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Episode-based payment: Perspectives for consideration

Contents

Foreword

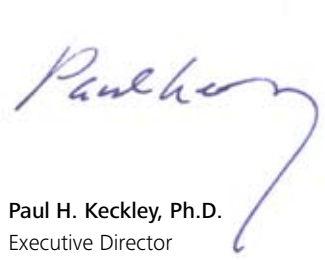
Health care reform advocates recognize the need to reduce the cost of health care from its forecasted 6.2 percent compounded annual growth rate to contribute to economic recovery. A major focus area has been the high incidence of Medicare enrollee readmissions after hospital discharge: A recent *New England Journal of Medicine* article concluded these avoidable costs were more than $17 billion annually.

Many believe that a bundled payment system, sometimes called episode-based payments, would appropriately incentivize hospitals and physicians to better coordinate care, resulting in improved efficiency and outcomes and lower costs. The majority of these cost reductions could be achieved if coordination of care from admission through post-discharge activity improved. A means to that end might be a single-bundled payment mechanism.

Given proposed changes in hospital payments (starting in 2013) to reward the avoidance of readmissions, and Medicare's plans to implement bundled payments to hospitals (starting in 2015) for admissions that result in 20 percent of post-acute spending, it is important that all stakeholders in the U.S. health care delivery and payment system understand episode-based payments at a conceptual and operational level.

To that end, the Deloitte Center for Health Solutions offers this paper to assist key stakeholders in understanding the rationale, implementation and impacts of episode-based payments.

Respectfully,



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Introduction and research overview

One of the fundamental concerns in U.S. health care reform is the pressure to constrain spending growth. This pressure occurs within the context of severe access to care issues, and what has been termed a "fragmented, 19th century craft-oriented delivery system" that is operating in a culture of adoption of biotechnology, science, and health care innovation.[1] A macro view of U.S. health care reveals a culture of medical specialization and high-technology care that is dealing with a growing chronic care population, supported by uneven primary care resources and facing systemic issues around coordination of care.[2]

"Critics have long contended that the U.S. health care system cannot intelligently address problems of coverage and cost because it is really a non system, a fragmented assemblage of private, voluntary, and public powers that resist any semblance of the planning that a $2 trillion annual enterprise demands."[3]

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Background

U. S. health care costs currently represent 16 percent of the gross domestic product (GDP), and are projected to increase at 6.2 percent through 2018. Estimates indicate that by 2016, health care costs will reach 20 percent of the GDP.[4] According to the Institute of Medicine (IOM), U.S. per-capita expenditures on health care are 20 percent higher than any other nation, yet rankings on key indicators such as infant mortality (23rd) and life expectancy (28th) are well below many other nations.[5] The imputed causes of these differences include higher intensity of services;[6] higher prices for services; an indirect connection between provider resources flowing to patients and society's financial resources flowing to providers;[7] lack of consumer incentives for prudent health care purchases; and administrative inefficiencies in the third-party payment system.[8] When considering health care spending in the context of GDP, it is necessary to understand that per-capita spending is not correlated with resources received by the patient or health care consumer. Rather, the full cost of the "system," including distribution, coordination and intensity of services, variable product and provider/workforce prices and salaries contribute to per-capita rates, without necessarily resulting in better health outcomes.[11,12]

01 Shortell, S. M. and L. P. Casalino (2008). "Health Care Reform Requires Accountable Care Systems," *JAMA*, 300(1): 95-97. p. 95

02 Berenson, RA, Hammons,T., Gans,DN, et al.(2008). "A House is Not A Home: Keeping Patients at the Center of Practice Redesign," *Health Affairs*, 27(5). p.1220

03 *Brown, L. D. (2008). "The Amazing Noncollapsing U.S. Health Care System - Is Reform Finally at Hand?" New England Journal of Medicine*, 358(4): 325-327. p. 326

04 CBO (November 2007) "The Long-Term Outlook for Health Care Spending," http://www.cbo.gov/ftpdocs/87xx/doc8758/11-13-LT-Health.pdf. Accessed 05/05/2009

05 Institute of Medicine, *Learning What Works Best: The Nation's Need for Evidence on Comparative Effectiveness in Health Care*. (September 2007), p.7- . http://www.iom.edu/ebm-effectiveness. Accessed 01/10/2009

06 Schroeder, S. (2003). "Intensity, Not Prices." *Health Affairs*, 22(5): 264.

07 Anderson, G. F., U. E. Reinhardt. (2003). Author response to letters. *Health Affairs*, 22(5):265

08 Allen, D.W. (2003). "Complex Reasons for High Spending," *Health Affairs*, 22(5):264

09 Shortell, S. M. and L. P. Casalino (2008). "Health Care Reform Requires Accountable Care Systems." *JAMA*, 300(1): 95-97. p.96

10 Dentzer, S. (2008). "Innovations: 'Medical Home' Or Medical Motel 6?" *Health Affairs*, 27(5): 1216-1217

11 Anderson, G. F., U. E. Reinhardt, et al. (2003). "It's The Prices, Stupid: Why The United States Is So Different From Other Countries," Ibid. 22(3): 89-105

12 Pauly, M. V. (1993). "U.S. health care costs: the untold true story," Ibid. 12: 152-159

Many studies have shown high levels of waste and unnecessary services in health care systems. Understandably, establishing payment systems that encourage the reduction of waste and unnecessary services could lower overall health care costs as well as improve quality. However, transitioning to a new payment system and the organizational structures needed to support it – even if it reduces costs and improves quality in the long run – will likely require significant investments for both payors and providers.

Consumers have a fundamental stake in any cost reduction that contributes simultaneously to improved care. In its *2009 Survey of Health Care Consumers*,[13] the Deloitte Center for Health Solutions reported that 73 percent (N=4001) of respondents say they are confused about how the health care system works and 94 percent believe health care costs are a threat to their personal financial security. In addition, 52 percent of respondents believe that over 50 percent of dollars spent on health care are wasted, and 38 percent grade the performance of the system as D or F.[14] Consumers stand to gain from improvements in coordination of care, simpler methods of determining quality of care, and more clear definitions of the relationship between cost of care and quality of care.

As consumers assume more financial responsibility for their health care purchases, the ability to offer health care services in a bundled payment could be highly appealing.

