



Spine centers of excellence: applications for the ambulatory care setting

Evan D. Sheha, Sravisht Iyer

Department of Spine Surgery, Hospital for Special Surgery, New York, NY, USA

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Correspondence to: Evan D. Sheha, MD. Department of Spine Surgery, Hospital for Special Surgery, New York, NY, USA. Email: shehae@hss.edu.

Abstract: Centers of excellence (COE) are designed to deliver high-quality, cost-effective healthcare by providing specialized and comprehensive multidisciplinary care for a given condition and have become attractive option to both insurers and healthcare providers given their promise of creating value. The criteria that constitute and define a COE may be delineated by a number of entities with a stake in value-based healthcare delivery including professional societies, the federal government, insurers and businesses seeking to control costs while guaranteeing outcomes for their employees. COEs accomplish this goal through a number of means, the first and most essential of which is centralization of organization wherein a variety of specialists are integrated under a single hospital system to improve communication between providers and decrease overall variability of care delivery. In this system, the patient is tracked throughout the entire spectrum of care from diagnosis, through non-operative or surgical intervention, and postoperative care. The centralized model in turn allows for standardization of protocols and multidisciplinary team input which helps to inform case selection, improve patient screening, make treatment more uniform and ultimately allow for dynamic and continual modification of best practices. This model lends itself particularly well to orthopedic subspecialties where patients often require specialized pre-, intra- and post-operative care from a variety of providers. However, despite their apparent benefits, studies evaluating outcomes after implementation of COEs have been less than favorable, and further research is needed in this area to support their widespread adoption. The growth of the ambulatory surgery center in orthopedics provides a new opportunity for the development, evaluation and evolution of spine COEs. Although the direct value of COEs is yet to be firmly established, they provide guidelines for best practices in outpatient spine surgery and a framework for how spine care can be transitioned safely and effectively to the outpatient setting.

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What is a healthcare center of excellence (COE)?

Healthcare COE have been established by the healthcare industry in response to the observation that businesses in the non-healthcare sector frequently find success in improving quality of product while decreasing costs when these centers are implemented (1). A healthcare COE has been defined as “a program within a healthcare institution which is assembled

to supply an exceptionally high concentration of expertise and related resources centered on a particular area of medicine, delivering associated care in a comprehensive, interdisciplinary fashion to afford the best patient outcomes possible” (2). The goals of healthcare delivery and the changing landscape of healthcare economics lend themselves well to the COE model as these centers promise successful, cost-effective treatment of a defined group of conditions which would

be otherwise more time or resource intensive without guarantee of favorable outcomes at non-specialty centers (3). COEs adhere to a multidisciplinary model, which has been established as a cost-effective healthcare delivery system wherein the patient is tracked throughout the entire spectrum of care from diagnosis, through non-operative or surgical intervention, and postoperative care all delivered through one institution or overarching management body. Specialty areas that have found success through this model include both non-surgical specialties such as cardiology, oncology and neurology, and surgical specialties including bariatric surgery, ophthalmology and orthopedics (2). The COE model lends itself particularly well to subspecialties like joint replacement and spine surgery where patients frequently require specialized care from multiple providers throughout the episode of care, including preoperative optimization, specialized intraoperative techniques, and specialty-specific postoperative rehabilitation.

Who decides the criteria for a COE is variable? Oftentimes these centers are established by professional society guidelines or a government entity (4). For instance, Bariatric surgery COEs were developed in 2006 given the high volume of procedures performed annually, refusal of insurance carriers to cover the procedure due to questions regarding cost effectiveness and risk profile, and limited data to support effectiveness of the procedure (5). Two governing bodies—ACS and ASMBS—created guidelines designating COE which was ultimately adopted by CMS insofar as only bariatric surgery performed at COEs would be reimbursed (6). Recently, outcomes have failed to demonstrate benefit of COEs, and this restriction was dropped in 2013 (7,8). Similarly, the American College of Cardiologists has created a “HeartCARE Center” national distinction of excellence which is their highest recognition. Criteria consist of cardiovascular accreditations, individuals within the system with advanced status in the ACC, and outcomes reporting or participation in quality improvement initiatives (9). Occasionally, the designation is created by bodies with a particular interest in streamlined or cost-effective delivery; and in this case it describes a partnership between a business entity and a hospital or healthcare network which defines a healthcare center which is seen to provide superior, cost-effective healthcare which can be mutually beneficial to both parties. As an example, Walmart has established a network of COEs through the Mayo Clinic system and waives copays for selected procedures if done at one of these centers (10,11). Similarly, Optum, an insurance company, has defined “Optum Centers of Excellence” as

hospital systems with which they have partnered to deliver higher-than-average quality of care. Various other private health plans, federal and state payers and specialty societies have created designations for COE, e.g., Aetna Institutes and Blue Cross and Blue Shield Blue Distinction Centers. In these cases, the designation may serve as a means of directing patients within these plans to seek care at COEs which ideally would serve to mutually benefit both the patient and payer in terms of cost and quality of care delivered; however, it does not technically define a COE by any other national criteria.

