The Patient Protection and Affordable Care Act contains a number of provision for improving the delivery of healthcare in the United States, among the most impactful of which may be the call for modifications in the packaging of and payment for care that is bundled into episodes. The move away from fee for service payment models to payment for coordinated care delivered as comprehensive episodes is heralded as having great potential to enhance quality and reduce cost, thereby increasing the value of the care delivered. This effort builds on the prior experience around delivering care for arthroplasty under the Acute Care Episode Project and offers extensions and opportunities to modify the experience moving forward. Total hip and knee arthroplasties are viewed as ideal treatments to test the effectiveness of this payment model. Providers must learn the nuances of these modified care delivery concepts and evaluate whether their environment is conducive to success in this arena. This fundamental shift in payment for care offers both considerable risk and tremendous opportunity for physicians. Acquiring an understanding of the recent experience and the determinants of future success will best position orthopaedic surgeons to thrive in this new environment. Although this will remain a dynamic exercise for some time, early experience may enhance the chances for long term success, and physicians can rightfully lead the care delivery redesign process.

Introduction: History and Overview of Bundled Payments

The current rate of healthcare spending in the United States is unsustainable. Various stakeholders such as the Centers for Medicare and Medicaid Services (CMS), government policy makers, hospitals, industry thought leaders, payers, and physician groups have been examining options to shift away from the current fee-for-service (FFS) model. This model encourages excessive delivery of services and results in an increase of both utilization of services and costs to the healthcare system. One alternative to the FFS model is global capitation, which provides cost-containing incentives because it gives physicians/health care decision makers a fixed budget for all the care their enrollees may require. This model has been explored with Accountable Care Organizations (ACO). However, it has come under scrutiny because the ACO system does not work well for independent practitioners that are not highly integrated with a health care system and therefore have little means to coordinate episodes of care.

Episode based bundled payment models are being studied such as the Acute Care Episode (ACE) Demonstration Project with the objective of aligning the financial incentives of hospitals and surgeons around the common goal of coordinating care and improving quality and cost-efficiency. This payment model can be viewed as a middle ground between the FFS model and global capitation.

To demonstrate the potential utility of bundled payments we can examine cost data from a study conducted by Luft [1] looking at
variability in costs for patients undergoing total knee arthroplasty (TKA) from 2003 to 2004. The mean episode cost for 4910 study patients was $22,454, with an average cost of $18,596 for the inpatient stay and $3866 for the outpatient services. While the total cost of TKA was relatively stable (coefficient of variation of 37%) and surgeon fees of $2685 were likewise stable, (coefficient of variation 56.3%), ancillary fees were equal to or greater than the surgeon fees and had a coefficient of variation nearly three times as large (141.2%). In addition, post acute care and rehabilitation facility costs (mean $7852) accounted for over 50% of inpatient facility costs. The large variability in resource use across geographic areas and individual medical centers could not be accounted for when adjusting for patient risk. The potential cost savings in an episode based bundled payment model would result from a more consistent resource allocation, and could lead to lower overall costs in terms of inpatient and post-discharge episodes of care costs.

The current bundled payment initiatives available present orthopaedic surgeons with the opportunity to be at the leading edge of this new health care delivery model. Significant opportunities exist for orthopaedic surgeons to work with the payers, hospital administration, and nursing staff to reduce inpatient costs and collaborate with post-acute care providers to reduce post-acute care costs and thus share in savings.

History of Bundled Payments

Bundled payments date back to 1984 when the Texas Heart Institute developed a pricing plan for cardiovascular surgery in which all services were covered under one global fee. A study conducted on the efficacy of the payment system demonstrated that it effectively reduced costs (in 1985 the flat fee for coronary artery bypass surgery at the Institute was $13,800 versus the average Medicare payment of $24,588), increased patient access, allowed payers to forecast expenses and simplified billing and collections. This was accomplished without adversely affecting quality of care delivered [2].

In 2006–2007, the Geisinger Health System introduced ProvenCare, a pay-for-performance approach that initially focused on coronary artery bypass surgery. The program’s three objectives were to establish best practices, to develop risk based pricing, and to engage patients. A patient’s preoperative, inpatient, and postoperative costs of care (within 90 days from surgery) were packaged into one fixed price. Under this plan, physicians agreed to follow 40 preoperative, intraoperative and postoperative treatment guidelines, but had the ability to deviate from specific protocols when noncompliance was documented. A study of the impact of this approach demonstrated that 117 patients who received ProvenCare had a significantly shorter total length of stay (5.3 days versus 6.3 days), a greater likelihood of being discharged to home (90.6% versus 81.0%), and a lower readmission rate (7.1% versus 6.0%) compared with 137 patients who received conventional care in 2005. [2] ProvenCare’s success expanded to other specialty lines and today includes total joint arthroplasty (TJA) and is being used by many centers around the country.

PROMETHEUS (Provider payment Reform for Outcomes, Margins, Evidence, Transparency, Hassle-reduction, Excellence, Understandability, and Sustainability) was a bundled payment project developed in 2006 by PROMETHEUS Payment Inc. [3]. Evidence based case reimbursement rates (ECRs) were assigned to various conditions that were adjusted for severity and complexity of a patient’s illness. A single ECR covered all inpatient and outpatient care associated with the condition and could be used to set budgets for episodes of care. If actual spending by health care providers was under budget, the provider received a bonus. However, if actual spending was over budget, payment to the providers was partially withheld. A quality score was factored into the ECR that tied outcomes, treatment complications, and patient satisfaction to bundled reimbursement.

