Bundled Payments in Orthopedic Surgery

BRANDON D. BUSHNELL, MD, MBA

ABSTRACT

Bundled payments, the idea of paying a single price for a bundle of goods and services, is a financial concept familiar to most American consumers because examples appear in many industries. The idea of bundled payments has recently gained significant momentum as a financial model with the potential to decrease the significant current costs of health care.

The author is from the Department of Orthopaedics and Sports Medicine, Harbin Clinic, LLC, Rome; and the Department of Orthopaedic Surgery, Medical College of Georgia, Georgia Regents University, Augusta, Georgia.

The material presented in any Keck School of Medicine of USC continuing education activity does not necessarily reflect the views and opinions of ORTHOPEDICS or Keck School of Medicine of USC. Neither ORTHOPEDICS nor Keck School of Medicine of USC nor the authors endorse or recommend any techniques, commercial products, or manufacturers. The authors may discuss the use of materials and/or products that have not yet been approved by the US Food and Drug Administration. All readers and continuing education participants should verify all information before treating patients or using any product.

Correspondence should be addressed to: Brandon D. Bushnell, MD, MBA, Department of Orthopaedics and Sports Medicine, Harbin Clinic, LLC, 330 Turner-McCall Blvd, Ste 2000, Rome, GA 30165 (bbushnell@harbinclinic.com).

Received: September 15, 2013; Accepted: February 20, 2014. doi: 10.3928/01477447-20150204-06
Orthopedic surgery as a field of medicine is uniquely positioned for success in an environment of bundled payments. This article reviews the history, logistics, and implications of the bundled payment model relative to orthopedic surgery. [Orthopedics. 2015; 38(2):128-135.]

In the current fee-for-service model of health care financial reimbursement, each provider, location, service, device, or other component of health care delivery is partitioned and billed individually. Although there may be multiple parts of the episode of care for a specific medical condition, they are usually not billed as a whole. This problem is particularly manifest in the field of orthopedic surgery, wherein an elective surgical experience seems like it should be easy to price out as single entity from the identification of need through the final recovery. However, such bottom-line cost analysis, even for a common orthopedic procedure, is almost impossible to conduct prior to the actual delivery in the current environment. In response to this fragmented system, the concept of bundled payments or bundled pricing has been proposed. When an episode of care is collated into a single price, purchasers can shop around for a health care product, and providers are forced to become more efficient in the provision of these products. This review examines the current state of bundled pricing in orthopedic surgery as both a concept and a potential new reality.

**History**

Bundled payments are generally familiar as a concept to modern consumers through their experience in many other industries. The telecommunication industry popularized the idea of paying a single monthly bundled fee for cable, telephone, internet, and cell phone. Fast food restaurants offer the value meal bundle of a burger, fries, and a drink, and catering services offer a complete meal bundled at a per-person price. In corporate finance, large companies are often bought and sold for a single price rather than as a collection of the prices of their individual subsidiaries. Natural gas and electricity services are often purchased as an annual bundle based on average costs, rather than on a wildly fluctuating monthly fee. Therefore, in many cases in American life, the concept of bundled pricing is a well-accepted norm rather than a truly innovative idea.

In health care, bundled pricing is not exactly revolutionary. In the days before Medicare, patients would often receive a single bill for professional services from a hospital or a physician, with no line-item accounting of the individual components of that service. However, in the last half century, health care has become more specialized, the fee-for-service model has held dominance, and payers have demanded justification for every single fee. Billing has thus become increasingly more fragmented as each piece of the overall puzzle seeks to protect its own interests. Although the days of a single price for professional services may not return, the latest proposed models of bundled pricing seem to represent a swing of the pendulum back in that direction.

In fact, orthopedic surgery was one of the first fields to begin that pendulum swing. In 1987, Michigan orthopedic surgeon Lanny Johnson conducted a 2-year pilot study of 111 patients in an alternative reimbursement system that resulted in substantial savings for the insurer and increased profits for both the hospital and the surgeon. Other medical fields soon followed suit. Between 1990 and 1994, Centers for Medicare and Medicaid Services (CMS) experimented with a bundled payment model for coronary bypass surgery that resulted in high-quality care for patients, savings for Medicare, and increased profits for participating hospitals and physicians. From 1993 to 1996, CMS conducted a pilot demonstration of cost savings through alternative payments for cataract surgery. Centers for Medicare and Medicaid Services–designated cardiac and orthopedic Centers of Excellence were developed in the early 2000s as an indirect method of bundling services and payments. Perhaps the most expansive current enterprise in the bundled pricing arena is PROMETHEUS Payment, Inc, a company funded by multiple grants to the Health Care Incentives Improvement Institute with the goal of establishing and implementing bundled pricing models for multiple conditions in cardiac care, orthopedic surgery, and general surgery. With such a history of success, especially in orthopedic surgery, bundled payments seem to be the way of the future.