Bariatric surgery COE’s relative failure to provide improved care highlights some of the issues at play in the creation and marketing of COEs as providers of value in healthcare. If the goal is to create specialized programs with proven high-quality healthcare that are attractive to stakeholders through the assumption that COEs will provide superior outcomes, and they do not, then COEs fail at a fundamental level (1,12,13). In cases where hospitals self-designate as COE without upholding rigorous external standards, this may serve simply as a marketing strategy. When not created in association with a second party with an interest in cost-effective healthcare delivery for other reasons there is a concern that unregulated COEs may potentially steal market share from other healthcare entities without actually providing improved outcomes and in turn negatively affect their perception, and ultimately their purpose. However, several studies have demonstrated the effectiveness of COEs at decreasing cost and creating value, and in theory they provide the optimal setting for healthcare delivery (14,15).

Spine COE

As is the case with COEs in general, there is no single entity and no specific set of criteria that defines a spine COE. One study from 2013 evaluated the effectiveness of spine COE’s created in 2009 in partnership with 25 health plans from across the United States as designated by a predefined set of requirements. In a comparison of outcomes between the 369 hospitals designated as COEs and 1,449 other centers performing similar operations, there was no difference in complications or readmission among patients undergoing cervical fusions, lumbar fusions or lumbar discectomies/decompressions (16). While results may have proved unfavorable for spine COEs, another study from 2013 by the same authors found that similarly designated centers for hip and knee surgery produced lower complication rates for hip

surgery, serving as a proof of concept that COEs can deliver on promises of improvement in value-based healthcare (15). This was supported by a study of Blue cross value-designated facilities which demonstrated decreased cost and complication rates in lumbar and cervical spine surgery (14). In the current environment, while hospital systems can define themselves as a spine COE, there is no centralized board to police this designation which oftentimes results from an agreement between a health plan and hospital system (2,10). The Joint Commission (JCO) defines criteria for a COE more generally by the ability of a hospital system to earn a disease specific care certification, a designation available for a number of disease states, conditions and procedures. Within the realm of spine surgery, JCO certification encompasses laminectomy, discectomy and spinal fusion requiring providers to comply with consensus based national standards, employ consistent use of evidence based practice, and collect performance measures (17). Recently JCO has partnered with the American Academy of Orthopaedic Surgeons to provide total hip and knee replacement certification with the aim of standardizing COE/certification nationwide with increased provider input, though no similar plan is in place (or yet made public) for a similar partnership with an orthopedic spine specialty group to create national guidelines for spine surgery (18).

The growth of the ambulatory surgery center (ASC) in orthopedics provides a new opportunity for the creation of spine COEs and, ultimately, value in ambulatory spine surgery (19,20). As evidence mounts to support the safety of ambulatory spine care, there is an increasing need to police these centers and ensure that patient safety is not sacrificed for cost-effectiveness (21,22). Currently, JCO, and other licensing agencies such as the Accreditation Association for Ambulatory Health Care (AAAHC), have provided a set of criteria for certification as an ambulatory orthopedic surgery COE—an important step in ensuring value-based care and ensuring the overall effectiveness of ambulatory spine COEs (23). While the evidence to date is promising, further research to support the value created by spine ASCs is paramount, especially as the indications for outpatient spine surgery will inevitably expand to encompass increasingly more complex cases, potentially putting at risk the benefits of spine ASCs by creating an unacceptable risk profile. The creation of ambulatory spine COEs provides the best opportunity to accurately evaluate the true value of outpatient spine surgery given the elimination of variables through the relatively standardized criteria by which they

are defined. Applying the general principles of healthcare COEs to spine surgery will ensure that best practices are followed, in turn ideally providing further high-quality evidence in support of outpatient spine surgery.

Key tenets for COE

Creating value

Ultimately, the creation of value—or the highest quality of care at the lowest cost—is the overarching goal of creation of COEs in ambulatory spine care (24). The value equation, as it has been termed, is the confluence of safety, institutional processes, patient satisfaction and outcomes measures, and overall cost to the patient, payer and society. While indirect costs—namely loss of workforce productivity—related to spine care may be particularly difficult to measure, direct costs related to resource utilization can be controlled to some degree with effective COE operational management. A recent focus on creating value in spine surgery by decreasing direct costs is the movement of spine surgery into outpatient ambulatory surgery centers. In one study, when compared to inpatient anterior cervical discectomy and fusion or cervical disc replacement (ACDF/CDR), average outpatient charges were 52% and 83% lower, respectively (25). Spine surgery performed safely and efficiently in appropriately indicated patients in the outpatient setting can circumvent many of the costs associated with lengthy inpatient stays and provide value through cost savings.