[13] Deloitte Center for Health Solutions. *2009 Survey of Health Care Consumers*, http://www.deloitte.com/dtt/article/0,1002,sid%253D80772%2526cid%253D252396,00.html. Accessed 05/09/2009

[14] Ibid

Background: The current payment system

Background: The current payment system

Payment for U.S. health care services is based on a third-party reimbursement model that, in 2005 (latest available figures), was 54.5 percent privately funded and 45.5 percent publicly funded.[15] Although alternative payment mechanisms have been studied and, in some cases, implemented, the primary payment model is still fee for service (FFS) based on volume, or units of service delivered. In some cases, health plans arrange for employers/enrollees to purchase units of service at a discount. But under an FFS payment mechanism, doing more (e.g., providing more health care services) is rewarded whether it improves quality or not. Increasingly, FFS is considered an obstacle to achieving coordinated, efficient and effective care; one that results in waste in health care delivery and the rapid rise of health insurance premiums.[16]

There are several alternative payment methods to the traditional FFS. Within the current discussion of health care reform, alternative payment strategies may be categorized as incremental or fundamentally different. For providers – physicians, hospitals, allied health professionals – it is likely that all are part of their daily challenge to align performance with optimal payments/compensation. (There are 1,300 health plans in the U.S. from which providers seek payment.) Figure 1 shows examples of the major payment models overlaid by incremental payment models.

Figure 1: Examples of major payment models

Payment strategy	Models of payment		
Model	**Pay for performance**	**Tiered networks**	**Never events**
Fee for Service	CMS	Premera Blue Cross, Seattle, WA	CMS
Capitation	Blue Cross Blue Shield of Massachusetts Alternative Quality Contract (AQC)	Blue Cross of California Power Select HMO	WellPoint, Inc., Aetna, Inc., Anthem Blue Cross
Bundled/Episode	Prometheus – Prometheus Payment; ProvenCare – Geisinger Health System	Aetna Aexcel High Performance Network and Virginia Mason Medical Center,[17] Seattle	ProvenCare, Geisinger Health System

Key terms

- IDS or IDN – Integrated Delivery System, sometimes referred to as an Integrated Delivery Network. An organization that includes at least one hospital, a large multi-specialty physician group practice and a payor, such as an HMO or a PPO.
- HMO – Health Maintenance Organization. A health delivery organization of providers and hospitals that has contracted with a payor to provide health care services for its members. Premium costs tend to be lower than for a PPO or other plans, however, the HMO is restrictive. Primary care physicians must be HMO members and control access to specialist care. An example of managed care.
- PPO – Preferred Provider Organization. A payor negotiates discounted rates for services with providers. Consumers generally pay a reduced co-pay fee compared to using a provider outside the PPO.
- PHO – Physician-Hospital Organization. A hospital and at least a portion of the medical staff are loosely aligned in an organization. Medical staff economic interests are primarily aligned with the hospital and must be able to provide sufficient geographic coverage for health plan contracting.[9]
- POS – Point of Service. A health insurance plan that allows a beneficiary to choose either a PPO or an HMO at the time of care. The HMO rate is less costly than the PPO rate for the beneficiary.
- PCMH or Medical Home – Patient Centered Medical Home. Current focus is a model for primary health care delivery, managed by primary care physicians, designed to manage costs and provide efficient, well-coordinated care to members. Not yet well-defined.[10]
- Fee for Service – A reimbursement scheme where the fee paid for care is based on the unit of service, such as an office visit, treatment, test, procedure, etc. Income can be maximized through volume of service units.
- Capitation – A method of reimbursement assigning a fixed fee prospectively for services on a per-capita basis. Managed care is the most common capitated program.
- Episode-based Payment – A method of reimbursement wherein all costs of care across all settings for a defined clinical condition are bundled into a single payment.

[15] CBO (November 2007) "The Long-Term Outlook for Health Care Spending," http://www.cbo.gov/ftpdocs/87xx/doc8758/11-13-LT-Health.pdf. Accessed 05/02/2009

[16] IOM (2006). Rewarding Provider Performance: Aligning Incentives in Medicare, Washington, D.C., National Academies Press

[17] Pham,HH, Ginsberg, PB, McKenzie,K, Milstein,A (July 10, 2007). "Redesigning Care Delivery in Response to a High Performance Network: The Virginia Mason Medical Center, " *Health Affairs*, hlthaff w532-w544

Fee for service

Fee for service (FFS) is the predominant payment model in the U.S. health care system and is considered a contributor to spending growth and geographic variation unrelated to quality of care.[18] Regardless of methods used to "recalibrate" the FFS system, provider behavior will still be rewarded for volume and level of service, as opposed to quality of care outcomes. In an effort to control FFS cost growth, payors have negotiated discounted rates with high-volume providers and formed preferred provider organizations (PPOs) within health plan offerings.[19] Figure 2 presents a summary of FFS characteristics, risks, strengths and weaknesses.

Incremental payment modifications under FFS payments

As commercial health plans and Medicare have observed, a volume-based method of payment has unintended consequences; over-use, widespread variation in practice patterns, and excess costs are among the most widely noted. To bend the cost curve, payors have modified FFS models to focus on desired results.

Among the most popular incremental approaches are:
Pay for performance: Physicians are rewarded for process measures of efficient care practices and medical management consistent with clinical practice guidelines. Since outcomes are frequently beyond the provider's control, process measures are the focus:

Figure 2: FFS characteristics

Payment mechanism	Risks	Strengths	Weaknesses
Predominant Method: • Fee paid on the basis of unit of service, such as an office visit, treatment, test or procedure. • Income is maximized through volume of service units. • Provider bills payor for services rendered on behalf of patient. No pre-arranged fees between provider and payor. **Variation:** • Discounted FFS is a form of managed care – providers agree to a discounted FFS fee in exchange for being a preferred provider (PPO) within a health plan network.	• Risk is fully borne by payor – commercial/private, philanthropic, government or consumer. • Depending on coverage level, consumer may also bear risk with payor. • Tends to financially penalize providers and organizations that reduce unnecessary services and admit patients to lower-cost but appropriate care settings.	**Provider Perspective:** • Rewards volume of service – the more tests, treatments, visits, procedures performed, the higher the revenue. • No penalty for poor-quality care, complications or re-hospitalizations. • No penalty for uncoordinated or inefficient care. • Creates access for those who can pay.	**Payor Perspective:** • Spurs spending growth and increases costs. • No incentive for efficiency of service delivery. • No incentive for quality or value. • Health care accessible only to those consumers who can pay. • Encourages specialty service use to the detriment of primary care. • Duplicative, unnecessary or marginal value care services result in increased provider revenue. • Supports geographic variation in health care use and spending. • Tends to favor more profitable high-technology services, which increase productivity and reduce costs at the expense of low-technology services.[20] • Rewards errors with payment for correction to clinical mistakes.

