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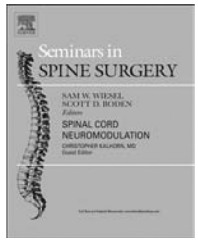

Bundled payments in spine surgery

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ABSTRACT

Interest in the application of bundled payments to the field of spine surgery continues to grow. There may be great potential for cost-savings for spinal procedures under bundled payments. However, challenges such as heterogeneity of DRGs, complex procedures requiring lengthy recoveries, and appropriate outcomes measurement pose barriers to successful bundled payment design. In this paper, we review the challenges and opportunities posed by bundled payments in spine surgery. We also present several key considerations for policymakers interested in payment reform within spine surgery. Surgeon involvement will be critical in providing guidance for generating effective alternative payment models.

1. Introduction

Spine surgeries are associated with an increasing economic burden as expenditures have only continued to rise in the last few decades.[1,2] The projected demand for spine surgery is likely to continue rising, if historic growth rates are any indication.[3–6] Policymakers seek to address the growing economic burden through alternative payment models, such as bundled payments. By bundling compensation, payers provide a pre-determined level of compensation for all services related to an episode of care (from pre-operative through post-operative care). Policymakers hope that by bundling these payments over an episode of care, providers will be incentivized to decrease the overall cost of care while maintaining or even improving healthcare quality. As an alternative to the current fee-for-service model, these reforms effectively shift the financial risk of care on to hospitals and providers. Indeed, previous reports are optimistic regarding the opportunity for bundled payments to significantly reduce costs incurred by the Centers for Medicare and Medicaid Services (CMS) and other third party payers.[7]

The rising interest in bundled payments for spine surgery follows promising leads of bundled payments in total joint arthroplasty (TJA). Like spine surgery, TJA presented a prime opportunity for cost reduction, with over 450,000 Medicare patients undergoing these procedures and over $7 billion in expenditures for hospitalizations.[8] Preliminary results of a Bundled Payments for Care Improvement (BPCI) program for TJA display an over 95% patient satisfaction rate as well as a 22% decrease in medical costs as compared to fee-for-service payments, without a negative impact on patient outcomes. However, spine surgery differs from TJA in several significant ways. First, patients can be more medically complex with many associated comorbidities. Next, numerous diagnosis related groups (DRGs) which include a variety of diagnoses and fusion levels, as well as the multitude of surgical procedures and options for a particular diagnosis, makes the use of this model particularly challenging. Therefore, the aim of this article is to review the challenges and opportunities presented by bundled payments for spine surgery, and offer some key questions that need to be addressed in seeking to design a successful bundled payment for spine surgery.

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2. Advantages of applying bundled payments to spine surgery

The rapid increase in the rate of spine surgery procedures over the last two decades has been accompanied by a growth in the overall economic burden associated with these procedures.[9] Given the high cost of care incurred from spine surgeries, these interventions have high potential to benefit from bundled payments as there are multiple opportunities to improve value across a single episode of care. This potential to improve costs and patient care using bundled payments for spine surgery makes this an appealing system for insurers, physicians, and their patients.

From a payer or policymaker's perspective, the sheer volume of procedures makes spine surgery an attractive target for bundled payments as even a small amount of savings per procedure will be multiplied, leading to substantial savings on aggregate. From a hospital or health system's perspective, engaging in a bundled payment solution may even help grow procedure volume further. By removing third party health plans, hospitals may be able to offer lower prices. Other incentives include additional pre-screening that benefits insurers by reducing unnecessary surgeries and increasing the efficiency of a surgical practice (e.g. enhancing the percentage of patients in a surgeon's clinic who go on to receive surgery). Another potential benefit of bundling spine surgical payments is increased negotiating leverage with vendors of implants, grafts, and other surgical instrumentation, which could help further lower the overall episode cost. One way of promoting high-quality and cost-effective care is to bundle payments where physicians are held as the responsible party for both costs and utilization of resources. This model of bundled payment has been seen to correspond to increases in surgical yield and increasing efficiency of care.[10] Furthermore, as the national trend of hospital employment of physicians continues to rise, the bundled payment system will rely on an integrative, collaborative effort on behalf of physicians and hospitals where their interests are aligned with controlling costs and maximizing outcomes.

3. Challenges of applying bundled payments to spine surgery

One major barrier to the success of bundled payments in spine surgery include the variability of procedures, and thus costs. Medicare payments for a 30-day episode for spinal stenosis, spondylolisthesis, and lumbar disc herniation differed by as much as 47% between the most expensive and least costly providers even after adjusting for price, case-mix, and indication. Following adjustment for procedure type, payments in the highest quintile were 28% higher.[11] The success of a particular bundled program would be highly contingent on where the price point is set relevant to extant variation within the performance of the procedure.

Currently, reimbursements under bundled payment plans such as BPCI are set based on DRGs. This becomes problematic in spine surgery as a single DRG encompasses a wide range of interventions. Previous research investigating the variation in costs for spinal fusion by DRG found that all spinal fusion DRGs had higher coefficients of within-DRG variation (44.2–52.6) than the TJA benchmark of DRG 209 (38.2).[12] This benchmark can be considered a measure of excessive variation within one DRG, given that CMS later separated DRG 209 into two independent signifiers for primary and revision TJA because variability within the single code was considered too great. Even now, the DRG for primary total hip and knee arthroplasty without major complication or comorbidity (DRG 470) encompasses 78 procedures. In comparison, DRG 460, "spinal fusion except cervical without major complication or comorbidity" includes 392 different procedures, including one to seven level fusions. There is no differentiation between incision type (open, percutaneous, endoscopic), addition of interbody fusion, number of levels fused, or whether certain devices or grafts are used. The inherent heterogeneity of the spinal DRG makes the bundled payment method for spine surgery problematic.

