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Bundled Payment

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Bundled Payment – AHA Research Synthesis Report

Executive Summary

Introduction

The first in a series of periodic reports, this *AHA Research Synthesis Report* examines the current evidence base on the design and impact of bundled payments and identifies knowledge gaps that still need to be answered as both the public and private sectors actively pursue this payment approach as a solution to current care delivery and quality issues.

Evidence on the Impact of Bundled Payments

The models of bundled payment that have been tested in the public and private sectors have yielded promising results. However, the models focus on specific conditions, such as those with defined timeframes, defined services, and isolated episodes, and are based in specific care settings, such as integrated delivery systems and academic medical centers.

Despite the limitations of the current knowledge base on bundled payment, current literature indicates that:

- 1. Bundled payment could potentially reduce spending on an episode of care.** For example, during the five-year Heart Bypass Center Demonstration, Medicare saved \$42.3 million, or roughly 10 percent of expected spending, on coronary artery bypass graft (CABG) surgery at the seven participating hospitals. Geisinger's ProvenCare was able to reduce hospital costs by 5 percent.
- 2. Providers' readiness to participate in bundled payment programs varies.** Of the 734 hospitals that expressed interest in Medicare's Heart Bypass Center Demonstration, 209 submitted pre-applications. Within a year of the introduction of Blue Cross Blue Shield of Massachusetts' Alternative QUALITY Contract (BCBSMA AQC), about 20 percent of eligible providers have signed up for the payment program.
- 3. Bundled payment can spur quality improvement.** This is especially true when bundled payment is paired with defined quality metrics. ProvenCare was coupled with 40 best practice steps based on the American Heart Association and the American College of Cardiology guidelines, and BCBSMA AQC has a performance incentive linked to a variety of nationally-recognized measures. ProvenCare reduced average length of stay (LOS) for CABG by 0.5 days and 30-day readmission rates by 44 percent over 18 months.

Key Issues for Consideration

Before bundled payment can be widely implemented, several key questions need to be addressed:

1. To which conditions should bundled payments be applied?
2. What providers and services should be included in the bundled payment?
3. How can provider accountability be determined?
4. What should be the timeframe of a bundled payment?
5. What capabilities are needed for an organization to administer a bundled payment?
6. How should payments be set?
7. How should the bundled payment be risk-adjusted?
8. What data are needed to support bundled payment?

Introduction

One of the top four research questions in the 2010 to 2012 AHA Research Agenda is:

What is the role of the hospital in a new community environment that provides more efficient and effective health care (e.g., what are the redesigned structures and models, the role and implementation of accountable care organizations, the structures and processes needed to implement new payment models such as bundled payments, and how do organizations transition to this new role)?

This *AHA Research Synthesis Report* provides a review of the literature on one aspect of this transition—reviewing *what is known and unknown about bundled payment*.

Bundled payment has been proposed as a means to drive improvements in health care quality and efficiency. Although there is great interest in this payment reform approach, there is currently limited data on how to design and administer bundled payments. Despite a few real-world applications of bundled payment, several questions remain. Among them is how payments for the physician and non-physician components of care will be determined under bundled payment.

The purpose of this research synthesis is to present an overview of bundled payment, including evidence of impact from public and private sector application, and the questions that must be considered as policymakers and delivery organizations move forward with this concept.

What is Bundled Payment?

Under a system of bundled payment, or episode-based payment, reimbursement for multiple providers is bundled into a single, comprehensive payment that covers all of the services involved in the patient's care. The goal of the bundled payment approach is similar to that of the Institute of Healthcare Improvement's (IHI) "Triple AimTM" objectives of improving population health, boosting the patient care experience, and reducing cost. As with the five components identified by IHI to fulfill its triple aims, bundled payment aims to control cost, integrate the care delivery system, and restructure delivery of primary care.

Bundled payment is touted as a viable option to meet payers and providers goals because of the potential improvements it presents over the Medicare fee-for-service system of reimbursement and the capitation model of payment. Medicare's current diagnosis-related group (DRG) system of reimbursing providers can be considered a form of bundled payment involving only one provider type. Likewise, the capitation model of payment adopted by several managed care organizations is also a type of bundled payment. However, both of these payment approaches are on the extreme ends of the bundled payment spectrum. Under the DRG system, the insurer assumes full financial risk of the patient acquiring the condition and any treatment costs associated with that episode; under capitation, the provider assumes most of the financial risks. The spectrum of services included in the DRG payment is very limited, compared to capitation, which is broader in scope. The appeal of recent models of bundled payment is that they ensure that financial risks of treating a patient are shared by both the payer and the provider and allow for flexibility in defining the scope of the bundled payment (e.g.,

timeframe, services included, and other considerations). Bundled payment may cover a certain clinical episode or a defined time period (Pham et al. 2010). For example, a single payment under a bundled payment system might cover:

- Hospital and physician services for acute episodes such as hip replacement or cardiac catheterization
- Physician, hospital, and support services associated with the management of a patient's congestive heart failure for one year

If the costs of care during the episode or timeframe are less than the bundled payment amount, the providers keep the difference. Conversely, if costs exceed payment, providers absorb the loss. In some proposed models of bundled payment, such as the accountable care organizations (ACOs) framework, savings are shared by all entities involved. Bundled payment has been proposed to address some of the shortcomings of the current fee-for-service payment system, such as overuse of well-reimbursed services and fragmented, uncoordinated care delivery. Proponents of bundled payment believe that it will lead to more judicious use of health services and improved care quality.