As of 2010, the United States had more than 150 pay-for-performance programs and new models continue to be introduced. [4] Unfortunately, many of these have shown inconsistent results in controlling health care costs, thus leading to the development of alternative performance based payment programs.

Recent CMS Initiated Bundled Payment Programs

In 2009, the Centers for Medicare and Medicaid Services (CMS) initiated the Medicare Acute Care Episode (ACE) Demonstration project for bundling payments for certain orthopedic procedures including total hip and knee arthroplasty [5]. CMS announced this project as a result of the Medicare Payment Advisory Commission’s (MedPAC) recommendation to further explore bundled payment options. In 2011, CMS initiated a new bundled payment project that was more flexible than the 2009 ACE project. The goal of CMS for this program was “to improve patient care through payment innovation that fosters improved coordination and quality through a patient-centered approach” [5]. CMS allows new project providers to select the conditions to bundle. Hospitals interested in pursuing one or more of the models were required to submit a nonbinding letter of intent and formal application to CMS. CMS structured four models of bundled payments, three retrospective and one with a prospective payment.

Regulatory Issues: Expansion of Medicare Bundled Payments—The CMS/Affordable Care Act Bundled Payments for Care Improvement Initiative

CMS is in the process of developing models of bundling payments through the Bundled Payments for Care Improvement (BPCI) Initiative, as authorized under Section 3012 of the Affordable Care Act (ACA). The goal of the initiative is to test innovative delivery arrangements to reduce federal spending while preserving or enhancing the quality of care, particularly through care coordination for Medicare beneficiaries who are hospitalized and also for Medicare beneficiaries when they leave the hospital. Under this program, which was announced on August 23, 2011, provider participants will offer a discount to Medicare compared to usual Medicare reimbursement levels. Applicants will receive payment for Medicare savings beyond the agreed-upon discount level, but they will assume risk for Medicare expenditures above the established risk threshold.

Under ideal conditions, the BPCI could foster seamless, efficient, collaborative care that reduces costs while protecting quality. However, there are numerous concerns regarding the risks of this program to participating hospitals and surgeons, particularly with regard to apportioning savings (i.e., gain-sharing arrangements), mechanisms for controlling costs (especially in models where hospital and post-hospital costs are included in the bundle), and safeguarding the provider’s ultimate control over treatment decisions in the face of cost-containment pressures.

Overview of the BPCI Payment Methodologies and Models

CMS is inviting applications to the BPCI under two different methodologies (retrospective vs. prospective) and four different models that vary in terms of the episode of care and included services. Three of the models involve retrospective bundled payments, under which a target payment would be set for a defined episode of care that represents a discount to historical payments for similar episodes of care. Participants in such models (including surgeons) would receive their original Medicare fee-for-service payments, but at a negotiated discount, usually between 2% and 3%. At the end of the episode, the total payments would be compared with the target price; if there are savings beyond the discounted amount,
participating providers may share these savings as outlined in their applications. The four models are as follows (Table):

- **Model 1:** Retrospective payment models for the acute inpatient hospital stay. Under Model 1, the episode of care is defined as all Medicare Part A services furnished to the “included beneficiaries” during a hospital stay. These services include hospital diagnostic testing and all related therapeutic services furnished by an entity owned entirely or operated by the admitting hospital in the three days prior to admission and the hospital facility services furnished during the hospital stay. Awardees will offer CMS a discount from the usual Part A hospital inpatient MS-DRG payments. The minimum discount varies by year of the award, ranging from 0% for the first six months and gradually increasing to 2% by year three.

- **Model 2:** Retrospective bundled payment models for an episode of care consisting of an inpatient hospital stay followed by certain post-acute care. All beneficiaries admitted to an awardee acute care hospital for certain agreed-upon MS-DRG’s will be included in the bundled episode. The episode begins with the inpatient hospital admission to a participating provider (the episode “anchor”) and continues for at least 30 days following discharge. The episode includes all hospital services (defined in Model 1), plus Part A and Part B services furnished during the hospital stay, along with Part A and Part B services furnished in the post-discharge period related to the episode anchor. In addition to the inpatient services, bundled services include any: inpatient hospital readmission services; long term care hospital services (LTCH); inpatient rehabilitation facility services (IRF); skilled nursing facility services (SNF); home health agency services (HHA); hospital outpatient services; independent outpatient therapy services; clinical laboratory services; durable medical equipment (DME); and Part B drugs. Applicants are expected to propose a target price for the episode that includes a discount on the expected Medicare payments for all included services. CMS requires minimum discount of 3% for applicants proposing a 30–89 day post-discharge episode, but only a 2% minimum discount for 90 day or longer episode.

- **Model 3:** Retrospective bundled payment models for post-acute care, without including the acute inpatient hospital stay. The episode anchor is the initiation of post-acute care services at a SNF, IRF, LTCH, or with an HHA within 30 days of beneficiary discharge from an acute care hospital for an agreed-upon MS-DRG. The episode begins on the date post-acute services are initiated with an awardee and continues through at least 30 days. The episode must include all related Part A and Part B services furnished during the episode, including related readmissions (that is, all services in Model 2 except acute inpatient services). Applicants will propose a target price for the episode that includes a discount to the expected Medicare payments for all included services. As under Model 2, discounts can vary by the type of episode, awardees may not restrict beneficiary choice of provider, including post-acute care provider. In addition, awardees will be financially liable for care for included beneficiaries that are furnished by providers who are not participating in the model.