**Creating the Bundle**

The essential challenges of any bundled pricing arrangement in any industry are determining (1) what actually goes into the bundle and (2) what to charge for it. In health care, bundling can take many forms. Bundling may involve an entire patient experience for a condition (eg, inpatient, outpatient, ancillary), an isolated part of that experience (eg, the inpatient portion), or any number of other potential combinations. Bundling may involve local providers and payers such as the Johnson project or it may involve nationwide, government-run programs such as the CMS cardiac bypass demonstration.

Although the chaotic world of health care finance makes the bundling process more difficult than in other industries, most bundled payment initiatives share several common steps toward meeting these requirements. To create a bundled pricing arrangement, the involved parties must define the episode of care, participants in the bundle, and clinical pathways and protocols; predict and manage use of resources; and ultimately define, deliver, and monitor quality outcomes. Only then can the prices of the bundle be set and managed effectively, allowing competition in a new type of market.

**Defining the Episode of Care**

The bundling process begins with a definition of the episode of care.
certain areas of medicine, such as longitudinal primary care for a patient with multiple illnesses, this task seems almost impossible. When does the episode actually begin or end? What if other episodes overlap and are covered by the same treatment team? What if they are handled by only part of the same team? On the other hand, orthopedic surgery inherently provides for a much easier definition process. The concept of the global period, which can consist of a preoperative evaluation, the surgery itself, and 90 days of postoperative aftercare, has long governed surgical finances. For most orthopedic conditions, the global period translates easily into an episode of care definition, although some alterations may need to be made for making the actual period of time shorter or longer, based on the specific nature of the situation. Pilot models of an episode of care in orthopedics have used a 30-day postoperative period. Many payers have identified orthopedic procedures as a target for experimental programs with bundled payment models because of the low complication rates, continuity of care teams, and uniformity of process. Orthopedic surgery also has a high usage rate and represents a major profit center for many hospitals and health networks, making even a stronger case for its role as a target for cost-saving and profit-maximizing initiatives such as bundled plans.

Defining the Participants

In the ideal setting, a single source provider will be able to manage all aspects of an episode of care from start to finish. Such a single source would likely be a major health system, with employed primary care physicians and surgeons, hospitals, physical therapy (including inpatient, home health, and outpatient), durable medical equipment, and pharmacy services. In this situation, the health system controls every aspect of the care episode under the bundle and thus can most effectively manage costs and maximize profit. Many of these single source providers, such as Vanderbilt University in Nashville, Tennessee, have selected orthopedic surgery projects as their first-pass foray into the world of bundled payments.

However, in reality most local and regional health care situations do not have a single source provider but are composed of multiple providers for each and every part of the episode of care. In these situations, significant negotiations must occur to get a bundled payment system off the ground. The various participants must determine who does what and, most importantly, who gets paid what. Typically, bundled payments result in a single check from the payer to a designated recipient. Negotiations must determine who that recipient will be and how the money will be distributed downstream to the other participants. This payment-determination process presents a major opportunity for both conflict and collaboration, and it may be the single most critical step in the whole process.

The number and types of patients who can participate in a bundled system must also be defined. In some cases, providers may refuse to offer a bundled pricing deal to patients with various comorbidities or other factors that place them at high risk of postoperative complications. Because complications dramatically increase the costs of care and that cost is transferred to the provider in a bundled arrangement, providers will likely not try to include high-risk patients. Patients whose care involves bundled pricing arrangements will likely undergo risk stratification by the provider in the process of setting prices.

Defining Care Protocols

Henry Ford’s development of the assembly line revolutionized the automobile industry by creating a protocol-based, reproducible system of efficiency. Although health care episodes are obviously not automobiles, a system based on bundled pricing still requires the creation of protocols or care pathways that direct the provision of services and products. These protocols must be predictive: they follow the same steps and produce the same outcome every time, just like an assembly line.

Creating agreement about the contents of a care pathway or protocol is perhaps one of the most difficult parts of developing a bundled pricing system, especially in orthopedic surgery. The orthopedic clinical literature lacks high-level evidence in support of many common practices, leading to a great deal of variation by surgeon, procedure, and location. The American Academy of Orthopaedic Surgeons has created numerous Clinical Practice Guidelines in an attempt to help direct care pathways, but the Guidelines have been widely criticized as confusing and ineffective. Therefore, participants in a bundling agreement must work at a local contractual level to standardize implants, medications, timing, therapy protocols, and other aspects of the clinical experience to make episodes of care more predictable. Without a predictable protocol, pricing becomes impossible.