Bundled Payment and Health Reform

The idea of bundled payment has been gaining traction for many years, and the recent health reform law includes a provision pertaining to bundling. The law calls for the establishment of a national pilot program on payment bundling for the Medicare program by 2013 and a Medicaid bundling demonstration program by 2012. The pilot, which will be administered by a new Center for Medicare and Medicaid Innovation (CMI), is a voluntary, five-year pilot program that will test bundle payments. Pilots may involve hospitals, including Long Term Care Hospitals and inpatient rehabilitation facilities, physician groups, and skilled nursing facilities and home health agencies for an episode of care that begins three days prior to a hospitalization and spans up to 30 days post-discharge.

The stated purpose of the program is to improve the coordination, quality, and efficiency of services around a hospitalization in connection with one or more of eight conditions to be selected by the Secretary of Health and Human Services. The health reform law holds a lot of promise for the expansion of bundled payment by authorizing the Secretary to expand the program after the pilot phase, based on performance. Expansion of previous federal bundled payment demonstrations has been curtailed by the congressional approval process. The law also eliminates the budget-neutrality requirement for the expansion of previous demonstration programs and hints at the possibility of aligning Medicare payment programs with private sector initiatives.

Evidence on the Impact of Bundled Payment

Evidence of the impact of bundled payment is limited but promising. To date, only a handful of models have been implemented, and they offer some insight into the feasibility and impact of bundled payment (Box 1). However, all of these programs are either narrow in scope or have been implemented in highly integrated systems with a broad array of services, such as large

hospitals or academic medical centers. Therefore, their design and results are not necessarily generalizable on a wide scale and to small, medium-sized, and rural hospitals. Also, as shown in the summary chart in the Appendix, the major bundled payment programs implemented do not address key gaps in the design of bundled payment. The chart summarizes the publicly-available published data on components of the programs such as, the conditions of focus, the providers and services involved in the bundled, strategy for holding providers accountable for care provided, timeframe for the bundled payment, organizational capabilities of the entity receiving the payment, and how payments were determined and adjusted.

Box 1 – Sample Bundled Payment Programs

Medicare’s Participating Heart Bypass Center Demonstration: Under this demonstration, which ran from 1991 to 1996, seven hospitals received a single payment covering hospital and physician services for coronary artery bypass graft (CABG) surgery. The participating hospitals received a single payment and determined how they would share the amount with physicians. The payment rate was also updated based on the Medicare hospital prospective payment and physician fee schedule rates.

Medicare’s Cataract Surgery Alternate Payment Demonstration: From 1993 to 1996, this demonstration project used a negotiated bundled payment option for all services routinely provided within an episode of outpatient cataract surgery, including physician and facility fees, intraocular lens costs, and the costs of selected pre- and postoperative tests and visits. Payment rates were determined by competitive bidding and were 2 to 5 percent lower than the non-demonstration payment rates.

Geisinger Health System’s ProvenCare: Under this program, which began in 2006, payment is bundled for all non-emergency coronary artery bypass graft (CABG) procedures including the preoperative evaluation, all hospital and professional fees, and management of any complications (including readmissions) occurring within 90 days of the procedure.

Dr. Johnson and Ingham Medical Center: In 1987, an orthopedic surgeon partnered with a local hospital to offer a fixed price for knee and shoulder arthroscopic surgery, which included all related physician and hospital charges for surgery and any subsequent service for two years after surgery.

Medicare’s Acute Care Episode Demonstration: Beginning in 2009, Medicare pays the five participants a flat fee to cover hospital and physician services for cardiac care (CABG, valves, defibrillators, pacemakers, etc.) and orthopedic care (hip and knee replacement). The participating sites have the discretion to reward clinicians and other hospital staff who meet certain quality and efficiency goals.

PROMETHEUS Payment, Inc.: With grants from the Commonwealth Fund and the Robert Wood Johnson Foundation, PROMETHEUS is developing a bundled payment system to cover a full episode of care for acute myocardial infarction, hip and knee replacements, CABG, coronary revascularization, bariatric surgery, and hernias. PROMETHEUS was implemented in three sites in 2009.

Fairview Health Services: Fairview Health Services in Minnesota is currently working with Target, 3M, and other large, self-insured employers to develop flat fee "care packages" around specific chronic conditions, such as diabetes and asthma. Employers and patients can use online tools to purchase a package that best fits their needs.

Blue Cross Blue Shield of Massachusetts (BCBSMA): The Alternative QUALITY Contract (AQC): In 2009, BCBSMA introduced the AQC to provider and hospital groups in Massachusetts. As of November, 2009, 20 percent of the BCBSMA provider network had signed on to the AQC. The AQC is a global payment system tied to nationally accepted measures of quality. The payment rate is set for all services and costs associated with a patient's care, is risk-adjusted for patients' health status, sex, and age, and is updated annually for inflation. The AQC is the most comprehensive bundled payment model to date because it covers all conditions that a BCBSMA member may present with, includes all services that the member may require across the continuum of care, and rates performance based on a detailed list of process, outcome, and patient experience measures. The contract also includes a pay for performance component where providers are eligible for an additional 10 percent of total payment if they meet certain quality benchmarks.

1. Bundled payment could potentially reduce spending on an episode of care, so payers, providers, and patients may benefit.