- **Model 4:** Prospectively-administered bundled payment for hospitals and physicians for the acute inpatient hospital stay only. Only Model 4, involves a prospective payment. Therefore, CMS would make a single, prospectively-determined bundled payment to the hospital covering all services furnished during the inpatient stay by the hospital, physicians, and other practitioners. Physicians and other practitioners would submit “no-pay” claims to Medicare; and they are paid by the hospital out of the prospective bundled payment.

These proposals will build on the ACE demonstration, but will expand to additional geographic areas and clinical conditions. CMS notes, unlike the ACE demonstration, the BPCI will not include sharing savings with patients since such policies “have proven operationally challenging to administer and confusing for beneficiaries.” The episode of care is the acute inpatient admission for agreed-upon MS-DRGs through patient discharge. The episode includes Part A hospital services (defined in Model 1) and Part B professional services, plus specified services furnished during certain readmissions. CMS will consider risk adjustment proposals, which must include a description of the methodology. Applicants should propose a target price for the episode that includes a single rate of discount off of the expected Medicare Part A and Part B payments for all hospital facility and professional services furnished during the hospitalization and related readmissions for all beneficiaries with the agreed-upon MS-DRGs (with a minimum 3% discount, and discount can vary by episode type). CMS and the awardee will agree to the bundle price in advance, and the awardee carries full risk for the price of the episode. All BPCI applications must identify a single entity (e.g., hospital, health system, physician hospital organization) that will accept the financial responsibility under the program, and must demonstrate all necessary partnerships between the awardee and participating providers. CMS will accept applications from “conveners” who are not enrolled Medicare suppliers or providers, but who can bring together multiple participating health care providers (e.g., a state hospital association or a collaborative of providers). There are two types of conveners: 1) an “awardee convener” who would have financial arrangements with CMS and participating providers that would allow the convener to bear risk, receive payments from CMS, and make payments to providers and/or Medicare; and 2) a “facilitator convener” who serves an administrative and technical assistance function for one or more designated awardees but who would not have an agreement with CMS, bear financial risk, or receive any payment from CMS (although the facilitator convener could share in the financial risk or cost savings through contracts between the convener and the awardees).

**Gain-Sharing Under the BPCI**

CMS specifically authorizes the use of gain-sharing arrangements under the BPCI. CMS stresses that it views gain-sharing as “a tool to support care redesign,” and it requires gain-sharing payments to be “tied to actual changes in behavior and/or increases in quality.” Such arrangements also must meet certain basic parameters “designed to ensure that care is not inappropriately reduced, that the quality of care remains constant or is improved, that there are not inappropriate changes in utilization or referral patterns, and to guard against fraud, waste, and abuse.” CMS sets forth threshold requirements for any gain-sharing arrangements.

Given the breadth of opportunity to formulate a BPCI, specific gain-sharing arrangements may vary widely among applicants, depending on terms negotiated with providers. For instance, in determining savings to be shared with surgeons, there would be discretion to look beyond savings on orthopaedic devices and associated surgical costs to include broader savings associated with the entire episode of care. Surgeons also would be able to negotiate the baseline for measuring savings (including whether the baseline would be fixed or reset during the course of the contract), quality measurements, the formula for determining bonus payments, whether or not the physicians/surgeons will bear risk, and the frequency of bonus payments.
Gain-Sharing Compliance Considerations

Providers contemplating gain-sharing arrangements as part of the BPCI must ensure compliance with a range of federal and state laws, including the federal Anti-Kickback Law, the Stark physician self-referral law, the federal civil monetary penalties law, and the False Claims Act. According to the RFA, the HHS Secretary will consider exercising its waiver authority with respect to the fraud and abuse “as may be necessary to develop and implement the Bundled Payments for Care Improvement initiative” with regard to gain-sharing arrangements. CMS anticipates that applicable waivers, if granted, would be included in the terms and conditions of the agreement between CMS and the awardees and/or providers.

Tax and insurance statutes also can impact such contracts. Notwithstanding the issuance of HHS waivers, any gain-sharing arrangements should be scrutinized by counsel, for compliance with all relevant state and federal statutes.

Looking Ahead

The BPCI is still in an early phase and it may be years until there are sufficient data for a meaningful evaluation of whether savings are achieved under the BPCI without quality decline. There is particular interest in determining whether bundled payment frameworks that extend beyond the ACE Demonstration model (e.g. to include post-acute care) are workable to further encourage collaboration and efficiencies along the continuum of the patient’s caregivers. Success in the BPCI demonstration, real or perceived, could hasten the use of bundled arrangements more broadly in Medicare and among private payers.

The Acute Care Episode (ACE) CMS Demonstration Project Experiences in Albuquerque (One Year) and Tulsa (Two Years) and San Antonio

With the purpose of improving quality and care coordination and reducing and controlling costs, CMS organized the Acute Care Episode (ACE) Demonstration Project focused on high volume and high cost THA and TKA in Medicare Fee-For-Service (FFS) patients. Patients in Medicare Senior Advantage Plans were not included in the ACE project. The project involved only four states: Colorado, New Mexico, Oklahoma, and Texas. Only one hospital system could be chosen per metropolitan service area (MSA). Two demonstration sites are described here: Site I (Tulsa) is a high volume (greater than 1000 cases) center with a small number (five) of surgeons and one surgeon who performed over 70% of the procedures. Site II (Albuquerque) is a moderate volume (500–1000 cases) center with many (twelve) surgeons and no one surgeon performing more than 20% of the cases. Two-year data are available from Site I and one year data are available from Site II. A separate program in San Antonio was similarly initiated.