[18] Fisher, E. S., D. E. Wennberg, et al. (2003). "The Implications of Regional Variations in Medicare Spending. Part 1: The Content, Quality, and Accessibility of Care," Ann Intern Med, 138(4): 273-287

[19] *Mechanic, R. E. and S. H. Altman (2009). "Payment Reform Options: Episode Payment Is A Good Place To Start." Health Affairs*, 28(2): w262-271. p. w262-271

[20] Ginsburg, P. B. and J. M. Grossman (2005). "When The Price Isn't Right: How Inadvertent Payment Incentives Drive Medical Care." *Health Affairs*, hlthaff.w5.376

They are controllable by the provider and a basis for health plan comparisons between providers. As databases tracking patient behavior become more robust, it is likely that outcome measures will be considered in pay-for-performance (P4P) programs in addition to lower costs and improved patient satisfaction.[21] Approaches to incentives vary widely; from threshold bonuses to high performers, sliding-scale bonuses based on continuous improvement and others. Nonetheless, P4P has become the most popular incremental mechanism used by health plans and Medicare to align provider performance with payments under the fee-for-service model. Figure 3 presents a summary of P4P characteristics, risks, strengths and weaknesses.

Tiered networks: A related incremental mechanism used by health plans to reward performance is tiering of provider networks, wherein better performers receive more favorable positioning in the provider networks that are offered to enrollees. Tiers may reflect cost effectiveness, efficiency of care, compliance with clinical quality indicators, patient satisfaction and other variables. Often, financial incentives are provided for patients who choose the most cost-effective physicians and hospitals through reduced cost sharing.[24]

Never events: A relatively new incremental effort targeted primarily to hospitals is a focus on avoiding never events; that, is payment reductions for failure to reduce medical problems that otherwise could have been avoided. Spurred by the IOM report, *To Err is Hu*man, and the identification by the National Quality Forum of 28 preventable medical errors that should never occur, many hospitals increased their focus on care and error-prevention processes. As of October 2008, CMS ceased paying hospitals for eight adverse events that were not documented as present upon hospital admission. Commercial payors, both regional and national, have had a mixed response, with some beginning to withhold payments for never events and others taking a wait-and-see approach.[25]

Figure 3: Pay-for-performance characteristics

Payment mechanism	Risks	Strengths	Weaknesses
• A value-based approach to payment – focus is on quality of services rather than volume. Providers are paid based on their adherence to performance measures. Often incorporated within an FFS payment system. • Programs are often based on well-known measurement systems, such as HEDIS.[22] • Although quality of services is rewarded, resulting in more utilization of appropriate under-used services, utilization of "overused" services is not reduced.	• Providers are at risk for degree of compliance with process performance measures for specified patient cohorts. • Uncertainty exists about the best way to design P4P programs: – Should performance be measured on an individual provider basis or by groups of providers? – Should incentives be based on levels of performance or rates of performance improvement?	• Rewards quality of care rather than units of service. • Emphasizes adherence to guideline-based processes of care. • Uses available, well-published quality performance measurement systems, such as HEDIS. • Fosters competition among providers based on performance on key quality metrics. • Indirectly drives business to high-performance providers.[23]	• Little emphasis on outcomes of care. • General lack of available, broad-based performance measures; more focus needed on multiple dimensions of care, and mutual shared accountability among providers. • Formal evaluation of P4P programs has been limited. • Unknown relationship between provider remuneration and change in practice behavior. • Methodological challenges of performance measurement, such as small subsets of clinical practice and lack of standardized metrics, can lead to "small N" phenomenon, resulting in less-credible data.

[21] AHIP, Board of Directors' Statement on Improving the U.S. Health Care System: Rethinking the Delivery and Payment Structures. p.2. March 9, 2009. http://www.ahip.org/content/default.aspx?bc=31|44|26308. Accessed 05/09/2009

[22] Health Effectiveness Data and Information Set. System developed by The National Committee for Quality Assurance (NCQA). See http://www.ncqa.org/tabid/187/Default.aspx for full description of the HEDIS program. Accessed 05/11/2009

[23] Baker, G., Delbanco, S. (2007) "Pay for Performance: National Perspective. 2006 Longitudinal Survey Results with 2007 Market Updates," 1-63. p. 5. http://www.medvantage.com/Pdf/2006NationalP4PStudy.pdf. Accessed 05/11/2009

[24] Terry, K. What "tiered networks" will mean to you," *Medical Economics*, September 17, 2004. p.1. http://license.icopyright.net/user/viewFreeUse.act?fuid=MzUyODg4Mw%3D%3D. Accessed 05/20/2009

[25] Taylor, M. (2008). "Experiments in Payment," *H&HN: Hospitals & Health Networks*, 82(9): 28-33. p. 28

For providers, pay for performance, tiered networks and never events represent the major mechanisms through which health plans – including commercial plans and Medicare – compensate their efforts. These mechanisms are incremental: Each represents a relatively modest deviation from a volume-based FFS payment model.

Managed care prospective payment

Managed care was introduced in the 1970s as a solution to the fee-for-service, volume-based incentives of the U.S. health care system. It featured pre-payments to providers based on actuarial assessments of the forecasted need for health services and associated costs. In short, managed care featured pre-payment for services rather than retrospective payments.

Enrollment in pre-paid health plans (managed care programs most closely associated with health maintenance organizations [HMOs]) peaked in the late '90s followed by a public backlash. Media stories about denial of coverage for experimental treatments for life-threatening conditions added fuel to negative public opinion about managed care.[26]

Lost in the rhetoric were many of the attributes implicit in managed care: that payment to providers based on coordination of care instead of volume might lead to improved outcomes and lower costs. Nonetheless, managed care, especially capitated payments, became problematic to the insurance industry and dangerous turf for policy makers intent on lowering costs. Figure 4 presents a summary of managed care/capitation characteristics, risks, strengths and weaknesses.

Figure 4: Managed care/capitation characteristics

Payment mechanism	Risks	Strengths	Weaknesses
Capitation • A method of assigning a fixed fee for services on a per-capita basis. Managed care is the most common capitated program. **Managed care** • A type of health insurance plan, which contracts with health care providers and health care facilities to provide care for its members at reduced cost for a specific period of time. Amount of coverage provided is determined by the rules of the network, which defines its own rules for coverage. • Goal is to reduce unnecessary costs of health care, improve efficiency and emphasize prevention. • The more restricted the plan, the less the cost. Managed care programs are provided through HMOs, PPOs or POS plans.[27]	• Risk is assumed by providers based on a fixed fee per patient prepaid by the payor. • Network rules, medical practice patterns, patient severity and consumer choices affect costs. • Provider/health facility is responsible for health care regardless of cost.	• Cost reduction goal is accomplished through multiple mechanisms:[28] – Providing economic incentives for both providers and patients to select less costly forms of care – Review of medical necessity for specific services provided – Increased patient (beneficiary) cost sharing – Controls on inpatient admissions and lengths of stay – Establishment of cost-sharing incentives for outpatient surgery – Selective contracting with health care providers – Intensive management of high-cost health care cases. • Provides incentive for focus on primary care and prevention.	• From provider and facility perspective: • Potential conflict of interest for providers exists in that providers may save money by withholding care or by providing less-expensive, low-technology care. • Patients with outlier disease/treatment requirements are more costly to treat than the allowable capitation. • Financial incentive exists to cherry-pick cases or covered population. • Inadequate capitated payments have become a major issue in states' and federal government's managed care programs.