Cost reduction and quality improvement in the bundled payment system results from several factors such as provider adherence to guidelines (ProvenCare), elimination of waste and utilization reduction (Heart Bypass Center Demonstration), and physician-hospital alignment. However, it is still unclear which of these factors has the greatest impact on cost reduction and quality improvement. During the five-year Heart Bypass Center Demonstration, Medicare saved \$42.3 million, or roughly 10 percent on CABG surgery at the seven participating hospitals, compared to expected spending. Eighty-six percent of the savings came from negotiated discount rates for patient services. The hospital negotiated rates applied to four physician specialties involved in bypass admission: surgeons, anesthesiologists, cardiologists, and radiologists, in addition to the allowable Medicare payment for consulting physicians. In addition to savings to Medicare, three of the four hospitals initially included in the demonstration experienced an average cost reduction of 2 to 23 percent by changing physician care practices and hospital processes (Bertko and Effros 2010). Specifically, the cost reductions were attributed to reduction in nursing intensive care unit hours, thus resulting in fewer nursing days per patient, reduced pharmacy cost from generic drug substitutions, and efficient use of the catheter lab. All four original hospitals included in the demonstration enjoyed profits. Beneficiaries saved \$7.9 million in coinsurance payments (Cromwell et al. 1997).

The fixed price for CABG under Geisinger's ProvenCare was set at the cost of a typical hospitalization plus 50 percent of the average cost of post-acute care over 90 days. An evaluation of the program found that hospital costs dropped 5 percent (Casale et al. 2007). Average length of stay (LOS) for CABG fell by 0.5 days, and the 30-day readmission rate fell 44 percent over 18 months.

Medicare's cataract surgery demonstration was also successful in reducing Medicare spending by \$500,000 for approximately 7,000 procedures.

Dr. Johnson and Ingham Medical Center's two-year project covering 111 patients also resulted in a lower price per case than in the comparable fee-for-service model. Profit margins for the surgeon and the hospital increased, and the payer (an HMO) saved more than \$125,000 (Johnson and Becker 1994).

Empirical work conducted by researchers at RAND lends further support to the notion that bundled payment can reduce health care spending. They constructed a model to compare the potential cost-saving impact of twelve policy options (e.g., establishing medical homes, decreasing resource use at end of life, expanding value-based purchasing), and bundled payment was shown to have the greatest potential to reduce health spending (Hussey et al. 2009). As outlined by the Medicare Payment Advisory Commission (MedPAC 2008), savings will result from efficient use of physician and hospital resources during hospitalization and reduction in post-discharge complications and costs (MedPAC 2008).

2. Providers' readiness to participate in bundled payment programs varies.

Prior to the start of the Heart Bypass Center Demonstration, the Health Care Financing Administration mailed solicitations to 734 hospitals. Of those, 209 submitted pre-applications, suggesting that many hospitals can work with their medical staffs to develop a single price for the service (Cromwell et al. 1997). However, provider interest in the cataract surgery demonstration was lower. Only 3.7 percent of eligible providers indicated a willingness to participate (Abt Associates Inc. 1997). Based on the success of ProvenCare for CABG, Geisinger has expanded the model to develop similar programs for hip replacement, cataract surgery, and percutaneous coronary intervention (Paulus et al. 2008).

3. Bundled payment can spur quality improvement.

The change in payment under ProvenCare was coupled with a pay-for-performance system that included 40 best practice steps based on American Heart Association and American College of Cardiology guidelines. Initially, 59 percent of patients received all 40 best practices. Six months after the start of the program, 100 percent of patients received all best practices (Casale et al. 2007). ProvenCare is estimated to have reduced all complications by 21 percent, sternal infections by 25 percent, and readmissions by 44 percent, and decreased hospital length of stay by half a day (Steele et al. 2008).

Hospitals participating in the Medicare Participating Heart Bypass Center Demonstration reduced mortality in CABG patients included in the demonstration (Cromwell et al. 1997). Dr. Johnson and the Ingham Medical Center's orthopedic surgery project resulted in a decline in potentially avoidable complications and reoperations (Johnson and Becker 1994).

Key Issues for Consideration

Before widespread implementation can be achieved, a number of operational and design questions must be addressed. Several questions are listed in Box 2 below and followed by additional detail for each question.

Box 2 – Key Questions

1. To which conditions should bundled payments be applied?
2. What providers and services should be included in the bundled payment?
3. How can provider accountability be determined?
4. What should be the timeframe of a bundled payment?
5. What capabilities are needed for organizations to administer a bundled payment?
6. How should payments be set?
7. How should the bundled payment be risk-adjusted?
8. What data are needed to support bundled payment?

1. To which conditions should bundled payments be applied?

Historically, Medicare's bundled payment demonstrations have been applied to conditions with a defined timeframe from diagnosis to recovery such as CABG and cataract surgery. Also, bundled payments have been proposed for conditions requiring defined types of services such as end stage renal disease. Similarly, Geisinger initially applied their bundled payment system, ProvenCare, to CABG and then extended it to other conditions such as hip replacement, cataract surgery, and obesity surgery. The Commonwealth Fund recently recommended the development of bundled payments for both acute and chronic conditions. Therefore, the trigger for bundled payment could occur before or even in the absence of hospitalization.

The focus of the previous bundled payment models may suggest that some conditions are better suited for bundled payment than others. For example, isolated acute care episodes with a clear beginning and end will better facilitate the development of a flat payment for an episode (Miller 2008). Also, conditions should have well defined clinical definitions so that it is clear which patients are eligible for bundled payment. Conditions with established clinical guidelines will help with the development of benchmarks and goals for providers. Feasibility may also be enhanced for episodes of care that have little variation in utilization and cost (Pham et al. 2010). For example, the care needed by patients with chronic heart failure is highly variable. The progression of the condition may, to a large extent, be outside the control of providers, and the service needs are often unpredictable.