In sites I and II, organizational committees were formed, involving equal representation from hospital administration and participating surgeons. These committees included a board of directors and groups, which governed clinical protocols, finance, and quality. Each of the committees emphasized collaboration between physician and hospital representatives. Physicians were lead contributors in clinical program development; hospital administration played a more prominent role on the finance committee. The quality committee received equal contributions from the clinicians and administration. Standardization of clinical programs and protocols required a consensus position before adoption.

Both hospitals provided strong financial transparency so that physicians understood all financial reports and decisions. Physicians actively participated in or supported all cost reduction and standardization decisions. Hospitals and physicians agreed there would be no limitation on implant vendors. CMS required detailed clinical, quality and fiscal documentation. The financial documentation was extensive. Six-month historical data were produced for presentation to CMS for approval and served as the baseline for comparison with the data generated by the demonstration project. Parameters included total costs; costs by department; total revenue; revenue per case; volume of Medicare FFS cases and non-Medicare cases; multiple standard and validated quality measures including complications and readmission rates; length of stay (LOS); and discharge disposition to home, rehab hospital, or skilled nursing center.

Following the start of the ACE project, all subsequent data were compared to these baseline values. A bonus of 25% of the Medicare allowable Part B payment to surgeons could be earned by achieving full participation in quality measures and assuring cost reductions where possible. An incentive bonus was paid to the patient for choosing to have his or her surgery performed at the demonstration site. This bonus was paid to the patient directly by CMS. It was equal to half the savings achieved by CMS, and was not to exceed the yearly Part B Medicare premium ($1180).

At Site I in Tulsa, the overall cost reduction was 10%. Supply cost reduction was 18%. Implant cost reduction was 7%. Personnel cost reduction was 6%. Hospital revenue was significantly improved. The net revenue per case increased 7% ($13,232 to $14,106). The contribution margin per case increased 57% ($2617 to $4116). Clinical results included an increase in patient volumes in both Medicare FFS patients (31%, 266 to 348) and all patients (38%, 665 to 909). The LOS decreased from 3.5 to 2.8 days. Physicians received the maximum 25% bonus in all cases.

Similar results were achieved at Site II in Albuquerque. Overall cost reduction was 10%; supplies cost reduction was 11%; implant cost reduction was 10%; and personnel cost reduction was 14%. The overall revenue per case decreased 1% ($13,279 to $13,123). The contribution margin per case increased 69% ($1215 to $2053). Clinical results included an increase in patient volume in both Medicare FFS patients (14%, 155 to 199) and all patients (31%, 878 to 1152). The LOS decreased from 3.9 to 3.19 days. Physicians received the maximum 25% bonus in all cases except one case in which one patient had a prolonged hospital stay because of multiple medical complications.

San Antonio ACE Program

The initial program at Baptist Health System (BHS) in San Antonio began with resistance from the majority of the orthopaedic surgeons within the health care system. The hospital administration recruited three key surgeons, one from each of the top three higher volume facilities within the system. In an effort to garner greater community support, the three surgeons also represented the three largest orthopaedic groups within the city.

These select three were involved in the design and early implementation of the program. Unfortunately, the majority of the orthopaedic surgeons were not included in these initial planning stages, thus creating some early friction among the ACE administrators and the remaining surgeons. Upon initiation of the ACE Project, 35 orthopaedic surgeons were on staff at five different facilities. Due to concerns regarding implant restriction and compliance with standardized protocols, three surgeons opted to withdraw from the hospital system. Of the three, only one was of significant high volume accounting for approximately 10% of all cases within the health care system. In addition, this particular surgeon was already transitioning to a non-Medicare focused practice prior to the initiation of the ACE project. The final dropout rate of surgeons was less than 10%.

In an effort to reduce cost, the hospital system administration initially limited the implant availability to only four vendors. The impetus for such a decision was the hope that the selected companies would lower their cost in anticipation of higher volumes. The stipulation was a set ceiling on primary arthroplasty device cost. This strategy of removing established implant companies and their
corresponding representatives fostered a sense of choice restriction for a number of surgeons. This administrative decision was the first indicator of concern among orthopaedic surgeons about a lack of transparency of the hospital administrators regarding the evolving ACE program. At the project onset, orthopaedic surgeon involvement was limited to just three of the above-mentioned orthopaedic surgeons. Of the 19-person BHS ACE Board, 47% were physicians (only three (16%) of which were orthopaedic surgeons).

Implementation in San Antonio

The early program efforts were focused on standardizing pre-operative and post-operative order sets, improving operating room efficiency, and streamlining the post-operative inpatient nursing care and rehabilitation process. The financial structure was instituted with an upfront 2%–3% Medicare discount. The physician gain-share was capped at 25% of the professional fee with an additional patient incentive. Gain-share was calculated on a monthly basis and based on achieving both quality care metrics and meeting the predetermined total direct variable cost target.

Results

The first year outcomes revealed a 10% decrease in total volume but a significant cost improvement of 15%. The bulk of this savings was based on implant cost caps. By year two end, the volume had seen a rise of 5% from baseline prior to the start of the program. The number of surgeons participating rose from 32 to 40 within the 3-year period.