This variability in expenditures can be attributed to several causes. First, spine surgery tends to offer a range of surgical options for a set of conditions, including approach (anterior or posterior, open or minimally invasive) and procedure (decompression and/or instrumentation and fusion). Next, as with all surgical procedures, cost tends to increase with patient and procedural complexity. Finally, there is substantial geographic variation in rates of spine surgery, which may reflect lack of consensus on surgical indication as well as the ideal approach.

Beyond the high variability in expenditures, we must also consider that the areas of greatest expense in spine surgery tend to differ from those in TJA. One study found that the inpatient admission accounted for 76% of costs, while only 4–8% of costs were attributed to post-acute care (PAC).[13] This pattern differs drastically from TJA, as post-discharge payments have been found to account for as much as 36% of a 30-day episode.[14] However, there is plenty of opportunity to achieve cost savings from the inpatient admission, including choice of procedure; type of approach; length of stay; and implant, graft, or device use.

Procedures such as deformity surgery or surgery for spinal cord injuries present another dilemma for bundled payment design. These operations pose an enormous initial cost but an even higher potential benefit when properly indicated. Furthermore, the benefits of treatment accrue over a long period of time, and results are life-changing and durable, resulting in improved quality of life and overall decreased health care utilization. However, a bundled payment design may disincentivize providers from offering such operations as the episode window (30 to 90 days) captures the costs but not the long-term benefits.

4. Experiences with bundled payments in spine surgery

Unfortunately there is a dearth of published literature on experiences with and results for bundled payment models in spine surgery. One institution reviewed their experience with the Bundled Payment for Care Improvement (BPCI) initiative for lumbar fusion. In comparing their first year under the bundled payment to the previous year (traditional fee-for-service reimbursement), authors found no change in 90-day episode costs along with slightly increased readmission and reoperation rates.[15] However, the authors note that as they studied the first year of implementation; no long-term results were

available. The authors also posit that participant hospitals had lower reoperation rates compared to non-participant hospitals prior to BPCI, and this could demonstrate regression to the mean.

More recently, UnitedHealthcare has launched their Spine and Joint Solution, a bundled payment program for total hip and knee arthroplasty as well as spine procedures. This program began in 2016 in 28 markets, and UnitedHealthcare has indicated they intend to expand this program to 37 markets in 2018.[16] Within this program, hospital readmissions have decreased by 10% and complication rates by 3.4% among spine surgical procedures. Moreover, the company's internal analysis shows savings of nearly $15,000 for lumbar spine fusions.[17]

One recent study surveyed 12 healthcare organizations in 2014 and found that eight were already implementing bundled payments, with the expectation that 30–45% of spine surgical patients would be covered by a risk-based bundled payment plan within a 3 year period.[10] The remaining four organizations did not currently have any spine patients covered under a bundled plan, but were starting to arrange such coverage.

5. Policy considerations for the future

Given the high volume and associated costs of spine surgery, the conversation about alternative payment models in this area will almost certainly continue. Large-scale implementation of successful bundled payments for spine surgery have yet to occur, however.

For policymakers, key considerations for bundle design include: defining more uniform payment groups, procedure setting, patient selection, and risk adjustment. As previously discussed, DRGs are currently inadequate for defining payment groups due to the high variability extant within each code. Potential options include using a more granular grouping or limiting bundles to certain standardizable procedures (e.g. single level posterior lumbar discectomy, one level anterior cervical discectomy and fusion (ACDF), or one level posterior lumbar fusions). The orthopaedic world has seen a trend toward performing procedures in the outpatient setting and reimbursement for an outpatient procedure is typically reduced as compared to one performed in the inpatient setting. Patient selection greatly impacts outcomes and current bundled payments have not been shown to impact procedural volume.[8] Inadequate risk adjustment, however, may lead to cherry-picking and reluctance on the part of surgeons and health systems to bear risk for medically complex patients.

Furthermore, the goal of bundled payment is to decrease the cost of an episode of care, while maintaining or hopefully improving clinical outcomes. The success of such a program will demand standardization of care across surgical implants, as well as implementation and a redesign of clinical pathways, reducing length of stay and enhancing coordination of post-acute care. An evidence-based approach will aid in limiting the resource excesses in the current system and serve to drive down costs while emphasizing quality.

Finally, appropriate outcome measures must be determined. Current reimbursements and penalties are linked to process metrics or quality of care measures that have little to no association with outcomes in spine surgery. The proper definition of metrics that accurately reflect short-term outcomes (encompassed within a bundle episode) is necessary and must be specifically tailored to spine surgical procedures.

6. Conclusion

While CMS has eased its pressure on the adoption of bundled payments for orthopaedic procedures, payment reform remains a hot topic among policymakers. Full implementation of the Quality Payment Program, established by the Medicare Access and CHIP Reauthorization Act (MACRA), is fast approaching and CMS continues to further incentivize clinicians to participate in advanced alternative payment models. At this juncture, championship from surgeons is more crucial than ever. As spine surgeons, we are uniquely positioned to help policymakers effectively develop feasible solutions due to our clinical expertise, level of involvement in patient care, and respect from healthcare organizations as a whole. Furthermore, studying and publishing results from first hand experience with bundled payments will undoubtedly help inform future iterations.

7. Disclosures

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