[26] Shen, Y.-C., Melnick, G (2006). "Is Managed Care Still an Effective Cost Containment Device?" *Forum for Health Economics & Policy*, 9 (1): (Frontiers in Health Policy Research), Article 3. http://www.bepress.com/fhep/9/1/3. p.19

[27] National Library of Medicine. http://www.nlm.nih.gov/medlineplus/managedcare.html. Accessed 05/05/2009

[28] National Library of Medicine: managed care. http://www.ncbi.nlm.nih.gov/sites/entrez. Accessed 05/05/2009

Episode-based payments

A major disconnect in provider payment is continuity of care: The U.S. health care system is expensive, in large measure, because patients are not followed through the system, which makes it difficult to minimize duplication, and to avoid errors and unnecessary costs that are not consistent with long-term outcomes. A recent focus of attention has been the bundling of payments to hospitals for the full range of services associated with specific patient populations. Bundling, or episode-based payments, was mentioned by President Obama in his February 24, 2009, address to Congress and has since been a major element in health care reform discussions.

An episode-based payment (EBP) bundles all costs of care across a clinical condition for a defined period of time and for all settings involved in direct and indirect care to the patient. An episode may include several levels and types of care providers, and may cross a number of venues including office, outpatient, hospital, rehabilitation, pharmacy and home health services. A key feature of EBP is its alignment with evidence-based best practices, including clinical guidelines and quality measures.[29] Determining the "best treatment" is premised in evidence, and agnostic to predispositions of organizations that might otherwise prefer to protect a specific domain of expertise. In EBP, the provider organization is responsible for managing a process of adherence to evidence-based practices based on what is done rather than "who does it."

Ideally, global bundling of fees by episodes (i.e., the total longitudinal condition cost for all physician, hospital, pharmacy, laboratory and other ancillary services in treating episodes of care – with appropriate adjustment for severity of providers' case mix) penalizes high-cost providers and offers incentives for lower-cost providers based on clinical outcomes and efficiency. Additional payments to providers for other services, such as teaching and research (academic medical centers), or for indigent care, could be added to the global-episode-bundled payment to encourage these activities by providers.

By bundling all clinical services into a single rate, and establishing rates based on the resources required to deliver optimal value (outcomes and efficiency), EBP offers policy makers a mechanism to align payments toward results instead of volume.

Issues in EBP

There are many considerations in the design and implementation of an episode-based payment system. As described in Figure 5 (next page), how to address outliers in the patient population, how to align individual performance recognition with the episode payment and how much to pay per episode are among the hurdles to its implementation.

Implementing EBP: Tools, not rules

One of EBP's challenges is the methodology upon which payments are based: What services are included? Delivering quality care in the most cost-effective manner, while taking into consideration disease severity and co-morbidity of patients' conditions, is the goal of value-based care. By grouping health care services into clinically meaningful events (episodes of care) "healthcare professionals can more precisely analyze patient treatments, evaluate the quality of care delivered and manage the associated costs."[30] The process of applying an episode grouper to determine physician resource use includes:

1. Identifying episodes of care comprised of clinically-related healthcare claims data (including hospital, physician, pharmacy, laboratory and other types of services) over a defined period of time;
2. attributing episodes to a physician or group of physicians; and
3. comparing the actual costs of episodes to their expected costs for each individual or physician group.[31]

[29] Rosenthal. M.B. (2008). "Beyond Pay for Performance - Emerging Models of Provider-Payment Reform," N Engl J Med, 359(12):

[30] Gillette, B. "Episode grouping can weigh impact of health services on cost and quality," *Managed Healthcare Executive*, September 2005. p. 32. http://support.thomsonhealthcare.com/uploadedFiles/docs/033-Medstat_MHE_MEG_Sept_2005.pdf. Accessed 05/20/2009

[31] Lake, T. Colby, M, Peterson, S. Health Plans' Use of Physician Resource Use and Quality measures. Final Report. October 24, 2007. Mathematica Policy Research, Inc. Contract no. RFP03-06-MedPAC/E4016631. p. v. http://www.medpac.gov/documents/6355%20MedPAC%20Final%20Report%20with%20Appendices%201-24-08.pdf. Accessed 05/20/2009

Figure 5: Issues in episode-based payment (EBP)

Issue	Discussion	Implications
Outlier patient conditions and case mix severity • Episodes have been described as a blunt instrument for bundling clinical care. The episode grouper works well for typical care where the law of averages works; however, for rare cases or those with disease severity outside the norm, it is difficult to compare care required by outlier patients to that required of patients with "average" care needs. • Should medical procedures be used in episode of care construction?	**Outliers** • This is an issue of particular importance to academic medical centers, which typically manage more complex patients. If sicker patients are included in the average episode, without appropriately adjusting for the provider's case mix of patients, providers with these sicker patients could appear to be inefficient in their care delivery, and payors would try to move their episode payment closer to the population average. • Episode technology vendors make the inclusion and exclusion of procedures a key differentiator in episode construction.	• Issues around case mix adjustment have been widely studied in health services literature and are why Medicare adjusts premiums to account for patients' disease status; otherwise, payors could "cherry pick" healthier patients and leave sicker patients without coverage. • If episodes are stratified by severity of illness and procedures are included in the episode definition, sophisticated providers could generate more procedures in the care they provide to inflate the perception of clinical severity for the patient and be reflected in the episode case mix.
Provider attribution • Complex health issues may require that a number of providers are involved in treating a patient for one episode of care.	**Attribution** • Which provider is ultimately responsible for managing the episode of care? Most commonly mentioned possibilities are primary care physicians, medical specialists and nurse practitioners. In some cases, it may be the provider organization.	• Episodes are patient-centric not provider-centric, so post-grouping provider attribution is necessary. In value-based purchasing and pay-for-performance, the episode's managing physician is held accountable for the quality of care. • Which provider is responsible for allocating the payments each provider receives? For some episodes, the hospital organization receives payment and allocates distribution of the payments across providers.
Episode reimbursement • To reimburse by episode, payors will need to contract with the providers delivering direct patient care over the course of the episode.	• For large provider organizations, the payor is likely to contract with the provider organization and let the organization determine an appropriate allocation to the episode providers. • For non-integrated health systems, payors will need to contract by episode across providers responsible by episode. This could introduce significant system issues due to provider attribution logic and appropriate allocation of the episode reimbursement across the clinical participants in the episode.	• Payors have dealt with similar issues in capitation, but episode-based reimbursement makes reimbursement even more complex for health systems.