Overall, the percentage of cases qualifying for gain-share to the surgeon was 79.1%. Of those not qualifying for gain-share, 95% were due to cost-related unmet requirements. The two most common causes were longer lengths of stay and higher costs for revision cases. Physician compliance with standardized order sets was 98% by Year 3. To date, the cost savings for the hospital averaged $985 per case. This accounts for a total cost savings of $5.5 million. Of the total cost savings, implant cost savings accounted for 85%. The calculated hospital cost savings for the entire program is 12%. Of the overall savings, $1.2 million was distributed directly to patients. The physician gain-share was $1.1 million. Of the 40 participating surgeons, 25 received six or less checks for the entire calendar year. However, the higher volume surgeons received a monthly check averaging $2100 (range $500–$5000).

The hypothesis that physician and hospital collaboration in all aspects of the ACE Demonstration Project would improve all clinical and fiscal measures has been generally confirmed. When both sides are incentivized to work together in all aspects of this endeavor, they can in fact develop an improved program. Cost reduction is a difficult task as there are several important cost centers that are interrelated in operation but are often administered separately. The three main cost centers comprise 89% of the total cost of an EOC. Supply cost (18% of total cost) reduction is achieved by several techniques: physician review of supplies opened for every case and elimination of those that are rarely used; physician acceptance of standard instrument sets; and no surgeon-specific or “personal” instrument sets unless absolutely essential.

Implant cost (47% of total cost) is the largest opportunity for cost reduction. Physicians must become more involved and aligned with the hospital in negotiations with implant vendors. It was important to physicians that no vendor was excluded. Personnel cost (24% of total cost) is complex to calculate because it involves several different departments. Wage and benefit negotiations are beyond the control of a single specialty program within a large general hospital or health care network. Significant personnel cost reductions occurred through several mechanisms: critical assessment of staffing model; increased volume of cases per day managed by same number of FTEs previously provided; and decreased length of stay.

The ACE Demonstration Project is intended to run for three years. The early data from Tulsa, Albuquerque and San Antonio already clearly show the clinical and fiscal advantage of physician and hospital collaboration. Two actions by CMS indicate their enthusiasm for the program: CMS has installed a new edition of Trailblazer (software billing program used by Medicare) that enables bundled payment billing; Secondly, CMS has developed a new request for proposal (RFP) that allows all states to participate in four different types of bundled payment projects that allow more diagnoses. In addition, the event of care can be expanded to include post discharge services.

Bundling: A Systematic Approach

A few essential elements are necessary to start a successful bundled payment program.

Redefining a Product with Enhanced Value: Perhaps one of the easiest ways to consider the implications and potential benefits of switching from a fee for service model of payment to a bundled payment model is to think about it from the perspective of a consumer of health care, rather than as a provider. Payers (insurers, employers, and patients themselves with increasing personal financial responsibility) expect that all providers of care are examining each service in the care process or a bundle. The purpose, necessity, and value of managing the relevant clinical decision points are expected provisions. New models of payment such as bundled payment are examples of health care delivery paradigms that emphasize collaboration to increase value.

Patients present with an end goal, the successful delivery of a solution to their painful arthritic joint, and the pain free restoration of function in a specified time. The product sought is not a series of individually delivered services, but rather the composite of what those services look like when delivered as a whole or bundle. The delivery of services, in a coordinated way, is an opportunity to meet our patients’ expectation by providing a complete and high-value product.

Defining the Target Market: The first consideration is to determine the target audience. The important consideration for anyone creating a bundled payment program is to recognize that patients are not uniform, and neither is the severity of their problems. Not all patients who have traditionally been indicated for TJA will have the same likelihood of an optimal outcome and the resources required to meet their medical needs may vary substantially. Developing an appreciation for these differences and developing algorithms for managing different types of patients with different ranges of problems will be important keys to success. It is recommended that anyone venturing into a bundled payment model BPCI should do so with an interest in identifying meaningful differences between patients that can impact the care required. The standardization in process that will be discussed below is meant to help identify when individualization of care through deviations from standard is needed. Think of the standardized processes as the gateways that help distribute patients into the correct path based on the clinical facets of their case that have the greatest impact.

Step 1 — Build a Dedicated Team: All stakeholders must have representation on this innovation team and need to share the common goal and vision of creating the new entity. Each may prefer to involve their legal counsel. In addition to the key participants, involvement of hospital finance personnel and nursing leadership is necessary at various points of the process.

An Opportunity for Physician Leadership: Unlike many providers who worry that a bundled payment for an episode of care will further erode the autonomy of physicians, we see great opportunity from this initiative. Physicians can recognize those elements of care that provide the greatest value to patients and are most essential to excellent outcomes. The shared financial opportunity within a bundle can be independent of an employment relationship between hospitals
and physicians. Physicians are positioned to take the leadership of a team and provide a detailed analysis and subsequent reengineering of the process with the patient’s interests the driving consideration. We believe that the earlier we get involved in the process the more likely we are to shape these new models of care delivery. Our patients deserve our involvement in these processes.

There is financial risk from an unmanaged care process at a bundled price. Potentially, there are downside risks that need to be covered by the participants. The current pattern in bundled payment pilots has allowed physicians to be protected from downside risk by the hospitals, however, that may not be a sustainable model. The financial investment and investment of time and effort in care redesign may not be rewarded by the marketplace. Despite the hospitals, however, that may not be a sustainable model. The pilots has allowed physicians to be protected from downside risk by a bundled price. Potentially, there are downside risks that need to be deserved our involvement in these processes.

Step 2 — Define the Episode: In this new paradigm, roles, and duties of each participant need to be clearly defined. At one institution, three “parties” entered into a bundled payment agreement, including a nonprofit hospital, a group of private practice arthroplasty surgeons and a private practice anesthesia group. The responsibilities of each party must be delineated with 1) what will be included or excluded in the episode of care agreement, 2) time frame of the episode, 3) nature of any warranties, 4) definition of cost parameters and, 5) the program’s clinical protocols and best practices.