While not all patients will be eligible for this model of care, there is a growing body of evidence to support the safety of outpatient spine surgery in ASCs. A recent meta-analysis of 39 studies evaluating the value equation of ambulatory spine surgery, namely the ratio of quality—or safety—to cost found that ambulatory spine procedures have equivalent or superior outcomes compared to inpatient procedures with regards to complications rates, hospital transfer rates, and readmission (26). COEs must maintain a high safety profile, and in the absence of evidence to suggest otherwise, limiting ambulatory spine surgery to those patients who are medically optimized undergoing less involved procedures for less complex pathology further ensures value in the outpatient setting (27).

Centralization of organization

Among the various considerations in COE designation,

comprehensive care and centralization of organization are paramount. A COE provides a “one-stop shop” for patients wherein they can receive all of their necessary pre- and postoperative care within a single organization. Integration of a variety of specialists under the umbrella of one hospital system gives a COE the ability to treat conditions which may complicate or arise from a patient’s episode of care. For instance, a complicated patient with multiple comorbid medical conditions who presents for spine surgery should be able to be managed perioperatively within one center rather than in a more traditional hub-and-spoke model. The standardization which arises from centralized organization improves communication between providers, decreases errors resulting from variability among providers, and streamlines the process. Ideally, when possible, co-location of providers creates efficiency for patients as well (2). Ambulatory spine COEs linked to a larger hospital system where this type of comprehensive care can be provided.

Defining an organizational structure along the lines of diagnosis or surgery type rather than operational structure also streamlines patient experience and can create subspecialty depth of expertise while decreasing practice variability. From a broad perspective, this would require that within a hospital’s orthopedics department, a given surgeon’s scope of practice is limited to a specific subspecialty; more narrowly speaking, this may mean that in a given spine surgery department, providers specializing in minimally invasive spine surgery may no longer be allowed to perform large adult deformity cases, and similarly deformity surgeons may not be allowed to perform the occasional microdiscectomy (28). Extrapolating this to the outpatient model, this would necessarily restrict which spine cases can feasibly be performed at ASCs.

This also involves the creation of clinical pathways wherein the specifics of perioperative care are defined and standardized, decreasing variability and allowing healthcare providers to focus on best practices. Furthermore, pathways should be considered malleable, changing to adopt new evidence-based practices. Monitoring for compliance, recording outcomes, setting pathway-specific benchmarks and sharing individual provider experiences set the stage for further pathway refinement (2). The structure of ASCs—typically smaller operations with a core of dedicated staff—lends itself well to adherence to and refinement of standardized clinical pathways through constant feedback from providers and staff.

Multidisciplinary team building and protocol creation

One facet of COEs that lends itself particularly well to a centralized model is the utilization of multidisciplinary meetings geared at creating value and improving outcomes by carefully scrutinizing patient treatment plans. Multidisciplinary conferences and standardized protocols, which may in certain cases limit access to surgery if the likelihood of complications is unacceptably high, have been shown to significantly reduce risk for perioperative complications (29,30). As the indications for ambulatory spine surgery continue to evolve, comprehensive and standardized protocols to inform case selection, patient screening, anesthesia type, and management in overnight observation units are important aspects of excellent spine care (31). Where evidence is lacking regarding ambulatory spine surgery, best practice guidelines—whether formally published or simply developed and agreed upon by stakeholders at ambulatory care centers—can be useful adjuncts in patient selection and management in ASCs (32).

Given the historically inconsistent data regarding the effectiveness of COEs in to improve outcomes, establishment of prospective and multicenter registries can provide another avenue to define their effectiveness. Registries have the dual benefit of measuring quality and effectiveness of spine procedures in a real-world clinical setting while demonstrating value of spine surgery as it relates to patient outcomes and quality of life (33). They allow institutions to measure the population value of spine surgery, simultaneously identifying those groups or individuals who serve to benefit most from an intervention as well as those who will not, and can further define the best setting—inpatient or outpatient—in which to perform a given procedure. By recording individual outcomes longitudinally, prospective patient registries allow for further refinement of cost-effective clinical indications and treatment strategies, ideally decreasing treatment variation, creating national benchmarks, and optimizing value in ambulatory spine care.

Conclusions

While spine care delivery systems remain highly variable, adherence to the tenets of COEs provides a framework to standardize outcomes and demonstrate value in the outpatient spine care model. Effective spine care requires strict patient selection, patient and staff education, and

adherence to pre- and post-operative protocols with an eye towards continual process refinement in order to allow for seamless care while avoiding complications. Although the direct value of COEs is yet to be established, they provide a guideline for best practices of these pathways and examples for how spine care can be transitioned safely and effectively to the outpatient setting.

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Footnote

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