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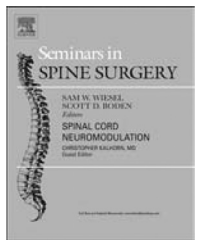

The impact of accountable care organizations on spine care

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ABSTRACT

Objectives: The purpose of this manuscript is to describe the origins of accountable care organizations and summarize their impact on spine care.
Findings: The unmitigated rise in capital expenditures for health care services in the latter half of the twentieth century gave rise to the development of cost-saving measures, including accountable care organizations. These have shown modest cost savings and improvements in quality measures but have largely ignored surgeons and surgical care.
Conclusions: As alternative payment models expand, spine surgery will be targeted for improvements. Spine surgeons should be involved in the structuring of those efforts.

1. Introduction

Medical care spending in the United States increased from 5% of the gross domestic product (GDP) in 1960 to 12% in 1990.[1] Recognition of this burgeoning cost resulted in putative attempts at healthcare reform and the rise of health maintenance organizations (HMOs), which was an attempt by insurers to contain costs by narrowing access networks for patients. Despite these measures, healthcare costs still consumed 17% of GDP by 2010.[2] The Patient Protection and Affordable Care Act (ACA) was passed in 2010 and ushered in complex changes to insurance coverage and provider payments. One provision of the ACA established accountable care organizations (ACOs) as one of many payment reform models with the overall goal to more fully achieve the "triple aim" of healthcare policy: improving care delivery, quality and cost.[3] It is imperative for surgeons to understand the implications of ACOs as physician participation grows and the structure of ACOs evolve. The purpose of this article is to review the current state of ACOs and, more specifically, their anticipated impact on spine surgical care.

2. The accountable care organization

2.1. Evolution

The ACO is one of many "alternative payment models" created by the ACA that also includes the bundled-care patient initiative (BCPI) and patient-centered medical home, among others. The Centers for Medicare and Medicaid Services (CMS) defines an ACO as a group of physicians or hospitals who voluntarily combine to provide healthcare to Medicare patients. Whether led by physicians or hospitals, the organization must apply to CMS and meet certain eligibility requirements (such as serving at least 5,000 Medicare patients) to be included in the ACO program. After the ACA was passed in 2010, the *Pioneer ACO* model became the first iteration of Medicare ACOs and has since ceased accepting new applications. In 2012, the *Medicare Shared Savings Program* (MSSP) model was introduced and continues to be the most utilized model (in addition to the *Advanced Payment ACO* model, which is a subset of the MSSP for ACOs with less access to the financial capital required to meet eligibility). As of 2018, there were

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Table 1. – A summary of the different accountable care organization (ACO) models offered by the centers for medicare and medicaid services. The advance payment model is a supplementary component of the MSSP model.

ACO Model	Inception Year	Enrollment Status	No. of participating centers	No. of beneficiaries
Pioneer ACO	2011	Closed	32 (2012) 9 (2017)	270,000 (2016, approx.)
Medicare Shared Savings Program (MSSP)	2012	Open	220 (2012) 561 (2018)	10.5 million (2018)
Advance Payment Model	2011	Closed	35 (2015)	Model concluded
Next Generation	2016	Open	18 (2016) 51 (2018)	470,000 (2016, approx.)

561 ACOs participating in the MSSP model covering approximately 10 million Medicare patients. The most recent CMS ACO model debuted in 2016, titled *Next Generation ACO* and has 58 ACO participants (Table 1). This model adapted in response to participant feedback by making more realistic baseline population estimates and allowing adjustments based on population risk. The proliferation of ACOs is underscored by the CMS announcement in 2016 that 30% of Medicare payments occurred via an alternative payment model, almost a year ahead of the program's initial goal.

2.2. Incentives

The primary goal of Medicare ACOs is the reduction of healthcare costs by eliminating redundancy and waste while maintaining or improving care quality. The incentive for ACO participation is a share in the financial savings realized, as long as predetermined quality metrics are met. The ultimate amount of the share is dependent on how the risk of a potential financial loss is structured between the ACO and CMS. In the MSSP model, ACOs can opt for a one-sided risk arrangement, which eliminates the (downside) risk of sharing in the losses with the government. Alternatively, there are three tiers of two-sided risk arrangements, which exposes the ACO to varying amounts of risk but increases the ACO's stake in the savings once quality benchmarks are achieved (Table 2).

Medicare payments continue to individual providers within the ACO under the fee-for-service model, but CMS creates a benchmark for the individual ACO based on historical Medicare payments for patient care in that specific demographic adjusted for risk factors associated with the population served. To account for normal variations in healthcare spending, a predetermined minimum savings (or loss) rate must occur to trigger additional payments from Medicare to the ACO (or vice versa in the setting of a loss with two sided-risk arrangement).