Previous bundled payment models offer little insight into how bundled payments can be scaled up to include more conditions without being mired in administrative complexities. Lessons from the BCBSMA AQC could be instructive on how bundled payments can be structured for a wide variety of conditions and at the same time minimize the administrative burden for both providers and payers.

2. What providers and services should be included in the bundled payment?

Past demonstration and pilot projects have centered on bundling payments for services provided by the hospital and physicians. For example, previous projects have often focused on surgical procedures (e.g., CABG or cataract surgery) where the largest expenditure for the payer is often concentrated in the acute care hospital and includes hospital-based physician services. As bundled payment is proposed for other medical, chronic, or long-term conditions, it will necessitate that other providers be included in the bundled payment, including but not limited to: primary care physicians, home health, nursing home, long-term acute care, rehabilitation, and other providers across the full continuum of care. Within the hospital setting, there may be an opportunity to link ancillary services such as laboratory work, emergency services, and other diagnostic services to the bundled payment. The engagement of multiple service providers will present an opportunity for optimal financial management. Establishing linkages between different types of providers and providers from different organizations will be a challenge. Similarly, determining actual payments to the physician and non-physician components of care within the bundle will also be challenging as the limited models of bundled payment do not present a precedent for future application.

The information available from previous applications of bundled payment might indicate that the broader the scope of providers and services included in the bundle, the more opportunities there are for cost savings and quality improvement. For example, some of the sites in the Medicare Participating Heart Bypass Center reduced spending by generic substitution, in addition to other practice changes. The BCBSMA AQC could offer some insight on the range of providers and services along the continuum of care that should be included in a bundled payment.

3. How can provider accountability be determined?

A related consideration is how to attribute provider responsibility for care in an episode. For example, most hip fracture episodes involve four or more care settings, and it may be challenging to determine the extent to which each provider is responsible for the outcomes of an episode (Hussey et al. 2009). This is an important question because bundled payment provides incentives for providers to reduce unnecessary utilization. One potential unintended consequence is that necessary care may also be reduced.

Assignment of responsibility for quality and payment purposes is easier for some conditions than others. For example, it is easier to determine the relative involvement of hospitals and post-acute care facilities, specialists, and other physicians for a hip replacement than a heart attack because hip replacements have more predictable care assignments (Pham et al. 2010). The orthopedic surgeon and hospital could be assigned primary accountability for the patient. For other conditions, it will be difficult to assign clear responsibility to a small number of providers to keep payment and quality control issues simple and transparent.

Unfortunately, the data on bundled payment provide limited guidance on how provider accountability for care was enforced in their models. For example, the sites included in Medicare's Participating Heart Bypass Center were at liberty to allocate the bundled payment between participating providers reduced as they deemed necessary. Medicare's Acute Care Episode Demonstration allows participating sites to reward clinicians and other hospital staff

who meet certain quality benchmarks. Another possible approach for fostering provider accountability is to allocate the bundled payment based on the share of what providers' fees would have been, thereby holding each provider accountable for delivering efficient care and controlling their costs.

4. What should be the timeframe of a bundled payment?

Available literature provides several examples of different durations for bundled payments. For example, in determining the financial risk impact of bundled payment on hospitals, researchers used 60 day post-discharge as the post-acute period to define the duration of the bundle (Welch 1998). The Commonwealth Fund proposal favors bundling payment for services provided from the time of admission through 90 days post-hospitalization (The Commonwealth Fund 2007). The president's proposed budget for 2010 suggests bundling payment for hospitalization and post-acute care that occurs within 30 days after hospitalization (Office of Management and Budget [OMB] 2008).

Geisinger's ProvenCare bundled payment for hospitalization and the 90-day period following CABG surgery. However, none of the literature presents evidence in support of any defined post-acute timeframe. It is important to note that the duration of the bundle will determine the types and amount of services included in the bundle. An appropriate post-acute timeframe should also allow patients enough time to fully recover from a condition. This is an especially important consideration for bundling payments for chronic conditions that often span a patient's lifetime. In an analysis of Medicare data, one study found that many patient episodes are captured within 30 days. However, for a sizeable minority of patients, a 30-day episode would not capture their multiple visits and hospital days for their complex health condition needs (Avalere 2010).

5. What capabilities are needed for organizations to collect and administer a bundled payment?

Bundling payments for episodes of care presents the administrative challenge of identifying the appropriate entity to collect and dispense income from the bundle as well as oversee the efficient delivery of care within the episode. This entity would need to have the administrative capacity to act as a third-party administrator in some respect and determine what patients' continuing care needs may be and how much each provider should be reimbursed for care. Acute care facilities, ACOs, and other organizations have been proposed as the appropriate entities to receive bundled payments on behalf of all providers and facilities involved in an episode of care.

In order to successfully undertake the function of care coordination, the entity would have to effectively work with hospitals, physicians, and other care providers to hold them accountable for high quality and efficient care delivery. Currently, few organizations have the infrastructure and influence to undertake this function. Additionally, the entity would need information technology systems to track and manage processes, especially if it is receiving bundled payments from multiple payers and there is no uniform definition or consensus on what is included in the bundle. Regardless of the reimbursement structure for bundled payments, it will

have to ensure that all care facilities and providers involved in an episode of care have equal bargaining power in the arrangement.

In most of the models of bundled payment implemented to date, such as PROMETHEUS, Geisinger's ProvenCare, and Medicare's Participating Heart Bypass Center program, the hospital or hospital system received the bundled payment and determined how to allocate the money among physicians and other providers. Sites in the Medicare's Participating Heart Bypass Center program expressed billing and collection challenges, especially at the onset of the program while they determined internal procedures and acquired appropriate technology. An important takeaway for future expansion of bundled payment is that the participating sites in Medicare's Participating Heart Bypass Center program would have liked to have been reimbursed for the initial investment.