Two commercial proprietary episode groupers are used by many health plans and provider groups: Medstat Medical Episode Grouper (MEG) from Thomson Reuters[32] and Symmetry Episode Treatment Groups (ETG) from Ingenix.[33] The basic methodology consists of grouping inpatient, outpatient and pharmacy claims data into clinically meaningful episodes through use of proprietary software algorithms. Both the Medical Episode Grouper and the Episode Treatment Grouper can be combined with other proprietary and health plan analytic methodologies for further analysis to determine appropriateness of care in individual circumstances. Figure 6 (next page) provides examples of this process.

Episode groupers have been used by organizations to:

- Identify and stratify high-risk patients
- Analyze cost and use of resources
- Evaluate return on investment for disease management programs
- Compare hospital and physician performance
- Rate employer groups
- Develop high-performing tiered networks and Clinical Centers of Excellence
- Target clinical and financial improvements.[34]

[32] See http://home.thomsonhealthcare.com/Products/?id228. Accessed 05/20/2009

[33] See http://www.ingenix.com/content/File/What_are_ETG.pdf . Accessed 05/20/2009

[34] Gillette, B. "Next-generation episode grouping could drive care quality," *Managed Healthcare Executive*, October 2005. p.32. http://support.thomsonhealthcare.com/uploadedFiles/docs/034-Medstat_MHE_MEG_Oct_2005.pdf. Accessed 05/20/2009

Figure 6: Episode groupers

Medstat Episode Grouper (MEG). Founded in 1998, used by payors to analyze claims data on more than 43 million covered lives.[35]

- Uses a patient-severity-based, risk-adjustment methodology (patent pending), based on fifth edition of Medstat Disease Staging® patient classification system, which includes 555 disease categories stratified by severity level.[36]
- Methodology delivered via proprietary software. Uses diagnosis codes (ICD-9 codes); does not use procedure codes (CPT codes).
- Example of output:
  - One of the many proposals under health care reform is focused on improving care coordination. Episode-bundled reimbursement has been suggested as a means to align provider incentives to promote better care coordination to reduce never events, adverse events, post-operative complications, nosocomial infections, readmissions, lengths of stay, etc.
  - The following table from Thomson Healthcare's MarketScan 2007 data for 29 million commercial and 2.2 million Medicare lives shows what an accountable care organization would receive across an average U.S. episode-bundled reimbursement for hip replacement and coronary artery bypass graft (CABG) care under commercial and Medicare reimbursement. (The subsequent tables show the breakdown of the episode across time (pre-operative, inpatient surgery, and post-operative care) and across professional fees and facility charges for a blended national commercial reimbursement rate.

Total allowed cost per episode (unbundled): Commercial vs. Medicare

Category	Commercial	Medicare
Hip replacement	$30,437	$22,409
CABG	$62,305	$50,598

Cost-Per-Episode Breakdown: Physician/Professional, Facility and Pharmacy Charges

CABG episode			
Type of charges	**Pre-admission services**	**Inpatient admission services**	**Post-admission services**
Physician/Prof	$1,270	$8,801	$909
Facility	$2,453	$45,099	$1,914
Pharmacy	$760		$1,101
Total	**$ 4,483**	**$53,899**	**$3,923**
Examples of procedures	Consultations	Surgery	Evaluation & management
	Pre-operative evaluation	Anesthesia	Skilled nursing
	Diagnostic cardiac catheterization	Medical care	Radiology
	Pathology		Cardiac rehab

(continued)

[35] http://home.thomsonhealthcare.com/Products/?id228. Accessed 05/20/2009

[36] Ibid

Figure 6, continued

Hip replacement episode			
Type of charges	**Pre-admission services**	**Inpatient admission services**	**Post-admission services**
Physician/Prof	$556	$4,318	$499
Facility	$335	$22,735	$452
Pharmacy	$811		$733
Total	**$1,702**	**$27,052**	**$1,683**

Examples of procedures	Consultations	Surgery	Evaluation & management
	Radiology	Anesthesia	Physical therapy
	Pathology	Medicine	Skilled nursing
	Pre-operative evaluation		Radiology

- See Appendix for example Medstat Episode Groups likely to be considered for episode-bundled reimbursement.

Episode Treatment Groups (ETG). Founded in the mid-1990s, part of a suite of products that are licensed by over 300 U. S. health care organizations[37]

- Defines episode as: "the unique occurrence of a medical condition or disease for a patient and the health care services involved in diagnosing his or her treatment."[38]
- Methodology is based on condition classification: 600 separate ETGs are defined and classified into 22 medical Major Practice Categories. Delivered via proprietary software. Uses diagnosis codes (ICD-9 codes) and procedure codes (CPT codes).[39]

Source: Thompson Healthcare's Market Scan 2007 data.

[37] See http://www.ingenix.com/content/File/What_are_ETG.pdf . Accessed 05/20/2009. p.2,4. Accessed 05/20/2009

[38] Symmetry Episode Treatment Groups: Issues and Best Practices in Physician Episode Attribution. Ingenix. ©.2008. p.2. http://www.ingenix.com/content/File/Symmetry_EpisodeAttribution_WP_FINAL_112007_L01.pdf. Accessed 05/20/2009

[39] Ibid

Prominent episode-based payment efforts

Several demonstration projects provide examples of episode-based payment. Such projects increasingly are in the public view, as indicated by a *New York Times* series on new approaches to address health care system challenges. One of the articles featured the Geisinger "ProvenCare" episode-based payment method for coronary artery bypass grafts (CABG).[42] Following is a review of ProvenCare, as well as two other episode-based methodologies: PROMETHEUS and the Medicare Heart Bypass Center Demonstration.

Geisinger "ProvenCare"

ProvenCare is the name of an episode-based payment method designed in 2005 by the Geisinger Health System. The episode of care was designed based on clinical practice guidelines and critical pathways; the global case rate was determined based on Geisinger's historical cost data.

A group of surgeons at Geisinger Health System reviewed evidence-based practices for coronary artery bypass graft (CABG) surgery. The level of evidence underlying each practice was included in the review. After selecting and agreeing upon 40 specific performance measures, they unanimously included the measures in each cardiac surgeon provider practice and initiated the inclusion of these measures in the Geisinger Electronic Health Record (EHR) for both inpatient and ambulatory settings. The 40 specific measures represent the key care processes for CABG surgery. They include specific documentation requirements for each aspect of the care continuum: pre-admission, operative, post-operative, discharge and post-discharge. The Geisinger System then established one global fee for all care and services related to cardiac bypass surgery, inclusive of 30 days before and 90 days after surgery (Figure 7).[43] The assumption of financial risk post-hospitalization is one of the unique features of this payment approach.