Defining the Scope of the Episode: Bundled payment models can include the inpatient acute stay, the post acute phase, or both. There are advantages to each depending on where the organization is in the continuum of resource optimization and engagement of a team. Unfortunately, many already have reduced cost of the acute episode, so the opportunities moving forward may be limited.

The post acute venue provides an untapped opportunity to capitalize on enhanced communication and care coordination efforts from which significant savings and value can be captured [6]. Unique to joint arthroplasty surgery are the functional demands of the patients after surgery and the dependence of post operative rehabilitation services following discharge from the hospital. The cost differential between the various places for rehabilitation is substantial; developing care pathways that allow equal or improved success at lower cost locations can add significant value.

Step 3 — Define the Performance Metrics: The data necessary to build a bundled payment product for hip and knee arthroplasty include measures of both cost and outcomes.

Process improvements have two tangible effects that add value. They result in expedient delivery of care with reduced waste and lower cost. They offer the promise of better outcomes. A healthcare system that promotes the value of these care redesigns will need to be explicit and transparent in expressing the resultant improvement in outcomes. We recommend utilizing existing required metrics as a base line, including compliance with Surgical Care Improvement Project (SCIP) measures, Hospital Consumer Assessment of Healthcare Providers and Systems (HCAPS) scores, standard adverse event reporting measures, reoperation, and readmission rates. The importance of patient reported outcomes cannot be overstated, so incorporating measures that track improvements from a patient perspective will be important, as will clear reporting on the duration of the episode and the likelihood that a patient will be successfully recovered in a set period of time.

Step 4 — Develop the Care Models: These care model projects provide a unique opportunity to undertake and complete a start to finish overhaul of a health care system’s episode of care program. This collaborative redesign process should incorporate consensus-based best practices and, where possible, evidence based medicine. Assuring the buy in of all providers will help achieve one of the fundamental benefits of the entire effort, which is, increasing standardization and reducing outliers of cost and quality. Ultimately, a checklist of clinical protocols is created. The checklist is divided into five sections: 1) Pre-operative documentation, 2) Intra-operative documentation including use of an approved implant system, 3) Post-operative in-patient documentation, 4) Discharge documentation, and 5) Post discharge documentation. These protocols become a template to be used as a guide for each patient’s episode of care and can be used to monitor compliance with best practices.

Care Path Development: Developing the appropriate mechanisms to refine all aspect of the care path, including expected deviations based on individual need, is of paramount importance. The development of a care delivery protocol has two conflicting, but complimentary aims. The first is to move towards a checklist where each unique condition or need of the patient is considered. Standardization is key to ensure that no element is omitted. Adoption of standard documentation templates and order sets ensures that activated and assisted decision support is available and that no relevant input is missed. The goal is not one-size fits all care, but rather a process that ensures that differences are routinely identified.

Creating Value Through Care Redesign

The essence of this new approach does not rest in how we get paid for the product but rather in how we define the product for which we expect to get paid. The key is in rethinking the nature of a joint arthroplasty as a composite, complex product [7]. When we assess the contribution by each element of the patient care value chain, the discussions of who should reap the benefits of providing that value can occur. The care coordination and care path development that surgeons and their teams bring to the process turn out to have substantial value, and in the end, successful programs reward this buy in and care design and management efforts [8].

The concept of value-based care has entered our common dialogue, and many health systems are rushing to discuss how they envision moving from volume to value and how they can be paid for demonstrating value. Providers will need to be able to articulate in clear terms to the purchaser how a given health care service is of value. Underlying the bundled payment concept is the notion that a composite episode has more intrinsic value to consumers than a fragmented system of care delivery. As such, when we bundle it together, it will likely have a dual benefit: it will be more highly valued by purchasers and will be less expensive to deliver. Providers who repackage care can thereby lay claim to, and be recipients of, the increased value created by their efforts.

Steps 5 through 6 — Cost Reduction Opportunities and Pricing the Bundle: During the redesign process, efforts should be directed towards eliminating waste, duplication, and unnecessary services. Drilling down to the direct cost of each element of the care plan begins the cost reduction process and is a method by which the hospital “base cost” of the bundle can be calculated. Determining the “base cost” for physicians’ services must also be dependent upon the cost of delivering all aspects of their work and patient care while complying with fair market value regulations. Incorporating time driven activity based costing methodology is of value during these steps. Finally, combining the base cost of all parties, plus a “margin,” is how the bundle can be priced.