Predicting and Managing Resource Use

Another major component of setting up an orthopedic bundle is the assessment and management of the resources used to provide the care. These resources depend on the episode of care, the participants, and the protocols, all of which must be designed first. Use-management divisions may become the most critical aspect of a health care entity’s administration under a bundled pricing model because providing the best service for the lowest price is the ultimate key to profitability and survival. One big challenge for predicting resource use is the rare but real risk of major complications after major orthopedic procedures, wherein the patient may suffer cardiac, pulmonary, or neurological events that require treatment in expensive critical care or intensive care units. Although their occurrence may be low, especially in
larger centers, the cost of such complications must be factored into the equation. Computer systems, which have historically managed multiple payment sources and destinations, must be rearranged to handle the new logistics of a bundled system. As the overall health care system moves toward a bundling model, providers must take on several duties traditionally performed by claims administrators—a major issue not only for digital infrastructure but also in terms of the required personnel with appropriate skill sets and experience. A period of dual payment methods (ie, traditional vs bundled) may exist for several years before the new methods are fully integrated, so additional staffing and support may be needed temporarily to handle the double-duty volume.

**Defining, Delivering, and Monitoring Quality Outcomes**

Traditionally, morbidity and mortality outcomes have been used to assess value of care. This method, which only focuses on the lack of negative outcomes, does not begin to measure the true value of care, which is the presence of positive outcomes. In a bundled pricing system, competition centers around the concept of economic and clinical value (ECV). Both the economic and clinical components of ECV can be difficult to define and measure, but orthopedic surgery leads many other areas of medicine in its ability to define value because many studies already exist that attempt to quantitate these components.

Definition of clinical value in orthopedics has been around for decades. For any given type of surgery, multiple clinical scoring systems exist that can provide objective and subjective measurement of success. The Harris Hip Score, popularized for pre- and postoperative assessment of total hip arthroplasty, was one of the first clinical outcome tools in any specialty. Other examples of widely used orthopedic scoring systems include the International Knee Documentation Committee (IKDC) score for knee surgery; the American Shoulder and Elbow Surgeons (ASES) score for shoulder surgery; the Disabilities of the Arm, Shoulder and Hand (DASH) score for hand surgery; and the American Orthopaedic Foot & Ankle Society (AOFAS) scores for foot and ankle surgery. Other scoring systems exist for more specific situations, such as pediatric patients or professional athletes. When appropriately selected and used, orthopedic scoring systems have a long history of statistically validated measurement of clinical outcomes and can easily be extrapolated as measurements of clinical value.

Defining the economic value of an orthopedic procedure has become a topic of recent orthopedic research. Demand for these data has driven more sophisticated methods of acquisition and measurement and more widespread interest in performing and publishing studies in this area. Recent studies have examined the societal value of total knee and hip arthroplasty, knee arthroscopy, and even hyaluronic acid injections. In fact, several studies have shown that Medicare may grossly underpay surgeons relative to the perceived value of the procedure by the patient. Further studies will help further clarify the economic value of orthopedic procedures and potentially reverse a troubling trend of declining reimbursement for surgeons. Meanwhile, the popular press has also picked up on this issue of economic value in orthopedic surgery, and articles proposing surgery warranties and questioning pricing policies have been published recently.

In orthopedics, clinical value measurements are well established, and economic value measurements are improving, but it is ultimately the combined value that matters most. Synthesizing and measuring the combined ECV of a procedure or management plan involves much more than simply adding a clinical number to an economic number. Although multiple methods of defining the relative contributions of the clinical vs the economic side exist, perhaps the simplest measurement proposed to date is the assessment of patients’ perception of overall value. The patient may represent the final end user of the bundled product, and recent studies have used patient feedback to help establish a sense of the perceived value of certain procedures. Ironically, these studies have found that patients often overestimate payments to surgeons almost ten-fold. Much work needs to be done to create better and more accurate definitions of orthopedic combined ECV, but providers attempting to establish a bundled payment program must nevertheless attempt to establish and exhibit some sort of ECV data as part of their arrangements.