Figure 7: Geisinger notes

- **What is Geisinger?** An integrated delivery network health system serving two million people in 42 counties in central and northeast Pennsylvania. It provides care through its own hospitals, clinics, outpatient services, research facilities, rehabilitation facilities, an HMO – Geisinger Health Plan – and a physician practice group. The physician practice group is multi-specialty, salaried by the health system, and provides care across the geographic region served by the health system. In addition to multiple facilities, Geisinger has a state-of-the-art health information system implemented throughout inpatient and outpatient facilities.[40]
- **What is ProvenCare?** Geisinger's designation of a demonstration project using proven care benchmarks in coronary artery bypass graft (CABG) surgery. The project designated all services that should be included in care before, during and after a CABG procedure, and used that grouping to "bundle" charges for the CABG episode.
- **ProvenCare for cardiac bypass surgery - before**: Geisinger was performing all 40 steps for bypass surgery only 59 percent of the time. After: Surgery is canceled if any pre-operative measures have been forgotten, and there has been almost 100 percent compliance on all 40 measures.[41]

An evaluation of this episode-based practice one year after implementation indicated a 10 percent reduction in readmissions, reduction in most complication rates, a shorter-than-average length of stay and reduced hospital charges.[44] Based on experience with the CABG ProvenCare, Geisinger is currently expanding the episode-based payment method to angioplasty, hip replacement surgery and cataract surgery.[45] Some external observers question the ability to generalize a model such as ProvenCare because many provider organizations lack the geographic market share, the system-owned physician practice, the internally funded health plan and comprehensive health information system available within Geisinger Health System.

[40] Lee, T. H. (2007). "Pay for Performance, Version 2.0?" *N Engl J Med*, 357(6): 531-533

[41] Ableson, Ibid

[42] Abelson, R. (May 17, 2007) "In bid for better care, surgery with a warranty." *New York Times*. http://www.nytimes.com/2007/05/17/business/17quality.html. Accessed 05/12/2009

[43] Etheredge, L. M. (2009). "Medicare's Future: Cancer Care." *Health Aff airs*, 28(1): 148-159. p. 157

[44] Lee, Ibid

[45] Mechanic, R. E. and S. H. Altman (2009). "Payment Reform Options: Episode Payment Is A Good Place To Start." Health Affairs, 28(2): w262-271. p. 265

PROMETHEUS

The PROMETHEUS payment methodology is another value-based approach to provider payment that includes bundling of services into an episode of care. PROMETHEUS' goal is to use financial incentives to encourage providers to use evidence-based protocols in clinical practice. Financial risk is assumed by all providers delivering care within a defined episode.

An interdisciplinary team[49] designed the PROMETHEUS model over three years. The team reviewed clinical practice guidelines for a number of conditions and selected ones that could be converted into an actual payment. This involved deconstructing the guidelines to identify all clinical services required to create the continuum-of-care episode, and analyzing the costs of the clinical services. The costs were then converted into a global payment, designed to be shared among all providers.[50] The outcome was twelve evidence-based case rates (ECRs) for clinical conditions, including cancer, cardiology, orthopedics and preventive care. The case rates are risk-adjusted for both severity of illness and complications.[51,52]

For any given ECR, all providers follow the specified clinical practice protocol, and all providers share the payment. However, a portion of the payment is withheld until provider performance is scored; providers are scored on their own performance against the clinical protocol as well as the performance of other providers on the team (Figure 8). This structure not only encourages evidence-based practice, it provides incentives for collaboration and improvements in care quality and efficiency across the inpatient and outpatient continuum. Transparency is achieved by publicly publishing the provider scores. A three-year pilot is currently under way at several sites.[53]

Figure 8: PROMETHEUS notes

- **What is PROMETHEUS?** A health care payment model focused on quality, which resulted from an interdisciplinary collaboration that began in 2004. The name derives from an acronym which represents the values of the program: Provider payment Reform for Outcomes Margins Evidence Transparency Hassle-reduction Excellence Understandability and Sustainability.[46]
- **PROMETHEUS program design**: A values-driven payment model for which designers specified the following requirements: "1) the payment mechanism couldn't interrupt existing health plan processes; 2) It must lower administrative burden for providers; 3) transparency must be the bedrock of all processes; 4) It could not require legislation to implement; and 5) program oriented to paying providers fairly."[47]
- **PROMETHEUS payments**: Based on evidence-based case rates and adherence to clinical protocols; payments are shared among all providers. Final payment is withheld until provider performance is scored against the clinical protocol. Each provider is scored 70 percent on their own practice and 30 percent on all other providers, thus providing clear incentive for clinical collaboration.[48]

Medicare participating heart bypass center demonstration[54]

One of the earliest demonstrations of episode-based payment began in 1988, sponsored by the Health Care Financing Administration (HCFA). Rising Medicare costs for both hospital care and physician services prompted this cost-containment demonstration project. At the time, Medicare was spending several billion dollars annually on CABG surgery. Although hospital and surgeon rates were capped, physician services were not similarly constrained.

[46] See http://www.prometheuspayment.org/mission/index.htm

[47] Gosfield, A. G. (2007 Ed) "A New Payment Model For Quality: Why Care Now?" *American Journal of Medical Quality*, 145-147. p.146

[48] Ibid

[49] Physicians, insurers, hospital executives, employers, RAND Corporation health care analysts, Harvard University. Commonwealth Fund contributed $300,000 to help develop the model; Robert Wood Johnson Foundation contributed $6.4 million to test the model.