2.3. Quality measures

Medicare ACOs are evaluated based on a list of quality benchmarks set by CMS. The latest list of benchmarks was published in 2017 and include 31 items spread across four domains (patient/caregiver experience, care coordination/patient safety, preventative health and at-risk populations). None of these benchmarks are related to surgical care and only one is peripherally related to spine care (ACO-44: Use of imaging studies in low back pain [first introduced in 2017]). The list of quality measures reflects the nature and focus of the ACO model, which centers on optimizing primary care objectives. Surgical care, which constitutes 30–40% of healthcare spending, is largely absent from metrics associated with ACO models.[4]

3. Outcomes of ACO adoption

Since the onset of ACO implementation in 2010, health policy and economics research has analyzed the benefits and shortcomings attributable to ACO formation. The three major categories of research efforts are: cost, healthcare outcomes and access to healthcare, the latter of which investigates social and economic disparities. These research efforts are commendable in their scope and complexity but, in general, are hampered by the accuracy of surveillance using CMS claims data, an accepted degree of patient movement in and out of ACOs and the heterogeneity of ACO models.

3.1. Cost

In one of the first attempts to characterize the impact of ACOs, Epstein et al published a descriptive study comparing patients in early ACOs (2011) to those not involved in ACO health systems.[5] This study found a 5.8% reduction in CMS spending for beneficiaries involved in ACOs. A subsequent study compared CMS per-beneficiary spending for both ACO and non-ACO health systems before and after enrollment into the Pioneer ACO model.[6] This study reported modest improvements in per-beneficiary costs, with an estimated total savings of $118 million (1.4%) for CMS. As expected, those organizations with higher baseline spending before ACO adoption realized greater savings. A follow-on study confirmed modest savings in 2012, but found no improvements in 2013.[7] Moreover, the savings in 2012 were eclipsed by incentive payments from CMS to ACOs in the one-sided risk arrangement of the Pioneer ACO model. This finding bolsters the argument for a two-sided risk agreement in the more recent iteration of ACO models. Additionally, this study maintained that ACOs led by primary care groups performed better economically than those integrated with hospitals. While this can be explained in part by the quality metrics chosen by CMS, it implies surgical care may not be as economically advantageous since it is primarily hospital-based.

3.2. Outcomes

Organizational improvement in healthcare outcomes and quality is evaluated using metrics set by CMS. In the second

Table 2 – A comparison of the risk arrangements for Next Generation and MSSP accountable care organization (ACO) models. The quality measures for both models are the same.

ACO Model	No. participating centers (2018)	Risk Model	Maximum Sharing Rate	Notable Differences
Medicare Shared Savings Program (MSSP)				Retrospective beneficiary assignment, no risk adjustment available
Track 1	460	One sided	50%	
Track 1+	55	Two sided	50%	
Track 2	8	Two sided	60%	
Track 3	38	Two sided	75%	
Next Generation	51	Two sided	80%–100%	Prospective beneficiary assignment, risk adjustment available

year of Pioneer ACO models there was a 14.8% improvement averaged across all measures.[8] As the MSSP model becomes the most common arrangement and the Pioneer ACO model phases out, it will be important to see if similar improvements in quality are appreciated given the significant differences between these two ACO models. In the summer of 2017, CMS reported a favorable trend in quality metrics over the first three years of the program, with improvement in 27 of 33 quality measures.[9] Further investigation and corroboration will be vital to determine the extent of quality improvement potentiated through ACO models.

3.3. *Access (racial disparities)*

Initial reports on the impact of ACO formation on health care access were positive. McWilliams et al reported progress in domains that were impacted by the organizational improvements of ACOs, such as access to providers and care coordination.[10] Another study showed improvements in the timeliness of care and physician communication within ACO groups.[11] Applied on a population level, improvements in access domains will positively impact both cost and quality. Conversely, populations that lack access to quality care will likely experience more costly care with worse outcomes. Lewis et al showed that, when controlling for clinical risk, minority groups in ACOs achieve worse quality performance scores.[12] This results in a downstream, self-perpetuating effect as the payment structure for ACOs penalizes lower performance scores. Furthermore, Schoenfeld et al. showed persistent disparities in access to surgical care (including lumbar spine surgical procedures) even after the formation of ACOs.[13] While it is important to recognize the improvements in access due to ACO formation, it is equally necessary to identify at-risk populations and incentivize ACOs to improve access to avoid exacerbating existing disparities.

4. Surgeons and the ACO model

The benefits of ACOs led by primary care groups and hospitals (to a lesser extent) is evident. However, the impact of surgeon participation in ACOs is not well described and the inclusion of surgical metrics in ACO quality measures is virtually absent. Dupree et al published the results of a survey study seeking to clarify the relationship of surgeons with other providers in ACOs and the ACO organization itself.[14] This study showed that surgeons play a role in the leadership of a fraction of ACOs. In addition, surgical care was not part of the strategic objective of any ACO surveyed and those interested in including surgeons were doing so in large part to lower the hospital readmission rate post-operatively. The envisioned incentives for participation on the part of surgical providers centered around increasing referrals rather than direct financial gains. This sentiment was due to the impression that the fractional financial savings associated with ACO participation would not be enticing for surgeons.