6. How should bundled payments be set?

Once assignment of responsibility for patient care is established and the appropriate entity for payment is identified, another challenge is setting the appropriate payment amount. If a bundled payment program includes only a small number of episode types or a small number of providers, payers could negotiate payment amounts (Pham et al. 2010), which is what Medicare has done (and continues to do) under its demonstration programs. However, there are several other ways in which payers may set bundled payment rates. For example, payment rates could be based on historical costs (e.g., average fee-for-service cost minus five percent) or standard of care guidelines (i.e., the estimated costs assuming providers delivered only recommended care).

The PROMETHEUS payment model uses evidence-based case rates that are based on resources required to provide care under well-established clinical guidelines. Geisinger's ProvenCare rates were negotiated and based on historical cost and reimbursement data. The rate for CABG assumed that readmission and complication rates would be cut in half as providers followed evidence-based care guidelines. Regardless of the method used, payers will also have to periodically revisit and update payment rates over time as more data on program outcomes become available. BCBSMA's AQC will be updated annually for inflation, and Medicare's Participating Heart Bypass Center program was updated based on the existing inpatient prospective payment and physician fee schedule rules.

7. How should the bundled payment be risk-adjusted?

Bundling payments for care received in the acute and post-acute care settings needs to factor adequate case-mix adjustment for the severity of illness of different patient populations. This will ensure that providers will not turn away the sickest patients for fear of being liable for more expensive treatments (RAND COMPARE). Also, social determinants such as language, socioeconomic status, and availability of social support should factor in risk-adjusted bundled payment, since they could influence patient health outcomes. Finally, to ensure that the bundling payment approach does not pose additional financial risk to providers and facilities, the payments would have to closely match the combined costs of acute and post-acute care (Welch 1998).

The bundled payment approach that provides a clear direction for risk-adjustment is BCBSMA's AQC. The global payments made to providers are risk adjusted for the age, sex, and health status of the patients. Other models may have alternative or additional ways to risk-adjust payment; however, that information is not readily available in the literature. Insurers commonly cite 100,000 as the appropriate patient population size to adequately diversify risks. It will be important to analyze if such thresholds should apply for risk-adjusting bundled payment.

8. What data are needed to support bundled payment?

Most current studies on bundled payment use episode groupers (software packages that search medical claims and records to identify whether patients meet the criteria of an episode, when the episode began and ended, and the services received) (Pham et al. 2010). However, in order for the groupers to be effective, data must contain accurate information on patient diagnoses and co-morbidities; dates, types, and cost of services; and patient and provider identifiers. Although many of these data are currently available, there is often limited detail because the data collection systems were designed for fee-for-service payment approaches. Electronic medical records may permit more comprehensive data collection.

Conclusion

While the concept of bundled payment is appealing, implementation is complex. It is telling that so few bundled payment programs have been established over the past 20 years. However, current political support for bundled payment coupled with the growing evidence base may lead to more experimentation with bundled payment in the near future. Further advancement of bundled payment will depend on the will of payers and providers to collaborate in a new way and to address several challenging operational issues.

Key References

Proposals

1. Senate Finance Committee (2009) *Description of Policy Options: Transforming the Health Care Delivery System: Proposals to Improve Patient Care and Reduce Health Care Costs*. Retrieved from:
<http://finance.senate.gov/sitepages/leg/LEG%202009/042809%20Health%20Care%20Description%20of%20Policy%20Option.pdf>

Summary: This proposal advocates for a bundled payment to be made for acute services and post-acute services occurring or initiated within 30 days of discharge from a hospital. This approach would involve a three-phase implementation, separated by two years. In phase one, bundled payments would be applied to the top 20 percent of post-acute spending; in phase two, bundled payments would be applied to the next 30 percent of post-acute spending; and in phase three, bundled payments would be applied to the last 50 percent of post-acute spending. Bundled payments will total inpatient MS-DRG amount plus post-acute care costs for the same MS-DRG and will be paid to an established legal entity, including a hospital.

2. Office of Management and Budget (2009) *A New Era of Responsibility: Renewing America's Promise*. Retrieved from:
http://www.whitehouse.gov/omb/assets/fy2010_new_era/a_new_era_of_responsibility2.pdf

Summary: The president's budget proposes bundled payments as an approach to reducing preventable rehospitalizations. The bundled payments will cover hospitalizations as well as post-acute care 30 days after the hospitalization. Additionally, hospitals with a high rate of readmissions within the 30-day period will be paid less.

3. Guterman, S., Davis, K., Schoen, C., and Stremikis, K. (2009) *Reforming Provider Payment: Essential Building Block for Health Reform*. (Fund Publication # 1248). Retrieved from the Commonwealth Fund:
http://www.commonwealthfund.org/~media/Files/Publications/Fund%20Report/2009/Mar/1248_Guterman_reforming_provider_payment_essential_building_block_FINAL.pdf

Summary: This proposal suggests a global fee for hospitalization and a "specified set of services for 30 days following discharge." This approach would be phased in starting in 2010; the first stage would involve bundled payment for hospital costs associated with initial hospitalization and any readmissions that occur within 30 days of discharge and follow up care for the patient. The second stage would involve bundled payments for acute and post-acute care, and the final stage would involve a bundled payment for acute care, physician services, post-acute care, and emergency room care.