**Setting the Price**

Once all of the aforementioned steps have been completed, a price for the bundled services and products can be established. Although the individual parts of the bundle may have existed previously, the bundle itself represents a new product on the market. As American health care transitions from almost all fee-for-service to more bundled payments, the process of pricing this new product will be difficult and characterized by hits and misses. Once a bundled pricing system becomes more mainstream, health care providers and networks will be able to set and manipulate prices more effectively as experience increases. Market forces will normalize prices as more products come to market, logistics become clearer, and both buyers and sellers have better understanding of product value. Orthopedics, where the bundled prices are inherently easier to set, will likely continue to be at the forefront of bundled payment arrangements.

**Implications of Bundled Pricing Systems**

As payers increasingly opt for bundled payment methods rather than the traditional fee-for-service system, many dynamics of the current health care delivery
system will change. For orthopedics, the specifics of these changes are still uncertain and have the potential to be both helpful and harmful. Many details will likely depend on local and regional factors, but several commonalities exist within any bundled pricing system.

Risk Shifting and Cost Management

From the perspective of the payer, episodes of care have always had an aggregate cost. For example, if a covered participant in an insurance plan needed a total knee arthroplasty, the insurance company generally had to pay for the surgery, the implant, the surgeon’s fee, rehabilitation, medications, assistive devices, etc—all independently. But because these various components were never linked under a single price, the providers of each service or product were never forced to consider that aggregate cost—only their individual part of it. A physical therapist would only be concerned with payment rates for therapy, and a brace shop owner focused only on reimbursement for the brace.

However, by grouping all services under a single bundled price, the risk is shifted from the payer to the providers.40 If costs exceed the bundled price, then the loss belongs to the provider, not to the payer. Such a transfer of risk forces the providers to become much more cognizant of ways to decrease costs and improve efficiency of the overall service in addition to their individual component. Traditional relationships have often made providers feel powerless at times in the game of reimbursement, but new pricing models will result in them becoming much more involved and interactive players in the game.41 For example, in a bundled arrangement for a total knee arthroplasty, the therapist will care about medication prices, and the brace shop owner will pay attention to average length of hospital stay.

Altered Incentives

One of the most obvious effects of such risk transfer is an alteration of traditional incentives. Under a fee-for-service system, surgeons are financially rewarded for higher volume, regardless of clinical outcomes. Although quality outcomes tend to drive volumes up for any given provider, this may not always hold true. With no tracking of outcomes or ECV, surgeons can build substantial wealth providing loosely indicated and/or poorly performed procedures. However, with a sharing of risk, physicians are immediately incentivized to provide higher quality at lower cost or suffer financial consequences.42,43 Although volume remains a profit driver, it is only quality volume that will pay off under bundling.

As bundled payment arrangements increase in prevalence, payers’ incentives will also shift somewhat. Whereas payers traditionally sought out the best price for each individual product, bundled pricing obviously changes that search to one for the best total price. In some cases, the total bundled price may not beat the total of the à la carte prices, at least in the early days of bundling. However, payers will also analyze their hidden costs and downstream costs, such as the time and human resource costs of multiple per-item negotiations with multiple providers vs the cost of a single negotiation with a bundled payment provider. Such savings from alterations of internal logistics and administrative costs will incentivize payers toward bundled pricing for its own sake.

Patients will also have different motivational forces at play in their health care decision making. Under some models of bundled pricing, patients may be offered direct or indirect incentives to seek care at facilities that participate in a bundling program. Insurance companies may offer discounted premiums or lower deductibles for patients who establish medical relationships with participating providers or institutions. Copayments may be lower at a bundled facility or with a bundled provider. In some cases, patients may even be offered actual cash payments as inducement for choosing to have a surgery done with providers participating in a bundling arrangement.15

Competition Along Different Lines

In the current market, providers compete along numerous lines, including geographic convenience, clinical quality, customer service and amenities, perceived reputation, and, rarely, price. Providers must court both patients and payers, who at times may have diametrically opposed interests. Patients may want a Mercedes version of their care episode, whereas the payer is likely content to pay for the Honda equivalent. However, under bundling, all participants’ interests are more aligned. Providers who can offer the greatest ECV for the lowest overall price will have the upper hand in competition.44 Defining or claiming ECV to a payer depends on the process described previously, wherein a provider must create that value through its products, processes, and services. Many of the traditional regional and national orthopedic powerhouses will probably continue their legacy of success, but new players will likely also emerge out of these shifts in competitive advantages. These changes particularly favor orthopedic providers in a single source situation or ones who can negotiate effectively enough to create an arrangement as close to a single source as possible.