Establishing Price: Price considerations should come last, and only after we have been able to outline how best to achieve the outcomes of interest. It is then that we will know what processes and resources were utilized, and thus what the costs. Each element of care that contributes to the final outcome of the patient’s result comes with an associated cost to deliver it. Costs of the resources utilized by the producer are the most important determinants of price. The price will then be set in a manner that is competitive within the market while allowing us to cover our costs and realize an operating margin.
<table>
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<tr>
<th>Model Feature</th>
<th>Model 1: Inpatient Stay Only</th>
<th>Model 2: Inpatient Stay Plus Post-Discharge Services</th>
<th>Model 3: Post-Discharge Services Only</th>
<th>Model 4: Inpatient Stay Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible Awardees</td>
<td>Physician group practices</td>
<td>Physician group practices</td>
<td>Physician group practices</td>
<td>Physician group practices</td>
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<td></td>
<td>Acute care hospitals paid under the IPPS</td>
<td>Acute care hospitals paid under the IPPS</td>
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<td>Health systems</td>
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<td>Conveners of participating health care providers</td>
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<td>Conveners of participating health care providers</td>
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<tr>
<td>Payment of Bundle and Target Price</td>
<td>Discounted IPPS payment; no separate target price</td>
<td>Retrospective comparison of target price and actual FFS payments</td>
<td>Retrospective comparison of target price and actual FFS payments</td>
<td>Prospectively set payment</td>
</tr>
<tr>
<td>Clinical Conditions Targeted</td>
<td>All MS-DRGs</td>
<td>Applicants to propose based on MS-DRG for inpatient hospital stay</td>
<td>Applicants to propose based on MS-DRG for inpatient hospital stay</td>
<td>Applicants to propose based on MS-DRG for inpatient hospital stay</td>
</tr>
<tr>
<td>Types of Services Included in Bundle</td>
<td>Inpatient hospital services</td>
<td>Inpatient hospital and physician services Related readmissions</td>
<td>Inpatient hospital and physician services Related readmissions</td>
<td>Inpatient hospital and physician services Related readmissions</td>
</tr>
<tr>
<td>Expected Discount Provided to Medicare</td>
<td>To be proposed by applicant; CMS requires minimum discounts increasing from 0% in first 6 mos. to 2% in Year 3</td>
<td>To be proposed by applicant; CMS requires minimum discount of 3% for 30–89 days post-discharge episode; 2% for 90 days or longer episode</td>
<td>To be proposed by applicant</td>
<td>To be proposed by applicant; subject to minimum discount of 3%; larger discount for MS-DRGs in ACE Demonstration</td>
</tr>
<tr>
<td>Payment from CMS to Providers</td>
<td>Acute care hospital: IPPS payment less pre-determined discount</td>
<td>Traditional fee-for-service payment to all providers and suppliers, subject to reconciliation with predetermined target price</td>
<td>Traditional fee-for-service payment to all providers and suppliers, subject to reconciliation with predetermined target price</td>
<td>Prospectively established bundled payment to admitting hospital; hospitals distribute payments from bundled payment</td>
</tr>
<tr>
<td>Quality Measures</td>
<td>All Hospital IQR measures and additional measures to be proposed by applicants</td>
<td>To be proposed by applicants, but CMS will ultimately establish a standardized set of measures that will be aligned to the greatest extent possible with measures in other CMS programs</td>
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</tbody>
</table>

Step 7 — Gain-sharing Incentive or other Methods of Compensation: There are primarily two methods of incentivizing or compensating participants for their work, Co-management models, and gain-sharing. At St. Francis Hospital, ten arthroplasty surgeons entered into a Co-management agreement (aka “Consulting Services Agreement”) with the hospital two years before the implementation of a bundled payment program. A contractual obligation to reduce costs and increase efficiencies was instituted and the physicians received an annual stipend to participate. The stipend is based on an independent evaluation by an outside entity that determined the amount of work (in hours per year) required to manage the arthroplasty service line and fair market value compensation was determined. This arrangement precludes any gain-sharing based on shared savings with the hospital as the orthopaedic arthroplasty surgeons are already compensated for this activity.

The St. Francis arthroplasty surgeons, nonetheless, believe that the co-management relationship with the hospital has certain advantages: 1) The arthroplasty surgeons manage the service line; 2) The arthroplasty surgeons receive reasonable annual compensation for doing so; 3) The arthroplasty surgeons do not receive direct compensation for finding cost saving opportunities and this may allow for a more sustainable concept for future collaboration with the health care system.

Under gain-sharing, if there is nothing more to gain by cooperation, there is nothing left to share[3]. The St. Francis system does not present a potential conflict of interest with the enrolled patients; and [4] the arthroplasty surgeons are not subjected to the potential scrutiny of the Office of the Inspector General (OIG).

Step 8 — Development of Continued Process Improvement Plan: Each component of the bundle payment program requires careful prospective monitoring both for clinical outcomes and for financial considerations. The monitoring process involves a comprehensive utilization review system including an annual review of clinical protocols that analyzes individual protocol adherence and compliance, providing feedback for variances, and an ongoing identification of additional cost saving opportunities. Under the scrutiny of OIG, in order for a so-called non-integrated healthcare system to implement a bundled payment program, a certain level of clinical integration is necessary. Sharing data, information technology, clinical protocols, and financial risk among participating parties satisfies this requirement.

Excluding Patients From the Bundle

There may be patients who should be excluded from the bundle, either permanently or temporarily. Exclusion should occur when the rules and assumptions of the system of care at the heart of the bundle cannot be expected to effectively manage the risk associated with their unique set of conditions. If these conditions are defined as modifiable, then their exclusion may be temporary and efforts can be made to correct medical conditions prior to the beginning of the bundle. The method of selecting patients for inclusion into the bundle will have wide-ranging impacts, and care must be taken to ensure that adverse selection of at risk patients does not result in care denial, if such care is medically necessary [9].

Patient Engagement

Patient engagement is key, stressing the elective timing of surgery and the dramatic impact of modifying risk factors can have on avoiding adverse events or delayed recovery. Modifiable risk factors such as smoking, anemia, diabetes management, and malnutrition are addressed and treatment offered to mitigate the inherent risks on the surgical outcome. Delaying surgery, though inconvenient and a dissatisifier, should be considered prudent and preferable to operating on a patient with poorly managed chronic conditions whose risk profile can be altered by appropriate interventions. Similarly, the social support and psychological wellbeing of the patient should be assessed and efforts made to enhance them to ensure a home environment conducive to optimal recovery.