4. MedPAC (2008) A path to bundled payment around a hospitalization. In *Report to Congress: Reforming the Delivery System* (pp. 83-103). Retrieved from:
http://www.medpac.gov/documents/Jun08_EntireReport.pdf

Summary: MedPAC proposes a bundled payment for services rendered by a single entity, defined as a hospital and its affiliated physicians. The payment will cover costs associated with an episode of hospitalization. The commission recommends a phased-in approach: in phase one, hospitals and physicians will be confidentially informed of their utilization patterns for hospitalization episodes. In the second phase, occurring two years after the first, the confidential information will be made publicly available. In phase three, the bundled payment system will be implemented. The commission also recommends that Medicare reduces payment to hospitals with high readmission rates.

5. Miller, H. D. (2008) *From Concept to Reality: Implementing Fundamental Reforms in Health Care Payment Systems to Support Value-Driven Health Care. Issues for Discussion and Resolution at the 2008 NRHI Healthcare Payment Reform Summit*. Retrieved from: <http://www.nrhi.org/downloads/2008NRHIPaymentReformSummitFramingPaper.pdf>

Summary: This framing paper prepared for the 2008 Network for Regional Healthcare Improvement (NRHI) Summit on Healthcare Payment Reform describes key issues and options for advancing payment reform in the U.S. The paper proposes episode-of-care payments as a middle ground between fee-for-service and capitation model of payment. One of the issues covered by the framing paper is the type of provider structures needed for bundled payments. According to the author, an integrated delivery system (IDS) is well-positioned to be such an entity. Outside of an IDS, a special organizational entity that includes a physician group and a hospital could also receive the bundled payment on behalf of all providers involved in an episode of care.

6. Congressional Budget Office (2008) *Budget Options Volume 1: Health Care*. Retrieved from: <http://www.cbo.gov/ftpdocs/99xx/doc9925/12-18-HealthOptions.pdf>

Summary: This proposal advocates for bundled payments for acute and post-acute care provided in both the hospital and non-hospital setting within 30 days of patient discharge. The bundled payment rate would be equal to the amount paid for the MS-DRG plus post-acute cost associated with that MS-DRG. According to the proposal, hospitals would have a greater involvement in the patient's post-discharge care and would probably reduce post-acute care under this payment approach. An alternative approach proposed by the CBO is bundling payment for hospital and physician services.

7. The Commonwealth Fund (2007) *Bending the Curve: Options for Achieving Savings and Improving Value in U.S. Health Spending*. Retrieved from : http://www.commonwealthfund.org/~media/Files/Publications/Fund%20Report/2007/Dec/Bending%20the%20Curve%20Options%20for%20Achieving%20Savings%20and%20Improving%20Value%20in%20U%20S%20Health%20Spending/Schoen_bendingthecurve1080%20pdf.pdf

Summary: The Commonwealth Fund Commission on a High Performance Health System proposes bundling payments for hospitalizations for acute-care episodes. Under this approach, Medicare would bundle payments for all inpatient, physician, and related services provided from the time of admission within 90 days post-hospitalization. The approach would also be applied to healthy and chronically ill patients in the outpatient setting.

Evaluation of Demonstration Projects

8. Paulus, R. A., Davis, K., and Steele, G. D. (2008) Continuous Innovation in Health Care: Implications of the Geisinger Experience. *Health Affairs*, 27:1235-1245.

Summary: Geisinger created the ProvenCare model for coronary artery bypass graft (CABG). As part of the model, the organization established best practices across the episode of care and developed a risk-based price for care, which included hospital costs and subsequent readmissions. Through ProvenCare, Geisinger was able to increase the percentage of CABG patients receiving recommended care, as measured by the forty measures, to 100 percent.

9. Cromwell, J., Dayhoff, D. A., McCall, N. T., Subramanian, S., Freitas, R. C., and Hart, R. J. (1998) Medicare Participating Heart Bypass Center Demonstration: Final Report. *Health Economic Research, Inc.*

Summary: In 1988, the Health Care Financing Administration negotiated contracts with four hospitals to pay them bundled payments for heart bypass with or without catheterization. The demonstration project lasted from 1991 through 1996, including a two year extension. The evaluation found that the demonstration saved Medicare \$42.3 million on bypass patients and saved beneficiaries \$7.9 million in Part B coinsurance payments. Participating hospitals also saved on treating bypass patients. Some of the cost savings were a result of generic drug substitutions reported by pharmacists. The range of hospital savings was between \$1.7million and \$15 million. Patients discharged from participating hospitals also had on average, an 8 percent decline in mortality rates. The evaluators also noted that patients received appropriate care at participating hospitals.

Other Published Literature

10. Mechanic, R. and Altman S. (2010) Medicare's Opportunity to Encourage Innovation in Health Care Delivery. *The New England Journal of Medicine*, 362(9): 772-774.

Summary: The authors of the article evaluate the newly-mandated Center for Medicare and Medicaid Innovation (CMI) and how the entity will facilitate the implementation of key health delivery models. First, the CMI is authorized to run pilot programs rather than demonstration projects, which can be hampered from widespread dissemination by congressional approval. The CMI would also have the authority to decide on which proposals to pursue and can choose to expand pilots that are not budget neutral. The CMI would play an essential role in health care payment reform, especially in the piloting and implementation of new payment approaches.

11. Pham, H. H., Ginsburg, P. B., Lake, T. K., and Maxfield, M. M. (2010) Episode-Based Payments: Charting a Course for Health Care Payment Reform. National Institute for Health Care Reform, Policy Analysis No. 1.

