-contracting options. The various remuneration models for neurosurgeons will play a role in aligning physician behaviors and interest around a patient’s continuum of care. Successful hybrid financial relationships are expanding for independent practice physicians who take on shared goals around program development, quality and outcomes, as well as volume-based independent goals based on productivity. These
arrangements provide incentives to neurosurgeons who provide neurosurgical services but also take on medical directorships, trauma and vascular calls, and even healthy spine clinic. In this scenario, program incentives are aligned up front and discussed.

NorthBay Healthcare in Northern California is embarking on construction of a 100,000-square-foot wellness clinic which will host the NorthBay Center for Neuroscience Healthy Spine Program, paid for through a mix of fee-for-service and a NorthBay-owned health plan. Patients who use the facility services may be in fee-for-service or capitated plans. NorthBay providers will sign professional service agreements that define their responsibilities and payment structures for each, physicians maintaining autonomy in decision making around neurosurgical and clinical resources and how individual patients are cared for. The goal is to incentivize neurosurgeons and the multidisciplinary care team to do what is right for the patient, even if that means keeping the patient out of the operating room.

This approach can also work to prevent readmissions. Even if neurosurgeons are hesitant to get involved in more aspects of the continuum of care, pressure to lower readmission rates will require it. Neurosurgeons will have to buy in to the idea that they should ensure that nutritional support, weight loss or weight maintenance, core strengthening, and other preventive measures are being addressed for patients at risk of subsequent recurrence or gradual progression of underlying conditions after a first neurosurgical episode of care. Partnering with postacute care programs, outpatient rehabilitation teams, and patients’ primary care physicians can facilitate that involvement and, at the same time, improve the health and wellbeing of patients.

Continuum of Care: Healthy Communities

Health maintenance along the continuum of care begins in the community, and healthcare providers can and should be part of that effort to achieve true cost savings. Just as we build our cities, towns, and communities, they build us as well, physically, socially, mentally, and even spiritually. These social determinants of health include how we design transportation systems, housing and parks, as well a community’s access to healthy food, public health, healthcare, and safety services.

Lack of sidewalks, bike paths, and recreational areas in some communities discourages physical activity and contributes to chronic disease, which can lead to the need for costly healthcare, including neurosurgery.

As evidence mounts on the links between the built environment and population health, many cities are joining forces with nonprofit groups and healthcare providers to address these disparities. In Sacramento, California, for example, a collaborative team of professionals from various sectors, including medicine, worked together to develop Design 4 Active Sacramento, which established inclusion of health elements in the county general plan, zoning code, and design guidelines. Design 4 Active Sacramento outlined the rationale for design strategies that promote health and sustainability. These include building mixed-use, compact communities, well-connected roadway networks, site and street design that considers how people perceive and interact with their environment, including sidewalks, bike lanes, and other amenities.

For healthcare systems to achieve true reform that both improves quality of care and reduces costs, engagement from every sector of society including patients will be essential. Driven both by incentive and imperative, neurosurgeons like all healthcare providers must play a role in the process to improve the health of our communities. Increased neurosurgeon engagement at more points along the continuum of care will have a profound influence on how that is achieved.

Disclosures

Both Dr. Benzil and Dr. Zusman are founding partners in Benzil Zusman, LLC, a consulting company that specializes in neuroscience and healthcare negotiations, strategy, and program development. Many of the concepts presented relate to the work they do and have done for clients.

REFERENCES

The conceptual basis of payment reform based on financial risk shift from insurers to healthcare providers and systems cannot be understood without a grasp of the idea of the “continuum of care”. The cost risk for an insurer under traditional fee-for-service payment includes all services provided to a patient, or more inclusively, a population of patients (or clients) covered by the insurers policies. When the cost for the total period of care over a defined period of time (“capitation”), or even the total episode to care (“bundled care”), is shifted to the provider of care, control of cost becomes a care provider’s responsibility and financial liability, including costs for which the provider previously had no interest or leverage. Those costs include primary and preventive services, acute care inpatient or outpatient services, post-hospitalization rehabilitation care – including both institutional and home care, and prevention of re-hospitalization for foreseeable complications.

The continuum of care under risk-based reimbursement becomes a concern of the entire system, as financial losses or penalties affect all participants in the enterprise, whether employed or contracted, since the profit to be made or money to distribute directly or indirectly affects all in the system. Bonuses, salaries, technical equipment purchases, facility amenities and expansions, services offered, and administrative and clinical personnel additions all depend on the profitability of the entire system. When all share in the consequences of profitability, everyone is a piece of the continent; no one is an island.

In “The Continuum of Neurosurgical Care: Increasing the Neurosurgeon’s Role and Responsibility”, Edie Zusman and Deborah Benzil describe this new nexus of organizational responsibilities and how they apply to the neurosurgeon participating in organized systems of care engaged in risk contracting. The point of the discussion is how a neurosurgeon, with a role traditionally limited to narrow surgical treatment protocols, can fit into the wider scheme of total patient care management, using the neurosurgeon’s unique knowledge, training, and experience to design and oversee the system of care. Mentioned are referral protocols, program directorships, patient education and expectation management, optimal emergency referral network design, tactics to reduce lengths of stay and hospital readmissions, establishing cost-effective diagnostic and treatment guidelines, and tailoring care management to individual patients.

The authors correctly believe that the neurosurgeon must find and define a new role as “care advocates throughout the continuum of care”. How this will be done is a work in progress, and this essay is a guide to organizing the concept and plan.

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