[50] Rosenthal, M. B. (2008). "Beyond Pay for Performance -- Emerging Models of Provider-Payment Reform," *N Engl J Med*, 359(12): 1197-1200. p.1199

[51] Taylor, M. (2008). "Experiments in Payment," *H&HN: Hospitals & Health Networks*, 82(9): 28-33. p.30

[52] Gosfield, A. G. (June 2008). "Making Prometheus Payment Rates ReaL: Ya' gotta start somewhere," pp.1-17., from http://www.prometheuspayment.org/publications/pdf/MakingItReal-Final.pdf

[53] Gosfield, A. G. (2007 Ed) "A New Payment Model For Quality: Why Care Now?" *American Journal of Medical Quality*, 145-147

[54] For a complete report of this demonstration, see http://www.cms.hhs.gov/demoprojectsevalrpts/MD/ItemDetail.asp?ItemID=CMS063472. Accessed 05/12/2009

[55] Cromwell, J., Dayhoff, DA, McCall, NT, Subramanian, S, Freitas, RC, Hart, RJ (1998). Medicare Participating Health Bypass Center Demonstration Executive Summary. Waltham, MA, Health Economics Research, Inc. HCFA Contract No. 500-92-0013. pp ES1-2

Physicians (other than surgeons) bore no financial risk for inpatient care – including days in intensive care, expensive drugs or tests. Because the physician model was FFS, the more services they provided, the higher their pay. This Medicare demonstration project was designed to set a global fee for CABG that would include physician services, thus aligning provider resources across the CABG episode of care (Figure 9).[55]

Figure 9: Medicare demonstration notes

- **What is the medicare participating heart bypass center demonstration?** Early example (design began in1988) of episode-based payment arising from increased Medicare costs for CABG. After all adjustments, Medicare costs for CABG increased 12-14 percent annually from 1985-1988.[1]
- **Four sites participated in the three-year demonstration, 1991-1994**: St Joseph's Hospital, Atlanta; St Joseph Mercy Hospital, Ann Arbor; Ohio State University Hospitals, Columbus; and University Hospital, Boston. In 1993, hospitals in Houston, Portland, Oregon, and Indianapolis were added to the demonstration.
- **Demonstration goal**: To test feasibility of negotiating and paying global rates for bundling CABG services.
- **Demonstration evaluation**: Both financial and quality measures were included in the evaluation:
  - Feasibility of bundling payments
  - CABG volume increase
  - Patient outcomes
  - Appropriateness of care
  - Physician payments
  - Reimbursement difficulties
  - Achievement of goals.

.

Four sites were selected for the demonstration, based on price and geographic distribution. Rates were negotiated with each site; a global rate was then established for every discharge within the Diagnosis Related Groups (DRG 106, 107) pertaining to CABG. Physician fees for pre-and post-discharge services were included in the global rate.

The project's primary goal, to demonstrate cost reduction through global episode-based payment, was achieved in three of the four hospitals. The reductions were attributed to shortening lengths of stay, substituting generics for branded drugs, closely following critical paths of care and decreasing unnecessary testing. CABG case volume did not increase at the demonstration hospitals, although most of the hospitals entered into new managed care CABG contracts with private payors.

Other outcomes included unanimous site dissatisfaction with the administrative burden caused by episode-based payment billing and collection issues. Working relationships among physicians improved but the decrease in physician referrals generated issues: Although formal quality improvement measurements were not included in the evaluation, providers perceived that quality of care improved. However, there was an unexplained increase in complication rates during the demonstration. It is hypothesized that the rate increase was due to additional attention given to coding during the project.[56]

Medicare continues to be engaged in demonstrating episode-based approaches to care and payment. On January 7, 2009, the Centers for Medicare & Medicaid Services (CMS) issued a press release announcing site selections for the Medicare Acute Care Episode (ACE) Demonstration. This hospital-based demonstration will test bundling of physician and hospital services to improve quality of care for Medicare FFS patients. Five sites have been selected: Baptist Health System (San Antonio, Texas), Oklahoma Heart Hospital, LLC (Oklahoma City, Oklahoma), Exempla Saint Joseph Hospital (Denver, Colorado), Hillcrest Medical Center (Tulsa, Oklahoma), and Lovelace Health System (Albuquerque, New Mexico).

The ACE demonstration's goal is to use a bundled payment to better align the incentives for hospitals and physicians, leading to better quality and more efficient care. The demonstration will include 28 cardiac and nine orthopedic inpatient surgical services and procedures and CMS will make a single payment for both Medicare Part A and B services. CMS indicates that the ACE demonstration will provide each site or "value-based care center" with an opportunity to develop care efficiencies through clinical pathways quality improvement, improved care coordination among specialists and gain sharing. The ACE demonstration, open to applicants from Texas, Oklahoma, New Mexico and Colorado, will be implemented during 2009.[57]

[56] Ibid. pp. ES 25-26.

[57] See Health and Human Services, CMS. *Medicare News*,http://www.cms.hhs.gov/DemoProjectsEvalRpts/downloads/ACEPressRelease.pdf. Accessed 05/14/2009

Implications

Although this paper has not focused specifically on health care industry stakeholders, they are key to the design, implementation, adoption and success of episode-based payment. EBP programs will require multiple stakeholders to work together in new ways. Selected implications for consumers and providers are presented in Figure 10.

Figure 10: Implications of episode-based payment: Consumers, providers

Consumers	• As consumers take on more financial and decision-making responsibility for their health care benefits, transparency and value-based purchasing will likely assume increased importance. • Episode reimbursement and reporting may help consumers make more rational health care purchasing decisions. • Episode cost reporting may give consumers a better perspective of the total cost of managing their health conditions. • Consumers may receive financial incentives to use high-quality/lower-cost providers in tiered networks. • Consumers may gain better understanding of the elements of coordinated care and become sensitized to processes and optimal outcomes.
Providers	• Episode technology will likely offer providers new analytical tools as they seek to improve patient care and cost effectiveness through coordination and efficiency. • Providers may have a financial incentive to maintain or improve a patient's health, prevent hospital admissions and coordinate care among multiple providers. • Physicians could have funding flexibility to use the best combination of providers and services for maximum value. • The EBP provider group could receive payment bonuses or penalties based on (a) patient health outcomes, (b) patient satisfaction levels, and (c) patient utilization of major acute care services. • Providers will need to understand episode methodology and risk stratification of their patient populations. • Management in provider organizations will need to determine mechanisms for distributing the episode allocation across individual providers. • Hospital providers may be incented to prevent adverse events and readmissions, and to provide care based on standards and clinical guidelines. • Physicians may no longer be paid more for longer hospital stays, more procedures, and treatment costs associated with adverse events. • Providers could be incented to cooperate in optimizing care quality and cost efficiency. • Because episode reimbursement will include all inpatient and outpatient services and all associated direct care provider services in a defined episode, providers will likely need to develop methods for determining fair payment allocation across settings and providers.

Payors are integral to the design, implementation and evaluation of episode-based payment programs. Selected implications for payors are displayed in Figure 11.