Summary: The authors discuss key design issues related to implementing an episode-based payment system, including defining episodes of care, establishing payment rates, identifying

providers to receive payments, compatibility with other proposed reforms, and staging implementation.

12. Bertko, J. and Effros, R. (2010) Analysis of Bundled Payment. RAND Health COMPARE. Accessed at: <http://www.randcompare.org/analysis-of-options/analysis-of-bundled-payment>.

Summary: The authors measure bundled payment against nine performance dimensions: spending, waste, patient experience, coverage, operational feasibility, consumer financial risk, reliability, health, and capacity. Their information is drawn heavily from results of the Medicare Participating Heart Bypass Center Demonstration and Geisinger's ProvenCare.

13. Ahlstrom, A., Cafarella, N., Dietz, K., and Tumlinson, A. (2010) Piloting Bundled Medicare Payments for Hospital and Post-Hospital Care: A Study of Two Conditions Raises Key Policy Design Considerations. Avalere Health, LLC. Accessed at: http://www.avalerehealth.net/research/docs/20100317_Bundling_Paper.pdf

Summary: Avalere analyzed Medicare claims from 2006 and 2007 for patients with Major Joint Replacement and Chronic Obstructive Pulmonary Disease. The data analysis demonstrated that a 30-day bundle length would capture nearly all of the care provided to joint replacement and COPD patients during an initial hospitalization, first post-hospitalization encounter and any subsequent rehospitalization. However, for a more complex definition of a bundle (defined as all hospital and post-hospital care until there is a break in care) only 79 percent of episodes and 41.5 percent of patient days are completed by the 30th day.

14. Blue Cross Blue Shield of Massachusetts (2010) Blue Cross Blue Shield of Massachusetts: The Alternative QUALITY Contract. Retrieved from: <http://www.qualityaffordability.com/pdf/alternative-quality-contract.pdf>

Summary: This article describes the voluntary global payment system introduced by Blue Cross Blue Shield of Massachusetts for its provider network. The Alternative Quality Contract (AQC) is a bundled payment that has been risk-adjusted for patients' age, sex, and health status and is updated annually for inflation. The system is also tied to performance incentives, which allows providers to receive additional 10 percent reimbursement for meeting a set of ambulatory and hospital measures. The new payment contract ties in with BCBSMA's strategy of "improving the quality and affordability of health care for members, providers, and employers."

15. Hussey, P. S., Sorbero, M. E., Mehrotra, A., Liu, H., and Demberg, C. L. (2009) Episode-Based Performance Measurement and Payment: Making it a Reality. *Health Affairs*, 17(5):1406-1417.

Summary: Using Medicare data, the authors constructed episodes of care using two grouper tools in order to illustrate key design issues associated with defining episodes and attributing accountability to providers. They suggest several areas for future research and demonstration programs that would help move episode-based payment approaches from concept to reality.

16. Hackbarth, G., Reischauer, R., and Mutti, A. (2008) Collective Accountability for Medical Care: Toward Bundled Medicare Payments. *The New England Journal of Medicine*, 359:1.

Summary: Two of the authors on this report are on the Medicare Payment Advisory Commission (MedPAC). The article provides further commentary on MedPAC's recommendation for bundling payments. According to the authors, to ensure "joint accountability for both the volume and the costs of services, payment for physician services as well as hospital and other post-acute services" must be included in a bundle. The authors however highlight that before this payment approach can be implemented, several questions need to be answered, such as whether hospitals and physicians will be able to collaborate and form an entity that can accept and divide a bundled payment.

17. Davis, K. (2007) Paying for Care Episodes and Care Coordination. *The New England Journal of Medicine*, 356:1166-1168.

Summary: In this article, Karen Davis advocates for instituting a global fee for care episodes as a way to reduce variation in payments for acute episodes or for care for patients with chronic conditions. The global fee would cover hospital services, physician services, and other services required for treating acute conditions. A major issue identified by the paper in designing such a system would be how to appropriately assign accountability for care across different settings over time. The author cautions that given the fragmentation of the health system and lack of continuity in patient-physician relations, new payment policies such as bundling payments should be extensively evaluated before being implemented.

18. Kulesher, R. R. and Wilder, M. G. (2006) Prospective Payment and the Provision of Post-Acute Care: How the Provisions of the Balanced Budget Act of 1997 Altered Utilization Patterns for Medicare Providers. *Journal of Health Care Finance*, 33:1-16.

Summary: This study assesses the preliminary impact of extending the prospective payment system to skilled nursing facilities and home health agencies on hospitals, nursing homes, and home health agencies in the mid-Atlantic region and specifically, in Delaware. "In Delaware, hospital-owned nursing homes reduced their Medicare utilization, and proprietary facilities increased their utilization. One-third of the HHAs in Delaware withdrew from Medicare participation."

19. Bryant, L. L., Floersch, N., Richard, A. A. and Schlenker, R. E. (2004) Measuring Healthcare Outcomes to Improve Quality of Care Across Post-Acute Care Provider Settings. *Abstract, Journal of Nursing Care Quality*, 19:368-376.

Summary: This abstract describes a study that reviews existing data sets used in the post-acute setting and examines efforts to create measures for post-acute care and provides future direction for research. The author of the article argues that in order to effectively measure the impact of care on clinical outcomes, "a valid, reliable manner that allows for comparisons to reference or benchmarking data" needs to be developed.

20. Budetti, P. P., Shortell, S. M., Waters, T. M., Alexander, J. A., Burns, L. R., Gilles, R. R., and Zuckerman, H. (2002) Physician and Health System Integration. *Health Affairs*, 21:203-210.