Hawken et al. examined the number of specialists participating in the 2015 MSSP ACO program.[15] Their findings continue to highlight the underrepresentation of surgeons in ACOs. Moreover, they found that ACOs with the highest ratio of specialists to beneficiaries were formed around widely recognized medical centers. The incentives for surgeon participation in this study mirrored that of Dupree et al, as the financial benefits of participation were relatively small as compared to income from existing surgical practice.

Resnick et al further characterized the landscape of surgeon participation in ACOs.[16] This study analyzed the percentage of surgeons within each subspecialty currently participating in ACO groups. As specialties, orthopaedic surgery and neurosurgery have approximately 21% and 25% of surgeons participating in ACOs, respectively. The widest discrepancy exists between plastic surgeons (12%) and transplant surgeons (36%). However, after adjusting for the interaction between surgical specialty and organizational structure there is little inconsistency across groups. As the authors point out, this indicates surgeon participation is largely driven by the organizational structure to which the surgeon belongs, and is not reflective of surgeons independently seeking to participate in ACOs.

5. Spine care

In financial reform models, spine surgery is a commonly targeted subspecialty due to the relatively high volume of procedures performed annually and cost per episode, especially among Medicare beneficiaries. In the fee-for-service model, there is evidence of waste in the form of provider inducement within spine surgery.[17] Although mandatory participation in alternative payment plans is not currently in place for spine surgeons, many believe changes are underway that will link payment to performance. It is vital for spine surgeons to develop quality measures by consensus, rather than passively

Table 3 – Proposed methods for spine surgeons to successfully participate in accountable care organizations (ACO).

Cost-saving Maneuver	Rationale
Clinical integration	
Set quality metrics for surgeon inclusion	Prevents wasteful specialists from joining ACO
Standardize operative implants	Decreases inventory costs and creates negotiating opportunity with device companies
Standardize post-operative plans	Sets patient and provider expectations, limits confusion about post-operative instructions
Care coordination	
Physician access	Decreases the number of office visits (telehealth)
Integrated post-acute care	Prevents poor communication, limits readmission

acquiescing to metrics imposed by those outside the community.

The majority of flexible spending in spine surgical episodes of care involves the cost of implants and technology used during the procedure, post-operative length of hospital stay, and readmissions (Table 3). Other avenues of cost-savings, although likely more modest, include consolidating pre-operative evaluations and aligning patient and surgeon expectations. In a study evaluating variation in Medicare payments for episodes of lumbar spine surgery, Schoenfeld et al. reported that large amounts of discretionary spending were associated with post-procedural care.[18] Moreover, this was magnified in the setting of complex surgical procedures, such as interbody fusion. Streamlined and standardized post-surgical care pathways, as well as increased stringency with respect to the use of more intensive spine surgical procedures would likely be necessary to facilitate financial success among spine surgical providers participating in ACOs.[17,18]

Additional approaches that may engender ACO-based savings for spine surgical practitioners have been demonstrated in other studies, albeit outside of Medicare and the ACO model. The Michigan Spine Surgery Improvement Collaborative is an example of a proactive partnership between surgeons and insurance providers to improve care and reduce costs per episode of care. Although this collaborative was formed with a private insurer (Blue Cross), the mechanisms through which savings may be realized are equally applicable to spine surgical practice within ACOs.

Kim et al. detail another successful example in which neurosurgeons proactively partnered with hospital leadership and reduced waste in a local healthcare system.[19] Applied strategies included decreasing the number of available implant vendors and creating quality programs to reduce infection rates and post-operative length of stay. This led to a 50% reduction in the intraoperative costs associated with cervical spine procedures and a 33% decrease in the costs of lumbar spine surgery. Following their incorporation as a MSSP ACO, the health system described in the work of Kim et al saved over $50 million in 2013 alone.

The growth in the sheer number of alternative payment models, as well as the extent of provider participation, has raised the concern of overlap between payment models, particularly bundled payments and ACOs.[20] This may be less of a concern to spine surgeons as the impending required participation in bundled or episodic care was nullified in November of 2017. Indeed, the changing political landscape has made the overall trend in healthcare policy less predictable. For example, the 2018 congressional budget dismantled the independent payment advisory board (IPAB) and it is unclear what further changes will be applied to alternative payment programs.

Regardless of the policy landscape, it will be important for spine surgeons to actively participate in the development of specialty-specific standards and benchmarks in the future. As the myriad existing payment models are refined and elaborated, surgeons can expect a movement toward widespread adoption. In particular, the continued growth of ACOs suggests the inclusion of metrics associated with surgical care is a reasonable next step for future iterations. As the spine surgery community approaches these branch points, its members must have a say in the structure of payment models to ensure they promote a climate where patients receive appropriate access to quality care.

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