Transparency

In a traditional market setting, bundled pricing tends to benefit the seller.45 By bundling services and products, the seller can effectively hide incremental cost increases of single items and drive prices up for the buyer. The consumer will focus on the overall experience or final result and may be willing to pay a higher overall price for perceived quality. Furthermore, bundling tends to flatten the demand curves for individual components into an aggregate curve and thus increase profits for the seller.46 With unbundled or à la carte pricing, the cost of each individual component becomes transparent and thus
open for negotiation. Consumers may focus less on the overall result and more on a perceived overcharge for a single item. With complete transparency, this process may repeat itself many times, thus reducing the overall profit margin for the seller by the proverbial thousand tiny cuts.

However, health care markets do not always play by traditional rules. Bundled pricing will decrease the line-item transparency that currently exists, but this may actually drive prices down for the buyer. Payers, not patients, are usually the main driver of price determination under the current model of health care finance. The prices of individual items, now painstakingly analyzed by payers, will no longer matter once cost-containment responsibilities are shifted to the provider. The payer will compare the bundled cost for an episode to its current costs for the episode and then make a payment decision, leaving the line-by-line breakdown to the providers.

However, the effect on the consumer may be just the opposite; bundled payments will likely result in increased cost transparency for the patient. Currently, the patient usually has no idea about the actual costs of his or her care. Although information about individual prices may be available now, the consumer has little reason to use that information. Explanation of benefits (EOB) documents are at best limited and confusing, and many patients do not even read them. Because the EOBs may originate from different providers over vastly different time frames, they have little ability to convey meaningful information about total cost to a patient. The cost of the proverbial forest is thus lost in the poorly managed transparency of the trees. Indeed, the average American patient usually has no idea about the actual total cost of his or her care. Although in many markets, such practices could be interpreted as essentially monopolistic and harmful to consumers, bundling payments as a means of price control may have other potential and unforeseen legal ramifications as well.

**LEGAL ISSUES**

Although bundled payments have been hailed as a potential savior from the runaway costs of the current health care finance system, several legal issues exist in considering their implementation. Larger hospitals and health systems will likely be able to bundle services and products more effectively and therefore provide them at a total cost that is lower than the incremental cost of all parts of the bundle. This competitive advantage will likely result in increased clinical volumes for the larger entities.

In many markets, such practices could be interpreted as essentially monopolistic and harmful to consumers. Bundled payments as a means of price control may have other potential and unforeseen legal ramifications as well.

**Future Directions**

In addition to the large-scale legal issues surrounding their very existence, bundled payment arrangements also create legal issues on the operational level. Countless opportunities exist for accusations of fraud, malfeasance, contract breach, and other sources of litigation between payers, providers, and patients. New legal precedents will be set as these groups work together in new and likely uncomfortable ways in the creation of bundled pricing deals. In orthopedics, these legal waters will be further muddied by the presence of the Stark Laws governing kickbacks, which will likely come into play as physicians and surgeons take leadership roles in the setup of bundling arrangements. Legal attacks on physician-owned medical device distributorships over the past few years provide some foreshadowing of what may lie ahead for some orthopedic bundling contracts.
ly focus on other areas, particularly care delivered in ambulatory surgery centers. Both the hospital and ambulatory surgery center bundling projects will have major implications for orthopedic care, especially because clinical technology advances may provide for shorter hospital times and more outpatient-based orthopedic surgery.

Many private payers, notably several of the BlueCross/Blue Shield companies, have entered into their own bundled payment experiments. These models have involved both academic and private health systems, as well as large private orthopedic groups, in larger urban markets. In some cases, these initiatives have even brought in the services of health care and information technology companies such as McKesson to help manage the intricacies of the project. Because of the high potential to maintain or even increase profit margins through bundled payment arrangements, private payers will likely have a great interest in the future of this new model.

**Conclusion**

Its prevalence in so many other areas of society outside of the health care arena, combined with its history of success within certain areas of medicine and the increasing pressure for high-quality care at low cost, make bundled pricing an idea whose time is arriving. Although some fields within health care present drastic challenges for bundled payment models, other areas seem to be a natural fit. Orthopedic surgery, with its long-standing history of the global period and its recent role in many federal-level demonstration projects, is a field that will lead the charge for the transition from fee-for-service to bundling. Orthopedics provides certain surgical procedures wherein the steps of setting up a bundle (ie, defining the episode of care, participants, protocols, resources, outcomes, and price) can be undertaken with relative ease. Some of the implications of bundled payments, such as risk transference, altered incentives for cost management, transparency, new lines of competition, and legal issues, will affect not only orthopedic surgery but American health care across the board. As these issues play out in the coming years, perhaps patients will soon be able to shop for their shoulders and knees the way they currently shop for their cars.

**REFERENCES**