Summary: The primary conclusion of this study is that physicians and health systems are not well-aligned. The authors arrived at this conclusion after studying 14 organized delivery systems and their 11,000 physicians in 69 medical groups and found that health systems paid inadequate attention to issues of importance to physicians.

21. Cotterill, P. G. and Gage, B. J. (2002) Overview: Medicare Post-Acute Care Since the Balanced Budget Act of 1997. *Health Care Financing Review*.

Summary: The authors of this article state that post-acute care providers have historically been highly responsive to payment reform as evidenced by shifts in care settings with the implementation of the SNF and HHA prospective payment system (PPS). The authors further caution that future research would need to focus on "potentially substitutable settings" in response to payment reform in the post-acute setting.

22. Coleman, E. A., Krammer, A. M., Johnson, M., Eilertsen, T. B., and Holthaus, D. (1999) Quality Measurement in Post-Acute Care: The Need for a Unique Set of Measures. *Abstract Book, Association of Health Services Researchers Meeting*, 16:78. Retrieved from: <http://gateway.nlm.nih.gov/MeetingAbstracts/ma?f=102194450.html>.

Summary: According to the authors of this abstract, quality measurement in the post-acute setting has traditionally built on measures in the long-term care setting. However, since post-acute care has shifted from long-term care to acute care, there is now a need to develop a new set of unique measures for post-acute care that span different care settings. The new measures also need to take into consideration the increasing severity and complexity of conditions treated in the post-acute care setting.

23. Welch, P. (1998) Bundled Medicare Payment for Acute and Postacute Care. *Health Affairs*, 17:6.

Summary: The author of this study sought to determine whether bundling payments for acute and post-acute care will result in additional financial risk for hospitals. He points out that "a key issue is how well bundled payments would match the combined costs of acute and post-acute care." Using Medicare's National Claims History Files from 1994 and 1995, the author calculated each hospital's margin under a bundled payment and under the existing system of reimbursement. He found that the standard deviation (financial risk) for episode of care costs were about the same for acute care. However, including post-acute care in the bundle could increase the financial risk to the typical hospital. The author also highlighted some of the other methodological challenges with the bundled payment system, such as unintended consequences, who should receive the payment, its feasibility in rural areas, and how to deal with competition among providers.

Appendix: Summary of Sample Bundled Payment Programs*

Bundled Payment Initiative	Components*						
	Conditions	Providers/Services	Provider Accountability	Payment Timeframe	Administrator Capabilities	Setting Payments	Payment Adjustment
Medicare's Participating Heart Bypass Center Demo	Coronary artery bypass graft surgery	Inpatient and physician services, Medicare hospital pass-throughs, related readmission	Unspecified	Unspecified	Data systems for micro-cost analysis	Bidding by participating hospitals; updated annually per inpatient prospective payment and physician fee schedule	Unspecified
Medicare's Cataract Surgery Alternate Payment Demo	Outpatient cataract surgery	Physician and facility fees, intraocular lens costs, and costs of selected pre- and postoperative tests	Unspecified	Unspecified	Unspecified	Negotiated discounts below usual rates	Unspecified
Geisinger's ProvenCare	Initially, cardiac surgery; expanded to angioplasty, cataract surgery, hip replacement	Facility and physician costs, follow-up care and all complications within 90 days	Adherence to evidence-based clinical measures	30 days before and 90 days after procedure	Integrated health system	Prior fee-for-service costs plus 50% of historical readmission rate	Historical rates
Dr. Johnson and Ingham Medical Center	Knee and shoulder arthroscopic surgery	Surgeon and hospital fees	Two year warranty for procedure	Unspecified	Unspecified	Pre-determined fee	Unspecified
Medicare's Acute Care Episode Demo	Cardiac care (CABG, valves, defibrillators, pacemakers), orthopedic care (hip and knee replacement), etc.	Hospital and physician services	Possible reward for clinicians and hospital staff for meeting quality and efficiency goals	Unspecified	Entities including at least one physician group and at least one hospital	Competitive bidding	Unspecified

Bundled Payment Initiative	Components*						
	Conditions	Providers/Services	Provider Accountability	Payment Timeframe	Administrator Capabilities	Setting Payments	Payment Adjustment
PROMETHEUS Payment, Inc.	Acute myocardial infarction, hip and knee replacement, CABG, coronary revascularization, bariatric surgery, hernias	All providers involved in patient care – inpatient and outpatient	Adherence to clinical guidelines	Acute condition (30 days), hip replacements (180 days), chronic illness (1 year)	Unspecified	Patient-specific payment based on risk factors, fee schedules, and other negotiated rates	Payment based on meeting clinical guidelines
Fairview Health Services	12 “care packages” for chronic conditions (low back pain, diabetes, migraine), specific medical care (prenatal care), and surgical procedures (knee replacement)	Hospital and physician (primary care and specialty) services	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified
BlueCross BlueShield of MA Alternative QUALITY Contract	All conditions	All services and costs – primary, specialty, and hospital care, ancillary, behavioral health, and pharmacy services	Associated performance measures and incentive payment	None	Unspecified	Base rate per-member, per month based on historical regional costs and performance payment of up to 10 percent	Patients’ health status, sex, and age; adjusted annually for inflation

* Chart was developed with publicly-available published data. The components outlined represent the conditions of focus for the particular bundled payment initiative, the providers and services involved in the bundled, strategy for holding providers accountable for care provided, timeframe for the bundled payment, organizational capabilities of the entity receiving the payment, and how payments were determined and adjusted.