Figure 11: Implications of episode-based payment: Payors (health plans, employers)

Payors	• Payors will likely need to determine how to apportion the episode reimbursement allocation to provide incentives for improved clinical performance and care coordination. • Payment systems will need to be improved without increasing overall health care costs. Consequently, it is essential that clear goals – in terms of improved quality, reduced cost or both – be established as part of any change in payment systems. • Payors should continue to incorporate and further develop risk stratification methods to account for severity of illness and co-morbidities within defined episodes of care. • Payors may negotiate with providers to determine the set of services to be included in a defined episode of care. • There may be increased pressure on payors to aggregate administrative claims data into larger national data pools to increase data volume for greater statistical credibility. Owners of data could resist and view their data as key strategic assets. The aggregation efforts of Mercer's Care Focused Purchasing, AHIP and HRPA of Arizona are recent examples that have had mixed results due to resistance to data sharing, as well as differences in episode construction methodologies and data standards pertaining to provider identification and attribution. • The episode-of-care payment amount could vary based on the patient's diagnosis, co-morbidities, and other patient-specific factors; however, payors would no longer increase payment to cover preventable adverse events such as errors and infections. • The payor would probably determine the episode-of-care payment amount prospectively but would include a retrospective adjustment based on the level of outcomes achieved. • Traditional utilization review metrics and policies would need to be updated to reflect improved care processes and outcomes in addition to efficiency and resource utilization metrics.

Policy makers are also key participants in the design and implementation of episode-based payment programs. Evaluating payment methodologies and designing demonstrations and national strategies for payment are among the pillars of health care reform. Medicare and Medicaid, as leaders in health care reimbursement strategies, can be pivotal to the adoption of episode reimbursement policy and its marketplace acceptance. CMS is currently conducting pilots in episode-bundled payments. Because many health plans make coverage decisions based on CMS practices, CMS may play a key leadership role in understanding episode-based payment and its application to health plan member populations. Policy makers and health services researchers will need to continue to test and improve outcomes measurement and risk-adjustment methodologies.

Closing thought

The use of episode-based payments to align provider performance, coordination of care and consumer expectations of "value" is a useful improvement to U.S. health care. It moves the system from volume-based, fragmented approaches of care delivery to performance-based payments and enhanced value that can improve health outcomes and decrease costs. We believe it to be a fundamental improvement to the delivery system that ultimately benefits patients in a substantial way while reducing avoidable costs.

Appendix

Eaton and Luft at UCSF (http://www.ahsrhp.org/2008/tuesday/marylandab/6_10_2008_11_30/Eatonl.ppt) have proposed different methods of payments to providers that may better align incentives. They specifically suggest for major acute and interventional episodes making a lump-sum payment, such as an expanded DRG, which is the idea underlying episode-bundled reimbursement.

The following tables using the episode grouper from Thomson Healthcare's MarketScan database would identify these episodes as good candidates for bundled reimbursement. They are listed in decreasing order, based on average allowed episode cost per member.

For commercial membership

MEG	Group name	Counts	Total allowed	Allowed/member
15	Infective Endocarditis	1,184	48,927,240	$41,324
530	Pneumonia: Aspiration	2,203	48,648,442	$22,083
401	Guillain-Barre Syndrome	1,633	35,840,615	$21,948
134	Alpha 1-Antitrypsin Deficiency	1,306	22,430,099	$17,175
302	Cryptococcosis	213	3,191,001	$14,981
514	Pneumonia: Pneumocystis carinii	325	4,560,714	$14,033
303	Cytomegalovirus Disease, (Acquired)	914	12,261,158	$13,415
202	Delivery, Cesarean Section	98,808	1,265,611,006	$12,809
345	Fracture: Acetabulum	1,785	22,359,875	$12,527
347	Fracture: Femur, Except Head or Neck	8,388	95,937,344	$11,437
295	Aspergillosis	621	7,034,439	$11,328
171	Vascular Insufficiency of the Bowels	4,664	52,597,665	$11,277
348	Fracture: Femur, Head or Neck	6,631	70,996,128	$10,707
138	Appendicitis	35,572	374,836,774	$10,537
285	Pancreatitis	25,432	262,018,081	$10,303
427	Encounter for Chemotherapy	1,918	19,326,648	$10,076
232	Anemia: Aplastic, Acquired	6,990	67,989,573	$9,727
523	Complications of Tracheostomy	1,326	12,863,786	$9,701
2	Aneurysm, Thoracic	5,861	56,086,045	$9,569
141	Clostridium difficile Colitis	4,850	43,678,461	$9,006
468	Toxoplasmosis: Congenital	354	3,014,763	$8,516
1	Aneurysm, Abdominal	6,718	56,748,734	$8,447
441	Anomaly: Coarctation of the Aorta	2,323	19,058,059	$8,204
203	Delivery, Vaginal	189,858	1,540,432,105	$8,114
155	Intussusception	850	6,808,714	$8,010

For Medicare membership

MEG	Group name	Counts	Total allowed	Allowed/member
134	Alpha 1-Antitrypsin Deficiency	135	3,040,254	$22,520
15	Infective Endocarditis	754	15,958,530	$21,165
401	Guillain-Barre Syndrome	389	4,995,142	$12,841
348	Fracture: Femur, Head or Neck	19,327	237,191,825	$12,273
530	Pneumonia: Aspiration	3,766	46,114,689	$12,245
138	Appendicitis	1,655	20,112,895	$12,153
523	Complications of Tracheostomy	355	3,505,445	$9,874
171	Vascular Insufficiency of the Bowels	3,580	34,748,546	$9,706
399	Disease of the Nervous System Secondary to Implants or Grafts	763	5,763,548	$7,554
347	Fracture: Femur, Except Head or Neck	5,028	37,494,662	$7,457
274	Cholecystitis and Cholelithiasis	20,273	143,205,000	$7,064
141	Clostridium difficile Colitis	5,004	34,867,614	$6,968
57	Neoplasm, Benign: Acromegaly	129	888,986	$6,891
165	Salmonellosis	146	1,004,943	$6,883
285	Pancreatitis	6,872	45,587,094	$6,634
510	Pneumonia: Bacterial	78,828	507,642,216	$6,440
231	Agranulocytosis	7,186	46,218,567	$6,432
514	Pneumonia: Pneumocystis carinii	125	761,686	$6,093
406	Meningitis, Encephalitis, and Myelitis: Viral	1,019	5,809,232	$5,701
426	Complications of Surgical and Medical Care	59,891	337,477,244	$5,635
345	Fracture: Acetabulum	845	4,676,781	$5,535
232	Anemia: Aplastic, Acquired	5,689	30,757,220	$5,406
295	Aspergillosis	251	1,257,924	$5,012
20	Pericarditis: Viral or Traumatic	590	2,938,582	$4,981
183	Injury: Urinary Tract	426	2,099,155	$4,928

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Acknowledgements

We would like to recognize the following individuals who contributed their insights and support to this research:

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We wish to also thank Wallace (Wally) D. Gregory for his review of this content; Erin Poetter for help with the publication and marketing activities; and Jennifer Bohn for her management of the research development process.

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