Rewarding Value Creation

Only after we have provided a viable product, at a price that the market will support, based on clearly defined deliverables, we can begin to try to assess how much relative value each component brought to this outcome. Quality efforts and efficiencies resulting in reduced waste, rework, errors, and complications can result in financial savings that are shared.

Gain-Sharing Within a Bundled Payment Environment

Definition: Gain-sharing is one mechanism that can be used to assist in delivering collaboration among physicians and hospitals [10]. It is a process or program that aligns the incentives of hospitals and physicians to improve the fiscal performance of the hospital and reward physicians for their effort. The Department of Health and Services Office of Inspector General defines gain-sharing as “an arrangement in which a hospital gives physicians a percentage share of any reduction in the hospitals costs for patient care attributable in part to the physicians’ efforts”. Gain-sharing programs are about saving money for hospitals and rewarding physicians for achieving the savings.

Physician Participation: Physician participation in gain-sharing programs can be through hospital purchasing programs or hospital cost savings programs. In hospital purchasing programs, physicians assist hospitals in negotiations with vendors regarding the cost of supplies, devices, implants, and drugs. Physicians can also participate in hospital cost savings programs that improve efficiency and cost-effectiveness such as clinical pathways. When physicians participate in these hospital cost saving programs, they achieve an indirect reduction of hospital costs.

Physician Re-imbursement: Physician reimbursement for participating in hospital gain-sharing programs can be by payment of a percentage of dollar savings, payment for time worked, or payment for specific work completed. Physicians can be reimbursed with benefits “in lieu of payment” such as increased hospital space, new equipment, and supplies, hospital assistance in the form of physician assistants, nurse practitioners, orthopaedic technicians, and hospitals can share the recruiting costs for new physicians. Physicians can be reimbursed by earning a negotiated portion of bundled payments that are given to the hospital for the service delivered by the hospital and the physician.

Hospital Interest: Hospitals are interested in gain-sharing because hospital operating margins are decreasing. Physicians generate costs for hospitals therefore, they can control costs. Hospital costs depend on physician orders and physician activity. In most healthcare financing schemes, physicians have no incentive to control hospital costs. One rationale for implementing gain-sharing programs is to create incentives for physicians to help control hospital costs [11,12].

A.A.O.S. Response: In 2006, the American Academy of Orthopaedic Surgeons (AAOS) issued a position statement on gain-sharing programs. The AAOS encouraged orthopaedic surgeons to be knowledgeable regarding medical costs and collaborate with hospitals on cost containment and quality improvement. The AAOS supported hospital purchasing programs and hospital cost savings programs. The AAOS opposed direct physician payments for participation in gain-sharing programs and favored indirect payments to physicians to enhance patient care. The AAOS expressed opposition to gain-sharing if quality of patient care might be compromised, or if restrictions on physician choice of supplies or devices were implemented. The AAOS encouraged orthopaedic surgeons to use
programs was voluntary and not coerced; if quality, efficiency, and patient satisfaction were measured and methods for improvement were included; and if the program was completely transparent to all stakeholders [11,13].

Total Joint Arthroplasty: Gain-sharing programs may be applicable to the economics of TJA. THA and TKA operations are clinically successful in terms of pain relief, functional improvement, and durability over decades. The prevalence of joint arthroplasty operation is becoming one of the highest Medicare expenditures. Hospital margins for TJA are deteriorating, as revenues are generally fixed and expenses are generally increasing, especially implant costs [14]. In 2013, hospitals need surgeons to help control the cost of joint implants. However, surgeons have no incentive to control the cost of joint implants. Gain-sharing programs have the potential to create incentives for surgeons to control the cost of TJA.

Gain-sharing can work if regulatory and tax barriers are modified to allow hospitals and physicians to form partnerships in the best interest of patients, hospitals, and physicians. Gain-sharing can work if gain-sharing programs are clearly defined and fully disclosed to all stakeholders including patients and the public.

Gain-sharing programs can be used to implement successful bundled payments financing systems. These programs can be applied to TJA. “If a healthcare program can bring physicians and hospitals together to improve quality in patient care align clinical and economic incentives, improve hospital financial performance, and reward physicians for work performed on behalf of the hospital, that program has a chance to succeed and survive in any healthcare economy” [15]. Gain-sharing programs can be such a healthcare program.

Summary

Given the changing political and economic climate in the United States, health care reform will continue the push toward the value equation emphasizing quality improvement and cost control. It is unclear what form this change in health care governance will assume, but change is inevitable due to the budgetary limits that will be encountered over the next few decades. Initiatives that enable physicians, health care systems and payers to control costs, improve quality and efficiency, and increase patient satisfaction will be utilized in the new health care paradigm. Physicians, health care systems, and payers who are able to align their interests and resources in ways to benefit patients, while controlling costs will be rewarded.

This manuscript summarizes current initiatives which seek to fulfill these goals in a collaborative effort of the American Association of Hip and Knee Surgeons (AAHKS) and The American Academy of Orthopaedic Surgeons (AAOS). We do not know if these initiatives will be successful. However, it is the hope of the Health Care Policy Committee and the Bundled Payment Subcommittee of the AAHKS that open discussion, transparency, and objective evaluation of these initiatives will lead to a higher quality of care for our patients and a more cost efficient health care delivery system for all. For more detail, please see the on-line version of this manuscript.

References


Further Reading